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☞ *Readers in search of a given subject will find it useful to bear in mind that the references are in several cases distributed under two or more separate but nearly synonymous headings—such, for instance, as Brain and Cerebral, Heart and Cardiac, Liver and Hepatic, Bicycle and Cycle, Child and Infant, Bronchocele, Goitre, and Thyroid, Diabetes, Glycosuria and Sugar, Eye, Ophthalmic, and Vision, &c., &c. (Py Q)=Parliamentary Question.*

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The Huxley Lecture

ON

RECENT ADVANCES IN SCIENCE

IN THEIR RELATION TO PRACTICAL MEDICINE AND THE NUTRITIONAL REQUIREMENTS OF THE BODY.

Delivered at Charing Cross Hospital Medical School (University of London), on Nov. 24th, 1920.

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No scientific worker, when invited by the staff of this great medical school to deliver a Huxley lecture, can fail in gratitude for the honour done to him. Nor, on the other hand, can he avoid a deep sense of responsibility. These occasions must be always significant, and till now each has been greatly served. The school has hitherto taken care that the memory of its great pupil should be recalled by lecturers, who have themselves reached high distinction. To follow them calls for courage enough. For myself, while offering my sincerest thanks for the opportunity put into my hands, I will beg for leniency, should comparisons be made.

I am to deal with human nutrition; but from a special standpoint and with special aims. I believe that recent acquirements in knowledge are changing the angle from which the nutritional needs of the human body ought to be viewed. That new criteria are becoming available and must be employed is the theme of this lecture. The acquirement of this newer knowledge began almost simultaneouly with the present century, but in its more significant, or, one should rather say, its more convincing aspects, it is of recent date. The latest developments were due almost entirely to investigators who have written in English. If they can be said to have yet affected practice it is only in countries where the English language is written and spoken.

I wish to put before you a personal appraisement of the importance of this newer knowledge, hoping to convince you that it has—as a subject of a Huxley lecture should, by definition, have—real relations with practical medicine.

As the last century closed the facts of nutrition were coming to be viewed more and more exclusively from the standpoint of Energetics. The criterion of an efficient dietary was apparently destined to be its caloric value, and, with one qualification, which seemed then to be lessening in significance, its caloric value alone. The chemical standpoint, in so far as it envisaged details, seemed to be losing its practical importance. Although the knowledge which was to correct these views, which, as I hope to show, were far too limited and exclusive, began to accumulate 20 years ago, the doctrine of the "eighteen-nineties" has continued to hold its ground, and is still sufficient for many.

Developments of Calorimetry.

Those years saw a remarkable development in the technique of human calorimetry. The accuracy with which the energy exchanges in the body came to be measured gave rise in the minds of all students of nutrition to a sense of real accomplishment, and to a feeling that, in addition to certain theoretical conclusions of great interest, calorimetry was making available, perhaps for the first time, information of a really quantitative kind to serve in practical guidance. The vague standards based upon statistical studies of the habits of communities could at last, it was felt, be checked, and if need be corrected, by data which were in the truest sense scientific. What, in terms of energy, are the basal requirements of the body? What the caloric equivalent of various forms of mechanical work? What the efficiency of the human body as a machine? What the relative value of different foodstuffs as sources of muscular energy? All these and kindred questions were being answered or the methods for their future solution made clear as the last century closed. They are, indeed, still being investigated, and with increasing accuracy, chiefly in the country where they were first seriously dealt with. For American workers Graham Lusk, Dubois, Benedict, and others are continuing the work of Atwater and Rosa, and are obtaining quantitative data which can be so controlled as to carry their own inherent proof of striking and even startling accuracy. The investigations are extending into the domain of pathological metabolism, and there I am convinced will have important bearings. I should, indeed, stultify myself if any word in this address gave you the impression that I under-value the results of accurate calorimetry as applied to man. My contention will be not that the data of calorimetry are unimportant, but that they are insufficient. Whatever else we need to know for proper definitions of nutritional requirements, we need always to know what is the call for energy. It would have been well indeed if the importance of such knowledge had been more widely recognised by Governments before the war. In spite of the developments I have mentioned, the war and its very urgent needs for guidance in matters of alimentation found us still with far too little knowledge of the energy requirements of troops in the field and of individuals engaged in various employments. It was as painful for those who had, in any capacity, to give advice to administrators on such matters to realise that scientific information was still sadly lacking in detail as it was surprising (at first) to the officials that scientific men should have any information to give at all! Considering the mass of information that is wanted and the fact that up to now the necessary equipment for such studies is confined to a few centres in America, it is not surprising that the data for complete practical guidance are even yet lacking.

Importance of Chemical Details.

If, however, when the crisis arose, the information available for guidance was insufficient on the side of energy requirements, the advice which could be given was lacking in precision for quite another reason. There was too little knowledge concerning, or, where there was knowledge, there was, for a long time, too little faith in the facts which later are to form the theme of this lecture. It is in my opinion not too much to say that when peace was established if policy had recognised, and could have afforded to apply, the teaching of the facts in question, the nutrition of Central Europe would be in a greatly more satisfactory condition than it is.

You cannot fail to have gathered already that my purpose is to bring to the front the importance of chemical details in the science of nutrition. Only by full consideration of these are adequate criteria made available for dietetics. I may take as my text the following definite and unequivocal statement:—

An animal may receive, digest, absorb, and, in a sense, fully metabolise a diet consisting of all the recognised basal foodstuffs. It may be taking these foodstuffs in quantity sufficient, or more than sufficient, to supply all its needs for energy. And yet its nutrition may be so abnormal that neither growth, nor health, nor life is long maintained. That this statement is one of fact has been brought home to many engaged in experimental studies by the behaviour of hundreds of individual animals. Being true it shows at once that, however useful may be the criterion of energy values in food-supply when other essentials have been first secured, the energy it contains cannot be the sole criterion of a diet. We cannot indeed escape from a full consideration of detail.

It is always a delight and relief to the mind when by the generalisation of knowledge it is enabled to neglect details. This relief is given in many branches of science by the application of the principles of energetics or thermodynamics. The method of thermodynamics, as you are well aware, enables us to make certain quantitative statements concerning physical and chemical phenomena without any kind of reference to the molecular mechanisms which underlie the phenomena. The statements remain true however

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much our views may change concerning the mechanism. Defining the nutritional needs of the body in terms of calories is an application of the thermodynamic method to metabolism. In a very limited sense, however. The true thermodynamic of metabolism calls for consideration of each tissue separately. Statements in terms of calories refer to a balance of events in the body, and refer alone to the energy liberated by combustion of the foodstuffs. On fuller analysis we may find that a given tissue utilises the free energy of a foodstuff and not its energy of combustion alone. Such considerations would lead me, however, to stray from my path. I would just like to point out here as noteworthy the fact that physical science in its recent dealings with the atom has returned to the study of mechanism, and that what we may call the higher chemistry, after long pre-occupation with thermodynamical studies, has come back with fresh interest to considerations of molecular structure.

Rubner's Law of Isodynamic Equivalence.

I am on the present occasion more anxious to convince you of the real and significant difference which exists between the outlook now opening and the narrower one which sufficed till recently, than to present at any length the more technical side of modern studies. I will venture therefore to delay my dealings with the new facts just a little longer in order to show how the older view has, both in theory and practice, been narrowed to the utmost. I will derive my discussion from the teaching of two authorities of the highest standing. I allude to Rubner and to von Pirquet. The one (though no mere theorist) shall supply the doctrine. The other (though far from an empiric) shall illustrate practice.

Rubner, however one may appraise his theoretical teaching, is one who has done more than most to advance the science he professes. He was the first to offer acceptable experimental proof that the principle of the conservation of energy holds in the animal body. A pioneer in calorimetric studies, he rightly saw that the conception of energy changes expanded and corrected certain of the earlier and purely material conceptions concerning life and its maintenance. But he also gradually developed a doctrine in which the energy exchanges of living matter are supposed to give, as it were, a higher and more significant criterion of life than any consideration of material changes could provide. From much of Rubner's teaching one gets, indeed, the impression of a belief that any broad and philosophic view of the meaning of life can only be obscured by attention to the details of material.

In one of his expositions[1] Rubner poses the question: "Material or Energy, which (in nutritional phenomena) is the more decisive?" and straightway answers the question by reference to the law (so named by him) of Isodynamic Equivalence. This involves the principle that any one foodstuff can replace any other so long as the replacement makes no change in the supply of energy. We may place, continues Rubner (I quote almost verbatim) a warm-blooded animal—a dog, for instance—under absolutely constant conditions and nourish it respectively with protein, with fat, or with carbohydrates. Now the chemistry of its nutrition in those three cases is wholly different, and the weight of material which we must administer to maintain the identity of conditions is by no means the same. If, however, we determine by calculation how great is the consumption of energy we shall find it constant in each case. Here is the proof of the Law of Isodynamic Equivalence. So argues Rubner; but unless the above statements are interpreted under strict limitations they are simply not true, and they may be made the basis of false doctrine.

Rubner, for instance, in the same place proceeds to assert "From the Law of Isodynamic Equivalence it follows that the living tissues do not demand any one of the basal foodstuffs in particular, but demand energy alone," a doctrine which on any fair interpretation is false. Permit me, however, to follow the thought of this author a little further. Rubner has maintained certain general propositions concerning living matter which, if true, are certainly of interest. The first is this: Every unit of living matter (a unit which it is not easy to define), is adjusted to expend the same amount of energy in a given time. If in different cases the expenditure seems vastly different it is due to circumstances alone. Make the circumstances the same and the energy expenditure will be the same, whatever the origin of the living unit, whether it be part of a bacillus or of a man. This is one way of stating a theory of life's unity. One need not quarrel with it. It is, however, almost impossible to prove it experimentally, and I doubt if it has any greater value than, say, the statement that there can be no life without phosphorus.

The next proposition takes us further into dogma and further away from the region of experimental proof. It is that when the unit of living matter has expended a certain predetermined quantity of energy it ceases to grow. This, again, if we follow Rubner, is to be taken as a fundamental attribute of living stuff. It follows that the duration of growth and the ultimate size of any animal are both functions of the rate of energy exchange in its tissues. The "tendency to grow" is just as great in the tissues of the young mouse as in those of the young elephant. Consider, however, two units of living matter, one of which is, or is to be, part of the body of a mouse, and the other part of the body of an elephant. From the first their condition, from the standpoint of energetics, is very different. The former, when in utero, is part of a material system (the body of the mother) which, being small, has relatively to its mass a large surface. Because of this relatively large surface energy (heat) is lost to the environment with proportionate rapidity and energy liberation within must be rapid for the maintenance of equilibrium. The latter, the embryonic elephant, is from the first part of a large system, of which the surface in relation to its mass is small. The rate of loss to the environment is therefore in this case proportionately small, and energy expenditure is economical. When mouse and elephant are born their own masses are still proportionately small and large respectively, the units of living matter within them suffer therefore the same differences of condition. In the small mass of the young mouse heat production must be rapid, in the larger mass of the young elephant it is slower, and so throughout their growth. But the doctrine, as you have heard, is that living matter has only a certain limited heritage of energy to expend before growth must cease. In the mouse compulsory extravagance shortens the growth period; in the elephant an equally inevitable economy makes the growth period a long one. Hence, according to Rubner, the ultimate smallness of the mouse and the largeness of the elephant! This is pure dogma. In certain of its aspects there may be truth in the dogma. But there is just as much actual evidence, and in my opinion more inherent probability, for the view that variety in size and form is determined by the specific chemical differences in living matter. Rubner voices his belief that duration of life is also inversely proportional to the rate of energy expenditure; but I must not consider his doctrine any further. He is no vitalist; he is far from postulating a special life force; but in his endeavour to extract some criterion of life other than its material basis he so sublimates the conception of energy—isolating it from and setting it above its material associations—that one feels we are almost brought back to the Archæus of Paracelsus. In parenthesis we may note that another modern mind of a very different type and from a very different standpoint has urged that no significance need be attached to any particular material basis for life. Henri Bergson, who postulates that only two things are necessary for the manifestation of life: (1) an accumulation of energy, and (2) an elastic canalisation of this energy in variable channels at the end of which are free acts, writes as follows:—

> "This two-fold result has been obtained in a particular way on our planet. But it might have been obtained by entirely different means. It was not necessary that life should fix its choice mainly upon the carbon of carbonic acid, ... and if the element charac-

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[1] Kraft und Stoff im Haushalte der Natur, Leipzig, 1909.

teristic of the substances that supply energy to the organism had been other than carbon the element characteristic of the plastic substances would probably have been radically different from what it is."

All this is as it may be. I have naturally on the present occasion no direct concern with M. Bergson's philosophic views, but it is of some interest to see a philosopher and an experimentalist meet together on the ground that the chemical materials with which life is associated are, relatively speaking, of little significance. This ground is, of course, well worn. It is only that the two modern thinkers I have quoted have reached it by rather special paths. The essential view is old. In one of the most famous of his addresses, delivered in 1868 and well known to you all, Huxley remarks: "I suppose that to many the idea that there is such a thing as physical basis or matter of life may be novel—so widely spread is the conception of life as a something which works through matter, but is independent of it. ......" Huxley, needless to say, controverts that view.

But for the moment I will pass from theory to practice. I will refer to practice which is based upon doctrine such as that of Rubner, but on its sounder parts alone. The reference might come better later; but I want you to have it clearly in mind at the moment that the standpoint of energetics is still dominant in the highest quarters. It is because of this dominance, indeed, that I was led to my choice of subject for this lecture.

Von Pirquet's "Nem" System.

The name of von Pirquet is familiar to you all, and from the scientific standpoint carries with it the very highest respect. It is associated with many important advances in medical practice, but in particular with a remarkable organised system of alimentation. This system—the "Nem" system—involves the rigid application of scientific principles (as appraised by its originator) to the alimentation of individuals, on lines that are ingenious, thorough, and organised for high accuracy. Primarily meant for hospital patients, the system is capable of extension to all classes of the community, and is, indeed, being employed under the direction of Professor Pirquet at this moment in the remarkable task of feeding, on behalf of the Red Cross Organisation, nearly 200,000 children in Vienna. It is based primarily upon calorimetry, aided by calculations which deduce the energy requirements of an individual from his body-weight and his sitting (not his standing) height. In place of the calorie, of which the definition is too abstract for the public, a more objective unit is employed. This unit is the energy contained in 1 c.cm. of milk and is known as a "nem."[2] His or her energy requirements, having been determined on the lines just mentioned, each individual under the system is supplied with a corresponding dietary as evaluated in nems. 10 per cent. of the energy is supplied as protein, but no critical attention is paid to the actual composition of the diet. If, for instance, fat be scarce, as at the present time, then it is replaced with sugar. The practice is based, frankly and courageously, upon energy value as the essential criterion of nutritional efficiency. We have therefore at one of the chief foci of science in Central Europe, at a time when economy in nutrition is a most urgent need, a system which ignores chemical details in diet. Now, if there be anything of significance in the considerations which are to engage your attention this practice must be seriously wrong. I shall return to it again before closing my remarks.

You have now been reminded of the theory and practice which form the point of departure for the newer conceptions. These shall now be appraised.

Impossibility of Replacement of Fundamental Foodstuffs.

During the discussion of Rubner's views it must have been in the minds of most here to ask how that author deals with the protein question. For three-quarters of a century it has been known that protein is one of the specific needs of the body. Protein for repair; fat and carbohydrate for fuel—that has been the short formula which, ever since the times of Liebig, has satisfied the majority of those who deal superficially with nutrition. It is an unsatisfactory formula; but at least it does not ignore the fact that there is one necessary item with specific chemical characters. Needless to say, Rubner has not ignored protein in connexion with the practical side of his scientific work, but while developing the sublimated views that have been put before you, he is content to point to its quantitative unimportance. No more than some 4 per cent., he urges, of the total energy demands need be supplied in the form of protein. But in dynamic phenomena, such as those which underlie nutrition, the significance and importance of a factor are not measured by its amount but by its indispensability; and no standpoint, it seems to me, can have either theoretical or practical value when it ignores this fact.

Recent researches, as I shall immediately remind you, have added much to an understanding of the significance of the protein element in nutrition; but a more general aspect of the case first requires brief attention. The basis of the doctrine of Rubner and those who think with him is, as we have seen, the claim that one foodstuff can replace another without disturbance to nutrition, so long as the energy supply is unaltered.

Whatever of truth may reside in this so-called law of isodynamic equivalence, as a bald statement it involves a suggestio falsi. No one of the fundamental foodstuffs can completely replace any other, even when the replacement involves no change in energy value. The closer the study of its needs the greater becomes the assurance that a certain minimum of each basal foodstuff is essential to the body. It is seldom desirable to speak of a "law" in biological science, but if we are to use the word at all we may say that in the phenomena of nutrition the law of the minimum overrides the law of isodynamic equivalence. True, it is important to avoid confusion of thought here. Whatever is fully oxidised in the body yields, of course, as it would yield elsewhere, heat equivalent to its energy of combustion. In that limited sense, isodynamic equivalence is involved in the principle of the conservation of energy, which assuredly holds in the body. But the efficiency of every working mechanism demands that the liberation of energy within it should occur in the right place and at the right time. Now the material body is a working system of such a kind that the most influential factor in determining where and when energy shall be liberated within it is the precise chemical nature of the fuel it burns. Not only, then, for the maintenance of its specific chemical structure and for its equipment as a laboratory, but also for the due ordering of its traffic with energy does the body call for a certain harmony and balance in the chemical nature of the materials which it receives from the environment.

Limits of Interchangeability.

Even when we think only of the three basal organic foodstuffs it is by no means true to say that so long as a minimum of protein is supplied the body is indifferent to other interchanges of material. For many years we have been well aware that it is not true at the limit. If carbohydrate be entirely replaced by fat metabolism fails at a crucial point. Complete utilisation of the energy in the fat does not occur. The chemical side of this failure is expressed in the phenomena of ketosis. Ketosis by itself proves that isodynamic equivalence amongst foods is at best a much limited principle. But other facts bear on this question. If carbohydrate and fat were nutritionally interchangeable both should serve equally well as a source of muscular energy. The best evidence available shows that they are not. The point has been very recently investigated afresh by Krogh and Lindhard,[3] of Copenhagen, and their experiments seem to me the most critical and conclusive of any in the literature. They were led to undertake the investigation because of some work done at Cambridge on isolated muscles, the results of which seemed to show that a muscle cannot be indifferent to the form in which its energy is supplied. The Danish observers found that the human body performs work more economically upon carbohydrate than upon fat, and when the work is sufficiently severe it is performed with greater difficulty upon the fat and occasions greater fatigue. When fat largely predominates over carbohydrates in the food there is a wastage during work of some 11 per cent. of the energy contained in fat. It is not liberated in the right place. Another interesting aspect of metabolism seems to be indicated in this research. We have known that a certain minimum of carbohydrate is required to secure full utilisation of fat. The converse would seem to be true; a certain minimum of fat is necessary for the proper usage of carbohydrate in the body. Although within certain limits these two foodstuffs may be interchangeable limits definitely exist. It is likely from the facts that there exists some proportion between them which would best suit ideal nutrition, but we do not yet know what this may be. It is, at any rate, clear that while the law of isodynamic equivalence is far from having that absolute character which would give it theoretic importance, it may well also fail as a guide in practice.

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[2] From Nährungs Einheit Milch.

[3] Biochem. Jour., 1920, xiv., 290.

Protein Supply.

I come now to the still more significant question of protein supply. Just as this century opened marked advancement in the chemistry of proteins began and rapid progress continued. In a few years, aided by new physiological and nutritional studies, which it made possible and stimulated, this particular advance in chemistry greatly increased our grasp of the meaning of nitrogenous metabolism, and our understanding of a most important side of nutrition. It is, indeed, not too much to say that this better knowledge concerning the constitution of these fundamental constituents of living tissues has already exerted a wide influence in all biological science, and in my opinion its ultimate effect will be wider still.

It is, of course, out of the question that I should deal with this advance historically, or allot credit to the many who have helped in it. I can perhaps best remind you of what in this newer knowledge is essential to my theme by rehearsing a few concrete statements.

1. We know that the complex molecule of protein consists of some 20 structural units assembled in what we may call the molecular pattern of the protein. All of these units belong to one chemical genus, since all are residues of α-amino-acids; but each represents a species within the genus, since each has elements of molecular structure which differentiate it from all the rest. The fact that all these units have certain characters in common, and the circumstance that they nevertheless differ so widely, are equally significant in the phenomena of metabolism.

2. In the molecular patterns of diverse proteins any individual unit may occur, in the one case seldom, in another many times, as might be the case with tesseræ of a particular colour in different mosaics. This decides the percentage yield of any particular amino-acid—say tyrosine—when this or that protein is digested. Sometimes, though rarely, a unit or units may be absent from the molecular pattern. The chief protein of maize, for instance, yields on digestion neither lysin nor tryptophane, though these amino-acids are among the score yielded by most proteins.

3. It is the molecular pattern—the arrangement, not the nature, of the constituent units—which differentiates the proteins of different tissues, and, so far as they are different, the proteins of homologous tissues in different species. Such differences are fundamental and underlie morphological differences in plants and in animals.

4. In digestion the pattern of the protein consumed is destroyed. The hydrolytic processes in the alimentary tract liberate the constituent amino-acids, and these, for the most part, if not entirely, are free and individual when, by way of the blood, they reach the tissues. In constructive processes the units are rearranged in patterns peculiar to the proteins of each tissue. Specific characters are thus maintained whatever protein may be eaten.

5. An animal can be maintained indefinitely if instead of intact protein it be given the whole mixture of amino-acids which results from the complete digestion of a normal protein such as the casein of milk. This fact makes it possible to test the nutritive importance of each individual amino-acid by observing the effect upon the animal of removing it, and it alone, from its food. By this method it has been shown that the body can dispense with certain parts of its food protein—usually the amino-acids of relatively simple structure—because it can make them for itself. On the other hand, with others it dispenses less easily, and some—usually the more complex in structure—prove to be wholly indispensable, and must have a certain minimal representation in the diet.

6. It should be understood that the function of any individual amino-acid need not be confined to its share in the reconstruction of tissue proteins. It may be the indispensable raw material for more specific chemical processes. As a single instance of such a function it may be noted that the iodine of the thyroid gland is present in an indol compound. One particular amino-acid from protein, tryptophane, is itself an indol derivative, and almost certainly is constantly required for maintenance of the thyroid function.

7. It follows from all this that nutritive values require, in the case of proteins, definition in detail. The minimal amount of a given protein which is adequate for maintenance will depend upon the amount it contains of that particular essential amino-acid in which it is most deficient. Different proteins may thus have very different nutritive values, a fact which may be, and has been, directly and very fully proved.

The body, therefore, in a given case may suffer from defect in the quality rather than from deficiency in the quantity of protein eaten.

Vitamine Supply.

But as was urged earlier in this lecture nutrition may wholly fail even when the supply of protein, no less than that of the fat, carbohydrate, and minerals is perfect. In such a case we should nowadays look to a deficiency in vitamines. I wish I might prove able to put the subject of vitamines or accessory food substances (as earlier in their history I ventured to call them) in the right light and in proper proportions.[1] The subject is no longer in a strict sense new, but its practical importance needs, perhaps, appraisement. Believing personally that the nutritional function of vitamines is a most significant fact, with important bearings in practical medicine, I yet recognise that when wide claims are made for this view a critical attitude may still be justified.

The chemical nature of vitamines remains unknown. As such they have never been isolated. Now one can quite well understand the consequent attitude of the practically minded. An agriculturist, concerned with the feeding of stock, assured one of my colleagues that he would believe in vitamines only when their price per hundredweight could be quoted in the market. One can sympathise with this practical attitude, but one sympathises less with the scientific man who refrains from an endeavour to appraise their importance until such time as when they have been separated in a pure condition. To be logical he should then avert his eyes from such agents as toxins and antitoxins, not to speak of enzymes; powerful realities all of them which, though of unknown constitution, by no means elude objective and quantitative study. It is doubtless easier for those who, like myself, have seen the facts illustrated by the fates of hundreds of animals, to believe that the whole difference between complete failure of nutrition on the one hand, and perfect nutrition on the other, may depend upon the presence of uncharacterised materials in amounts which, while not infinitesimal, may be extraordinarily small.

Though the history of knowledge might well forbid the question, it may be asked, How, if the influence of such factors is so important, can they have eluded observation till now? Discriminating studies of human nutrition in which scientific thought has been applied to quantitative observations, or at any rate those recorded studies which make up the orthodox literature of the subject, had mostly been made at centres of learning, situated among communities receiving that variety of food which is characteristic of Western civilisation. Strong suggestions for the importance of details are under such circumstances lacking, for the necessary details are automatically supplied. Suggestions, sometimes vague, sometimes really clear, have, as a matter of fact, been frequent enough in the writings of those who in the past have been responsible for the feeding of communities when stress and shortage exist, or when, as on voyages of discovery, food has become abnormal or restricted in kind. As you know, it was from the East, where diets are more one-sided, and the security due to compensatory variety much less, that some of the more important of the evidence came to justify the newer conceptions that are now establishing themselves.

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[1] I can make no attempt to deal with the literature of vitamines, and those who have advanced the subject will, I trust, excuse the absence of reference to their labours.

The experimentalists of the last three-fourths of a century, though they have thought in terms of proteins, fats, and carbohydrates, have never given these substances to their subjects in pure form; otherwise they would long ago have learned that they alone could not maintain organic nutrition. They gave natural foods, while ignoring, for the most part, the fact that such foods, being themselves plant or animal tissues, contained a great number of substances other than the basal protein, &c. Yet the nutritional value of these surely called for study. Most of these other substances, however, are present, individually, in small amount, and it will be readily understood that, so long as the tendency to view nutrition more or less exclusively from the standpoint of energetics was wholly in the ascendant, the minds of the students were averted from a consideration of substances which could contribute so little to caloric value.

But while the animal so clearly depends upon the plant, which alone can trap solar energy, for its supply of calories it depends upon the latter no less for highly specific materials. The urgent need for certain amino-acids is sufficient proof of this. But there was no logical reason for the tacit assumption that this need could extend only to substances which, like the protein constituents, or the fat and carbohydrates, are made by the plant in relatively large quantity. A few experimentalists have, it is true, set themselves to discover if any of the known minor constituents of natural foods—that is, in the ultimate tissue, the minor constituents of plant tissues—are of nutritional importance. It is now sure that the animal body can dispense with every one of these which happens to have been isolated in a pure form; with every one which is, in the strictest sense, known. It may be a coincidence or there may be chemical reasons for the circumstance that the highly active constituents have escaped isolation. It is at any rate among the unknown minor products of plant life that substances indispensable for the animal are found, and these we call vitamines. There is, in fact, at present no other definition of a vitamine as a nutrient, but what is based upon its indispensability, its very low effective concentration, and, if you will, our ignorance of its chemical nature. Doubtless had such substances been easy for the chemist to isolate they would have been isolated long ago, and a knowledge of their chemical nature might well have preceded the knowledge of their nutritive importance. The sequence was fated to be the reverse of this. At any rate, it is quite sure that there is no fear in this connexion that the known is masquerading as the unknown. Some seem to have suspected this possibility, but the crucial experiments have been far too discriminating. The technique used in the study of vitamines has now indeed some elements of exactitude. They can be removed from diets, and restored to them in a high degree of artificial concentration. They display specific properties sufficient for clear distinctions to be made among them, and more than sufficient to prove that they belong to chemical categories different from those containing the better-known foodstuffs.

I have been so far concerned to point out that, while there is no great reason for surprise in the circumstance that studies of nutrition, made on lines that had become orthodox, did not earlier lead to any conception of nutrients of the vitamine type, there is also no reason at all for surprise in the fact that substances with the qualities ascribed to them do, after all, exist. There is, perhaps, on the other hand, some reason for surprise when we find that the quality which, as I have said, really serves at present to define them is displayed to so high a degree. I mean their power of exerting a nutritional influence altogether out of proportion to their concentration in the food.

You will not expect here any technical discussion concerning these substances. This lecture is covering too wide a ground for my remarks to have other than general bearings. I would only remind you that at present three vitamines are known, to each of which I must refer in a later brief discussion of deficiency disease. It is quite likely that others exist, and their discovery may make clearer certain aspects of faulty nutrition, which are yet obscure.

The Law of the Minimum.

I would ask you at this stage of the discussion to note how very far the more newly won facts, especially those concerning the protein and vitamine supply, have carried us from the doctrines earlier discussed. Contrast Rubner's claim that the animal body makes no demand for specific material but only for energy, with the fact that when deprived of materials which contribute at most some few hundredths of its total food, the body fails altogether to make proper use of other of the energy supply. Rubner and those who think with him would speak of energy supply as the one essential "limiting factor" in nutrition. What we have actually to recognise is that each of several factors may become that which limits efficiency, and that no one of these is in any strict sense more important than any other. Normal nutrition calls for a certain minimum of each one and every one. If a diet is harmoniously balanced in a chemical sense, then indeed energy does become the sole limiting factor. Nutrition then fails, of course, only when too little of the diet is eaten to yield the essential minimum of energy. But the supply of fat may become the limiting factor, and no less that of carbohydrate. Or, again, when the supply of energy consumed is ample, with fat and carbohydrate duly adjusted, the circumstance that a single essential amino-acid in one case, or a vitamine in another, is present in amount below the necessary minimum converts each of these in turn into the factor which limits utilisation. Small as the necessary minimum in either case may be, unless it is reached the proper use of the rest of the diet is reduced to a degree which is proportional to the deficiency. If the deficiency be complete normal utilisation is altogether impossible.

This is a statement of the working of the Law of the Minimum, a much more significant principle in nutritional phenomena than the Law of Isodynamic Equivalence.

It is of course true that in civilised and prosperous communities the large variety of foods upon the market and the natural instincts of those who can afford to purchase them, secure for the most part the consumption of well-balanced dietaries, so that when, say, the requirements of a particular calling in such a community are to be estimated, energy measurements yield a justifiable criterion. It is nevertheless important to remember that even in the midst of plenty individuals, and even communities, may consume chemically deficient diets, and a proof that their energy consumption is normal may then lead to very wrong conclusions.

Under special conditions of existence the protection afforded by variety in food may so fail as to make possible dramatic consequences in the form of deficiency disease.

Scurvy and Food Deficiency.

The conception that a specific disease may be due to a specific deficiency in diet appealed to some, even long ago, as involving, logically, a possibility. For many who have passed through certain experiences—the conditions of war contributing—the possibility has become a fact. Others, however, still accept the available evidence for the existence of this particular case of cause and effect with considerable reserve. To me the phenomena of scurvy in the adult have always seemed to provide a touchstone. They were surely sufficient to justify belief in one deficiency disease at any rate long before it was supported by other evidence. It will, indeed, further the aims of this address if I ask you to consider a little the case of scurvy, familiar as it is, even at the cost of my giving insufficient attention to other cases.

The element of drama seems always to be present in the literature of scurvy, be it in professional writings or when, as long ago used often to be the case, it inspires the pens of the laity. No one can read some of these earlier records of the disease at its worst—for instance, the account given by Richard Walter, Anson's chaplain on board the *Centurion*—without something of a thrill. But though its ravages were greatest on the old slow-sailing ships, cut off from fresh foods for long weeks together, it was common enough two centuries ago among certain communities at home. It is of interest on this occasion to recall a remark made by Huxley when writing of David Hume. Huxley, recalling that during one period of his early life Hume developed symptoms of scurvy, speaks of it as "a disease now almost unknown *among* landsmen, but which, in the days of winter salt meat, before root crops flourished in the Lothians, greatly plagued our forefathers." In Hume's case there was a dramatic disappearance of the disorder. His circumstances improved, he developed a voracious appetite, and in six weeks, Huxley reports, from being lean and raw-boned (and scorbutic) he became sturdy and robust, with a ruddy complexion and a cheerful countenance.

But it is, of course, in naval records that the dramatic side of the disease is most evident. We will think, however, only of the successive acts in the story of prophylaxis and recall, first, how, after being a heavy scourge, scurvy practically disappeared from the ships, when, in 1796, the wisdom of Sir Gilbert Blane decreed a ration of lemon-juice for all and sundry. In the second act of the drama scurvy reappears. The fruit-juice was thereupon gravely discredited; but fortunately a prophylactic of quite different sort made the tragedy less. Steam was soon to carry the mariner, more swiftly than could sails, to ports and supplies of fresh foods. The last acts in the story are recent. Science at the Lister Institute demonstrated that the juice of one variety of citron is not the same as that of a related variety. The historical research of Mrs. Henderson Smith brought this knowledge into relation with the story of scurvy in the navy. The juice which had protected everybody so well at the end of the eighteenth century, and during the first half of the nineteenth, was that of sweet limes and lemons. When the trouble reappeared it was because for economic reasons the juice of the West Indian or sour lime had been substituted. But the latter has now been shown to contain only a fraction of the amount of the antiscorbutic vitamine which is present in the former and contains it in a less stable form. Surely this is an interesting correlation in circumstance. I have dwelt upon the matter because it clearly shows how specific may be a material bodily need: need for a substance produced in all plants but of such a special nature that it may be freely stored in the fruit of one variety of a species, but scarcely at all in that of a related variety! And I dwell upon the history of scurvy generally because it illustrates so well how a bias or habit of mind (so, at least, it seems to me) may affect thought about ætiology.

As Surgeon Rear-Admiral P. W. Bassett-Smith has pointed out,[5] Blane, a century and a quarter ago, attributed the disease to the lack of a "certain element which is necessary for growth and repair" thereby foreshadowing definitely enough the conception of a deficiency disease. But the great naval hygienist saw much of scurvy and its remarkable response to treatment. Later authorities have often seen much less and speculated more. If they could discard for a moment the obsessions of intoxication and infection and accepted the obvious significance of diet in scurvy, they thought only in terms of the known, and looked, for instance, to the absence of potassium salts or the organic acids of fruits as the causative factor, oblivious of the fact that the stability of such substances ruled them out of all relation. But up to quite recently, though not, I think, since the coming of the impressive evidence made available by war conditions, there have been many struggles to bring scurvy back into the category of infection or intoxication. I put it to you (as counsel would say) that, considering the nature of the evidence, such endeavours can only be due to the obsession that some positive agent—some intruder so to speak—must always dominate ætiology. Several recent writers, concerning themselves with the definition of deficiency disease, have criticised the use of the term "negative cause" and doubtless to formal logic such a term would be abhorrent. But it is better to use a somewhat illogical term than to miss some solid meaning which is conveniently conveyed by it. We must either speak of the cause of scurvy being the absence of something from the diet, or, because of its casuistic accretions, avoid the word cause altogether. Objection to a term is a small matter, but apparently with some the objection involves the practical standpoint that the production of phenomena like the symptoms of disease can only be due to the influence of some positive factor. If not to a poison or to infection, then to excess of something. Certain authors find it logical to refer causation to excess, but illogical to refer it to defect. They feel perhaps that the latter course takes liberties with the old adage "Ex nihilo nihil fit." But do not such views carry us back to the popular or metaphysical conception of cause as enforcement, and away from the scientific conception of cause as the routine of experience? Causation, in the words of John Stuart Mill, is recognised by uniform antecedence.[6] Antecedent to normal nutritional phenomena is the consumption of a particular set of essential nutrients. If in the absence of one of them the sequence proves to be consistently different, such absence is then the reason (for we may avoid the word cause) for that difference. So we may say the reason for scurvy is the absence of the unstable antiscorbutic vitamine, and it is a sufficient reason.

But through long years, so notable in other respects for great advances in knowledge concerning the origin of disease, the pointings of scurvy failed to give rise in the modern mind to any clear-cut conception that the body, being a chemical system depending upon the law of the minimum, might well lose its equilibrium for lack of some minor but perfectly specific dietetic factor. It required other evidence to give birth to the conception. This came in the first place from an intensive study of the relation of diet to another disease—beri-beri. The final issue here has been a practical certainty that the symptoms arise from a different but equally specific failure in supply—the lack of the so-called water-soluble vitamine. But had the further evidence come alone from the pathological side it is doubtful if it would have compelled the arrival of a general idea. At the same time, however, proof was being provided, as we have seen, that apart from any manifestation of disease normal growth and maintenance fail in the absence of the same or similar factors of supply. Under the compulsion of all the facts the idea of a vitamine crystalled out, and carried with it the understanding that deficiency might be a real element in the ætiology of disease.

Fat-soluble Vitamine.

An essential accessory nutrient clearly different from the anti-scorbutic substance and from that other made so familiar by the story of beri-beri came later into knowledge. This is the so-called fat-soluble vitamine. It is made by the plant, is present universally in green vegetable tissues, and is in most seeds, but it does not necessarily accompany the vegetable oils and fats when these are expressed or extracted. The animal, however, happens to store this substance in association with its depôts of fat—hence its name. Grave errors in nutrition follow upon its absence from the diet, and this circumstance has added a greatly increased importance to the whole question of the national fat-supply. Once again we learn that something more than the gross amount of a foodstuff must be considered in evaluating its nutritional capacity. For the future we must apply a new criterion of value to fats.

I will not now discuss the relations of fat-soluble vitamine deficiency to disease, though the matter is one of profound and present interest. Many points are at issue, but intensive work is being done, and our knowledge will rapidly increase. In my belief the practical issues will ultimately be astonishing in their importance.

Pellagra.

Since your attention was for so long directed to the question of protein, I must, before closing, refer to the possibility that an ill-balanced protein supply may be a reason for failure in health. In this connexion we turn to pellagra. Of this disease much has been heard of late, and its interest was enhanced by its prevalence under the conditions of the war. The supposed evidence for an infective or toxic origin has gradually weakened, while that pointing to a dependence upon diet has recently become strong. Goldberger, who has studied it closely in America, considers that it follows upon the consumption of diets in which more than one deficiency, including constitutional faults in the protein eaten, contributes to the total result—a view which can, I think, be harmonised with all that we know about metabolism. But W. H. Wilson, of Cairo, holds that dependence upon proteins of "low biological value"—ill-balanced proteins—is the main determinant. The evidence, you should understand, is yet far from complete, but two striking experiences may be mentioned. Wilson found pellagra rife in a camp of Armenian refugees, and noted that their diet, though sufficient in calorie value, contained proteins of low nutritive value only. At his suggestion this error was corrected and, without other changes in treatment, pellagra thereupon disappeared.[7]

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[5] Proc. Roy. Soc. Med., 1920, xiii. (War Section), 51.

[6] Cf. Karl Pearson: Grammar of Science, second edition, p. 113.

Goldberger[8] has studied the question in a large asylum. In all its wards were cases of pellagra among both coloured and white patients. The only change he introduced was an improvement in the quality of the proteins of the food. But with this pellagra disappeared from his wards, though persisting in other wards where the change was not made. When from the latter pellagrins were transferred to Goldberger's wards his treatment was equally successful. There are probably other factors in the ætiology of pellagra, but its behaviour strengthens much other evidence which shows that the recognition of specificity in proteins is of more than academic importance. If the application of all these considerations to practical medicine bore only upon the production of actual disease they would have far less importance than, in my belief, is actually attached to them. A deficiency which when extreme produces actual disease will, almost certainly, when less extreme involve some failure in health.

I was once greatly impressed with happenings at a large preparatory school. The boys were mostly quite young. Their health during a winter term was vaguely unsatisfactory. The majority became listless; the standard both of work and play fell much below normal, and various forms of minor trouble were reported. Explanation seemed difficult. The drains were inspected, throats were swabbed, but nothing came to light. The diet was considered, but was found to be ample and of good quality. Finally, however, it was noticed that being a winter term the kitchen supplied almost nothing in the way of uncooked food; and relatively little of green vegetables or fruit, whether cooked or otherwise. This by itself would perhaps have mattered little; but during that term it happened that the village shop where the boys had been wont to spend a portion of their pocket money upon fruit was closed. When this was realised, and a little fresh fruit supplied, all trouble disappeared. There was at no time scurvy in the technical sense, but the school was assuredly *feeling a lack of the anti-scorbutic vitamine.*

If the practitioner, when considering whether diet may not be the cause of a case of ill-health, has in his mind the idea of specific deficiencies he will no longer reject the possibility when general underfeeding or ill *digestion alone* have been excluded. Realising that details must be considered, he will, in my opinion, be able to ascribe more to diet than hitherto, and at the same time extend his list of cases diagnosed. Mostly will this prove true when the patients are young.

If we prove justified in ascribing to nutritional errors more—even a little more—of failure of health and development in children, the circumstance will surely be a happy one. A little more of evil becomes referable to nurture instead of *to nature*; *to environment* instead of to inheritance; and, therefore, to the remediable instead of to the irremediable.

Conclusion.

Before closing my remarks I would like to say why I think the coming year will stand out in the history of *the developments which have been before you. No* secret will be betrayed by reference to what may prove a classical experiment: An experiment on human material, involving a comparison; yet wholly legitimate, because each of the policies which will be compared possesses the complete faith of those who will carry it out.

Under the scientific auspices of the Lister Institute and the Medical Research Council Dr. Harriette Chick and Dr. Elsie Dalyell, with a proper staff, are in Vienna, in the home of the Nem System. They are there to apply the newer principles to the nutrition of children in the wards of von Pirquet. In adjacent wards the Nem System will go on undisturbed. A real comparison will therefore be made. The enterprise is unique in its occasion, in its international character, and in the high qualifications of those who are to conduct it.

I venture on no prophecy as to the outcome, but I cannot help holding very firmly to the faith that Vienna will show how important to practical medicine are recent advances in the science of nutrition.

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[7] Ministry of Interior, *Report for the Year 1918, Government* Press, Cairo.

[8] Medical Annual, 1920, p. 270.

An Address

ON THE

PSYCHOLOGY OF ANÆSTHESIA.

Read before the Section of Anæsthetics of the Royal Society of Medicine

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SOME explanation of the title of this paper seems desirable. Psychology is defined in the dictionaries as "the science of the phenomena of mind—mental science," but as under anæsthesia the functions of the mind are commonly held to be out of action it may appear inaccurate to formulate any connexion between the causation of the phenomena evinced by an individual under anæsthesia and psychology. I hope, however, to be able to show that there are quasi-mental phenomena during narcosis. Any alternative title would have necessitated the employment of a long and cumbersome explanatory phrase.

In his "Metaphysics" Sir William Hamilton defined psychology as "*the Philosophy of the Human Mind, strictly* so denominated is the science conversant about the phenomena or modification, or states of the mind, or Conscious subject, or Soul, or Spirit, or Self, or Ego." This extends the limits of psychology, and since the days of Hamilton biology has enabled us to accept a still wider concept of the sphere of psychology, for we now accept that science as capable of enfolding experimental investigations of phenomena which cannot in any sense be regarded as confined to *the action of the conscious mind.* The materialistic school accept psychology as a science dealing with the phenomena of the conscious being even although the Psyche is not in its view the Soul, or the Spirit, or indeed the Self or Ego taken as an individual entity out of relation to its phylogenetic origin. Dr. G. W. Crile, whose work *stands out* as a bold attempt to explain the phenomena of man's life by a study of the cellular changes observable in his brain after physical work—and physical work is in his view the objective evidence of stimulation of his brain matter—offers us a definition of psychology. He suggests that it is "a science of man's activities as determined by the environmental stimuli of his phylogeny and of his ontogeny." Such activities may be of the conscious or the subconscious mind.

Anæsthesia and the Abolition of Consciousness.

I suggest that we are justified in believing that the older views about the mentality of a person under anæsthesia are inaccurate and need modification. Indeed, I submit that we are *justified in postulating* that the abolition of consciousness *does not necessarily* predicate the smothering of all emanations from the higher brain centres, although such emanations differ both in kind and degree *with the depth of* the narcosis.

The old concept of anæsthesia and deep narcosis was that the individual in such a state was practically in the condition of a frog whose brain has been destroyed. It was taught that the animal functions necessary for the persistence of life were preserved, but they were no longer subject to modification or under any sort of control by the brain centres. This view, I submit, we must now throw over.

Many of the avenues which bring an individual into communication with his enviroment are certainly closed under anæsthesia, but how many I think we are at present unable to determine. The number of such closed doors, and the extent to which some of them may be left ajar, or opened under sufficient peripheral stimulation, is also matter for investigation. But supposing that the anæsthetised person is cut off from any relation with other individuals we have no evidence that he does not retain some degree of consciousness, or if one may be permitted the term, of subconsciousness. In such a state, although he cannot functionate as an intelligent being or have any inclination so to do, he may, under appropriate external stimuli or auto-stimulation, bring about effects which influence his personal welfare. The extent of our adoption of this view is a severely practical problem the solution of which cannot fail to assist us in our everyday work as anæsthetists.

The commonly accepted tests of consciousness are only reliable in so far as they give evidence of the abrogation of certain reflexes; they give us no information concerning the persistence or absence of subconsciousness, if such subconsciousness does, indeed, survive the intensive application of anæsthetics.

If I may interpolate a suggestion at this point which the use of the phrase "the intensive application of anæsthetics" invites, it may shed a little light upon the question of the persistence of subconsciousness.

Differing Intensity of Action of Anæsthetics.

The various anæsthetics in use differ in the degree or intensity in which they act. Accepting the usual abolition of reflexes as criteria of anæsthesia we recognise that Snow's third degree of narcosis—surgical anæsthesia—is a profounder condition of unconsciousness under chloroform than under ether, demanding a longer period of recovery of mental balance, and ether in turn produces a deeper state than nitrous oxide gas, although to outward seeming each has rendered the patient merely "anæsthetic." It may be a question of the depth of the penetration of the drug into the protoplasm of the cells of the nervous system. Even if this is a mere matter of physical and chemical interaction it is not extravagant to suggest that anæsthesia may be caused before the entire abrogation of subconsciousness.

Unconscious Cerebration or "Awareness."

Carpenter, in his "Mental Physiology," gives some extremely interesting and in this connexion important instances of what he termed "unconscious cerebration." The individual's ego functionated with his higher cerebral centres but did so without being aware of such activity. The usual effect of ratiocination was brought about, but ratiocination was non-existent.

I am fully alive to the fact that psychologists may decline to accept my connotation of the terms subconscious and unconscious cerebration, and I readily admit the use of them is open to grave adverse criticism; still I can discover no better words and trust that I may be forgiven, and—what is more important—that my meaning may be clear. As to the proofs that such residuum of consciousness persists under certain degrees of narcosis—anæsthesia, semi-anæsthesia, and so on—such proofs are only presumptive and I propose to deal with them immediately.

The trend of modern thought is to recognise that the state usually designated consciousness is really an epiphenomenon, that throughout the nervous system there exists an "awareness" which in the higher centres we call consciousness, but which also exists below these centres. It is revealed in the spinal cord by the reflexes with which we are familiar. Some years ago I published the results of experiments which showed that under nitrous oxide gas ankle clonus could be elicited. The patient was unconscious, but below a certain level his awareness was actively present, and being no longer controlled the reflex developed. So it is fair to assume that in certain persons whose higher controls are readily put out of action by anæsthetics, there arise phenomena due to the "awareness" of the centres, even when consciousness is temporarily lost. These phenomena occur during anæsthetisation of neuropaths, neurasthenics, and so on. The truth of these statements has been shown by many cases of cord and brain injury met with in wounded soldiers, although, so far I know, their relation to the problems of anæsthesia has not been recognised. The "awareness" of the centres reaches certain levels and the phenomena vary with the levels reached. If, as I maintain, we are able to alter the level of consciousness or "awareness" by anæsthetics, we bring about states similar to those arising through trauma affecting the higher or lower centres. The "awareness" may and does persist in the lower centres, while consciousness, the "awareness" of the brain, is lessened or lost. I am indebted to Dr. Henry Head for the term "awareness," which seems more suitable than the expressions "subconsciousness," "liminal state," and "unconscious cerebration." We need a word to express the residual state of activity of the parts of the nervous system when gross consciousness is abrogated or lost.

Nerve Storms during Anæsthesia.

Crile would have us believe that a physical impress is made on the brain cells by the emotions, notably by fear, the emotion with which our work brings us into closest contact.

In his "Origin and Nature of the Emotions" he discusses these matters and compares the effects of emotions to those of trauma under anæsthesia. He writes: "Although no pain is felt in operations under inhalation anæsthesia, *the nerve impulses excited by a surgical operation still reach the brain.*" In this statement he is not in accord with the findings of Longet or of Waller based upon their classical experiments on the spinal nerves, since these observers recognised that anæsthetics act directly upon the nerves as well as upon the nerve centres. We may now consider these facts, which are suggestive, even if they do not amount to proof.

My experience has forced upon me the need for an explanation of the nerve storms and bizarre phenomena arising during induction and maintenance of anæsthesia in certain types of subject. For many years I had remarked that soldiers, whether officers or privates, were not only very difficult to anæsthetise, but were prone to evince unusual and often dangerous phenomena, both in "going off" and throughout the operation. Similarly I found neuropaths, highly nervous persons and that large class of patients whom we group somewhat unsatisfactorily in the category of neurasthenics, with babies and alcoholics, resembled soldiers in being "bad patients." What struck me most was that persons possessing an unstable nervous system evidenced by curious and troublesome nerve symptoms, were liable, even although no definite disease of their central nervous centres existed, to unusual phenomena both during induction and maintenance of anæsthesia. They appeared to project their conscious nerve dyscrasia into the period of anæsthesia, so that nerve storms arose interfering with respiration, circulation, and other functions. What I wish to indicate is that in these cases temperamental peculiarities became manifest even when consciousness was absent. One is tempted to add, even though consciousness was absent, a residual subconsciousness persisted; the higher centres, cut off from the external world by the anæsthetic, remained in function and dominated those centres which were necessarily still active for the maintenance of life. Possibly such nerve activity is of a quasi-defensive character or arises through abolition of repression of phylogenic activities. Psycho-analysis, to which I shall return, may help us to explain these phenomena.

In the categories of babies and alcoholics we have other factors with which to deal. In the first class there exists a notably unstable nerve-centre equilibrium and a narrow margin between the zone of anæsthesia and the spread of narcosis to the degree of overdosing of the whole nervous system. Babies and young children are dominated by their phylogeny, their ontogeny being as yet hardly developed.

I was at one time tempted to believe that alcoholics were bad subjects because their tissues were more or less damaged; this, however, is a half-truth, and does not explain why in their case the unusual phenomena of anæsthesia resemble in a remarkable degree those which emerge in the case of neuropaths and neurasthenics. I think I overlooked the fact that alcoholismus is a *disease grafted* upon an individual whose nervous system is on the borderland of abnormality; possibly others have made the same mistake. If this be a true deduction we have in their case to deal with patients who have a nervous system obnoxious to such drugs as anæsthetics and have lost their normal recuperative and resistive powers owing to chronic toxæmia. It is an interesting fact that alcoholics are extremely prone, even under profound anæsthesia, to move, to phonate, and to exhibit symptoms which may well be defensive or a revival of repressed phylogenic activities.

Observations on Soldiers.

These observations were made by one anæsthetist and may be open to criticism on that score, but they fall into line with those of other workers who anæsthetised many soldiers during the war and placed their experiences on record.

In the first place it has to be remembered that the armies were composed of many different types of men, alike only in being below middle age, who were, although physically fit often subjects of some nervous disability. We are told that one man who had had two attacks of insanity was passed a having "a slight defect but not enough for rejection." My experience indicates that most of the men, whether really fit or suffering from nervous inefficiency, were "bad subjects." They took a great quantity of the anæsthetic before losing consciousness, were prone to struggle, to fight, to be restless, even after the ocular reflexes were in abeyance, and were very liable to respiratory and circulatory crises even when there was no more than the usual degree of trauma. Unlike the poorly nourished neuropath, who often evinces some untoward symptoms following the anæsthetic, they usually recovered consciousness normally. Some, however, passed through a stage of delirium resembling mania, and showed no further unusual after-effects. Perhaps I should modify this statement and divide the new army men into two classes—those who resembled the units of the old army in being physically fit and possessing good health, and those who were rendered "fit" by an intensive training. This latter type often showed severe after-effects.

Anæsthesia and Psychoses.

We learn[1] that whereas no new psychoses were developed as a result of war stress (Weyganat), war excursions and alarums were liable to fan into flame any latent predisposition to nervous disease. Psychoses we recognise as arising through toxæmic conditions or from mental conflict (psychogenic), and whatever the origin of the state there can be no doubt that those who are the subject of some psychosis develop unusual phenomena when given an anæsthetic. We owe to the workers in psycho-analysis the knowledge that our mentality is a complex of derived—that is, phylogenic—instincts and ontogenic or individual traits. The former are repressed in normal civilisation, but during war the primitive animal instincts escape; the fighter is no longer his former self as he was in civil life. A like change is engendered and favoured by acute illness, severe trauma, especially that of the head or spine, since these conditions, together with the unwise use of alcohol, cause loss of the habitual inhibition of the savage instincts of mankind. Another point of some importance is one noted by Read, "that the necessary curtailment of free thought and action involved in army discipline naturally leads to much repression." This repression at length calls for a vent for the lower instincts and an escape into the unbridled licence of savagery. Cannon has shown that intense emotions provoke adrenalism, and we are probably correct in believing that the secretions of the ductless glands other than the adrenals are also increased by similar stimulation. The soldier about to take an anæsthetic is usually under the dominance of fear and of other emotions, and he exercises severe repression so long as his controlling centres remain in control of his actions. He no longer has the support of "the herd," but experiences an exaggerated fear of what is to happen to him and the necessity for self-protection. The effect of the anæsthetic is to destroy the systems of restraint and open the flood-gates of primitive instincts, which in this case seek to liberate him from those who hold him; he even endeavours to destroy the latter, since they are for the nonce his obvious enemies. As Dr. Ernest Jones has indicated,[2] the investigations of psycho-analysis have shown that the influence on conscious life of these impulses (primitive inherited instincts), which are in a repressed state in the unconscious mind, is of an unexpected importance, and, what is more, that the impulses themselves are indestructible. Moreover, the adrenalism to which reference was made above no doubt accounts for some of the abnormal states of the circulation so common in such cases.

We may sketch the mental picture in the mind of the fighter and recognise that it may provoke the outbursts of disconcerting activity under the anæsthetic. In some men it is the vivid recalling of recent experiences, in others the blurred impression of a phylogenic complex which carries the individual back to a primitive environment. Are we justified in believing that this is the explanation of abnormal phenomena which develop during anæsthesia in individuals of the classes we have considered? It may be objected that there is a gulf fixed between the mentality of the soldier and that of the civil neuropath, but such is not really the case. Similar results are reached, although by different routes. The berserker rage of the warrior and the perverted mind-state, conscious or subconscious, of the neuropath are one and the same departure from the normal, and as such cause similar phenomena under anæsthesia.

Dreams Occurring under Anæsthesia.

There is another and most interesting aspect of this question—the study of dreams which have occurred under anæsthesia and left a profound impression on the unconscious mind. The study of these dreams sheds some light upon the psychology of the state, and seems to support the contention that there is a period of liminal consciousness beyond that which passes into abeyance early in narcosis.

Dreams, common with every kind of general anæsthetic, are not always remembered. Patients will say that they had a "lovely" or a "dreadful" dream, but cannot recall it in detail. Many such dreams probably arise as the patient is resuming consciousness; if of a disagreeable character they are usually the result of some perception of pain due to the concluding steps of an operation or of "after pain." This is a common type with nitrous oxide gas inhalation, and has little significance for us in the present connexion. Pleasurable dreams fall into another category; they are worthy of close investigation, as are also the dreams often called "horrors," which leave an indelible impress upon the mind and may be recalled at wide intervals of time under subsequent anæsthetisations.

Among such dreams we can recognise types. The erotic type, not infrequent with nitrous oxide gas or ether, and less common with chloroform, can often be recognised by muscular movements which suggest orgasm. The patient, unconscious of his or her surroundings at the time they occur, is left somewhat exhausted, and in the case of women obviously disturbed if the anæsthesia has been brief and recollection of the erotic sensation is dimly present upon recovery. It is such dreams which form the basis of charges of assault often preferred in good faith against surgeon, dentist, or anæsthetist. I have been told repeatedly by men that they have had a "good time," meaning erotic dreams have lightened the tedium of anæsthesia. Those who enjoy the sensation of alcoholic exhilaration will say they have had a "splendid drunk," and their muscular movements during the stage of recovery suggest bacchanalian fancies and amatory hallucination.

Deeply Impressed Dreams.

I have met with different forms of dreams deeply impressed and either remembered or recalled. The importance of these is great.

A person will have a dream under an anæsthetic which is so vivid as to amount to a subconscious experience, as if it were an episode in another life. One recalls the case of John Addington Symonds. At the period of his mental storm and stress, I think when he was at Davos, his mind was perturbed by doubts as to the truth of revealed religion. Symonds was given an anæsthetic and under its influence he passed into what he describes as a kind of trance. The presence of the Almighty was revealed to him and the Voice said, "It is I whom you deny." One need not labour the story, it is one of the type of constructive dreams which are very vivid and persist. I had a patient who, like a character in George Du Maurier's novel "Peter Ibbetsen," "dreamed true." She told me that every time she inhaled nitrous oxide she dreamed of a friend, and felt as if she was in the society of this friend; she remembered what she had dreamed before, took up the thread of the narrative, and continued it in each successive dream. I regret I have lost touch with this patient and so am trusting to my memory concerning it and to a scant note made at the time when I was told the story. In another case the patient informed me that she always had "a delightful dream," which was repeated on each occasion when she took gas. The details she kept to herself.

In these dreams we find a persistent impression left upon the subconscious mind, capable of being revived under certain presumably similar conditions.

The best example of this I have met with was in a highly intellectual man, a teacher at one of the old universities, highly nervous and neurotic. He had to have all his teeth removed but could not face the ordeal. Finally, his sister, also an intellectual, who had been a patient of mine, suggested he should consult me. His history was typical of many such cases. In childhood he had been given an anæsthetic and had had an exceedingly bad time. The recollection of that experience was an abiding horror. When I saw him it was obvious that his condition was a serious one; he was being poisoned but he refused an anæsthetic and distrusted any local analgesia. Luckily his sister had impressed him with my ability to help him. He consented to be re-educated as regards the effects of nitrous oxide, provided I promised to desist from any administration when he felt the old horror was gripping him. By repeated administrations, at first brief and stopped before unconsciousness, I was able to build up his confidence and belief in the efficacy of the anæsthetic, and so to submerge the old associated horror beneath the new and agreeable sensation. Of course this case is an extreme one, but it is probable that many patients who exhibit maniacal fear—a very dangerous thing during induction of anæsthesia—do so as a result of the revival in their subconscious state of preceding, and possibly forgotten, experiences which have deeply scarred their subconscious mind.

I think these cases, especially those in which a dream is repeated in identical detail at wide intervals of time, indicate that in anæsthesia we are dealing not only with ordinary consciousness as tested by motor reflexes, but with the subconscious hidden mind, access to which is made possible again and again when the use of an anæsthetic is invoked on successive occasions. But some patients who long before taking an anæsthetic have lived abroad have during the induction period of anæsthesia commenced to speak in some native dialect, uttering phrases which had not passed their lips for years. Here we have no associative nexus between the anæsthetic and the harking back to the experiences of bygone years, but I think we have evidence of inhibiting the repression which the new conditions of life in England would naturally impose. Carried further, as it is in many persons, the removal of repression leads to furious struggling and protective efforts, as of one attempting to ward off the attacks of his enemies. In soldiers, as has been said, this is very common.

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[1] Military Psychiatry in Peace and War, C. Stanford Read, M.D.
[2] War and Individual Psychology, Sociological Review, July, 1915.

The Problem of Prophylaxis.

How far anæsthetics can penetrate the veil of the unconscious mind and protect it from obnoxious impressions has yet to be determined. The power to do so is limited, I think, by the individual psyche.

In the classes to which I have particularly referred—those who are the subject of some psychosis, the neurotic, the neurasthenic, the toxæmic, and persons of a poorly developed and unstable nervous system in general—the anæsthetic awakens both phylogenic and ontogenic traits more readily than is the case with the stormless individual with an irreproachable central nervous system. In these classes we expect not only the muscular storms but look for interference with the controls of circulation and respiration with their associate and definite dangers. The establishment of prophylaxis in such persons becomes a practical problem, and one seeks for the assistance furnished by the experience of others. The subject which I have attempted to introduce to you is worthy of extensive study and research; we should receive valuable aid from the neurologist, and from the employment of psycho-analysis we may obtain light on our problem. There is danger that because we now get excellent results even with neuropaths we may relegate the study of psychology to the limbo of the unnecessary developments of thought. It must be noted that anæsthetists seldom have opportunities, unless they make them, of following up abnormal cases for months or for years; so they may miss the profound psychic developments which have their rise in an anæsthesia. We are not infrequently told that such and such a patient must not be given an anæsthetic because of a serious upset and prolonged illness which followed an operation under an anæsthetic which took place some years ago. Such a case is one for study, not one to be refused the benefit of general anæsthesia, since this form of narcosis is peculiarly useful in the case of psychoses and neuropaths. The study made, we should be prepared by knowledge, much of which has yet to be gathered, about the best form of anæsthesia and method of its production, with detailed attention to the patient's environment and preparation. This preparation should often be prolonged, and should be directed not only to the needs of the body, but also to those of the mind. To take a concrete example. Crile's "stealing of the thyroid" is accomplished by a method admirable in its conception since it deals with the patient's mental as well as his physical requirements. I have been greatly struck by a remark of the lady who appears to give many of this surgeon's anæsthetics. She insists that a definite and formal part of the induction scheme she pursues is re-assurance of the patient; the mind is supported, fears are banished, and a sense of well-being engendered by the determined efforts of the anæsthetist, while the anæsthetic is steadily given, and given without hurry or impatient intolerance of a nervous person's natural trepidation.

Dangers of Injudicious Administration.

How real is the danger of injudicious methods of administration and of a faulty choice of agents is shown by the following facts.

Sir George Savage has told me that patients who are or have been insane not infrequently develop mania after ether. I have known transient maniacal delirium to arise in patients who at the time of the induction were apparently sane, and have on subsequent occasions substituted chloroform given with oxygen in place of ether with satisfactory results. I am convinced that every ounce of ether saved by limiting the dose during maintenance of anæsthesia, after complete anæsthesia is obtained, is a step towards lessening post-anæsthetic mental disturbance.

I know of at least one case, and others have been noticed, in which acute mania lasting for some weeks has followed the operation of the radical cure of hernia undertaken under a local analgesic. The patient was a medical man of assured sanity, but I do not know whether he had any tendency to a psychosis.

When spinal anæsthesia is employed and no preliminary injections of alkaloids are given, and when a general anæsthetic is not adopted concurrently with the blocking of the spinal nerves, a high degree of psychic shock appears in many cases, the effects of which persist for a considerable time after the operation. This state seems to be in some ways analogous to the effect of a general anæsthetic given to the subject of a psychosis. In the one case the apprehensive centres are wholly unprotected from the perturbations of fear; in the other these centres appear ultimately to be thrown out of action. During the period of induction, however, they are not completely protected, and activate to the extent that they cause the phenomena of struggling, and that nerve storms arise which interfere with respiration, circulation, and the even process of induction.

Anæsthetisation of Psychopaths and Neuropaths.

At present we possess certain methods which my experience of their use extending over some years leads me to believe are satisfactory in cases of individuals who fall into the categories of psychopaths and neuropaths.

The use of alkaloids before inhalation or colonic etherisation is unquestionably valuable. There is a common, but I think mistaken, impression that morphine and atropine best subserve the ends in view. It is general experience that the dose of morphine usually given—namely, ⅙ gr. one hour before inhalation—is insufficient to produce the requisite drowsing of the patient, and so larger doses are ordered. This is certainly true in the case of soldiers. Now these large doses of morphine, even if they achieve their aim, exercise a very deleterious effect upon the nervous system and parese the respiratory centre to a dangerous extent. If, however, scopolamine is added to the morphine and atropine a more stuporous effect is arrived at without damaging the functions of respiration. It is true that scopolamine acts in some ways similarly to morphine, but we must remember that it belongs to the atropine group, and so while it drowses the senses it stimulates the respiratory centre. Drugs in combination act in some ways synergically; in others they are antagonistic, as in the case of atropine, morphine, and scopolamine. Another practical point is that we require the optimum effect of these drugs when the induction is commenced. If it comes on later it is a danger, and so at least an hour should elapse between the giving of the hypodermic and the administration of the anæsthetic. An equally important matter is that the patient should be ensured a good night's rest before the operation. The use of a hypnotic may be undesirable in some ways, but its benefit is great in others, the latter being, in my opinion, important. After this night's rest the patient should not be disturbed unless it is absolutely necessary to have enemata or be given indigestible beef-tea.

This, in brief, is the line of treatment I suggest; it will, no doubt, be modified, possibly with advantage, in the hands of others.

Conclusion.

Although this is not strictly a matter for the anæsthetist, it may be noted that gentle surgery protects the patient from reflex dangers, while some form of blocking the centripetal nerves by analgesics, as in Crile's anoci-association method, is probably a protection against some shock effects, although, of course, the latter cannot be entirely abrogated in abdominal or thoracic operations. Another practical point calls for mention. I, no doubt in common with other anæsthetists, have noticed that if the induction is performed hurriedly or without due attention to detail, and if the operation is commenced before absolute anæsthesia has been obtained for some minutes, the whole course of the latter proves unsatisfactory. Do what one may, it is marked by an uneven level of narcosis; vomiting or retching is constantly imminent, and disturbances, usually vagal in origin, are common. Throughout the anæsthesia anxiety and dissatisfaction obtain, and severe after-effects usually occur. I believe that this trouble arises through no initial and complete control having been obtained over the higher centres. Consciousness may eventually be lost, but the influence of the unconscious mind is aroused; for some reason, at the nature of which we can only guess, its effects persist and are hardly abrogated.

To recognise this state is to suggest its treatment, whether or no we admit its suggested causation.

ORAL SEPSIS,

WITH SPECIAL REFERENCE TO CHRONIC DENTAL APICAL INFECTION.[1]

By W. BERTRAM WATSON, M.D. LOND.,
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THE presence at this meeting of many of our colleagues of the dental profession is an indication that they, as ourselves, realise how essential it is for the well-being of our patients that there should be, in the future, a closer coöperation between the medical and dental professions than has hitherto prevailed. Now that there is conclusive evidence of the importance of oral sepsis as a causative factor in the production of many constitutional diseases, dental theory and practice have become of greater importance; and members of the medical profession will continue to welcome all the help in diagnosis and treatment which can be given by their dental colleagues.

In such societies as ours there is perhaps a tendency rather to present other peoples' views, drawn from medical literature, than to relate personal experiences. You will forgive me if I go to the other extreme, giving you some account of my successes and failures, and of the changes that have taken place in my views on the difficult question of oral sepsis during the 21 years of my professional life.

We have only to look at the medical and dental journals of England and America to see that the question of the influence of dental infection on the health of the individual and of the nation is one of the most discussed problems of the day, and a topic about which the intelligent laity are thinking as well as ourselves. My interest in the question of oral sepsis was first aroused when I was a clerk and house physician at St. Mary's Hospital in the late "nineties," as a result of the study of the writings of Dr. William Hunter, the pioneer in this field of research. As has always been the case with teachers preaching a new gospel, Hunter's message for a long time fell on deaf ears, but the great value of his work is now fully realised; and his writings on oral sepsis as a cause of disease are as well worthy of study to-day as when they were written 20 years ago.

For the past 18 years my work, as is the case with most of my hearers, has lain in the sphere of chronic disease. I do not think it is altogether a disadvantage that patients who are sent to us for treatment are under our care for a limited period of the year only. They come here from year to year, which enables us to review the position at regular intervals, the result being that progression and retrogression in morbid processes, success or failure in treatment, make a deeper impression. A further advantage which we enjoy in our work in Harrogate is that we have the opportunity of studying cases which have been treated by different methods, by different physicians, in different countries, and many lessons are to be learnt from patients themselves.

Association of Oral Sepsis and Constitutional Conditions.

I wish now to quote a few brief notes of several cases illustrative of the association between oral sepsis and constitutional conditions. I had no difficulty in laying my hands upon the notes, because all these cases made a deep impression, standing out as peaks in my clinical experience.

CASE 1.—A male, aged 26, with a history of acute pain for three months in the metacarpo-phalangeal joint of right index finger. He was of good build and physique, led a healthy outdoor life, and had never known a day's illness. He was unable to write save for a short time only, and when he came to see me had his hand on a splint. The affected joint showed all the clinical signs of inflammation; no evidence of involvement of any other joint. Mouth appeared healthy, but the dental surgeon reported presence of one devitalised tooth. On my advice this was removed; within three days all inflammatory symptoms had disappeared from the joint. I saw nothing of this patient for 12 months; he then returned with precisely the same signs and symptoms in the same joint. Removal of a second devitalised tooth acted in the same way as on the first occasion, and I heard later from the patient that he was quite free from all trouble.

CASE 2.—A male, aged 45, with loss of power in upper extremities, chiefly in the hands. He had in both arms boring pains, which became worse at night, and at intervals sensory disturbances, particularly "pins and needles," in one or both hands. This nerve disturbance had been attributed to glycosuria from which he had suffered for some years. He was a debilitated subject, had worked hard in a City office, and looked and felt ill. Examination of mouth revealed the presence of a number of septic stumps, and marked gingivitis. I advised clearance of the mouth; within a few weeks pain and weakness in the arms had disappeared; further, there was a surprising reduction in the glycosuria—an observation which has stood me in good stead many times since.

CASE 3.—A female, aged 46, had enjoyed good health all her life save for present subacute rheumatism, from which she had suffered for nine months. The greater part of the time she had been confined to her bed; nightly temperature between 99°-100° F., pulse-rate 100-110. Began with pain in muscles of upper extremities; joints of both arms and legs then became involved. Prolonged fever, loss of sleep, and pain was beginning to tell on patient; heart muscle showed signs of enfeeblement. Severe gingivitis present round six or eight stumps, with which she parted reluctantly. Within 48 hours temperature and pulse-rate became normal; within a week patient was quite free from pain, and in a comparatively short time she was able to return home in an ordinary compartment instead of by invalid saloon, in which she came. A year later this patient again came under my care, having remained quite well for six months; since then a recurrence of pain and swelling of knee-joints. The mouth was completely cleared on this occasion. Patient wrote later, giving a good report of her condition.

CASE 4.—A male, aged 68, with an anomalous skin eruption which had been present for three weeks. Numerous small vesicles and pustules on body, neck, face, and arms, and raised red blotches on hands and other parts of body. Repeated crops of ulcers on tongue and lips prevented his taking solid food for three weeks During previous summer he had been troubled with gums and throat, for which he had undergone a course of vaccine therapy. Gums, teeth, tongue, fauces, and pharynx were acutely inflamed: a well-marked example of profound and generalised oral sepsis. Blood picture was one of pernicious anæmia, although degree of anæmia was not extreme. Further blood examination made at an interval of 10 days showed a reduction of red blood cells from 3,400,000 to 2,800,000. Culture from gums gave an abundant growth of streptococci; urine culturally negative, and incubation of a swab on agar from a pustule for 48 hours gave no result. Two or three days after his arrival the patient became febrile, and in spite of energetic local antiseptic treatment he died within a month from acute septicæmia. I believe it to be a well-recognised clinical fact that there is a special malignity in streptococcal infections involving bony cavities and bone substance.

Further Conditions found in Association with Oral Sepsis.

If time permitted I could give you notes of many other cases that have passed through my hands—some complete successes, others partial, through recognition of oral sepsis as the causative factor of the condition. The business man in the "forties," whose only complaint is that he does not feel fit, is tired after his game of golf, and has lost the sense of physical well-being—dyspeptics of various types, and in this last group we have perhaps allowed our minds to dwell on the element of unsatisfactory mastication and not sufficiently on the toxæmic element. I believe ophthalmologists will tell us what my limited experience has taught me, that in very many ocular conditions—e.g., cases of iritis, iridocyclitis, and retrobulbar optic neuritis—the cause is to be found in the mouth, and the cure is the work of the dental surgeon. This is not to be wondered at when we consider the close association regarding blood-supply between the teeth of the upper jaw and of the structures in the orbit via the pterygoid plexus.

I have quoted one case of acute septicæmia, and could quote many others of less important pyogenic infections due to oral sepsis—e.g., cases of recurrent boils and abscesses. From the successes which I have achieved in several cases of intractable urticaria I am sure it is wise to eliminate the possibility of dental infection in this condition. Fibrositis, so prevalent that we are perhaps entitled to look upon it as a British disease, is not entirely due to the dampness and chilliness of our sea-girt isles, but is oftentimes due to a toxæmia from the same source. Shall we not have to modify our views to explain the high incidence of another peculiarly British institution—acute and chronic gout—recognising that we must reckon with a mild degree of sepsis as, at any rate, a factor? A number of writers in the medical press, particularly in America, have drawn attention recently to the rôle of oral sepsis in *hyperthyroidism*. I have recently had under my care a lady suffering from this condition in its early stages, for whom I thought of prescribing a course of radiotherapy, but after oral care she improved so rapidly that I have reason to believe that no further treatment will be necessary.

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[1] Being the opening paper read at a discussion at the Harrogate Medical Society, Nov. 18th, 1920.

So far I have spoken of successes, complete and partial, but I have to record many failures. A number of people are to-day either wholly or partially edentulous on my advice, with no apparent advantage; and how many others there are in the same condition who tell the same dismal story after following the advice given to them by other physicians. There is, however, another side to the picture, as I have on several occasions, as a result of the subsequent history, had to regret not having advised radical treatment in the first instance; a case to illustrate this I purpose quoting shortly.

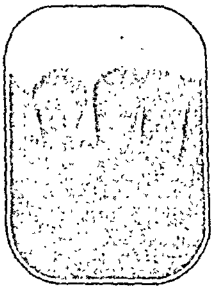
FIG. 1.—Normal teeth.

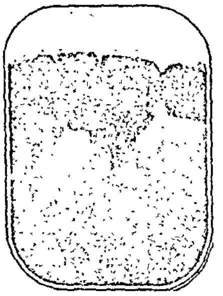
FIG. 2.—Bridge work and infected roots.

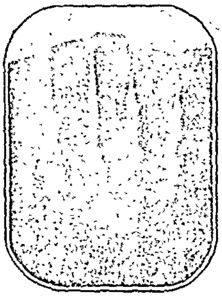
FIG. 3—Large granuloma at the root of lower incisor tooth, associated with pyorrhœa and marked alveolar absorption in the incisor area.

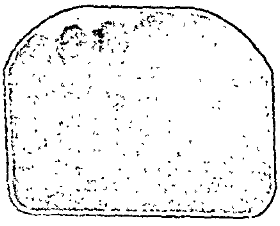
FIG. 4.—Lower molar tooth showing typical granuloma at each root.

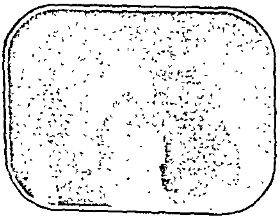
FIG. 5.—Gross infection around the roots of teeth.

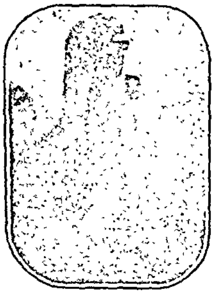
FIG. 6.—Gross infection around the roots of teeth.

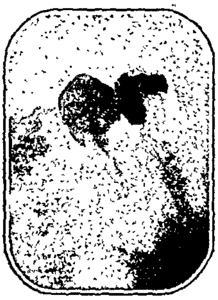
FIG. 7.—Granuloma at the root of tooth with filled dental canal.

Chronic Focal Apical Infection.

It is not my intention, however, to roam over the entire field of oral sepsis, but to draw your particular attention to one special part of the problem, that of chronic focal apical infection. The hypothesis on which I worked till a few months ago was that systemic infection from oral sepsis was chiefly due to the swallowing of countless milliards of pyogenic organisms. Eventually the time arrived, possibly on account of an enhanced dosage, or to diminished resistance on the part of the gastric secretions, when the bactericidal action of the gastric juice became inadequate, and so live pyogenic organisms found a foothold in the gastro-intestinal mucosa. My view was that in those cases in which satisfactory results did not follow oral treatment the probable explanation was that the stable door had been shut after the horse had gone, that the *Streptococcus oris* had taken up its abode in the colon, its cultural characteristics no doubt changing in course of time through correspondence with its new environment.

I fully recognised the possibility of a generalised infection from the buccal cavity, but felt that this did not altogether "fill the bill." The first case which I have quoted did not satisfactorily fit in with this conception of the morbid pathological process, and I now purpose giving some details of a further case which to me was very instructive, and in which I was sorry that radical treatment had not been adopted at the commencement.

CASE 5.—In the summer of 1915 a lady in the late twenties consulted me on account of considerable swelling of three of her finger-joints, probably periarticular, and possibly with fluid present. For some months she had been subject at times to swellings, accompanied with pain in finger- and toe-joints. Her dental surgeon and physician in London were in agreement that the condition of her mouth was perfect. I examined her mouth carefully and found everything satisfactory. She was proud of her teeth, had paid unusual attention to the question of oral hygiene, and had never had toothache. Tonsils and naso-pharynx healthy, general health and personal medical history good. On the three or four occasions that I saw her I noted that she had a slight rise in temperature—99° to 99·5°—with quickened pulse, which naturally made one search the more diligently for a focal infection. On my advice she again saw her dental surgeon and took a further opinion, which again corroborated our findings. In the summer of 1916 I saw her again; her general health was becoming impaired; the inflammatory changes had progressed in joints originally affected, and fresh joints had become involved. She sought further advice from a third dental surgeon, who cleared the mouth, and later she had a course of treatment with an autogenous streptococcal vaccine. For a few weeks after this operative procedure the patient was gravely ill, since which time no fresh joint lesions have appeared.

This case illustrates the danger which is run by undertaking the surgical treatment of too many foci at the same time. Had the teeth been removed gradually, absorption of toxic material would have been spread over a longer period, with much less risk of constitutional disturbance.

Dental Radiography.

Last winter I visited some of the great clinics and a number of the smaller hospitals in the United States of America. I was much impressed with the position that dental radiography occupies in that great country. Some of the most stimulating hours of my life were spent at Rochester, Minnesota, in the society of Dr. Charles Mayo. He took me first to the dental radiographic department of the Mayo Clinic; there I found that a radiographic examination of the teeth formed part of the routine examination of the patient. In the past few years I had occasionally seen dental radiograms, but must confess I could make but little of them; nor did I receive much enlightenment regarding them from my dental surgeon colleagues. After seeing a few hundreds in America, I found no difficulty in interpretation, and began to realise their great value for diagnostic purposes. My attention was particularly directed to the question of chronic apical infection from a radiographic standpoint. As a result of the infective process there is a destruction of cancellous bone tissue at the site of the mischief, which is indicated in the accompanying radiograms by a light area. I learnt that if such a light area be discovered in the alveolar process at the apex of a devitalised tooth or about a root, it was possible on radiographic evidence alone to make the positive diagnosis of chronic apical infection; and, further, that with the elimination of the inflammatory process the cancellous tissue resumed its normal character and appearance.

Dr. Charles Mayo arranged for me to have an interview with Professor E. C. Rosenow, to whom the medical profession owes a debt of gratitude for much original work, by no means the least important of which has been his bacteriological studies of dental infection. He demonstrated to me his methods of cultivation, also many micro-photographs of granulomata near the apices of extracted teeth, showing bacteria lying in close proximity to blood-vessels. From a study of these it was easy to see that bacteria have no difficulty in passing straight into the blood or lymph streams, and that, in consequence, chronic apical infection from a theoretical standpoint is the most dangerous of all forms of oral sepsis. I had been mistaken in my view that the harm lies in the swallowing of pyogenic organisms, and learnt that the chief danger arises from direct absorption into the blood stream of bacteria and their toxins. Moreover, this menace is the more serious because it usually gives rise to no symptoms and no pus formation. I now began to see daylight. Had the patient whose case I last quoted been radiographed in the first instance, a method of investigation of which neither her dental surgeons nor I had availed ourselves, a correct diagnosis of chronic apical infection could have been made, and I think I am justified in saying that with proper treatment her joint symptoms would soon have disappeared, before grave organic change had supervened.

Elective Localisation of Bacteria.

I can do no more than refer to Rosenow's work on the elective localisation of bacteria. I venture to quote one of his cases dealing as it does with a condition with which we have to deal so frequently. A middle-aged physician had repeated attacks of pain in the right gluteus maximus muscle and stiffness of the muscles of the back. A granuloma was found over the apex of the root of an extracted tooth, which on cultivation gave a short-chained green-producing streptococcus, a few hæmolytic streptococci, and a moderate number of slightly hæmolysing streptococci. A rabbit was injected intravenously with the growth, and at the necropsy the right gluteus maximus muscle was found to be hæmorrhagic, and there were a moderate number of lesions in the more tendinous portions of the muscles throughout the body. Rosenow quotes, among others, cases of myelitis, iritis, multiple neuritis, and arthritis, which pathological changes he has been successful in reproducing in rabbits by intravenous injections of cultures from granulomata found at the apices of teeth in patients suffering from these conditions.

It is obvious that our only hope for a really successful issue, in dealing with cases of systemic infection from oral sepsis, is to attack at the very beginning of the morbid process. To be logical, one should first consider the problem as to how apical infection takes place, whether via the periodontal membrane, the dental pulp, or the blood stream; but the consideration of the ætiology and prevention of the condition is one for the dental pathologist, and does not fall within the scope of this paper.

Is Simple Extraction Adequate?

With a patient suffering from a systemic disease in which an infection at the apex of one or more teeth is discovered, What is the correct treatment from a dental surgical standpoint? Rosenow teaches that simple extraction is not adequate, and that persons who have had all their teeth extracted may still harbour localised areas of infection in the jaws. May not this be the explanation of some of the failures to which I have already referred, the apical or periodontal infection having been left or only partially removed? I am, of course, referring to cases in which there is no other manifest focus of infection in the tonsils, naso-pharynx, accessory sinuses, &c.; and let me add that it is rare to find infected tonsils without infected teeth being present at the same time. If the infinite capacity for taking pains be the correct criterion, my friend, Dr. B. S. Gardner, who is in charge of the dental department at the Mayo clinic, is a genius, because he takes no chance of not completely eliminating apical infections. It was my privilege to see him operate on a number of cases, all performed under conductive anæsthesia, which appeared to me to be most satisfactory alike to patient and surgeon. His practice in some cases is to make a half-inch round incision to cut loose a flap of the soft tissues, and so expose the alveolar plate which forms the labial wall of the socket of the affected tooth. A window is then made by removing the alveolar plate to uncover the infected area. The tooth is then extracted, and granulation tissue removed with a curette until healthy bone is visible on all sides. After the cavity has been washed out with an antiseptic solution the flap is drawn down and sewn into position carefully with horsehair stitches.

Analysis of Seventy Cases Investigated by Means of Dental Radiography.

During the past six months I have utilised dental radiography in the investigation of 70 cases in which the consideration of the personal history and clinical findings led me to believe that help in diagnosis might be forthcoming. The greater proportion of these, 31, were cases of fibrositis: in 23, definite apical infection was revealed, and of the 23, in 13, the condition was associated with rarefying osteitis in the neighbouring alveolus, 2 showed rarefying osteitis only, leaving 6 in which no changes were observable on the dental films. Six out of 10 cases of neuritis showed apical infection, 2 of these with rarefying osteitis in addition, and 1 with rarefying osteitis alone. Of 7 cases of arthritis 4 showed apical infection alone, and 2 apical infection with rarefying osteitis. In 13 patients suffering from general ill-health, with ill-defined dyspepsia, there was radiographic evidence of dental trouble in all—7 had apical infection alone, 2 apical infection and rarefying osteitis, and 4 rarefying osteitis alone. In one case of kerato-cyclitis there was gross apical infection; in one case of alopecia, in which a dermatologist suspected the presence of a focal infection, radiography revealed some buried roots with granulomata; in one case of urticaria giganta gross apical infection was revealed, involving several teeth, together with rarefying osteitis. One case of trigeminal neuralgia, probably due to the presence of a buried root in the upper jaw, was undiagnosable save by radiography. One case of persistent pyrexia disappeared after the removal of infected teeth and tonsils. In 3 cases of general toxæmia of unknown origin and in 2 unclassified cases of no importance there was gross apical infection.

I now purpose giving a few details of 8 of this series of 70 cases which received dental surgical treatment while under my care.

CASE 6.—A young man suffering from neuritis of some months' standing, involving left upper extremity, had complete relief from pain three or four days after removal of offending teeth, with curettage of sockets. Radiographic diagnosis—apical granuloma.

CASE 7.—A male, aged 59, with fibrositis, chiefly confined to cervical and lumbar muscles, had suffered pain in consequence for six months. Nodules to be felt in affected muscles; evidence of synovial change in both shoulder-joints. Radiographic examination revealed gross apical infection of second right incisor and left bicuspid in the upper jaw, no pyorrhœa being present. Cultural examination of an extracted tooth yielded a pure growth of a hæmolytic streptococcus, from which an autogenous vaccine was prepared.

CASE 8.—A female, aged 34, with history of two attacks of rheumatic fever at ages of 8 and 28. Systolic bruits heard at both the mitral and aortic orifices, but no cardiac symptoms. For the past two years she had complained of muscular pains. Visible portion of teeth appeared sound; slight apical infection reported at apex of one tooth in upper jaw, and a large infection at apex of a second tooth in lower jaw; no pyorrhœa. Cultural examination of extracted teeth gave a pure luxuriant growth of a hæmolytic streptococcus; an autogenous vaccine was administered, and I hear she is now quite free from her muscular pains.

CASE 9.—A male, aged 40, who had complained of gastric discomfort, general ill-health, and slackness for two or three years; granulomata discovered around apices of most of his teeth. I advised complete extraction with curettage of sockets; notwithstanding his edentulous condition gastric symptoms speedily disappeared, with marked improvement in general health and increase in body-weight.

CASE 10.—A female, aged 56, had suffered for many years from repeated attacks of kerato-cyclitis. On the advice of an oculist she had seen her dental surgeon on many occasions, but he had always reported that her mouth was above suspicion. Apical infection was present at root of one tooth; the socket was opened by the alveolar route already described. Granulomatous material was removed, which bacteriologically after 48 hours gave a free growth of a Gram-positive diplococcus.

CASE 11.—A male, aged 34, gave in May, 1920, a history of pain in his feet for some weeks in 1917 and at intervals since. Since November, 1919, he had suffered from severe pain in both hands and feet; poor general health obvious. Fusiform swellings of interphalangeal joints of hands feet puffy clinically the picture was one of the œdematous type of early arthritis. Radiographic examination of right hand and foot showed inflammatory changes at present mainly confined to soft parts—i.e., periarticular; but there was evidence of wasting of bone in neighbourhood of articular surfaces. Visible portions of teeth appeared healthy, but by radiographic observation large granulomata seen at roots of a lower left molar, with absorption of root apices (vide Fig. 4). On digital pressure of tonsils yellow, offensive concretions were extruded. Tonsils were enucleated and the offending tooth extracted with curettage of socket. Tonsils on external examination showed numerous follicles, and on section pockets containing greenish pus. On cultural examination of tonsils a pure growth of a short-chained streptococcus was obtained; and cultural examination of tooth gave a pure growth of same organism. In a recent letter from his doctor I hear there is considerable improvement in general health, the weight having increased 15 lb. He says: "The feet are much better, and he walks quite decently now. The fingers are better, but still far from normal; the thickening over the terminal inter-phalangeal joints has gone, but the first inter-phalangeal joint, especially the first right finger, is very pronounced."

CASE 12.—A male, aged 42, gave in April, 1920, a history of general ill-health since 1915, and of a severe and prolonged attack of iridocyclitis in 1919. During this attack, a streptococcus was isolated from the urine, and a vaccine prepared from this source had proved of service. Mouth appeared healthy; but in upper jaw there was evidence of gross apical infection involving four teeth. Cultural examination of these teeth gave a luxuriant growth of a streptococcus, and a course of vaccine therapy, following removal of the septic foci, had most beneficial results.

CASE 13.—A male, aged 53, at present under my care, first consulted me five years ago on account of fibrositis, which I considered at that time was probably traumatic in origin. I saw him again in June, 1920; he gave a history of good health in intervening period. Nine weeks previously a window came down on his fingers and tore off the nails, since when he had had "rheumatic" pains in upper and lower extremities and lumbar area. General health was good; he took a good deal of exercise notwithstanding his muscular discomfort. There was much gold crown and bridge work in his mouth, and radiographic examination showed gross infection at the apices of four teeth. All forms of bath treatment exaggerated the symptoms, which gradually became more severe, finally confining him to bed, and necessitating the exhibition of opiates to relieve. He came under my care a month ago, and it was evident that there had been deterioration in his general health. Blood examination showed marked secondary anæmia, the hæmoglobin being 43 per cent only, but no evidence of pernicious anæmia. Wassermann reaction, negative. Blood culture, sterile. Cultural examination of the urine gave a short non-hæmolytic streptococcus. I advised removal of the four infected teeth one at a time, followed by curettage. After each extraction patient was ill for four or five days with febrile disturbance and exacerbation of his rheumatic pains. Cultural examination of all the teeth gave a free growth of streptococci of two strains—(1) a hæmolytic streptococcus; (2) a non-hæmolytic streptococcus. Since removal of these foci patient is steadily improving and I believe the prognosis is favourable.

In all these eight cases the radiographic findings were confirmed, and every tooth (all teeth were removed with meticulous care to avoid contamination from the mouth) submitted to bacteriological examination gave a growth of pyogenic organisms. As far as the series of 70 cases is concerned, this report must of necessity be looked upon as a preliminary communication, owing to the recent nature of the work detailed. My experience is so small that it would be unwise for me to dogmatise, and to say, for example, that apical infection was the "fons et origo mali" in every case in which it was discovered. At the same time that experience has been large enough to convince me that apical infection is frequently the cause of constitutional disease, which may be prevented or cured, particularly if recognised at an early stage.

It seems that a new conception of oral sepsis must revolutionise dental practice. Our dental surgeons have attained a high degree of skill in preserving the visible portion of the teeth; they have concentrated their energies almost entirely towards their preservation for masticatory and cosmetic purposes. A well-known American writer gives it as his considered opinion that the degree of oral sepsis is in direct proportion to the amount of mechanical work in the mouth. One has often admired the mechanical skill of the dental surgeon revealed in beautiful bridge work, crowns, fillings, &c.; yet the whole has sometimes to be scrapped in order to give their host health. For some time past I have questioned whether a devitalised tooth should ever be left in the head, and am now sure that it should not unless apical infection has been excluded by radiographic examination repeated at stated intervals. The dental surgeon will in the future visualise his work primarily from the standpoint of oral sepsis. He will consider the mouth as a gateway of disease, and himself as the keeper of the gate.

Thanks are due to my colleagues, Dr. Sinclair Miller, D.S.O., for the pathological examinations, and to Dr. C. W. S. Saberton and Dr. C. G. Hitchcock for radiographic help.

EXPERIMENTS WITH THE FLOCCULATION TEST (SACHS-GEORGI) FOR SYPHILIS.

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SOON after Wassermann introduced his reaction it was shown by numerous workers that the extract of spirochætes (syphilitic liver) which was used as antigen could be replaced by certain lipoid substances,[1] and that the reaction was not therefore necessarily a genuine antigen-antibody reaction. Further work afforded evidence that the reaction was of a physical kind,[2] and that the reacting power of the serum seemed to lie in the globulin fraction;[3] in addition it was shown that syphilitic sera possessed, to a greater degree than normal sera, the power of producing precipitates when left in contact with certain lipoidal emulsions under certain conditions.[4] It has for many years been a well-established fact that there is an optimum turbidity of the antigen for the production of the Wassermann reaction,[2] that is, a physical state when there is an optimum total surface of the suspended lipoids,[5] a fact which is taken as strong evidence of the physical nature of the reaction. The prevailing view of the Wassermann reaction may be summarised as follows: that the reaction is of a physico-chemical nature, and that there occurs a precipitation of the globulin of the syphilitic serum by the lipoidal colloids of the antigen with adsorption of the complement by this precipitate.[5] [6] It is suggested that fixation of complement does not occur in the absence of such precipitation or flocculation, even though at the time the reaction takes place flocculation is not demonstrable to the naked eye, but convincing experimental proof on the point is still lacking.

Attempts to Replace the Wassermann Test

On this assumption attempts have been made to replace the very complex Wassermann reaction by one in which a visible flocculation could serve as evidence of the syphilitic nature of the serum and render unnecessary the measurement of the amount of complement fixed by the protein-lipoid mixture. Of these various attempts the most successful up to the present time appears to be that advocated by Sachs and Georgi,[8] and the method is known in Germany under the name of the Sachs-Georgi test.

Sachs and Georgi[8] made use of the mixture of heart extract and cholesterin,[7] which is widely used in this country as the antigen in the Wassermann reaction, and mixing this with the diluted serum in certain proportions they noted the production or not of a flocculus after incubating the tube for two hours at 37° C., and then leaving at room temperature overnight. They claimed for this method great reliability in the distinction of syphilitic from non-syphilitic sera, a greater reliability, indeed, than they allowed to the Wassermann test itself. A large number of other workers have recently applied the method with conflicting results; some agreed as to the reliability of the reaction, while others found that the methods failed to give positive reactions in many cases which were syphilitic, and that false positives were given in other conditions, as, for example, in tuberculosis. Sachs and Georgi,[9] in a second paper, admitted that they had claimed too high a degree of accuracy for the test, but stated that with an increase in the length of incubation the false positives could be eliminated. They now suggested that the test should not be used to supplant the Wassermann test, but rather to supplement it. Other workers have also found this modification of the reaction to give more reliable results, and since its introduction the bulk of opinion in Germany has been in favour of the accuracy of the test. It is evident, however, that the experience of a very large number of workers must be collected before a reliable estimate of its accuracy can be made, and the time has not yet arrived for the collection of this evidence; the amount of work on this reaction which has been carried on outside Germany is up to the present very small.

Results of Experiments with the Flocculation Test, using Different Strengths of Emulsion.

Series.	Lipoidal emulsion.	Physical state of emulsion.	Time in hours. Temp. 37°C.	Total sera.	Sera giving strong positive W.R.				Sera giving weak or doubtful (Dbt.) positive W.R.				Sera giving negative W.R.			
					Total	Pos. S.G.	Dbt. S.G.	Neg. S.G.	Total	Pos. S.G.	Dbt. S.G.	Neg. S.G.	Total	Pos. S.G.	Dbt. S.G.	Neg. S.G.
I.	B.	Opalescent.	2 + 20 R.T.	65	25	18	2	5	6	0	0	6	34	4	0	30
II. ... 1a	B.	,,	20	43	16	11	0	5	7	0	0	7	20	1	0	19
1b	B.	,,	48	43	16	15	0	1	7	1	1	5	20	0	5	15
2a	H.	Slightly turbid.	20	43	16	15	0	1	7	2	0	5	20	2	1	17
2b	H.	,,	48	43	16	15	0	1	7	6	0	1	20	5	6	9
III. ... 1a	B.	Opalescent.	20	83	26	13	3	10	23	0	0	23	34	0	0	34
1b	B.	,,	44	83	26	16	2	8	23	1	0	22	34	0	1	33
2a	H.	Slightly turbid.	20	85	26	19	2	5	25	4	5	16	34	0	0	34
2b	H.	,,	44	85	26	19	3	4	25	7	10	18	34	1	4	29
IV. ... 1a	H.	Mod. turbid.	40	49	19	15	4	19	5	2	1	2	25	2	2	21
1b	H.	,,	68	49	19	18	1	0	5	3	1	1	25	4	7	14
V.	H.	,,	24	73	21	10	4	7	9	0	3	7	45	0	5	40
VI.	H.	,,	14	60	19	13	2	4	15	2	3	10	26	1	5	19
VII. ... 1a	H.	Very turbid.	15½	82	21	15	5	1	11	0	1	10	50	0	2	49
1b	H.	,,	15½ + 24 R.T.	82	21	20	0	1	11	0	1	10	50	0	2	48
2a	H.	,,	15½ R.T.	78	20	0	0	20	11	0	0	11	47	0	0	47
2b	H.	,,	15½ R.T. + 24	78	20	15	2	3	11	0	1	10	47	0	0	47
VIII. ... 1a	H.	,,	20	67	28	26	0	2	10	3	1	6	29	0	0	29
1b	H.	,,	42	67	28	28	0	0	10	7	1	2	29	0	1	28
IX. ... 1a	H.	,,	15	55	27	27	0	27	13	13	0	0	15	15	0	0
1b	H.	,,	39	55	27	27	0	27	13	13	0	0	15	15	0	0
X.... ... 1a	H.	,,	14	58	15	13	1	1	7	1	2	4	36	2	0	34
1b	H.	,,	43	58	15	15	0	0	7	4	0	3	36	11	2	23
XI. ... 1a	H.	Opalescent, faintly turbid.	15	51	16	12	0	4	10	0	0	10	25	0	0	25
1b	H.		43	,,	,,	14	0	2	,,	0	0	10	,,	0	0	25
2a	H.	Mod. turbid.	15	,,	,,	14	2	0	,,	0	0	10	,,	0	0	25
2b	H.	,,	43	,,	,,	15	0	1	,,	0	0	10	,,	0	0	25
3a	H.	Very turbid.	15	,,	,,	15	1	0	,,	0	1	9	,,	0	0	25
3b	H.	,,	43	,,	,,	15	0	1	,,	0	0	10	,,	0	0	25
4a	H.	Max. turbidity obtainable.	15	,,	,,	14	2	0	,,	0	1	9	,,	0	0	25
4b	H.		43	,,	,,	15	0	1	,,	0	0	10	,,	0	0	25

The main results are here shown. "B." signifies an extract prepared from bullock's heart, while "H." is that prepared from human heart. "R.T." signifies room temperature.

Technique.

The lipoidal mixture used by Sachs and Georgi is prepared as follows:—

An alcoholic extract of bullock's heart is made, using 1 g. of heart muscle to each 5 c.cm. of 96 per cent. alcohol; 100 c.cm. of this heart extract is mixed with 200 c.cm. of 96 per cent. alcohol and 13 c.cm. of 1 per cent. cholesterin (alcoholic solution). This cholesterinised extract is diluted with normal saline, just before the test, in the following way. To 1 volume of the mixture 1 volume of normal saline is rapidly added, and then 4 volumes of saline added more slowly in such a way as to make an emulsion which is opalescent but not turbid. The serum of the patient inactivated at about 55° C., as for the Wassermann test, is diluted 1 in 10 with normal saline, and to 1 c.cm. of diluted serum is added 0·5 c.cm. of emulsion prepared in the manner described. In their original paper Sachs and Georgi recommended that the results should be read off at the end of two hours at 37° C., and 18–20 hours at room temperature, but in their later paper they recommend as yielding more reliable results leaving the tubes in the incubator for 18–20 hours and reading off immediately on removal therefrom. A positive reaction is one in which there is a flocculation or precipitation visible to the naked eye or with the aid of a hand-lens.

In the series of experiments here reported the following technique was used:—

The bullock's heart extract was prepared according to the above formula, the minced meat being shaken up with the alcohol but not ground in a mortar. The human heart extract was, however, prepared in a slightly different manner so as to use the extract from which the "antigen" used in the parallel Wassermann tests was prepared—that is, a 1 in 10 alcoholic extract of human heart muscle was used, the muscle being ground in a mortar with the alcohol; on the day of the test 20 parts of the extract were mixed with 10 parts of absolute alcohol and with 1·35 parts of 1 per cent. cholesterin (Poulenc frères). One part of this mixture was then diluted with 5 parts of saline so as to give varying degrees of density. It was never possible to produce an opalescent solution with this extract, the thinnest obtainable being slightly turbid.

Wassermann tests were conducted on all the sera by a method which is practically that of Harrison,[10] differing only in that the doses of complement used in the test are 4, 6, and 8, or 4 and 8, and that the volume of each constituent used is 0·2 c.cm.

A +++ (strong positive) represents eight doses or more of complement fixed, ++ (moderately strong positive) between six and eight doses, + (weak positive) between four and six, and ± (doubtful reaction) less than four but more than the negative controls. In every series of tests at least two negative controls and at least two strong positives in addition to other positives of different degrees were invariably used. Every precaution was taken to eliminate complement that was over-deviable and antigen that was too anticomplementary and which might have given false positives. In addition, every case included in this series had both its Wassermann and its Sachs-Georgi done by one worker (myself) from the same tube of serum (heated at 56° C. for 20 minutes), and with the exception of one series both tests were done on the same day. In every case venous blood has been used. The +++ may be taken with certainty to represent cases of syphilis, while the ++ and + were with extremely few exceptions obtained from early cases and cases under treatment. The ± reactions are not necessarily, though frequently, from latent or treated cases.

It was early apparent that opalescent emulsions such as Sachs-Georgi recommend give results in the interpretation of which there is room for important differences of opinion. The flocculation is so very delicate that many cases occur in which one is doubtful whether the reaction should be classed as positive or negative. Attempts were therefore made to modify the test in such a way that the flocculation in a strong positive case should be massive and unmistakable and at the same time to ensure that the negative cases should show no trace of flocculation. The conditions have, therefore, been varied so as to test different time and temperature readings, different cholesterinised extracts, and cholesterinised extracts prepared so as to be under different conditions of density.

Some sort of scale had to be drawn up to accommodate the readings to the use of the dense lipoidal extracts used in the later experiments, and the following standards were adopted for convenience in recording:—

+++ was used to represent complete clearing of the emulsion with the formation of large flocculi which usually come to the surface or adhere to the side of the tube; ++ represents a result in which there is clearing but in which the flocculi are more numerous but not so massive; + represents an appearance in which there is not complete clearing between smaller flocculi; ± represents the production of very small flocculi which are still visible to the naked eye; ∓ a flocculation which is only with certainty distinguishable with the help of a hand-lens; and –, no visible change in the emulsion even with the help of a hand-lens. In the interpretation ± to +++ are reckoned as positive, that is those degrees of flocculation which can with certainty be determined by the naked eye; ∓ is classed as a doubtful reaction; and – as negative.

The number of different sera used was 686, and the number of different tests and readings 1882.

Discussion of Results.

In discussing the results obtained one may for convenience first take Series I. to V.

Emulsions.—Both the opalescent emulsion produced from the bullock's heart extract and the slightly or moderately turbid emulsion produced from the human heart extract showed fluctuations at different testings in the degree to which they yielded results comparable with those of the Wassermann tests; when tested side by side, as in Series II. and III., the opalescent emulsion gave results rather nearer to the Wassermann readings in Series II., but much less close in Series III. In addition, what it has not been possible to demonstrate in the table, the slightly or moderately turbid emulsion gave much more definite and more easily read results than did the opalescent emulsion. Although both emulsions on occasion yielded results very closely analogous to the Wassermann readings, both gave on other occasions results which materially differed, usually in the direction of missing undoubtedly syphilitic cases.

Time and temperature.—Here also the results were not perfectly consistent. The original Sachs-Georgi standard method of 2 hours at 37° C. followed by 20 hours at room temperature gave results in which a few positives were negative, and a few negatives positive; a reading at the end of 14 hours at 37° C. similarly showed results on the negative side; readings at the end of 24 hours at 37° C. gave, as a rule, results in which a few positives were missed, while readings at the end of 48 hours gave, as a rule, results tallying fairly closely with those of the Wassermann. At this later period, however, there was a tendency for negative Wassermann sera to give a weak positive Sachs-Georgi result.

In Series VII. to XI. turbid emulsions were used, the last series being one in which a set of emulsions of varying turbidity, prepared from the same extract, were tested side by side with the same set of sera. The results of these later experiments may be summarised as follows:—

Emulsion.—Where in the same series of tests emulsions of varying density were used (Series XI.) it was found that turbid emulsions gave better results than opalescent, but that greater degrees of turbidity beyond a certain minimum did not seem to produce a difference in the readings.

Time and temperature.—Readings at the end of 42 or 43 hours at 37° C. as a rule gave the most accurate results; readings at the end of 20 to 24 hours gave results usually slightly on the negative side; readings at the end of 15½ hours at room temperature gave results in which all the positives would be regarded as negative; readings at the end of so many hours at room temperature, followed by so many hours at 37° C., gave results less good than readings at the end of so many hours at 37° C. followed by so many hours at room temperature.

False positives.—One may now turn to Series IX., where false positives were yielded by all the negative sera. The reason for such a result is not yet definitely known, but it is significant that on this occasion, owing to the large number of tests which were being carried out, a batch of new tubes, which had been somewhat hurriedly washed, was pressed into service. As other factors in the reaction were the same as on other occasions, it is possible that the electrolytic conditions which play their part in the reaction had been on this occasion artificially produced. It will be seen that false positives were also given at the 43 hours' reading of Series X.

One may therefore add to the conclusions already made: under conditions as outlined, results can usually be obtained by the flocculation test, which approximate extremely closely to those of careful Wassermann tests, and in my hands the most accurate and most easily read were obtained when turbid emulsions were used rather than the opalescent solutions advocated by Sachs and Georgi, and when a considerably longer period of incubation was made use of than their standard time of 18 to 20 hours. It must be admitted, on the other hand, that the series of false positives already referred to occurred when these thick emulsions were being used, and it is possible that the increase in the surface of the suspended lipoids carries with its advantages this particular danger. I believe, however, that on this occasion the cleaning of the glassware had been insufficient. When opalescent solutions are used, the readings seem to me to be too difficult and too liable to cause the introduction of a personal element, and for this reason it is desirable that the comparatively gross flocculation seen with the thicker emulsions should be aimed at in standardising the test. Until the factors which may cause false reactions are definitely recognised and can be controlled the test should not be used to supplant the Wassermann reaction, although it may profitably be used as an additional control to that test. Even when used in this way at least half a dozen negative and half a dozen positive controls should always be included. Further experiments into the nature of the reaction are in progress.

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A CASE OF

ENTERIC FEVER DUE TO THE B. ENTERITIDIS OF GAERTNER.

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THE following is a report of a case running a course simulating in many respects that of a case of typhoid fever, but due in all probability to infection with the *Bacillus enteritidis* of Gaertner. We feel constrained to publish it, not merely because it presents features of inherent bacteriological interest, but because it appears to be a unique case of its kind. Not that infection with the *B. enteritidis* of Gaertner is uncommon, but infection with this organism, occurring in a sporadic form, unassociated with other cases, having no demonstrable relation to food-poisoning, and running a course so closely similar to that of typhoid fever, appears to be unrecorded. Savage,[1] for instance, has collected the details of no less than 19 outbreaks of food-poisoning, shown more or less conclusively to have been due to the *B. enteritidis* of Gaertner, but amongst these there does not appear to be a single instance of a case running a typical typhoid course, such as the one we are about to describe. Bainbridge,[2] it is true, in his Milroy lectures in 1912 stated that "the illness following the consumption of meat infected with Gaertner's bacillus or *B. suipestifer* may take the form of pyrexia, lasting two to three weeks," but he quotes no instances in support of this statement, nor does he mention whether such cases are sporadic or merely associated with outbreaks of food-poisoning. It is the two points, the typhoid-like course and the sporadic nature of the infection, upon which we desire to lay special emphasis. Undoubtedly there have been some rather anomalous cases of infection with the *B. enteritidis*, and perhaps it would be advisable to give a short résumé of such as we have been able to collect from the literature.

Anomalous Cases of Infection.

Dean,[3] in 1911, reported a case of cholecystitis with gall-stones in a woman, aged 61, in which the *B. enteritidis* of Gaertner was isolated from the fluid in the gall-bladder, from a gall-stone, and from the fæces. The bacteriological findings were confirmed by serological and absorption tests. There was apparently no history of enteric fever or other illness which might be ascribed to the passage of the organism into the gall-bladder, so that in all probability it had gained entrance to the body without giving rise to marked symptoms.

Buchanan,[4] in a report to the Local Government Board, described an outbreak of food-poisoning at Mansfield following on the consumption of potted meat. Amongst the sufferers was a boy who had a prolonged illness without diarrhœa, was restless and feverish, delirious in the second week at night, wasted rapidly, ran a temperature of 101°-103° F., with a pulse of 120 and respirations of 30 a minute, had abdominal pain, some cough, frontal headache, slight enlargement of the spleen, and improved gradually after the fourth week. No definite bacteria were isolated and no agglutination tests of the boy's serum were performed. Possibly this may have been a case of infection with *B. enteritidis*, but, as apart from the finding of *B. proteus* in the potted meat no organisms of pathogenic importance were encountered, the exact nature of the case must remain in doubt.

Savage,[5] in an investigation of human fæces, isolated the *B. enteritidis* of Gaertner from the stools of a patient—age and sex not stated—who was clinically suffering from typhoid fever. The patient was admitted to hospital on the 28th day of illness; 12 days later—i.e., on the 40th day—a perforation of the intestine occurred; he was operated upon and died. On the 30th day the patient's serum agglutinated *B. typhosus* in a dilution of 1-200, and two strains of paratyphoid bacilli in a dilution of 1-100. On the 36th day the titre to *B. typhosus* was 1-600, to the paratyphoid bacilli 1-100. On the 38th day the stools were examined, and two organisms of the Gaertner group isolated; of these one was agglutinated by the patient's serum in a dilution of 1-100. This organism gave the biological reactions of the *B. enteritidis* of Gaertner, and was agglutinated to titre by a Gaertner serum. It is possible that this was a case of enteric fever due to the *B. typhosus*, and that by the time that the fæces were examined—that is, on the 38th day of illness—the organism had disappeared from the stools. The *B. enteritidis* isolated may have been introduced casually into the patient's intestine, or it is possible that it normally formed part of the intestinal flora, though both of these conditions appear to be extremely uncommon, as Savage himself has shown. If it is admitted, however, that the *B. enteritidis* was actually the cause of the illness, it is difficult to account for the agglutination results of the patient's serum; this serum rose in titre from the 30th to the 36th day from 1-200 to *B. typhosus* to 1-600, while the titre for the paratyphoid bacilli remained constant at 1-100. Unfortunately no absorption reaction was performed to see if the *B. enteriditis* isolated from the fæces would absorb the agglutinins for *B. typhosus* from the patient's serum. Further, as the patient's serum was not repeatedly tested against the *B. enteritidis*—indeed, from the account it seems doubtful if this was done at all—it does not appear justifiable to pronounce any definite opinion as to the exact nature of the infection.

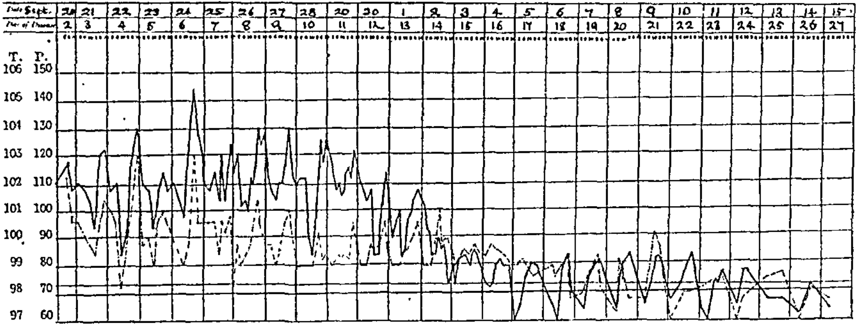
Savage,[6] in his recent book on "Food Poisoning and Food Infections," says that Batten and Forbes in 1908 described two cases of infection of infants with the *B. enteritidis* of Gaertner. The two patients suffered from diarrhœa and vomiting, with a considerable amount of pyrexia, the symptoms persisting for a number of weeks and ending fatally in both cases. No evidence was available as to the manner of infection. In the same book Savage,[7] when dealing with the symptomatology of food-poisoning, remarks that very occasionally cases with a protracted course are met with, the patients being ill for several weeks. However, these cases are met with in outbreaks of food-poisoning due to several different types of organism, and are obviously different from sporadic cases of infection with the *B. enteritidis*.

Description of Case.

The patient, Miss X, aged 23, who was temporarily acting as resident house physician, on awaking on Sunday morning, Sept. 19th, 1920, found herself to be suffering from a general feeling of malaise, together with a dry irritating cough. She got up and went about her duties. During the course of the day the cough continued incessantly, without, however, any expectoration of sputum. In the afternoon she went out to tea, and on returning in the evening felt hot and feverish. On taking her temperature she found it to be 100·4° F. After supper she took 30 grains of aspirin and then danced for an hour. Before going to bed at 10 P.M. her temperature had dropped to 99°. Sleep during the night was disturbed very badly by the cough. The following morning she was feeling distinctly worse, and as her temperature had risen to 102° she was admitted to one of the wards of the hospital. On admission the temperature was 102·8°, pulse 112, and respirations 28. The cough appeared to be somewhat looser, and a certain amount of mucoid expectoration was brought up.

Physical examination.—We are indebted to Dr. W. J. Fenton for the account of this examination, which was completely negative, except for the presence of an occasional rhonchus at the bases of the lungs. It was thought that the condition was probably one of influenza, of which there had been two or three cases amongst the nursing staff at that time.

CHART 1.



Showing the temperature (T.) curve as a continuous line and the pulse (P.) curve as an intermittent line.

During the next few days the temperature rose gradually, with marked morning remissions of 2° or 3° F., till by the 6th day of disease it had reached 103·4°; the pulse, on the other hand, gradually decreased in frequency till on the same day it was only 86; the respirations similarly decreased to 22 per minute. The cough had become looser and the expectoration, which was now more profuse, was mucopurulent in nature and sometimes tinged with blood; examination of the sputum for tubercle bacilli was negative. On auscultation of the lungs at this stage râles were heard at both bases, while scattered over the left base a large number of moist sounds were audible, which were taken to be evidence of patches of broncho-pneumonia. No dullness on percussion was demonstrable. During the first week the patient's appetite was fairly good, and she was able to take a semi-liquid diet without experiencing any discomfort. An expectorant mixture was given three times a day, together with inhalatio tereben. co.

The condition of the patient then became somewhat graver. The temperature oscillated between 101° F. in the morning and 104° in the evening, the pulse varied between 80 and 100, while the respirations rose to about 46. The facies of the patient, which had at first been bright and intelligent, assumed a dull, heavy, listless, apathetic appearance; the tongue was dry and heavily coated with fur; the lips were cracked and covered with sordes; at night there was low muttering delirium with purposeless movements of the fingers. No abdominal pain was complained of, the bowels were constipated and had to be relieved by enemata, and no enlargement of the spleen could be made out.

First agglutination test.—On Sept. 30th, the 12th day of illness, it was thought advisable to test the patient's serum for agglutinins to the enteric group. Accordingly, it was put up against *B. typhosus*, *B. paratyphosus A*, *B. paratyphosus B*, two strains of *B. paratyphosus C*, eight strains of *B. suipestifer*, and *B. enteritidis* of Gaertner. It failed to agglutinate any of them in a dilution greater than 1-20, with the exception of *B. enteritidis*, which was agglutinated up to 1-160. The technique used for this and for subsequent agglutination experiments was a Dreyer's technique, modified only in that standardised agglutinable cultures were not employed, the tubes being incubated in a water-bath for two hours at 55° C, and read a quarter of an hour later.

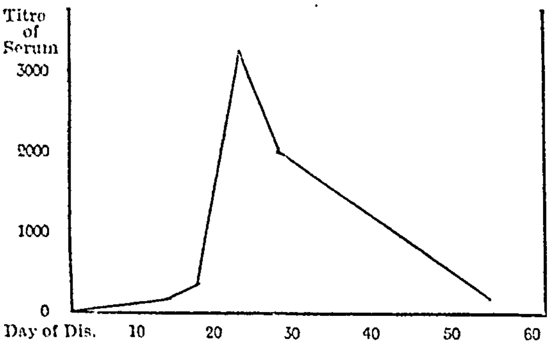
First Leucocyte count.—On the same day a differential white blood cell count gave the following figures:—

Total white blood corpuscles	11,062 per c.mm.
Polymorphonuclear leucocytes ...	88 per cent.
Small lymphocytes	9 ,,
Large lymphocytes	1 ,,
Eosinophiles	1 ,,
Basophiles	Nil.
Large hyalines	1 per cent.

On the same day a blood culture was also performed, but proved negative. On the 12th day the temperature began to fall, dropping to 99·4° while the pulse remained at 86, and the respirations decreased to 36 per minute. Simultaneously the appearance of the patient became brighter, the face lost its dull expression, and the tongue began to clear.

Second agglutination test.—On the 16th day of disease, when the patient was sitting propped up in bed, but still feeling very weak, the serum was tested again, and it was found that the titre to *B. enteritidis* had risen to 1-320. On the 14th day examination of the fæces and the urine for organisms of the enteric group was undertaken, the result being negative. The fæces were examined on five occasions during the rest of the time the patient was in hospital, but apart from the presence of *B. pyocyaneus* no non-lactose fermenters were isolated. The reason for not examining them every day was firstly, because the patient did not pass a motion every day; and secondly, because there was some misunderstanding over the collection of the specimens, leading to the failure of their transmission to the laboratory.

CHART 2.



Showing the agglutination curve of the patient.

By the 14th day the temperature had dropped to normal, but remained swinging between 97° and 99° for the next ten days, when it finally became stable on the 25th day after the commencement of the illness. The pulse ranged between 68 and 84, while the respirations dropped to 20-24 per minute. Convalescence was extremely rapid, the patient by the end of the third week being able to sit up in bed, carry on an animated conversation, and take light solid articles of food.

Third agglutination test.—On Oct. 10th, the 22nd day of illness, the titre of the serum for *B. enteritidis* had risen to 1-3200.

Second leucocyte count.—Three days later a second count was performed, and showed:—

Total white blood corpuscles	8100 per c.cm.
Polymorphonuclear leucocytes	72 per cent.
Small lymphocytes	22 ,,
Large lymphocytes	1 ,,
Eosinophiles	3 ,,
Basophiles	1 ,,
Large hyalines	1 ,,

Fourth agglutination test.—On the 27th day of disease the titre of the patient's serum to *B. enteritidis* had fallen to 1-2000.

The patient got up on the 25th day for a short time, and was feeling so well that she was allowed to leave hospital on Oct. 15th, 27 days from the commencement of the attack. She was away for three weeks on the south coast. During that time she felt very weak, and suffered from occasional attacks of vomiting, coming on in the evening after exercise. There was no diarrhœa and the appetite was good. The patient bled herself on Nov. 2nd, but unfortunately the blood was delayed in transit, so that by the time it reached the laboratory it was in a state unfit for examination.

Fifth agglutination test.—On her return she was bled again, and her serum now agglutinated *B. enteritidis* only in a dilution of 1-160. Chart 2 shows the agglutination curve.

Diagnosis.

Making a résumé of the chief features of the case we have, then, (1) a fever lasting altogether 24 days and running a course simulating closely that of typhoid; (2) a very definite lowering of the pulse-temperature ratio, particularly noticeable when the pyrexia was at its height; (3) a moderate degree of toxæmia during the second week; (4) absence of a rash; and (5) no evidence of enlargement of the spleen. We do not consider the absence of the rash to be of great importance, as its presence is by no means constant, especially in cases of paratyphoid infection, while in connexion with the spleen, as a physical examination of the patient appears only to have been made infrequently, owing to her weak condition and the desire to disturb her as little as possible, and as it is recognised that the spleen may only be palpable for one or two days during the whole course of typhoid fever, we feel that it is impossible to exclude enlargement of this organ. Further, we can find no evidence to show that either a rash or enlargement of the spleen are at all common accompaniments of infection with the *B. enteritidis* of Gaertner. Certainly, in reviewing the literature of food-poisoning, one cannot help but be struck by the rarity with which these two symptoms are encountered.

A blood culture taken on the 12th day of disease was negative, and this, again, is a point on which too much stress cannot be laid, as by this time agglutinins had appeared in the blood, and as it seems possible that these may lead to the clumping of the bacilli in vivo and their subsequent removal from the blood by filtration in such organs as the liver, spleen, and kidneys, a positive result is hardly to be expected at this stage of the disease; in support of this we think we are justified in saying that the majority of pathologists will agree that the chances of obtaining a positive culture from the blood diminish every day after the end of the first week of illness.

The examination of the fæces and urine was likewise not undertaken till comparatively late in the disease—in fact, till the very day on which the temperature began to fall—so that here again negative findings are not of any great value. On the other hand, the characteristic agglutination curve, rising rapidly during the third week, falling sharply with the complete establishment of convalescence, and then coming down more slowly and remaining well above normal for at least seven weeks is a point which we consider to be of the greatest importance in the diagnosis of the disease. We realise, however, the incompleteness of the evidence necessary for the complete establishment of the nature of the case, and only regret that, as laboratory examination was not undertaken till the 12th day of illness, more extensive investigations were unable to be carried out.

Suggested Interpretations of the Case.

The following hypotheses suggest themselves as interpretations of the findings of the case:—

(1) The agglutination curve, though perfectly distinct, may have been in the nature of a pure freak—that is to say, that agglutinins to the *B. enteritidis* of Gaertner may be present in the serum of an individual (normal or diseased) who is not suffering from an infection with this organism. In this connexion we have been unable to find in the literature any account of an examination made with the object of estimating the normal agglutinin titre of human sera to *B. enteritidis*, such as has been carried out so fully in the case of *B. typhosus* and *B. dysenteriæ*, Flexner, and it is therefore impossible to exclude the fact that in certain individuals, under certain circumstances other than infection with the Gaertner bacillus, agglutinins for this organism may be present. But considering the number of agglutination tests which must have been performed against *B. enteritidis* in relation to the food-poisoning outbreaks, it would seem improbable that, if this hypothesis were true, it would not have been verified previously. It may be objected that the emulsion used for agglutination in this particular case was at fault. With the exception of the last test on the 53rd day after the commencement of the illness the same emulsion was employed throughout. The organism used was *B. enteritidis* of Gaertner, obtained from the Lister Institute, being

one of the strains with which Bainbridge worked in 1911 during his classification of the Gaertner group; it was grown in broth for 24 hours at 37° C., was then heated at 55° C. for one hour, and formalin added subsequently to the extent of 1 per cent. This emulsion was being used at the time very extensively by one of us (G. S. W.) while working out the relation of some organisms of the paratyphoid group, and though it was tested against a large number of sera, both rabbit and human, no instance of non-specific agglutination was encountered. Moreover, neither during the past 18 months, in which an extensive series of agglutination tests have been used with this strain, nor during the past few weeks in which it has been employed almost daily, have any anomalous cross-agglutinations been met with. Finally, both the saline and the normal rabbit serum controls, which were put up with each test, have proved consistently negative.

(2) The clumping of *B. enteritidis* may possibly have been due to heterologous agglutination, secondary to infection of the patient with an organism having an antigenic constitution similar to that of the Gaertner bacillus. As, however, no less than 18 other strains of the paratyphoid-Gaertner-suipestifer group were tested against the serum with negative results it is improbable that the infecting organism could have belonged to this group. In that case it must have been some entirely different bacterium, the serological reactions to which have not been worked out. However fantastic this may seem, we would recall the case of the Weil-Felix reaction in typhus fever, in which an apparently non-pathogenic proteus bacillus is agglutinated by the serum of a patient infected with an organism of undetermined nature. It would be unwise, however, to press this analogy too closely, as we remain completely in the dark as to its exact nature.

(3) The patient may have been previously infected with the *B. enteritidis*, and agglutinins against this organism formed in her blood. The occurrence of a pyrexial wave may then have stimulated the fresh production of these agglutinins, with the result that a distinct agglutination curve was produced. Garrow,[8] in a recent paper, has invoked this hypothesis, based upon a certain amount of experimental evidence, to explain the rise in agglutinin titre to organisms of the typhoid and paratyphoid groups which has been found to occur in undoubted cases of malaria and trench fever, the patients having previously received one or more injections of T.A.B. vaccine. Against this there are four salient facts: (*a*) there is no evidence of previous infection with the Gaertner bacillus, and a critical examination of the patient's past history failed to reveal any facts in favour of this possibility; (*b*) the patient had never had an injection of T.A.B. or other vaccine, so that group agglutination resulting from such an injection can definitely be rejected even if one were prepared to admit that the injection of such a vaccine could lead to the formation of agglutinins acting on the *B. enteritidis*; (*c*) the course of the disease was highly suggestive of enteric fever, and since, therefore, the clinical and bacteriological findings agreed closely with each other, the objection that the diagnosis was made on laboratory investigation alone cannot be maintained; and (*d*) there is no definite evidence in human beings to prove that a pyrexia of non-enteric nature is able to give rise in a patient who has previously suffered from an enteric infection or who has received a prophylactic dose of T.A.B. vaccine to an agglutination curve similar to that which results as a reaction to infection with an organism of the enteric group.

(4) The case was one of infection with the *B. enteritidis* of Gaertner, in favour of which is the definite agglutination curve, which has been found to be so characteristic of infections with organisms of the enteric group. We feel that in favour of this hypothesis is the vast amount of work which has been performed on this subject by Dreyer and the Oxford School—work which has both been confirmed and amplified by Topley, Platts, and Imrie[9] while investigating cases of undiagnosed pyrexia invalided from the Western front during the late war.

Method of Infection.

Accepting the diagnosis of Gaertner infection as correct, the question naturally arises as to how the patient became infected. At the time there was no case of enteric fever in the hospital, with the exception of one man who was suffering from a prolonged illness, shown to be due to infection with an organism of the Aertrycke mutton type. As the serum of this patient, however, showed no agglutinins to the *B. enteritidis*, it is quite improbable that there was any connexion between the two cases. Miss X had the majority of her meals in the residents' quarters, but a few had been taken outside. When she was first interrogated at the end of the second week of her illness she was unable to give any clear account of the food she had partaken of during the few days preceding the commencement of her symptoms, and therefore an examination of such food was out of the question. Nor could she remember having eaten any article of diet which had appeared to her to be in any way suspicious. A friend of hers—also resident in the hospital—who stated that she had had all her meals during the previous week with Miss X, admitted to having experienced a certain degree of malaise on the Sunday morning on which Miss X first felt ill, which continued for a few days before passing off, but as no definite symptoms were noticed, it would be unwise to regard this as more than a coincidence. None of the other resident staff nor any of the patients or nurses in hospital at the time manifested any evidence of food-poisoning, so that it would appear that the infection probably occurred outside the hospital.

If, however, infection had occurred through consumption of food in the hospital, four possible sources suggest themselves: (1) The food, when introduced into the hospital, may have been infected. Several examples of milk and meat containing the *B. enteritidis* of Gaertner have been reported; Zwick,[10] for instance, isolated a Gaertner bacillus from the milk of two cows suffering from acute mastitis, while Mohler and Buckley[11] recovered Gaertner bacilli from the fæces of a number of cows suffering from an enzoötic of enteritis, while Savage's extensive work on the subject has shown that infection of cows with the *B. enteritidis* is not altogether uncommon. However, this possibility is negatived by the fact that no symptoms of food-poisoning occurred in the other inmates of the hospital, as would almost certainly have happened if this had been true. (2) The cook, who prepared the food for residents, nurses, and patients, may have been a carrier of *B. enteritidis*, and thus have infected the food. If this were so, one would have expected other examples of food-poisoning to have occurred, which, as already mentioned, was not the case. Examination of this cook and her co-workers in the kitchen for evidence of infection was found to be impracticable, and as it seemed to be a most unlikely source, no further attention was devoted to this possibility. (3) The housemaid who carved the meat and served the food to the residents may have been a carrier, and may have infected one or two portions of food while engaged in its distribution; this might account for only one person being affected with symptoms of food-poisoning. To test this hypothesis the serum of the housemaid was taken and put up against the *B. enteritidis* of Gaertner and against one of the suipestifer group, but was found to be completely negative. (4) The food consumed by the patient may have received a chance infection from a fly, which had been in contact with Gaertner-containing material. By this means it is possible that only a small amount of food might have been contaminated—probably after it had been cooked—with the result that risk of infection would have been incurred by only one or two individuals, and as the infectivity of the *B. enteritidis* does not appear to be of a very high degree, unless it has multiplied in the food so as to be present in relatively large numbers or exists combined with a considerable amount of preformed toxin, it is quite reasonable to suppose that only such persons as presented a general lowering of resistance would be likely to succumb to the effects of invasion by the organism. In the very nature of the case it was impossible to prove the truth of such a hypothesis.

Previous Medical History of the Patient.

Having failed to find any definite evidence of infection, the past history of the patient was closely investigated, and the following facts elucidated. Two years ago she had suffered from a severe attack of influenza when at Sheffield, at the time when this disease was manifesting a pandemic spread, during which she had run a high temperature for two to three weeks, accompanied by severe vomiting and hæmorrhages from the nose and mouth. Altogether she was in bed for five weeks, and had felt somewhat weak for a year afterwards. Last Christmas, when away in the country staying with her sister, who had returned from India after a prolonged attack of sprue, she had had another attack of fever, likewise diagnosed as influenza, starting with a high temperature and vomiting, which persisted for three or four days. A week after her recovery she was attacked with abdominal pain followed by diarrhœa with the passage of blood and mucus, which continued for nearly ten days before finally passing off; during this time the patient continued up and about, though feeling very weak. Since then she has had a slight degree of debility, and has been unable to take any violent exercise. It was thought possible that the patient might have been infected with an organism of the dysentery group from her sister, though the latter apparently never had anything to do with the preparation of the food in the house. To test this the serum of the patient was put up on Oct. 4th, the 16th day of her illness, against emulsions of *B. dysenteriæ*, Flexner, *V*, *W*, *X*, *Y*, *Z*, and against one of *B. dysenteriæ*, Shiga, but the agglutinations were all negative in a dilution of 1–50.

There yet remains the possibility that her sister may have been infected with the *B. enteritidis*, and from her Miss X had become infected with the resulting illness marked by abdominal pain and diarrhœa. Failing to rid herself entirely of the organism she had remained a carrier, and her recent illness might have been due to an exacerbation of the activity of this organism occurring while the patient was in a debilitated condition. Unfortunately, as her sister does not live in London it has not been possible as yet to procure a sample of her blood for examination, but if occasion offers this will certainly be done.

Summary.

(1) A case is reported of a patient suffering from pyrexia which simulated closely a typhoid course, but which was probably due to infection with the *B. enteritidis* of Gaertner. The case, moreover, was of a purely sporadic nature, and was unconnected with any coexisting outbreak of food-poisoning.

(2) It is suggested that it would be advisable in view of this case to test the sera of patients suffering from enteric-like infections against a more extended series of antigens than are commonly employed, in order to ascertain whether sporadic infections with organisms of the enteric group other than *B. typhosus*, *B. paratyphosus A*, and *B. paratyphosus B* are more than mere pathological entities.

It is with pleasure that we record our gratitude first of all to Dr. Fenton for his kind permission in allowing us to publish the case; secondly to Dr. W. W. C. Topley, director of the Institute of Pathology, Charing Cross Hospital Medical School, for giving us advice from his extensive bacteriological experience of cases of enteric infections; and, thirdly, to the clinical staff of the hospital for the help and facilities they afforded us.

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PSEUDO-COXALGIA:

OSTEO-CHONDRITIS DEFORMANS JUVENILIS.

BY H. A. T. FAIRBANK, D.S.O., O.B.E., M.S. LOND., F.R.C.S. ENG.,

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So little attention has been paid to the above affection in this country, except by orthopædic surgeons, that a brief description of what is known of the disease may be of interest, and may result in greater numbers of these cases being recognised and recorded. Since the appearance some ten years ago of the original papers dealing with the subject, by A. T. Legg in America, J. Calvé in France, and Perthes in Germany, little has been written on the subject in this country. Cases have been reported by R. C. Elmslie, D. P. D. Wilkie, H. H. Platt, E. M. Little, and the writer, while Mr. Muirhead Little published a short paper on this subject in the *Clinical Journal* in 1915. An exhaustive paper by Legg on the facts and theories to date may be found in *Surgery, Gynæcology, and Obstetrics* of the following year. The chief importance in recognising this condition lies in the difference between its prognosis and that of tuberculous hip disease, for which it is not uncommonly mistaken. Juvenile osteo-chondritis, which is by no means rare, affects children from 3½ to about 12 years of age, and males more commonly than females; it is usually unilateral, but may be bilateral.

Description of a Typical Case.

A healthy-looking child of, say, 6 years of age, of an active disposition and fond of games, begins to limp on one leg; perhaps there is a history of some antecedent fall on the hip, but not such as would raise a suspicion of any serious injury; the limp persists, and is accompanied by little or no pain. Eventually advice is sought, and examination reveals the following facts.

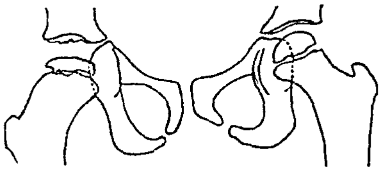

FIG. 1.—Tracing of skiagram of unilateral case of pseudo-coxalgia. Boy aged 5 years.

The position of the limb at rest is usually normal. There is slight wasting of the thigh and buttock, with resulting apparent prominence of the trochanter; some thickening of the neck of the femur, particularly on the inner side, may occasionally be felt; abduction of the hip is markedly limited or obliterated, while flexion remains free, almost, if not quite, to the normal limit; internal rotation and extension may be somewhat limited; at this stage there is no shortening, and rarely does the shortening amount to much. Trendelenburg's sign is usually positive. There is no pain on jarring the trochanter or heel. Skiagraphic examination reveals characteristic appearances; the epiphysis of the head of the femur is flattened from above downwards, irregular in outline and density, or even broken up into fragments; the epiphyseal line is less distinct than it should be, as if invaded by calcified tissue from both epiphysis and neck; the juxta-epiphyseal region of the neck is irregular and fluffy, and there may be clear semi-transparent areas adjacent to the epiphyseal line, more commonly at the upper angle of the neck; on the lower side the neck is thickened; the joint space is not diminished, showing that the cartilaginous head is little, if at all, distorted, but that the changes are

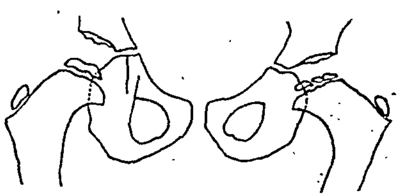

FIG. 2.—Tracing of skiagram of bilateral case of pseudo-coxalgia. Boy aged 6½ years. (Seen with Mr. O. Addison.)

rather in the ossific centre inside it; the pelvis may be asymmetrical, the affected side being slightly the smaller of the two; the acetabulum may show changes in the way of fluffiness and want of definition.

Progress, Treatment, and Ætiology.

The progress of the case is always towards recovery. Abscess formation and other complications seen in true hip disease never occur. Most writers agree in stating that treatment, or entire absence of treatment, has little, if any, effect on the ultimate result. Radiograms taken at intervals for one, two, or even three years show that after a time the ossification of the epiphysis returns to the normal, until at last the hemispherical shape of the ossific centre is restored. Finally, there may be some mushrooming of the head of the femur, so that the appearance would justify the diagnosis of one form of juvenile osteo-arthritis. The limp, usually slow in disappearing, is eventually lost. Spasm of muscles may occasionally be a feature in the early stages, when the diagnosis may be difficult. As a rule the diagnosis is easy.

Although treatment is said to have no effect, it is wiser to order a walking calliper splint to take the weight off the femur, while cases with an unusual amount of pain or spasm must be treated with complete rest and extension for a time. Muirhead Little advises abduction under anæsthesia and fixation in plaster, so that changes in the shape of the head that might limit abduction may be avoided.

As to the nature of the affection nothing definite is known. The theory which receives the greatest amount of support is that trauma produces damage to the blood-supply of the head of the femur, and that the changes in the ossification of the bone are secondary to this damage. Developmental error—as a predisposing if not the sole cause—local infection, and rickets have all been suggested in explanation of the appearances. Tubercle and syphilis can undoubtedly be ruled out of court. Suffice it to say that there are difficulties in the way of accepting the traumatic theory, but the discussion of this subject must be left for a subsequent publication elsewhere. Similar radiographic changes in an epiphysis are met with in other regions of the body.

A NOTE ON

SPIROCHÆTES IN THE ÆTIOLOGY OF CERTAIN PARALYSES.

BY G. SCHUSTER, M.D.,

ASSISTANT PROFESSOR AT THE PSYCHOLOGICAL AND NEUROLOGICAL CLINIC OF THE ROYAL HUNGARIAN UNIVERSITY OF BUDAPEST.

AT the suggestion of Professor E. E. Moravcsik, M.D., I started research in the parasitology and pathological tissues of general paralysis of the insane, at the Psychological and Neurological Clinic of the Royal Hungarian University of Budapest, soon after the publication of Noguchi's researches. The outbreak of war prevented me continuing this work, but I was able to resume it at the end of 1918. I include in this short contribution my more important observations on the presence of spirochætes in the central nervous system, before publishing a longer description of the cases treated in this clinic in view of their parasitological, clinical, and therapeutical applications. I also take the opportunity of reporting an interesting diagnosis in a case of disseminated sclerosis.

Levaditi, Marie, Bunkowsky, Moore before Jahnel, later Hauptmann have shown the presence of spirochætes in large quantities in the cortex of patients suffering from G.P.I. with paroxysms; they regarded the paroxysms as due to mechanical and toxic effects of the sudden increase of spirochætes. During my researches I have noticed that the spirochætes are situated chiefly in the lower strata of the cortex, sometimes in such quantity as to show almost a pure culture. This was noticed not only in cases of G.P.I. with paroxysms, but also in those without. In eight cases of G.P.I. the main colonies were in the boundary of the cortex and the medullary substance, and in the lowest strata of the cortex; this was so, not only when the spirochætes were localised, but when diffused over the whole area of the cortex. It is difficult to say without further research whether the spirochætes are permanently localised in these strata, because their dissemination is prevented by some means, or because the circulatory or microchemical environment is favourable. Some observations convinced me of the pathological and clinical importance of the boundary of the cortex and the medullary substance. In certain cases of disseminated sclerosis the sclerotic spots are mostly on this boundary. I found, as did Siemerling, in an acute and in a chronic case that the disintegration of the medullary sheath was situated underneath the cortex and in the lower boundary of the cortex. In cases of diffuse sclerosis and peraxial sclerosis (Rossolimo, Angyan, Schilder) the spots of disintegration of the medullary sheath were immediately underneath the cortex, also overspreading some areas of the cortex; disintegration of the medullary sheath in the cases of G.P.I. (which were similar to those in disseminated sclerosis) was also to be seen on the boundary of the cortex and medulla, as was shown by Siemerling, Spielmeyer, Borda, and Fischer. These observations show that there are certain places in the central nervous system which have microchemical properties of importance in the ætiology of G.P.I.; in regard to the parasitological aspect the lower strata of the cortex seems to have microchemical affinity with the spirochætes.

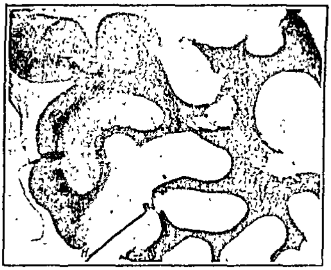

FIG. 1.—Heterotopia in disseminated sclerosis.

The spirochætes appear in largest quantity in this place, and the so-called degenerative forms are mostly in the upper strata of the cortex. In an interesting case of disseminated sclerosis I found fine spirochætes diffusely spread in the upper strata of the cortex. (Figs. 1 and 2.) This diagnosis shows an affinity between disseminated sclerosis and G.P.I. in regard to ætiology; the gold sol reaction of the cerebrospinal fluid is similar in disseminated sclerosis, in G.P.I., and in cerebral syphilis; it is probable that the spirochætes found by Kuhn and Steiner are a similar kind to the *S. pallida*. It was impossible to show spirochætes in the brain of patients suffering from G.P.I. in those cases when 10 per cent. formalin was injected into the brain through the carotids two hours after death. I thought I should be able in this way to fix the spirochætes thoroughly and instantaneously around the veins, but either the formalin stream carried off the spirochætes or they did not happen to be present in that part of the tissue examined. If, indeed, the formalin stream carries off the spirochætes this would be a favourable fact from the therapeutic point of view. We cannot yet judge the results of the carotid injections made by Knauer. It is

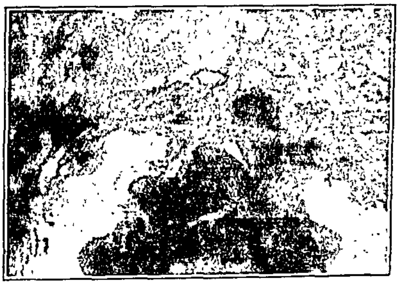

FIG. 2.—Spirochætes in the cortex of a case of disseminated sclerosis.

obvious, however, that one could always discover even dispersed organisms if the central nervous system had not previously been hardened by injection.

Summary.

1. Large quantities of spirochætes are to be found in the central nervous system in cases of G.P.I., even when it runs a simple course without paroxysm. 2. The main colonies of the spirochætes settle in the lowest strata of the cortex, and while increasing in number there they may spread over other areas of the cortex; whilst alterations of the tissue of the cortex may be extensive the alterations of the medullary sheath are most obvious just on the edge of the cortex and medullary sheath. 3. I was able to show fine spirochætes in the lower layers of the cortex in a case of disseminated sclerosis; there seems to be some connexion between disseminated sclerosis and alterations of medullary sheath, because in both cases the result caused by spirochætes is plexiform disintegration of the medullary sheath, of which the site of election is the boundary of the corticular and medullary substance. 4. Formalin injection prevents demonstration of spirochætes in the central nervous system.

I take the opportunity to express my thanks to my chief, Professor Moravcsik, for his kind suggestions and advice.

OBSERVATIONS ON THE USE OF
CITRATED MEDIA.

BY H. C. BROWN, C.I.E., M.B., B.CH. CAMB.,
MAJOR, I.M.S.

(*From the Wellcome Bureau of Scientific Research.*)

CITRATE of soda has for many years been used when collecting samples of blood for cultural tests; the admixture of the blood of an animal with a solution of sodium citrate is also employed in the preparation of blood media. It is naturally important to be certain that the addition of sodium citrate has no restraining influence on the bacteria to be cultivated. Harvey[1] states that the addition of sodium citrate to a nutrient broth tends to inhibit the growth of *B. typhosus*. In a special report[2] of the Medical Research Council it is stated that, as the addition of citrate of soda to human blood tends to prevent the growth of many bacteria, this procedure should not be employed. Rosenthal[3] has used citrate of soda instead of bile when studying the cultural characteristics of the enterococcus.

Addition of Citrate Apparently Favourable to Bacterial Growth.

Whilst working with this organism in a lemco-peptone broth to which 1 per cent. of sodium citrate had been added, I was struck with the great increase in growth compared with that in the uncitrated broth. The citrate used throughout these observations was the ordinary trisodium citrate having a faintly alkaline reaction.

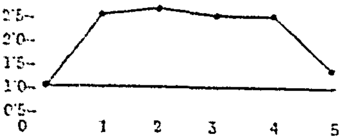

CHART 1.—Cholera, 24 hours. Increase of growth in citrated broth.

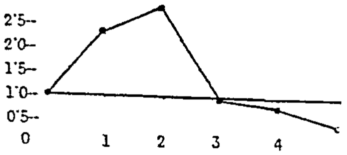

CHART 2.—*B. cloacæ*, 24 hours. Showing maximum growth in 2% citrated lemco broth, P_h 7·6.

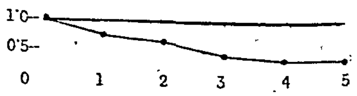

CHART 3.—*B. typhosus*, 24 hours. Showing inhibition of growth.

NOTE.—The horizontal line in each chart shows the yield of organisms in the control uncitrated broth. The figures 0 to 5 under each chart indicate the percentage of sodium citrate.

Numerous other organisms have been studied in this way, and it was found that although citrated broth exerted a distinctly inhibitory action on the growth of the majority of organisms, certain other organisms produced a considerably heavier growth in citrated than in the control broth. A list of the organisms in which the growth is inhibited or enhanced in citrated broth is shown in the Appendix. It might naturally be assumed that the addition of citrate of soda to a medium had so altered the reaction of the medium as to make it more favourable to the growth of certain organisms.

Method of Investigation.

In order to investigate whether this surmise was correct, a batch of broth was taken and divided into two parts, one being kept as the control, the other portions of the remainder being citrated by the addition of 1, 2, 3, 4, and 5 per cent. citrate of soda. The samples were tubed in 10 c.cm. quantities. The P_h of the original broth was found to be 7·3, and that of each of the citrated samples 7·4; after autoclaving for 20 minutes at 115° C. the P_h of the uncitrated was 7·4, and each of the samples of citrated broth was also 7·4. Tubes, each containing 10 c.cm., having been sown with one loopful of a 48 hours' culture of cholera, were incubated at 37° C., and although the initial reaction of the medium was the same in each case, the growth in the citrated tubes was considerably heavier than in the control broth. In each case smear preparations were made from the cultures and stained by Gram's method in order to exclude the possibility of any error due to contamination. (See Charts 1 to 3.)

Determination of Change in Citrate of Soda.

The next point to be determined is whether any change has taken place in the citrate of soda by the growth of such organisms as cholera and *B. cloacæ*. This is best elucidated by the application of the following simple chemical test. If a 10 c.cm. sample of 1 per cent. citrated broth is taken and an equal volume of a saturated aqueous solution of lead acetate is added, a flocculent white precipitate is produced, which gradually settles; after 48 hours the precipitate occupies a height of approximately one-quarter of the total height of the fluid in the tube, whereas in the case of a 48 hours' culture of cholera, in the same medium, the precipitate only occupies a height of approximately one-eighteenth of the total height of fluid. Presumably what has happened is that the sodium citrate, in the case of the V. cholera culture, has broken up, and consequently only a partial precipitation takes place on the addition of the lead acetate. This effect may be shown rapidly by centrifuging the tubes.

When an organism such as *B. coli communis* is grown in 1 per cent. citrated broth for 48 hours and is treated in this way, the precipitate is as abundant as in the tube containing sterile citrated broth. This is well shown in Fig. B, and when this is compared with Fig. A we see that a heavy precipitate on the addition of lead acetate is produced in the case of those organisms of which the growth is inhibited by the addition of citrate of soda. The addition of lead acetate to a citrated broth culture of an organism provides further evidence of the differential peculiarities of certain organisms when grown on citrated media.

Another point of interest with regard to citrated fluid media is that certain organisms are capable of producing gas when grown in this medium, without the addition of any carbohydrate, for 72 hours or more. So far I have only been able to demonstrate gas formation with *B. pneumoniæ*, Friedländer, *B. cloacæ*, and *B. paratyphosus C.*, and in the case of these organisms no gas was produced in the control broth which contained no citrate.

Growth in Solid Media.

So far the effect of growing organisms in citrated fluid media has been considered, but when solid media are citrated in a similar manner the same holds good. If two samples of nutrient agar are taken, and one portion is citrated to 1 per cent., and then both samples are brought to the same P_h, it will be found that if equal amounts of a broth culture are thoroughly spread over each agar slope the yield of cholera after 24 hours' incubation per square centimetre of solid medium is considerably greater in the case of the citrated than in the control medium.

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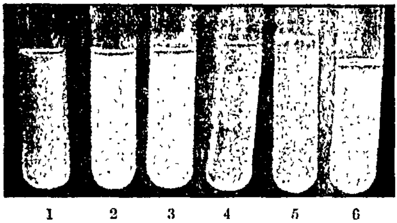
[1] Indian Journal of Medical Research, 1919, vol. vii., p. 360.
[2] Medical Research Council: Special Report Series No. 51, p. 31.
[3] C. R. Soc. Biol., 1917, vol. lxxx., p. 856.

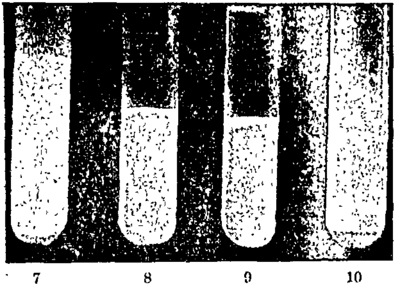
When one comes to study the effect of growing cholera and other cholera vibrios on citrated media the difference between the growth of cholera and those of the vibrios of Metchnikoff and Finkler Prior is very striking, for the growth of the two latter is markedly inhibited by citrate, whereas that of cholera, as already mentioned, is greatly enhanced. Other organisms, however, such as the El Tor vibrio, and paracholera A and B (Mackie and Storer), also vibrios K, Belah, and Ferrest (Mackie) all show a greatly increased growth in citrated broth, and cannot therefore be distinguished in this way from the true cholera vibrio. This fact is specially interesting in that these organisms are more closely allied to the true cholera vibrio than are the vibrios of Metchnikoff and Finkler Prior. In the case of the paratyphoid bacilli I have found that the growth of *B. paratyphosus A* is inhibited in citrated media, whereas that of three strains of *B. paratyphosus B* and also *B. paratyphosus C* is enhanced. The dissociation of the citrate in the case of *B. paratyphosus B* and *C* is clearly demonstrated on the addition of lead acetate, and forms a means of discriminating between *B. paratyphosus A* on the one hand and *B* and *C* on the other, for in the case of the two latter organisms the amount of the lead acetate is considerably less than in the case of *B. paratyphosus A*.

FIG. A.



1. Enterococcus, ordinary broth. 2. Enterococcus, citrated broth. 3. Bacillus coli, ordinary broth. 4. Bacillus coli, citrated broth. 5. Cholera, ordinary broth. 6. Cholera, citrated broth.

FIG. B.



7. Enterococcus, citrated broth. 8. Bacillus coli, citrated broth. 9. Control, citrated broth. 10. Cholera, citrated broth.

Gas formation in a citrated broth after 48 hours in the case of *B. paratyphosus C* appears clearly to differentiate this organism from *B. paratyphosus A* and *B*. Similarly, certain types of intestinal streptococci can be differentiated from others by their behaviour in citrated media, and I have found the test useful in the case of certain unclassified organisms isolated from rats.

The majority of these observations have been conducted with a 1 per cent. citrated broth, but it is probable that a broth citrated to 2 per cent. would have given still more striking results. As regards the length of time of incubation necessary to secure the best results, I am of opinion that 48 hours is probably the optimum, as I have noticed on more than one occasion that when the tubes are incubated for shorter intervals there is apparently, first of all, a slight retardation of the growth in the citrated broth before the enhancement occurs. The terminal hydrogen-ion concentration of citrated and uncitrated cultures may possibly throw further light on the matter, but so far I have not investigated this point. No apparent dissociation of citrate takes place when citrated media are subjected on more than one occasion to high pressure sterilisation; it is thus a medium easy to prepare.

Conclusions.

1. The effect of the addition of citrate of soda to media is that, whilst it inhibits the growth of some organisms, it produces an increase in the growth of other organisms.
2. This increase in growth is not caused by any alteration in the reaction of the medium due to the addition of citrate.
3. The dissociation of the sodium citrate by certain organisms can be well demonstrated by the addition of lead acetate to a 48 hours' culture.
4. Certain organisms are capable of producing gas in simple citrate fluid media.
5. Citrated medium forms an easy means of differentiating the true cholera vibrio from certain other vibrios, also *B. paratyphosus A* from *B. paratyphosus B* and *C*, and certain types of *Streptococcus fæcalis* from others.
6. The addition of citrate of soda to nutrient media should prove useful in the large scale production of cholera vaccine, provided that the antigenic power of the vaccine is not in any way affected.
7. Citrated media can be autoclaved on more than one occasion without affecting their cultural characteristics.

I am much indebted to the Curator of the National Collection of Type Cultures at the Lister Institute for his courtesy in supplying me with the majority of the cultures used in these preliminary observations, also to Captain S. R. Douglas and Dr. White Robertson for the strains of *Streptococcus fæcalis*.

Appendix.

Organisms showing an increased growth in citrated media.

V. choleræ.
V. paracholeræ A, Mackie and Storer.
V. paracholeræ B, Mackie and Storer.
V. K., Mackie.
V. Forrest, Mackie.
V. Belah, Mackie.
V. El Tor.
B. lactis aerogenes.
B. pneumoniæ, Friedländer.
B. cloacæ.
Enterococcus, Tissier.
Enterococcus, De Freece.
Str. fæcalis, Stubbs.
Str. fæcalis, A. E. W.
Str. fæcalis, Forrest 1.
B. paratyphosus B.
  Type, Hirschfeld.
  Strain, *Para C.*
B. paratyphosus B.
  Type, Hirschfeld.
  Strain, XII. Hog Cholera.
B. paratyphosus B.
  Type, Hirschfeld.
  Strain, East Africa.
B. paratyphosus B.
  Type, Schottmüller.
  Strain, Schottmüller Bainbridge.

Organisms showing inhibition of growth in citrated media.

B. coli, Escherich.
B. typhosus.
B. paratyphosus A, strain Schottmüller.
V. Metchnikovi.
V. Finkler Prior.
B. dysenteriæ, Flexner.
B. dysenteriæ, Shiga.
B. Morgan No. 1.
Staphylococcus aureus.
Staphylococcus albus.
B. enteritidis, Gärtner.
B. prodigiosus.
B. proteus.
Meningococcus
Pneumococcus.
Streptococcus pyogenes.
B. subtilis.
B. pestis.
M. catarrhalis.
M. melitensis.
M. paramelitensis.

Note.—Since writing this paper I have found a reference to the work of Altobelli in the *Bulletin de l'Institut Pasteur*, 1915, Vol. XIII, p. 133, in which attention is drawn to the fact that certain organisms, more especially *B. paratyphosus B*, are capable of attacking malates, tartrates, and citrates. The original paper is not available, and in the above abstract no mention is made of the enhancement or inhibition of growth of certain organisms or of gas formation.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

WAR SECTION.

A MEETING of this section of the Royal Society of Medicine was held on Dec. 13th, 1920, with the President in the chair.

Lieutenant-Commander E. L. ATKINSON, D.S.O., R.N., read a paper on

Snow-blindness,

based on his experiences in the Antarctic, 1911–13, in the winter campaign in France in 1916 to 1917, and at the Northern Russian Front in 1919. He considered that from the nature of its causation two different sets of symptoms result. 1. Selective reflection of violet and ultra-violet rays from the sun at maximum altitude at midday. This is intensified by the excessive illumination, the light being 1¼, judged by actinometer time. The number of the rays striking the eye is increased owing to the countless ice-crystals forming a perfect distributing surface. He contrasted this effect, if the surface were a perfect reflecting surface when there would then be no change in the intensity of illumination with the change in altitude of the sun. Fifteen minutes of such a day will cause snow-blindness, the symptoms being photophobia, lacrymation, chemosis, with slight hyperæmia of the retina, and later small corneal ulcers. The symptoms come on rapidly, especially on entering a tent where a primus stove is burning. Recovery is the rule. 2. The second class is complicated by diplopia, probably due to excessive strain on the internal and external ocular muscles. With ice-crystals falling the light is so diffused that it comes from every point. There is thus no contrast, and the strain on the visual apparatus is continuous and exceptional. The light value by actinometer time in these days varies from 2 to 12. Photophobia, lacrymation, and chemosis are less and there is no retinal change, and the symptoms do not usually develop for 24 to 48 hours. Hemisine 1 in 1000 is painless and the most efficient remedy. Prevention is assured by efficient glasses, which will give good contrast and cut out the violet end of the spectrum. Both theory and experience indicate that red and dark amber glasses are the best. That altitude of the sun was a very important factor was shown whilst crossing the Beardmore glacier in the Antarctic summer when the sun was always above the horizon. When travelling by night no snow-blindness occurred, while when travelling by day nearly everyone became affected.

Discussion.

Mr. G. E. GASK said that his only experience of snow-blindness was amongst the Swiss Alps, where it occasionally proved a great inconvenience to mountain climbers. The symptoms were conjunctivitis, chemosis, and swelling of lids. There was no retinal blindness. Twenty years ago black glasses alone were used, but these were found to shut out too much light, so as to render crossing glaciers or difficult climbing impracticable. Now deep green or amber glasses were used. If glasses were not available a certain limited protection was afforded by darking the lids and face with burnt cork. Snow-blindness might occur during a snow-storm with complete absence of direct sunlight.

Mr. A. W. ORMOND did not consider that snow-blindness was entirely due to ultra-violet rays, as the cornea and lens stop all such rays from getting through to the retina. The results appear to be secondary to the effect on conjunctiva and cornea. Snow-blindness was probably commonest as the result of exposure in a haze. He suggested that Sir William Crookes's glasses were the most satisfactory.

Mr. J. H. FISHER considered that the superficial conditions of conjunctivitis and keratitis were undoubtedly produced by actinic rays, and that Crookes's No. 2 glasses would probably be more satisfactory than No. 1. A missionary amongst the Canadian Esquimaux had informed him that these people suffered greatly from snow-blindness, and asked his advice as to preventive measures. He had recommended rose-tinted glasses, which the Esquimaux should fit into leather goggles so as to exclude lateral light.

Colonel R. H. ELLIOT considered that the scotomata were due to light rays, and that it was most important to cut off lateral light.

SECTION OF ELECTRO-THERAPEUTICS.

AT a meeting of this Section of the Royal Society of Medicine on Dec. 17th, Mr. S. GILBERT SCOTT, the President, in the chair, Dr. REGINALD MORTON related his impressions gained during a recent visit to the Frauenklinik at Erlangen in connexion with a

System of X Ray Treatment of Uterine Carcinoma

evolved there under Professors L. Seitz and H. Wintz. Some years ago Dr. Wintz, in the effort to improve the results of surgical treatment for uterine carcinoma, experimented with radio-active materials, especially radium. This being too local in its action, he then proceeded to use the X rays in combination, with some improvement. The next step was the development of apparatus and X ray tubes capable of giving a more or less continuous output of rays of a penetration and intensity such as had never before been available for practical work. A specially designed coil working continuously at a normal sparking distance of 16 inches is used to excite the tubes. The latter are of the usual "gas" type, also specially constructed to work at this resistance of 16 inches of air. A very ingenious automatic regenerator keeps the vacuum constant within very narrow limits, and the anticathode is worked at the constant temperature of boiling water. A zinc filter is used having an absorption equivalent to 12 mm. of aluminium. Every tube is standardised and frequently re-calibrated so as to conform to one of the basic principles of the system—the use of a radiation as nearly constant as is humanly possible. Working under the standard conditions the unit skin dose—the amount normal skin will stand just short of injury—will be given in approximately 35 minutes, at the normal focal-skin distance of 23 c.cm. There will be reddening of the exposed patch in from 4 to 8 days and tanning in from 3 to 4 weeks, but no destruction of normal tissue. Taking this unit skin dose as 100, it has been found that a cancerous growth requires 110 per cent. of this to ensure its destruction. Sarcoma requires only 80 per cent. and tuberculous glands and joints respond very favourably to a 50 per cent. dose. A 90 per cent. dose applied to a cancerous growth paralyses it, so to speak, and causes it to shrink, but it is not certainly destroyed and may recur; but if only a 40 per cent. dose is given it acts as a strong stimulant, with perhaps rapid increase in size and possibly serious or even fatal results. This brings us to another of the fundamental principles of the system, that the full cancer dose must be given on the one day. Another important principle is that every case and every dose has to be considered individually—accurately calculated and accurately administered, necessitating full anatomical and topographical knowledge. In a case of uterine carcinoma, for instance, it is found that when the unit skin dose is given over the symphysis, as above described, only about 18 per cent. of this reaches the cervix, dispersion and absorption accounting for the loss of approximately 82 per cent. Consequently further doses are necessary, using six ports of entry for thin subjects and a seventh directed against the vulva for those with thick abdominal walls. Six weeks later one parametrium is attacked, the other being done after 14 weeks. Superficial carcinomata are treated with the tube placed from 70 cm. to 100 cm. from the surface, the exposure varying from 5 to 10 or 11 hours. This is necessary to get even irradiation, since we have but one port of entry under such circumstances; the application is to be repeated after six weeks. The supra-clavicular and axillary regions receive special exposures at the first sitting. Usually the patients are not disturbed during these long sittings and are encouraged to sleep. If there is any restlessness a dose of omnopon or other sedative is useful.

With regard to results, of 24 cases of uterine carcinoma treated by the X rays alone during the year 1918, 20 at the present moment are quite well and leading normal lives, being at least clinically cured and free from any sign of carcinoma, local or general. Approximately equal success has attended the treatment of mammary carcinoma. If there is a large mass of cancerous tissue it should be removed by operation first, but if small it may be attacked at once with very good prospects of success. 75 per cent. of the cases of mammary carcinoma treated in the year 1917 by the X rays and without preliminary operation are now clinically cured.

Dr. **LOUISA MARTINDALE** (Brighton) read a paper on the *Treatment of Uterine Fibroids by means of powerful* deep irradiation through suitable screens on the Fribourg method, a procedure that has been before the profession for several years, and one that gives good results.

Dr. H. G. **ADAMSON** (London) spoke of the use of the X rays in dermatology, making special reference to the treatment of ringworm and pruritus. He also laid stress on the necessity for accuracy in dosage, advocating the method of measurement elaborated by Sabouraud and Noire as being the most reliable for the treatment of skin diseases at least.

The **PRESIDENT**, Dr. **EARDLEY HOLLAND** (London), Dr. J. R. **RIDDELL** (Glasgow), and Dr. R. W. A. **SALMOND** (London) also took part in the discussion.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

AN ordinary meeting of this society was held on Dec. 17th, 1920, at 1, Upper Montague-street, W.C., Dr. F. E. **FREMANTLE**, M.P., the President, being in the chair, when Professor H. R. **KENWOOD** delivered a presidential address on

The Work of the Navy, Army, and R.A.F. Group within the Society.

He pointed out that the health services of the fighting forces and of the civil community learnt much from each other during the war; more particularly was the civilian community the richer by the experience, and one object of the Group should be to assist in the utilisation of this knowledge.

The Great War, he continued, witnessed an unprecedentedly full application of the ancient axiom that "prevention is better than cure." There was no axiom more generally accepted and more seldom practised by the individual; and so, foremost in our programme must be the endeavour to secure the goodwill and intelligent coöperation of the rank and file—be they fighters or workers—in the prevention of disease. It is impossible to overstate the value of judicious educational health propaganda work. The time for this is propitious; for the Great War trained and disciplined the populace through their war service and experiences, and it must have uplifted them to a higher level of common aim. Given satisfactory feeding and clothing *homo sapiens* need suffer but little from environment where there is knowledge of, and concern for, the simple rules of healthy living. The environment of the soldier, bad as it often was in trenches and billets during the war, was responsible for little sickness (thanks to good feeding and clothing, sanitary supervision, and discipline), save that due to vermin. General Beveridge had told them that some 50 per cent. of the total sick admissions resulted from disease caused by lack of personal cleanliness and the presence of vermin. There could be no doubt that much more could be done by a well-organised coöperation with the civil authorities to keep our fighting forces freer from vermin, and so to supplement and aid the Service provisions to this end.

Professor Kenwood then dealt with the case which the Great War established for the better spacing of troops in tents, huts, billets. and barracks. He pointed out that the greatest hygienic step ever undertaken in connexion with the army and navy, as proved by sickness and mortality returns, was the provision of additional cubic space and improved ventilation in barracks, and this was introduced many years ago. If the conditions here could be further improved (and there is room for this) it would immensely diminish sickness and promote physical fitness. Increased spacing, he said, meant money; better ventilation meant some difficult education and training of the men; but there would be a big balance on the credit side of the account—even in terms of *£ s. d.* He next referred to certain diseases, notably influenza, which need organised research on a comprehensive scale in order to study their behaviour in the mass. With reference to the course of epidemics, he was satisfied that the lack of susceptible population was not the main cause of their cessation.

In the Great War, he said, preventive inoculations were practised to an unprecedented degree, and death in many forms was thereby prevented to a proportionate extent. Is our civil community to benefit more fully from this experience? He next discussed some respects in which coöperation should be developed between the civil public health staffs and the service sanitary staffs, and the advantages and economy that would thereby result. In connexion with the Territorial Forces this coöperation should be developed to its maximum extent, by making the fullest use of the local knowledge and experience and of existing civil services and provisions, always with due regard to the needs of training and the circumstances of war. The necessity for devising fuller measures for the mutual protection of the civil and military population against the spread of venereal disease was impressed during the war, and here was an enormous wastage in the fighting efficients which could and must be reduced in the future. We learnt from the army to meet many sanitary requirements by means of simple and inexpensive appliances, fever hospitals, &c. Is the civil community going to profit from this lesson. The extravagant cost of many civil provisions has had the effect of limiting their adoption by smaller communities where they are often greatly needed. Cannot a happy mean be established between the two extremes?

Professor Kenwood concluded by expressing the hope that occasionally the Group would be invited by the Directors of the various Medical Services to coöperate in some matter of research in which they might be judged capable of rendering useful assistance. Such help would always be done in a spirit of loyal comradeship and with the sole object of rendering assistance to those who are in the responsible position of advising upon and directing the health provisions of the Services.

Discussion.

Professor **JOHN ROBERTSON**, M.O.H. Birmingham, drew attention to the great difference between conditions in peace and war time, and to the way in which the best laid plans in time of peace often go to pieces in war. Medical officers in Territorial units would need the direction of officers familiar with war conditions. In regard to the sanitary conduct of troops it was wise to expect nothing from the men but what they were actually compelled to do. He had been appalled at the lack of cleanly habits in the men. To encourage good ventilation they must be provided with blankets and proper means of warming. It ought to be possible to prevent vermin infestation in all conditions, and there should be a regular weekly issue of clean clothing. He mentioned the importance of proper spacing of individuals in schools and hutments, and said that he thought that an 8 ft. distance between man and man in tents would have almost prevented the spread of cerebrospinal fever. Young officers, he added, must be taught to keep to proper sanitary standards, and the reasons should be explained to them. The available information as to sanitary matters in the war ought to be recorded and collated for future use.

Professor R. St. G. S. **BOND**, Naval Medical College, Greenwich, said that no one appreciated the Presidential Address more than the naval members. The problem of air-space, ventilation, and spacing was of great importance on warships, and was accentuated by the crowding of extra men on board in the war. Diseases of respiration were prevalent, and influenza was very bad on ships during the outbreak. Before the war the medical officer on a ship had to act as medical officer of health, even if he lacked proper training. During the war a naval sanitary service was founded. Naval health officers had since been appointed at some of the principal ports, and it was hoped that the service would be further extended. Money was the difficulty.

Major-General Sir W. **MACPHERSON** said that the Group constituted a liaison between medical officers of health and the medical officers of the Services. At the early stages of the war local medical officers of health gave great assistance in connexion with billets. One of the greatest achievements of the war was the work of the sanitary sections in France. The French were astonished at the perfection of our latrine arrangements in the front line, and later imitated them. General Macpherson emphasised the importance of education in sanitary matters and mentioned that in some details, such as the disposal of refuse and excreta, the civil authorities could learn from the military.

Dr. G. A. AUDEN, school medical officer, Birmingham, said that the importance of sanitation must be inculcated in the combatant officers. He was surprised at the way in which even public school men relapsed into hopelessly insanitary habits on active service.

Squadron Leader A. GRANT, R.A.F., mentioned the importance of coöperation between civil and service medical officers, and referred to a recent outbreak of cerebro-spinal fever, which was only recognised after an R.A.F. man had become involved in it. Infectious conditions were often introduced into units by men who acquired them when on leave. Difficulties arose from the absence of facilities for the prophylactic treatment of venereal diseases for men on leave.

Professor P. S. LELEAN, R.A.M. College, in connexion with the question of spacing, stated that Petri dishes placed in the proximity of men whose throats had been sprayed with *B. prodigiosus*, showed numerous small colonies at distances of 2 and 4 feet, fewer at 6 feet, and at 8 feet they were beyond the reach of infection by fine spray and only received occasional massive infection from droplets. He paid a tribute to the work of officers of sanitary sections, including architects and surveyors with medical men. He remarked on the badness of the water-supply in some rural districts.

Dr. HERBERT JONES, M.O.H., Herefordshire combined districts, referred to the initiation of the sanitary service, which was intended by Sir Alfred Keogh to enlist the services of the principal civilian medical officers of health.—Dr. W. J. SLOAN, Assistant School M.O., L.C.C., spoke of the exactness with which the carrier rate in cerebro-spinal fever corresponded with the spacing of the men.—Dr. HUTCHINSON WOOD, M.O.H., Biggleswade U.D.C., said that the sanitary education of the commanding officer was necessary, as well as of the rank and file.—Dr. R. H. WILSHAW, M.O.H., Worthing, suggested that the sanitation of camp hutments could be very much improved by following the lines of sanatorium buildings.—Dr. C. SANDERS, M.O.H., West Ham, inquired whether the meeting could not do something to hasten the production of the sanitary history of the war. It was ten years before that of the American War was published.

The PRESIDENT said that the war had required adaptation on the spot to all sorts of conditions previously unknown, such as strange climates and new infections. He instanced the way in which malaria had been dealt with by medical officers who had never before come across it. There had been remarkable opportunities for preventive work owing to the possibilities of complete control over the activities of the men, and of obtaining comprehensive statistics and returns. The generation which had fought and the next generation would yet benefit from the habits of hygiene inculcated during the war. He predicted a brilliant future for the new Group.

Professor KENWOOD, in replying, indicated the following items of work for the Group in the immediate future: (1) education and health propaganda; (2) coöperative measures for safeguarding the mutual interests of the civil and military medical officers; (3) advising the civil authorities as to the adaptation of military sanitary measures to civil conditions; (4) camp hygiene and sanitation (sites, water-supply, hutment types, &c.). He said that the honorary secretary of the Group (Dr. W. N. W. Kennedy, Town Hall, Croydon) would be pleased to receive the names of any naval, military, or R.A.F. medical officers desirous of joining the Group.

Thirty-one new members of the society were elected at the meeting.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

Exhibition of Cases and Specimens.

A WELL-ATTENDED meeting of this society took place on Dec. 17th, 1920, at the laboratories of the London School of Tropical Medicine, 23, Endsleigh-gardens, N.W., with Professor W. J. R. SIMPSON, the President, in the chair.

The following demonstrations were given:—

Sir JAMES CANTLIE showed a male patient from Baghdad suffering from "Baghdad Ulcer" on the finger of several months' duration.

Dr. H. S. STANNUS: Sections and photographs of examples of malignant disease in African natives. (1) Spindle-celled sarcoma of the testicle with secondary deposits in each orbit; (2) carcinoma of the thyroid and liver; (3) malignant parotid tumour. He referred to the comparative infrequency of malignant disease among natives, which, as the result of 15 years' experience in Central Africa, he thought was not as rare as generally supposed.

Colonel S. P. JAMES, I.M.S.: Specimens illustrating true indigenous malaria in England. Stained blood-films, showing *Plasmodium vivax* from cases of benign tertian fever in children aged 5 and 13, in October, 1919, and August, 1920, coming from Queenborough and Isle of Grain, Kent, and *Plasmodium falciparum* from a case of malignant subtertian fever in a girl of 18 at Sheerness; slide preparation of stomach of *Anopheles maculipennis* fed on a case of indigenous malaria and showing many zygotes. A map of England was shown giving the geographical distribution of cases of malaria in 1915–17, and in 1919.

Surgeon Rear-Admiral P. W. BASSETT-SMITH: Trypanosome Infection of Fœtus—specimens of *T. gambiense* in the spleen and liver of the guinea-pig fœtus and of *T. rhodesiense* in the liver of the rat as the result of maternal infection. Transmission of trypanosome infection to the healthy young guinea-pig by suckling from the infected female had been reported, but his experiments in this direction had proved negative.

Dr. A. C. STEVENSON: Extravascular Distribution of Trypanosomes in Tissues—sections (1) of the choroid-plexus, kidney, and stomach of a guinea-pig, showing presence of *T. nigeriense* in the areolar tissues; (2) of the labyrinth of the ear, heart muscle, and mediastinal lymph gland showing *T. rhodesiense* infection of the areolar tissues.

Major H. C. BROWN, I.M.S.: (1) Standardisation of Bacterial Suspensions by Opacity for estimation of weight and number of organisms in vaccines, aided by calculated proportional tables of the required vaccinal strengths; (2) the value of citration of liquid culture-media by sodium citrate (1 per cent.) for the purpose of retarding or augmenting bacterial growth—e.g., in particular the inhibition of *Paratyphosus A*, and increasing the development of *Paratyphosus B* and *C*.

Dr. ANDREW BALFOUR: Models of Fruits and Foodstuffs from India.

Dr. P. MANSON-BAHR: 1. Amœbic Dysentery. Illustration of the value of sigmoidoscopic examination in diagnosis, by drawings of the appearance of the ulcerated rectal wall and of scrapings obtained through the sigmoidoscope showing *E. histolytica* cysts in large numbers. 2. Kala-azar. (*a*) Persistence of *Leishmania donovani* in the bone marrow in a patient who died from intestinal complications. (*b*) Section of liver showing periportal cirrhosis and perihepatitis, associated with ascites and perisplenitis. 3. Malignant subtertian malaria in a Palestine case. Blood films showing multiple ring forms of the parasite. Sections of liver and heart muscle exhibiting many parasites in the blood-vessels. 4. Stomach of infected *A. maculipennis*, showing presence of sporozoites.

Lieutenant-Colonel A. ALCOCK: Specimens of—(1) the tick *Dermacentor venustus*, vector of Rocky Mountain fever; (2) British anopheline species, *A. bifurcatus* and larvæ, *A. maculipennis*, *A. plumbeus*; (3) *Stegomyia fasciata*, living and microscopical specimens of larvæ;

(4) fruit mite (*Carpoglyphus passularum*) from case of grocer's itch; (5) flea (*Pulex irritans*), showing the anatomy of the alimentary tract—in particular the mouth apparatus and proventriculus.

Dr. J. G. THOMSON: Preparations of Leishmania Infections. (1) Kala-azar. *Leishmania donovani* in smear from spleen pulp and section of spleen; living and stained specimens of the parasite obtained by N.N.N. (Novy-MacNeal-Nicolle) method of culture. (2) Oriental sore. *Leishmania tropica* in section of the granuloma and in living and stained preparation from culture by N.N.N. method.

Professor R. T. LEIPER: Helminthological Preparations. (1) *Dipylidium caninum* from a female patient in South Africa; (2) shells of *Bithynia striatula*, intermediary mollusc host of *Clonorchis sinensis* (human liver fluke); (3) cercaria of *Clonorchis sinensis* on a fish scale; (4) abnormal branching of *Hymenolepis*; (5) cystercercoids expelled from body cavity of *Cypris* and *Cyclops*; (6) ova of:—*Clonorchis sinensis*; *Fasciolopsis buskii* and *Heterophyes heterophyes* (intestinal flukes); *Schistosoma japonicum*; *Paragonimus westermanni* (lung fluke); *Oxyuris vermicularis* showing the inner shell; *Ascaris lumbricoides*; *Ankylostoma duodenale* (from a cat experimentally infected).

Dr. G. C. LOW: Human Blood Filariæ. Fresh blood-film preparation showing the living embryo of *F. bancrofti* (*nocturna*); stained preparations differentiating embryos of *F. bancrofti* and *loa* (*diurna*).

Dr. E. ATKIN and Mr. A. BACOT: Rickettsia of Typhus and Trench Fever. (1) Typhus. Specimens of *Pediculus corporis* and *capitis* fed on human case of typhus, showing *R. prowazeki* in coccoid and bacillary forms, also in smears of gut contents, and in smears of *P. capitis* fed on typhus-infected monkey; sections of brain of guinea-pig infected with typhus show cell proliferation about the blood-vessels. (2) Trench fever. Smears of secretion and section of gut of *P. corporis* showing *Rickettsia quintana*. (3) Rickettsia bodies in gut smear of the tick *Dermacentor venustus* vector of Rocky Mountain fever. (4) *R. lectularia* of bed-bug. (5) *R. melophagi* in smears of ovary and kidney of sheep.

Lieutenant-Colonel G. E. F. STAMMERS, R.A.M.C.: Spirochætal Jaundice in the Guinea-pig. Cadaver of infected guinea-pig showing pleural and peritoneal hæmorrhages. Sections of lung of guinea-pig, infected from the rat, and of the liver of rat, both showing the presence of *Leptospira*.

Colonel CLAYTON LANE, I.M.S.: Demonstration of Levitation Method for Concentration of Ankylostome Eggs in Fæces.

Sir STEWART STOCKMAN: Piroplasmosis of Domestic Animals.

Mr. J. T. EDWARDS: Pathological Specimens of veterinary interest. Inflammation of ileum of ox in Johne's disease; enlargement of spleen due to Hodgkin's disease in a dog; aorta of horse showing verminous penetration by *Strongylus vulgaris*; lung of ox showing consolidation in hæmorrhagic septicæmia; ulcerative colitis due to infection by *B. necrophorus* in swine fever; swine erysipelas shown by typical skin lesions and chronic vegetative endocarditis; diphtheria of tongue and lips due to infection by *B. necrophorus* in a calf; tongue of calf in foot-and-mouth disease, &c.

Dr. A. CASTELLANI: Some Tropical Mycoses. (1) Bronchomycosis due to *Monilia krusei*, shown in films from sputum and in culture; (2) *Tinea imbricata* of skin due to *Endodermophyton indicum*; (3) acladiosis—ulcers of leg—caused by *Acladium castellani-pinoyi* ((2) and (3) shown in photographs and cultures); (4) mycelial fungus in urine from a case of cystitis.

LIVERPOOL MEDICAL INSTITUTION.

A MEETING of the Pathological Section was held on Dec. 2nd, with Dr. J. E. GEMMELL, the President, in the chair, when Professor G. J. ADAMI read a paper on

The Pathology of Influenza.

He described the attempt to find a common lesion for the successive stages of pre-pandemic purulent bronchitis, pandemic pneumonia, and the hæmorrhagic pulmonary œdema characteristic of the late pandemic of influenza, and to distinguish those lesions due to the primary causative agent from those due to the secondary invaders. He said it was the generally accepted view that the influenza epidemic started in May of 1918 and was followed by a much more serious epidemic in the autumn, but he did not think this view correct. As early as 1916 and the spring of 1917, Hammond, Rolland, and Shaw described in THE LANCET[1] a series of cases of purulent bronchitis in the Etaples area, characterised by a peribronchitis, a destruction of the lining epithelium, a bronchitic and bronchiolitic purulent discharge and all associated with the presence of both the influenza organism and the pneumococcus. In the latter year, 1917, an exactly similar epidemic was noted in the Aldershot area by Dr. Adolphe Abrahams and others.[2] In the same year the American bacteriologists noted a very fatal form of pneumonia following measles. MacCallum showed that the morbid anatomy of the respiratory tract was that of an interstitial pneumonia, an exudate that was not excessively cellular, a destruction of the epithelium of the bronchi, and a microscopic appearance of the bronchioles extremely suggestive of the French and English epidemics. MacCallum found, however, that the chief organisms in this series were a hæmolytic streptococcus and the pneumococcus. The influenza organism was only noted a few times. Then came the great epidemics of 1918. Dr. Adami showed that in the reports from France, Macedonia, Italy, India, and America he was able to trace a common histology and bacteriology. From all areas the disease was ushered in with congestion and suppuration of the upper nasal respiratory tract, and in those reports where these parts had been bacteriologically examined invariably the influenza organism had been recovered. Further, a tracheitis limited to the lower third of the trachea was, perhaps, the greatest common histological factor. He felt sure that whatever may have been the changes due to other organisms, the influenza organism of Pfeiffer, if not the causa causans, was always associated with the disease. In the autumn, however, it was obvious that the virulence of the organism had been raised to an inordinate degree, and he suggested that the absence of pus and the hæmorrhagic œdema and the marked lymphatic dilatation might be explained by negative chemiotaxis. In this connexion Dr. Adami referred to the classical experiments of Metchnikoff on mild and virulent anthrax organisms. Dr. Adami then demonstrated the means whereby the lungs are protected from organisms by the obliquity of the naso-pharynx and the ciliated epithelium, and showed how in influenza this beautiful protective device breaks down.

The discussion was adjourned until the next pathological meeting.

A clinical meeting was held on the afternoon of Dec. 16th, 1920, Dr. J. E. GEMMELL, the President, in the chair.

Dr. FRANCES IVENS read a note on the

Use of Antigonococcal Serum,

indicating briefly the methods used and the results obtained in a series of 30 cases. The patients were, with two exceptions, young married women. Thirteen had no children and nine one only. The cases included 22 of tubal infection, three of endocervicitis, and two of arthritis occurring during pregnancy and the puerperium. *Nicolle* serum had been employed, and was administered in 19 cases subcutaneously, in six into the tubes and peritoneal cavity, and in five vaginal or local applications had been made. To avert anaphylactic shock normal saline solution had been administered simultaneously. All the cases made good immediate recovery and the after-results were strikingly good in the majority of the cases, the least successful being those where the intraperitoneal method had been employed. Dr. Ivens considered that the results warranted further experiments and study, and asked for suggestions respecting the best method of administration in view of the special characters of the organism and the fact that it did not belong to a diffusible group.

Clinical cases were shown by Dr. John Hay, Drs. R. J. M. Buchanan and J. C. Matthews, Dr. H. M. Mitchell, Dr. A. D. Fordyce, Dr. R. Stopford Taylor, Mr. T. Stevenson, Mr. F. J. S. Heaney, Mr. G. C. E. Simpson, Dr. R. W. MacKenna, Mr. T. H. Bickerton, Dr. Murray Bligh, and Mr. R. C. Dun.

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[1] THE LANCET, July 14th, 1917. [2] THE LANCET, Sept. 8th, 1917.

Reviews and Notices of Books.

WOMEN AS ARMY SURGEONS.

Being the History of the Women's Hospital Corps in Paris, Wimereux, and Endell-street, September, 1914–October, 1919. By FLORA MURRAY, C.B.E., M.D. London: Hodder and Stoughton. 1920. Pp. 263. 12*s.* 6*d.*

THIS book, besides being a most interesting record of indubitably valuable work, is also a glorification of the women's movement, including the struggle for the suffrage. No medical woman or man can withhold praise from the way in which the Women's Hospital Corps did their work; often, especially in the early days of the war, as at Paris and Wimereux, in conditions of extraordinary difficulty. Lack of transport for the wounded was the curse which afflicted both the French and the British medical service in the early days, and had it not been for the American voluntary fleet of motor ambulances matters would have been even worse than they were. The rapidity with which the women organised their hospital corps and managed to get the hospital in Paris into working order is amazing. The idea was set on foot on August 12th, 1914; on Sept. 14th the W.H.C. left Victoria for Paris, and took up its abode in the Hotel Claridge, where by the evening of Sept. 17th they had 50 beds ready for patients.

Not long after this the unit expanded and opened a hospital at Wimereux, this time under the Royal Army Medical Corps; the Paris hospital was under the French Red Cross. On Jan. 18th, 1915, it was decided to close the hospital in Paris on account of various difficulties, mainly the almost insuperable one of getting enough fuel, and the staff proceeded to Wimereux to join up with the rest of the corps, but in about a month Sir Alfred Keogh offered the corps the charge of a large hospital in London. This was in February, 1915, and by May of that year the hospital in Endell-street, formerly the workhouse of St. Giles, Bloomsbury, was opened, the staff approximating to 180 persons, of whom 21 were men of the R.A.M.C. detachment. The hospital did admirable work, for an account of which we must refer the reader to Dr. Murray's book, where, besides accounts of the professional work carried out, there will be found amusing descriptions of the conflicts with "brass hats" and the War Office. However, the energy and enthusiasm of the staff triumphed over all difficulties, and Endell-street went ahead until October, 1919, when the order went forth that it should be evacuated and closed. Dr. Murray's pride in the W.H.C. shows in every line of her book, but it is pardonable. There is a trifling error on p. 142, where Hildegarde is mentioned as the "famous medicine woman of the third century"; she lived from 1098–1180.

TEXT-BOOK OF TRACHEO-BRONCHOSCOPY.

Technical and Practical. By Sanitätsrat Dr. M. MANN. *Translated by* A. R. MOODIE, M.A., M.D., Ch.B. St. And., F.R.C.S. Edin. London: John Bale, Sons, and Danielsson. 1920. Pp. 292. 31*s.* 6*d.*

THE first part of this treatise, after a short and perfunctory account of the anatomy, is devoted to the technique of the method of direct examination, and begins with a long illustrated list of instruments; though he expresses no opinions in this section, we gather that the author prefers Brünings' apparatus. There follow some useful hints on the introduction of the tube. Dr. Mann favours the sitting position and local anæsthesia, though he mentions that Killian's school has, from the first, considered general anæsthesia a necessary expedient. We cannot, however, agree with the advice implicit in the statement that "when carrying out upper bronchoscopy in an infant, it is sufficient simply to hold it still with the hand." The next section is the most valuable and comprises abstracts of a large number of cases of foreign bodies in the trachea and bronchi, of absorbing interest to the laryngologist; the list is naturally far from complete, and we regret to find so few British cases quoted, although plenty of good work in this field has been done here. The following section deals with bronchoscopy in diseases of the bronchial system. Dr. Mann is disappointed that, in the six years since his book appeared in Germany, there has been an almost complete disappearance of published papers by those who have endeavoured to employ the method in disease of the thorax, either for examination or therapeutic applications. He gives some interesting descriptions of the result of examination in various diseases, but, though he urges physicians to make use of bronchoscopy for purposes of treatment, the results he is able to give are not, so far, very encouraging. There are several good coloured plates of post-mortem specimens, but only one, though an interesting one, of a series of images seen through the bronchoscope. It could be wished that the author had included œsophagoscopy in his survey. Owing to a misapprehension of the original German, Clar's lamp is attributed to "Clarsche," but the translation into rather colloquial English is, on the whole, excellent.

ACCESSORY SINUSES OF THE NOSE.

The Catarrhal and Suppurative Diseases of the Accessory Sinuses of the Nose. By ROSS HALL SKILLERN, M.D., Professor of Laryngology, Post-Graduate School, University of Pennsylvania. London and Philadelphia: J. B. Lippincott Company. 1920. Pp. 418. 30*s.*

THE third edition of this work is practically a reprint of the second, reviewed in our columns early in 1917; it contains several new illustrations and one more page, devoted to a description of Grayson's method of exploratory opening of the sphenoidal sinus with a small hand-burr. The first section treats generally of anatomy, ætiology, symptoms, diagnosis, treatment, and complications; the next four sections deal respectively with the maxillary, frontal, ethmoidal, and sphenoidal sinuses, and there is a final short section on multiple sinusitis. The book is beautifully illustrated and gives a very thorough account of a difficult and complicated subject; it has already proved its value to the rhinologist. The price has been raised from 21*s.* to 30*s.*

LECTURES ON TROPICAL OPHTHALMOLOGY.

Delivered at the London School of Tropical Medicine, by ROBERT HENRY ELLIOT, M.D. Lond., F.R.C.S. Eng., &c. London: Henry Frowde and Hodder and Stoughton. 1920. With 13 illustrations. Pp. 36. 3*s.* 6*d.*

THIS brochure is the skeleton on which the larger work on "Tropical Ophthalmology," reviewed in THE LANCET, Nov. 6th, 1920, was founded. It is a useful introduction to the subject, such as might be expected from Mr. Elliot. In the section on the treatment of the eye complications of tropical diseases there is a warning to the tropical practitioner which, though contained in the larger work, is relatively more prominent in the smaller. It is that in the various conditions for which arsenical and antimonial preparations are used, it is essential that the doctor should "keep vividly before his mind's eye the spectre of optic atrophy."

FORMULAIRE DES MILIEUX DE CULTURE EN MICRO-BIOLOGIE.

By DERIBERE DESGARDES. Paris: Librairie le François. 1921. Pp. 98. Fr.4.

THIS small volume contains a collection of formulas for the preparation of the principal media used in bacteriological laboratories. An almost endless number of media have been described, and the author has perforce to limit his selection to those in general use. The media described are those most favoured in France; some which are favoured in this country are not mentioned—e.g., MacConkey's medium. There is no reference to Levinthal's medium for the cultivation of *B. influenzæ*. These defects are not of importance to the English reader, however. The book can be commended to those who require the information it offers.

ROENTGENOGRAPHICAL TECHNIQUE.

The Principles and Practice of Roentgenographical Technique. By I. SETH HIRSCH, M.D., Director, X Ray Departments, Bellevue, Fordham, Harlem, and Gouverneur Hospitals, New York City. London: H. K. Lewis and Co. 1920. Pp. 241. 60*s.*

DR. Hirsch has had a long experience in teaching radiology, and few are more competent to write such a treatise as this. Knowing so well just what the student requires, he has carefully avoided that which does not matter, while giving plenty of what is necessary to make a successful radiologist. As the title suggests, fundamental principles are what count in the management of apparatus, assistants, and patients, and this idea runs through the whole work consistently. The technical details of many forms of apparatus are frequently a stumbling-block to the beginner, and in such cases the author has introduced a series of large-scale diagrams, serving admirably to clear up difficult points. The chapters on X ray tubes, as well as those on production and measurement of the X rays, and the practical applications of the principles, are particularly good. Fluoroscopy, radiography, postures and positions of the patient are described in detail and illustrated by blocks and diagrams of high quality and ample numbers. Numerous tables add to the value of the work, such as wiring tables, tables of absorption, voltages, exposure, and many others. The subject is a difficult one to undertake and Dr. Hirsch has done it well. There must be very few radiologists who cannot learn something worth knowing from a perusal of this volume; for the beginner it will be invaluable.

THE RADIOGRAPHY OF THE CHEST.

Vol. I., Pulmonary Tuberculosis. By WALKER OVEREND, M.A., M.D. Oxon., B.Sc. Lond. London: William Heinemann, Ltd. 1920. With 99 radiograms and 9 diagrams. Pp. 120. 17*s.* 6*d.*

THIS work is painstaking and well balanced. The author is enthusiastic as to the value of the X ray method in diagnosis, but is yet careful to maintain a sense of proportion between this and the more classical modes of examination, which, after all, have served very well.

This first volume commences with a chapter, illustrated with good radiograms as well as drawings, on the normal chest, and it is lucid and complete, but the author's views on the nature of the branching shadows that make up the pulmonary reticulum are open to comment. He still considers their origin obscure, whereas we were under the impression that the excellent work of K. Dunham had finally settled this question. In dealing with the various types of tuberculous involvement of the lungs the author gives first the usual history, symptoms, and clinical signs, follows on with the X ray appearances, and then contrasts or reconciles the whole as the circumstances permit. It is unnecessary to discuss these chapters in detail; the book must be read and studied in conjunction with the typical radiographs illustrating the various forms of pulmonary tuberculosis.

We think the value of the volume is marred by the adoption of an antiquated classification and nomenclature, as well as by the too free use of a phraseology which, while no doubt academically correct, the average medical man will find cumbersome. None the less Dr. Overend is to be congratulated on the extent and thoroughness of his work, which is a very valuable contribution to a difficult but interesting subject.

MANUEL D'URÉTROSCOPIE.

By ROBERT HENRY and ANDRÉ DEMONCHY. With a preface by Dr. MARION. Paris: Masson et Cie. 1920. With 86 illustrations, including 30 in colours. Pp. 116. Fr.25.

THIS little book gives a general survey of the subject of urethroscopy. A large part of it, more than half the text, is given to description of various urethroscopes and cysto-urethroscopes, and the accessory apparatus is commonly used in conjunction with these. An instrument designed by one of the authors, Demonchy's urethroscope, is described in detail, and in a chapter devoted to a critical examination of all the instruments mentioned it is given first place in order of merit. It resembles Luys's urethroscope in general construction but has a telescope attached. The authors pronounce those urethroscopes which are designed to give dilatation of the canal by air or water to be of little use, even in the examination of the posterior urethra, though they admit some virtues in the various irrigating cysto-urethroscopes. Most of their English readers will differ from them, for in this country aero-urethroscopes are generally used for the anterior urethra and irrigating instruments for the posterior. The latter part of the book contains chapters on the appearances of the normal and abnormal urethra, and on methods of treatment through the urethroscope.

All the illustrations in colour are of the appearances seen in the undilated urethra, which, of course, differ markedly from those obtained when the canal is dilated with air or water during examination.

EARLY EMBRYOLOGY OF THE CHICK.

By BRADLEY M. PATTEN, Assistant Professor of Histology and Embryology, School of Medicine, Western Reserve University. Philadelphia: P. Blakiston's Son and Co. Pp. 167.

THIS book was written to help the student in his early work in courses in vertebrate embryology. It is an admirable little work, interesting and instructive, and the student who brings a little intelligence to bear on his reading cannot fail to advance his knowledge, both of actual fact and of principle, to a considerable extent by its perusal. The descriptions are clear, the format excellent, and the illustrations good and useful. Altogether it is a book to be recommended.

ATLAS OF THE SENSORY CUTANEOUS NERVES.

By WILLIAM IBBOTSON, M.R.C.S., L.R.C.P. London: Scientific Press. 1920. Pp. 25. 7*s.* 6*d.*

THIS little book presents a series of coloured diagrams showing the areas of distribution of the sensory nerves. They are, of course, schematic, with appended explanatory notes. We notice that while the text gives the usual levels the situation of the lumbar enlargement in Fig. 1 does not correspond therewith. We also consider that the distribution of musculo-cutaneous on the palmar surface is perhaps too extensive in Fig. 6, and that the ulnar supply on the dorsum in Fig. 7 might be increased, while the area given over to the musculo-cutaneous of the leg in Fig. 8 is too extensive. The author, moreover, has larger views concerning the posterior primary area in the gluteal region than those generally taught. These, after all, are minor matters, in some way subjects of individual opinion, and hardly detract from the value and utility of this little work.

PSYCHOLOGY OF THE SPECIAL SENSES.

Their Disordered Functions. By ARTHUR F. HURST, M.A., M.D. Oxon., Physician and Neurologist to Guy's Hospital. London: Henry Frowde and Hodder and Stoughton. 1920. Pp. 123. 12*s.* 6*d.*

UNDER this title the Croonian lectures, which were delivered before the Royal College of Physicians of London in June, 1920, have now been published as a book. These lectures were reported in abbreviated form in THE LANCET, and were then the object of editorial comment. They record in permanent shape the valuable work carried out by the author in conjunction with colleagues both before and since the war at Guy's Hospital, and during the war in Lemnos, Salonica, Oxford, Netley, and the Seale Hayne Military Hospital. As a frontispiece to this volume *La Dame Stapart* is reproduced from Carré de Montgeron's "La Vérité des Miracles," depicting a miraculous recovery from hemiplegia, hemianæsthesia, and blindness, after a visit to a tomb in the Chapelle de Ste. Anne at Avernal in 1728.

Autobiography of Sir Charles A. Cameron.

With an Introduction by Sir James H. M. Campbell, P.C., Lord High Chancellor of Ireland. Dublin: Hodges, Figgis, and Co. 1920 Pp. 162. 7*s*. 6*d*.

It is only reasonable to suppose that the reminiscences of a man in his ninetieth year, who is also a medical man, a public analyst, and also an Irishman, will afford interesting reading, and Sir Charles Cameron's book does not disappoint expectation. He was born in 1830 and one of his earliest recollections is talking to an old woman who in her youthful days had been present at, or rather had been but a mile or so away from, the field of Culloden during the battle. He also remarks that although he never saw anyone carried in a sedan chair, yet he knew of two which were to be seen on hire at the Rotunda. He presumes, therefore, that they had not quite ceased to be used at the end of the "thirties." Sedan chairs were in use much later than that date, for the late Sir Moses Montefiore attended a Royal garden party in one not very long before he died (1885), and between 1873 and 1877 an old lady who lived in Windsor always used to come to the Eton College concerts in a sedan chair. Sir Charles Cameron's book is full of delightful stories about all sorts of interesting people, among others Sir William Wilde, the aurist and oculist. Wilde was notorious for his untidy and dirty habits, and Sir Charles Cameron mentions the report that he was refused by Helen Faucit on the ground that he did not keep his hands clean. These same habits of Wilde were the occasion of Father Healy's happiest witticism. Healy was a friend of Cameron, but the latter does not give the story, which is as follows:—Shortly after Wilde had been knighted Healy met one of the Irish Members who had just returned from fulfilling his duties in Parliament. The weather was stormy, and Healy asked his friend what sort of crossing he had had. "Bad," said the M.P.; "the dirtiest night I ever saw." To which Healy gravely replied, "Indeed, it must have been wild."

Another of Cameron's friends was Matthew O'Reilly Dease, who used often to entertain Cameron to dinner at the Reform. Although they were only two, Dease always ordered a magnum of champagne, because, as he rightly said, "Champagne stores better in magnums." We hasten to add that Cameron was moderation itself and that Dease never drank more than one glass. We might go on quoting page after page of the book, but we can only congratulate Sir Charles Cameron on its appearance and recommend our readers to read it. It would be the better in places for revision; for instance, on p. 28 Sir Charles Cameron records, if we mistake not, that his wife was born on Oct. 18th, 1838, while on p. 31 he says that she was born on Oct. 26th, 1839.

Normal Histology.

With Special Reference to the Structure of the Human Body. Twelfth edition. By George A. Piersol, M.D., Sc.D., Professor of Anatomy in the University of Pennsylvania. London and Philadelphia: J. P. Lippincott Company. With 438 illustrations, 88 of which are in colour. 1920. Pp. 418. 21*s*.

Professor Piersol's work will be found to be a thoroughly reliable, well-illustrated, and comprehensive exposition of "Normal Histology." Of the coloured illustrations most are in one colour, light carmine or light bluish hæmatoxylin, or methylene-blue tint. Only a few are in two colours—e.g., developing bone, injected skin, inner ear; and only two or three in more than two colours. Anyone familiar with actual well-prepared microscopic sections will at once agree that the illustrations drawn by the "skilful pencil"—to quote the author's words—of Mr. Louis Schmidt are faithful representations of well-selected, typical histological preparations. Moreover, the magnifying power is stated in each case. There are a few schemata or diagrams only, and no diagrams showing the intricate connexions of the various parts of the central nervous system. There are figures of some parts not usually illustrated in books on histology—e.g., mucous membrane of the maxillary sinus and of the frontal and sphenoidal sinuses. The drawings of the injected sections strike us as particularly accurate, but there are few diagrams to systematise the distribution of the finer blood-vessels such as used to be characteristic of the work of Professor Mall. The text is admirable and ample, and as histology has its place at the beginning of the medical curriculum in the U.S.A., some points on the gross anatomy are added—e.g., on the brain and other organs. In a short appendix a few satisfactory and thoroughly tested methods are given.

Handbook of Mechanical Dentistry.

By J. L. Dudley Buxton. London: J. and A. Churchill. 1920. With 168 illustrations. Pp. 269. 16*s*.

This work does not aim at being an elaborate treatise on mechanical dentistry, but rather a guide to practical work in the surgery and laboratory. The author is clear and concise in his descriptions, and has succeeded in producing a book which should be of considerable help to both student and practitioner. There is a chapter on Dental Metallurgy by Mr. H. Terrey.

The Care of Children.

Fourth edition. By Robert J. Blackham, C.B., D.S.O., M.D., Colonel, late A.M.S. London: Scientific Press. 1920. Pp. 113. 4*s*. 6*d*.

In these days, when new books on child culture are appearing almost every day, there is yet room for Dr. Blackham's small work, a fourth edition of which has been called for. The book has been revised and largely rewritten, a preliminary chapter on "The Child's Mother" having also been added. It is an admirable compendium of all that a mother needs to know, the chapter on communicable diseases, supplemented by an appendix giving in tabular form their main features, being one of the most useful. The book is readable and thoroughly practical, one special feature that calls for notice being the hints given on the care of children in India and abroad generally. Altogether, the volume is one that may be unreservedly recommended to all who have the charge of children.

A Thought Book on the Socratic Method.

Edited by T. Sharper Knowlson. London: T. Werner Laurie. 1920. Pp. 200. 7*s*. 6*d*.

This book belongs to that class which Lamb called βιβλία ἀβιβλία. Mr. Knowlson remarks in his preface that he supposes that "it is the practice of every reader of books to make a more or less careful record of the thoughts that have appealed to him." The Thought Book contains a selection from his own notebook, and the principle of the book is that the reader should ask himself questions about the thoughts which Mr. Knowlson has collected for him, in accordance with a scheme of queries supplied by Mr. Knowlson, and should, in addition, make a collection of thoughts for himself and invent his own questions. We cannot see that keeping a book on these lines has any value, neither can we attach much value to Mr. Knowlson's questions. For example, on p. 43 we have a thought from Ruskin, "All education should be moral first; intellectual secondarily." Mr. Knowlson's first query is, "What is the difference between moral and intellectual education?" Anyone with a grain of intelligence would surely know the answer to this without having to think it over and write it down. As for Mr. Knowlson's method being Socratic, socratism does not consist merely in asking questions, its essence is the way in which the questions were asked and the position to which they lured the person questioned. If Mr. Knowlson will read Book IV. of Xenophon's Memorabilia he will get a good idea of what the Socratic method really was. To our minds anyone who followed Mr. Knowlson would rapidly become similar to the philosopher described by Sir George Trevelyan, who used to wander about asking "Why are we created? Whither do we tend? Have we an inner consciousness?" till all his friends when they saw him in the distance used to say, "Why was Thompkins created? Is he tending this way? Has he an inner consciousness that he is a bore?"

GRIFFIN'S CENTENARY VOLUME, 1920.

THE publishing house of Messrs. Charles Griffin and Co., 12, Exeter-street, London, produced at the close of last year a sumptuous centenary volume in which is detailed the history of the firm from its establishment in Glasgow in the year 1820. The name of the house has long been associated with the production of technological books and scientific treatises of the first order, which were thus brought within reach of all who had at heart the modernising and development of British commercial enterprise. The services rendered by "Griffin's" to the country are clearly indicated by the wide range of industries with which its publications have dealt and continue to deal; the book contains chapters written by specialists who trace the connexion of the house with such vital national activities as shipbuilding, mechanical engineering, mining, metallurgy, textiles, applied chemistry, medicine, hygiene, and sanitation. Medicine and the allied sciences, indeed, have been well represented in the lists of the firm which gave to the world such works as A. W. Blyth's "Manual of Practical Chemistry"; this book was expanded into two volumes—"Foods: their Composition and Analysis," and "Poisons: their Effects and Detection," which are to-day the accepted works of reference in courts of law. R. S. Aitchison's "Medical Handbook" and the "Surgical Handbook" of Caird and Cathcart are examples of the well-known "Pocket" Medical Series of Reference Books. Professor W. Stirling's English edition of Landois's "Textbook of Human Physiology" and the whole "Standard Medical Series" may be mentioned also as having helped to lift the name of Griffin to the high position it now occupies in the publishing world. Lord Moulton, in his foreword to the Centenary Volume, refers to the good fortune which has secured to the firm "in unbroken succession an able and enterprising head." The manner in which its history is here presented and the story itself combine to make clear the loyalty which the business has had at its command, together with the driving force and skilled direction, which have brought to it deserved prosperity.

TEXT-BOOKS ON CHEMISTRY.

Inorganic Chemistry. By JAMES WALKER, LL.D., F.R.S. Eleventh edition, revised and enlarged. London: G. Bell and Sons. 1920. Pp. 327. 5*s.*—We could not wish for a clearer outline of the principles of chemistry than is presented in this unpretentious volume. Dealing with elementary facts it is intelligibly written and, while adapted to the mental grasp of the beginner, prepares the way to a deeper study of the subject. The chapters on ionisation and the rarer elements are excellent, and illustrate the purpose of the author to keep his work up to date. The present issue is the eleventh edition, and will precede many other editions if the standard of modernisation is maintained.

Text-book of Chemistry. By R. A. WITTHAUS, A.M. Seventh revised edition by R. J. E. SCOTT, M.A., B.C.L., M.D. London: John Bale, Sons, and Danielsson. 1920. Pp. 478. 20*s.*—Written admittedly mainly for medical students, it is open to doubt whether this revised edition of a well-known book is not calculated to increase the burden of the medical curriculum. It seems to us that the book is much better adapted to the requirements of the purely chemical student. The relations of chemistry to medicine are practically ignored on the ground that the growth of such relationships is so great as to necessitate separate works on the subject. All the same the bearings might have been indicated, even if only quite briefly.

Intermediate Text-book of Chemistry. By ALEXANDER SMITH. London: G. Bell and Sons. 1920. Pp. 520. 8*s.* 6*d.*—An intermediate study of chemistry is, in our view, an erroneous proposition. Any work written within the confines of the intermediate is bound to overlap extensively both the elementary and the advanced treatment of the subject, and the trouble is indicated in this volume. Many chapters border on industrial questions, which are best dealt with in separate numbers in view of their great technical scope.

Elementary Practical Chemistry. By J. E. MYERS, D.Sc. Vict., and J. B. FIRTH, M.Sc. Vict. Second edition, revised. London: Charles Griffin and Co. 1920. Pp. 194. 4*s.* 6*d.*—This book does not aim at a novel treatment of the subject, amounting as it does to the outlining of a series of exercises at the laboratory bench which are well known. These are, however, well adapted and arranged and in good sequence for the requirements of medical students taking their first examination in practical chemistry. The directions in regard to manipulation form a satisfactory feature of the work.

Qualitative Chemical Analysis. By HENRY W. SCHIMPF, Ph.G., M.D. Third edition, revised. New York: John Wiley and Sons, Inc. London: Chapman and Hall. 1920. Pp. 187. 7*s.*—Primarily intended for students in pharmacy this systematic course of qualitative chemical analysis of inorganic and organic substances outlined in this book will be consulted with advantage by all beginners in the chemical laboratory. The comprehensive tests set out bear witness to the writer's intimate acquaintance with the trustworthy evidence for the presence or absence of the substance sought for, and a demand for a third edition is thus explained. The author is the professor of analytical chemistry in the New York Brooklyn College of Pharmacy.

Applied Chemistry. By C. KENNET H. TINKLER, D.Sc., F.I.C., and HELEN MASTERS, B.Sc. Vol. I. London: Crosby Lockwood and Son. 1920. Pp. 292. 12*s.* 6*d.*—The diploma in household and social science recently instituted by the University of London has brought this book into being. The present volume deals with water analysis, detergents, textile fabrics, bleaching agents, ventilation, fuels, paints, polishes, and so forth. A second volume is promised shortly, dealing with foods. An interesting and attractive feature of the work are the examples of experiments which deal more particularly with problems relating to household matters, not performed in the chemical but in the kitchen laboratory. The subject matter is well and clearly written, but, of course, a knowledge of chemistry is essential to intelligent reading. Students of household science will welcome this publication. It is a practical book, which should prove of general interest apart from academic calls.

Practical Chemistry. By P. A. ELLIS RICHARDS. Third edition. London: Baillière, Tindall, and Cox. 1920. Pp. 149. 5*s.*—This is eminently a book for bench work. The directions are thoroughly practical and manifest the experience of a teacher acquainted with details, careful attention to which leads to successful results. As stated in the preface, all the subject matter in the syllabus of the Conjoint Board preliminary science examination is included, while there are detection tables and volumetric analyses arranged to meet the requirements of the first examination for medical degrees of the London University. A useful section is added on elementary toxicology, and the chapters on preparation of salts are decidedly helpful. The qualitative methods have been brought into line with recent developments.

JOURNALS.

Journal of Pathology and Bacteriology. Vol. XXIII. No. 4. Pp. 371-512. December, 1920.—The Diurnal Variation in the Sizes of Red Blood Cells, by C. Price-Jones.—On the Action of X Rays upon the Transplantation of a Spontaneous Carcinoma of the Rat, by H. Chambers, G. Scott, and S. Russ. A spheroidal-celled carcinoma of the submaxillary gland in a rat failed to grow when inoculated into normal rats, though autologous grafts succeeded well. Transplantations into rats previously treated with rather large doses of X rays succeeded in a proportion of animals, and the tumour subsequently grew fairly well in normal rats.—Hæmolytic Fever, by K. Yamakami. The author believes that the rise of temperature in blackwater fever and other conditions in which hæmolysis occurs in the circulating blood is directly due to the pyrogenetic substances set free by laking the red corpuscles. Experiments on the effect of injecting laked blood and of the lysis of red corpuscles in vivo by the injection of distilled water have given varying and contradictory results. The author shows that it is a question of quantity; small doses of laked blood give no temperature change, moderate doses cause a rise of several degrees, while large doses cause a fall.—Tuberculosis of the Myocardium, by W. W. Adamson.—The Principles underlying Gram's Stain, by T. H. C. Benians. Gram-positive bacteria lose their power of retaining the stain when they are mechanically broken up; the reaction depends therefore on the physical structure of the organism and its cell wall. A variety of experiments lead to the conclusion that the dye forms an absorption compound with the bacterial substance; this is dissociated by iodine, which forms with the dye a large molecular substance which in alcoholic solution will not readily pass through the cell wall. Some Gram-negative organisms combine with the stain, but have a membrane which lets the dye-iodine compound through (e.g., gonococcus), in others there is no real permeation by the stain (e.g., coli).—The Splenic Lesions in Splenic Anæmia, by E. H. Kettle. In five cases of splenic anæmia the spleen, removed by operation, showed at least four distinct lesions: one was Gaucher's disease, one possibly tuberculosis, two probably "Banti's disease," and one quite indeterminate. "Splenic anæmia" is evidently not a homogeneous disease. Good illustrations accompany this paper.—The Effect of Osmic Acid and other Agents on the Affinity of Receptors for Immune Bodies and on their Antigenic Properties, by M. Kosakai. Stromata of red cells treated with osmic acid absorb immune body unspecifically, but act as specific antigens.—A New Apparatus for Accurate Blood-Gas Analysis, by J. S. Haldane. A combination of the author's apparatus for oxygen-capacity determinations by ferricyanide, with the compensatory arrangement of his gas-analysis apparatus by which determinations of O_2 and CO_2 in blood, &c., can be conveniently and accurately achieved.—Observations on the Gases in Human Arterial and Venous Blood, by J. Meakins. Using Hürter's method of obtaining samples of blood by direct puncture of the radial artery with a fine needle, the author shows that on the average arterial blood is 95 per cent. saturated with oxygen; breathing air enriched with oxygen raises this to 99 per cent., while 10 minutes' respiration of air containing only 12 per cent. oxygen reduced the saturation to 81. Holding the breath for 40 seconds reduces the saturation to 84 per cent., and substantial reductions are also caused by the rapid shallow breathing which is characteristic of pneumonia and some nervous states.—Experimental Study of Gastrotoxic Serum, by Y. Miyagawa. Following out Bolton's work on gastrolytic sera, the author demonstrates the production of isogastrolysin in a proportion of animals. Rabbit *v.* guinea-pig and rabbit *v.* rabbit immune sera will both act on rabbits' and guinea-pigs' stomachs. There is no specificity between the fundus and pyloric areas.—The Effects of X Rays on Lymphocytes, by S. Russ, H. Chambers, and G. Scott. Brief exposure to X rays reduces the lymphocytes in rats' blood by some 50 per cent. after about one hour, after which there is a gradual return to the normal; further doses of rays now produce no effect.—The Pigments of the Adrenals, by G. M. Findlay. The lipochrome pigments consist of carotin and xanthophyll, and possibly a third substance; melanin is of endogenous nuclear origin. All are increased in conditions of cell depression.—The Leucocyte Changes in Pellagra and Beri-beri, by G. M. Findlay. In pellagra neutrophils are normal, lymphocytes increased; in beri-beri both are decreased.—Palatal Tumour with Structure of Mixed Parotid Tumour, by J. Ritchie.—Obituary Notice, with portrait of the late Professor A. R. Ferguson, of Cairo.

New Inventions.

INSTRUMENTS FOR THE RELIEF OF DEAFNESS.

WE have examined various instruments for the relief of deafness designed by Mr. W. H. Pettifor, telephone engineer, 11, Victoria-street, London, S.W., and shown at the London Medical Exhibition last October. Two of them are of a novel character.

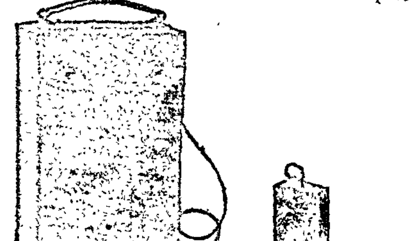


FIG. 1.—Bone Conduction Instrument.

Bone Conduction Instrument (Fig. 1).—This instrument has been designed for cases of obstructional deafness, where conduction of sound through the bone may be necessary. By lightly pressing the knob against the teeth or any part of the skull (directly behind the ear is an excellent place), vibrations are conveyed to the auditory nerves in much the same way as sound to the normal ear. The whole set comprises a transmitter, which contains a highly sensitive aperiodic microphone, a pocket battery, and the usual receiver. For purposes of practical use this instrument appears to be still in an experimental stage, but it may prove useful in a limited class of deafnesses.

Laryngeal Transmitter (Fig. 2).—This instrument consists of a transmitter which is placed against the larynx and held there by means of an adjustable band. This transmitter gives a very good wave-form on account of cutting out the transmitter diaphragm, thus excluding all extraneous sounds. The transmitter is connected to a small dry battery and a receiver, the latter being adjusted to give the most suitable pitch and strength. This instrument should be useful in teaching lip-reading, as the lips of the teacher are not obstructed by an instrument being held in front of them, the pupil also hearing the sound of the words. Another use to which this instrument could be put with great advantage is reading to a deaf person for a long period, as it is unnecessary to hold the transmitter, and the reader's lips can be observed. From personal trial we think this instrument likely to be of value in high degrees of middle-ear deafness.

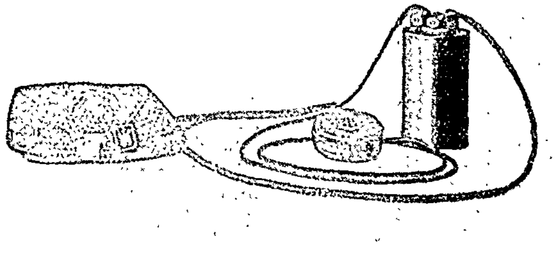
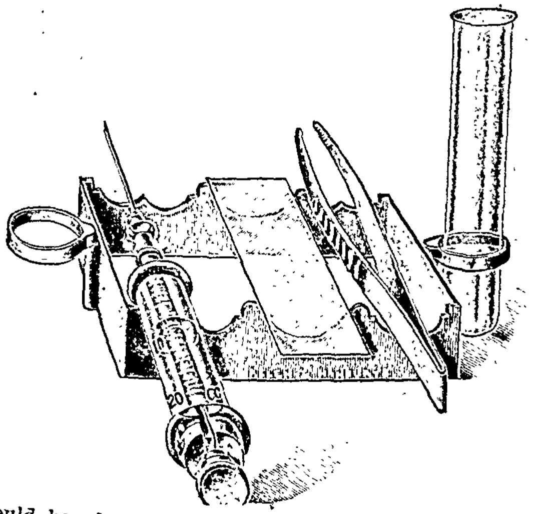


FIG. 2.—Laryngeal Transmitter.

A SIMPLE TRAY.

FINDING the need of a simple rest or tray for the impedimenta which are used in giving tuberculin injections, I have designed the tray shown in the accompanying illustration. The requisites for such an appliance are simplicity, stability, and asepticity; the tray will be found to meet these requirements. Dr. H. A. Ellis (Hackney Infirmary) has suggested to me that it would be of more value to laboratory workers if the spaces were adapted to hold slides and if a holder for test-tubes were added, and these alterations have been made.



The tray has been made for me by Messrs. Allen and Hanburys, Ltd., 48, Wigmore-street, London, W., who have constructed it to my design.

Gordon-square, London, W.C.

F. E. GUNTER.

THE LANCET.

LONDON: SATURDAY, JANUARY 1, 1921.

The New Year.

The beginning of the year is used by all thinking people, by all people that is who revise the plans of the future by the experience of the past, as a season in which it is convenient to take stock of their position; and what holds good for thinking individuals should hold good for a learned profession. But such provisions and revisions, to have full value, should not be too limited, for, as has been frequently pointed out, any tendency to regard the separate years as defined periods rather than as arbitrary subdivisions of time may lead either to unwarranted optimism or to feelings of depression which fuller consideration would not confirm. The prospect of medicine for the new year is both wide and perplexing. On the one hand, many new avenues of medical progress, and even of medical adventure, have been opened up, and large schemes, for the most part founded upon large ideas, have been laid before us; but, on the other hand, the means to traverse these avenues and the opportunities for carrying out these schemes seem, for the moment at least, to have been withdrawn. There is no money. With the roll of unemployment as it is, and with the vast demands on the country necessitated by an unprecedented war, there can be little prospect of money in large sums being forthcoming immediately for purposes of medical administration. It is clear that only the most urgent demands are likely to be satisfied, and the probability is that the satisfaction given will be but partial. And if the State is thus hampered, private individuals are no less so—disregarding prices and disregarding money values, we have only to look, as most of us are doing or have recently done, at the income-tax demands to realise how difficult it will be in the immediate future to rely in any large extent upon personal generosity. That is the pessimistic side, which we suggest may often seem less black when its shadows are steadily scrutinized.

The failure of Parliament at this juncture to attend with sympathy to the requisitions of the Ministry of Health in matters of grave national urgency is largely accounted for by the fact that the public have not appreciated the measure of that urgency; following an easy lead given to them in many places, they have fallen into the belief that the Ministry of Health, in its hurry, is willing to embark on a course of unconsidered expenditure. We believe, as well as hope, that such a view will not long prevail. It may be in the minds of our readers that much the same mental attitude was popular, and was superficially justified, upon the introduction of the National Insurance Act, but quite soon legislation for national insurance against sickness and its results was seen to be one phase in a consecutive story, the story of the development of medical practice; and though many deplored, and may still deplore, the machinery inflicted upon that development—going even so far as to speak of it as retrogression—we must own that the Insurance Act followed upon a wider understanding by the public of the essential part that medicine must play in social reform. And that is the position which to-day is more obvious than it was seven years ago. The public demand from medicine to-day, from every branch, section, and division of our calling, that we should assist in the improvement of the social, moral, and physical conditions of the State. The influential valuation of medicine is shown by the fact that day by day a medical side of things makes itself apparent, compelling from intelligent people the recognition of the spread of our science. This being so, it is perfectly impossible to believe that the difficulties with which we now struggle will remain permanent through lack of money. But while money is not forthcoming the work of medicine must not be allowed to stand still. Let us remember that if less money is available for carrying through large schemes there is less need for money in many directions, inasmuch as in the last few years a levelling down of riches has been accompanied by a levelling up of poverty. The improvement of nutrition in the London school children, and even in the condition of their teeth, which is perhaps the best criterion of early nutrition, points this out clearly enough. The effect of this levelling on the financial aspect of general practice has not yet been fully realised, but experience has somewhat unexpectedly shown a growing content with the remuneration derived from contract practice on present lines. And it would require a national cataclysm to upset the capitation basis of the large part of medical practice for the next generation.

Another consoling reflection is the increasing willingness of all ranks of society to respond to the teaching of hygiene. Grandmotherly legislation and fatherly local authorities were doubtless necessary to start, let us say, the mining community on the paths of true health; but having seen a little of what medical skill and hygienic protection may do for his happiness and efficiency, the miner, at all events, is taking his medicine seriously and is inclined to make the arrangements for himself. It seems to us that the future, if we look at it without passion or prejudice, is by no means discouraging as regards medicine in its broader aspects of national health and efficiency.

Insanity and Responsibility.

At a recent trial at the Central Criminal Court, Albert John Bartlett, indicted for the murder of a woman, was found by the jury to have been guilty of the act, but to have been at the time insane and not responsible for his actions. The trial has given prominence again to the questions arising out of the rule laid down in connexion with McNaughten's case in 1843, and since followed of necessity in all such cases; this makes the crucial question in determining legal responsibility, whether the accused understood the nature and quality of his act and knew that it was wrong. Sir Robert Armstrong-Jones, who was called for the defence by Bartlett's counsel, had examined the prisoner in Brixton Prison, and gave evidence as to conditions he had observed. In the course of cross-examination and of questions put to him by the judge, he expressed the view that the rule laid down in McNaughten's case in the early half of the last century was antiquated and required revision in the light of more recent medical knowledge than was then available. Mr. Justice DARLING, in summing up to the jury, called their attention to evidence upon which, in accordance with the existing law, they might find that the accused was insane, and this they did as stated above. His lordship, however, in the course of doing this, commented upon the views of Sir ROBERT ARMSTRONG-JONES as to the accepted rule in such cases, and is reported as having said: "We take the law of England from the King's Bench, and not from Harley-street; from the House of Lords, and not from Wimpole-street or any other street." As to this, it is hardly necessary to point out that a medical witness, like any other witness, is obliged to answer truthfully questions put to him in cross-examination or by a judge. If he holds an opinion as to a rule of law, and is asked what it is, his reply can hardly be treated in fairness as an attempt on his part to dictate to the court. Apart from this, the learned judge's remark has given publicity to a question upon which many medical men hold strong opinions.

This they have as good a right to do as members of the legal profession, and their other fellow citizens, the question being not what the rule of law is but whether it falls short of being what it ought to be. The point raised may be stated, perhaps, thus: a man may be insane, even to the extent of being recognised and certified as such, so that he is detained in an asylum, and may yet be capable of knowing the nature and quality of the act of killing another, and of knowing that it is wrong. He may, however, some day commit that act, still knowing its nature and quality, and still knowing that it is wrong, but impelled thereto by insane impulse, through a defect of will-power, such impulse being irresistible, dominating, and compulsive. Sir HERBERT STEPHEN, writing from long and wide experience of criminal trials, has, inter alia, replied to this view, as stated in the *Times* by Sir ROBERT ARMSTRONG-JONES, holding that there is no need for a jury to have the question put to them, "Could he help doing it?" because, in fact and in practice, when they think that a man has acted under an insane and irresistible impulse, they always answer in the negative the question now put to them: "Did he know what he was doing and did he know it was wrong?" Such an argument will not convince those alienists who find the present law to need revision. Their view will probably be that the fact that juries find verdicts, frequently or generally, which could be shown not to be in accordance with the law, if their reasons for arriving at them could be analysed, is no reason why the law should be left without change or challenge. Their conclusion will rather be that such a condition of things points to the desirability of inquiry, in order to ascertain whether the rule should not be altered, so that it may commend itself to juries and be universally and lawfully followed.

After all, the principle to be kept in view can hardly be denied. The law permits a special verdict to be returned in the case of certain prisoners because, owing to their proved mental condition, to punish them as ordinary criminals would be contrary to justice and humanity. It is asked now whether a standard regarding the mental condition to be proved which was set up three-quarters of a century ago accurately interprets modern conceptions of what is just and humane. It seems to us quite likely that it is nothing of the sort, and at all events the serious question remains for investigation as to what weight should be given to medical as well as to legal opinion.

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Occupational Hygiene and the School Medical Service.

THE annual report of the chief medical officer of the Board of Education concludes with the sentence:—

> The final product of the School Medical Service should not be a statistical record, but an alert and growing individual, equipped for the manifold functions of life, able to work with efficiency, able to enjoy life with keenness and appreciation, a healthy member of a healthy community.

Various suggestions are forthcoming as to why achievement lags so far behind intention. One is given in the current number of *School Hygiene*, a journal which has kept interest alive in the scientific aspects of school health and has had an influence outside its immediate circle. We are glad, therefore, to learn that the journal is to enjoy a renewed existence under the editorial guidance of Dr. JAMES KERR and Dr. C. W. HUTT. A valedictory article, written under the shadow of discontinuance, takes a serious view of the outlook for school hygiene as a branch of scientific knowledge, suggesting, in fact, that progress in this direction during the last decade has been almost negligible. A point is made of the crystallisation of procedure into forms and schedules, which, it is allowed, favours the accomplishment of routine, but which, at the same time has its drawbacks. These are summarised as follows:—

> "The technical work of school hygiene has been discounted by shibboleths which have placed the responsibility on medical officers of health, so that the people who know and do the work do not get the credit or hearing which they deserve. Unconsciously interest and pride in their work suffers, and now the whole status of the service has been so lowered that it may be regarded as a blind alley into which the young practitioner should only venture with the utmost circumspection. Yet school hygiene, if the methods of science were properly regarded, is of prime importance, and has a rich harvest to yield. It should even now be giving much greater value for the money spent, often, indeed, in largely wasted efforts."

Fortunately the article does not stop at this harsh indictment, which fails to recognise the difficulties of administration, but proceeds to suggest the remedy—namely, that the whole field of hygiene in schools should be opened up for educational research and treatment, the Universities to recognise training in this fundamental branch of occupational hygiene and to institute a diploma in it. The proposed training would have as its basis the proper handling of statistics in investigations of distribution and association, a broad knowledge of physical conditions—heating, lighting, ventilation, and the like—and of the problems of social disease and healthy living in general. Study of fatigue symptoms and their indications, the physiological effects of food, rest, and recreation would constitute a first part of the course, to count as the equivalent of the public health diploma course. The second part would comprise a knowledge of industrial conditions and of school hygiene, on which the industrial efficiency of the human unit primarily depends. The occupational environment of the growing child, or, in other words, educational hygiene, is still in a plastic condition, and its study would be comprehensive under this intensive attention, and include, among other things, a consideration of bodily and mental development and retardation, and the effects of artificial conditions on the growing organism.

For ourselves, we are satisfied that the position of medical officer to an Education Committee, especially if he also advises the Committee for the Care of the Mentally Defective, is one full of scientific interest. He will have, in fact, barely time to make use of all the material which passes through his hands. But the position of the assistant school medical officer, if limited to inspecting children and filling up Board of Education schedules, must obviously be monotonous. Some senior officers see to it that their juniors have clinic work as well, but the medical profession as a whole has set its face against the school medical officer undertaking any treatment except affections of the skin and minor ailments. To carry out the Education Act of 1918 will involve the employment of many more assistant medical officers, so that the individual prospect of becoming a senior in the service will become more remote. The suggestion, therefore, that the School Medical Service should be widened to include duties with regard to factories and employees is welcome, and would give more scope for research. The school doctor knows all about the young people, and is in a better position to carry out the work than the certifying factory surgeon. To sum up: Add to the school medical officer's work the supervision of young people and the care of the mentally defective, plan out a special course of study for industrial and school hygiene, provide a stimulus to research and inquiry, and in a comparatively short time the School Medical Service would not only be content, but would attract from abroad seekers after that knowledge which it is in its power to gain and to give. But the abuses to which a multiplication of special diplomas may lead are, we presume, well known to the School Medical Service, and the conditions for obtaining the projected diploma will have to be carefully thought out.

The Financial Position of the Hospitals.

A CONFERENCE of Representatives of the Honorary Staffs of Voluntary Hospitals was summoned just before Christmas by the British Medical Association. The gathering was presided over by Sir JAMES GALLOWAY in the Barnes Hall of the Royal Society of Medicine, and we give in another column a brief account of the discussion, as well as the interesting conclusions that were arrived at. At the outset of the proceedings a resolution was passed recording the view of the meeting that the voluntary method of administration is to the advantage of the public, of medical science, and the medical profession. And while various other resolutions expressed approval of State subsidies, the necessity for greater help from employers of labour, and the value of patients' contributions, one speaker, Dr. ASTLEY CLARKE, describing the position of the Leicester Royal Infirmary, was able to tell the meeting that at this institution solvency had always been maintained under the voluntary system, through the intelligent regard by the administration of the particular qualities and needs of the centre and district. Two other important points emerged from the discussion—rather from the views expressed than from the words of any resolution. First the meeting concluded that payment by the State for pensioners, or by the National Insurance Commissioners for panel patients, in no way detracted from the voluntary status of an institution. And, secondly, that it is right that the honorary staffs of voluntary hospitals should receive payment in certain circumstances, but, of course, when the claims of the hospitals for maintenance have been satisfied. The Conference is to be the prelude of similar gatherings, it being clear that it would be advisable to consider in this reasoned way many other important matters in connexion with the financial position of the hospitals. In this connexion we may refer to an important communication published this week from Dr. J. C. MUIR, medical superintendent of the Whipps Cross Hospital of the West Ham Board of Guardians. Dr. MUIR is writing in reference to the recent discussion at the Harveian Society upon the future of the Poor-law infirmaries—a discussion which will be renewed at the end of this month; but what he says has its distinct message to all who are concerned with the voluntary hospitals, for these must be affected by the elevation of the Poor-law infirmaries to general hospital rank. The question, for example, of the payment of medical staffs will enter a new phase when any practical linking-up occurs between the voluntary and the Poor-law hospitals.

A PRIZE IN OPHTHALMOLOGY.

Mr. W. EDMONDS and Miss S. EDMONDS, of Wiscombe Park, Colyton, have founded a prize in ophthalmology in memory of their brother, NICHOLAS GIFFORD EDMONDS, Lieutenant, 2nd Black Watch, who fell at Magersfontein on Dec. 11th, 1899. The prize is £100, and is awarded every two years for the best essay on a subject dealing with ophthalmology and involving original work. The competition is open to all British subjects holding the medical qualification. Subject to certain legal regulations, the management of the prize will be in the hands of a committee nominated biennially by the Medical Board of the Royal London Ophthalmic Hospital, who will select the subject of the essay and elect two examiners. The winner of the prize will have the option of giving a lecture on the subject at the Royal London Ophthalmic Hospital. The Middlemore prize, awarded triennially and run on very similar lines, has rendered valuable service to ophthalmology, and many of the prize essays remain as standard works. It may certainly be expected that this generous gift awarded biennially will also act as a strong stimulus to original work. There cannot be too many such incentives to break away from routine in professional life, and to stimulate initiative; many men have originality and power of investigation, but from lack of stimulus do not settle down to any definite line of research. The setting of a concrete subject is often all that is required to fire a man to carry out a valuable piece of work. By indicating the subject of the essay two years before the award ample time is afforded for thorough observation, carrying out experiments, and careful compilation. Mr. and Miss EDMONDS have placed the medical profession under a deep obligation by their intelligent liberality. Their wish in founding the prize is that suffering may be alleviated, and it may be confidently anticipated that this end will be attained.

Annotations.

"Ne quid nimis."

IN MEMORY OF HUXLEY.

Huxley once said that the only instruction of educative value that he had ever received was that given in the lectures on physiology delivered by Wharton Jones at Charing Cross Hospital Medical School. It is therefore peculiarly fitting for the lecture founded at Charing Cross Medical School in Huxley's memory to be delivered by a physiologist. Of the 11 lectures held since his death in 1895, three have now emanated from the heads of physiological laboratories. In 1896 Sir Michael Foster inaugurated the lectureship with a discussion of the influence on subsequent medical thought and procedure of three physiological discoveries made at about the time that Huxley was a student—the work of the brothers Weber on the inhibitory action of the vagus, the experiments of Bernard leading to the conception of the vaso-motor system, and the researches of Waller on nerve degeneration. In 1906 Professor J. P. Pavlov gave an account of his experimental investigations into the psychical faculties of the higher animals; and this year Professor Gowland Hopkins, no less illustrious than his physiological predecessors, has given the important exposition of the present ideas on nutrition which we publish on p. 1. In a few remarks introductory to his lecture Professor Hopkins spoke of the responsibility felt by him on this occasion, which was the greater inasmuch as the lectures had suffered interruption through the catastrophe which had made a breach in the continuity of most things. He pointed out that the passage of these tragic years seemed to have given a disproportionate remoteness to the life and times of Huxley: for it was now no more than a quarter of a century since Huxley died, and barely 40 years since the days of his main activities. Professor Hopkins said that to many, if not to most, of his predecessors in the lectureship, Huxley was personally known, but that he himself had no memories due to such acquaintanceship, and it was to be feared that they would not belong to many of those who would follow him. These lectures indeed were fated soon to lose a particular character which had hitherto been attached to them. A very few more years and the thoughts of the audiences would be directed towards a figure wholly historic, even as elsewhere they were directed on similar occasions to the personalities of the older heroes of medicine and of science. But yet for mid-Victorian science Huxley's gifts provided both sword and buckler. It is not too much to say that in those days the younger biologists, while profiting from his scientific labours, worked with a definite sense of his protection. Professor Hopkins voiced the regret of us all that in his peculiar position as the champion of scientific aims Huxley has had no true successor. His pen would have seen to it that the services of science to the nation during the war should not fade from the public memory as they are fading to-day. We miss the gifts we commemorate.

CHRONIC GASTRIC DISORDERS.

SPEAKING from an experience of nearly 30 years and almost a thousand hospital gastric cases, Mr. A. E. Maylard, in the first of three interesting James Watson lectures delivered last year in Glasgow, and now published in booklet form, deals with chronic gastric disorders dependent upon other causes than those of an ulcerative, carcinomatous, or obstructive nature; and he points out that, owing to the great successes of gastric surgery during the last 25 years, a large number of patients come under the care of the surgeon for gastric symptoms which are not due to organic disease of the stomach or duodenum. Therefore, he draws attention to the care required in diagnosis and the need for collaboration between physician and surgeon, so that operations should not be undertaken for gastric symptoms due to organic or functional disease of the nervous system, such as locomotor ataxy, hysteria, neurasthenia, or to such distant sources of infection as dental caries and diseases of the nasal sinuses. He speaks of three primary essentials to be cleared up in every case:—

> "(1) Whether it is the stomach itself that is the cause of the symptoms; (2) whether it has become the seat of functional or organic derangement as the result of mischief elsewhere; or (3) whether the symptoms are merely apparently connected with the viscus; that is to say, the stomach is quite healthy in itself, but the symptoms which appear to be gastric are merely the referred indications of disease in some other part of the body."

The need is also pointed out for regarding an operation for gastric symptoms as an exploration of the whole abdomen, so that causes of reflex gastric symptoms, such as cholecystitis, chronic pancreatitis, and diseases of the intestines, appendix, and female genital organs, may not be overlooked. Mr. Maylard considers that the frequency and importance of appendical dyspepsia has been greatly exaggerated. In many cases an exploration is still necessary to settle the diagnosis, so that organic disease, such as chronic ulcer and carcinoma, may be found and treated in its early and hopeful stages.

For the treatment of chronic gastric ulcer Mr. Maylard leans to partial gastrectomy, disregarding the teaching of long experience that gastro-jejunostomy, with or without excision or cauterisation of the ulcer, cures the large majority of these patients with a much smaller risk. For diagnosis he relies chiefly on the clinical symptoms and expert radiographic examination. He does not believe much in "test-meals," but apparently has no experience of repeated examinations at short intervals after a meal—a method which, when well established, may make us all change our views. For duodenal ulcer he recommends that "if the part of the duodenum implicated cannot be freely mobilised so that the involved bowel can be excised, gastro-jejunostomy must alone suffice," but excision of the ulcer-bearing area appears to us unnecessarily severe, especially when such a comparatively safe and simple operation as gastro-jejunostomy cures over 90 per cent. When there has been serious hæmorrhage Mr. Maylard recommends, in addition, exclusion of the duodenum by "completely severing the stomach at its pyloric extremity," because he believes that bleeding is less likely to recur when the food cannot pass over the ulcer and the peristaltic wave may be interrupted.

With regard to gastric carcinoma he quotes Dr. C. H. Mayo:—

> "The most common cancer is that of the stomach. More than one-third of the cancer in men, and more than one-fifth of the cancer in women appear in this organ; and, inasmuch as the condition in nearly one-half of such patients who come to the physician for examination is inoperable, there is room for some improvement in the matter of securing earlier recognition of the disease" (*Annals of Surgery*, 1919, p. 236).

He also advocates that steps should be taken to educate the public upon this subject, so that patients should seek treatment while the disease is in its early stages. Mr. Maylard divides the causes of pyloric obstruction into anatomical and pathological, the latter depending on new growths. As regards the former, he pointed out in 1904 that, quite apart from congenital hypertrophic stenosis of the pylorus, a developmental narrowing of the orifice existed in some cases, and very gradually gave rise to obstructive symptoms. He has himself operated on 36 patients suffering from this condition with satisfactory results. Landerer had previously and independently drawn attention to the same condition, which is due to an excess of reduplication of the pyloric fold whereby the width of the valve is increased and the channel diminished, so that it will not admit the index finger. As a result of this partial obstruction the stomach hypertrophies and ultimately dilates when the muscular power gradually diminishes. For this condition Mr. Maylard prefers gastro-jejunostomy to Finney's operation, and he advocates gastro-jejunostomy also for ordinary pyloric obstruction following ulceration; in this case he makes his anastomosis as near the pylorus as possible. Mr. Maylard does good service by again drawing attention to the variable and often misleading symptoms and radiographic appearances of partial pyloric obstruction, the symptoms and signs often disappearing when the patient is at rest under good conditions, only to reappear when he returns to work. Mr. Maylard strongly advises operation when the symptoms of undoubted gastric disease do not completely recover after a reasonable period of conservative treatment, in order to avoid the serious consequences of delay in cases of ulcer, carcinoma, or obstruction.

SILICOSIS ON THE RAND.

THE main interest of the report just published[1] of the South African Miners' Phthisis Board for the year ending July 31st, 1919, lies in the portion contributed by Dr. W. Watkins-Pitchford, chairman of the Medical Bureau. The importance of the work which is being conducted on the Rand in relation to silicosis may be appreciated from the statement that 4000 persons were, during the year, submitted to the careful examination required before men are permitted to commence work underground, while some 15,000 men are being kept under regular observation at periodical examinations. Indeed the activities of the Board probably represent the most complete and intensive inquiry ever made into the occurrence of any disease, and their annual reports must gather in interest as time goes by. Unfortunately for medical science, the period now reported upon was interfered with by the enlistment and subsequent return to the goldfields of many miners. Nevertheless, even this interruption in the normal course of employment has been utilised to throw light on the occurrence of the disease. Thus, in some instances,

> "miners of many years' standing, who had but slight apparent damage to the lungs on leaving, showed definite physical signs upon their return from military service; and in more than one instance a miner of long service, who left with apparently a normal chest, returned in a condition of fully developed primary silicosis."

Development of silicosis in the absence of exposure to risk had previously been suspected, now it is a proven fact. A further important point must now also be accepted, namely, that—

> "Tuberculous infection will often bring about a rapid development of silicotic changes in the lungs of a miner who has habitually inhaled siliceous dust but who may have hitherto shown little or no indication of pulmonary damage. ...... In these cases one might almost say that the *tuberculosis has 'predisposed' to the silicosis;* such a statement is, indeed, true in its literal sense with respect to men who are the subjects of tuberculosis before they begin hard-rock mining."

The statistics quoted do not yet indicate any beneficial results from the recent improved conditions of underground work. This is due partly to war-time interference with employment which has rendered comparison with figures of former years impossible, and partly to the fact that results are not yet due in a disease with so slow an onset. "We have, meanwhile, to gather the residue of the evil crop which sprang from the ignorance and indifference of the past." The value of initial examination, which commenced September, 1916, and has been applied to 5175 men (of whom 2741 are known to be in underground employment), is clearly shown by the fact that only one has developed tuberculosis and no one silicosis. If this remarkable record is maintained the disease will be swiftly eradicated from the mines. Meanwhile although the toll it is taking of those at work before 1916 remains high—viz., 55 cases of silicosis or of silicosis with tuberculosis per 1000 working miners—"of a total of 3166 men who had worked, on the average, for a period of nine years and six months, only 349, *not all*, had become silicotic; the proportion was only 1 in every 9, or 11 per cent."; while of these silicotic cases only 15·6 per cent. were affected with tuberculosis—the complication without which silicosis would be a comparatively innocuous pathological condition. We await further reports, which must be of great moment to all those concerned with the administration of schemes under our own Workmen's Compensation (Silicosis) Act of 1918.

EFFECTIVE X RAY THERAPEUTICS.

AT the December meeting of the Section of Electro-therapeutics of the Royal Society of Medicine (p. 24) a description was given by Dr. Reginald Morton of a system of treatment, primarily aimed at the cure of uterine carcinoma, that may have a profound influence upon radiological and surgical procedure in the treatment of malignant disease in general. Dr. Morton spent a week in the Women's Clinic at Erlangen studying the methods there employed, and he came away with the conviction that the apparatus and technique constitute a real advance in radiology. No new principle is involved, but special tubes have been designed to give a greater degree of penetration and intensity than has hitherto been available. Until now the loss of radiation by dispersion and absorption has been sufficient almost to nullify any effort to destroy deeply seated malignant growth. With the system here described, for which Privat-dozent Dr. Hermann Wintz (who succeeds Dr. L. Seitz as professor at the end of the present session) is mainly responsible, nearly 20 per cent. of the skin dose is transmitted to a depth of 10 cm.; hence by using simultaneously a number of portals of entry for the rays the treatment of central carcinoma becomes practicable, for it has been found that a cancerous growth will disappear if its whole mass has been subjected to a dose only slightly in excess of that which normal skin will stand without serious injury. Over 80 per cent. of cases of uterine carcinoma, with more or less involvement of the parametria, treated by this method alone during the year 1918, are still well and leading normal lives. It is the same with 75 per cent. of cases of mammary carcinoma treated without operation during 1917. The method is, of course, inapplicable after general dissemination has occurred, but it is not too much to hope that most cases of malignant disease will come under skilled observation before this serious condition arrives.

Another class of disease that has given excellent results with this method of treatment is the tuberculous gland and joint, especially in young subjects where the disease has not progressed to actual destruction. A notable feature of the system is the high degree of accuracy in the dosage. Nothing is haphazard; every dose is a separate calculation, and the whole procedure is standardised so far as the present state of knowledge permits. We are gratified to learn that similar equipment is being installed in at least two London hospitals, so that the advantages of these discoveries will soon be available for all. The results will be watched with keen interest.

GONOCOCCAL ENDOCARDITIS IN A CHILD.

SINCE Thayer and his associates at the Johns Hopkins Hospital established the specific nature of the endocarditis occurring in gonorrhœa many cases have been studied in adults, but the complication in the gonorrhœal vaginitis of children is rare. In the *Journal of the American Medical Association* of Dec. 11th Dr. H. L. Dwyer has reported the case of a girl, aged 23 months, who was admitted to hospital with painful swelling of the left ankle and wrist.

> The illness began three weeks before with pain, swelling in left foot, fever, and vaginal discharge. A friend living with the family also had a vaginal discharge. The child was poorly nourished and irritable. Moving the limbs caused great pain. The skin was yellow and the sclerotics were of a greenish-yellow tint suggesting jaundice. The left ankle and wrist were swollen and very painful. In the lumbosacral region was a superficial abscess 2 inches in diameter. A vaginal discharge was present. The apex beat was just inside the nipple line in the fourth interspace. The heart was beating rapidly and irregularly. A soft blowing systolic murmur was audible over the entire cardiac area, was heard best at the apex, and was transmitted to the axilla. The abdomen was distended. The temperature was 104°,

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[1] Annual Report of Miners' Phthisis Board, Union of South Africa. Capetown, 1920. 6s.

pulse 140, and respirations 42. Smears from the discharge showed many Gram-negative intracellular diplococci. The abscess was opened, and similar organisms were found in the pus. A culture from the blood also showed them. Under rest the pains in the joints subsided, as did the abdominal distension. The spleen could then be felt to extend 2 inches below the ribs. The cardiac murmur became harsh and intensified, and death took place on the seventh day in hospital. The necropsy showed greenish-yellow cauliflower vegetations on the free borders of the mitral valve. Cover-glass preparations from the valve revealed Gram-negative diplococci.

Gonococcal endocarditis in children is rare. Satterthwaite in 100 cases of endocarditis in New York children found only one due to the gonococcus. Abscess in the subcutaneous tissue or in muscle has been observed in a few cases of gonorrhœa. Dr. Dwyer suggests that the abscess in the sacral region in his case was the result of localisation of organisms from the blood stream due to lowered resistance in that area from pressure. The usual features of gonococcal endocarditis are irregular intermittent fever, chills, and anæmia, and do not differ from those observed in endocarditis due to other organisms. An increase in the intensity of the murmur from day to day, such as was found in the present case, has been noted by several observers.

THE EAR AS PROTOTYPE OF THE TORPEDO.

Dr. H. Hartridge, in the *Journal of Physiology* (vol. liv., No. 4), offers an ingenious suggestion to account for the well-known association in the inner ear of such diverse and differently constituted apparatus as the semicircular canals, the otolith mechanisms on the one hand, and the cochlea with its adjuvant fenestræ, fluids, and middle-ear chain of ossicles on the other. The suggestion is that the mammalian organ subserved in the ancestors of mammals the function of perceiving depth below water surface, and was therefore associated with the semicircular canals and otolith organs in the identification of position and direction of travel. As the author shows, there is a close mechanical analogy between the auditory apparatus of mammals and the depth-controlling gear of the naval torpedo. In the latter are two mechanisms which operate together to control the depth at which the projectile shall travel beneath the surface of the water. 1. A pendulum under the influence of gravity records any deflection that the long axis of the torpedo may make with the horizontal, and if such deflection exists it turns the horizontal rudders in such a direction that the deflection tends to be corrected. 2. A hydrostatic membrane, a sheet-rubber diaphragm, situated in the side of the torpedo in contact with the water outside and on the inside with the air-filled interior. As the torpedo gets deeper in the water the hydrostatic pressure tends to press the diaphragm inwards against a resisting spring. If the torpedo is at the correct depth at which it is required to travel, the hydrostatic pressure produces a force on the diaphragm that is just balanced by the force exerted in the opposite direction by the spring; but if the torpedo gets too deep or too shallow the forces no longer balance, and the diaphragm is pressed inwards or allowed to move outwards respectively, and this causes appropriate deflection of the rudders. If pendulum and hydrostatic membrane operate together, it is found by experiment that the one eliminates the tendency to deflection caused by the other, and the torpedo is thus caused to travel along a straight path at a given distance under the surface. Applying these results to the fish, the latter for the proper direction of its path in three dimensions in space would requre at least a mechanism to give information concerning depth below surface and one to be influenced by gravity, and therefore to show deflection from the horizontal axis. The latter mechanism is identified as the otolith organ. Dr. Hartridge suggests that the tympanum, middle ear, and cochlea are to be identified as the depth-recording mechanisms, the tympanum being the counterpart of the rubber hydrostatic membrane of the torpedo, the ear ossicles the counterpart of the levers which transmit the motion of the diaphragm under varying hydrostatic pressure to the rudder-control mechanism, the stapedius muscle acting as the spring which in the torpedo balances the forces produced in the diaphragm by the hydrostatic pressure. Any mechanism for recording changes in hydrostatic pressure has a fluid—e.g., water on one side of the diaphragm, and a readily compressible fluid, gas, or air on the other side, with arrangements for renewing the air, as it is liable to be absorbed. In shallow water fish and in most reptilia the renewal of air in the middle ear is readily affected by the fish coming to the surface of the water and taking in the air and equalising the tension by the mouth and Eustachian tubes. In some fish the air in the swim bladder is renewed in a similar way. In certain fish living below the surface there is a special connexion with the gas-secreting gland, the swim bladder. In many osseous fishes this is effected through a connexion between the swim bladder and the middle ear by means of a tube, or the swim bladder itself forms the chamber, the change in volume of which (with change of depth below surface) brings about movements in the mechanism which connects with the middle ear, as in carp, loche, and sleat-fish. The remarkable mechanism of articulated bones which connects the ear and the swim bladder in the Siluridæ seems to be associated with the perception of depth and not with audition—and is for measuring air-bladder volume under changes of hydrostatic pressure. The view is advanced that the auditory apparatus of mammalia, which is represented by the cochlea, fenestræ, ossicles, and tympanum, once formed in their ancestors an apparatus for perceiving not sound vibrations but the depths below sea-level. Granting this, it would explain why the cochlea, semicircular canals, and the otolith organs are associated together anatomically, and have a common nerve; and if the cochlea perceives depth below surface all three will be directly concerned with the perception of position and the control of direction.

INDIGENOUS MALIGNANT TERTIAN MALARIA.

A CASE of malignant tertian malaria contracted by a resident of Liverpool and ending fatally was reported by Professor E. E. Glynn and Dr. J. C. Matthews at a recent meeting of the Liverpool Medical Institution. The case is of unusual importance on more than one ground. Not only is it the first recorded instance of indigenous malignant tertian malaria occurring in England since our knowledge of the differentiation of the various forms of malaria has attained its present high degree of precision, but the disease was contracted in a district considerably to the north of the areas where indigenous malaria has in past times been prevalent. Further, the case stands alone as the only reported instance of fatal indigenous malaria of recent years. The patient was a girl, aged 18; she was a native of Liverpool, and had lived in the same house in the town for ten years. Apart from anæmia, she was well and active up to a fortnight previous to her death. Two days before the onset of her illness she spent some hours in a valley which was subsequently found to harbour large numbers of hibernating larval and adult anopheline mosquitoes, but it is more than probable that she had become infected before this date, as anopheline mosquitoes are known to occur in one of the parks and the country round Liverpool where she was accustomed to walk. No suspicions were entertained as to the nature of her illness, and she died two hours after admission to the Liverpool Royal Infirmary on the fourteenth day from the onset of symptoms. Beyond considerable enlargement of the spleen, which was noted to be "dark, rather like malaria," the naked-eye appearances of the organs after death presented no characteristic features, and it was only on microscopic examination of blood-films and smears from the bone marrow and spleen that the nature of the case became evident. Organisms resembling degenerated crescents were present in the bone marrow, and in blood-films and smears from the spleen a large number of segmenting malignant tertian parasites were discovered. Specimens showing crescents

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METABOLISM OF INFANTS AND YOUNG CHILDREN.

onnexion between abnormal stools in infants
ctive fat-digestion has long been a subject of
mong pædiatricians. Any approach to accurate
ons of the alterations from the normal fat-
of fæces has been hindered by a lack of standard
or healthy subjects which could be accepted as
al in England. In the last two years a couple
tant contributions to this subject have appeared,
in America and the other in England. During
Emmett Holt, working with Angelia M. Courtney
len L. Fales, gave the results of laborious
tions on the normal and abnormal fat-
ism of infants and young children in a
of papers first appearing in the *American
of Children's Diseases*, and now reprinted
in the volume of Studies from the Rockefeller
for Medical Research for 1920 (vol. xxxiv.).
with the examination of the stools of
er of healthy breast-fed infants, the authors
at, although over 90 per cent. of the food-fat
orbed, the dried fæces contained on an average
as 34·5 per cent. of fat. Of this fæcal fat
er cent. was in the form of neutral fat, and
per cent. in the form of soap. In healthy babies fed on modifications of cow's milk the digestion of fat appeared to be about as satisfactorily carried out as in the breast-fed, though such slight differences as were found were in favour of the latter. Constipation made very little difference to the proportion or splitting of the fæcal fat, but in the presence of diarrhœa the amount of fat wasted in the stools was increased and the proportion of soaps lowered, as might be expected with hurried and imperfect digestion. In the third and fourth of their papers the authors investigated the fat-metabolism of older children. On a diet of milk only, or of milk and cereal, the amount of fat in the stools was lower than that of the infants, but still reached a figure of 30 per cent. On a mixed diet this proportion was lessened to 18–20 per cent. This figure still seems a high one if we compare it with the 14·5 per cent. found in the case reported by Garrod and Hurtley,[1] of a normal boy on a mixed diet rich in fat. In rachitic children the American authors found a slightly increased fat loss, and in chronic intestinal indigestion the wastage was considerably increased. Finally, the important question of substitutes for butter-fat was considered. It was found that nut-butter and corn-oil were both well absorbed, and that to a considerable degree they may be safely substituted for the more expensive milk-fat. The authors are careful (on the evidence submitted we might almost say scrupulous) to state that vegetable fats must never be allowed entirely to replace the animal fat of the diet. How much of the latter must be taken to provide the necessary amount of fat-soluble vitamine they hazard no opinion. Another valuable paper dealing with the same subject was published by H. S. Hutchison[2] in April, 1920. This author, investigating independently in Glasgow, reaches figures closely agreeing with the American results as regards the absorption and digestion of fat in infants and young children. He finds that in rickets the excess loss of fat daily compared to that in healthy subjects averages 0·6 g., an amount which is sufficient to affect nutrition. In infantile atrophy he found no true defect in fat-absorption. He lays great stress upon the importance of ascertaining the daily weight of the stools before attempting to judge whether fat-absorption is normal or defective. It is evident that percentage estimations alone may lead to wrong conclusions in this matter, and that before a balance can be struck, the daily intake and output of fat must both be known. These two sets of investigations, agreeing closely with one another, certainly serve to establish a standard set of figures for the fat-metabolism of normal infants.

"SNOW-BLINDNESS."

A PAPER by Lieutenant-Commander E. L. Atkinson, read before the War Section of the Royal Society of Medicine (see p. 24), throws some fresh light on this subject, gained partly during service with Scott's Antarctic Expedition, 1911–1913, and partly in North Russia in 1919. As is well known, the ordinary symptoms are photophobia, lacrymation, and chemosis, coming on after an interval of several hours. In Commander Atkinson's experience the symptoms came on more rapidly, especially on entering a tent where a primus stove was burning. They also included slight hyperæmia of the retina, and later small corneal ulcers. Recovery, however, was the rule. The rays which cause "snow-blindness" are generally admitted to be the ultra-violet ones, which, being absorbed almost entirely by the cornea and lens, can in themselves have no direct action on the retina. Their action, however, was intensified by the excessive illumination of the Antarctic region, due to the countless ice crystals reflecting light into the eye from all directions. Exposure of the eyes for as little as 15 minutes to these conditions was enough to cause the symptoms. In certain cases another symptom followed—namely, diplopia. This was probably due to the excessive strain on the external ocular muscles caused by the unusual diffusion of light, resulting in the absence of any

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s de l'Institut Pasteur, vol. xxxii., 1918, September, No. 9.
Soc. Path. Exotique, Paris, vol. x., No. 10, December, 1917.

[1] Quarterly Journal of Medicine, 1912-13, vi., 249.
Ibid., 1919-20, xiii., 277.

pulse 140, and respirations 42. Smears from the discharge showed many Gram-negative intracellular diplococci. The abscess was opened, and similar organisms were found in the pus. A culture from the blood also showed them. Under rest the pains in the joints subsided, as did the abdominal distension. The spleen could then be felt to extend 2 inches below the ribs. The cardiac murmur became harsh and intensified, and death took place on the seventh day in hospital. The necropsy showed greenish-yellow cauliflower vegetations on the free borders of the mitral valve. Cover-glass preparations from the valve revealed Gram-negative diplococci.

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and segmenting parasites were exhibited at the laboratory meeting (see p. 26) of the Royal Society of Tropical Medicine and Hygiene in London. Subsequent examination of additional material showed numerous crescents in the bone marrow and a moderate number in the spleen and blood smears. The differential count of a post-mortem blood-film gave only 10 per cent. of polymorphonuclear cells, 28·2 per cent. lymphocytes, and 61·4 per cent. mononuclears. The diagnosis of malignant tertian malaria may therefore be regarded as abundantly proved; that the case was indigenous also admits of no question, and it is a matter of fair inference that the mosquito from which infection was derived had itself become infected from one of the many victims of malignant tertian malaria who have arrived in this country from abroad.

Although, as is remarked by the authors, it is probable that this is not the only case of malignant tertian malaria that has recently occurred in England, our climatic conditions are such that it is unlikely that cases of the kind are, or ever will be, other than exceptional. Lieutenant-Colonel S. P. James, I.M.S., showed some specimens to illustrate true indigenous malaria at the laboratory meeting to which we have referred. Even in France, under far more favourable climatic circumstances, very few cases of indigenous malignant tertian infection have so far been reported. Roubaud[1] has referred to isolated cases of infection, and slight epidemics of locally acquired malaria have been recently notified from various parts of France; usually the infection was with *Plasmodium vivax*, but he states that in some cases *P. falciparum* was equally the cause. Also Lagriffoul and Picard[2] record a locally acquired case due to infection with *P. falciparum*. These authors remark that the presence of locally acquired malignant tertian malaria in France should occasion no surprise, since it is known that in Macedonia it spreads in regions where the summer and autumn are not warmer than in the French Mediterranean region. Further, it was reported by Roux at a Plenary Session of the Sanitary Conference of the Allied Powers held in Paris in March, 1919, that of one group of 170 cases of malaria locally contracted in France during the summer and autumn of 1917, five were infections with *P. falciparum*. It should be observed that the heavy incidence of malignant tertian malaria in Macedonia occurs at a latitude considerably south of the southern limits of France, and, notwithstanding the statement quoted above, it is unlikely that the heat of summer on the French littoral approaches in length or severity that of the Struma and Vardar valleys.

FAT-METABOLISM OF INFANTS AND YOUNG CHILDREN.

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pulse 140, and respirations 42. Smears from the discharge showed many Gram-negative intracellular diplococci. The abscess was opened, and similar organisms were found in the pus. A culture from the blood also showed them. Under rest the pains in the joints subsided, as did the abdominal distension. The spleen could then be felt to extend 2 inches below the ribs. The cardiac murmur became harsh and intensified, and death took place on the seventh day in hospital. The necropsy showed greenish-yellow cauliflower vegetations on the free borders of the mitral valve. Cover-glass preparations from the valve revealed Gram-negative diplococci.

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[1] Annales de l'Institut Pasteur, vol. xxxii., 1918, September, No. 9.
[2] Bulletin Soc. Path. Exotique, Paris, vol. x., No. 10, December, 1917.

[1] Quarterly Journal of Medicine, 1912–13, vi., 249.
Ibid., 1919–20, xiii., 277.

Gonococcal endocarditis in children is rare. Satterthwaite in 100 cases of endocarditis in New York children found only one due to the gonococcus. Abscess in the subcutaneous tissue or in muscle has been observed in a few cases of gonorrhœa. Dr. Dwyer suggests that the abscess in the sacral region in his case was the result of localisation of organisms from the blood stream due to lowered resistance in that area from pressure. The usual features of gonococcal endocarditis are irregular intermittent fever, chills, and anæmia, and do not differ from those observed in endocarditis due to other organisms. An increase in the intensity of the murmur from day to day, such as was found in the present case, has been noted by several observers.

THE EAR AS PROTOTYPE OF THE TORPEDO.

Dr. H. Hartridge, in the *Journal of Physiology* (vol. liv., No. 4), offers an ingenious suggestion to account for the well-known association in the inner ear of such diverse and differently constituted apparatus as the semicircular canals, the otolith mechanisms on the one hand, and the cochlea with its adjuvant fenestræ, fluids, and middle-ear chain of ossicles on the other. The suggestion is that the mammalian organ subserved in the ancestors of mammals the function of perceiving depth below water surface, and was therefore associated with the semicircular canals and otolith organs in the identification of position and direction of travel. As the author shows, there is a close mechanical analogy between the auditory apparatus of mammals and the depth-controlling gear of the naval torpedo. In the latter are two mechanisms which operate together to control the depth at which the projectile shall travel beneath the surface of the water. 1. A pendulum under the influence of gravity records any deflection that the long axis of the torpedo may make with the horizontal, and if such deflection exists it turns the horizontal rudders in such a direction that the deflection tends to be corrected. 2. A hydrostatic membrane, a sheet-rubber diaphragm, situated in the side of the torpedo in contact with the water outside and on the inside with the air-filled interior. As the torpedo gets deeper in the water the hydrostatic pressure tends to press the diaphragm inwards against a resisting spring. If the torpedo is at the correct depth at which it is required to travel, the hydrostatic pressure produces a force on the diaphragm that is just balanced by the force exerted in the opposite direction by the spring; but if the torpedo gets too deep or too shallow the forces no longer balance, and the diaphragm is pressed inwards or allowed to move outwards respectively, and this causes appropriate deflection of the rudders. If pendulum and hydrostatic membrane operate together, it is found by experiment that the one eliminates the tendency to deflection caused by the other, and the torpedo is thus caused to travel along a straight path at a given distance under the surface. Applying these results to the fish, the latter for the proper direction of its path in three dimensions in space would require at least a mechanism to give information concerning depth below surface and one to be influenced by gravity, and therefore to show deflection from the horizontal axis. The latter mechanism is identified as the otolith organ. Dr. Hartridge suggests that the tympanum, middle ear, and cochlea are to be identified as the depth-recording mechanisms, the tympanum being the counterpart of the rubber hydrostatic membrane of the torpedo, the ear ossicles the counterpart of the levers which transmit the motion of the diaphragm under varying hydrostatic pressure to the rudder-control mechanism, the stapedius muscle acting as the spring which in the torpedo balances the forces produced in the diaphragm by the hydrostatic pressure. Any mechanism for recording changes in hydrostatic pressure has a fluid—e.g., water on one side of the diaphragm, and a readily compressible fluid, gas, or air on the other side, with arrangements for renewing the air, as it is liable to be absorbed. In shallow water fish and in most reptilia the renewal of air in the middle ear is readily affected by the fish coming to the surface of the water and taking in the air and equalising the tension by the mouth and Eustachian tubes. In some fish the air in the swim bladder is renewed in a similar way. In certain fish living below the surface there is a special connexion with the gas-secreting gland, the swim bladder. In many osseous fishes this is effected through a connexion between the swim bladder and the middle ear by means of a tube, or the swim bladder itself forms the chamber, the change in volume of which (with change of depth below surface) brings about movements in the mechanism which connects with the middle ear, as in carp, loche, and sleat-fish. The remarkable mechanism of articulated bones which connects the ear and the swim bladder in the Siluridæ seems to be associated with the perception of depth and not with audition—and is for measuring air-bladder volume under changes of hydrostatic pressure. The view is advanced that the auditory apparatus of mammalia, which is represented by the cochlea, fenestræ, ossicles, and tympanum, once formed in their ancestors an apparatus for perceiving not sound vibrations but the depths below sea-level. Granting this, it would explain why the cochlea, semicircular canals, and the otolith organs are associated together anatomically, and have a common nerve; and if the cochlea perceives depth below surface all three will be directly concerned with the perception of position and the control of direction.

INDIGENOUS MALIGNANT TERTIAN MALARIA.

A CASE of malignant tertian malaria contracted by a resident of Liverpool and ending fatally was reported by Professor E. E. Glynn and Dr. J. C. Matthews at a recent meeting of the Liverpool Medical Institution. The case is of unusual importance on more than one ground. Not only is it the first recorded instance of indigenous malignant tertian malaria occurring in England since our knowledge of the differentiation of the various forms of malaria has attained its present high degree of precision, but the disease was contracted in a district considerably to the north of the areas where indigenous malaria has in past times been prevalent. Further, the case stands alone as the only reported instance of fatal indigenous malaria of recent years. The patient was a girl, aged 18; she was a native of Liverpool, and had lived in the same house in the town for ten years. Apart from anæmia, she was well and active up to a fortnight previous to her death. Two days before the onset of her illness she spent some hours in a valley which was subsequently found to harbour large numbers of hibernating larval and adult anopheline mosquitoes, but it is more than probable that she had become infected before this date, as anopheline mosquitoes are known to occur in one of the parks and the country round Liverpool where she was accustomed to walk. No suspicions were entertained as to the nature of her illness, and she died two hours after admission to the Liverpool Royal Infirmary on the fourteenth day from the onset of symptoms. Beyond considerable enlargement of the spleen, which was noted to be "dark, rather like malaria," the naked-eye appearances of the organs after death presented no characteristic features, and it was only on microscopic examination of blood-films and smears from the bone marrow and spleen that the nature of the case became evident. Organisms resembling degenerated crescents were present in the bone marrow, and in blood-films and smears from the spleen a large number of segmenting malignant tertian parasites were discovered. Specimens showing crescents

and segmenting parasites were exhibited at the laboratory meeting (see p. 26) of the Royal Society of Tropical Medicine and Hygiene in London. Subsequent examination of additional material showed numerous crescents in the bone marrow and a moderate number in the spleen and blood smears. The differential count of a post-mortem blood-film gave only 10 per cent. of polymorphonuclear cells, 28·2 per cent. lymphocytes, and 61·4 per cent. mononuclears. The diagnosis of malignant tertian malaria may therefore be regarded as abundantly proved; that the case was indigenous also admits of no question, and it is a matter of fair inference that the mosquito from which infection was derived had itself become infected from one of the many victims of malignant tertian malaria who have arrived in this country from abroad.

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[1] Annales de l'Institut Pasteur, vol. xxxii., 1918, September, No. 9.
[2] Bulletin Soc. Path. Exotique, Paris, vol. x., No. 10, December, 1917.

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PSYCHONEUROSIS, SYMPATHETIC AND ENDOCRIN.

ALL interested in psychological medicine will welcome a brochure entitled, "Functional Mental Illness and the Interdependence of the Sympathetic and Central Nervous System in Relation to the Psychoneuroses," by Dr. R. G. Rows and Dr. David Orr,[1] reprinted from the *Edinburgh Medical Journal*, the first, we believe, published by these original and devoted workers since army medical duties claimed all their energies. The present work is a courageous attempt to bring into relation the central nervous system, the sympathetic and autonomic systems, the endocrine organs with the effects of emotion and mental strain. The whole trend of the two essays is frankly appreciative of modern psychological investigation. The value of the teachings of Freud is recognised, but it does not appear from the cases recorded that orthodox Freudian psycho-analysis was practised, though it is evident they consider careful psychological investigations of repressed ideas essential for successful treatment. They point out that repressed emotions and conflicts are accompanied by disturbance of nervous function, and they outline a mechanism by which psychical trauma directly produces changes in structure, thus throwing light on the inscrutable problem of the relations between mind and matter. It is claimed that the sympathetic system is represented in the cerebral cortex, and that emotion and stress through the sympathetic affect the endocrine organs, and that these liberate hormones which affect all the bodily tissues. In this way a vicious circle may be produced. Dr. Rows deprecates the collection of symptoms under names such as dementia præcox, which he regards as a sterile procedure. Recent research shows that the body works as a whole, and three principles must be recognised: (1) the importance of the autonomic and sympathetic systems; (2) the special activities of the endocrine organs; (3) the correlation of the latter with the sympathetic system. From the concluding words of Dr. Rows's essay, as from one of Dr. Orr's opening sentences, it seems fair to infer that both authors consider that insanity could be prevented if it were properly treated in its early stages. Unfortunately, the time has not yet come when such sweeping assertions can be justified. All will agree that it is of the utmost importance to investigate and treat the earliest sign of mental disturbance, and no doubt in many cases further trouble may thereby be prevented, but there is little real evidence that any large proportion of confirmed mental disease is preventable. Admitting to the full the value of analysis in obtaining insight into the meaning of symptoms, it is a long step to conclude that the elucidation of psychological mechanisms is necessarily curative. Any such conclusion ignores innate degeneration, unstable mental constitution, the influence of toxic disturbance, and the possibility of gross disease of other organs reacting unfavourably upon nervous tissues.

Whilst optimistic teaching is much wanted in psychological medicine, and the worst that can happen is that we should sink into a laissez-faire attitude, yet true advance is always hindered by over-statement. It is surely fallacious to teach that if a patient were treated on some specific lines at the beginning all would have been well; such teaching recalls the charlatan who, called to a hopeless case, says impressively, "It is too late. ...... If I had only been called in earlier." There is abundance of evidence to show that modern psychological methods even in the most approved hands are not always successful. Pensions boards have still to give full pensions to ex-soldiers who have been discharged recovered from neurological war hospitals, and mental hospitals are still receiving the products of the most approved psychological treatment. To paraphrase Jowett's famous saying, "No treatment is infallible, not even the newest." Whether the psychoses develop from a primary condition essentially akin to that which produces the psychoneuroses is a question that remains unanswered. Dr. Orr's article is an excellent résumé of recent work, throwing light on the relation between the vegetative nervous system and the endocrine organs, and the effect of emotion upon both; but the inexperienced reader would be helped if the limitations of our knowledge were pointed out more plainly. Taken as a whole, the argument running through both papers is a timely contribution to our knowledge. It is helpful to have brought out for us so plainly the importance both of modern psychological methods of investigation and the value of the study of the sympathetic-endocrine system, and to learn that, in some measure at any rate, these can be correlated. We can, as Dr. Orr concludes, no longer regard psychoneuroses as psychic disturbances in the narrow sense employed in the past.

THE SIZE OF RED BLOOD CORPUSCLES.

IT might easily be supposed that the dried blood film had by this time yielded most of its secrets. Dr. C. Price-Jones, however, shows[1] that something fresh may yet be got from it. By careful measurements he finds that the average diameter of the red cells on first waking in the morning is about 0·5 μ less than during ordinary waking hours; it soon increases after getting up, and by about noon reaches a maximum which is maintained till bed-time. Violent exercise superimposes on this diurnal curve a sudden increase with a rapid return to normal; gentle exercise has no obvious effect. The suggestion that the corpuscles swell when the blood becomes more acid and shrink when it becomes more alkaline was confirmed by experiments in vitro in which lactic acid, CO_2, and sodium carbonate were added to defibrinated blood. Particularly striking are the changes produced by forced breathing in which the alkalinity is increased by washing out CO_2; the cells immediately shrink, and almost as quickly regain their normal size. Dr. Price-Jones suggests that the increased size of the cells in venous blood, known long since to Limbeck and Hamburger, is an ingenious arrangement whereby their passage through the lungs is delayed until the excess of CO_2 is discharged.

DERMATITIS DYSMENORRHŒICA.

IN a review of this subject Dr. Fred Wise and Dr. H. J. Parkhurst,[2] of New York, remark that ever since the article by Matzenauer and Pollitzer in 1912 on dermatitis dysmenorrhœica there has been much controversy among dermatologists as to the genuineness of this rare affection. The clinical symptoms consist in a burning sensation of the skin, accompanied by an urticaria-like swelling of a faint rose-red colour which differentiates the condition from the more intense scarlet of other inflammatory processes. Within a quarter to half an hour later a further stage of development occurs: the follicles stand out more distinctly, each being surrounded by an anæmic zone. This appearance is soon followed by an exudation of serum into the follicular orifice, and subsequently a thin yellowish-brown crust forms. A superficial desquamation about the follicles ensues, especially in the more acute cases. The follicles being close together, these vesicular areas soon coalesce to form patches of weeping dermatitis or yellow crust-covered lesions simulating traumatic excoriations. The further manifestations are either secondary or the result of involution of the lesions. Rubbing or scratching may cause superficial excoriations or slight hæmorrhages, thus intensifying the inflammatory process and causing increased exudation and crust formation. Usually the necrosis reaches no further than the rete Malpighii, and healing occurs within three or four days, but in the more severe cases the necrosis may extend deeply, resulting in the formation of hypertrophic scars and keloids. Any part of the body may be *affected, but the face is the area of predilection.* In one of Matzenauer's and Pollitzer's patients there was a coincident eruption of the lingual and buccal mucosæ. The lesions, which are almost always symmetrical in distribution, are usually round or oval on the cheeks and buttocks and linear on the extremities. The patient seen by Dr. Wise and Dr. Parkhurst was a woman, aged 30, who suffered from dysmenorrhœa, each menstrual period being accompanied by a regularly recurrent eruption manifested by œdema, erythema, follicular hæmorrhage, crusting, and pigmentation. Between the menstrual periods and in pregnancy the eruption was in abeyance. The writers were convinced that malingering played no part in the causation of the dermatosis.

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[1] Edinburgh: Oliver and Boyd. 3s. 6d.

[1] Journal of Pathology and Bacteriology, vol. xxiii., p. 371.

[2] Archives of Dermatology and Syphilology, December, 1920.

BEETHOVEN'S DISEASES.

IN a paper published under this title on the 150th anniversary of Beethoven's birth Dr. Schweisheimer,[1] of Munich, discusses the pathological history of Beethoven. His tragic ear disease, which dated back to the age of 28, and probably earlier, first involved the left and then the right ear. At an early date he was unable to hear the high tones of instruments or singing at any distance. This fact, combined with the progressive character of the disease, indicates that the ear affection was not otosclerosis, as might at first be supposed, but a disorder of the internal ear, of which early lowering of the upper tone limits is characteristic. As there was no history of attacks of giddiness or other disturbance of equilibrium the cochlear nerve must have been principally affected. There was no indication of the middle ear having been primarily attacked. The auditory centre in the brain was not involved. The cause of the deafness can only be conjectured. There is nothing in Beethoven's history pointing to an infectious origin for the acoustic neuritis, and toxic and traumatic factors could be excluded. Dr. Schweisheimer suggests that there was a constitutional weakness of the auditory nerve, which developed as time went on, and was possibly due, in part at least, to hereditary taint. Beethoven's father and maternal grandmother were drinkers, and his mother is said to have died of consumption. There was no history of deafness in the family. Apart from minor ailments, such as a whitlow, which interfered with playing the piano, and a moderate degree of myopia, Beethoven began to suffer at a comparatively early date from symptoms of cirrhosis of the liver, for which indulgence in punch was probably responsible. In his later years œdema of the legs and ascites developed, giving rise to dyspnœal attacks from pressure on the diaphragm. Paracentesis abdominis was performed on four occasions, but relief was only temporary, and death took place at the age of 56. The necropsy, which was performed by Dr. Johannes Wagner, of the Vienna Pathological Museum, showed atrophy of the auditory nerves and atrophic cirrhosis of the liver.

THE executive committee of the War Emergency Fund of the Royal Medical Benevolent Fund announces that it is now prepared to make grants for the daughters of medical men in circumstances similar to those which have entitled applicants to grants for the education of their sons. Applications for grants should be made to the honorary secretary, War Emergency Fund, 11, Chandos-street, Cavendish-square, London, W. 1. The Fund has made several substantial grants to defray in whole or in part the school fees of the sons of medical men who, after resuming civil practice, find themselves in temporary financial difficulty owing to war service.

FINANCIAL POSITION OF HOSPITALS.

A CONFERENCE of the Representatives of the Honorary Medical Staffs of Voluntary Hospitals was held on Dec. 21st, 1920, at the Royal Society of Medicine, under the chairmanship of Sir JAMES GALLOWAY, senior physician to Charing Cross Hospital. The conference arose out of the action of the Minister of Health in appointing a Committee to inquire into the financial position of the voluntary hospitals of the country, when withdrawing or modifying Clause 11 in the Ministry of Health (Miscellaneous Provisions) Bill, which would have enabled county councils to take over the Poor-law infirmaries and run them as general hospitals at the expense of the ratepayers. The conference was called by the British Medical Association.

The first resolution before the conference was put by Mr. BISHOP HARMAN, Chairman of the Hospitals Committee of the British Medical Association, and was seconded by Sir HENRY DAVY. The motion after verbal alteration ran as follows:—

> That this conference of the staffs of voluntary hospitals called by the British Medical Association desires to record its belief that the voluntary method of administration of the voluntary hospitals of the country is to the advantage of the public, of medical science, and of the medical profession, and that it should be maintained.

The motion was supported generally by Sir HAMILTON BALLANCE (Norfolk and Norwich Hospital), who, however, asked whether institutions had been taken into account in the motion which received subsidies from the State for specific purposes, such as education grants or payments from the National Insurance Commission and Ministry of Pensions.

Mr. F. W. V. COLLINSON (Preston Royal Infirmary), pointed out that the reception of assistance to conduct venereal clinics or to attend insured or pensioned persons did not affect the voluntary system. He considered that the voluntary system was not affected by payments from those who could afford to pay.

Dr. ASTLEY V. CLARKE (Leicester Royal Infirmary) described the exact position of Leicester, where the voluntary system was keeping the great general hospital of the town solvent because it was being worked with intelligent regard for the nature of the population.

Mr. W. S. DICKIE (North Riding Infirmary) also spoke in favour of the voluntary principle.

Flat opposition was expressed to the motion and to the whole voluntary system by Dr. PETER MACDONALD of York, who found the voluntary system, as founded on charity, to be against the sentiments of the age, and who, moreover, believed it to be impossible that such a system should continue long under existing financial conditions.

Mr. L. P. GAMGEE (Birmingham General Hospital) sought the definition of what was a voluntary hospital in much the same terms as those which Sir Hamilton Ballance employed, while Dr. T. SANSOME (West Bromwich), impressed with the virtues of the voluntary system, thought that the financial arguments were against it.

Mr. BISHOP HARMAN having explained that in his motion he did not contemplate that State contributions affected the voluntary system, the resolution was put to the meeting and carried by some 150 votes to 4.

A second motion, standing in the name of Mr. A. E. MORISON, of the Durham County Hospital, registered the view of the meeting that necessitous persons should continue to be treated free. This was agreed to without dissentients, and the same lucky fate met the motion in Mr. BISHOP HARMAN'S name declaring it undesirable that voluntary hospitals should be subsidised by local rating authorities, "except in so far as payment is made for the examination and care of patients for whom these authorities are responsible."

A fourth motion standing in Mr. BISHOP HARMAN'S name was to the effect that in times of financial difficulty it is desirable that the central Government should subsidise voluntary hospitals, and that such subsidy in the case of any individual hospital should take the form of a contribution proportional to the income received by the hospital from voluntary and other contributions. The subsidies here proposed should be made through some central hospital fund.

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[1] Münchener Medizinische Wochenschrift, Dec. 17th, 1920.

A debate arose here over an amendment, which was subsequently lost, proposed by Dr. R. A. BOLAM, Chairman of the Council of the British Medical Association. Dr. Bolam thought that it would be advisable to specify the objects for which State grants were required, and proposed that these grants should be "for training of medical practitioners and nurses and, by loan, for extension of hospital facilities." The amendment was sympathetically considered by the meeting, but was eventually lost by an almost unanimous vote, the original motion being agreed to.

The conference next registered its view—

> That a greatly extended support for voluntary hospitals should be sought from employers and insurance companies, seeing that they benefit largely, both directly and indirectly, by the services of the voluntary hospitals.

Dr. J. R. ROBERTSON (Ashton-under-Lyne Infirmary) then brought forward a motion—

> That every in-patient of a voluntary hospital should make a weekly contribution towards the cost of *maintenance* therein; in the case of insured persons this charge should be met by the *Ministry of Health.*

The first part of this motion was amended with the qualification, after the word patient, "who is not a necessitous person," and in this form the motion was agreed to.

A motion standing in the name of the Durham County Hospital was brought forward by Mr. A. E. MORISON to the following effect:—

> That this conference considers that the contributory method of subscription is the *only* one possible under the industrial conditions of the *North of England.* In view, however, of the increased cost of maintenance, &c., it considers that the contributory rates paid by workmen should be materially increased.

This met with approval, as did one proposed by Dr. MURRAY BLIGH (David Lewis Northern Hospital) to the following effect:—

> That it is desirable that voluntary hospitals, after securing sufficient accommodation for the necessitous poor, should make arrangements for the reception of patients who are able to pay for the cost of their maintenance and treatment in whole or in part.

A further resolution was moved from the David Lewis Northern Hospital, Liverpool, providing—

> That no fixed rate of payment for professional services rendered to such patients should be established, the fees so payable to remain, as at present, a matter of arrangement between patient, family physician, and consultant.

This resolution was carried.

Dr. ASTLEY CLARKE then proposed the following motion:—

> That the logical position for the members of the honorary medical staffs of all voluntary hospitals to take up in the event of decisions being taken which would lead to patients paying, in part or in whole, the hospital maintenance fees, either individually or by some contributory method, or with the addition of rate aid or State aid, or by a combination of two or more of these methods, is that a percentage of all such payments should be passed into a fund which can be allocated in any manner which such honorary medical staff may determine.

The motion was founded upon suggestions made by the British Medical Association as to the uses of a staff fund, and met with favour.

In conclusion, the meeting decided that another conference should be summoned, when it seemed necessary to the Hospitals Committee of the British Medical Association.

FROM the beginning of 1921 the annual Fellowship dues of the American Medical Association are raised from $5 to $6, an increase 20 *per cent.* The subscription carries with it the right to receive the *Journal of the A.M.A.*, the income from which supports the Association's activities in the interest of the medical profession and the public, such as the work of the Council on Pharmacy and Chemistry, of the Chemical Laboratory, of the Council on Medical Education and Hospitals, of the Council on Health and Public Instruction, and of the Biographical and Propaganda Departments.

TUBERCULOSIS.

Decline of Tuberculosis in Birmingham.

THE report issued by Dr. G. B. Dixon on tuberculosis in Birmingham strikes a happy mean between the flamboyant note of the pre-war era, when much was written and talked about the conquest of consumption, and the jeremiads on tuberculosis so familiar at the present time. Birmingham achieved in 1919 the lowest tuberculosis death-rate on record, the figures being 1188 deaths from all forms of tuberculosis, equivalent to a mortality-rate of 1·28 per 1000. The number of notifications was 3116—the lowest since notification was introduced. Thus there is good reason for Dr. Dixon's claim: "We are now getting fewer deaths than before the war, and we are getting far fewer new cases." Dr. Dixon carefully avoids the tempting claim that the decline of tuberculosis is mainly due to direct anti-tuberculosis measures; it is, no doubt, due to many factors, several of which are still more or less obscure. But it is evident from his report that the campaign against tuberculosis in Birmingham is whole-hearted and multi-tentacular. It is particularly encouraging to note in his short essay on sanatorium treatment that, at the Yardley Road Sanatorium, the bad old custom of loafing is becoming a lost art, and the pernicious system of monotonous, unremunerated work, masquerading as "graduated, therapeutic labour" is giving place to interesting employment of a productive nature and with an educational value.

Classification of Pulmonary Tuberculosis.

In one of the appendices to Dr. Dixon's report Dr. E. G. Glover, medical superintendent of Salterly Grange Sanatorium, gives some useful hints as to classification of tuberculosis, a subject which has been discussed in papers by Dr. Niven Robertson and Dr. W. B. Knobel in the December number of *Tubercle.* Dr. Glover exposes the frailties of the purely anatomical classification in one illuminating adjective. It is *sartorial.* The classification which he prefers puts sputum negative cases in Group I., the case which changes from sputum positive to sputum negative under primary treatment in Group II., and the case which remains sputum positive during treatment in Group III. His is a good working rule, with purely objective criteria easily rubricised. As the researches of Dr. N. D. Bardswell and many others have shown, the factors on which this classification is founded are of far-reaching prognostic significance. Yet this classification still ignores the three most important influences determining the patient's fate—balance of mind, a balance at the bank, and the sympathy of relatives and employers. The second of these can, of course, be rubricised, but the first and the last are difficult to gauge and tabulate.

The Danger of Tuberculous Milk.

Dr. James C. Gilchrist, honorary secretary of the King Edward VII. Welsh National Memorial Association for the Prevention, Treatment, and Abolition of Tuberculosis, has sent us for publication a resolution passed after discussion by a group of 16 tuberculosis officers and institution superintendents under the Association:—

> That this conference of the medical staff of the Welsh National Memorial Association unanimously affirm as their view that the distribution of milk containing tubercle bacilli is fraught with danger to the lives and health of children consuming it, and that the hypothesis that tubercle bacilli consumed in milk may produce a degree of immunisation is no reason for the abatement of any efforts directed towards producing a tubercle free milk.

A statement drawn up by a prominent U.S. official on the tuberculin test as a factor in the milk traffic has been issued to the press by Mr. Emile Berliner, President of the Washington Tuberculosis Association, and (incidentally) inventor of the gramophone. The tuberculin test as a means for insuring a safe and sanitary milk-supply is described in this statement as wholly inadequate.

> A herd may be tested to-day and no reacting animals be found, and again tested in six months, when one or several animals may be discovered with tuberculosis. It is entirely possible that within a month from the first test the milk

from that herd may contain living, active, virulent tubercle bacilli. And such milk, if consumed in the raw state, in particular by children, may give them tuberculosis, notably of the intestines, of the spine, and of the glands. Butter made from the raw cream of such milk would likewise contain the bacilli in an active and virulent state for at least four to five months. It is comparatively easy to "dope" a herd with certain easily obtainable chemicals and thereby prevent the tuberculin from acting in a test, even though animals in the herd are afflicted with open tuberculosis.

The conclusion is drawn that only proper pasteurisation under official supervision and direction will give to a community a safe milk- and cream-supply.

The Auto-Urine and Serum Tests for Active Tuberculosis.

The reaction which Professor Wildbolz, of Berne,[1] described last year promises to supply a much-needed test for active tuberculosis in an early stage of the disease. It is a safe prophecy that his auto-urine reaction and the auto-serum reaction more recently reported on by his assistant, Dr. Imhof,[2] will figure prominently in the medical journals for some years to come. In passing it may be noted that the principle of auto-sero-diagnosis is not new, and even before the war its possibilities were being discussed. Wildbolz assumes, and gives numerous arguments in support of his assumption, that in active tuberculosis antigens are excreted by the urine and can be demonstrated by intracutaneous inoculation of the producer of the urine or any other tuberculous patient. When a tuberculous lesion is latent no antigens are demonstrable in the urine, and the test is therefore, according to Wildbolz, superior to v. Pirquet's, which indicates infection without clearly distinguishing between latent infection and active disease. It was found that urine had to be condensed by evaporation in vacuo before its antigen content was sufficiently concentrated to provoke an intracutaneous reaction. A negative reaction was obtained when healthy urine was injected into the skin of healthy persons or when the tuberculous were inoculated with the urine of healthy persons. The urine of the tuberculous also failed to give a positive reaction in healthy persons whereas it was nearly always positive when the urine's producer or anyone else gave a positive reaction to a 1 in 1000 solution of tuberculin. There was never a general or focal reaction, only a local reaction. V. Pirquet's and Wildbolz's reactions were strikingly parallel and confirmatory of each other. Dr. Imhof's paper is chiefly concerned with the auto-serum test which he has carried out with blood deproteinised by precipitation with alcohol. He points out that there are various drawbacks to the auto-urine reaction, which is more painful, more apt to provoke necrosis of the skin, and more subject to error on account of variations in the concentration and other properties of the urine than the auto-serum test. In bi-lateral renal tuberculosis, for example, the auto-urine reaction may be negative. Imhof's comparison of the auto-serum with the auto-urine reaction in more than 80 cases showed a close conformity between the two. In 30 cases of surgical tuberculosis both reactions were positive with only one exception. In another group of 34 cases admitted to hospital for accidents or non-tuberculous diseases, both reactions were invariably negative. But perhaps the most instructive of all his cases were those in which the two auto-reactions were at variance with the clinical diagnosis. Among these were nine patients admitted to hospital for accidents or non-tuberculous diseases. All gave a positive reaction to both tests, although there was at the time no clinical evidence of tuberculosis. These cases were, however, watched and no fewer than five subsequently developed signs of pulmonary disease.

Only a few papers have hitherto dealt with control investigations of the claims of the Berne school. Miche[3] does not accept all of them, but Lanz[4] has carried out important investigations, which are confirmatory and which show how various errors may be eliminated. Much of his work concerns the treatment of the urine with a view to removing its most irritating, non-specific elements which obscure the intracutaneous reaction. Gramén,[5] working at the St. Göran's Hospital in Stockholm, seems greatly impressed by the value of the reaction which he has tested in about 50 cases. Obviously it is too early to form a correct opinion of the importance of these reactions, but if the claims already made on their behalf are justified, an advance of very great importance has been made in the early diagnosis of active tuberculosis. The principle concerned may also possibly be extended to the early diagnosis of tuberculosis in cattle, for, as Wildbolz has intimated, tuberculous antigens in the milk of a cow may, perhaps, be demonstrable by an ophthalmo-reaction in the same animal.

A University Sanatorium.

On Dec. 16th Dr. Louis Vauthier recounted before the Geneva Medical Society the story of his scheme for the relief of students stricken with phthisis in the midst of their course of study. During many years at Leysin Dr. Vauthier has been sadly impressed by the large number of patients of this class who come for treatment and by the particularly unfortunate position in which they find themselves. To many the abandonment of their professional studies at a late stage spells the ruin of a career. In all cases the extra anxiety resulting from uncertainty as to their future life's work constitutes a serious moral obstacle to successful therapy. Dr. Vauthier therefore conceived the idea of establishing a university sanatorium where study might be pursued concurrently with a well-ordered course of treatment. His proposals were very warmly received by the senates of the three universities in Romance Switzerland—those of Geneva, Neufchatel, and Lausanne. In July, 1919, representatives of these universities met and constituted a committee of action. The universities of German Switzerland were appealed to and promised their support. In March, 1920, the project was placed before the governing body of the League of Red Cross Societies and received its blessing. Later it was taken up with enthusiasm by the World's Student Christian Federation, the students of Belgium, Holland, France, Spain, and Roumania being particularly active. At the present time a booklet is being prepared which will give a history of the scheme, an outline of the organisation of the proposed institution, and an appeal for the coöperation of foreign universities. The University hopes to draw its students from each of the 31 member nations adhering to the League of Red Cross Societies.

MEDICINE AND THE LAW.

A Medical Witness and Punctuality.

AT a recent inquest in North Leicestershire, at which there were only two witnesses, the mother of a child killed through the upsetting of a pot full of scalding tea, and a medical practitioner, the latter arrived late. On his entering the court the coroner is reported as having said to him: "I don't know whether you are used to inquests, but in my district punctuality must be insisted on." To this the medical man replied that it was difficult for him to leave people who were dying, and that he had been called to another place to attend a patient who had to be sent to a hospital. The coroner was not satisfied and a further discussion took place, the witness protesting that he meant no disrespect, but that a dying man claimed his aid, and the coroner insisting that all witnesses, medical and otherwise, must be punctual at inquests. Finally the coroner said that he did not desire for a moment to impute or suggest intentional discourtesy, but that when a medical man could not get to an inquest in time he should find means of letting him or his officers know. He would then be prepared to hold things over. This probably is the best solution that can be arrived at in circumstances which fortunately do not often occur. None can deny that the coroner is entitled to all respect and to the punctual arrival of witnesses. He could not get through his work otherwise, and in modern times, with telephonic and telegraphic communication, fairly prompt notice of necessary absence or delay can usually be given. There must, however, sometimes, if rarely, be occasions when the choice will lie between keeping the court waiting and leaving a dying person unattended, and when there is no time or when there are no means for informing the coroner or possibly a bench of magistrates. Such a thing might even happen conceivably when a judge was expecting the witness at a court of assize, although then, as a rule, a medical man would have made arrangements with a colleague to attend his patients in cases of urgency. What should be done in such an emergency? There can, it is submitted, hardly be any question that the medical man's duty is to concern himself with the saving of life if he has reasonable cause to believe that life will be imperilled by his not responding to the call for his assistance. He will then have to trust to the courtesy and humanity of the court before which he should have attended, and should go there to make his excuse with the least possible delay. Stress, however, is laid upon the necessity for practical certainty as to the urgency of the need for immediate medical aid, and in the case of a witness bound over to appear in an assize court it is strongly recommended that he should in all cases take steps to render the imagined dilemma impossible.

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[1] Corr.-Bl. für Schweiz. Aerzte, Nr. 22, 1919.
[2] Schweiz. med. Woch., Nr. 46, 1920.
[3] Rev. méd. de la Suisse Romande, Nr. 12, 1919.
[4] Schweiz. med. Woch., Nr. 17, 1920.
[5] Hygiea, Nov. 16th, 1920.

An Inquest on a Case of Anthrax.

On Dec. 20th an inquest was held at Southwark before Dr. F. J. Waldo, sitting with a jury, upon the body of Frederick Griffiths, aged 59, a leather dresser at the Abbey-street factory, Bermondsey, of Messrs. Bevington and Sons, leather merchants. According to the evidence, deceased had worked during the past two years in a wet department, breaking, unhairing, and flushing goat skins from the infected area of the Cape and East India. Previous to this process the skins were washed in water by other workers. Deceased was last at his work on Friday, Dec. 10th; on the following day he complained of a small boil on his neck, and later the neck became swollen. On the 12th, in the absence of his panel doctor, another practitioner painted the swelling with iodine and prescribed ointment. On the 13th his panel doctor advised his removal to Guy's Hospital, where anthrax was diagnosed. He was there treated with Professor Sclavo's serum and, at the same time, the malignant pustules were excised. A second dose of serum was injected on Dec. 14th; the patient died next day. A foreman fellow-worker said deceased, a healthy vigorous man, had not complained of any illness at all. Basins, cold water, soap, nailbrushes, and towels were provided for the workers. Coloured pictures showing the various stages of local anthrax, with printed directions, were hung up at the factory. He himself had noticed the pictures, but had never read the directions as to the showing of suspicious cases to a doctor. He only knew of two previous cases of anthrax at Messrs. Bevington's, one in February, 1919, and one in August, 1920. Both cases recovered under the serum treatment at Guy's Hospital. Dr. Thomas Rose, divisional surgeon to the police, had made a post-mortem examination of the body and said he found no petechiæ, but a film from the spleen showed numerous characteristic, undoubted bacilli and spores of anthrax. A culture from the subcutaneous tissue and lungs gave growths of the same bacillus. Death was due to heart failure from toxæmia induced by œdema of malignant anthrax. The condition was consistent with infection by means of a nail from Cape goat skins. Disinfection was impracticable since the skins would be destroyed by the process. Dr. Waldo, in summing up, said most cases of anthrax in London occurred in Bermondsey, the centre of the leather and tanning trade. Cleanliness was the best preventive of anthrax and hot water ought at once to be provided in addition to cold at Messrs. Bevington's factory. Workmen should notify the foreman immediately the slightest suspicion of anthrax arose, so that serum might at once be injected by a doctor. Too little thought was given to this disease by workers in skins. Trial of the serum should be made in every case. A verdict of misadventure was recorded, the cause of death being anthrax.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Plague Prevention in France.

A FEW isolated cases of bubonic plague have been recorded in France fairly recently. The disease is diagnosed "Malady No. 9" on the notification forms to the police authorities, according to the French Medical Acts, Feb. 10th, 1903, and Sept. 28th, 1916, and it is that fact which aroused curiosity in the French press some time ago. It was suggested that some unknown exotic disease had been introduced in the country by refugees, and had provisionally been called "Malady No. 9." The appearance of the disease was immediately followed by prophylactic measures, consisting in an active campaign of rat destruction. In order to stimulate the general interest a reward of 25 centimes was given for the body of each dead rat. People who were taking an active part in the destruction of rats complained that during this time fleas were becoming more numerous in their homes. This complaint led to the appreciation of the special danger of contamination by fleas during a campaign for rat destruction unless adequate precautions are taken, for dead rats have to be carried about to be checked by the local authorities who give the rewards. These considerations have dictated more elaborate prophylactic measures, which appear in the general instructions issued this week to practitioners by the Ministry of Health. Doctors are asked to point out the danger of handling dead rats on account of their fleas, and are requested to recommend that paraffin or benzene should be poured over dead rats, which should be burnt or properly buried. Amongst other recommendations are the bacteriological examination of the serous effusion or pus contained in glands in order to try to identify Yersin's bacillus in suspicious cases, and the isolation of diagnosed cases and suspicious patients, and their immediate notification to the local authorities. Practitioners are also advised to inject intravenously 100 to 120 c.cm. of the antiplague serum made at the Pasteur Institute, as soon as the disease is diagnosed. It is also suggested that 60 to 80 c.cm. of serum should be injected daily during the next three days. Doctors are furthermore asked to do their best to convince those approaching their patients (nurses, relatives, &c.) of the necessity of being vaccinated. It is specified that vaccination for an adult should consist in a 2 c.cm. subcutaneous injection of the antiplague vaccine made at the Pasteur Institute (½ c.cm. for an infant, 1 c.cm. for a child between 2 and 10). The study of the recent cases of bubonic plague has led to new researches dealing with the bacteriological diagnosis of the disease. Mons. H. Violle, in a communication to the Société de Biologie on the diagnosis of bubonic plague, recommends that when direct examination of serous effusion or pus from a gland has not revealed Yersin's bacillus, a sero-diagnosis should be made not with the blood serum but with fluid or even pus obtained by puncture of a gland. Mons. Violle has observed that with this technique the agglutination can become positive very soon after the onset of the disease. He remarks that this fact is well worth considering since antibodies appear only much later in the blood.

Encephalitis Lethargica and Hiccup.

In a recent article in the *Presse Médicale* Mons. J. Lhermitte refers to cases of persistent hiccup with nasal and bronchial catarrh, malaise, and slight fever, which have recently occurred in France and elsewhere in Europe. Other cases have occurred concurrently with an epidemic of encephalitis lethargica and since the usual symptoms of this latter disease have in some cases been preceded by persistent hiccup with nasal and bronchial catarrh, malaise, and slight fever, he concludes that the syndrome represents a disease of a similar nature. This opinion has already been expressed at the Société Médicale des Hôpitaux by MM. Netter, W. Dufour, and R. Bénard, and lately at the Société de Neurologie by MM. J. Sicard and J. Paraf.

Dec. 25th, 1920.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Prize-giving at the Royal College of Surgeons in Ireland.

THE annual distribution of prizes in the school of the Royal College of Surgeons in Ireland took place on Dec. 18th, when an address to the students was delivered by the Vice-President, Sir W. I. de C. Wheeler, in the absence, due to illness, of the President. The Vice-President contrasted the present conditions of medical study with those found when he was a student. At that time the operating theatre still savoured of the bull-ring, and anæsthesia was in its infancy. The physician's top hat and double-breasted coat had now disappeared, and the possession of a pure water-supply had done more for the cause of temperance than a thousand Pussyfoot campaigns. The College, the only unendowed school of medicine in Ireland, had strong claims for State aid, which had not yet been met. On the medical side of practice the belief in drugs still held too much sway, while surgery was as yet saturated with reaction and conservatism. He advised his hearers to keep their minds open and independent. They should work with each other as comrades, not as competitors.

Resignation of Professor Hugh A. Auchinleck.

Professor H. A. Auchinleck, who has been professor of medical jurisprudence in the school of the Royal College of Surgeons for more than a generation, has now resigned that post and retired from practice. The students of the school entertained him to dinner last week prior to his leaving Dublin for a visit to East Africa. The Vice-President occupied the chair and several of his colleagues were also the guests of the students.

The Use of the Red Cross by Doctors.

Sir John Lumsden, chairman of the Joint Committee in Ireland of the St. John Ambulance Association and the British Red Cross Society, has, with the consent of his London headquarters, advised medical practitioners in Ireland to affix a Red Cross badge in a prominent position on their motor-cars so as to be visible by day or night, in order to protect from shooting should the occupant fail to hear a challenge.

Death of Dr. George Peacocke.

The death of Dr. George Peacocke, of Dublin, occurred on Christmas morning after a few days' illness. He was struck down by pneumonia very suddenly, and few of his friends had heard of his illness until the news of his death became public. Dr. Peacocke was still a young man, not much over 50, and was always of robust health. He was educated in Trinity College, Dublin, taking his medical degrees in 1892. His whole professional career was associated with the Adelaide Hospital, where he was successively house physician, assistant physician, and physician. He took much interest in the affairs of the Royal College of Physicians, and held for a time the offices of censor and vice-president. He was, since its foundation, chairman of the Irish branch of the College of Nursing, Ltd. He had also been president of the Section of Medicine of the Royal Academy of Medicine in Ireland, and contributed frequently to its Transactions and to the medical journals. As a capable and thoughtful physician and an upright man he was held in much respect in Dublin, and will be greatly missed by his professional brethren.

Ulster Medical Society.

Dr. Thomas Houston, the president of the Society, and Miss Houston gave an "At Home" to members and their friends, at the Medical Institute, Belfast, on the evening of Dec. 18th, 1920, when Major J. A. Sinton, V.C., was presented with the certificate of Honorary Fellowship of the Society. The certificate is in the form of a tryptich bound in Russia leather and is ornamented by water-colour drawings of Queen's University, the Royal Victoria Hospital, and the Medical Institute, with reproductions of the Victoria Cross and the Russian Order of St. George, and the crests of the Indian Medical Service and the Ulster Medical Society. It reads as follows:—

> "This is to certify that John Alexander Sinton, V.C., M.D., D.P.H., Indian Medical Service, has been elected an Honorary Fellow of the Ulster Medical Society in appreciation of the conspicuous gallantry and devotion to duty which have earned for him the greatest distinction which a British soldier can obtain—the Victoria Cross for Valour."

Dec. 28th.

URBAN VITAL STATISTICS.

(Week ended Dec. 18th, 1920.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 18 million persons, the annual rate of mortality, which had been 13·5, 13·2, and 12·9 in the three preceding weeks, rose to 15·3 per 1000. In London, with a population of nearly 4½ million persons, the death-rate was 16·0, or 3·1 per 1000 above that recorded in the previous week, while among the remaining towns the rates ranged from 7·1 in Ealing, 7·2 in Gillingham, and 7·4 in Walthamstow, to 21·4 in Bath, 21·6 in Tynemouth, and 21·8 in Merthyr Tydfil. The principal epidemic diseases caused 247 deaths, which corresponded to an annual rate of 0·7 per 1000, and comprised 93 from infantile diarrhœa, 76 from diphtheria, 33 from measles, 26 from whooping-cough, 16 from scarlet fever, and 3 from enteric fever. Measles caused a death-rate of 1·2 in Sheffield and in Middlesbrough, 1·4 in Smethwick and in Barrow-in-Furness, and 1·7 in Walsall. There were 4994 cases of scarlet fever and 2654 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 5297 and 2654 respectively at the end of the previous week. The causes of 40 of the 5217 deaths in the 96 towns were uncertified, of which 10 were registered in Birmingham, 5 in London, and 3 each in Liverpool and Rhondda.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 14·3, 13·5, and 15·2 in the three preceding weeks, rose to 16·1 per 1000. The 363 deaths in Glasgow corresponded to an annual rate of 17·0 per 1000, and included 7 from infantile diarrhœa, and 5 each from whooping-cough and diphtheria. The 92 deaths in Edinburgh were equal to a rate of 14·1 per 1000. and included 2 from infantile diarrhœa and 1 from diphtheria.

Irish Towns.—The 161 deaths in Dublin corresponded to an annual rate of 20·2, or 2·1 per 1000 above that recorded in the previous week, and included 7 from infantile diarrhœa, 4 from whooping-cough, and 1 each from scarlet fever and diphtheria. The 126 deaths in Belfast were equal to a rate of 15·9 per 1000, and included 2 each from scarlet fever and infantile diarrhœa, and 1 from diphtheria.

The Services.

ARMY MEDICAL SERVICE.

Temp. Major-Gen. Sir R. Jones, (Major, R.A.M.C., T.F.) relinquishes his temporary commission.

ROYAL ARMY MEDICAL CORPS.

R. Fitz-J. Haythornthwaite to be temporary Lieutenant.

Officers relinquishing their commissions: Temp. Lieut.-Col. W. J. N. Vincent, on ceasing to be employed at the Wharncliffe War Hospital (retains the rank of Lieutenant-Colonel). Temp. Major J. Dalrymple (granted the rank of Lieutenant-Colonel). Temp. Capt. A. G. Welsford (granted the rank of Major).

SPECIAL RESERVE OF OFFICERS.

Capt. E. S. Mawe relinquishes his commission on account of ill-health contracted on active service and retains the rank of Captain.

TERRITORIAL FORCE.

Capt. C. E. K. Herapath to be Major.

Temp. Major W. A. Smith (4th Bn., East Lancs. Regt. relinquishes his temporary commission.

Capts. A. C. Court (late R.A.M.C., S.R.) and A. G. M. Middleton (late R.A.M.C.) to be Captains.

Supernumerary for service with O.T.C.:—Lieut. D. R. Wheeler (late R.A.M.C.) to be Lieutenant for service with Belfast University Contingent, Senior Division, Officers Training Corps. London University Contingent: Capt. J. H. Ryffel resigns his commission and retains the rank of Captain.

INDIAN MEDICAL SERVICE

Lieut.-Col. R. Steen is transferred to the temporary non-effective list.

The King has approved the admission of the undermentioned to the I.M.S.:—To be Captains: Major W. J. Webster (late R.A.M.C., S.R.); Capt. G. M. Moffatt (late 3rd Bn., R. Dub. Fus., S.R.), Capt. J. M. Mitchell (late R.A.M.C.).

necessary absence or delay can usually be given. There must, however, sometimes, if rarely, be occasions when the choice will lie between keeping the court waiting and leaving a dying person unattended, and when there is no time or when there are no means for informing the coroner or possibly a bench of magistrates. Such a thing might even happen conceivably when a judge was expecting the witness at a court of assize, although then, as a rule, a medical man would have made arrangements with a colleague to attend his patients in cases of urgency. What should be done in such an emergency? There can, it is submitted, hardly be any question that the medical man's duty is to concern himself with the saving of life if he has reasonable cause to believe that life will be imperilled by his not responding to the call for his assistance. He will then have to trust to the courtesy and humanity of the court before which he should have attended, and should go there to make his excuse with the least possible delay. Stress, however, is laid upon the necessity for practical certainty as to the urgency of the need for immediate medical aid, and in the case of a witness bound over to appear in an assize court it is strongly recommended that he should in all cases take steps to render the imagined dilemma impossible.

An Inquest on a Case of Anthrax.

On Dec. 20th an inquest was held at Southwark before Dr. F. J. Waldo, sitting with a jury, upon the body of Frederick Griffiths, aged 59, a leather dresser at the Abbey-street factory, Bermondsey, of Messrs. Bevington and Sons, leather merchants. According to the evidence, deceased had worked during the past two years in a wet department, breaking, unhairing, and flushing goat skins from the infected area of the Cape and East India. Previous to this process the skins were washed in water by other workers. Deceased was last at his work on Friday, Dec. 10th; on the following day he complained of a small boil on his neck, and later the neck became swollen. On the 12th, in the absence of his panel doctor, another practitioner painted the swelling with iodine and prescribed ointment. On the 13th his panel doctor advised his removal to Guy's Hospital, where anthrax was diagnosed. He was there treated with Professor Sclavo's serum and, at the same time, the malignant pustules were excised. A second dose of serum was injected on Dec. 14th; the patient died next day. A foreman fellow-worker said deceased, a healthy vigorous man, had not complained of any illness at all. Basins, cold water, soap, nailbrushes, and towels were provided for the workers. Coloured pictures showing the various stages of local anthrax, with printed directions, were hung up at the factory. He himself had noticed the pictures, but had never read the directions as to the showing of suspicious cases to a doctor. He only knew of two previous cases of anthrax at Messrs. Bevington's, one in February, 1919, and one in August, 1920. Both cases recovered under the serum treatment at Guy's Hospital. Dr. Thomas Rose, divisional surgeon to the police, had made a post-mortem examination of the body and said he found no petechiæ, but a film from the spleen showed numerous characteristic, undoubted bacilli and spores of anthrax. A culture from the subcutaneous tissue and lungs gave growths of the same bacillus. Death was due to heart failure from toxæmia induced by œdema of malignant anthrax. The condition was consistent with infection by means of a nail from Cape goat skins. Disinfection was impracticable since the skins would be destroyed by the process. Dr. Waldo, in summing up, said most cases of anthrax in London occurred in Bermondsey, the centre of the leather and tanning trade. Cleanliness was the best preventive of anthrax and hot water ought at once to be provided in addition to cold at Messrs. Bevington's factory. Workmen should notify the foreman immediately the slightest suspicion of anthrax arose, so that serum might at once be injected by a doctor. Too little thought was given to this disease by workers in skins. Trial of the serum should be made in every case. A verdict of misadventure was recorded, the cause of death being anthrax.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Plague Prevention in France.

A FEW isolated cases of bubonic plague have been recorded in France fairly recently. The disease is diagnosed "Malady No. 9" on the notification forms to the police authorities, according to the French Medical Acts, Feb. 10th, 1903, and Sept. 28th, 1916, and it is that fact which aroused curiosity in the French press some time ago. It was suggested that some unknown exotic disease had been introduced in the country by refugees, and had provisionally been called "Malady No. 9." The appearance of the disease was immediately followed by prophylactic measures, consisting in an active campaign of rat destruction. In order to stimulate the general interest a reward of 25 centimes was given for the body of each dead rat. People who were taking an active part in the destruction of rats complained that during this time fleas were becoming more numerous in their homes. This complaint led to the appreciation of the special danger of contamination by fleas during a campaign for rat destruction unless adequate precautions are taken, for dead rats have to be carried about to be checked by the local authorities who give the rewards. These considerations have dictated more elaborate prophylactic measures, which appear in the general instructions issued this week to practitioners by the Ministry of Health. Doctors are asked to point out the danger of handling dead rats on account of their fleas, and are requested to recommend that paraffin or benzene should be poured over dead rats, which should be burnt or properly buried. Amongst other recommendations are the bacteriological examination of the serous effusion or pus contained in glands in order to try to identify Yersin's bacillus in suspicious cases, and the isolation of diagnosed cases and suspicious patients, and their immediate notification to the local authorities. Practitioners are also advised to inject intravenously 100 to 120 c.cm. of the antiplague serum made at the Pasteur Institute, as soon as the disease is diagnosed. It is also suggested that 60 to 80 c.cm. of serum should be injected daily during the next three days. Doctors are furthermore asked to do their best to convince those approaching their patients (nurses, relatives, &c.) of the necessity of being vaccinated. It is specified that vaccination for an adult should consist in a 2 c.cm. subcutaneous injection of the antiplague vaccine made at the Pasteur Institute (½ c.cm. for an infant, 1 c.cm. for a child between 2 and 10). The study of the recent cases of bubonic plague has led to new researches dealing with the bacteriological diagnosis of the disease. Mons. H. Violle, in a communication to the Société de Biologie on the diagnosis of bubonic plague, recommends that when direct examination of serous effusion or pus from a gland has not revealed Yersin's bacillus, a sero-diagnosis should be made not with the blood serum but with fluid or even pus obtained by puncture of a gland. Mons. Violle has observed that with this technique the agglutination can become positive very soon after the onset of the disease. He remarks that this fact is well worth considering since antibodies appear only much later in the blood.

Encephalitis Lethargica and Hiccup.

In a recent article in the *Presse Médicale* Mons. J. Lhermitte refers to cases of persistent hiccup with nasal and bronchial catarrh, malaise, and slight fever, which have recently occurred in France and elsewhere in Europe. Other cases have occurred concurrently with an epidemic of encephalitis lethargica and since the usual symptoms of this latter disease have in some cases been preceded by persistent hiccup with nasal and bronchial catarrh, malaise, and slight fever, he concludes that the syndrome represents a disease of a similar nature. This opinion has already been expressed at the Société Médicale des Hôpitaux by MM. Netter, W. Dufour, and R. Bénard, and lately at the Société de Neurologie by MM. J. Sicard and J. Paraf.

Dec. 25th, 1920.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Prize-giving at the Royal College of Surgeons in Ireland.

THE annual distribution of prizes in the school of the Royal College of Surgeons in Ireland took place on Dec. 18th, when an address to the students was delivered by the Vice-President, Sir W. I. de C. Wheeler, in the absence, due to illness, of the President. The Vice-President contrasted the present conditions of medical study with those found when he was a student. At that time the operating theatre still savoured of the bull-ring, and anæsthesia was in its infancy. The physician's top hat and double-breasted coat had now disappeared, and the possession of a pure water-supply had done more for the cause of temperance than a thousand Pussyfoot campaigns. The College, the only unendowed school of medicine in Ireland, had strong claims for State aid, which had not yet been met. On the medical side of practice the belief in drugs still held too much sway, while surgery was as yet saturated with reaction and conservatism. He advised his hearers to keep their minds open and independent. They should work with each other as comrades, not as competitors.

Resignation of Professor Hugh A. Auchinleck.

Professor H. A. Auchinleck, who has been professor of medical jurisprudence in the school of the Royal College of Surgeons for more than a generation, has now resigned that post and retired from practice. The students of the school entertained him to dinner last week prior to his leaving Dublin for a visit to East Africa. The Vice-President occupied the chair and several of his colleagues were also the guests of the students.

The Use of the Red Cross by Doctors.

Sir John Lumsden, chairman of the Joint Committee in Ireland of the St. John Ambulance Association and the British Red Cross Society, has, with the consent of his London headquarters, advised medical practitioners in Ireland to affix a Red Cross badge in a prominent position on their motor-cars so as to be visible by day or night, in order to protect from shooting should the occupant fail to hear a challenge.

Death of Dr. George Peacocke.

The death of Dr. George Peacocke, of Dublin, occurred on Christmas morning after a few days' illness. He was struck down by pneumonia very suddenly, and few of his friends had heard of his illness until the news of his death became public. Dr. Peacocke was still a young man, not much over 50, and was always of robust health. He was educated in Trinity College, Dublin, taking his medical degrees in 1892. His whole professional career was associated with the Adelaide Hospital, where he was successively house physician, assistant physician, and physician. He took much interest in the affairs of the Royal College of Physicians, and held for a time the offices of censor and vice-president. He was, since its foundation, chairman of the Irish branch of the College of Nursing, Ltd. He had also been president of the Section of Medicine of the Royal Academy of Medicine in Ireland, and contributed frequently to its Transactions and to the medical journals. As a capable and thoughtful physician and an upright man he was held in much respect in Dublin, and will be greatly missed by his professional brethren.

Ulster Medical Society.

Dr. Thomas Houston, the president of the Society, and Miss Houston gave an "At Home" to members and their friends, at the Medical Institute, Belfast, on the evening of Dec. 18th, 1920, when Major J. A. Sinton, V.C., was presented with the certificate of Honorary Fellowship of the Society. The certificate is in the form of a tryptich bound in Russia leather and is ornamented by water-colour drawings of Queen's University, the Royal Victoria Hospital, and the Medical Institute, with reproductions of the Victoria Cross and the Russian Order of St. George, and the crests of the Indian Medical Service and the Ulster Medical Society. It reads as follows:—

> "This is to certify that John Alexander Sinton, V.C., M.D., D.P.H., Indian Medical Service, has been elected an Honorary Fellow of the Ulster Medical Society in appreciation of the conspicuous gallantry and devotion to duty which have earned for him the greatest distinction which a British soldier can obtain—the Victoria Cross for Valour."

Dec. 28th.

URBAN VITAL STATISTICS.

(Week ended Dec. 18th, 1920.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 18 million persons, the annual rate of mortality, which had been 13·5, 13·2, and 12·9 in the three preceding weeks, rose to 15·3 per 1000. In London, with a population of nearly 4½ million persons, the death-rate was 16·0, or 3·1 per 1000 above that recorded in the previous week, while among the remaining towns the rates ranged from 7·1 in Ealing, 7·2 in Gillingham, and 7·4 in Walthamstow, to 21·4 in Bath, 21·6 in Tynemouth, and 21·8 in Merthyr Tydfil. The principal epidemic diseases caused 247 deaths, which corresponded to an annual rate of 0·7 per 1000, and comprised 93 from infantile diarrhœa, 76 from diphtheria, 33 from measles, 26 from whooping-cough, 16 from scarlet fever, and 3 from enteric fever. Measles caused a death-rate of 1·2 in Sheffield and in Middlesbrough, 1·4 in Smethwick and in Barrow-in-Furness, and 1·7 in Walsall. There were 4994 cases of scarlet fever and 2654 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 5297 and 2654 respectively at the end of the previous week. The causes of 40 of the 5217 deaths in the 96 towns were uncertified, of which 10 were registered in Birmingham, 5 in London, and 3 each in Liverpool and Rhondda.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2¼ million persons, the annual rate of mortality, which had been 14·3, 13·5, and 15·2 in the three preceding weeks, rose to 16·1 per 1000. The 363 deaths in Glasgow corresponded to an annual rate of 17·0 per 1000, and included 7 from infantile diarrhœa, and 5 each from whooping-cough and diphtheria. The 92 deaths in Edinburgh were equal to a rate of 14·1 per 1000, and included 2 from infantile diarrhœa and 1 from diphtheria.

Irish Towns.—The 161 deaths in Dublin corresponded to an annual rate of 20·2, or 2·1 per 1000 above that recorded in the previous week, and included 7 from infantile diarrhœa, 4 from whooping-cough, and 1 each from scarlet fever and diphtheria. The 126 deaths in Belfast were equal to a rate of 15·9 per 1000, and included 2 each from scarlet fever and infantile diarrhœa, and 1 from diphtheria.

The Services.

ARMY MEDICAL SERVICE.

Temp. Major-Gen. Sir R. Jones, (Major, R.A.M.C., T.F.) relinquishes his temporary commission.

ROYAL ARMY MEDICAL CORPS.

R. Fitz-J. Haythornthwaite to be temporary Lieutenant.

Officers relinquishing their commissions: Temp. Lieut.-Col. W. J. N. Vincent, on ceasing to be employed at the Wharncliffe War Hospital (retains the rank of Lieutenant-Colonel). Temp. Major J. Dalrymple (granted the rank of Lieutenant-Colonel). Temp. Capt. A. G. Welsford (granted the rank of Major).

SPECIAL RESERVE OF OFFICERS.

Capt. E. S. Mawe relinquishes his commission on account of ill-health contracted on active service and retains the rank of Captain.

TERRITORIAL FORCE.

Capt. C. E. K. Herapath to be Major.

Temp. Major W. A. Smith (4th Bn., East Lancs. Regt. relinquishes his temporary commission.

Capts. A. C. Court (late R.A.M.C., S.R.) and A. G. M. Middleton (late R.A.M.C.) to be Captains.

Supernumerary for service with O.T.C.:—Lieut. D. R. Wheeler (late R.A.M.C.) to be Lieutenant for service with Belfast University Contingent, Senior Division, Officers Training Corps. London University Contingent: Capt. J. H. Ryffel resigns his commission and retains the rank of Captain.

INDIAN MEDICAL SERVICE.

Lieut.-Col. R. Steen is transferred to the temporary non-effective list.

The King has approved the admission of the undermentioned to the I.M.S.:—To be Captains: Major W. J. Webster (late R.A.M.C., S.R.); Capt. G. M. Moffatt (late 3rd Bn., R. Dub. Fus., S.R.), Capt. J. M. Mitchell (late R.A.M.C.).

THE HORSLEY MEMORIAL.

THE executive committee of the Horsley Memorial has now published the first list of subscriptions towards the foundation of a lectureship or scholarship in order to commemorate the services of the late Sir Victor Horsley to science and to the Empire. The absence of numbers of medical men on war service prevented the taking of steps in this matter until a short while ago, but the memory of Sir Victor Horsley's tragic death in Mesopotamia is still fresh, and will be brought back acutely to all minds by the announcement of the death on Christmas Day of his elder and only surviving son. It is certainly not too late to move for the recognition in a permanent form of Horsley's life and work. It is suggested that the most appropriate trustees would be the Senate of the University of London, and that if a lectureship be finally decided upon the subject should be left widely open, in order to secure the services of men distinguished in various departments of public life to deliver the yearly Victor Horsley Lecture.

Sir Victor Horsley was one of the most noteworthy students of University College Hospital, a distinguished medallist and graduate of the University of London, a leader and first chairman of the Representative Meeting of the British Medical Association, and a Fellow of the Royal Society. His pioneer research work connected with surgery of the brain and nervous system and the causation of myxœdema, and his investigations as secretary of the commission appointed to inquire into the value of Pasteur's treatment of rabies, were amongst his great achievements; but his distinction in science and surgery was the result of only a part of his labours. He was possessed of a great desire for the improvement of the social conditions of his country, and so found himself a leader of various more or less unpopular causes, which he upheld with a fervour not always devoid of offence to his opponents; his devotion to reforms connected with temperance, to the enfranchisement of women, the welfare of children, and the abolition of slums, will long be remembered; and he has left behind him the memory of a brilliant and painstaking teacher and a great and honourable public servant.

The first list of subscriptions, paid and promised, is as follows:—

	£	s.	d.
Sir Frederick Mott, K.B.E., and Lady Mott, Dr. Camac Wilkinson, Sir George Newman, K.C.B., Dr. J. O. Wakelin Barratt, Dr. and Mrs. George Murray ... each	10	10	0
Rt. Hon. Lord Edmond Fitzmaurice, Sir Felix Semon, K.C.V.O., Dr. Mary Sturge, Dr. Slinger, C. J. Bond, C.M.G., Dr. Farquhar Buzzard, Right Hon. Leif Jones, Percy Sargent, C.M.G., D.S.O. ... ... each	10	0	0
Sir W. Arbuthnot Lane, Bart., Sir G. Sims Woodhead, K.B.E., N. Bishop Harman, Dr. H. H. Tooth, C.B., C.M.G., Dr. Otto May, Dr. A. Salusbury McNalty, Ewen J. Maclean, Edward J. Domville, O.B.E., S. H. Burton, J. Smith Whitaker, Sir John Bland-Sutton, Dr. Blacker, C.B.E., Lieut.-Col. R. McCarrison, Mrs. McCarrison, H. Huxley, Raymond Johnson, O.B.E., Dr. Gordon Holmes, C.M.G., C.B.E., Sir Hamilton Ballance, K.B.E., C.B., Dr. W. H. Willcox, C.B., C.M.G., Society of Members of the Royal College of Surgeons, Professor E. H. Starling, F.R.S.... ... ... each	5	5	0
Right Hon. Sir T. Clifford Allbutt, K.C.B., Sir Charles Ballance, K.C.M.G., Dr. A. Fulton, Sir J. Rose Bradford, K.C.M.G., C.B., C.B.E., Right Hon. T. R. Ferens, Dr. Frank Hinds, W. G. Spencer, O.B.E.... ... ... each	5	0	0
Mr. and Mrs. Stephen Paget, Sir Rickman J. Godlee, Bart., K.C.V.O. ... ... each	3	3	0
Dr. R. A. Bolam, O.B.E., Dr. T. Ridley Bailey, Sir T. Jenner Verrall, LL.D., Dr. Dawson Williams, Dr. R. H. Clarke, Dr. Percy Rose, Dr. Steen, Dr. Lauriston Shaw, Dr. E. W. Goodall, O.B.E., Dr. Alfred Cox, O.B.E., Dr. Rigden, Lady Barrett, C.B.E., Col. Sir A. W. Mayo-Robson, K.B.E., C.B., C.V.O., Sir Leonard Rogers, C.I.E., Sir Hugh Beevor, Dr. Squire Sprigge ... ... each	2	2	0
Dr. C. E. S. Flemming, Dr. Garstang, Dr. Hawthorne, Sir Charles Harrison, Dr. O'Sullivan, Dr. Henry Sturge, Col. Mansell Moullin, C.B.E., Professor Rutherford Morison, Dr. Eleanor Lowry, Dr. Russell Wells, Anonymous ... ... each	1	1	0
Miss Powning, Dr. Henry Bird, Dr. J. J. Muskens... each	1	0	0

The hon. treasurers of the Memorial are Sir Frederick Mott, K.B.E., F.R.S., 25, Nottingham-place, W.1, and Dr. H. H. Tooth, C.B., C.M.G., 34, Harley-street, W.1; the hon. ecretaries are Sir W. Arbuthnot Lane, Bart., 21, Cavendish-quare, W.1, and Edward J. Domville, Esq., C.B.E., Symonds-ry, Bridport. Subscriptions may be paid to either of the named, or to the "Victor Horsley Memorial Account," den County Westminster and Parr's Bank, Hanover-re Branch.

Correspondence.

"Audi alteram partem."

THE FUTURE OF POOR-LAW INFIRMARIES.

To the Editor of THE LANCET.

SIR,—The statements made by different eminent speakers at a meeting of the Harveian Society, of which you give a full account in your issue of Dec. 25th, are such as to cause just indignation among all connected professionally with Poor-law hospitals or infirmaries. They make one wonder also whether the speakers do in fact know anything about the ordinary modern Poor-law hospital. We learn that "sick people have been provided in the past with little else than food and shelter"; and the speaker is not, from the context, referring to at all a remote past. We are told that there is no provision for obtaining Wassermann tests, bismuth X ray pictures, blood cultures or counts, or X ray examinations for tubercle. It is suggested kindly that one general practitioner may be equal to three "medical State officials," which in this connexion can only mean the resident medical staff of the infirmaries; this to men who see daily the disastrous effects of delay and inadequate treatment at home and at out-patient departments. It appears that our general equipment is poor and our laboratory equipment nil, and that we treat only incurable and chronic cases. These are some of the statements, in their own words, of speakers who contemplate absorbing the Poor-law hospitals into the voluntary system.

Now no thoughtful man in a position to judge can deny, or wishes to deny, that great changes and improvements are necessary in Poor-law hospitals both for present purposes and if they are to take on a larger section of the public as their patients. And no medical superintendent who has borne for years the burden of responsibility for clinical and administrative work together can fail to see that, whatever be the effect on his own position, a wide expansion of medical staff must result from the new conditions. Already there are few infirmaries which have not specialists attached, either visiting regularly or available when desired, and this is an arrangement advocated for many years by the Medical Superintendents' Society and due entirely to the initiative of individual superintendents. And unquestionably if these hospitals, under the name of municipal hospitals or otherwise, are to be used by the main body of middle- and working-class patients, public opinion will legitimately demand that they shall have a numerous professional staff of the highest possible qualifications. For though specialism is possibly somewhat overdone and a smaller number of patients than is generally supposed suffer through lack of "specialist" advice, nevertheless it is wrong that any risk should be run of even a small number of patients so suffering. That there is this risk at present cannot be denied.

But, Sir, in what spirit is this "linking-up" process to be approached? Is is to be mere swallowing up by the voluntary system, itself by no means free from reproach? Or is it to be a genuine and reciprocal coöperation? Or is it to be avowed rivalry—pull voluntary, pull municipal, and the devil take the hindmost? And is it certain that in 20 years time the municipal hospital would be that hindmost? If those responsible for the policy of the voluntary hospitals begin by throwing out grotesque mis-statements of this sort, how do they expect to be welcomed? We do not pretend to be other than we are. We are not teaching schools and cannot pretend to the skill or repute of the acknowledged leaders of the profession, the picked men, to be found in them. But such as we are we have fought our fight for improvement year after year, with no help from the voluntary hospitals as such, though with generous help often from individuals. The charge cannot with justice be brought against the Poor-law hospitals that they have failed to treat adequately the patients with whom they have had to deal. As the class of patient has altered so gradually the equipment, methods, and staff have expanded, and these hospitals have cured enormous numbers of patients whom the voluntary hospitals have either rejected entirely, or have been obliged, through pressure on their beds, to discharge after quite inadequate periods of treatment.

And now at last the prospect of a great future opens before our Poor-law hospitals. Now, too, the voluntary hospitals begin to take notice of us and to desire to link our future with theirs. But if the attitude of the speakers at the Harveian Society is representative, it may incline us to seek that future independently rather than "link up" with those who regard us as backwaters of stagnancy and neglect. It does not seem by any means certain as yet that the future municipal hospital, if that is to be its name, will be part of the voluntary system. In some ways the tendency seems otherwise. This may be regrettable, but our regret would be a good deal lessened by such statements or mis-statements as these, which, it is well to say plainly, are simply untrue.

Although I feel this protest to be necessary one would rather look at and welcome the manifest desire of every speaker that every available hospital should be put on the highest possible footing. Here we are all on common ground.

One aspect of the matter is too often overlooked. What is to become of the very poor patient and the patient suffering from unattractive disease of a septic nature and the wasting babies rejected by the children's hospitals. At present they "squall" near the "grave case" of one speaker—or perhaps they do not always. At any rate the very poor and those whose illnesses are unattractive, no good for teaching, not creditable to the surgeon, have been squeezed out of the voluntary hospitals, and bid fair to be squeezed out of the Poor-law hospitals too. They will still need treatment, however, and unless that is grasped there is a danger of much hardship resulting. No doubt there are some unused Poor-law infirmary beds, but the number is nothing like so great as has been represented, and the needs of this class should be recognised as well as the needs, urgent indeed as all admit, of those a little above them in the social scale or more obviously and rapidly curable.—I am, Sir, yours faithfully,

J. C. Muir,
Medical Superintendent of the Whipps Cross
Hospital of the West Ham Board
of Guardians.
Dec. 27th, 1920.

CRIMINOLOGY.

To the Editor of The Lancet.

Sir,—The leading article in your issue of Dec. 25th (p. 1314) on the treatment of criminals incites me to suggest what has been for some time in my mind, that some one or more of the bodies who grant a D.P.H. might allow criminology as one of the subjects in its course. I confess that I am thinking of Birmingham, where unusual facilities exist, and teachers who have made it a special study could be found. It might perhaps become a nursery for medical men who wished to enter the prison service.—I am, Sir, yours faithfully,

Dec. 28th, 1920. W. P. Herringham.

SYNOPSIS OF PHYSIOLOGY.

To the Editor of The Lancet.

Sir,—In the notice of my book which appears in The Lancet of Dec. 25th (p. 1311) your reviewer takes exception to the following remark of mine: "Hunger pains ...... are due, as Cannon has shown, to periodic contractions of the stomach wall." He implies that I am incorrect in attributing this discovery to Cannon and that it should properly belong to Carlson. The facts are these: Cannon made the suggestion in a communication to the Boston Society of Medical Science on Jan. 17th, 1911.[1] In collaboration with Washburn he proved it by direct experiment, an account of which appears in the *American Journal of Physiology*, vol. xxix., p. 436, under date March 1st, 1912. The first paper by Carlson on the subject appeared on Dec. 2nd, 1912. Carlson, referring to his own experiments, wrote: "The individual contractions of the group rhythm and the stronger contractions of the continuous rhythm are recognised as hunger pains (confirmation of Cannon and Washburn)."[2] And later, on Jan. 1st, 1913, he wrote: "We owe the actual demonstration of the synchrony of the hunger sensations with the strong contractions of the empty stomach to Cannon and Washburn."[3] Carlson therefore, on his own admission, did but confirm the discovery.

Your reviewer further says: "The central nervous system and reflex action together take up only 16 pages." He makes no mention of the fact that in my book I have arranged the nervous system on a new plan in such a manner that the description of the special senses is woven into the description of the central nervous system. The central nervous system is described in its different aspects on pp. 264–280, 285, 286, 298, 299, 306, 307, 309–317, 321–326. This makes about 35 pages, not 16 as your reviewer states.

I am, Sir, yours faithfully,
Ffrangcon Roberts, M.D., M.R.C.P.
Clare College, Cambridge, Dec. 27th, 1920.

THE ORGANISATION OF THE MEDICAL PROFESSION.

To the Editor of The Lancet.

Sir,—Will you allow me to draw attention to the present position in the organisation of medicine? Excluding for the moment the Royal Colleges, there are three organisations in the medical profession interested in what may be called, for want of a better term, medical politics, namely:—

The British Medical Association, an organisation of individual medical men with a membership of some 20,000 (including those resident in the colonies and abroad), or roughly 52 per cent. of registered practitioners.

The Federation of Medical and Allied Societies, an organisation of societies at present uniting rather more than 18,000 medical practitioners in Great Britain, and some 90,000 of those in the allied dental, pharmaceutical, nursing, and midwives professions.

The Medico-Political Union, an organisation of individual medical practitioners on trade-union lines with a membership of some 3200.

The first and third of these exist to further the interests of doctors alone. The Federation exists to advance the interests of the general public by providing the means of sounding the collective opinion of the various sections in the medical profession, in the allied professions, and in the community at large. As such it neither aspires to leadership nor to control of its constituent bodies.

The view of the Minister of Health may be drawn from his recent statements. On Nov. 1st, 1920, he told a deputation of the B.M.A. that "he was not going to consult half a dozen different bodies each claiming to represent the profession." He also said, "if you want us to consult you, get busy, and set up some machinery whereby you can readily be consulted." He pointed out that "in each area there might be a branch of the B.M.A., but there were also other associations and societies as well." On Dec. 9th, 1920, Dr. Addison received a deputation from the Medico-Political Union, and took the opportunity to make the following remarks:—

> "Since the early days of the Ministry of Health there have been a large number of Deputations of medical men on important subjects which the department has under consideration. In such circumstances the voice of a united medical profession, speaking not of its own interests primarily, is most urgently required, but has not yet been obtained. There is no lack of those who say they represent the profession as a whole, but there is no one body which even claims to represent all interested organisations, though some aspire to. If you wish to procure attention for your views you must agree together first. In no other way is it possible for your views to be completely represented in the councils of those concerned with the reconstruction of our public health system."

The view of the British Medical Association may be gathered from the words of the Medical Secretary and others speaking presumably for the whole body. I may quote the following: "the Association is recognised as the mouthpiece of the profession"; "there is only one organisation in the medical profession—namely, the Association"; "the Association could, if loyally supported by the whole profession, do all that the Federation aims at doing." On Dec. 15th, 1920, the Central Council of the Association rejected the recommendation of the Ministry of Health Subcommittee, which body advised coöperation with the Federation.

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[1] See Cannon, The Mechanical Factors of Digestion, 1911, p. 204.

[2] See American Journal of Physiology, vol. xxxi., p. 151.

[3] Ibid., p. 175.

The view of the Federation.—Desiring to meet the needs of the community and the allied professions, the Federation has adopted a policy of neutrality and conciliation. It claims that by no other means than those it provides can the collective voice of a great profession and its allies in the public service be made available in the councils of the nation. Amongst the 45 organisations coöperating at the present time may be mentioned the Royal Society of Medicine, the British Science Guild, the Medical Women's Federation, Medico-Psychological Association, Association of M.O.H., British Dental Association, Pharmaceutical Society, College of Nursing, Royal British Nurses Association, and Midwives Institute—mentioning larger bodies only. And as all the allied professions are fully represented it requires only the coöperation of the British Medical Association and the Medico-Political Union to make adequate representation of medicine possible. Is not this a goal worth some personal sacrifice?

I am, Sir, yours faithfully,
N. HOWARD MUMMERY.

The Federation of Medical and Allied Societies,
5, Vere-street, W. 1., Dec. 21st, 1920.

SPIRITUALISM AND THE NEW PSYCHOLOGY.

To the Editor of THE LANCET.

SIR,—May I congratulate you on having secured for your Christmas Day number a review of Dr. M. Culpin's book on spiritualism by a whole-hogger believer in telepathy? Next Christmas I shall look forward to a number devoted entirely to ghost stories, spirit-rapping, *ouija* boards, &c.—an annual relief from the sobriety of your weekly review of British medicine.

I am, Sir, yours faithfully,
Loughton, Essex, Dec. 29th, 1920. LEONARD HILL.

THE X RAY TREATMENT OF RINGWORM: A WARNING.

To the Editor of THE LANCET.

SIR,—The increasing number of claims against medical practitioners in respect of permanent alopecia following upon the treatment of ringworm of the scalp by X rays renders it desirable that those who may have occasion to use that method of treatment should warn the patient's parents of the possible after-effects.

The violent reaction which occasionally follows even minimum doses of X rays, in spite of all precautions, is otherwise apt to create a suspicion of overdosage or negligent technique, and give rise to claims which might have been avoided by a preliminary word of caution.

I am, Sir, yours faithfully,
JAMES NEAL,
General Secretary.

Medical Defence Union, Ltd., 4, Trafalgar-square,
London, W.C. 2, Dec. 23rd, 1920.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.—The annual general meeting of the Medical Officers of Schools Association was held at 2, Savoy-hill, Victoria Embankment, London, W.C., on Dec. 17th, when Mr. R. C. Elmslie was elected president, and thanks were corded to Dr. James Kerr, the retiring president. Having gard to the important position occupied by the journal, nd Hygiene, it was agreed to continue its publication, l Dr. James Kerr and Dr. C. W. Hutt were elected editors. was announced that Dr. E. H. Nash would read a paper School Punishments.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

PARLIAMENT was prorogued on Thursday, Dec. 23rd, until Tuesday, Feb. 15th, 1921. The Royal Assent was given to a number of Acts, including the Women and Young Persons (Employment in Lead Processes) Act and the Employment of Women, Young Persons, and Children Act.

HOUSE OF COMMONS.

MONDAY, DEC. 20TH.

Substitutes for Salvarsan.

Mr. WATERSON asked the Minister of Health if he would furnish the names of the various substitutes for salvarsan and neo-salvarsan the use of which had been approved by his department; and if he would state whether his department guaranteed that the substitutes were exactly similar to the German salvarsan and neo-salvarsan.—Dr. ADDISON replied: The following substitutes for salvarsan and neo-salvarsan have been approved: Kharsivan, neo-kharsivan, arsenobillon, novarsenobillon, diarsenol, neo-diarsenol, galyl, and salvarsan (manufactured by an English firm of chemists). No guarantee of the kind suggested can be given, but there is good reason to believe that all these drugs, with the exception of galyl, correspond in general chemical constitution to the respective German preparations. They are all officially tested for toxicity before being placed on sale.

Dental Bill.

Dr. ADDISON introduced a Bill "to amend the Dentists Act, 1878, and the provisions of the Medical Act, 1886, amending that Act." The Bill was read a first time.

[On Tuesday, Dec. 21st, the order of the second reading of this Bill was discharged and the Bill withdrawn. It is understood that it has been introduced for the purpose of discussion and that it will be re-introduced at the beginning of next session.]

TUESDAY DEC. 21ST.

Ex-Service Men in Asylums.

Mr. LEONARD LYLE asked the Minister of Pensions if his department made any payments in connexion with ex-Service men who were in any asylums whatever in the country for the treatment of mental disease; why, if this was the case, both his department and the Ministry of Health abstained from giving figures; whether the number of such men had been stated officially to be inconsiderable; and whether it was possible, in view of payments made by his department, to give the public reliable information on the matter.—Mr. IAN MACPHERSON replied: I would draw my honourable friend's attention to the replies given to the honourable Member for Frome on June 28th, and to the honourable and gallant Member for Gateshead on July 30th, last. From these it will be seen that ex-Service men, confined in asylums and suffering from certifiable insanity due to war service, are by special arrangements treated as service patients with all the privileges of private patients. Their number on Dec. 9th was, I regret to say, 5634. The entire cost of their maintenance and treatment is borne by my department and, in addition, treatment allowances are made on substantially the same basis as in other cases of in-patient treatment.

Medical Appeal Tribunal for Wales.

Lieutenant-Colonel PARRY asked the Minister of Pensions whether he was aware that the medical appeal tribunal for Wales had been removed from Wales to hear appeal cases in England, and that consequently the hearing of appeal cases in Wales had been suspended, and what was the reason for such action.—Sir G. HEWART (Attorney-General for England) replied: I assume that this question refers to the Pension Appeal Tribunals set up under the War Pensions (Administrative Provisions) Act, 1919. The sitting of the tribunals in various large centres in England and Wales are arranged in accordance with the number of cases received in each district. The tribunal which sits almost continuously in Wales was temporarily removed to London for the fortnight commencing Dec. 6th. It returned to Wales yesterday. The arrangement was the result of (*a*) a diminution in the number of cases received from Wales, and (*b*) an increase in the number of London cases received.

Calves Used for Lymph Production.

Mr. LUNN asked the Minister of Health if he would state how the carcasses of the calves used for the production of vaccine lymph at the Government lymph establishment were disposed of after the lymph had been taken from them and the animals had been slaughtered.—Dr. ADDISON replied: The calves used for the production of lymph at the Government lymph establishment are hired, and after slaughter are examined by the veterinary surgeon of the establishment. The carcasses sold for food are subject to further examination by officers of the local sanitary authorities. I am advised that there is no evidence whatever that the carcasses of vaccinated calves are unfit for food.

Public Vaccination Statistics.

Mr. KENYON asked the Minister of Health if he would furnish a statement showing the number of public vaccinations carried out in England and Wales in each year during the past 10 years, and the expenditure incurred in respect of the same out of national and local funds respectively.—Dr. ADDISON replied: The information asked for by my honourable friend is as follows:—

Year.	Number of successful vaccinations and re-vaccinations performed by public vaccinators at the cost of the rates.	Approximate expenditure incurred in respect of public vaccination.	
		Expenditure out of local rates.	Expenditure out of Exchequer Fund.
1909-10	415,718	£183,000	£25,000
1910-11	394,338	174,000	30,000
1911-12	362,757	165,000	23,000
1912-13	334,530	158,000	19,000
1913-14	315,067	152,000	16,000
1914-15	—	144,000	26,000
1915-16	—	138,000	12,000
1916-17	—	129,000	16,000
1917-18	232,648	116,000	21,000
1918-19	202,913	110,000	20,000

WEDNESDAY, DEC. 22ND.

Food Value of Milk.

Mr. HURD asked the Parliamentary Secretary to the Ministry of Agriculture what steps had been taken to carry out propaganda regarding the food value of milk, as promised six months ago, so as to remedy the insufficient consumption of milk, especially among children.—Dr. ADDISON (Minister of Health) replied: The Ministry of Agriculture and Fisheries and the Board of Education have agreed to coöperate with the Ministry of Health in this matter and have drawn up a scheme for including instruction as to the value and use of milk in various courses at schools and colleges.

Free Passages for Indian Medical Service.

Lieutenant-Colonel RAW asked the Secretary for India if he could make any statement regarding the promised concessions to officers of the Indian Medical Service in the matter of passages to and from India.—Mr. MONTAGU replied: The concession to officers of the Indian Medical Service of free passages to and from this country when sent home on sick leave has been sanctioned with effect from July 1st, 1919.

Committee on Smoke Abatement.

Major HAMILTON asked the Minister of Health whether he had accepted the conclusions of the Committee on Smoke Abatement; and, if so, whether he would explain why in Sheffield and elsewhere contracts for thousands of houses were being approved by his Department without these conclusions being specially brought to the notice of the local authorities concerned.—Dr. ADDISON replied: I have circulated copies of the Interim Report of the Committee on Smoke Abatement to all local authorities with a memorandum recommending consideration of the various substitutes suggested for the open coal fire where these can be economically adopted. The Report has also been brought to the notice of the Housing Commissioners. I understand that in the case of Sheffield the Housing Commissioner has been in touch with the local authority, and that the council are considering the Report with a view to the possibility of taking action in accordance with the suggestions made.

Military Cases of Small-pox.

Mr. RAFFAN asked the Minister of Health if he would state how many naval or military cases of small-pox were reported to his Department during the year 1919; what was the vaccinal condition of the cases; and how many ended fatally.—Dr. ADDISON replied: Four naval cases and 13 military cases of small-pox were reported to my Department during 1909. Four of the patients were stated to have been unvaccinated, and 3 of these cases proved fatal. There was one other fatal case, the vaccinal condition of which could not be ascertained. The remaining 12 cases were stated to have been vaccinated in infancy and one of them to have been revaccinated.

Surplus Hospital Accommodation.

Mr. ORMSBY-GORE asked the Minister of Health whether he would further consult the Association of Poor-law Unions with regard to the best method of rendering all surplus hospital accommodation in Poor-law institutions available for the treatment of the sick before re-introducing Clause 9 of the Ministry of Health (Miscellaneous Provisions) Bill; and whether it was his intention to make any alterations in the Bill before re-introducing it.—Dr. ADDISON replied: I am prepared to consider any suggestions, whether from the Poor-law Unions Association or from any other source, which are consistent with the declared policy of the Government that the treatment of the sick poor should be merged in the general health services of the community. In reply to the latter part of the question, I am not at present aware of any valid reason why the Clause should be altered.

THURSDAY, DEC. 23RD.

Washington Conference and Maternity.

Mr. G. BARNES asked the Minister of Health whether he was yet in a position to state the intentions of the Government with regard to the Washington Conference with respect to maternity.—Dr. ADDISON replied: As my right honourable friend is aware, the views of this Department were communicated some time ago. I understand that questions have arisen affecting international law. They have been referred to the law officers, and the matter is with them at present.—Mr. BARNES: Is it within the recollection of the right honourable gentleman that he has given me that answer almost in exactly similar terms to the same question for the last six months? Will he undertake to speed up the law officers? Is he aware that the Government are under an obligation to put this Convention to the House within 12 months of Jan. 26th last. There may be exceptional circumstances which would justify a postponement, but will he bear that fact in mind and endeavour to get these international law questions settled as speedily as possible? Is it not a fact that international law questions can only arise if the Government intend to put the Convention into operation, and inasmuch as the right honourable gentleman has said that they do not intend to do so, why raise these international law questions at all?—Dr. ADDISON: I really cannot profess to answer questions of international law; I can only say that as far as this Department is concerned its work on this matter was finished some two or three months ago. I understand that the questions are very difficult and intricate. I am advised that important international questions must be settled before the Government can put it to this House, and those are the matters which are causing the delay. I regret the delay, but I know that the law officers are being as expeditious as they can in the matter.

Divisional and Whole-time Medical Officers.

Colonel Sir ARTHUR HOLBROOK asked the Minister of Health if he would state the salaries to be paid to the four divisional medical officers and the 33 whole-time outdoor medical officers recently appointed by him and what he estimated would be their travelling expenses; what expenditure would be incurred for the clerical and nursing staffs for these officers; what payment had been sanctioned for rent and care of regional offices throughout the country; was he aware that the appointment of these officers to supervise and direct panel doctors throughout the country was strongly resented by the medical profession; and, in view of the large expense involved and having regard to the heavy financial obligations already existing, could the matter be reconsidered.—Dr. ADDISON replied: The salary to be paid to the four divisional medical officers is at the rate of £1600 a year, and for the 33 whole-time medical officers the salaries range from £1000 to £1400 a year in all cases inclusive, and providing that no additional payment is made in the shape of war bonus. The total travelling expenses of this staff for a full year is estimated at £8000. In addition a clerk has been assigned in certain areas, and the cost of clerical assistance under this head is estimated at £2700 a year. Where necessary nurses are employed to assist the medical officers at a fee of half a guinea a session. Where it has been necessary to rent premises for this work the arrangements have been made by the Office of Works, but I shall be glad to obtain particulars of cost and furnish them to my honourable and gallant friend. In answer to the last two questions I am certainly not aware that the policy adopted is strongly resented by the medical profession. This policy, which was adopted in 1914, has been continuously supported by medical men and by the Approved Societies; it is sound in itself, and will produce results abundantly justifying the expenditure in the saving of health and of the amounts paid in sickness benefit.

Section 79 of the Lunacy Act, 1890.

Mr. FREDERICK ROBERTS asked the Minister of Health whether he intended to have Section 79 of the Lunacy Act, 1890, posted up in the waiting-rooms of pauper asylums, since this step had been now for some time under the consideration of the Lunacy Board; and, if so, when would this commence.—Dr. ADDISON replied: I am advised that this proposal is by no means free from difficulties, and that there is much difference of opinion among experts as to its advisability. But the Board of Control have now completed their inquiries, and I hope to receive their considered recommendation early in January.

The Care of Lunacy Documents.

Mr. FREDERICK ROBERTS asked the Minister of Health if he could say what became of the original reception order and accompanying medical certificates of inmates who were dead or who have been discharged from asylums, licensed houses, and registered hospitals, and also in the case where a licence was extinguished; did they remain permanently in the keeping of the medical superintendent or licensee; and, in view of the possibility of subsequent legal action taken by a sometime inmate, where the issue might turn upon the integrity and security of these original documents, would he take steps by regulation or otherwise to secure that these originals remained henceforth in the custody of the Lunacy Board and were safe from any interference with their contents.—Dr. ADDISON replied: The original admission papers relating to dead or discharged patients are retained by the authorities of institutions for as long as, in their discretion, they think it necessary. In the case of licensed houses there is no general rule with regard to the custody of documents when the licence is extinguished. But in view of the fact that copies of all these documents are in the possession of the Board of Control, I see no necessity for any regulations of the kind suggested, nor have I any reason to believe that the discretion left to the authorities is not properly exercised.

Medical News.

UNIVERSITY OF CAMBRIDGE: DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.—The Special Board for Medicine, on the recommendation of the Committee on Medical Radiology and Electrology, have approved the granting of the Diploma in these subjects to—

Sir A. D. Reid, L.R.C.P. Lond., M.R.C.S. Eng.; R. W. A. Salmond, M.D., Ch.M. Aberd.; H. Martin Berry, M.D. Liverp.; J. F. Hall-Edwards, L.R.C.P. Edin.; and J. T. Case, M.D. Ill.

At examinations held recently the following candidates were successful:—

THIRD EXAMINATION FOR MEDICAL AND SURGICAL DEGREES.

Part I., Surgery and Midwifery.—C. G. Ainsworth and A. B. Appleton, Downing; C. S. Atkin, A. B. Bratton, and W. M. Casper, Caius; M. T. Clegg, Jesus; B. K. T. Collins, Trinity; S. J. Cowell, Queen's; F. C. Cozens, Emmanuel; E. J. Crisp, Sidney Sussex; E. C. Curwen, Caius; H. B. Dodwell and E. A. Fiddian, Emmanual; L. P. Garrod, King's; H. L. Garson, Clare; W. N. Goldschmidt, Pembroke; E. H. H. Granger, Clare; C. Griffith-Jones, Caius; J. C. N. Harris, Pembroke; G. A. Harrison, Caius; F. B. Hobbs, Sidney Sussex; L. W. Jones, Emmanuel; E. I. Lloyd, Trinity; W. H. Palmer and H. A. A. Pargeter, Sidney Sussex; F. P. N. Parsons, Pembroke; P. W. Putnam, Emmanuel; R. S. Scott and T. H. Somervell, Caius; E. D. Spackman, Queens'; G. D. C. Tracy and A. R. Walker, Emmanuel; T. T. B. Watson, Christ's; A. D. Whitelaw, St. John's; V. Wilkinson, Christ's; M. Wong, St. John's; F. G. Wood, Jesus; W. G. Woolrich, St. John's; H. B. Yates, Downing; and K. J. Yeo, Emmanuel.

Part II., Medicine, Pathology, and Pharmacology.—C. G. Ainsworth, Downing; F. Allen and J. C. Andrews, St. John's; C. S. Atkin and S. H. Barnett, Caius; D. C. Beaumont, Christ's; C. C. Beney, Jesus; P. F. Bishop, Clare; C. N. Carter, Trinity; P. D. H. Chapman, Sidney Sussex; A. O. Courtis, Pembroke; S. J. Cowell, Queens'; L. Cunningham, Downing; H. B. Dodwell, Emmanuel; W. D. Doherty, King's; H. V. Edwards, Trinity; L. S. Gathergood, Sidney Sussex; A. C. V. Gosset, Caius; E. H. H. Granger, Clare; J. R. Harris, Queens'; G. A. Harrison, Caius; F. B. Hobbs, Sidney Sussex; L. W. Jones, Emmanuel; J. M. Lawrie, Trinity; P. Lazarus-Barlow, Downing; F. S. Maclean, Jesus; J. W. McK. Nicholl and E. S. Orme, Queens'; R. Y. Paton, Trinity; C. J. Penny, Jesus; K. Playfair and J. L. Potts, Caius; W. B. Purchase, Sidney Sussex; G. P. N. Richardson, Christ's; A. G. Shurlock, Jesus; F. N. Sidebotham, Clare; J. A. B. Snell and P. V. Squires, Caius; W. S. Sykes, Emmanuel; D. C. L. Vey, Clare; H. N. Webber, A. T. Westlake, and A. D. Whitelaw, St. John's; J. Whittingdale, Downing; V. Wilkinson, Christ's; F. R. Winfield, Downing; W. G. Woolrich, St. John's.

UNIVERSITY OF LONDON.—At examinations held recently the following candidates were successful in the subjects indicated:—

M.D. EXAMINATION.

Branch I., Medicine.—Monty Baranov, Univ. Coll. Hosp.; Stanley Batchelor, William Moses Feldman, and Ernest Eugène Herga, London Hosp.; Kenneth Reed Hill, Univ. Coll. Hosp.; Geoffry Charles Lander and Rowland John Perkins, St. Bart.'s Hosp.; Evelyn Dennis Scott, Guy's Hosp.; and James Aubrey Torrens, St. George's Hosp.

Branch IV., Midwifery and Diseases of Women.—Henry William Evans, Guy's Hosp.; and Violet Ione Russell, London (R.F.H.) Sch. of Med. for Women.

Branch V., State Medicine.—Maitland Radford, Univ. Coll. Hosp.

Branch VI., Tropical Medicine.—George Alex Sheridan Madgwick, London Sch. of Trop. Med. and London Hosp.; and Edward Selby Phipson (University medal), Birmingham Univ. and London Sch. of Trop. Med.

M.S. EXAMINATION.

Branch I., Surgery.—Hugh Ernest Griffiths, St. Bart.'s Hosp.; Robert Lister Horton (University medal), Univ. Coll. Hosp.; Samuel Walter Maslen Jones, Middlesex Hosp.; Norbert Leo Maxwell Reader and Cedric Sydney Lane Roberts, Guy's Hosp.; and Henry James Drew Smythe and Douglas George Clutsam Tasker, Bristol Univ. and London Hosp.

UNIVERSITY OF MANCHESTER.—At examinations held recently the following candidates were successful in the subjects indicated:—

FINAL M.B. AND CH.B. EXAMINATION.

F. H. Anderson, May Blakiston, Phyllis M. Congdon, J. W. Crawshaw, A. M. El Aguizy, Florence M. L. Graham, E. M. Greaves, Albert Haworth, G. E. Hayward, Irma M. C. Jehansart, A. W. Kirkham, James Leather, G. H. Lees, Gertrude B. Leigh, P. B. Mumford (second-class honours and distinction in Obstetrics and Surgery), Terence O'Brien, Florence G. Sherry, Doris A. Taylor, Henry Tomlinson, and Raymond Williamson.

Medicine.—Martha F. Barritt and Violet M. Jewson.

Obstetrics.—T. E. Coope.

Forensic Medicine.—R. J. Allison, Caroline M. Edwardes-Evans, Cecil Nelson, H. D. Preston, and S. J. Woodall.

THIRD M.B. AND CH.B. EXAMINATION.

General Pathology and Morbid Anatomy.—R. S. van Aalten, P. D. Abbatt, Reginald Anderton, J. H. Appleton, Mary W. Atkinson (distinction in Pathology), J. B. Bennett, Doris H. Bentham, Benjamin Broman, G. H. Buckley, E. W. Clough, H. M. Coope, Margaret Derbyshire, O. M. Duthie, Kathleen M. Eastwood, Beatrice L. Ellison, H. E. Emmett, H. P. Fay, J. H. Fletcher, William Geraghty, Doris M. Hardman, Arthur Ingham, E. L. Jones, J. I. Kelly, Nora Mills, Winifred H. Mitchell, Louis Morgenstern, A. C. Newman, Hilda Pratt, G. T. Robinson, Abram Rosenstone, F. H. Scotson, Henry Southworth, G. B. Stenhouse, Leo Unsworth, Emmeline Wade, Margaret J. Warburton, Margaret Wild, James Worthington, and James Yates.

Pharmacology and Therapeutics.—Margaret Derbyshire, Gwendolen A. G. Edwardes-Evans, Richard Handley (distinction in Pharmacology), G. A. Lord, Louis Morgenstern, and Margaret J. Warburton.

Hygiene.—Lionel Boyars, Richard Handley, L. W. Kay, G. B. Lord, and Louis Morgenstern.

FINAL EXAMINATION FOR DIPLOMA IN DENTISTRY.

Alan Booth, Dorothy Marsden, and Norman Wood.

UNIVERSITY OF ST. ANDREWS.—At recent examinations the following candidates passed in the subjects mentioned:—

THIRD PROFESSIONAL EXAMINATION FOR M.B., CH.B. DEGREES.

Forensic Medicine and Public Health.—David A. K. Cassells, George R. M. Cordiner, and William A. Steel.

FINAL EXAMINATION FOR M.B., CH.B. DEGREES.

Margaret Jane Mudie Cuthbert, Jean Helen Dumbreck Fleming, Mabel Hodgson, Frances Lilian Knipe, Margherita Murray Lilley, Christian Elinor Little, and John Bain Macdonald.

CAMBRIDGE AND VIENNA.—A collection is being made among resident members of Cambridge University, graduate and undergraduate, in support of relief work in the University of Vienna, but it is believed that many Cambridge men no longer resident would wish to identify themselves with this attempt to help the greatest seat of learning in Central Europe at this time of most pressing need. The *Times* of Oct. 23rd recorded the death in Vienna from starvation of Professor Max Margules, the great meteorologist, who had been living on a pension of 400 kronen (equivalent to 8*s.*) a month; and it is only too clear that this is not an isolated or exceptional instance. In the coming winter both students and professors (with their families) will be in urgent want of the necessities of life. The Cambridge Executive Committee has asked for £5000, and all assistance which old Cambridge men can give will be needed if this sum is to be reached or even approached. Cheques should be sent to Barclay's Bank, Ltd., Cambridge, made payable to the "Universities' Relief Fund."

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN.—The following appointments have been made by the Council: Sir Leonard Rogers, F.R.S., to be Stuart Mill Lecturer in Tropical Medicine; Miss Dorothy Maughan, M.P.S., to be Lecturer in Pharmacy. The Staff of the London School of Medicine for Women have announced that they will increase their donation to the Appeal Fund for the extension of the Hospital and Medical School from £500 to £1000. The extension is to provide beds for the class of workers who live in small flats or lodgings. For these illness is a haunting dread, as they cannot be nursed where they live, while they are unable to afford the high fees charged by good nursing homes. They can afford the cost of maintenance at the present charge of £4 per week. A few beds are now available for men and women at this charge, and 23 more will shortly be ready. Further accommodation for men, women, and children will be provided as soon as funds permit. Donations and subscriptions should be sent to Sir Francis Leyland Barratt, Bart., Honorary Treasurer, Royal Free Hospital, Gray's Inn-road, W.C.1.

National Association for the Prevention of Infant Mortality.—A congress will be held on Infant Welfare in London on July 5th, 6th, and 7th. Among the subjects to be discussed will be residential provision for mothers and babies; inheritance and environment as factors in racial health; the supply of milk, its physiological and economic aspects. Further particulars may be obtained from the secretary at 4, Tavistock-square, London, W.C.1.

Medical Magistrate.—The name of Dr. Chas. Owen Fowler has been added to the list of magistrates for the borough of Croydon.

Medical Coroner.—Dr. R. L. Guthrie, O.B.E., barrister-at-law, has been appointed coroner for the Eastern District of the County of London. Dr. Guthrie was deputy coroner in N.E. London, when, on the outbreak of war, he joined the R.A.M.C. and served for nearly five years in France and at home. He retired with the rank of lieutenant-colonel.

Instruction in Hospital Administration.—A three months' course of lectures and demonstrations in hospital administration will be given at the Western Hospital, Seagrave-road, Fulham, London, S.W., by Dr. R. M. Bruce, medical superintendent, on Tuesdays and Fridays at 5 P.M. The course will begin on Tuesday, Jan. 4th, and is suitable for those reading for a diploma in public health. The fee for the course is £3 3s., and medical men desiring to attend a course of instruction are required before attending at the hospital to pay this fee to the clerk to the Metropolitan Asylums Board, Embankment, London, E.C., giving their full name and address.

The People's League of Health.—As a result of a meeting held by the League at the Cardiff City Hall on Dec. 15th last, under the chairmanship of the Lord Mayor, at which Sir Bruce Bruce-Porter, Dr. Eric Pritchard, Dr. Mary Scharlieb, and Dr. E. H. Stancomb, representing its Medical Council, were the speakers, a committee was formed to establish the work of the League in Wales. Among those organising the Welsh branch are Professor Edgar Collis, Talbot Professor of Preventive Medicine, Welsh National Medical School; Dr. Ewen J. Maclean, a member of the Consultative Council of the Ministry of Health; and Mr. D. W. Evans, Director-General of King Edward VII. Welsh National Memorial Association. The committee considers the present moment opportune for the furtherance of the work undertaken by the League in developing public demand for health legislation.

Central Midwives Board.—A special meeting of the Central Midwives Board was held at Queen Anne's Gate Buildings, Westminster, on Dec. 21st, 1920, with Sir Francis H. Champneys in the chair. Several midwives were struck off the roll and in two cases midwives were placed on probation, the following charges amongst others having been brought forward:—

> Being in attendance at a confinement and the child suffering from inflammation about the navel, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (5), and the child suffering from illness supposed to be infectious, the midwife neglected to send to the local supervising authority any notification that she was herself liable to be a source of infection, as required by Rule E. 23 (c). A midwife did not take and record the pulse and temperature of her patients at each visit, as required by Rule E. 14, and she did not enter records of the pulse and temperature of her patients in a notebook or on a chart carefully preserved, as required by Rule E. 14. A midwife neglected to wash the patient's external parts with soap and water and to swab them with an efficient antiseptic solution before making the first internal examination, as required by Rule E. 8 (a); she did not disinfect her hands and forearms before touching the patient's generative organs, as required by Rule E. 4; she neglected to take and record the pulse and temperature of the patient at each visit, as required by Rule E. 14; and medical aid having been sought for the patient and child, she neglected to notify the local supervising authority thereof, as required by Rule E. 22 (1) (a). Without undergoing disinfection to the satisfaction of the local supervising authority a midwife continued in attendance upon other maternity patients, contrary to Rule E. 6. A patient suffering from excessive bleeding, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (3), and the patient's mother desiring the attendance of a registered medical practitioner the midwife dissuaded her from securing his attendance (misconduct).

At a meeting of the Board held on the same day a letter was considered from Miss Clive Haydon, the honorary secretary of the Teachers Instruction Course Midwives' Institute, stating that the teachers of midwifery who attended the recent course of instruction at the Institute had passed resolutions urging the extension of the period of midwifery training and the advisability of a high qualification for approved teachers. The Board agreed with the advisability of raising the standard of midwifery training both for pupils and teachers whenever circumstances render such an advance practicable. Meanwhile any such voluntary extension of the duration of training would meet with the hearty approval of the Board.—A letter was considered from the medical officer of health for Kensington, asking if, in the event of the Kensington Council arranging for the nursing of a mother and child (the latter suffering from ophthalmia neonatorum) to be taken over by a midwife specially engaged by the council for the purpose, the midwife originally engaged would be discharged from all responsibility during the period subsequent to such taking over. The Board decided that the medical officer of health for Kensington be informed that the Board thinks that an arrangement whereby a nurse specially trained is available for bad cases of ophthalmia neonatorum would be very helpful, but does not think that midwives should be separated either from mothers or children under their care.—A letter was considered from the medical officer of health for the city of Worcester asking if it is considered desirable that investigation of the mode of practice of a midwife under Rule E. 25 should be carried out in the case of all midwives or only in those cases where the results of the midwife's work have not seemed satisfactory. The Board decided that the medical officer of health for Worcester be informed that Rule E. 25 (p. 37) reads as follows:—

> "The local supervising authority shall make arrangements to secure proper inspection of the register of cases, bag of appliances, &c., of every midwife practising in the district of each authority, and, when thought necessary, an inspection of her place of residence and an investigation of her mode of practice."

This rule obliges the local supervising authority to secure a proper inspection of the register, &c., of every midwife, but leaves the inspection of the residence and mode of practice to the discretion of the local supervising authority. It is highly advisable that unnecessary inspection should be avoided as likely to annoy the patient, to cast doubt on the efficiency of the midwife, and generally to interfere with the working of the Act.

Fees of Doctors Called in by Midwives.—A new scale of fees for the payment by local supervising authorities of medical practitioners called in by midwives under Section 14 of the Midwives Act, 1918, has come into operation to take the place of that prescribed by the Local Government Board in December, 1918. The chief alterations made by the new scale are:—

> (1) The fee for attendance at confinements is £2 2s. in all cases, instead of £1 1s. in ordinary cases, and £2 2s. in cases involving operative assistance.
>
> (2) A special fee of £1 1s. is prescribed for suturing the perineum and for other operative assistance occurring after the confinement, and also for attendance at abortions or miscarriages.
>
> (3) The fee for visits is increased to 5s. by day and 10s. by night.
>
> (4) It is made clear that a fee is not payable by the local supervising authority where the doctor has agreed to attend the patient under arrangement made by or on behalf of the patient or by any club, medical institute, or other association of which the patient or her husband is a member, or where the doctor receives or agrees to receive a fee from the patient or her representative, or in respect of any services performed by the doctor after the expiry of four weeks from the day of birth.

The Minister of Health has approved an alteration in the rules of the Central Midwives Board, which makes Section 14 of the Midwives Act applicable to all cases in which a midwife calls in a doctor under the C.M.B. rules. Rule E.20 now reads:—

> In all cases of illness of the patient or child or of any abnormality occurring during pregnancy, labour, or lying-in, a midwife, as soon as she becomes aware thereof, must call in to her assistance a registered medical practitioner, using for this purpose the form of sending for medical help properly filled up and signed by her. The conditions referred to in this rule shall be deemed to be emergencies for the purpose of Section 14 of the Midwives Act, 1918.

The local supervising authority is, of course, empowered to recover these fees except in cases of poverty.

The late Dr. G. C. Grant.—George Cowie Grant, of Dufftown, died in a nursing home in Aberdeen on Dec. 23rd. He was the fifth son of Major William Grant, of Balvenie House, Dufftown, and brother of the late Mr. J. Grant, well known as county clerk of Banffshire and town clerk of Banff. Dr. Grant was a graduate of Aberdeen University and took the degree of M.B. and C.M. in 1894. He afterwards practised his profession in England for about two years at Birmingham City Asylum and for six years as a practitioner in Colne, Lancashire. In 1902, for personal reasons, he gave up his professional career, but did not cease to take an interest in health matters. For a number of years he was chairman of the isolation hospital at Dufftown, convener of the public health committee of the county council, and chairman of the board of control. For a term of three years he was provost of Dufftown. He was also a member of the county council and a justice of the peace for the county. About two years ago he was appointed convener of the county of Banff. Dr. Grant took a deep interest in all that pertained to the welfare of the community and was everywhere held in high esteem. He is survived by a widow and family.

MEDICO-LEGAL SOCIETY.—A meeting of this society will be held at 11, Chandos-street, London, W., on Tuesday, Jan. 18th, at 8.30 P.M., when a paper will be read by Dr. H. Gibson Sutherland on Medical Evidence in the Staunton Murder Trial.

SOCIETY FOR THE PREVENTION OF VENEREAL DISEASE.—The Executive Committee of the Society for the Prevention of Venereal Disease has recently been enlarged by the inclusion of the following members:—Mr. W. Willson Cobbett, Captain W. E. Elliot, M.P., Dr. A. Mearns Fraser, Dr. Jane Lorimer Hawthorne, Mr. Cuthbert Laws (General Manager of Shipping Federation), Mr. Harry Machin, Captain T. Michell, R.N., Surgeon Vice-Admiral Sir James Porter (late Director-General, Naval Medical Department), and Mr. A. H. Tubby, F.R.C.S.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the Committee held on Dec. 14th, 1920, 30 cases were considered and £315 voted to 25. The following is a summary of some of the cases relieved.

Daughter, aged 61, of M.R.C.S Eng. who practised in London and died in 1885. Her mother, who died in 1906, and self were left with very limited means. The applicant now has only £1 per week, and owing to ill-health and increased cost of living finds it impossible to pay her way and has got into debt. Highly recommended.—Widow, aged 71, of M.D. Glasgow who practised in Scotland and died in 1889. Lives with a sister who has £10 and applicant has £50. They endeavour to supplement this by letting rooms, and last year received from this source £65. Rent £34.—Widow, aged 75, of M.R.C.S. Eng. who practised in Brixton and died in 1883. Applicant was left totally unprovided for with four children, all of whom are married and unable to assist her. Only income the Old-age Pension, 10s. per week, and occasional gifts from friend. Pays 8s. per week for one room. Relatives who in the past helped are now all dead.—Widow, aged 31, of M.B. Edin. who had for two years worked on a Pensions Board and previously worked as a locum tenens and died in 1920. Applicant left quite unprovided for with two children, ages 4 and 5. Deceased's colleagues on the Pensions Board collected a sum of money to assist applicant, but this will soon be exhausted. Having to look after the children she cannot undertake a post. Would like to get the children into a home. Expenses: Rent £1 per week; board, 25s. per week; storage of furniture, 5s.—Widow, aged 41, of M.R.C.S. Eng. who practised at Plymouth for over 30 years and died in September, 1920. Applicant left with son, aged 12, and girl, 10, with insufficient means. Health bad, so unable to work. Certain income about £35, and has had to spend some of her capital to pay her way. Rent 16s. per week.

Subscriptions may be sent to the honorary treasurer, Sir Charters J. Symonds, C.B., F.R.C.S., at 11, Chandos-street, Cavendish-square, London, W. 1.

OUTBREAK OF SMALL-POX IN ABERDEENSHIRE.—Two cases of small-pox from the Longside district of Aberdeenshire were admitted into the County Infectious Diseases Hospital at Aberdeen on Dec. 22nd. The outbreak took place in a family at Rova, and its origin is as yet unknown. The persons affected are men, aged 66 and about 21. The diagnosis has been officially confirmed.

HEALTH SCHEME FOR THE COUNTY OF ABERDEEN.—The proposals of the Scottish Board of Health in connexion with maternity service, child welfare, and the general public health administration of the county have been under consideration by a special committee of the Aberdeen County Council. The Council is recommended to appoint Dr. H. J. Rae, the tuberculosis medical officer for Aberdeenshire, to the office of deputy M.O.H. for the county, and to continue his present administration of the tuberculosis scheme for the combined area, and also to act as administrative and executive officer under the new scheme. Dr. Rae is also recommended for the post of inspector of midwives under the scheme. The Committee recommends that the salaries of Dr. J. P. Watt and Dr. Rae be increased by £200 each from May 15th last, subject to the approval of the Scottish Board of Health, the increase in the case of Dr. Rae to be charged against the scheme for maternity service and child welfare. Nursing associations are proposed for every district, so that the total number of nurses in the county would amount to 31.

DONATIONS AND BEQUESTS.—Under the will of the late Mr. F. Gorringe, who left £450,000 for charitable purposes, subject to the life interest of his wife, whose death was recently announced, the St. George's Hospital and the Westminster Hospital will receive an eighth share each.—*Manchester Hospitals:* £5000 were received by the Salford Royal Hospital towards the cost of the new nurses home, as a thank-offering from Edward Pilkington, Laurence Pilkington, and Mary Gavin Pilkington. A legacy of £1000 from the executors of the late Mr. Lewis Atkinson, of Higher roughton, was also received. It was decided to name a bed er the donor. From the Dickenson Charity £200 were ived to be applied as income for present neces- s, and £100 from Mrs. Lomas Harrison, of Hale. St. Mary's Hospitals have received from the executors he late Mr. Lewis Atkinson £900, and from those of the late Mr. W. Cooney £73. A sum of £1000 has also been received from Mrs. E. Lees for the endowment of a bed, and £750 from the Anson Golf Club for the endowment of a cot. Further donations to the amount of £325 have also been received by the board of management.—*Hospitals in the North of Scotland:* The employees of the Great North of Scotland Railway met recently to consider the allocation of the money which had been collected during the year on behalf of local charitable institutions. The chairman reported that the sum of £432 9*s.* 5*d.* had been collected over the system among the traffic, permanent way, and head office staffs. Over 95 per cent. of the staff had contributed to the collection. He added that the Board of Directors had announced their intention of giving a subscription of £200 to the Aberdeen Royal Infirmary. The money collected was allocated as follows: Aberdeen Royal Infirmary, £432; Sick Children's Hospital, £30; Eye Institute, £5; Chalmers's Hospital, Banff, £15; Gray's Hospital, Elgin, £15; Turner Memorial Institute, Keith, £15. The collections made by the employees of the Northern Cooperative Society amount to £150, an increase of 50 per cent. Most of the employees now make weekly contributions. The sum of £150 was allocated as follows: Royal Infirmary, £75; Royal Hospital for Sick Children, £20; Aberdeen District Nursing Association, £10; Eye Institution, £7; Morningfield Hospital, £5; Convalescent Hospital, Newhills, £10; Convalescent Hospital, Cults, £10; Aberdeen Dispensary, £8; and the Asylum for the Blind, £5. £1362 have now been contributed by the employees since the fund was started. The school teachers of Aberdeen have set an excellent example to other members of the community in subscribing the handsome sum of £425 15*s.* 1*d.* to Sir James Taggart's scheme for assisting the Sick Children's Hospital. This represents more than four hours' pay. Many teachers gave a whole day's pay.

MANCHESTER UNIVERSITY DEGREE DAY.—Degrees were conferred on Dec. 22nd by the Vice-Chancellor on a number of graduates. For the first time in the history of the University the degree of Doctor of Philosophy was awarded, the recipient having done research work in organic chemistry. Of the 21 Bachelors of Medicine and of Surgery seven were women.

ABERYSTWYTH DISTRICT MEDICAL OFFICERSHIP.—The deadlock between Aberystwyth guardians and the Ministry of Health, on which we have already commented (THE LANCET, Nov. 27th, p. 1119, and Dec. 25th, p. 1328), advanced another stage at a meeting on Monday. At the last meeting of the guardians an intimation was received from the Ministry of Health that the salary of Dr. J. A. Rees, who had been appointed in preference to Dr. A. Thomas, who served throughout the war, would not be sanctioned by the Ministry, and it was agreed to ask Dr. Rees for his views on the subject. Dr. Rees replied that he left the matter in the hands of the majority of the board. The clerk now explained that it would be necessary to appoint a temporary medical officer, and the majority of the guardians promptly reappointed Dr. Rees as temporary medical officer.

CARDIFF MEDICAL SOCIETY.—At a meeting of this society on Dec. 14th, 1920, specimens were shown. Mr. Geary Grant showed: (1) an Appendix and a Meckel's diverticulum which had become adherent to the mesentery of the ileum, removed from a case which had been admitted with signs of acute appendicitis; (2) three small Epithelial Inclusion Cysts from a patient who had suffered an injury to the finger; they were found lying on the tendon sheath, simulating a ganglion; (3) a Thyroid suspected of being malignant, removed June, 1920, from a patient who had returned with a freely movable gland in the neck, which he proposed to remove. Dr. D. R. Paterson discussed the effect on the voice of removing the thyroid, and reported a case of complete paralysis of the vocal cords requiring a tracheotomy tube. Mr. Tenison Collins showed: (1) a Pediculated Fibroid Tumour, partly cartilaginous, removed from the anterior surface of the fundus uteri from a patient suffering severe menorrhagia with the uterine wall otherwise normal; (2) a Phosphatic Stone, weighing 4 ounces, from a woman suffering from retention of urine, removed by vaginal cystotomy, one end of which appeared to have fallen on the urethra, acting as a valve; (3) the Handle of a Crochet-hook, slightly sharpened, from a woman three months' pregnant, located by X rays and found lying in the utero-vesical pouch, causing no sign of irritation, the insertion and removal of which had no effect on pregnancy. Mr. Geary Grant reported removing a phosphatic mass round a nucleus of "slippery elm" by suprapubic cystotomy. Mr. J. O. D. Wade showed an Oxalate of Lime Vesical Calculus from a boy aged 19 years, who passed urine every half hour, the history dating from birth. A sound would not enter the bladder. The calculus was removed by suprapubic cystotomy with great difficulty, owing to the sharp spicules fitting into folds of the mucous membrane.

BOOKS, ETC., RECEIVED.

BUTTERWORTH AND CO., London, India, Canada, and Australia.
Elements of Hygiene and Public Health. By Rai Bahadur Jaising P. Modi, L.R.C.P. & S. Edin. With Introduction by Lieut.-Col. E. J. O'Meara, I.M.S. 2nd ed., revised and enlarged. Pp. 497. 12*s.*

LE FRANÇOIS, 91, Boulevard Saint-Germain, Paris.
Formulaire des Milieux de Culture en Microbiologie. Par Dr. Dériberé Desgardes. Pp. 98. Fr.4.
Prothèse Dentaire. L'Art de l'Empreinte Technique. Pratique de la Prothèse. Par Maurice Wisner, Chirurgien-Dentiste. Pp. 224. Fr.12.

FISCHER, GUSTAV, Jena.
Die Lipomatosis und ihre klinischen Formen: ein Beitrag zur Physiologie und Pathologie des Fettgewebes. Von Dr. H. Günther. Pp. 216. M.40.

HODGE, WILLIAM, AND CO., Edinburgh and London.
Trial of the Wainwrights. Edited by H. B. Irving, M.A. With an Appreciation of the Editor by Sir Edward Marshall Hall, K.C. Pp. 235. 10*s.* 6*d.*

KEGAN PAUL, TRENCH, TRUBNER, AND CO., London. E. P. DUTTON AND CO., New York.
In Search of the Soul, and the Mechanism of Thought, Emotion, and Conduct. A Treatise in Two Volumes containing a Brief but Comprehensive History of the Philosophical Speculations and Scientific Researches from Ancient Times to the Present Day, as well as an Original Attempt to account for the Mind and Character of Man and establish the Principles of a Science of Ethnology. By Bernard Hollander, M.D. Vol. I., pp. 516; Vol. II., pp. 361. £2 2*s.*

MACLEHOSE, JACKSON, AND CO., Glasgow. MACMILLAN AND CO., London.
Memories and Musings of a Hospital Surgeon. Pp. 192. 7*s.* 6*d.*

MACMILLAN AND CO., London and New York.
Physiology and Pathology of the Cerebro-spinal Fluid. By Prof. W. Boyd. Pp. 176. 30*s.*
Old at Forty or Young at Sixty. By R. S. Carrol, M.D. Pp. 148. 13*s.*

MALOINE, A., ET FILS, Paris.
Traité de Pathologie Médicale et de Thérapeutique Appliquée. Publié sous la direction de Emile Sergent, Membre de l'Académie de Médecine, Médecin de la Charité; L. Ribadeau-Dumas, Médecin des Hôpitaux; L. Babonneix, Médecin des Hôpitaux. Tome XXXII., Radiologie, Radio-Diagnostic Radiothérapie, Radiumthérapie. Par Béclère, Cottenot, Simone Laborde. Pp. 520. Fr.30.

MASSON ET CIE, Paris.
Nouveau Traité de Médecine. Publié sous la direction de MM. les Professeurs G. H. Roger, Fernand Widal, P. J. Teissier. Secrétaire de la Rédaction: M. Garnier. Fascicule I., Maladies Infectieuses. Pp. 482. Fr.35.

METHUEN AND CO., London.
Crowley's Hygiene of School Life. By C. W. Hutt, M.D. 4th ed., revised. Pp. 450.

OXFORD UNIVERSITY PRESS, London, New York, Toronto, Melbourne, and Bombay.
Carnegie Endowment for International Peace. Preliminary Economic Studies of the War. Early Effects of the War upon the Finance, Commerce, and Industry of Peru. By L. S. Rowe, Ph.D. Pp. 60.

SAUNDERS, W. B., COMPANY, Ltd., London and Philadelphia.
Advanced Lessons in Practical Physiology for Students of Medicine. By Russell Burton-Opitz, S.M., M.D. Pp. 238. 18*s.*
Laboratory Manual of the Technic of Basal Metabolic Rate Determinations. By Walter M. Boothby, A.M., M.D., and Irene Sandiford, Ph.D. Pp. 117. 24*s.*
Laboratory Manual and Text-book of Embryology. By Charles William Prentiss. Revised and rewritten by Leslie Brainerd Arey, Professor of Microscopic Anatomy at the Northwestern University Medical School. 3rd ed., enlarged. Pp. 412. 27*s* 6*d.*
A Text-book of Pathology. By Prof. W. G. MacCallum. 2nd ed., thoroughly revised. Pp. 1155. 45*s.*

Appointments.

JOHNSTON, G. S., M.B., Ch.B. Edin., has been appointed Assistant *Tuberculosis Officer and Assistant Medical Officer of Health* for the City of Dundee.

LORIMER, G. N., M.B., B.S. Melb., *Medical Registrar to St. Mary's* Hospital, Paddington, W.

Certifying Surgeons under the Factory and Worshop Acts: ISARD, C. V., M.R.C.S., L.R.C.P. Lond. (North Tawton); TRUMPER, W. A., M.R.C.S., L.R.C.P. Lond. (Ivybridge); JOHNSTON, A. H., M.R.C.S., L.R.C.P. Lond. (Hull); HACKETT, E. L. M., L.R.C.P. & S. Irel., L.R.F.P.S. Glasg. (Usk); JAMES, T. G., M.R.C.S., L.R.C.P. Lond. (Pontypool).

Vacancies.

For further information refer to the advertisement columns.

Bath, Royal United Hospital.—H.S. and H.P. £150 each.
Belfast County Borough, Municipal Hospital for Tuberculous Children, Graymount.—Visiting S. £350.
Birkenhead Education Committee.—Asst. Sch. M.O. £450.
Birmingham General Hospital.—Res. Anæsth., H.P., and H.S. £100. Also H.S. for Skin and Venereal Depts. £125.
Bradford Royal Infirmary.—Res. Surg. O. £250. H.S. £200.
Bristol General Hospital.—Surgical Registrar.
Bristol Royal Infirmary.—H.S. £120.
Burnley, Victoria Hospital.—H.S. £250.
Cancer Hospital (Free), Fulham-road, London, S.W.—Director of Research Inst. and Director of Path. Dept. £1200 and £800 respectively.
Cardiff, King Edward VII. Hospital.—Ophthal. H.S. £200.
Cheshire County Asylum, Parkside, Macclesfield.—Asst. M.O. £350.
City of London Hospital for Diseases of the Chest, Victoria Park, E.—Res. M.O. £250.
Colchester, Severalls Mental Hospital.—Asst. M.O. 7 gs. per week.
Colonial Service.—M.O.'s for West African Medical Staff, Government Service in Malaya, East African Protectorates, West Indies (including British Guiana), Fiji, and the Western Pacific, &c.
Derby, Derbyshire Royal Infirmary.—Ven. Dis. O. £750.
Doncaster Royal Infirmary and Dispensary.—Sen. and Jun. Res. M.O.'s. £250 and £225.
Down District Asylum, Downpatrick.—Sen. and Jun. Asst. M.O.'s. £350 and £300.
Durban, Government Hospital.—Asst. M.O. £484.
East Ham County Borough Education Committee.—Asst. Sch. M.O. £500.
East Suffolk and Ipswich Hospital.—H.S. £200.
Evelina Hospital for Children, Southwark, S.E.—H.S. £160.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Hon. Anæsth.
Hospital for Women, Soho-square, W.—Clin. Assts.
Hull Royal Infirmary.—Asst. H.S. £150.
Ilford Urban District Council.—Female Asst. M.O.H. £400.
King's College for Women, Household and Social Science Department, Campden Hill-road, W.—Asst. in Dept of Hygiene and Bacteriology. £400–£500.
Leeds General Infirmary.—Res. Cas. O. £150. Ophthal. H.S. £50. Two H.S.'s. Two H.P.'s.
London County Mental Hospital Service.—Sixth Asst. M.O. £300.
London (Royal Free Hospital) School of Medicine for Women.—Prof. of Obstet. and Gynæc. [and Direc. of the Obstet. and Gynæc. Unit. £2000.
Manchester, Barnes Convalescent Hospital, Cheadle.—Res. M.O. £300.
Manchester Northern Hospital for Women and Children, Park-place, Cheetham Hill-road.—H.S.
Manchester Royal Infirmary.—Accident Room H.S. £200.
Newark Hospital and Dispensary.—Res. H.S. £200.
Newcastle-upon-Tyne Hospital for Sick Children.—Jun. Res. M.O. £200.
Nottingham General Hospital.—H.P. £200.
Ryde, Royal Isle of Wight County Hospital.—Res. H.S. £250.
Sheffield Royal Hospital.—Asst. Cas. O. £150.
Sheffield Royal Infirmary.—Asst. Cas. O. £150.
Stockport Infirmary.—Asst. H.S. £220.
Throat Hospital, Golden-square, W.—Hon. Med. Registrar.
University College Hospital, Gower-street, W.C.—Hon. Asst. Ear, &c., Dept. Also M.O. £250.
West London Hospital, Hammersmith-road, W.—P. Also Hon. Obstetric Registrar.
Wigan Education Committee.—Asst. Sch. M.O. £500.
Wilts County Council.—Female Asst. County M.O.H. and Asst. Sch. Med. Inspec. £600.
Wolverhampton and Staffordshire General Hospital.—Res. Surg. O. £300.

THE Secretary of State, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Caterham.

Births, Marriages, and Deaths.

BIRTHS.

WALLACE.—On Dec. 7th, 1920, in Calcutta, the wife of Captain Q. V. B. Wallace, M.C., R.A.M.C., of a son.

WHEELER-BENNETT.—On Dec. 22nd, 1920, at "Grenofen," Steyning, Sussex, the wife of Dr. Clement Wheeler-Bennett, of a son.

WHITE.—On Dec. 12th, 1920, at 1, Albemarle-road, Withington, Manchester, the wife of Charles Powell White, M.D., F.R.C.S.—a daughter.

WIGHT.—At Swatow, China, on Nov. 14th, 1920, to Dr. and Mrs. A. Wight, English Presbyterian Mission—a daughter.

MARRIAGES.

HEATON—WHEELER-BENNETT.—On Dec. 21st, 1920, at St. Luke's Church, Bromley Common, Kent, Trevor Braby Heaton, O.B.E., M.D., M.R.C.P., to Constance Irene, only daughter of J. W. Wheeler-Bennett, C.B.E., J.P., and Mrs. Wheeler-Bennett, of Ravensbourne, Keston, Kent.

JOHNSTONE—DEMPSTER.—On Dec. 21st, 1920, at St. Ninian's Cathedral, Perth, George Gordon Johnstone, M.C., M.D., D.P.H., to Constance Margaret, eldest daughter of Mr. and Mrs. T. Dempster, of Perth.

LAWRENCE—GOODRIDGE.—On Dec. 20th, 1920, at St. Andrew's Church, Bournemouth, Sidney Cameron Lawrence, M.B., Ch.B., D.P.H., to Maria Louisa, widow of John Perch Goodridge.

DEATHS.

DOUGLAS.—On Dec. 22nd, 1920, at Devonshire-street, Portland-place Arthur Douglas, M.D., Senior Physician, British Hospital for Mental Disorders and Nervous Diseases, aged 70.

JOHNSTON.—On Dec. 22nd, 1920, at Braehead, Lugar, Ayrshire, Robert Johnston, M.B., C.M., late of Dundee, in his 74th year.

MAIR.—On Dec. 21st, 1920, at Westbourne-terrace, W., Robert Slater Mair, M.D., in his 95th year.

MARSDEN.—On Dec. 19th, 1920, at St. Thomas's Hospital, London, after a long and painful illness contracted on active service, Walter Gibson Marsden, M.A., M.B., B.Ch., late Captain, R.A.M.C.

NEAL.—On Dec. 23rd, 1920, at Bolingbroke-grove, S.W., John Breward Neal, M.R.C.P., in his 73rd year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Wednesday, Jan. 5th.

SECTION OF SURGERY: at 5.30 P.M. (Exhibits at 4.30 P.M.)

Paper:

Mr. James Berry: A Further Series of 500 Goitre Operations, with Special Reference to After Results (illustrated by the epidiascope and demonstration of patients).

Abstracts of the notes with temperature and pulse charts of every case will be exhibited, together with a large number of pathological specimens, which will be on view at 4.30 P.M.

The meeting will be of great interest to the members of the Sections of Medicine and Laryngology.

Thursday, Jan. 6th.

SECTION OF OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.

Short Communication:

Dr. Louise McIlroy: The Use of Morphia in Labour.

Paper:

Mr. Percival Cole: A Series of 43 Cases of Inoperable Uterine Carcinoma treated by the Cold Cautery Method of Percy.

Tuesday, Jan. 11th.

SECTION OF PSYCHIATRY: at 8.30 P.M.

Paper:

Dr. Morowoka: The Morbid Conditions of the Choroid Plexus in Mental Disease (illustrated by epidiascope).

Thursday, Jan. 13th.

SECTION OF NEUROLOGY: at 8.30 P.M.

Informal Meeting for free discussion (tea, coffee, smoking).

N.B.—As this is the first of these evenings it is hoped that Members will endeavour to attend and, if possible, exhibit objects of interest.

Friday, Jan. 14th.

CLINICAL SECTION: at 5.30 P.M. (Cases at 5 P.M.)

Cases: The following will be shown by—

Mr. W. E. Tanner: Case of Osteochondritis Deformans.

Mr. W. H. Ogilvie and Mr. Massie: Two Cases of Fracture-Dislocation of the Ankle.

Mr. Bonar: Impacted Fracture—Separation of Lower Epiphysis of the Femur.

Other cases will be shown.

SECTION OF OPHTHALMOLOGY: at 8.30 P.M. (Cases at 8 P.M.)

Cases and Exhibits:

Mr. G. Winfield Roll: Foreign Body Retained in the Eye for Many Years.

Mr. B. T. Lang: A New Scotometer.

Papers:

Dr. Ransom Pickard: Variations in the Size of the Physiological Cup, and their Relation to Glaucoma.

Mr. B. T. Lang: Scotometry.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, Jan. 3rd.—2 P.M., Dr. G. Stewart: Medical Out-patients. Mr. MacDonald: Surgical Out-patients. Dr. Simson: Diseases of Women. Dr. Morton: X Ray Department.

TUESDAY.—2 P.M., Dr. Burnford: Medical Out-patients. Mr. T. Gray: Surgical Out-patients. Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Skin Department.

WEDNESDAY.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 2 P.M., Mr. Addison: Operations. Mr. Gibb: Eye Department. Mr. D. Armour: Visit to Surgical Wards.

THURSDAY.—2 P.M., Dr. G. Stewart: Medical Out-patients. Mr. D. Armour: Operations. Mr. B. Harman: Eye Department. Mr. Baldwin: Orthopædic Department.

FRIDAY.—10 A.M., Mr. D. Buxton: Dental Department. Dr. McDougal: Electrical Department. Dr. Robinson: Gynæcological Operations. 2 P.M., Dr. Burnford: Medical Out-patients.

SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 2 P.M., Dr. Owen: Medical Out-patients. Mr. Sinclair: Surgical Out-patients.

Daily:—10 A.M. Ward Visits. 2 P.M., In-patient, Out-patient Clinics and Operations.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

THURSDAY, Jan. 6th.—6 P.M., Chesterfield Lecture:—Dr. W. Griffith: Eczema.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

Christmas Lectures on the Haunts of Life, by Prof. J. A. Thomson:—

TUESDAY, JAN. 4th.—3 P.M., Lecture III.:—The Great Deeps.

THURSDAY.—3 P.M., Lecture IV.:—The Freshwaters.

SATURDAY.—3 P.M., Lecture V.:—The Conquest of the Land.

S[illegible] ROYAL HOSPITAL AND ANCOATS HOSPITAL [illegible]DUATE DEMONSTRATIONS, at the two Hospitals

[illegible] Jan. 6th.—4.30 P.M., Mr. Macalpine: The Interpretation [illegible] Symptoms of Urinary Disease. (At Salford Royal [illegible])

Notes, Short Comments, and Answers to Correspondents.

SOME PROBLEMS IN MARINE HYGIENE.[1]

WITH SPECIAL REFERENCE TO MERCHANT SHIPS.

BY SURGEON VICE-ADMIRAL SIR ROBERT HILL, K.C.M.G., C.B., C.V.O.,

MEDICAL DIRECTOR-GENERAL OF THE ROYAL NAVY.

I. VENTILATION AND ACCOMMODATION IN SHIPS.

The Foundation of Naval Hygiene.

THE most prominent pioneers of naval hygiene were three medical officers—James Lind, who began his sea service in 1739, and two others, Thomas Trotter and Gilbert Blane, who began theirs in 1779. These three were men of widely different characteristics, but they had in common the aspiration to improve the health of our seamen and the sanitary conditions under which they lived. Lind—methodical [illegible] painstaking, far-seeing in his suggested improvements could not stand against opposition and became r[illegible] Trotter, impetuous and a fighter, obtained minor reforms, Blane, full of worldly wisdom and tact, ingratiated himself with the authorities—who were absolutely ignorant of naval hygiene—and won them over to his side. These pioneers set themselves to eradicate diseases in the fleets and merchant ships and to bring the general conditions of living to some degree of sanitation.

The personnel was chiefly ravaged by scurvy, small-pox, and typhus, which sometimes carried off four-fifths of a naval or mercantile expedition. Reforms were hard to enforce; even when lime-juice became known as preventive of scurvy, and vaccination had proved its value in combating small-pox, very little advantage was taken of either. In 1761 Lind introduced the distillation of sea-water to make drinking-water, but distillation was probably adopted in very few ships at that time. He, no less than Trotter and Blane, was convinced of the necessity of ventilation and cleanliness, recognised that infection of certain diseases was carried by personal contamination and by clothing, and advocated isolation of infected persons and the fumigation of closed compartments. Trotter believed in vaccination against small-pox, then a terrible scourge in the Navy, but not until 1800 was an Order issued permitting surgeons to vaccinate seamen who desired it. In 1795 Blane became one of the two Medical Commissioners on the Board of Sick and Wounded Sailors; owing to his efforts the general use of anti-scorbutics became obligatory in the following year. He paid particular attention to the seaman's diet, recognising that it was not salt that caused scurvy, but a deficiency of other things in diet, a fact that is now well understood to be a cause of other diseases, such as beri-beri. In this way the foundations of marine hygiene were laid; we now recognise that most of the general principles of hygiene observed on shore can also be applied to men afloat in the Navy or Mercantile Marine, although the ship is still subject to particular limitations of size, occupation, and climate.

Ventilation.

Efficient ventilation of a ship is perhaps the most difficult problem of marine hygiene. Pryor has likened a ship to a bottle, through the neck of which fresh air has to come in and foul air escape. At one time wind-sails were the only means of artificial ventilation known. These are, in the words of Blane, "wide tubes formed of canvas and extended by hoops into the form of a cylinder, which pass from the external air into the lower parts of the ship through hatches"; but when the ship was battened down they could not be used. As far back as the end of the seventeenth century square wooden trunks, subsequently replaced by brass trunks (the idea being borrowed from a French frigate) were conducted from the hold or lower deck to the open air; this was the germ of origin of our present excellent system. At the present time it is stated in the Board of Trade instructions that in merchant ships "no hard-and-fast rule can be laid down as to the system of ventilation to be adopted ...... but that there should not be less than two ventilators, one serving as an inlet for the admission of fresh air, and the other as an outlet for escape of impure air." These must be fitted clear of bunks, so as not to cause discomfort to occupants. "To ventilate forecastles, poops, and between deck spaces, the simplest method is to have an iron pipe with revolving cowl at each end of the space, so that while impure air escapes at one end pure and fresh air will enter at the other, and a constant circulation be kept up. One of the ventilators should pass through the deck to at least the lower edge of the beams," but it may be remarked here that it would be better to carry the inlet pipe down to near the deck of the space so that fresh air may circulate right through the space. For the tropics means of introducing windsails by some aperture, such as a skylight or hatch being cut in the deck over the living space, are insisted on. The instructions state that when it is proposed to ventilate crew spaces by any system of mechanical ventilation the full plans to scale should be forwarded for the Board's consideration by the surveyor. There is no mention of consultation with a medical officer, but I consider that the advice of a medical officer expert in ship's hygiene should always be taken; such an expert should sit on the Board of Construction of all ships. In the Royal Navy a medical officer of the Medical Director-General's Staff inspects the ventilation of ships under construction, and coöperates with other Departments in dealing with proposed alterations and improvements; but the ideal would be attained if this officer attended the meetings of the Board of Construction before the keel of a ship was laid. The medical officer is nearly always called in too late for his recommendation to be carried out except at enormous expense. I understand that in France the plans of every ship proposed to be built must be submitted to a Board of Construction, which includes "The Director of Public Health." I must, however, insist that until a medical officer has had long experience at sea, whether in the Royal Navy or Mercantile Navy, he is not qualified to give valuable and practicable advice on construction.

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[1] Being portions of a Chadwick Trust lecture delivered at Newcastle-upon-Tyne, Dec. 3rd, 1920.

Efficient ventilation in merchant ships, whether natural or artificial, is not so difficult as in men-of-war. The main object of the latter is fighting efficiency, and with all the increasingly complicated and necessary machinery it became a very difficult problem. In 1912 a special committee was able to overcome many difficulties; time and experience gained will, we hope, soon solve the remainder.

Essentials necessary; systems employed.—To obtain efficient ventilation three essentials are necessary: (1) the circulation of a sufficiency of fresh air; (2) the distribution of air without creating draughts; and (3) the maintenance of an equable temperature. Three systems are available for artificial ventilation in a ship—the Plenum system, the exhaust system, and the system where these two are combined. In the Royal Navy the Plenum system is now mainly adopted by which air is drawn in from outside, the inlets being placed on the upper deck so that no foul or exhaust air can be sucked into them; it is then forced by powerful electric fans through air trunks to the living spaces. If necessary it can be warmed by use of "thermo-tanks," which consist of a series of steam pipes over which the cold air passes and is so warmed before passing into the trunks; by these mechanical means the temperature of the air can be adjusted to the comfort of the men.

Standard of purity.—In living and working spaces of a ship a high standard of purity of air must be aimed at. In H.M. ships the fans for supply and the air-trunking are designed to provide for the supply and suitable distribution of air at the rate of 50 cubic feet per person per minute, or 3000 cubic feet per hour. In order to obtain this delivery of fresh air to all parts of the space, outlet gratings of fixed expanded steel are placed at regular intervals along the supply trunks, which extend to the farthest part of the space, the trunk end being closed. Inside the trunks straight metal deflectors are placed near these openings; by adjustment of these deflectors a uniform velocity at all parts is obtained, no unpleasant draught being experienced at a distance of 1 foot from the grating even when 100 cubic feet per minute issue from it. When such equality of velocity is obtained after various trials these deflectors are permanently fixed. It has now been definitely settled that in spaces where there are foul odours or gases or vitiated atmosphere the exhaust system is only to be used. This is a useful point for merchant ships carrying dangerous cargoes of coal or oil and should be considered in the construction for the ventilation of holds. Some merchant ships—as, for instance, the *Aquitania*—employ the double or interchangeable system of supply and exhaust; but the latter is open to the criticism that the exhaust trunks accumulate dust and dirt, which if the exhaust be reversed into supply is blown into the compartment again. It is, however, in smaller ships that the problem of ventilation is so urgent. The Board of Trade instructions only deal with the rudiments of the problem; cowl ventilators (inlet and outlet) frequently have to be closed during bad weather, ventilation then ceasing to exist. Dr. William Hanna, of Liverpool, has rightly advocated the adoption of an electric fan, running at two speeds, fast and slow, and driving air into a shaft which would be carried into and around the quarters at a lower level than the bunks. The shaft is perforated with numerous small holes to admit air into the forecastle. I must emphasise this point. No seaman, naval or mercantile, will stand a draught, and no draught would be experienced if the velocity were not more than 3 feet per second; outlet shafts should be fixed in suitable positions.

Some system of warming the fresh air-supply is necessary; the temperature to be aimed at is about 55° to 60° F.—higher than which it tends to produce dryness of the nose and throat, headache, and fatigue. In H.M. ships the fresh air is heated by being driven through thermo-tanks containing tubes through which steam passes at low pressure. A by-pass is fitted to allow supply of cold air when required; if well regulated its effect will be to prevent excessive moisture and excessive dryness. This method would only be practicable in the larger merchant ships; some system of radiators, electric or steam, should therefore be provided. For cubicles, cabins, and small living spaces an ordinary electric table fan of the traversing type will do much to remove "stuffiness."

Inspection.—Merchant ships carrying medical officers should have a system of inspection of ventilating arrangements, samples of air being taken from time to time with observations on the wet and dry bulb thermometer of the outside and inside air for comparisons; these samples should be sent for analysis. The standard of purity of air laid down in H.M. ships is that there shall be in a living space not more than 12 parts of carbonic acid gas to 10,000 parts of air.

Accommodation.

This subject has aroused perhaps the greatest controversy among all the problems concerning the merchant service. The Merchant Shipping Act at present in force lays down that each man shall have 120 cubic feet air space and 15 square feet floor space. The Act says space occupied by messrooms, bathrooms, or washing places appropriated to the use of seamen may be taken into account, so that not less than 72 cubic feet and 12 square feet is obtained for each man. This should be "over all," that is to say, not counting in space filled up by fixtures. The Australian Government gives 140 cubic feet and 18 square feet; the Norwegian Government gives 125 cubic feet and 18 square feet, exclusive of fixtures, cupboards, &c. In the Royal Navy 200 cubic feet are allowed per man, but this is where hammock-slinging is general. The merchant seaman appears to wish for the "bunk or berth system" for sleeping. The main objection to this system is that it is seldom feasible to provide a separate bunk for each man; a bunk is usually occupied by different men in various watches—an objectionable habit and likely to lead to spread of infectious and contagious diseases. Hammocks, one for each man, are much more hygienic; they are stowed away when not in use, space for day living and messing being thus opened up. The bedding is more easily inspected and each man is responsible for the cleanliness of his own. I feel sure the general adoption of hammocks will lead to better health and comfort. I understand the cubicle system is asked for, with iron bunks; the latter proviso is agreed to, as wooden bunks harbour vermin; but iron bunks, if adopted, should be made to fold up when not in use, especially where no separate messing space is allowed for.

Living space forward or aft.—As regards the placing forward or aft of living spaces for men it is stated that the forecastle position is exposed to storm, danger through collision, cessation of ventilation in bad weather, and noise, which in head seas interferes with sleep. On the other hand, the seaman is much less overlooked "for'ard" and can lead his own life; in hot and calm weather the forecastle is in a favourable position; the best place on board in a collision is governed by chance; and the commanding officer prefers his men for'ard as being more under control in case of accidents. Aft, the noise of the propellers is trying and "bumping" still occurs in heavy seas. On the whole, the aft position is perhaps better; it was lately adopted in H.M. ships, but was not popular with the men, although many officers preferred it. But this comparison hardly holds on account of different structure. On the subject of hammock-slinging it is interesting to note that recently an inquiry was held by the Ministry of Transport and Shipping in conjunction with the Admiralty and War Office on the evil effects of spacing hammocks too near each other in H.M. transports. This spacing was formerly 16 inches between each hammock hook; in the Royal Navy it has now been increased to 20 inches. The evils of such close approximation in transports were revealed in their overcrowded state during the war; influenza spread to an alarming extent and mortality was high. In future hammock hooks will be fitted 27 inches apart, centre to centre, instead of 16 inches, and the interlocking of the hammocks will be increased from 3 feet to 4 feet 6 inches. Troops will be embarked up to the extent of the hammock billets provided, plus 25 per cent. in addition. By the new method of slinging no two heads of people in adjacent hammocks are opposite. The 25 per cent. troops for whom no hammock billets are provided will be employed on various duties (sentries and watch-keepers) whilst the remainder are sleeping.

General accommodation.—On the subject of general accommodation in merchant ships I recommend for your perusal the February, 1920, publication of *Blackwood's Magazine*, which contains the impressions of a naval officer on first taking over command of a merchant ship for war service. It is satisfactory to note that the merchant seamen gladly adopted the disciplinary measures which were made for their comfort. This shows how much can be done to improve living conditions by officers of a ship provided they have the necessary knowledge and tact. Much more, however, could be done if ship-owners and ship-builders would make every effort to improve sanitary conditions, thereby making the men more contented and getting better work from them. This is evidenced in the new standard ships. Here the crew are placed in the after-part of the ship, which is steam-heated. Messing space is separated from the sleeping space; a recreation- and smoke-room is provided; cubic and floor space is more than is laid down by the Board of Trade. Separate cubicles, each fitted with two berths, are placed along the ship's side. The men wish them placed against the bulk-heads, but I think the former is the better arrangement. Seamen and firemen's wash-places are provided and have lockers for each man's dirty clothing. I think the adoption of spray-baths would be a further great improvement, saving water and time and meaning that no man can wash in the same water another has used. These improvements have their origin in the demands made by the National Seamen's and Firemen's Union.

THE NATURE OF ANIMAL LIGHT.

WITHOUT discussing the ultimate nature of light—whether it is due to a succession of pulse-waves in the ether caused by vibrations of electrons or to other causes—there are aspects of the question, more especially bio-luminescence or bio-photogenesis—the production of light by animals and plants—which have in all ages excited the interest and curiosity of mankind. Professor E. Newton Harvey, of Princeton University, has published a most interesting monograph—one of the series of "Monographs on Experimental Biology"—on the "Nature of Animal Light."[1] The memoir is concerned largely with the physical characteristics of animal light and the chemical processes underlying its production. Recent researches go far to place this question on a sound physico-chemical basis. That animals can produce light was recognised in the earliest times, when fire-flies and glow-worms abounded and the phosphorescence or "burning of the sea" was described by the older explorers. Aristotle mentions the light emitted by dead fish and flesh and some kinds of damp wood—phenomena now proved to be due to living micro-organisms.

Bio-luminescent Animals and Plants.

In 1667 Robert Boyle, by means of his receiver and pump, made fundamental experiments to show that the light from all three sources, as well as that of the glow-worm, is dependent on a plentiful supply of air, and drew an interesting comparison between the light of the luminous wood and a glowing coal. Of course, Boyle knew nothing of oxygen, the essential factor in his experiments. Some material is oxidised; its nature and the production of the light which accompanies oxidation are the two fundamental problems in bio-luminescence. At least 36 orders of the animal kingdom contain one or more forms that produce light; in the plant kingdom only two groups contain luminous forms—some of the bacteria and some fungi, especially certain mushrooms—either the mycelium alone or the fruiting body alone, or both, are luminescent. Amongst animals, noctiluca, jelly-fish, ctenophores, sea-pens, some marine worms, various crustaceans, brittle stars, fire-flies and their larvæ, and glow-worms, a few molluscs—e.g., *Pholas* and *Pyrosoma*—and some fishes. All these are either marine or terrestrial; no examples of fresh-water luminous organisms are known. Most marine forms are deep-sea animals, some of them—fishes with complicated luminous organs, and many luminous marine animals—are surface forms of the plankton. The eggs of the *Lampyris* beetle emit light, even within the ovary. The only safe way to detect luminous organisms in sea-water is to add a little ammonia to the water, which slowly kills the organisms and causes any luminous forms to glow with a steady, continuous light for a time, a condition accompanying the death of the animal, a sort of "death-glow," to be compared, perhaps, with rigor mortis in muscle tissue. Of course, many non-luminous forms and—before the days of antisepticisms—even human wounds were infected with luminous bacteria, so that such luminescence is purely secondary. The supposed luminous character of the eyes of the cat in the dark is purely a phenomenon due to reflection out of the eye again of light which has entered from some external source. The eye of any animal is quite invisible in absolute darkness, and the same applies to the so-called luminous moss *Schistostega*. Luminous bacteria are very sensitive to oxygen, and "bacterial lamps" have been prepared and photographs taken by Raphael Dubois and also by Molisch, but it "seems doubtful, to say the least, whether luminous bacteria can ever be used for illumination."

"Cold Light" and Oxidation.

The ordinary forms of light to which we are most accustomed—sunlight, electric light, gas-light—are in each case parallel phenomena with the high temperature of the sources—bodies in a state of incandescence, emitting radiant energy or flux of many different wave-lengths, heat-light, and actinic rays, as well as other varieties of rays. But many bodies give off light at low temperatures and when stimulated by some other means than heat. Such bodies are spoken of as luminescent by the Leipzig physicist, Wiedemann, and to this category belong all luminous animals. Luminescences are classified according to the means of exciting the light—thermo-, photo-, cathodo-, radio-, chemi-luminescence, and so forth. They are all examples of "cold light," light produced at temperatures far below those observed in incandescent solids. Organo-luminescence, or the light of luminous animals, is in no sense phosphorescence, being quite independent of previous illumination of the animal; indeed, strong light has a bactericidal action on these forms, similar to that with ordinary bacteria. The spectra of luminous animals are quite similar to those of chemi-luminescent reactions, and this is essentially an oxy-luminescence, since oxygen is necessary for the reaction. All luminous animals require oxygen for light production, so that bio-luminescence and chemi-luminescence are similar phenomena, and the light of luminous animals is due to the oxidation of some substance produced in certain of their cells.

Physical Characteristics of Animal Light.

The characteristics of the physical nature of animal light—quality, efficiency, and intensity—have only been accurately measured in one group—the beetles. Very few organisms produce light to the fully light-adapted eye, although their light may seem quite bright to the dark-adapted eye, but the dark-adapted eye is a poor judge of the quality—i.e., the colour of a light—due to the Purkinje phenomenon, for "all cats are grey in the dark." Different luminous animals produce light of quite different colours as judged by our eye, and some animals possess several luminous organs emitting different colours—some two, some three colours—but this difference of the light does not necessarily indicate difference in spectral composition, because of the Purkinje effect. Examination of the spectrum of various luminous forms clearly indicates, however, that the different colours are really due to light rays of different wave-length, and are not the result of any subjective phenomenon. The spectrum of luminous animals never extends to the limits of the visible spectrum in either the red or violet, although it is possible that bands occur in the infra-red or ultra-violet; the radiation from the fire-fly is 100 per cent. efficient; it is a "cold light"; its energy is all light and no heat. The most efficient artificial illuminant has only about 4 per cent. of the luminous efficiency of the fire-fly. Luminous bacteria glow with less intensity than any other organism, and A. Lode calculated that the dome of St. Peter's at Rome, if covered with bacteria, would give little more light than a common stearine candle, so that luminous bacteria are not likely to come into vogue for purposes of illumination. Light from animal sources in no way differs from ordinary light except in intensity and spectral extent. It is all visible light, with no infra-red or ultra-violet radiation or rays capable of penetrating opaque objects. It may be polarised, can cause fluorescence or phosphorescence of substances, affect a photographic plate, cause heliotropism of seedlings, and stimulate the formation of chlorophyll.

Luminous Organs.

As to the luminous organs themselves, in one class the oxidisable material is formed and burned within the cell—intracellular luminescence; in the other the material is secreted to the exterior and is burned outside—extracellular luminescence. Some animals have very complicated luminous organs—in which chemical energy is converted into radiant energy—the lantern of the fire-fly and other animals is an organ of chemi-photo changes, while eyes which receive light are organs of photo-chemical changes. In some organisms the oxidation of luminous material goes on continuously independent of any stimulation of the organism—e.g., bacteria, fungi, and a few fish—or is intermittent, oxidation and luminescence occurring only as a result of stimulating which may occur from within (e.g., from nerves) or without. The flashing excited by stimulation has a varied rhythm in different animals, and different species of fire-fly can be distinguished by the character of their flashing. Some forms produce light only at certain seasons of the year, and some have a periodicity of luminescence—e.g., at night—failing to respond during the day. The photogenic material is formed within the cells or in glands, and in some forms is associated with granules in the protoplasm. As to the chemistry of light-production R. Dubois experimented with *Pyrophorus* and *Pholas* and Newton Harvey with other forms, including a *Cypridinia*, an ostracod crustacean.

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[1] The Nature of Animal Light. By E. Newton Harvey, Ph.D., Professor of Physiology, Princeton University. Monographs on Experimental Biology. London and Philadelphia: J. B. Lippincott Company. 1920.

Luciferine and Luciferase.

The net result is that luminescence in these three forms is definitely shown to be due to the interaction of two easily separable substances, luciferin and luciferase, in presence of water and oxygen; but luciferin and luciferase from different luminous animals have different properties, and are to be distinguished by prefixing the generic name of the animal from which they are obtained. Luciferase has protein properties, is capable of oxidising large quantities of luciferin, behaves in many ways as a ferment, and may be so regarded. One of the most remarkable things concerning luminescence in general is the small amount of material necessary to cause a visible emission of light. A flash of light resulting from the impact on ZnS of a single α particle, a helium atom, is visible to the naked eye. Luciferin and luciferase from *Cypridinia* will also luminesce in exceedingly small concentration. One part of luciferase in 1,700,000,000 parts of water will give light when luciferin is added, and a similar dilution of luciferin will give light when luciferase is added; so great is the sensitivity of our eye in the detection of a small energy change. Luciferase seems to act as an organic catalyst, oxidising luciferin with light production; the reaction begins with an extraordinarily low oxygen tension, increasing in intensity with the increase of that oxygen tension, but very soon a maximum luminescence is obtained, and further increase of oxygen-tension gives no brighter light; the oxygen-tension curve is very similar to the hæmoglobin-saturation oxygen-tension curve. For a given mixture of luciferin and luciferase of *Cypridinia* the light becomes more intense, with increasing temperature up to a definite optimum, and then diminishes in intensity. A minimum, optimum, and maximum temperature for luminescence is observed in all luminous organisms. Luminous bacteria will still light at −11·5° C., nor is the power of luminescence destroyed by exposure to liquid air. The intensity of luminescence seems to be dependent on the velocity of oxidation of luciferin, and perhaps also on the particular manner in which luciferin is oxidised. We may assume as a tentative hypothesis that luminescence only occurs during oxidation (addition of O or removal of H) of the luciferin-luciferase compound.

PUBLIC HEALTH IN EGYPT.

Lower Egypt, 1918.[1]

THE Annual Return of Births, Deaths, and Infectious Diseases in Egypt during 1918, issued by the Statistical Department of the Ministry of Finance, has already been noticed in these pages (THE LANCET, August 7th, 1920, p. 331). The Report of the Public Health Department has now been issued, and contains much additional matter of interest; it relates to the calendar year 1918, with the exception of financial details, which refer to the financial year, ending March 31st, 1919. The population of the whole country, calculated for July 1st, 1918, is now stated as 12,820,900, as compared with 12,662,700 in the year preceding. The general birth-rate was 39·5 per 1000, as compared with 40·6 in 1917; the death-rate was 39·9, compared with 29·7. Ismailia, on the Suez Canal, had high birth and death-rates (88·0 and 624·1), owing to the presence of a large temporary population, both civil and military, whose births and deaths were calculated against the normal civil population. In the sparsely populated province of Sinai there was also a high birth-rate (51·1) and death-rate (795·4), for the same reason. The Eastern Desert Province had 3·7 births and 9·7 deaths per 1000. With these exceptions the birth ratios ranged from 31·5 at Aswân and 33·8 at Suez to 42·9 in the Fayûm and 44·9 at Asyût; in Cairo and Alexandria (the two largest cities) the ratios were nearly the same (36·9 and 36·7). Influenza made its first appearance in the country at *Alexandria in May, having* been imported from Europe by sea. In June it was recognised at Port Said, at Cairo in July, and in August in the province of Daqahliya, in the east of the Delta. Scattered outbreaks with a high rate of pulmonary complication and high death-rates occurred in other provinces, both of Lower and Upper Egypt in September, and in October it spread quickly over the whole country, with much pulmonary complication and corresponding high fatality. It reached its zenith in the first week of December. "The disease was certainly introduced from Europe by sea," and was prevalent in the British Army both in Egypt and Palestine before extending to the civil population. "The great majority of the 4059 towns and villages of Egypt were attacked," the spread of the disease being promoted by the frequent fairs held in the country villages and by military movements, but not by the Mecca pilgrimage. The total number of cases is not known, but the excess of deaths from September to December inclusive over the average of that period for 1916 and 1917, amounting to 138,648, may be presumed as roughly the total number of deaths due to this disease. Circulars as to personal precautions and immediate preventive measures were widely distributed, medical aid was organised, funeral celebrations stopped, and numerous special influenza hospitals opened in the districts most affected. In the treatment of cases with pulmonary complication cacodylate of guaiacol is considered to have given the best results. There were increases in relapsing and typhus fever notifications, but many of these were really cases of influenza. There were 357 "declared cases" of plague (with a fatality of 42·8 per cent.), compared with 732 cases in 1917, and 1702 in 1916. Owing to the invasion of Palestine in 1917 Egyptian troops and labourers were exposed to cholera infection, and several cases were detected in December of that year among men returning to Egypt. Five days quarantine and disinfection were imposed on all Egyptian levies at Kantara and Port Said before entering Egypt. Of 280,044 men so returning to the country 96·9 per cent. were kept under observation; prisoners of war were segregated, and instruction given in preventive measures, with practical training, at various centres throughout the country. The result was that no cholera was introduced into Egypt, which means that, in all probability, Europe was saved from a visitation of this pestilence.

Full and precise details are given of the work carried on in the Public Health Laboratories, the Vaccine and the Antirabic Institutes, showing that the Egyptian administration fully recognises the great value of scientific preventive medicine, and appreciates the material benefit to the country and its inhabitants derived therefrom. Colonel Cathcart Garner, Director-General of the Department, is to be congratulated on the results recorded. The immense advance in the public health (and the prosperity) of Egypt can perhaps only be fully appreciated by those of an older generation whose knowledge of the country dates back to the early eighties of last century.

Sudan, 1914–19.

In a report on the affairs of the Sudan, covering the years 1914–19, the Governor-General, Major-General Sir Lee Stack, makes several references to medical matters. He says that in 1915 a reorganisation of the medical work of the Sudan was carried out with the creation, under its own director, of an independent civil medical department, which had previously been under the control of the Principal Medical Officer, Egyptian Army. A new system of regulation of births and deaths has been instituted, which has resulted in a considerable increase in the number of registrations, as shown by the following figures:—

	1914.	*1915.*	*1916.*	*1917.*	*1918.*
Births	16,645	12,318	15,303	14,078	18,935
Deaths	12,450	16,065	9,587	9,172	14,452

These figures do not approach completeness or accuracy, as appears from the fact that the estimates of population from other sources give a total of over 4,000,000, as against 3,400,000 in 1914; but the system of registration does not obtain at all in the Southern Sudan. Seven outbreaks of cerebro-spinal fever occurred in 1914–15 with a heavy mortality. As regards small-pox, the Northern Sudan is fairly efficiently protected by vaccination. Small outbreaks occurred in Khartoum and Omdurman in 1917, but were soon controlled. Vaccinating tours arranged as far as possible during the winter months, but have had to be curtailed owing to shortage of staff. Considerable success has recently been obtained in vaccinating among nomad Arabs, who had previously been strongly opposed to it.

In 1918 the Sleeping Sickness Commission was considered to have completed the duties for which it was appointed, and its advisory functions were taken over by the Central Sanitary Board, the executive work being continued by the Principal Medical Officer of the Egyptian Army. In the Yei River district of the Mongalla Province about 175 patients, who had been three years from symptoms, were discharged as cured. In the last year progress has been made in the infected areas dealt with, and no new areas of human trypanosomi infection have been discovered. The P.M.O. of the Egyptian Army has forwarded the reports of Captains Spence and Simpson, R.A.M.C., on their several districts, and pays a deserved tribute to the patient steady work which these two officers and their Egyptian and Syrian staff are doing. The influenza epidemic made its appearance in the Sudan in September, 1918. It became very general throughout the Sudan, with a considerable mortality. The district which suffered the most appears to have been Berber province, north of Khartoum.

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[1] Annual Report of the Department of Public Health, Cairo; Government Press, 1920.

It reached its most virulent stage in February, 1919, and died away in April and May. It is not possible to give more than an approximate estimate of the extent of the outbreak and consequent mortality. The senior M.O., Kassala, estimated 1600 cases out of a population of 6000 in Gedaref alone; 35 deaths from the disease were notified. The death-rate of all cases admitted to hospital was about 6 per cent. Malaria on the whole was not severe, except at Makwar, in the Sennar province, where the Blue Nile dam is to be constructed. Much work is being done in continuing the antimony treatment of bilharzia, first fully investigated and developed by Dr. J. B. Christopherson, the Director of the Khartoum and Omdurman Civil Hospitals. This officer, who has done valuable work for many years, retired on pension in May, 1919.

Dr. E. S. Crispin, the Director of the Medical Department, reports that considerable difficulty is still experienced in respect of both staff and hospital requirements. Advertisements for medical inspectors produced few replies and there has been a similar difficulty in obtaining Syrian and Egyptian staff. Funds were provided this year for a maternity school. The buildings are being constructed.

THE "BEE WORLD."

BEEKEEPERS will be interested in the *Bee World*, an international journal "devoted to the progressive interests of modern bee culture" (Apis Club, Port Hill House, Benson, Oxon). The 1920 June-September number contains much evidence of the enthusiastic support given to the journal by those who labour in this exacting industry, and includes an interesting article on the re-stocking with bees of the devastated areas of France and Belgium by the War Victims' Relief Mission of the English and American Society of Friends.

THE GIRLS' SCHOOL YEAR-BOOK.

THE official organ of reference of the Association of Head Mistresses, in its fifteenth annual edition (1920-1921), besides an alphabetical list of schools with the names of governing bodies and staffs, contains all details of fees, school courses, hours of attendance, and so forth, and indicates the various professional and business openings available for girls after leaving school. The articles on medical education for women, and on dentistry, pharmacy, nursing, massage, health visitors, sanitary inspectors, and the like, though short, are explicitly written and are of practical use to parents, guardians, and pupils. Lists of scholarships gained by women during 1919 and university honour degrees, 1919, are among the other contents of this useful book of reference, which is published by the Year-Book Press, 13, Museum-street, London, W.C. 1, price 7*s*. 6*d*.

A RADIANT HEAT CONSERVER.

IT is estimated that some 30 per cent. of the radiant energy of a fire is directed to the floor in front of that fire, where its heat is taken up by the floor-door draught. Mr. C. Wray, F.R.C.S. Eng., has invented a device whereby this difficulty may be overcome, consisting of a horizontal brass tray on telescopic legs with vertical wings on the right and left borders, so arranged that they can be adjusted to different widths of fire. The general effect is practically to bring the fire 18 inches forward into the room; as heat diminishes as the square of the distance the advantage of this fact is obvious. The right wing reflects heat to the left of the room, the left wing to the right of the room; the two combined protect the incandescence from draught. When this heater is used with a good gas-stove there is no occasion to light the fire more than three minutes before making use of a room. A kettle or an entire meal can be kept at boiling point, and the heater proves ideal for toasting purposes; it is also useful for rapid drying of instruments and clothes. It is manufactured by Messrs. Gowlland, Morland-road, Croydon.

"HOW TO LIVE FOR MORE THAN ONE HUNDRED YEARS."

Mr. L. H. Goizet, the author of "Never Grow Old" (London and New York: G. P. Putnam's Sons. 1920. Pp. 191. 10*s*.) states that "chemistry teaches us that the composition of the organised being reduces itself to four gases, azote, oxygen, hydrogen, and carbon, and to a few mineral principles of earthly origin. Since the gases are elastic—that is, able to be compressed or dilated—the form (of the body) must be likewise." If the gases are not "maintained in a sufficient state of cohesion and compression by the universal rotatory movement" they dilate, "and the separation of the form commences, to be continued more or less rapidly in a complete way to total anishing," which lamentable result can be postponed for a ng time by the author's system of superficial tractile atory rubbings beginning "at the centre of gravity of the n which corresponds exteriorly to the crown of the d." It is difficult to understand how such nonsense e to be printed.

MEDICAL PRACTICE BY FOREIGNERS IN SPAIN.

THE position of foreigners who desire to practise medicine in Spain has long been obscure, and we are glad to be able to give categoric information on certain points, thanks to the courtesy of the Registrar of the General Medical Council. All foreign subjects, it appears, may carry on their respective professions in Spain, except such callings as imply the use of authority or jurisdiction, provided that they have studied and been approved like a Spaniard in official Spanish educational establishments. Actual medical reciprocity only exists with some American Republics, and with Portugal, but foreigners who prove the validity of their qualifications and have practised for six years are admitted, the right of refusing recognition being reserved.

In a specific case the following information was supplied: The candidate must present an academic certificate, giving details of all courses of study, which must be issued by the head of the University or other authority under whom the studies were carried on. This must be authenticated by the Minister of Education, and his signature must be verified by the Foreign Minister in England. This in its turn must be authenticated by the Minister for Foreign Affairs in Madrid. The application must then be reported upon by the College of Medicine and the Council for Public Instruction in Spain. This information will be incorporated in a new edition of the pamphlet on the conditions of practice abroad, shortly to be issued by the General Medical Council.

YEAR BOOK OF PHARMACY.

THE 1920 volume (London: J. and A. Churchill. Pp. 594) contains the usual abstracts of papers relating to pharmacy, materia medica, and chemistry, contributed to British and foreign journals during the year ending June 30th last. This part has been well done by Mr. J. O. Braithwaite. The list of new remedies and of new applications of old remedies is compiled by Mr. Thos. Stephenson, F.R.S. Edin. A novel and useful feature is a "research list" or enumeration of subjects suggested for research, for which grants may be made by the British Pharmaceutical Conference. Finally, the transactions of the Conference held at Liverpool last July are given in full, including Mr. C. A. Hill's valuable address on Progress in Science and Pharmacy, comment upon which appeared at the time in our columns.

Communications, Letters, &c., to the Editor have been received from—

A.—American Medical Association, Chicago; Andiron Club of New York City.

B.—Prof. A. E. Boycott, Lond.; Dr. H. C. Brown, Lond.; Mr. H. J. Buckland, Lond.; Dr. C. Bolduan, Washington.

C.—Dr. H. P. Cholmeley, Forest Row; Dr. G. Chaikin, Lond.; Prof. E. L. Collis, Cardiff; Clerical, Medical, and General Life Insurance Society, Lond.; Cardiff Medical Society, Hon. Sec. of.

E.—Prof. J. T. Edwards, Lond.; Mr. G. Evans, Lond.; Eugenics Education Society, Lond.

F.—Mr. H. A. T. Fairbank, Lond.; Dr. C. O. Fowler, Lond.

G.—General Medical Council, Lond., Registrar of; Sir H. J. Gauvain, Lond.; Dr. W. H. Gregory, Beverley; Great Northern Hospital, Lond.; Mr. F. B. Galbraith, Montclair; Dr. L. H. Guest, Lond.

H.—Prof. F. G. Hopkins, Cambridge; Sir W. P. Herringham, Lond.; Dr. T. S. Higgins, Lond.; Hospital Library and Service Bureau, Chicago; Dr. W. Harris, Lond.

I.—Mr. J. Ingham, Bradford.

J.—Major J. P. Johnson, S.A.M.C., Lond.

K.—King Edward VII. National Memorial Association, Cardiff; Dr. W. H. Kesteven, Lond.

M.—Ministry of Health, Lond.; Metropolitan Asylums Board, Lond.; Medical Institution, Liverpool; Medical Defence Union, Lond.; Dr. J. C. Muir, Lond.; Dr. J. F. McMillan, Sandown; Dr. R. J. Morris, Harrogate; Dr. R. Miller, Lond.; Dr. G. Marshall, Lond.

N.—National League for Health, Maternity, and Child Welfare, Lond.

P.—Dr. R. H. A. Plimmer, Aberdeen; Pastel Society, Lond.; People's League of Health, Lond.; Dr. S. Phillips, Lond.; Capt. V. Perez, R.A.M.C., Farnborough; Professional and Business Women's Hospital League, Lond., Sec. of.

R.—Dr. B. Robinson, New York; Mr. R. P. Rowlands, Lond.; Royal Surgical Aid Society, Lond.; Royal Mail Steam Packet Co., Lond., Chairman and Directors of; Royal Medical Benevolent Fund, Lond., Sec. of; Royal Institution of Great Britain, Lond.; Dr. B. A. Richmond, Lond.; Dr. F. Roberts, Cambridge.

S.—Dr. W. J. E. Sumpter, Sheringham; Messrs. Southall Bros. and Barclay, Birmingham; Dr. G. F. Stebbing, Lond.; Society of Medical Officers of Health, Lond., President of; Mr. J. D. Spencer, Aberystwyth; Dr. H. Scurfield, Sheffield; Société des Sciences Médicales et Biologiques de Montpellier; Prof. W. Stirling, Manchester.

T.—Dr. A. H. Thompson, Lond.; Dr. H. M. Turnbull, Lond.; Dr. G. L. Thornton, Exmouth; Dr. Thaysen, Copenhagen.

U.—University of St. Andrews.

W.—Dr. F. Parkes Weber, Lond.; West London Post-Graduate College; Dr. P. Wilde, Bath; War Emergency Fund, Lond.

Y.—Dr. M. L. Young, Lond.

Communications relating to the editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.

THE LANCET, JANUARY 8, 1921.

An Address
ON
THE USE AND MISUSE OF THE CURETTE.

Delivered to Graduates at the Manchester Royal Infirmary on Nov. 9th, 1920,

BY W. E. FOTHERGILL, M.A., B.Sc., M.D. EDIN.,
PROFESSOR OF OBSTETRICS AND GYNÆCOLOGY IN THE UNIVERSITY OF MANCHESTER.

THERE has recently been a strong reaction against the indiscriminate use of the curette; but from the first some authorities strictly defined the indications for scraping away the endometrium. Thus Marion Sims appears to have introduced the sharp curette about the year 1865, and soon afterwards T. A. Emmet wrote: "As regards the instrument of Dr. Sims, I honestly believe that the ingenuity of man has never devised one capable of doing more injury." Ever since that time the curette has had its detractors; but in spite of them all it has gained a popularity probably unrivalled by that of any other surgical implement. It may interest and possibly amuse you to hear some recent expressions of opinion on this subject. J. O. Polak says: "It seems almost impossible to educate the profession to the acceptance of the fact that the curette has but two well-defined indications: first, to remove the products of conception before the eighth week; and, second, to make the diagnosis in inter-menstrual uterine bleeding at or after the menopause."

A. Heineberg[1] thinks that "despite all that has been written and taught in the last few years about the futility or harmfulness of uterine curettage, there is probably no operation which is still so frequently abused." This writer describes the now well-known changes which occur during the menstrual cycle. Only 2 or 3 mm. in thickness during the resting phase, the endometrium grows to 6 or 7 mm. thick during the *pre-menstrual* phase. There is loss of superficial epithelium and destruction of the stroma by extravasation of blood during the menstrual phase, and the process of repair which begins before the bleeding ceases reproduces a new endometrium 2 or 3 mm. thick by the beginning of the next resting phase. These changes, the writer reiterates, account for the varieties of so-called endometritis described by our predecessors; and he emphasises the futility of scraping away the endometrium because it varies from phase to phase of the menstrual cycle. Heineberg next expresses with satisfaction his belief that curetting is being done less and less in incomplete abortion and in puerperal infection. He goes on to condemn the operation in dysmenorrhœa because it is only successful in odd cases, and then it is the preliminary divulsion of the cervix that does good, not the curetting. In sterility he says that many uteri are infantile and unfit for pregnancy, and that lack of offspring can be demonstrated to be the fault of the male in from 30 to 40 per cent. of cases carefully studied. He mentions 100 cases re-operated by Polak, amongst whom were 43 who had been curetted for sterility, although they were the victims of old pelvic infection. Of the 43 women, 39 had been curetted without first having their husbands examined. Howard A. Kelly's figures are quoted to show that less than 15 per cent. of curettings for sterility are followed by pregnancy. The work of A. H. Curtis is next cited to prove that the endometrium is generally germ-free, and this is regarded as an objection to curetting because during the operation the uterine cavity may be infected. This writer next condemns the use of the curette for leucorrhœa, and finally he says that, "the statistics of T. S. Cullen, C. C. Norris, and R. M. Rawls, combined with the work of Curtis, present a strong condemnation of that pernicious and thoughtless practice which includes curettage as a routine measure in most (vaginal) operations on the pelvic viscera."

Indiscriminate Curettage.

W. A. Lincoln[2] writes that the most accepted of all rules of conduct is "When in doubt, curette." He, like Heineberg, mentions that the old varieties of so-called endometritis are nothing but normal phases of the menstrual cycle, and that, naturally, one or other of them was found whenever a scraping was examined. "A nice symptomatology was built up around these, all the way from amenorrhœa, dysmenorrhœa, metrorrhagia, menorrhagia, or any other kind of discharge to general symptoms of lassitude, headache, backache, or any other ache." "In case some women might be left out it was stated that endometritis might be present without any symptoms whatever. Given a curette and a woman, the old-time gynæcologist would always find endometritis." Lincoln quotes Cullen to the effect that endometritis is a very rare disease and H. B. Whitehead to show that hæmorrhage is not a symptom of it. He cites Busse as to the result of curetting for hæmorrhage in 500 cases with benefit in only 10 per cent. of them. Passing on to the dangers of curetting, he says that in puerperal infection many deaths have been laid to its door, and refers to A. P. Heineck's 160 cases of perforation of the uterine wall, and Schweetzer's[3] 105 German cases with a death-rate of 25 per cent.

To secure personal information Lincoln wrote to a number of his neighbours and received from 24 medical men 43 curetting disasters with 11 deaths, a mortality of 25 per cent. He publishes all these cases in detail. There were 5 cases of severe bleeding with 3 deaths; 8 cases of sepsis with 3 deaths; 27 cases of rupture of the uterus with 4 deaths; and 3 cases during early pregnancy with 1 death. He concludes: "A curettage is a major operation not to be undertaken except under the very best conditions, and with every possible precaution, by a careful and skilful surgeon." J. W. Bovée[4] writes: "It is a notorious fact that the most slovenly and ignorant physician resorts without hesitation to the curette for various diseases of the uterus, real or otherwise." He condemns the routine curettage incident to pelvic plastic surgery, and in so-called endometritis. Incomplete abortion he calls a discarded or discredited indication, the curette being "not only very hazardous but decidedly unnecessary except in case of very dangerous hæmorrhage." Subinvolution as an indication is also discarded. A chapter of accidents follows, including "resection of 70 inches of intestine after perforation of the uterus with the curette," "perforation of the puerperal uterus," and "17 centimetres of gut drawn out of the uterine cavity." This writer also quotes the work of Curtis to show that the uterine cavity is generally sterile, the idea being that it is a very risky performance to pass an instrument through the cervical canal, which is sometimes infected, into the uterine cavity, which is generally germ-free.

Proved Uses of the Curette.

Between them the authorities just quoted condemn most of the usual indications for the use of the curette, and if they are all right it follows that curetting is generally wrong. We are all ready to admit that there is still much futile curetting; but the pendulum has swung too far against a useful instrument, and it is worth while to consider the moot points seriatim in the cold light of common-sense and experience.

Acute septic endometritis.—Take first the question as to the use of a large curette for emptying and cleaning the uterus infected either post-partum or post-abortum. If this is done before the pathogenic organisms have entered the blood stream the result is generally excellent. The cleansing of the uterine cavity should, of course, be completed with fairly dry swabs, and not by intra-uterine douching, which sometimes forces septic material and irritating antiseptic solutions up through the tubes into the peritoneal cavity with disastrous results. The dry cleaning should not be repeated, and no subsequent intra-uterine or vaginal douche is desirable. Once emptied and swabbed, not swilled, with an efficient concentrated antiseptic, the uterus is best left alone. Now if the patient already has septicæmia before the curetting is done she may, of course, subsequently die of septicæmia; but there is no reason for joining Lincoln in laying her death at the door of the curette, which in septicæmia does no harm if it does no good.

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[1] Heineberg: Therap. Gaz., August, 1920, p. 533.

[2] Lincoln: Annals of Surgery, December, 1918, p. 638

[3] Monats. f. Geburts. u. Gyn., 1915, vol. xlii., p. 148.

[4] Bovée: Surg., Gyn., and Obstet., June, 1920, p. 618.

Incomplete abortion.—The discovery of retained products of conception and their removal from the uterus remain, in spite of all that has been said to the contrary, sound and common uses for the curette. And these include subinvolution, in which the removal of an unduly persistent layer of decidual tissue is often an essential step in the treatment.

Hæmorrhage.—It is clear that removing the endometrium will not cure so-called functional uterine bleeding; in other words, bleeding which is not due to any local lesion, but is menorrhagia due to excess of ovarian secretion, anæmia, or some other general cause. But the dilator and the curette are essential for the discovery of mucous and small fibroid polypi, of malignant disease within the cervical canal and uterine cavity, and of the results of infection superadded to post-menopause changes known as "senile hæmorrhagic endometritis." Except in malignant cases, they provide the treatment as well as the diagnosis. The rule should be, curette in metrorrhagia but not in menorrhagia. Neither the cause of menstruation nor the cause of excessive menstruation is local.

Preliminary to plastic vaginal operations.—The use of the curette as a preliminary step in operations for genital prolapse has been utterly condemned. But when the cervix is to be amputated or repaired it must first be dilated in order to gain working room for suturing. Again, it is wise to make sure that all is well within the uterus before so narrowing the vagina as to render access to the uterine cavity very difficult thereafter. Polypi are often found and removed during the preliminary scraping, and early malignant disease of the body of the uterus is discovered from time to time. This has happened in cases of my own, three times within the last few months, and has confirmed me in the habit of curetting before operating for prolapse. The prognosis in cancer of the body is something like ten times as good as in cancer of the cervix; and, in early cases, hysterectomy seldom fails to save the patient. If I had omitted the routine preliminary curetting, these three women would have gone away cured of prolapse only to return in a few months with cancer of the uterus advanced beyond remedy.

Leucorrhœa.—Let us grant at once that it is ridiculous to curette for "the whites"—namely, creamy leucorrhœa or excess of the normal vaginal discharge which does not come from the uterus at all. In slimy leucorrhœa, again, the mucus appears to come mainly from the cervix and scraping does not much help matters.

Sterility.—Let us also grant that it is quite wrong to curette for sterility, without first making sure that there is no definite cause for it either in the patient or her husband. The operation is useless for this purpose in cases of relative sterility (one child or one abortion). It is also necessary to remember that age, pure and simple, is the commonest explanation of sterility and that when a woman aged 40 marries, the odds against her becoming pregnant is about 100 to 1. But when both husband and wife are sound and young, and have been married three or four years without offspring, experience shows that conception quickly follows curetting in a certain percentage of cases. Whether the dilator or the curette efficient instrument in these cases remains to be

norrhœa.—Here the trouble is that spasmodic gestive dysmenorrhœa are constantly confused. wisting pain dating from puberty and limited hours on the first day of the period is often cured by the birth of the first child and is often relieved by thorough dilatation of the cervix under an anæsthetic. It is useless to dilate a cervix through which a child's head has already passed without curing the pain. On the other hand, neither the dilator nor the curette can remedy the dull aching of distended veins in the pelvis any more than they can relieve the aching of varicose veins in the leg or in the scrotum. Thus the curette is out of court for dull aching pain either during or between the menstrual periods. Such pain is not in the uterus nor is it caused by it. If a patient has both spasmodic and congestive dysmenorrhœa it is worth while to dilate; for the sharp pain of the first day may be relieved though the dull premenstrual and menstrual aching will remain.

Dangers of Curettage.

There is nothing to be gained by exaggerating the risks of dilatation and curetting—namely, infection, splitting the cervix, and perforating the body of the uterus. Infection can be avoided by the usual precautions. If the operator retains in his own hand one of the vulsellæ with which the uterus is drawn down during dilatation, his own muscular sense will estimate the force he is exerting upon the dilator in his other hand. Thus he should avoid the risk of causing serious laceration of the cervix. It is much easier to perforate the uterus with a small dilator than with a large one. Therefore it is wise to push in the smaller dilators only 2½ inches and to refrain from attempting to measure the uterine cavity until the internal os will admit the passage of a large dilator. The length of the cavity once estimated, the operator is not likely to perforate or tear the uterus with the curette. Clean perforation of a healthy uterine wall does no harm, as the uterine muscle closes the hole at once. But if the organ is so atrophied or degenerated that it tears easily it should be removed at once.

Summary and Conclusion.

To sum up, the broad fact remains that the curette is mainly a diagnostic instrument. Apart from mere increase in the duration or quantity of the menstrual flow, and in the presence of any uterine hæmorrhage whose cause is not clear, the rule, "When in doubt, curette," is a sound one.

In women of reproductive age the cause of irregular bleeding is found in the majority of cases to be retained products of conception; and it is remarkable how often these relics are found in women who will not admit that they have missed a single period. Sometimes one or more polypi are found. Occasionally, though the cervix feels normal, the curette finds a place within the cervical canal where epithelioma yields like cheese. And not so very rarely malignant disease is found within the body of the uterus. After the close of reproductive life uterine bleeding absolutely demands dilatation and exploration by curette unless the hæmorrhage has an obvious cause, such as cancer of the cervix, the twisting of the pedicle of an ovarian cyst, or the degeneration of a fibroid. In these post-menopause cases exploration generally reveals the presence of cancer of the body of the uterus; but sometimes there is nothing but the result of a chronic infection whose steps are senile vulvitis, vaginitis, cervicitis, endometritis. In these cases, if the cervical canal becomes occluded after the endometrium has been infected, the result is pyometra, with distension of the uterus by pus and blood-stained purulent vaginal discharge. Now, in cancer of the corpus uteri infection of the ulcerated new growth occurs very late, so that the discharge becomes offensive only when the disease is far advanced. Thus foul discharge means pyometra or late cancer of the body, while a discharge of pure blood through a clean vagina means early cancer of the body. The cases of senile hæmorrhagic endometritis and of pyometra are more numerous than we realise, and they are quite curable by the curette. Thus the operator who removes every enlarged bleeding uterus in an old patient without preliminary exploration will subject to the discomforts and risks of hysterectomy a certain proportion of old ladies who could have been cured by a simpler and safer method.

A Dissertation

UPON

CARBUNCLES.[1]

BY SIDNEY PHILLIPS, M.D. LOND., F.R.C.P. LOND.,

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Differing Definitions.

SOME authorities regard a carbuncle as an affection of the skin only; in H. N. Barnett's "Students' Handbook of Surgery" it is defined as "an acute phlegmonous inflammation of the skin with multiple openings, induration, sloughing of subjacent tissues and of the skin." Others admit that the subcutaneous tissue is also affected. H. W. Stelwagon[2] writes of it as "an acute, usually egg- to palm-sized, more or less circumscribed flattened phlegmonous inflammation of the skin and subcutaneous tissues terminating in slough." Watson Cheyne and F. F. Burghard[3] define it as "a gangrenous inflammation of the skin and subcutaneous tissues affecting a considerable area." Others do not regard it as a skin affection. Marcus Beck[4] calls it "a spreading inflammation of the subcutaneous areolar tissue implicating the skin and terminating in death of the affected tissues with formation of slough." W. Rose and A. Carless[5] attribute carbuncle to the subcutaneous tissue.

It will be seen that some authors regard carbuncle as an affection of skin only, others as an affection of skin and subcutaneous tissue, whilst others again do not admit that the skin is involved at all. The derivation of the word from *carbo*, a coal, apparently from the fancied resemblance of the surface appearance to that of a living coal, gives no justification for limiting the lesion to the structure of the skin. As a fact the microbic organism to which the affection is due makes no distinction between anatomical divisions, but impartially invades any tissue. Carbuncles begin on the surface of the skin, as seen in pustules, or in the deep layers of the skin, or in the tissue beneath the skin, and even under deep fascia. All carbuncles attempt, and most succeed, in destroying the skin, but this does not constitute them as a skin disease. J. E. Erichsen remarks, "whether carbuncle commences in the skin or in the subcutaneous areolar tissue is not definitely ascertained." But I think the answer to the question is that it may begin in either.

Probable Sequence of Events in Carbuncles.

Opinions also differ as to whether a carbuncle is an inflammatory process. Most of the authors I have quoted, with J. F. Schamberg,[6] J. H. Sequeira,[7] and others, regard it as a phlegmonous or gangrenous (Cheyne) inflammation, terminating in slough. Others are more guarded; thus Malcolm Morris[8] terms it an "infiltration," and Pye-Smith[9] speaks of it as the "inflammation which accompanies sloughing." A. von Winiwarter,[10] however, states that it is primarily a tissue necrosis, and Rose and Carless[11] describe it concisely as "an extensive gangrene of the subcutaneous tissues, due to a local invasion of pyogenic microbes." Inflammation ordinarily leads to suppuration, diffuse or local, but the pathognomonic sign of carbuncle is sloughing or necrosis of tissue. A carbuncle begins in a more or less acute sudden pain; after a varying interval neighbouring tissues become tense and sooner or later the surface of the skin shows signs of inflammation and œdema. Eventually the skin is ulcerated through from below; as soon as this is accomplished the inflammatory symptoms begin to subside, and the redness, heat, and swelling fade away.

I think the sequence of events in carbuncles makes it probable that necrosis of tissue is the first event and that the inflammatory process is secondary, being the natural method of separation of the slough from the living tissues and eliminating it from the body, much as happens in gangrene in other parts. It is of interest to remember that carbuncle is apt to occur in diabetics, who are specially prone to gangrene. And, with slight modification, I shall adopt as my definition of a carbuncle that of Rose and Carless, that it is a gangrene of deep skin or deeper tissues due to a local invasion of pyogenic microbes.

Cause of Sloughing.

A. von Winiwarter suggests that the sloughing is due to early thrombosis of vessels due to microbic invasion. And M. Kaposi[12] writes: "Some believe, though it has never been proved, that thrombosis of vessels is the first event." The suddenness of the pain that sometimes occurs supports this belief, and the theory of primary thrombosis, resulting in necrosis of tissue and consequent inflammatory effusion, seems to me the most probable explanation of the formation of carbuncle.

Pathology of Carbuncles.

Ætiology.—The proximate cause is generally, possibly always, the *Staphylococcus pyogenes aureus*. Entry into the body: I believe it is generally held that a carbuncle results from local infection of skin, staphylococci already existing there suddenly taking on activity in debilitated persons. This is no doubt true in many cases, but there are difficulties in believing that it is always so. It is not easily credited that the staphylococcus can, so suddenly as it does, set up a fierce acute carbuncle from a supposed local infection merely because the host is debilitated. Carbuncles sometimes occur in non-debilitated persons, and carbuncles occurring in long series at parts of the body distant from one another can hardly be said each to arise from local infection. Having once invaded the body in a pathogenic form, the organism may remain in some local focus—perhaps the scar of the carbuncle—and set up fresh local lesions. Age: Usually after middle life, though in war conditions they occurred in early age, being quite a scourge in the English and French armies. Sex: Males many more than females. Locality: Mostly on dorsal surfaces of the body or scalp, but they may occur on the face, the worst carbuncle of all being that on the lip. *Constitutional conditions:* Debilitating conditions, exposure, fatigue, &c., as also diabetes, and (it is said) albuminuria. Diet: Carbuncles have been numerous since 1914 and have been attributed to deficient food. But mere starvation does not lead to carbuncles, and if the cause be deficiency or defect in some dietetic principle, we do not know what it is. It has been suggested that deficiency in fresh vegetables rendered it commoner amongst English and French than in the German army. Periodic frequency: Erichsen remarked 40 years ago that carbuncles are more numerous in some years than others, and they have been more common all over the world since 1914. All microbic affections are liable from time to time to take on virulence and wide distribution to which debilitating conditions and overcrowding contribute. Relapses: Carbuncles often occur in series, sometimes long continued through months or years, and are apt to recur after some months' interval.

Symptoms.

Pain.—The first symptom is pain—in superficial carbuncles mere burning, itching, or irritation, in deeper ones sometimes acute and lancinating like a stab with a knife or the sting of an insect, but there is nothing to confirm the theory that carbuncles commence in a sting. In very deep-seated lesions the pain may be deep and throbbing, perhaps intermitting for hours or even a day. Pain, especially in deep-seated carbuncles, may precede other symptoms for a long time. Usually in a few hours the skin gets red and hot, and an area of variable size gets vivid red or bluish with much hyperæsthesia and heat, and sometimes widespread surrounding œdema. When the process is very acute a vesicle or pustule may develop on the surface, which dies away and has nothing to do with subsequent openings in the skin resulting from ulceration from below. Pain, tension, and throbbing increase, and there results a tense, painful, prominent, bright-red oval swelling, with surrounding vivid œdematous and brawny tissue. Pus shows at points beneath the skin and ulcerates through it, this being accompanied by sharp pains.

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[1] A paper read at a meeting of the Harveian Society on Nov. 18th, 1920.

[2] H. W. Stelwagon: Diseases of Skin, eighth edition, p. 424.

[3] W. Cheyne and F. F. Burghard: Manual of Surgical Treatment, vol. ii., p. 7.

[4] J. E. Erichsen: Surgery, vol. i., p. 923.

[5] W. Rose and A. Carless: Manual of Surgery, p. 449.

[6] J. F. Schamberg: Diseases of the Skin, p. 174.

[7] J. H. Sequeira: Diseases of Skin, p. 193.

[8] Malcolm Morris: Diseases of Skin, p. 400.

[9] Pye-Smith in Fagge's Principles of Medicine, vol. ii., p. 695.

[10] A. von Winiwarter: Furunkel und Carbunkel, Stuttgard, 1892.

[11] Rose and Carless: Ibid.

[12] M. Kaposi: Diseases of Skin, p. 292.

The more vascular and superficial the carbuncle the sooner is the skin destroyed. Some carbuncles, even small ones, are much less acute—this form of "stodgy" carbuncle has a thick tough slough—there is very little pus, and what pus there is may be confined under the slough; the opening formed in the skin may take days to enlarge sufficiently to allow the tenacious slough to get freed. In carbuncles where the slough is very deep-seated the pain may be intense owing to the imprisonment of the inflammatory effusion beneath the tough unyielding superlying tissues. These carbuncles may fail to "point" at all, the pus running in any direction in the deep tissues.

As the openings in the skin enlarge or coalesce and débris of slough escapes, the pain, tension, and surrounding œdema subside, and the livid skin gradually returns to the normal. Where there have been many openings small separate cavities may ensue, but these soon fall into one, and a deep crater remains with granulating surface, which contracts and heals, leaving often a very small cicatrix; indeed, it is surprising how skin which seemed doomed to slough may entirely recover. But a carbuncle usually takes a week at least to open up, a fortnight to discharge all slough, and a week or more completely to heal; a month is the least time from beginning to end, and many take three months.

One cause of delayed healing is the existence in the tissues of tough fibrous strands of tissue which have not been destroyed by the necrotic process as have the softer tissues. They get tough and even woody, like the rootlets of weeds, and prevent final cicatrisation unless dissected out with knife or scissors.

It is said that carbuncles, unlike boils, spread at one part while healing at another. I think this only happens in that type of carbuncle which is an aggregate of several smaller foci which do not all begin simultaneously or develop equally rapidly.

Two Types of Carbuncles.

There are distinguishable two types of carbuncles: (1) The commoner and more superficial one, which develops mainly in numerous separate foci of necrosis, is very vascular, soon comes to the surface, perforating it by several openings, and has much pus and soft sloughs easily discharged in shreds or fragments; (2) a more deep-seated type with a single tough dense slough having much less vascularity and pus formation; the opening through the skin is formed and enlarged very slowly, and the slough is with difficulty eliminated, being tough and remaining whole instead of softening and breaking up.

In some individuals, especially alcoholics and elderly obese persons of small vitality, carbuncles show no tendency to heal, but continue spreading till a large flattish surface, perhaps as large as a plate, is produced and death occurs from asthenia. Lymphangitis and lymphadenitis are not very common with carbuncles, but the former may produce vivid redness and burning pain of the skin, and the latter may produce very tender enlarged glands. A very troublesome accompaniment of carbuncles is the development of secondary carbuncles near the main one, and of vesicles or pustules on the surface of the skin. The latter may develop and become purulent in a few minutes. They are intensely painful; the more profuse the suppuration, the more liable are they to occur; they seem to develop from the pus running over the skin: this pus, which may be very irritating, producing a scalding pain on the skin, is sometimes itself of strong acid reaction.

Constitutional Symptoms.

Many writers represent these as severe, and speak of fever, rigors, and patients finally sinking from exhaustion. Carbuncles usually occur in debilitated persons —sometimes in diabetics—but ordinarily there is little fever or constitutional disturbance, and the patient is able to get about and follow his occupation. In the early stage, before the skin has given way, there is much pain and a feeling of illness, and long series of carbuncles deteriorates the health by means of pain, sleeplessness, and loss of appetite. But, as a rule, general symptoms are slight in comparison with local symptoms, and severe constitutional symptoms are infrequent. In the grave case of spreading carbuncles the symptoms are passive rather than active, the patient gradually weakening till he dies.

Facial Carbuncles.

Carbuncles may occur on the face, having the same characters and course as elsewhere on the body. On the nose they sometimes create huge swelling and give great pain, but subside, leaving little trace. But there is a special form of facial carbuncle, sometimes called malignant carbuncle of the face, which N. Davies-Colley has thus described:—

> "It is generally seen between ages of 20 and 30. Beginning as an itchy pimple, usually upon the upper or lower lip, the swelling rapidly affects the whole lip, which is soon four or five times its natural size. It is brawny, livid, and very painful. Numerous pustules or vesicles form, especially on the red surface of the lip. The inflammation extends upwards towards the eye or downwards towards the clavicle; the eyeball may protrude; severe pyrexia with rigors occur; pain in the side, bloody sputa, and other indications of lung implication follow, and the patient may succumb to pyæmic phlebitis in a week from the onset. On section of the lip numerous small abscesses are found and not a homogeneous slough, as in true carbuncles."[13]

Sir James Paget writes that at one time he did not regard it a carbuncle, but subsequently came to the conclusion it was a carbuncle with peculiarities due to its position. It is distinguishable from anthrax, which it resembles, by bacteriological examination. Clinically "in malignant pustule the vesicles are close together and grouped in a ring round a central blackish slough; the swelling of malignant pustule is less painful and there is no suppuration."[14]

The affection is a very terrible one and is nearly always, if not always, hopeless, but a case is recorded by R. Coombe and R. V. Solly, of Exeter,[15] cured after injection of 50,000,000 staphylococci and two succeeding doses of 25,000,000 each, together with internal use of citric acid. The treatment advised is scraping away the affected tissues, applying carbolic acid, and ligaturing the facial vein.

Diagnosis.

Cheyne and Burghard say "a carbuncle is a number of boils aggregated together"; Pye-Smith that "a boil and a carbuncle are pathologically identical," and S. Milsome[16] writes, "a carbuncle consists of a number of boils grouped together." But a boil is an affection of the follicles of the skin, and a carbuncle may be very much more and does not necessarily affect the skin except secondarily. And though some carbuncles may be merely aggregated boils, others are very much more. Clinically a boil is said to be distinguishable from a carbuncle by its size, but a carbuncle may be very minute and a boil may be of a large size.

It is curious that many writers say boils are usually multiple and carbuncles single: Rose and Carless, H. N. Barrett, Schamberg, Sequeira, all give this as a diagnostic feature, and Erichsen mentions as a singular fact that he once saw a carbuncle followed by a dozen other ones. In any case such a criterion is useless in diagnosis, as it involves waiting to see if the lesion is multiplied, but boils may be solitary and carbuncles are very frequently multiple.

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[13] N. Davies-Colley: Dictionary of Surgery, C. Heath.

[14] Ibid.

[15] R. Coombe and R. V. Solly: THE LANCET, 1909, vol. ii., p. 145.

[16] Clifford Allbutt's System of Medicine.

Another distinction has been made that the projection of a boil is oval or round or conical, while a carbuncle is flat. As a fact a carbuncle may form a projection the size of an orange. Multiple perforations are said to distinguish carbuncles from boils, but carbuncles may have only one opening.

Neither size nor prominence nor multiplicity will serve to differentiate boils from carbuncles, but when an affection localised to the hair follicle or sweat gland occurs it is a boil; if there are several of such lesions aggregated together a superficial carbuncle results; if the lesion extends deeper it is a carbuncle.

Prognosis.

Paget writes, "Carbuncles are looked on in the profession as dangerous things, but not in my experience." They are, however, still written of as "always a serious malady" (Stelwagon).

But, with the exception of the malignant facial carbuncle, I think it is the general experience that the prognosis is good both as regards the carbuncle and the patient. Even diabetics usually get well of carbuncle. But, as has already been said, in broken-down alcoholics or in elderly persons of small vitality death may occur from asthenia. And long successions of carbuncles through a series of years no doubt carry with them elements of danger.

Treatment.

Some advocate operation in all cases, but I will deal first with treatment without operation.

(*a*) Abortive treatment. Local subcutaneous injection of carbolic acid (1 in 20) may help to shrink up small localised carbuncles. (*b*) Plasters of resin or of lead with a circle cut out of the centre have been used, but can only restrain development of small carbuncles. (*c*) Painting with tincture of iodine or a strong chlorinated solution will dry up very small staphylococcal gatherings, but only when they are in the superficial skin. (*d*) Bier's treatment by cupping in the early stage is said to abort carbuncles. As a rule one has to take it that suppuration will occur, and treatment should be directed to relieving pain and to assisting the advance of inflammatory products through the skin. This is best effected by hot fomentations or poultices, preferably the latter, as they retain longer their warmth and moisture and the linseed oil of the meal is sedative to the skin. They must be changed frequently and must not be too hot, or they will scald the inflamed skin. As soon as possible after discharge occurs through the skin, fomentations should replace poultices; this cannot always be done directly discharge occurs, as some foci of suppuration may be later than others. A good plan is to alternate poultices and fomentations till the latter are used alone.

It is desirable to keep the skin as little moist and sodden as possible. But if discharge is very slight a dry dressing will cake and imprison the pus, giving much discomfort, and if the discharge is profuse, the dry dressing soon becomes a wet one. Dressings should be as small as possible; gauze absorbs discharge better than lint. A good plan is to put a large piece of dry lint between the skin and the fomentation with a central hole cut out of it over the central part of the carbuncle with its smaller gauze dressing. Painting the skin around the carbuncle with diluted tincture of iodine also lessens the infectivity, but must not be done so often as to inflame the skin, and it is well not to apply a hot fomentation immediately after painting with iodine tincture. I do not think antiseptic lotions are required before the skin is broken.

The antiseptic used should be non-irritating, used warm, gradually altered in strength or composition, and gaseous as well as liquid.

Antiseptic Applications.

Antiseptic applications should be avoided that irritate or inflame the skin when used continuously for a long period. Carbolic acid is an established application for carbuncles, but it numbs the skin even when used occasionally, and I do not think it is the best antiseptic for the long-continued use required for a carbuncle. Boric acid is very irritating to some skins, even used as boric lint. Flavine is non-irritating and I found it very useful, but it has the disadvantage of staining everything bright yellow. Chlorine and hypochlorites are time-honoured antiseptics. Lister found liquor chlori of the old Pharmacopœia (1870) effective when a 1 in 5 solution of phenol failed. The hypochlorites used to be employed, but of late eusol, which is the first preparation of the actual acid (of which it contains about 5 per cent.), has been used. The hypochlorites destroy bacteria, but do no serious damage to the phagocytic activity of the leucocytes or to the reparative power of the tissues.

But according to W. Martindale, eusol rapidly loses its antiseptic power if warmed, and must therefore be used cold. This is a disadvantage, as cold applications are not congenial to carbuncles; I also found eusol, after being on for some time, developed a marked burning power; when mixed with serum in exudation it probably undergoes chemical change. I prefer the liquor sodæ chlorinatæ in 1 in 20 or 1 in 30 solution; it is a non-irritant powerful antiseptic, and it has what I think is the advantage of emitting gaseous chlorine; I think antiseptics which are gaseous as well as liquid are indicated in local treatment of bacterial affections.

Long Continuance of Chemical Applications: Strapping.

An application, at first painless, gives pain and irritation after it has been used for a time; in the case of flavine, though it does not irritate, the dressings remain stained with it many days after it has ceased to be applied. Probably other chemicals are also absorbed by wound tissues after continuous application, and the hint may be taken that it is as well gradually to lessen their strength or to change the antiseptic employed. Strapping irritates the skin, but it is sometimes impossible to keep small dressings in situ without it, especially when the patient is up and about. I found Mead's less irritating than the white rubber oxide of zinc strapping.

Syringing; Cupping; Compressing.

Nothing is so effective in getting rid of debris of slough and pus from the recesses of a carbuncle as syringing, preferably with the same solution as is used for the dressings. Kaposi writes "removal of necrotic plugs before they are separate is absolutely useless." I think it is worse than useless; it is intensely painful and, if successful, leaves behind it a raw, absorbent surface; nor is any time gained by it, for if sloughs be allowed to separate spontaneously, by the time they do so the cavity will have shrunk to a small size, will be lined with granulations, and will rapidly close. Cupping is recommended for helping separation of slough, but syringing is quite sufficient and is essential. With reference to compression, I. B. Muirhead[17] has pointed out that if a carbuncle be squeezed, after a few minutes "the patient complains of creepy, sickly, or faint feelings, due obviously to a mild form of intoxication," showing that a poison in the carbuncle has been extruded into the system. I do not know if this explanation be correct, but I am sure that manipulation and compression of carbuncles at the dressings do produce a feeling of illness and should be done very gently; if the syringe is used it is not much required.

It is important to abstain from rubbing the skin with spirit or other soap, which seems to open up the follicles in the skin and is sure to be followed by a plentiful crop of staphylococcal pustules or secondary carbuncles. Too much of any form of washing of the skin is undesirable. Occasional warm water washing and drying with starch or zinc stearate powder is useful, but a long-powdered skin gets "itchy."

Ointments.

Ointments and greasy applications, even when they contain antiseptics such as calomel, favour development of secondary carbuncles and pustules. After a carbuncle has opened up glycerine of carbolic acid diluted six times may be applied, and little plugs of gauze steeped in it may conveniently be inserted in the openings in the carbuncle. Care must be taken that it is not kept applied to the uninvolved skin surface.

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[17] THE LANCET, 1910, i., p. 1786.

Internal Remedies.

The internal remedies recommended are too numerous to mention. Brewer's yeast is a time-honoured one, but I have not found it any use at all. Preparations of nuclein appeared to do good temporarily. Sulphuric acid and the sulphides failed to do me any good. Sulphur is much more effectively taken as flowers of sulphur; about a drachm a day is a very useful remedy; its elimination by the skin is manifest, as silver coins in one's pocket get to look like gun-metal. Tonics of all sort are recommended, and are no doubt good in this as other asthenic states, but they are not curative. The collosol iron malt preparation is very good. Stannoxyl, a French preparation of stannium salts, I have found very useful in acne and boils, but it has not any marked effect on recurring carbuncles. Collosol manganese intramuscular injections, first recommended by my colleague Mr. J. E. McDonagh, have a very marked effect on staphylococcal infections. Carbuncles under this treatment sometimes dry up, shrink, and scab over in a remarkable manner, and of all the various methods of treatment I have tried in my personal experience of five years of carbuncles this alone has been effective. Collosol silver is also very useful as a local application. Opium, according to J. M. McLeod, is "better avoided." Paget says "its use is very valuable." I see no reason why opium should be abstained from in cases of carbuncle, if there are indications to give it; sleeplessness and pain sometimes demand it; it is the best treatment for the phagedæna and sloughy ulcers of legs, &c., and I have thought that carbuncles improved with internal administration of opium. Carbuncle in diabetes, and diabetes itself, are best healed by opium.

Vaccine Treatment.

I do not think severe acute staphylococcal infection is destroyed by vaccines, though its milder forms may be. At the 3rd London Hospital I saw many cases that had been treated by vaccines, but carbuncles persisted, and I think it is the opinion of those who saw very large numbers of cases in France that vaccines were ineffective.

Diet.

Some recommend port wine and other forms of alcohol, and others regard them as harmful. The administration of alcohol in carbuncle, as in other diseases, must be left to the common sense of the medical attendant. Dr. S. J. Nelson[18] lays great stress on dieting in patients with carbuncles, especially restricting sugars, raw fruits, coffee, and alcohol; milk or cream must be taken not with food, but an hour before; he utters a warning against the patient "over-eating, as is generally the case." But I think it is well to let the patient eat as he usually does; a patient who has carbuncles is not usually addicted to over-eating.

Operative Treatment.

Most modern surgical books recommend operation as the only treatment for all carbuncles. This is surprising, for most carbuncles will heal up without operation. I think the guiding rule should be to avoid operations unless there are special indications demanding it, but I am convinced that in some cases operation is necessary. Four, perhaps five, different procedures are described: complete excision; early incision; late incision; incisions with subsequent removal of slough and application of pure carbolic acid or other caustic; and there may be added subcutaneous incision.

(1) *Complete excision.*—G. Lenthal Cheatle[19] writes: "Incision is not enough to evacuate the contents; hence complete and wide excision is the best treatment." J. M. McLeod[20] writes: "Far the most satisfactory method of treating carbuncles locally is eradication of them by excision or scraping." J. P. Warbasse[21] says: "Extensive carbuncle of the neck with a boardy infiltration and dusky congestion is best treated by excision of the whole diseased area as though it were a tumour." J. H. Sequeira[22] writes, "Complete excision gives excellent results." Cheyne and Burghard[23] say: "The best treatment for a carbuncle of moderate size is to make an incision completely encircling it and to dissect it out cleanly under general anæsthesia; nothing is lost by excision, because the skin over a carbuncle is of little use in subsequent healing. The incision must be well beyond the limits of the disease, or local recrudescence is almost certain."

Schamberg[24] writes that "where septicæmic symptoms become marked it is justifiable to excise the whole affected area." Paget does not allude to total excision as a method of treatment in his careful clinical lecture on carbuncle, nor do Erichsen and many other authorities, and E. Doyen in a clinical lecture vigorously inveighs against it as replete with danger and almost sure to be followed by a succession of other carbuncles. The operation, a very severe one, greatly enlarges the area of the lesion; it tends to free hæmorrhage, which, in debilitated patients, is undesirable; it is practically impossible, however widely the "encircling" is made, to excise all tissue infiltrated with the causative organism; a huge raw crater is left, which soon discharges pus profusely, and pus full of virulent staphylococci. In consequence it is impossible to keep the skin dry; the pus is very irritating to the surface, giving rise to crops of satellite carbuncles; the cavity is intensely painful, and takes a very long time to heal. The operation produces much debility and disables the patient for months; in my experience, as in that of Doyen, it does not prevent but rather favours succeeding carbuncles. In addition, administration of anæsthetics to diabetic subjects with carbuncle is a danger, and the operation leaves a large cicatrix, which in some situations may be an undesirable result. The remark in Cheyne and Burghard's article that "the destruction of skin by the operation is of little consequence, because the skin over a carbuncle is of little use in subsequent healing" is not, I think, in accordance with the general experience, which is that the dusky inflamed tense skin over a carbuncle recovers to a surprising extent as the inflammation resolves, and that a very large brawny carbuncle, if not excised, leaves a very small cicatrix. It is noticeable that many of those who recommend total extirpation make the remark that subsequent skin-grating may be required. I think complete excision can be desirable only in very exceptional carbuncles.

(2) *Early incision.*—This procedure is recommended by Foote,[25] professor of surgery, New York Polyclinic Medical School: "It is important incision should be made through the skin before the process has extended widely." Warbasse[26] writes: "The surgeon should not wait until pus has collected, but free incision should be made at the earliest possible time."

I take "early" to mean that the skin is still unbroken. Paget, in a clinical lecture, writes: "Carbuncle in its first stage, when it is hard and still spreading, is generally intensely painful, and may be relieved of some of its pain by cutting, but healing without cutting is quicker than with; this also applies to subcutaneous incisions." I think the best advice is that of Erichsen, who writes: "Some surgeons uniformly adopt incisions, others with equal constancy reject them; I think the most successful treatment consists in allowing the question of early incision to be determined by the amount of tension in or around a carbuncle; should the parts be soft and relaxed an incision is not necessary, but on the other hand, if the tension be considerable, the pain great, and the constitutional disturbance severe, nothing gives such relief as a free and early incision." At the same time this negatives any very early incision, since the advice is to wait until carbuncles demand it. I think that if the incision be early and made to relieve tension, it is undesirable as a routine practice to excavate all the slough, which will certainly still be firmly fixed to living tissue, and I agree with W. Spencer and G. E. Gask,[27] who write, "A deep crucial incision was *formerly* a favourite practice, but it is much better to make an incision only through the skin down to the sloughing tissue."

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[18] Fitch's Dietotherapy, New York, vol. iii.

[19] System of Surgery, vol. i., p. 3.

[20] System of Treatment, by Latham and Crispe, vol. iii., p. 1112.

[21] Surgical Treatment, vol. i., p. 255.

[22] Diseases of the Skin.

[23] Surgical Treatment.

[24] Diseases of the Skin.

[25] Text-book of Minor Surgery, New York, p. 128.

[26] Surgical Treatment, vol. i., p. 253

A crucial incision is that usually recommended, although Erichsen observes that "a single straight incision does just as well." For mere relief of tension a single incision is often enough, but if the carbuncle tissue is to be scraped out, probably a second incision will be required.

(3) *Incision with application of caustics or corrosives.*—A very generally practised method is to incise, remove all slough, and rub in pure carbolic acid. If incision is made early to relieve pain and tension before the slough is at all loose, in my opinion it is better to abstain from the use of carbolic acid; but if the cutting is performed later and the slough separating carbolic acid should be applied. It perhaps lessens the probability of fresh carbuncles, though it certainly often fails to do so; I do not think it accelerates healing. The skin around should be oiled before the operation to protect it from any acid that may run over it, and the wound should not be packed with cotton-wool or other dressing steeped in carbolic acid, which cakes up with effused blood and prolongs unnecessarily the action of the acid. Whether simple incisions or incisions with use of carbolic acid be practised, they should not extend beyond the inflamed tissue on to the unaffected skin; it is quite unnecessary to open up new ground and to produce fresh edges of wound; the latter are intensely painful, especially if carbolic acid is used, and are almost certain to become infected. The inflamed skin of a carbuncle soon recovers as the carbuncle subsides, and there is no reason with a carbuncle the diameter of a halfpenny to make incisions of the diameter of a penny extending into unaffected skin.

Summary.

Summarising what I have said as to operation, I think operation is advisable in the following circumstances:—

1. Where the sloughing process is very deep-seated, perhaps under the fascia, and the inflammatory effusion is much obstructed in extending towards the surface; in these cases suppuration may extend widely and laterally, running between tracts of fascia and in the direction of least resistance. Pain is very intense, pyrexia may be marked, and serious constitutional symptoms arise. In such cases incision is imperative to give exit to the imprisoned pus.

2. Certain carbuncles, though not large, may be deep-seated and the slough may be very tough and thick; the process is subacute, the surrounding inflammation is not intense, and the amount of pus may be small. The opening formed in the skin may be single and very small at first, enlarging only very gradually; this and the toughness of the slough and its depth often imprison the small amount of pus there is beneath the slough. Eventually the opening in the skin becomes ulcerated away sufficiently for the slough to be got rid of, but it is a long process; toxins are absorbed, and in these cases I think incision should be performed.

3. Incisions to enlarge spontaneously formed openings in the skin or throwing them together are often useful as assisting discharge of slough and in accelerating healing.

4. Operation is sometimes required when final healing is prevented by tough bundles or bands of fibrous tissue which have resisted the sloughing process.

5. If either the first two conditions have led to opening a carbuncle by operation it is well to apply pure carbolic acid at the same time, but it is not desirable to incise a carbuncle otherwise progressing favourably in order to use carbolic acid.

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[27] W. Spencer and G. E. Gask: Practice of Surgery, p. 60.

TABES: ITS EARLY RECOGNITION AND TREATMENT.[1]

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Two Cases of Tabes.

IN October, 1912, I was consulted by a man who told me that he was 24 years of age and that he had suffered severe pains in his legs and slight pains in his arms for four years. He had seen various doctors, who had diagnosed neuritis, but had not been able to relieve him of his suffering. Further questioning elicited no other complaint in respect to his health except that he was lacking in energy and was easily tired on going upstairs. His description of pains led me to believe that he was suffering from tabes dorsalis, although he denied venereal infection.

Examination revealed no signs of any organic disease, with the single exception that his appreciation of pain below the knees, on the ulnar aspect of the forearms, and on part of the thorax did not appear to be quite up to the standard of other parts. The eyes were normal in every respect and the reflexes those of a perfectly healthy man. He could toe-and-heel a line backwards and forwards without hesitation, and the closure of his eyes had no ill-effects on his equilibrium. On the completion of my examination I told him that he was suffering from syphilis of the nervous system, and then elicited a history of irregular sexual intercourse on one occasion seven years before. This had been followed by a "pimple," for which he was treated by medicine for a short period. At my request his blood was examined by Dr. Carmalt Jones, who found a positive Wassermann reaction.

Eight years have elapsed since the date of this examination and diagnosis, during which period the patient has been having antisyphilitic treatment at more or less regular intervals. Without going into great detail, I may say that he has had 18 intravenous injections of salvarsan, kharsivan, or novarsenobenzol, two intramuscular injections of salvarsan, 460 mercurial inunctions, and a few courses of grey powder by the mouth. In other words, he has averaged 2½ injections of salvarsan and between 50 and 60 mercurial inunctions per annum. The treatment has not been regulated by Wassermann tests, but the latter have been made on ten occasions, including the one already mentioned. The blood Wassermann reaction first became negative in January, 1914, 15 months after the commencement of treatment. It became slightly positive in May, 1915, and again in September, 1917. On all other occasions the test proved negative. The cerebrospinal fluid was examined in May, 1914, when it gave a negative Wassermann reaction and yielded a count of 23 lymphocytes per c.mm. In January, 1916, the reaction was again negative and the lymphocytes numbered 8 per c.mm.

During these eight years the patient has been engaged in a strenuous business life with a very moderate allowance of holiday. He married in 1915 and is now the father of two healthy children. He plays a scratch game of golf and a game of tennis, with which he is quite content. In 1918 he was examined by a recruiting board and passed A 1, the verdict being upset by an appeal board at my request. To-day the patient presents no physical signs of organic disease, although a careful examiner may still detect some of the analgesia which I observed at my first interview. He has never entirely lost his pains, but the latter have not interfered with his active life, and he has frequently enjoyed several months together of complete freedom. An occasional bout of pain is easily dispelled by a dose or two of aspirin or phenacetin. Recurrences are usually associated with undue fatigue or with some more or less serious anxiety.

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[1] A paper read before a meeting of the Section of Neurology of the Royal Society of Medicine on Dec. 9th, 1920.

This story raises some questions of interest, but before dealing with them I propose to recite another which may add value to the discussion.

In March, 1914, a man 38 years of age consulted me on account of severe pains in his arms and legs, from which he had suffered for six months. In other respects he was perfectly well, and he denied venereal infection. About five years previously he had been troubled with two or three sore-throats, for which he had had his tonsils enucleated. On examination he presented no signs of organic disease, and I could not satisfy myself that his sensibility was in any way abnormal. The pains were those of tabes dorsalis, and an examination of the blood revealed a positive Wassermann reaction. In April, 1914, I gave the patient three intravenous injections of salvarsan, and from that time until October he took courses of grey powder by the mouth. The pains disappeared after the injections and the blood Wassermann reaction was negative in October. I advised him to continue with occasional courses of mercury, and I have recently ascertained that he has remained free from pain and in perfect health.

Tabetic Pains.

In order to justify a diagnosis of tabes in the absence of physical signs it is necessary to state one or two facts about which there can be little disagreement. In the first place, the disease is one which attacks the afferent paths of the nervous system, and it is only reasonable to suppose that its earlier manifestations are of a subjective character—in other words, that complaints indicating a disorder of function precede those which are clearly due to structural defects. In the second place, it will be agreed that in a large proportion of cases of unmistakable tabes careful inquiry will elicit a history, often going back five, ten, or more years, of pains which have been regarded as neuritic or rheumatic in origin, and have not been associated with any other disability. Not once but a score of times have I asked a tabetic patient whether he has suffered from pains. After repeated denials I have altered the wording of my question and inquired for rheumatism. "Oh, yes, I have suffered from rheumatism for years." "What do you mean by rheumatism?" "Why, sharp, shooting pains in my limbs." This conversation shows how little the patient has associated his pain with the disability for which he is seeking advice, and incidentally how few patients understand the language they speak.

Granted that pains can be, and often are, the earliest signs of tabes, can they be distinguished from pains of other origin? I would answer this question in the affirmative and even go so far as to say that the pains of tabes described by a patient who is able to translate his feelings into intelligible language are quite pathognomonic. The fact that they are called lightning pains and that patients often say that they shoot up and down their legs has been responsible for a very general misunderstanding of their true character. When the patient states that they shoot up and down the limb he does not mean that each pain shoots from the hip to the foot or vice versa. He means that during an attack he may have pains first in the thigh and a few minutes later in the foot. If he is asked to describe them in greater detail he will inform you by gesture and by word that these pains have an axis, so to speak, at right angles to the surface of the limb. They stab like a knife or a darning-needle going in, or they resemble the effect produced by taking up the flesh, pulling at it, and letting it go. Further, the pains come not singly, but if not in battalions at any rate in platoons. They are rapidly repeated, several occurring in the course of a second or two, followed by a lull of longer or shorter duration. Bouts of paroxysms may last for a few hours to a few days and then cease for a time. Favourite sites for these pains are the heel, the inner aspect of the shin, and the inner aspect of the knee. The area within which they repeat themselves is small, described by the patient as the size of a crown-piece or no bigger than the palm of the hand. Between the frequent paroxysms these areas are often tender to light touch, so that the does not even like the contact of his clothes. atients are quite certain that pains may be provoked by a cold draught, by a change of weather, or even by a glass or two of beer. Others are equally sure that responsibility lies with fatigue or anxiety. In the early stages of the disease pains rarely occur during active exercise, but later on walking may be brought to a full stop by a sudden and overpowering paroxysm.

Before leaving the subject of pains let me make it quite clear that those I have described are not the only ones suffered by tabetic patients. There are deep, gnawing, aching pains in the bones, and others which have not the same diagnostic value. Let me also emphasise the fact that tabetic lightning pains must be recognised by their characters and not by their severity. Many patients confess to what they call "niggling pains," trivial in respect to suffering, but identical in nature with the lightning type.

It would be surprising if there were not other subjective phenomena in early tabes, and attention may be drawn to the not uncommon complaint that hot or cold water has become disagreeable or unbearable, that the patient is obliged to have his bath at a temperature which is described as tepid. Not that the hot or cold water provokes pains, but that it gives rise to a sense of great discomfort. This often applies to the whole surface of the body, although pains may be absent or confined to the lower limbs. Similarly it is not uncommon to hear that the fingers are numb when it is quite impossible to determine any disorder of sensibility by tests. This, of course, is not pathognomonic of tabes.

Treatment.

The necessity for advising antisyphilitic treatment of tabetic patients is not now so urgent as it was a few years ago, but it may be doubted whether the principles of this treatment are yet adequately recognised. We are all asked "How long must I go on with treatment before I am cured?" For many years my answer has invariably been, "For the rest of your life." I am never consulted about a primary chancre, but if I were my advice would be the same. It cannot be denied that we are not and never have been in a position to tell a patient that he has been cured of syphilis, and, as neurologists, we are now constantly seeing tabetic patients who have been cured of syphilis by the arsenical compounds, just as 15 years ago we saw those who had been cured by mercury. I maintain that the only honest advice we, as medical men, can give to patients suffering from any syphilitic disease is to the effect that they should continue to have periodic courses of treatment for the rest of their lives. Tell them that prevention is better than cure, and that they must regard this precaution as a method of insurance. In my experience so many victims of tabes and other syphilitic nervous diseases have allowed valuable time to slip by owing to negative Wassermann reactions that my confidence in this test as a method of regulating treatment is shattered.

Conclusion.

Is there any lesson to be learned from the story of the two patients which I have presented to you? The first man was infected with syphilis 15 years ago, and has undoubtedly suffered from tabes for 12 years, during eight of which he has been under treatment. To-day he would be passed as a first-class life by any medical officer of an insurance office who did not know his history. It would be unwise and unjustifiable to say that he is cured, but it is difficult to believe that the natural progress of his disease has not been arrested. And it must be remembered that he wasted four years before his symptoms were recognised and treated. The second patient was more fortunate. Only six months were wasted, and the result of treatment was rapid and lasting, judged by the fact that he has now enjoyed six years of freedom from any kind of symptom. These are not the only cases of the kind which have come under my observation, but I regret to say that it is a rare experience to be asked to see a patient suffering from tabes whose symptoms have not been long-standing.

It is obvious that the value of these observations depends on the reliance which can be placed on the description of pains given by patients, and on the criterion the description affords for purposes of diagnosis. In many cases the description is vivid and easily recognised. In others it can only be elicited by patient cross-examination, avoiding the employment of leading questions. After many years of critical study of this problem I am convinced that the lightning pains of tabes are, for practical purposes, pathognomonic, and that they can and should be recognised before they are many months old. Treatment initiated before physical signs are apparent is not only possible in many cases, but is likely to be attended by good results if persevered with to the end of the chapter.

DIFFICULT CASES OF
INFANT FEEDING AND MANAGEMENT.[1]

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I BEGIN by impressing upon you the importance of exact diagnosis. Start right with an accurate diagnosis of your case, and you are on the way to right treatment and correct management. Much confusion exists in the use of such terms as "wasting disease," "atrophy," &c.; and in reference to the wasting infant it is necessary for us to be quite clear on the following points: (1) Is the failure to thrive associated with the condition of the infant at birth, or has it arisen since birth? (2) If the condition was present at birth, is it a case of imperfect development—i.e., immaturity—or is it due to specific disease?

If the wasting baby was healthy at birth, then the case is one of malnutrition. Do not speak of "atrophy," meaning loss of function, in the case of a baby who has never had the function to lose. Recollect how easy it is to slip from a rather casual way of looking at the case into thoroughly wrong diagnosis and treatment. The infant is a wasting infant, is it not? Wasting implies malnutrition, and the treatment of malnutrition is correct feeding. But, unfortunately, the best feeding in the world will not do much for this particular wasting baby. The infant is *not* suffering primarily from malnutrition; it is suffering from congenital syphilis and will not thrive unless mercury is given systematically. Bear with me if I seem to labour this point of diagnosis, for it is no uncommon experience for me to find cases of congenital syphilis treated with patent foods and cases of malnutrition treated with mercury.

Congenital Syphilis.

Congenital syphilis is very varied in its manifestations. It is seen in three stages: (1) where the fœtus dies in utero; (2) where the infant is born with the disease quite evident; and (3) where the infant at birth appears to be quite healthy. Only the third stage concerns us to-day, and here it is very easy to go wrong unless the doctor is alive to the possibilities. The cases that give rise to doubt and difficulty are cases of remote infection. At birth the infant is quite healthy and vigorous, and its weight good. The specific symptoms gradually begin to appear. The first signs are not those generally recognised as syphilitic, for these are not seen till later. The infant's crying is often characteristic, being almost continuous; there is a wildness, a frenzy, about it that takes it out of the category of the ordinary infantile plaints. Restlessness and sleeplessness are prominent features. A little later snuffles may appear, but if alone the latter is useless for diagnosis; many young babies, especially those with malnutrition, show this sign. Ulceration of the palate often occurs, and the ulcers are generally symmetrically disposed on both sides of the middle line. The "café-au-lait" complexion so much dwelt on by various writers is not, in my opinion, of much value for diagnosis; in many cases of well-marked congenital syphilis there is no sign of it, nor is it in the least pathognomonic. The most marked instances of this complexion occur in infants suffering from chronic intestinal catarrh.

In cases of congenital syphilis it is of the utmost importance that the earliest possible diagnosis should be made. I have referred, for instance, to ulceration of the palate. With early diagnosis and appropriate treatment all such lesions should be prevented. Pay no attention to the history of the case. If you are interested in amateur fiction you may find the "history" of interest. Make your diagnosis on the signs and symptoms.

Some years ago I was asked by a colleague to see a young baby. I diagnosed congenital syphilis. He could not accept this diagnosis as it went clean against all his knowledge of the case. He had attended the mother in her first confinement. He had seen the first baby from birth, and never had there been a sign of syphilis. Moreover, my own diagnosis—remote infection—put the other possible explanation—recent infection—out of count. However, I stuck to my diagnosis and advised my colleague to wait for a favourable opportunity and talk the matter over with the father. He did, and he elicited the history that as a young man the father had contracted syphilis, that he was thoroughly treated and had been pronounced cured, but in order to be on the safe side he had received a mild course of anti-syphilitic treatment some months before and for about a month after his marriage.

This case is, I think, worth quoting, because if it had not been for the diagnosis the true history of the case would never have been elicited.

On pp. 281–2 of my "Nutrition of the Infant" (fourth edition) you will find the diet chart and the weight chart of D. F. (R. 1083). That case shows you very clearly the difference that diagnosis makes. The correct diagnosis was not made between June 10th and August 28th, and the infant was in a critical condition. On August 28th the proper diagnosis was made. Mercury was administered, and from that time the weight chart was as satisfactory as it had previously been unsatisfactory. Do not, however, go away with the impression that I am persuading you to give hyd. c. cret. to babies on the off-chance that they may be syphilitic. That is very far from my intention. Mercury for syphilis and not for malnutrition is what I want to say to you.

Treatment of Immaturity.

Now we may pass from congenital disease to congenital imperfection. Immaturity may be, and usually is, due to prematurity, but not all immature infants are premature. As a matter of fact, a full-term immature infant usually presents greater difficulty than a moderate case of prematurity. Some 15 years ago I endeavoured to arrive at some prognostic criterion of viability by means of the weight of the infant. In the atrophic infant I found as a rule that the prognosis was bad if the infant weighed less than one-half of the normal weight for its age. But in infants at birth, or very shortly after birth, I found the weight almost useless as a basis for prognosis; in this case the length of the infant was the most potent factor. The normal infant at birth is 21 inches long, and this measurement is extraordinarily constant. The case of an infant under 20 inches in length is difficult, and that of an infant under 19 inches almost hopeless. In the condition of immaturity the strain generally falls upon the digestive system. Either the infant has to be fed upon an extremely delicate food, because anything approaching the normal standard of milk mixture for a young infant causes digestive disturbance; or, if a moderately good food is taken without indigestion, the infant nevertheless fails to gain in weight.

I may quote from the case of an infant sent to me by Dr. T. Luson, of Kingston-on-Thames, many years ago. After the infant had been two months under my care I wrote to Dr. Luson:—

> "It is a remarkable illustration of this class of case. The infant is taking a large amount of highly nutritious food, there is no digestive disturbance of any kind, and yet she makes absolutely no gain in weight. She has not yet reached the stage of structural creation."

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[1] Being a Post-Graduate Lecture delivered at the Infants Hospital, London, on Nov. 16th, 1920.

Shortly after this was written the infant started to increase its weight, and steadily rose from 6 lb. 14 oz. to 8 lb. 14 oz. in the course of seven weeks.

In the treatment of premature infants the two considerations of greatest importance are (1) warmth, (2) delicate adjustment of diet. In my experience the best method of maintaining a normal temperature in the infant is to use an electric radiator. The room should be adequately warmed by a coal fire, the window being kept slightly open as a rule to ensure an adequate supply of fresh air. The infant's cot should be placed in a corner of the room surrounded by screens and with the electric radiator underneath or near to it. By altering the position of the radiator and by adjusting the current it is comparatively easy to maintain the temperature near the cot fairly constant. For a premature infant I generally recommend that the temperature should be not less than 80° F. On no account use an "incubator." Almost any method is preferable to shutting a baby up in a box of that kind. See that the extremities are covered with cotton-wool. If the feet are warm I consider the temperature conditions satisfactory.

Many premature infants do fairly well for a week or two and then die, not infrequently because they have been fed on foods enabling them to "carry on" for a short period, but entirely failing to provide them with the stimulus necessary to promote growth and development of function. Fresh milk modified to suit the delicate condition of the infant is essential.

Post-natal Breakdown in Healthy Infants.

From this necessarily brief summary of the difficult cases in infants as a result of ante-natal conditions I pass to the consideration of the baby who is thoroughly healthy at birth and "goes wrong" a few weeks or months after birth. In my previous lecture[2] I dealt with the general principles underlying the feeding and management of the normal infant, and I propose now to deal as succinctly as possible with the treatment of nutritional disorders and disease. Here is a typical history:—

> The infant did well for about a month, and then vomiting occurs, motions were rather undigested, and weight no longer increased. The baby was breast-fed; the monthly nurse gave the mother port wine with increased food; the baby got worse, although the doctor was called in and did what he could. A specialist was called in and ordered a remarkable concoction of drugs, bread, and milk. The same specialist was again called in a few days later, and this time ordered asses' milk. A few more days elapsed, and a most distinguished physician was called in. He made a sensible attempt to stem the tide of the disaster, ordering a wet nurse without delay. She arrived, and in the following 24 or 36 hours a material improvement was evident, which unfortunately was not maintained; in the succeeding 24 hours the baby had violent diarrhœa and was seriously collapsed. Still another specialist was sent for—this time myself. I ordered a dose of castor oil and a little brandy, two "feeds" of saline lactose to be followed by a milk mixture of the composition: fat, 1·25 per cent.; lactose, 4·00 per cent.; whey proteins, 0·50 per cent.; caseinogen, 0·25 per cent.; lime water, 5·00 per cent. The infant made an uninterrupted recovery.

I want to draw your attention to certain cardinal points. There could not have been very much wrong with the baby when the simple measures I adopted were all that was required to effect a rapid and complete cure. Let me summarise as follows the mistakes made in this case: (1) overfeeding of the mother; (2) still worse, when the baby was beginning to show signs of indigestion, the monthly nurse increased the mother's diet; and (3) as the infant had to be removed from the breast by reason of its severe indigestion, the indication was for a specially diluted milk for a few days; instead of which a mixture of equal parts of milk and water with added cream was given. A big, vigorous, healthy baby might be able to tackle such a mixture, but to order it for a six-weeks' old infant that for a fortnight past had been suffering from gastric and intestinal disorder was very unwise. I pass over the efforts of the first specialist because they were, in my opinion, merely silly; the second was a first-rate physician, and his advice might have been successful, but even he would not leave the baby alone. Why be so keen on feeding a baby whose stomach is thoroughly upset? True, the wet nurse's milk suited the baby admirably for rather more than 24 hours. How was it that diarrhœa with collapse occurred the day after? The explanation was not difficult; the wet nurse came from Queen Charlotte's, and was a poor woman who went for her meals to the kitchen of a well-appointed house, and the generous diet sent the fat in her milk up with a bound, with disastrous results for the baby.

And what am I to say about the milk mixture that did meet the requirements? The fat was only about one-third of the normal amount, a fair amount of lactose was given, for it is readily assimilated, and of whey proteins, for they are very light and place little strain on the digestive organs. The curd-forming element was, of course, reduced to a very small amount. But this is not all—the "milk" mixture that saved the baby contained no less than 94 per cent. of water. There is one other moral attaching to this case. Those I discussed at the outset were cases of inherent difficulty, for no doctor who knows his work will say that an infant only 19½ inches long at birth is not a difficult case. But here no such explanation is tenable. The difficulty was, to put it as tactfully as possible, due to conditions not present at the time of birth.

Nervous Exhaustion.

The next class of difficult case I have to discuss is one to which I would invite your close attention, for there is, according to my experience, no class of difficult case so little understood by doctors in general or, at any rate, so imperfectly appreciated. I have seen these cases everywhere, and it almost invariably happens that the doctor in charge of the case is distinctly sceptical when he hears my diagnosis. His general attitude is that he hopes it may be true, but fears it is too good to be true—the diagnosis is too optimistic. The very last case I saw before I joined the army was at a consultation in Essex, and the doctor said to me, "This is a very rare case, is it not?" I could not help smiling, for his was the third case I had seen that week. When I see these cases the first thing I do, as soon as possible, is to order opium for the baby—one-quarter of a minim of nepenthe—to be repeated in one hour if required. Now let me attempt to give you an outline of the case.

> The parents are healthy, highly-strung people. As a rule, they are not in the least "neurotic," but they are on the nervous side. If I say that the mother is a charming woman, a thoroughly good sportswoman, and generally "one of the best," you will the better appreciate the type of parent I mean. The history of the case, allowing for the necessary human differentiation, is fairly constant. The mother's milk, as a rule, is scanty and soon fails. Some milk mixture is tried and the baby is much disturbed by indigestion, generally accompanied by a good deal of pain. Pain, indeed, is one of the first symptoms. Various foods and various remedies are tried, but nothing avails, and the first stage of the case ends in really terrible trouble. The baby has had nothing in the way of restful sleep for something like 48 hours, and everybody is distracted by its violent screaming and obvious suffering. Intermingled with this first stage or following closely upon it are a whole boat-load of symptoms. Vomiting may be intense so that even plain water will be promptly expelled. Intense spasm of the colon may be present, spasmodic movements of the head and limbs are fairly common, and epileptic seizures may be seen.

But, indeed, the symptoms are protean. Do not worry about particular symptoms so long as you can get the size of the case. The diagnosis is nervous exhaustion, with, as a rule, intense neuro-muscular irritability. When I had cured one of these babies one of the most charming mothers in this country said to me, "I have never before heard of a rest-cure for a three months' old baby." That remark gives you a valuable clue to the whole line of treatment, which is as follows:—

> (1) Remove the baby from the extremely well-lit nursery with its very sanitary oil-cloth floor, and place it in a semi-darkened, well-carpeted room.

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[2] [illegible] al Points in Infant Feeding, Clinical Journal, [illegible] 3, 1920.

(2) See that the nurse is quiet and gentle; everything she does to the baby must be done gently.

(3) The baby must be away from all noise on the stairs or outside the house. In one case I noticed distinctly that every time the dog in the stable-yard barked the baby squirmed. Remove that dog.

The food as a rule should be a nourishing one. Too much dilution will not be useful, for the nervous system requires fat, and, generally speaking, the baby needs building up. Here is the sort of milk mixture that I have in mind for a three months' old baby suffering from neurasthenia: fat, 3·00 per cent.; lactose, 7·00 per cent.; whey proteins, 0·75 per cent.; caseinogen, 0·75 per cent.; lime water, 5·00 per cent.

In regard to milk mixtures I always think in terms of the relative proportions of the constituents, and I would wish you so to think, for I know of no other way by which you can keep constantly in your mind the related factors of the requirements of the infant and the constitution of the milk mixture. But I recognise that my lecture would not be sufficiently practical or useful to you if I confined myself strictly to writing the prescription. I must try to tell you how to get the prescription dispensed, and so must interpose a summary description of my "fat whey" method worked out in the research laboratory of this hospital some years ago, and since then extensively employed in our out-patient department and elsewhere:—

Add rennet to one quart of milk; raise the milk to 100° F.; stir the milk all the time the curd is forming; as the curd forms gradually press it down to the bottom of the jug with a large spoon, so that the curd is finally pressed into a hard lump at the bottom of the jug. Remove the lump of curd, raise the fat whey to 150°, cool rapidly, and then add the required proportion of milk.

Note that the fat whey should only be *raised* to (*not kept at*) 150°. This procedure is necessary in order to kill the rennin ferment. If this were not done the rennin in the fat whey would curdle the added milk when the mixture was warmed to 100° before it was given to the infant. By means of fat whey, water (if necessary), and milk all sorts of combinations may be obtained. For example, three parts of fat whey to one of milk makes a mixture very closely approximating to the prescription I have just given. This mixture is, however, as compared with the prescription, a little deficient in sugar, but there is, of course, a very easy correction for that deficiency, and you need not particularly worry about the added sugar being milk-sugar. There is plenty of lactose in the mixture.

Intestinal Disorders.

I pass now to a brief consideration of intestinal disorder. The cases I propose to discuss are full of difficulty and anxiety. The baby is suffering from diarrhœa, is cold, very ill, and a fatal issue is probable unless you put a stop to the threatening conditions. But do not concentrate your attention too much on the diarrhœa. Long ago Dr. Emmott Holt, of New York, in his admirable book, "Diseases of Infancy and Childhood," referred to the cases in which constipation occurs, remarking that in acute intestinal intoxication diarrhœa is a conservative process of the greatest possible value, and I cordially agree with him. In 1887 Ballard, reporting upon his investigations into the disease known as "epidemic diarrhœa," stated that in his opinion the disease could run its course from first to last, and even to death, without any diarrhœa at all. In my paper on the Bacteriological Diagnosis and Treatment of Alimentary Disease in Infancy and Childhood[3] you will find a fairly complete account of the subject; I can now only give you a very brief summary.

The first thing is to give the infant a good dose of castor oil. Stop all food and give warm sweetened weak tea—one of the best sustaining tonics for the infant and, generally speaking, much better than brandy. If the collapse is urgent, administer by inhalation 1 minim of amyl nitrite—the most potent restorative in all cases of infantile collapse and extremely effective in cases of convulsions. I have long abandoned the subcutaneous and intravenous injection of normal saline solution. If the baby cannot swallow, administer amyl nitrite and then give the normal saline by the mouth in a bottle. I have never known a baby to refuse it, and administered in this way it is extremely effective and gets into the baby much more quickly than by any other method. All fluids administered at this period should be at "super temperature," 110°. A direct microscopical examination of the intestinal dejection is of great importance, for, as a rule, this enables us to put the case into one of two groups: (1) Gram-positive organisms dominant—probably a case of lienteric diarrhœa; or (2) Gram-negative organisms dominant—a case of intestinal toxæmia.

The cases with Gram-negative organisms dominant are serious and, roughly, fall into two types of intestinal toxæmia: (1) acute, (2) chronic. The acute type is very serious.

The importance of the bacteriological diagnosis in these cases can scarcely be exaggerated, for as long as the Gram-negative organisms are dominant the infant is in danger. I should never feel justified in giving a favourable prognosis until I had satisfied myself that this toxic dominance had been obliterated. If the case is a toxic one, fresh milk is essential. Any form of cooked milk or food other than milk handicaps the growth of the lactic organisms and encourages the growth of the toxic organisms. In bad cases of toxæmia fresh milk will not be anything like powerful enough, and cultures of the *Streptococcus lacticus* should be administered with every feed.

In the case of lienteric diarrhœa the treatment is very different. The Gram-positive organisms are dominant. The dejections are acid—very likely much too acid. In such cases a small dose of opium is a very valuable remedy, as it soothes the irritated intestines. The infant should be kept very warm and should not be given fresh milk until the diarrhœa has ceased. In these cases I find that the Ideal brand of unsweetened condensed milk much diluted is, as a rule, a very good food to begin with. In the course of its preparation it would appear that saccharated lime is added to the milk; this combination appears to be very well suited to the needs of the infant suffering from lienteric diarrhœa.

In all cases of serious intestinal disorder the treatment must be conducted with great care. Sometimes the kind of food previously given is so ill-suited to the infant's needs that it must be stopped forthwith. But in other cases the changing of one kind of food to another and very different kind of food is too violent a procedure. For example, I am never satisfied until the infant is getting fresh milk in suitable quality and quantity, but this does not mean that I promptly order a milk mixture suitable for a normal infant. The worse fed a baby has been the less likely it is to digest milk. The milk mixture must be given much diluted, and at first it should not be given at every feed. The proper food must be gradually introduced, for a delicate infant cannot straightway digest fresh milk after it has been deprived of milk for a considerable period.

Conclusion.

Before bringing my lecture to a close I wish to refer as briefly as possible to broncho-pneumonia and the importance of correct feeding in these cases. The baby has been very ill with all the signs and symptoms of pneumonia, but the temperature has fallen; the breathing is much easier, and altogether it is clear that the severity of the attack has passed. Just at the time, however, that the rapid recovery of the infant is expected it becomes clear that something is wrong, and it is very often at this stage of the case that I am called into consultation. These are cases of colon toxæmia; the infant has been swallowing large quantities of mucus, and the decomposition of this mucus in the intestine is responsible for the condition. The leading symptoms are apathy, great drowsiness, weakness, and refusal of food. Always feed infants suffering from broncho-pneumonia on fresh milk and keep the bowels open, so that the mucus is speedily voided.

You will allow that it is not an easy matter to select the material for a single lecture from the experience of some 20 years' dealings with difficult cases in babies. My main idea throughout has been to deal with the kind of case that I have actually found, according to this experience, to be the cause of difficulty and trouble.

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[3] American Journal of Diseases of Children, February, 1914.

DIABETES INSIPIDUS COMPLICATED BY INTERMITTENT GLYCOSURIA.

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THE earliest record of the occasional presence of traces of sugar in the urine of diabetes insipidus is a reference to two cases by Sir William Roberts[1] in 1876. Naunyn[2] in his monograph on diabetes mellitus refers to a single case in his own experience, but no details are given. Von Noorden[3] mentions the fact of transitory glycosuria in diabetes insipidus, though he does not discuss the condition nor describe a case. The only complete record of a case of intermittent glycosuria that we have found is one reported by Mackenzie Wallis and Roper.[4] The main feature of this case was the association of glycosuria with "acidosis" and creatinuria. The presence of polyuria was noted, but its bearing on the case was not discussed. In the light of the two cases here recorded it is probable that the case was of similar nature.

Clinical Record.

CASE 1.—A. Z., age 32, of Jewish nationality, a market porter, was admitted to St. Bartholomew's Hospital under the care of Dr. J. H. Drysdale, on 22/1/20, complaining of loss of energy and strength. The man ascribed his symptoms to the strain of army service, and stated that he had good health until the spring of 1918, when he first complained of a dull pain in the small of the back. He went sick in May, 1918, on account of this pain, and about this date he first complained of thirst, weakness and drowsiness. He described his weakness as a tired feeling, a "droopy feeling," as though he had no life in him. This feeling was liable to occasional aggravation, for which he used the word "drowsiness." At the same time he suffered from a "tight feeling" over both eyes (deep supra-orbital), which sometimes amounted to a headache. He was admitted with these symptoms to the Mile-End Military Hospital, where sugar was found in the urine, and the case was diagnosed as diabetes mellitus. He was told not to eat potatoes, and he was invalided from the army on his discharge from hospital in July, 1918. After his discharge from the army he returned to his work as a market porter, but after six weeks' work he was unable to continue on account of pain in the back and weakness. The symptoms as outlined above have persisted and varied little since their onset. There is no history of past illness, and V.D. is denied. It appears from his statements that he has had polyuria for the past ten years.

Family history.—Father and mother alive and well. Wife healthy, and has had no miscarriages; he has two children—one, aged 8, is delicate and has had pneumonia twice; the other, aged 4, has "always seemed to pass a lot of water," and in infancy suffered from enuresis. She is otherwise bright and active, and a single morning specimen of urine brought for examination was normal.

Condition on admission.—The salient facts observed on admission were noted from time to time unchanged from the date that he first came under observation in May, 1919. General appearance: small build, good physique, no skeletal deformity. Skin and hair natural. The upper lids drooped somewhat and the eyes were a little prominent: the sclerotics were always somewhat congested, so that the facies suggested a man who has been drinking the previous night. The tonsils were hypertrophied, there was marked pyorrhœa alveolaris. Eyes: pupils equal, normal reaction to light and accommodation; optic discs and visual fields normal. In the neuro-muscular system there were no abnormalities, except that neither the knee-jerks nor the ankle-jerks could be elicited; other reflexes were normal but weak. Cardiovascular system: normal. Blood pressure 113/68. Kidneys: the following figures give the fluid intake and output in ounces on successive days under observation in hospital—fluids/urine, 160/136, 192/146, 90/80, 172/–, 140/80, 140/145, 147/110, 110/92, 101/104, 84/60, 62/60, 85/96, 87/–. The following figures give the specific gravity of 24-hour specimen [illegible] 1008, 1010, 1010, 1010, 1015, 1012, while it was on two [illegible]s in single specimens 1020 and 1025. There was [illegible] of micturition, and the above figures show the amount of polyuria. During the six weeks that the patient was under the observation of Dr. W. Langdon Brown in 1919 sugar was only found in the urine in very small amounts on two occasions. In general the urine was clear, pale amber in colour, with a nebula deposit, never containing albumin or diacetic acid.

The blood Wassermann reaction was negative. The diastase in the urine was 22 units. X ray examination of the skull on 13/9/19 by Mr. Martin Berry showed a slightly expanded sella turcica, and the posterior clinoid processes appeared thinned; a faint shadow was visible in the region of the pituitary body. From the skiagram it did not appear that the condition was necessarily beyond the limits of normal variation. A later skiagram taken by Mr. H. George in February, 1920, was reported on as follows: "The pituitary fossa is a little on the large side, its shadow measuring 14 × 10 mm. (normal = 12 × 9 mm.), the posterior clinoid processes are somewhat thinned and the sella turcica somewhat enlarged."

Other points noted were as follows: the hands were small, the fingers markedly square-ended; the feet and toes were of normal shape, as were the ears and nose. Constipation was the rule; sleep was undisturbed and appetite good. Loewi's reaction was negative.

CASE 2.—P. M., age 35, war-pensioner and previously a gas-works stoker, was admitted to St. Bartholomew's Hospital under the care of Dr. Drysdale, 28/2/20, having been sent to Dr. Mackenzie Wallis by Dr. A. S. Woodwark for a blood-sugar analysis. His chief complaint was of headache and pains in the small of the back. On account of the clinical resemblance of the case to the foregoing patient, who was at that time in the hospital, he was admitted for examination. When in France, working in a Labour Corps behind the line, and shortly after rejoining his unit from sick leave in England, he complained of the onset at one time in October, 1918, of thirst, polyuria, and headache. The headache was a pain across the right eye just above the eyebrow. At about the same time he first complained of pain in the small of the back. He was kept under observation and was told that sugar had been found in his urine. He was ordered a restricted carbohydrate diet consisting of meat, dry toast and milk, without jam, sugar, or potatoes. Fourteen days later he was free from headache and thirst and felt much better; he accordingly rejoined his unit. Shortly afterwards he complained of pain in his stomach; this was diagnosed as dental dyspepsia. From this date on he passed from one hospital to another, only once returning to his unit for one week, being occupied, apparently without any particular symptoms of disease, until his demobilisation in November, 1919, in dental treatment. Nine days after his return home in November, 1919, he complained again of the onset of headache, thirst, and pain in the back. These symptoms persisted without variation until his admission to the hospital. He has had polyuria as long as he remembers, and has had difficulty in holding his water; he has to pass it once or twice during the night. Except for occasional quinzies no past illnesses. Venereal disease was denied. In May, 1915, he was rejected for the army on account of being round-shouldered and deformity of the feet (hammer toe). In July, 1918, having been recruited for a Labour Corps in the meantime, he was invalided home from France with inflammation of connective tissues, legs and feet. It was after rejoining his unit from his illness that his pituitary symptoms first developed.

Condition on admission.—General appearance: considerable growth of coarse dark hair in all the normal regions. It was a marked feature of his appearance, though not beyond the normal variation. The skull was dolichocephalic and the lower jaw prominent. There was marked dorsal kyphosis and some degree of lumbar lordosis; the kyphosis was attributed by the patient to carrying a heavy weight on the back soon after leaving school. No other skeletal deformity was present. He was a man of low intelligence, but in other respects cerebration was normal. In addition to the symptoms already noted he complained of a feeling of tiredness; he explained this symptom by standing at attention and saying that he could not stand thus, but only like this, and then he let his shoulders flop forward and stood with knees a little flexed. The tongue was clean and moist; the tonsils hypertrophied; all teeth except three were missing, and their place taken by false dentures. The cardiovascular system was normal. The heart gave evidence of slight hypertrophy, and there was slight thickening of the radial artery. These signs were not more than might be expected in a gasworks stoker 35 years old. The blood pressure was 110/65. The neuromuscular system was normal. The optic discs were normal. There was no refractive error; the visual fields were normal; all reflexes were brisk and natural. There was no evidence of kidney disease. The urine on boiling gave a faintest cloud; there was, however, no precipitate with salicyl-sulphonic acid, and this was decided to establish the fact that no albumin was present. Many specimens were examined for casts; occasional hyaline casts were found in centrifuged deposits both from fresh and 24-hour specimens, but no abnormal deposit was found. From this aspect the urine was therefore normal. During the period of the patient's observation in hospital a trace of sugar was found in the urine in four specimens. This sugar was identified as glucose. The following figures give the range of variation of fluid output and intake for 24-hour periods: Intake/Urine = -/64, -/34 plus, 84 plus/108, 81/72, 78/90, 81/84, 95/112, 72/120, 88/106, 102/106, 91/104, 82/112, 97/100, 91/93, 99/90; these figures do not correspond accurately, as the patient was in some respects difficult to control. The following figures give the range of variation in specific gravity of 24-hour specimens: 1013, 1005, 1010, 1010, 1011, 1007, 1010, 1010. The urine was pale, slightly hazy, though perfectly clear immediately it was passed. The faint haze on boiling not due to albumin led to a suspicion of cystitis, although there was no other evidence of this complaint. A catheter specimen of the urine was examined bacteriologically, but both aerobic and anaerobic cultures were negative. Diacetic acid was never found in the urine. As regards other tests, the blood Wassermann reaction was negative; the diastase in the urine was 22·2 units (normal). Loewi's reaction was positive on March 5th, though negative at a later date (15/3/20).

Without other treatment than rest in bed the patient suddenly recovered of his symptoms on March 6th. He said on the following day that he felt quite well, that he had lost his headache and pain in his back, and that his energy had returned. There were no outward signs of this change in his condition. The polyuria continued as before, and though he seemed to drink as much as previously he said that he had lost the thirst of which he had previously complained. While not attaching too great importance to signs whose significance is still an uncertain matter, it is noted that the Loewi's reaction was positive while he felt ill and negative when he felt that he had recovered. A difference in the response to sugar was also noted.

Chemical Pathology.

Technique.—Specimens of urine were repeatedly tested for sugar by chemical and polarimetric methods. A negative reaction with Benedict's solution was regarded as indicating the absence of sugar in pathological quantity. Blood sugar determinations were made by the writer's method,[5] and the diastatic activity of the urine by a modification of the original Wohlgemuth method.

CASE 1.—15/9/19. Blood sugar = 0·1 per cent. (normal). January-February, 1920, sugar tolerance tests:—28/1/20: 6 A.M., 50 g. glucose taken; no glycosuria followed. 30/1/20: 6 A.M., 100 g. glucose taken. Urine: 6–7 A.M., vol. 190 c.cm., 0·595 per cent. sugar, total 1·13 g.; 7–8 A.M., vol. 160 c.cm., 0·356 per cent. sugar, total 0·569 g.; 8–9 A.M., vol. 165 c.cm., 0·00 per cent. sugar, total —; 9–6 A.M., vol. 1770 c.cm., 0·356 per cent. sugar, total 6·3 g. Report: The patient passed 0·1 per cent. sugar in the urine before the test, and this amount was increased after taking 100 g. glucose. The tolerance appears, therefore, to be less than 100 g. and more than 50 g. 9/2/20: 6 A.M., 75 g. glucose taken. Urine: 6–7 A.M., vol. 200 c.cm., 0·2 g. per cent. sugar, total 0·4 g. Urine examined in hourly specimens afterwards contained no sugar. Report: These observations show that the sugar tolerance of this patient lies above 50 and below 100 g. 5/2/20: 10.50 A.M., blood sugar 0·09 per cent., urine no sugar; 11 A.M., 25 g. glucose taken; 11.15 A.M., blood sugar 0·122 per cent.; 11.30 A.M., blood sugar, 0·137 per cent.; 12 noon, blood sugar 0·09 per cent.: 12.30 P.M., blood sugar, 0·09 per cent. Urine, 11 A.M.–12 noon, contained 1 per cent. sugar. Total vol. 245 c.cm. Total sugar, 2·45 g. Report: Tolerance on this day was lowered. The blood sugar showed a practically normal change following 25 g. glucose, but the threshold value was lowered.

CASE 2.—2/3/20: Before test, blood sugar 0·11 per cent.; urine, no sugar. 11 A.M., 50 g. glucose taken by mouth. 11.15 A.M., blood sugar 0·207 per cent. 11.30 A.M., blood sugar 0·307 per cent. 12 noon, blood sugar 0·226 per cent. Urine, 11 A.M.–12 noon contained 0·7 per cent. sugar; total volume 310 c.cm.; total sugar 2·2 g. Report: The blood sugar showed a definite response to the ingestion of 50 g. glucose, the marked hyperglycæmia being maintained for over one hour. It is evident from the figures that the leak point for sugar is high but the tolerance low.

After the patient had made a clinical recovery another tolerance test was performed with the following result: 15/3/20: Before test, blood sugar 0·1 per cent.; urine, no sugar. 11 A.M., 50 g. glucose taken by mouth. 11.15 A.M., blood sugar 0·113 per cent. 11.30 A.M., blood sugar, 0·140 per cent. 12 noon, blood sugar, 0·122 per cent. 12.30 P.M., blood sugar, 0·110 per cent. 1 P.M., blood sugar 0·09 per cent. Urine, 11 A.M.–12 noon, contained no sugar; urine, 12 noon–1 P.M., contained no sugar. Report: The lowered glucose tolerance observed 13 days previously had disappeared, corresponding with the improvement in the condition of the patient. The response to the sugar ingestion was normal, and there was no glycosuria.

The nature of the reducing substance in the urine in both patients was established as being glucose by the fact of its being dextro-rotatory, and by the preparation of glucosazone crystals.

Discussion.

The most constant and important signs of disease shown by these two patients were polyuria and the secretion of urine of low specific gravity. Chemical examination of the urine, microscopical examination of its deposit, and clinical examination of the cardiovascular system ruled out renal disease as a cause of the abnormal condition of the urine. Nor can it be ascribed to polydipsia or to gross disease of any part of the nervous system, in so far as such disease can be excluded by clinical examination. It is considered that, in the absence of demonstrable functional or organic disease of the central nervous system and kidneys, the diagnosis of diabetes insipidus is justified in the presence of these two signs; there was evidence in both cases that the complaint was of long standing. The cases are examples of the complaint in its slightest form, since their excretion of urine was not often more than 4 litres in the 24 hours and was some days as little as 2 litres, while the specific gravity of the urine was generally about 1010 in a 24-hour specimen, and sometimes normal, in a single specimen.

The association of diabetes insipidus with pituitary disease has long been recognised. More recently G. L. Kennaway and J. C. Mottram[6] have reported two cases of diabetes insipidus in which there was evidence of pituitary involvement, and in this communication they give an account of present knowledge of the relation of pituitary disease to diabetes insipidus. These observers come to the conclusion that "the existing evidence of morbid anatomy seems on the whole to be distinctly in favour of an association between lesions of the glands and the disease in question." Though disease of the pituitary gland may occur without polyuria there do not appear to be any cases on record in which diabetes insipidus occurred and in which the pituitary was proved post-mortem to be normal, or where it was normal the stalk free from any pressure. Physiological evidence supports pathological evidence on this point. Thus Swale Vincent[7] states that "so far the only symptom of acromegaly which appears to have a direct relation to the function of the pituitary, as revealed by physiological experiment, is polyuria." From the clinical aspect we know polyuria as a frequent symptom in both acromegaly and dystrophia adiposis-genitalis. Neither patient showed any very obvious sign of pituitary disease, but in spite of this, on the strength of the general evidence outlined above, it is justifiable to diagnose both cases as pituitary dystrophies and to inquire particularly for the presence of other signs in support of this diagnosis. Case 1 had an enlarged sella turcica, an enlargement which of itself is not sufficient perhaps to determine a pathological condition, but of importance in relation to the facies (the slight exophthalmos and congestion of the sclerotics) and the general consideration of the case. Case 2 varied from the normal in the direction of acromegaly in the following skeletal features: the lower jaw was underhung, the skull dolichocephalic, and there was dorsal kyphosis; hirsuties was marked.

Both patients made chief complaint of headache and definite complaint of lassitude. This lack of energy is a common complaint in pituitary disease, varying from a feeling of inertia and drowsiness to remarkable periods of somnolence. The headache in both cases was frontal; in Case 1 it was bilateral and in Case 2 limited to the right supra-orbital region. Headache is a constant symptom in pituitary disease. In the cases of pituitary disease described by K. Falta[8] and Harvey Cushing[9] headache is rarely absent. Cushing regards a bitemporal headache as the more characteristic of pituitary disease. At the same time, many of the patients whose histories he gives complained of a severe frontal headache. In our experience frontal headache situated deep in the supra-orbital region, and described by the patient as a tight feeling or gnawing pain, is not uncommon in pituitary disease, and Pardee[10] has lately drawn [illegible]tion to the frontal distribution and in[illegible] headache in pituitary disorders.

There remains for consideration the intermittent glycosuria exhibited by both patients. This glycosuria is in no sense an early phase of diabetes mellitus on account of its slight degree, its intermittent nature, its non-progressive course, and its independence of diet. In neither case did a large carbohydrate meal lead to the appearance of sugar in the urine. The intermittent nature of the glycosuria distinguishes the cases from diabetes innocens, and it is of interest that one of the cases recorded by H. Salomon[11] in his original communication on diabetes innocens complained of polyuria, and did not therefore perhaps belong to his group. Apart from the case described by Mackenzie Wallis and Roper, the only group of cases to which our cases bear any resemblance are the intermittent glycosurias observed in acromegaly. Sir Archibald Garrod[12] has written that the glycosuria in some cases of acromegaly is intermittent "although the patient's diet was by no means poor in carbohydrate." In the same context he notes that "in the newer literature of pituitary tumours, since 1886, Borchard found no record of glycosuria apart from acromegalic symptoms." The chemical examinations of the blood sugar establish the importance of these small traces of glucose occasionally found in the urine in these patients. These researches indicate a lower sugar tolerance in both cases and a lowered leak point in one case, and they further lead to the prospect of new light being thrown on this aspect of sugar metabolism.

In the present state of our knowledge the positive Loewi's reaction observed in Case 2 is to be regarded as an indication of a polyglandular dystrophy, and not necessarily as a sign of pancreatic disease. The association of pancreatic disorder with acromegaly is referred to by several writers (v. Falta), but in our patients there was no evidence of pancreatic disease other than the glycosuria; the diastase reaction was normal in both.

Summary.

The two patients here described appear to be examples of a pituitary dystrophy comparable to those clinical cases of thyroid dystrophy in which there is no marked change in the size of the gland and no distinct clinical picture of either hypo- or hyperfunction. From their past history neither case seems to be progressive, though Case 2 is liable to periodic variations. These patients are not therefore regarded as early cases of acromegaly or other recognised pituitary syndrome, but rather as persons in whom the pituitary is functioning irregularly and perhaps at times excessively. We believe that cases of the type here described have not been previously recognised. The two patients are alike in their salient features, and they do not fit into any of the subdivisions into which Cushing divides his five main groups of dyspituitarism. The interest of the cases does not lie in the possibility of their representing a group of dyspituitarism that has hitherto escaped recognition, but depends on the fact that such cases may lead to the recognition of clinical phases of pituitary activity that bridge the gap between physiological and pathological states. When this borderland has been explored the earliest stages of progressive pituitary disorders will be more easily recognised. Cushing remarks that "it would be precocious to make a diagnosis of 'acromegaly' before enlargement of the acral parts of the body occurs. Still it would be possible." Though our two cases are not regarded as early cases of acromegaly, they do bring nearer the possibility that Cushing foresees.

We wish to thank Dr. Langdon Brown for permission to make use of his observations on Case 1, when the patient was under his care in the autumn of 1919, Mr. Foster Moore for his examination of the fundus oculi of both patients; and Mr. George who gave us the advantage of his special technique in the measurement of the pituitary fossæ by X ray photography. Dr. E. I. Lloyd, house physician, was responsible for the care of the patients and for carrying through the routine of examination. We are indebted to Dr. Drysdale nission to publish these records of his cases.

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THE CULTURAL DIAGNOSIS OF ENTERICA IN INOCULATED INDIVIDUALS.

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THERE appears to be an impression that preventive inoculation against enterica diminishes the chance of recovering the causative organism from the blood. Thus, in a recent paper by R. P. Garrow,[1] entitled "The Myth of 'Atypical' Enteric Fever," with the argument of which I am in sympathy, in substance at least if not in detail, the following statement occurs:—

> "The difficulty of recovering enteric bacilli from the blood of inoculated soldiers is well known, even in the early stages of illnesses which clinically resemble enteric."

Is this a well-known fact? If so, I am not aware of any published data in its support. In bacteriological circles on the Western front during the late war it would appear that a similarly pessimistic view was held. Thus A. E. Webb-Johnson,[2] writing of his experiences at a stationary hospital in France, remarks:—

> "With regard to inoculation there is another point, which is possibly one of the most important. The specific bacteria are not found in either blood, fæces, or urine with anything like the same frequency nor in such numbers as in the non-inoculated, since the microbes are killed more rapidly and effectually, owing to protective substances being in the body ready for the attack."

The fostering of such views gave, I imagine, the impetus to that concentration on agglutination tests which formed such a feature of enteric diagnosis in France. Largely on that basis of diagnosis cases of enterica have been analysed from the standpoint of clinical syndrome, and for some time it has been current teaching that inoculation profoundly modifies the type and severity of the attack in inoculated individuals. With this aspect of the case I am not immediately concerned, but I hold that any comparative analysis of clinical syndrome or of incidence and mortality statistics in inoculated and uninoculated individuals must, to be above all reproach, be founded on a culturally diagnosed series of cases.

Analysis of 373 Cases in American Army.

This has been done in a recently published and most valuable article by the late Major V. C. Vaughan,[3] of the United States Army, whose conclusions are in agreement with those of Garrow (loc. cit.). This author submits with full bacteriological particulars a clinical analysis of 373 cases of enterica (mainly typhoid) which occurred among American troops in France, all of whom had been inoculated with the triple vaccine. For the purpose of his analysis the following proviso was laid down:—

> "No case has been accepted for our statistical study as being undoubted typhoid or paratyphoid fever unless the causative organism has been isolated either from the urine or fæces, or preferably from the blood. I recognise that the finding of the typhoid or a paratyphoid bacillus in the fæces alone does not establish a diagnosis, but have assumed that this finding, together with the presence of characteristic clinical symptoms of the disease and with negative blood cultures, form sufficient evidence on which to base a diagnosis."

A series of 270 cases in which *B. typhosus* was recovered from the blood or excreta (180 by blood culture) is taken for the main clinical study. His conclusions cannot be summarised here, and I need only say that the results of the analysis went to show that vaccination had not altered the essential characters of the disease.

(*Continued from previous column.*)

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> "The most striking feature of the disease in the inoculated is its almost classical resemblance to the old typhoid as we know it in the unvaccinated. Not only was this resemblance true on paper, but it was likewise true at the bedside."

No convincing evidence was found that vaccination lessened the chance of finding the infecting organism, and in fact Vaughan's positive cultural results from blood, urine, and fæces reached remarkably high figures, as we shall see. Some of the bacteriological data are of great interest, and I propose to consider them in the light of certain data from the Mesopotamian laboratories now published for the first time. Of Vaughan's series of inoculated individuals 274 were submitted to blood culture (repeated if necessary) with a yield of 180 positive results—viz., 143 at first trial, 25 at second, 3 at third, and 9 at fourth. Blood culture was successful in the first week in 65·7 per cent. of trials, in the second in 54·7 per cent., in the third in 46·7 per cent., and in the fourth in 21·7 per cent. The urine was cultured in 109 cases with positive results in 33·9 per cent., and of 270 cases in which the stools were examined no fewer than 193 (70·2 per cent.) were successful. Simultaneous blood and fæces cultures were made on 150 cases in successive weeks of the disease, and the results showed that during the first week the chance of success by stool culture was about two-thirds of that obtainable by blood culture, whereas in the second week the chances were about even. In the third week stool culture gave a somewhat better chance. From the third week onwards the value of both methods decreased. To summarise, Vaughan's series of 373 cases of enterica in inoculated troops comprised 270 cases of culturally proved typhoid, 9 cases of culturally proved paratyphoid A, 23 of paratyphoid B, 12 classified as paratyphoid "indeterminate," and 59 cases of "clinical enteric" which did not yield to bacteriological inquiry. Vaughan's series of 373 cases must be regarded as a very specially observed and repeatedly investigated class, and it is not surprising that the yield of positive isolations reached the high figure of 84·1 per cent. all over.

Blood Culture Results from Mesopotamia.

With the varying conditions obtaining in a wide and scattered front such as we had in Mesopotamia, a figure such as this was not to be expected, but I am quite satisfied that even this figure may be attainable (and indeed was approached) in special circumstances where ward and laboratory act in partnership and all forces are concentrated on the diagnosis of enterica by isolation of the causative organism. I have summarised elsewhere[4] some of the bacteriological statistics in connexion with enterica as met with in Mesopotamia, and I may simply repeat here that we had two classes only of notified enterica—viz., (1) confirmed enterica (isolation of T., A., or B.) and (2) clinical enteric group or E.G. Diagnosis by agglutination methods was not accepted officially and was not practised. During the period October, 1917, to December, 1918, of 1577 cases of notified enterica in British and Indian troops, 734, or 46·6 per cent., were confirmed by the laboratories (1039 British cases yielding 36·9 per cent. of confirmations and 535 Indian cases yielding 56·8 per cent. of confirmations). When all the circumstances are considered the figures are, in my opinion, highly creditable to the Mesopotamian bacteriologists and, as I have indicated, higher figures up to 70 or 80 per cent. were reached in certain hospitals dealing with small but thoroughly investigated series. Now, what facts emerge from a consideration of these cultural results in relation to previous inoculation? From my notes of the Mesopotamian laboratory returns I have abstracted the cases of successful blood culture for the period August, 1918, to January, 1919 (six months). I find that of 139 cases diagnosed by blood culture 78 (viz., T. 22, A. 38, B. 18) were inoculated men, 28 were returned as not inoculated (T. 19, A. 5, B. 4), and 33 were set down as "no pay-book entry" (T. 15, A. 14, B. 4). Thus of the total at least 56·1 per cent. yielding positive blood cultures were definitely inoculated men; 35 had received T.A.B. vaccine in 1918, the year of their attack, 24 had received their last dose in 1917, 17 their last dose in 1916, and 2 in 1915 (probably typhoid vaccine only). There would, therefore, appear to be no justification for the assumption that in a mixed group of inoculated and uninoculated men it is the latter which are most likely to yield positive blood cultures.

Blood Culture and Period of Disease.

One other point may be usefully referred to here. Unsubstantiated statements have been made with regard to the duration of the bacteriæmia in typhoid and paratyphoid infections respectively as affecting the chance of successful blood culture. Accurate data on this matter can be obtained only by a very special investigation involving repeated blood culture in a series of culturally proved cases (by blood or otherwise), and so far such data are not forthcoming. It may, however, be of interest to bring forward certain figures connecting successful blood culture with period of disease in typhoid and paratyphoid infections respectively; I have notes of 102 cases of typhoid, 84 of paratyphoid A, and 26 of paratyphoid B. The results in 4-day periods are as follows:—

	No. of cases diagnosed of		
	Typhoid.	Para. A.	Para. B.
Between 1st and 4th day	11	12	8
" 5th " 8th "	51	46	12
" 9th " 12th "	26	20	2
" 13th " 16th "	8	3	3
17th day and afterwards	6	3	1

Assuming that the great majority of these cases arrived in hospital towards the end of the first week of the disease the distribution in time of the various diagnoses made would seem to show no material difference whether *B. typhosus* or *B. paratyphosus A* was the infecting organism. The figures for *B. paratyphosus B* are too small to be of significance.

Discussion and Conclusion.

Though I am unable to find any support for the assumption that in the inoculated individual who contracts enterica the degree and duration of the bacteriæmia are altered to the consequent detriment of successful blood culture, I must admit the plausibility of the assumption. R. L. Stone[5] has shown that typhoid bacilli injected intravenously into immunised rabbits disappear from the blood and tissues (except possibly the gall-bladder) in 24 hours, whereas in normal rabbits similarly injected bacilli may take ten days or more to disappear. Doubtless in the great majority of inoculated individuals who ingest typhoid bacilli some mechanism of this kind is at work to prevent infection. What part is played in this disappearance by bactericidal bodies in the blood and tissues must be left at present an open question in view of some recent divergence of opinion on the question of increased bactericidal antibody-content in the blood of animals immunised against *B. typhosus*. On the other hand, we must bear in mind that neither in the individual nor in the mass is immunity absolute. Even under the most rigidly controlled laboratory conditions, when large series of animals are taken, no antigen will produce an immunity which protects 100 per cent. of the immunised against a dose which kills 100 per cent. of the controls. The experiments of S. Rowland[6] on immunisation of rats against *B. pestis* may be consulted on this point.

Under actual military conditions, although some approach to constancy of antigen and degree of immunisation may be realised, there can certainly be no constancy of the test dose or of the individual human factor. The results in the rabbit, an animal naturally insusceptible to typhoid fever and artificially educated to deal with *B. typhosus* introduced into its circulation directly, need not, in my view, have their strict counterpart in the vaccinated man who manages to contract by another channel of infection the germs of a disease to which his race is naturally susceptible. In the light of Besredka's recently promulgated views on immunity in enteric infections, the explanation may be found in inefficient immunisation of the intestinal epithelium or in a breakdown of what amount of immunity it may have acquired. The disease would then in all probability proceed on ordinary lines.

Vaughan (loc. cit.) in the search for possible explanations of the occurrence of typhoid in inoculated American troops, makes the following, among other suggestions. The vaccinated person takes into his interior probably large doses of the infecting bacilli, the majority of which he is capable of dealing with. Some, however, may find a nidus in the gall-bladder (as in the immunised rabbit) and there proliferate.

> "The numbers of organisms that are continually discharged in the bile and resorbed through the intestinal mucosa call on the immunity mechanism for constant and exhausting action."

When to this antibody-exhaustion is added the fatigues and hardships of war with its attendant diarrhœal troubles, the chances of an ultimate systemic infection are enhanced. This view, which would attribute a systemic infection to a breakdown of immunity in a carrier presupposes some evidence of intestinal trouble preceding the attack, and in this connexion Vaughan notes that of 104 inoculated men who contracted typhoid fever 60 per cent. had antecedent diarrhœa. It was Vaughan's opinion that two of the chief causes of typhoid fever among vaccinated American troops were (1) the ingestion of overwhelming doses of the infecting organism, and (2) loss of resistance and antibody-exhaustion due to the exposures of military life. It should be mentioned that the majority of Vaughan's cases had received the saline triple vaccine and a minority the lipovaccine. In a non-vaccinated population of all ages the variety of clinical forms in which enteric disease presents itself has long been recognised. Whether in a vaccinated population there occurs a relatively greater proportion of mild cases among the attacked than would be found among the attacked of a non-vaccinated population must be determined on a basis of cultural diagnosis. The practicability of such diagnosis is not, so far as present evidence shows, enfeebled by previous inoculation.

In conclusion I may add that I have been in communication with Sir William Leishman on the question ventilated in this note. Unfortunately it may be some time yet before the relevant data can be extracted from the medical case-sheets and laboratory files of the Western front. Sir W. Leishman informs me, however, that bacteriologists in France certainly supported the views I have attributed to them in the present communication. The question is of high theoretical and practical importance, and the publication of this note may, I hope, stimulate further inquiry.

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TREATMENT OF THE CRIPPLING DISABILITIES OF CHILDREN.

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What are the main crippling disabilities?—In every list of cripple children, whether compiled in this country, in America, or on the Continent, three main groups constitute the bulk, and do not vary much in their proportions: (A) Deformities congenital or acquired; (B) paralyses; (C) tuberculosis of joint and bone. Of 1130 cases under treatment in Shropshire and North Staffordshire in 1919, and listed in Birmingham in 1911, there were: Group A, 35 per cent.; Group B, 32 per cent.; Group C, 28 per cent.; various, 5 per cent. Of 12,496 cripple children of whom the writer has been able to obtain particulars, in 35·4 per cent. the crippling disability is *non-pulmonary tuberculosis*, and in 52·5 per cent. it is of the A or B group. The total number to be dealt with is very large; the inquiries as to cripple children, quoted in the report of the chief medical officer of the Board of Education for 1919, give returns averaging 8·6 per 1000 school population, and it is clear that many of these returns are incomplete and give only a fraction of the true proportion.

Is there failure in the treatment of these disabilities?—At present the failure is exceedingly great: the prin- asons are as follows: (1) the cases do not, as a t into touch with efficient treatment early enough; (2) many of the cases never get efficient treatment at all; (3) a great majority of the cases suffer for lack of after-care. Every neglected congenital deformity, every "hump-back," every joint deformity due to infantile paralysis, indeed, the great majority of all cases crippled by this disease, are examples of one or other, or even of all, of these failings.

Is the present system to blame?—There is no system! It is the absence of any organisation, even of any general agreement as to organisation, that makes the treatment of the child threatened with crippledom so ineffective. Some cripple children go to the union infirmary and stay there; they often have no education, and generally no treatment unless they are acutely ill, and then often only for a short period at the nearest general hospital. These are not imaginary statements; they are based on common findings of the inquiry carried out by the Central Committee for the Care of Cripples. Some go to special hospitals for non-pulmonary tuberculosis, but, as a rule, only when they are definitely suffering from established tuberculous arthritis. To quote from a recent discussion by specialists in another sphere: "The specialist sees the difficult cases and the failures." Surely many cases of early tuberculous disease become difficult cases and lead to permanent crippledom merely because of lapse of time. That is typical of the failure of the present chaotic arrangements.

Typical Cases of Failure in Treatment.

Take an early case of *tuberculous hip.* A child develops a limp and cries at night. His mother knows, possibly the district nurse knows, perhaps he is even taken to the doctor. A limp and a cry or two, and for physical signs just limitation of movements of the joint in all directions, with a little flexional deformity from muscular spasm. There is no apparent sign of urgency. But actually there is *no time to be lost.* Prompt immobilisation of the affected joint, a bed in an open-air ward, and good feeding will prevent suffering, and will almost ensure, in perhaps nine months, full recovery, often without any permanent disability.

But only very few of these cases actually find their way into hospitals for tuberculous joints at this stage. The golden opportunity slips by, there is uncertainty, then delay, and the disease tightens its grip! Suffering and illness increase, the text-book picture becomes easily recognisable, the joint surfaces are destroyed, there is danger to life, treatment is now not a matter of months but of years, and the child at best will be a cripple. Actual instances without number can be given of children who have paid by their prolonged suffering and illness, their joint destruction and permanent crippledom, the extreme and needless cost of our present lack of means for early ascertainment and facilities for immediate treatment.

Take *infantile paralysis.* A child is feverish, perhaps very ill. One or two limbs seem powerless; the child is restless, in pain, and cries if touched. Perhaps some weeks later he is brought to a hospital and there given "massage and electricity" for a few weeks, or, if the child lives within out-patient reach, for months or years. Much recovery may occur even with this late and ineffective treatment, but the number of children needlessly crippled by preventable paralysis is very great. The profession as a whole has by no means yet realised the principle of ganglion cell rest as an urgent measure in the first stages of this disease, whether the onset of paralysis is associated with a feverish illness or not.

By the immediate immobilisation of the head, spine, and affected limbs, with correct posture[1] and undisturbed skin protection, the inflamed or poisoned cells are given the functional rest they need and cannot otherwise get. We know that even without that rest much recovery takes place (quickly or slowly); it is then reasonable to assume, as, indeed, Mackenzie's cases tend to prove, that with proper spinal and neuromuscular rest the recovery will be quicker, more extensive, and more often complete.

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[1] William Mackenzie: The Treatment of Infantile Paralysis, Melbourne, 1910; Robert Jones, THE LANCET, May 30th, 1914.

A *congenital deformity* is, of course, not quite so urgent a matter, but, none the less, the ultimate result is far better and can be obtained more quickly, with less disturbance and less pain, if the defect is treated as soon as it can be detected.

Scoliosis and other deformities which develop insidiously are also at first treated easily, later with difficulty or with only partial success.

In every branch of the work early treatment tends to prevent crippledom, to forestall illness and suffering, and to eliminate the need for operation.

It has been stated that some cripples never get efficient treatment at all. How is this? It is due to lack of suitable provision for their needs, for the work cannot be done on an adequate scale by the general hospitals. The cases are slow and tedious; they need a country hospital with open-air wards, splint and appliance workshops, educational facilities, and so on. Means must be available to ensure the accurate fit and comfort of a splint, frame, plaster, or appliance, and workshops where these various needs can be supplied quickly for each case, to the exact specification and under the superintendence of the surgeon, are of the very greatest advantage. General education and handicraft training are required for these children while in hospital, for otherwise many have no teaching for very long periods, and thus have an educational as well as a physical handicap. The joint consideration and proper coördination of treatment and education is very important.[2]

Again, in these cases there is no natural convalescence. Operations, manipulations, and even prolonged retention in hospital do not finish the treatment. Without thorough after-care deformities will inevitably recur, club-feet, though over-corrected, will relapse, posture, gravity, and uneven muscle-balance will cause deformity in cases of infantile paralysis, and tuberculous hips will insidiously change abduction into adduction.

To sum up, failure is due to want of (1) early treatment; (2) efficient treatment in suitably sited, equipped, and staffed hospitals; (3) thorough after-care.

A Proposed Scheme.

Outlines of a proposed national system to meet these needs have been worked out by the Central Committee for the Care of Cripples as follows:—

I. A central coördinating body which should work with the Ministry of Health and the Board of Education.

II. Local committees for the care of cripples in every district.

III. Hospital schools. The provision in England and Wales of an adequate number of hospital schools for crippled children with open-air wards.

IV. Each hospital school should be run under its own local committee, with its own teaching staff and handicraft workshops. Working in direct union with the hospital school should be:—

(*a*) Out-patient clinics for—(1) The examination of children sent up for consultation; (2) the treatment of cases which can be effectively treated as out-patients; (3) the after-treatment and supervision of children discharged from the hospital school; (4) the maintenance of touch with old patients so that advice and help may be given as to suitable employment.

(*b*) Invalid schools, day and residential, for the minority of children who have not been cured or benefited sufficiently to enable them to attend ordinary classes. In large towns special day schools will fill the need; but for children in other districts, who are prevented from receiving education by their persisting disability, residential schools are necessary. For the sake of simplicity and economy these should be part of the establishment of the hospital school, but in a separate wing. These children would be drafted into this when fit to leave the hospital, but would continue to benefit from the teaching, handicraft shop, and surgical supervision.

V. It is vital that those responsible for the treatment should be experienced in orthopædic work. This applies both to the surgical staff and the hospital and after-treatment sisters.

VI. There should be provision for paying patients.

VII. Wards should be available for adolescent and adult cripples and persons suffering from injuries needing orthopædic treatment.

VIII. Where efficient organisations for crippled children exist these would be welcomed in the scheme which should be sufficiently elastic to cover some diversity of method.

The essential principles of the proposed scheme are those already stated, and aim at treatment, very early, very efficient, and very complete.

The suggested hospital and clinic organisation is developed from an existing unit which has been doing this work in a county area for a good many years. There the organisation was gradually developed to meet the difficulties already mentioned, the tragedy of children coming into hospital with established disease, deformity, and paralysis, and of others readmitted with relapse owing to the impossibility of keeping touch with all discharged cases, of whom many live at considerable distance.

Hospitals for Cripple Children.

The essence of the system is the establishment of hospitals for all types of cripple children to serve a more or less definite district—say, one, two, or three counties; hospitals which should accept responsibility for every cripple right through the district, organise team-work, and enlist in the team every doctor and every health worker. Success depends on a true spirit of coöperation.

Scattered orthopædic clinics.—The working of scattered orthopædic clinics is described in a leaflet used in connexion with the organisation of clinics in another district.

After describing the work of the children's section of the hospital in the treatment of all types of crippled children this leaflet goes on to say:—

> "But, if the hospital is to do its work well, it must achieve not only early treatment but also thorough after-care. Everyone is familiar with patients who have suffered from one or other of these conditions, have had a period of hospital treatment, have apparently been put right, but two years later have been just where they were before, solely as a result of deficient after-care. The very great majority of children are able to become out-patients while still in plaster-of-Paris or wearing appliances. The renewal of the former, and the upkeep, readjustment, and replacement of the latter mean constant work, and at the same time careful watch must be kept for any sign of relapse. This work must fall to the lot of the hospital staff who have carried out the active treatment, and have the enormous advantage of a workshop where any repair, alteration, or renewal of appliance or boot may be done quickly and to the exact requirements of the surgeon.
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> It was for this after-care, which has to be kept up for years, that the local orthopædic clinics were started in connexion with the Shropshire Orthopædic Hospital, for it was found quite impossible to bring all the old cases up to the hospital frequently. Their practical value was quickly and abundantly proved. Here a number are already working, and it is proposed to set them up throughout the area served by the hospital—i.e., principally Berks, Bucks, and Oxon.
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> In starting a clinic a suitable centre, generally a market town, is chosen, the county medical officer of health and the local doctors are consulted, so that, if possible, it may be held in the cottage hospital or in rooms which are used for infant welfare or other health purposes. Representatives of the B.R.C.S., Infant Welfare, Nursing Federation, or other voluntary associations are asked to form a local committee to run the clinic, help in its work, contribute to the expenses, and act as almoners. This committee might well become a branch of the Invalid Children's Aid Association. Sisters specially trained in orthopædic work visit the clinics, which are held every week or every fortnight, according to the need. They see the children coming from the surrounding district and patch or renew their plasters, make sure that their appliances and boots are effective, and so on. These after-care sisters live at, or near, the hospital, and follow closely the treatment of any cases from their districts which are in the hospital, so that there may be no break in continuity of purpose. The sisters never initiate treatment, their work is to carry out the treatment ordered by the surgeon. The latter visits the clinics to see all the cases once every eight weeks, and makes a special additional visit when necessary. Children who are not actually sent up by their doctor are referred to him before their treatment is commenced. A list of the regular visits of the surgeon is sent to the doctors in the locality, who are thus brought into touch with the work of the hospital, and can readily refer cases for treatment or consideration. They can keep in touch with a patient right through, for they are always very welcome at the clinics or the hospital.
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> This coöperation is really an extension of team-work, and means much to all concerned. To the hospital it means the possibility of early treatment and thorough after-care; to the doctors it is helpful in that, otherwise, the management of cases requiring much plaster work, all sorts

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[2] The Care of Cripple Children, Brit. Med. Jour., May 22nd, 1920.

of apparatus, special boots, &c., is difficult and troublesome; to public health representatives it is valuable, as the work concerns, mainly, children for whose treatment they are responsible."

This system has proved completely successful. Cases are now sent to the local clinics or the hospital in the early stages; this change is progressive, as the parents, doctors, school medical officers, nurses, health visitors, &c., realise more and more fully what is being done for the various conditions and the importance of losing no time; and the after-treatment is carried on till all danger of relapse is past.

To the doctors the clinics are a great help. The cases treated need plasters and appliances often for very long periods, and these require constant care, alteration, or renewal, work practicable when one is always at it and there are hospital workshops at one's elbow, but in private practice or for a general surgeon almost impossible. Perhaps the commonest cases attending the clinics are those of past acute poliomyelitis with resultant paralyses and deformities. In a young child there are years of treatment by plaster and appliances ahead: first, the correction of deformities and the prolonged postural treatment of the muscles; then the consideration as to further measures to restore lost muscle function, or to stabilise joints. And often there is a time of waiting until the child reaches an age when an operation which is required can best be carried out. It is, for example, disadvantageous to do an arthrodesis until the subject is about 8 or 10 years old. Sir Robert Jones has said: "There is plenty to be done during the waiting, and if this be done well perhaps no operation will be needed."[3] Even long-neglected cases of this disease often show astonishing improvement when paralysed muscles are treated by constant relaxation for long periods with simple re-education.

All this work is difficult and tedious and hardly practicable except by means of local clinics. They are really extensions of the hospital out-patient department, and serve to bring the hospital within easy reach of the parents and the doctor. A frequent long journey with a cripple child is quite impracticable for most working-class parents who have a house and perhaps other children to look after. Unless a clinic is available within a reasonable distance of their home they sooner or later fail to bring the child up for treatment or supervision.

Early ascertainment.—A deformity or the warning sign of a crippling disease may be noticed first by a doctor, a midwife, a school medical officer, or infant-welfare worker. It is evident (1) that all these people must appreciate the importance of immediate action; (2) that ready means of getting the cases to hospital or clinic quickly must exist. It is only by the actual intercourse between hospital staff and primary health workers affected by the district-working hospital and its clinics that the necessary knowledge is attained and facilities for prompt diagnosis and treatment provided.

The problem in big cities.—In London and other big cities the problem is analogous, and can be solved in the same way. Instead of one central hospital school there might well be institutions of similar type in the country attached to orthopædic hospitals or orthopædic departments of general hospitals. Instead of a large rural district with a population a quarter or half a million, a district of the town of somewhat similar population might be assigned to each unit. The hospital would be responsible for working its district on lines which would ensure early ascertainment, continuity of treatment, and thorough after-care.

Finance.

Establishment of hospitals.—Total new construction will often be avoidable. Many suitable or adaptable hospitals exist, either already devoted to work of this type, old military hospitals, or those still in use by the Ministry of Pensions. Where new building is necessary it should be of a simple type, and have the twin virtues of low establishment and low maintenance costs. Such a hospital has been described elsewhere.[4] It should be of semi-permanent construction, for even so it may outlast its author's generation, and eventually be considered quite out of date and ineffective. Establishment grants from the Ministry of Health are available for the proportion of beds devoted to non-pulmonary tuberculosis.

Maintenance.—If the hospital school is "approved" by the Board of Education and by the Ministry of Health the maintenance costs can be claimed from the local authorities responsible for each case, provided they authorise the admission. The authorities can collect what is fair from the parents, and can demand from the Ministry of Health and the Board of Education 50 per cent. of their own expenditure. The average weekly hospital expenses can be divided by the number of in-patient children. The sum thus arrived at can be charged to the authorities; the charges for cases coming under the education authorities must first be approved by the Board of Education.

The responsible authorities are: (1) For all tuberculous cases and for all children under school age, the local public health authority; (2) for children of school age (non-tuberculous), the local education authority.

Conclusions.

1. There are a great many cripple children in this country and a still larger number of adults whose crippledom dates from childhood.

2. Most of these cases need not have been permanently crippled if they had been given adequate treatment at an early stage of their disability.

3. Of cripple children, about one-third suffer from non-pulmonary tuberculosis, and about two-thirds from other crippling conditions.

4. The need for the adequate provision of treatment for these disabilities is very great; it has been recognised and provided for by legislation.

5. Unless a coördinated and comprehensive policy is adopted there will be a muddle—in some places a good scheme, in others a bad one, in others, again, for a long time none at all.

6. For the treatment truly to meet the need it must be (*a*) very early, and so largely preventive; (*b*) efficient in suitably sited, equipped, and staffed hospitals; (*c*) completed by thorough after-care.

7. Very early treatment and thorough after-care can only be achieved by a hospital centred in a "district," and responsible for working that district by coöperation with other health workers.

8. Every area in the country must be served by a hospital for cripple children.

9. The special hospital conditions necessary for the various types of crippling disease, paralysis, or deformity are almost identical. A hospital satisfying the needs of the tuberculous cripple will provide all that the others require. The "local clinic" organisation is needed for all types.

10. In certain places hospitals for all varieties of cripple children already exist. Several already have a local clinic system; in others it is as yet undeveloped. In one district, where the organisation has been working for some years, the results have been most satisfactory.

11. In any district where there is a hospital for non-pulmonary tuberculous cases, and no provision for other types, that institution should enlarge its scope. To set up a separate hospital and clinic organisation for the non-tuberculous cripples would be foolish and extravagant; to leave them without provision a great deal worse.

12. The hospital which exists to deal with cases sent from a distance, with arthritis deformity or paralysis established, will become a thing of the past. Such hospitals have done magnificent work, and have been the honoured teachers of us all; but the treatment of crippling disabilities is becoming more and more of a preventive nature.

13. The establishment of this system of treatment means to substitute early and thorough treatment for what has hitherto been tardy, difficult, costly, and incomplete.

14. The expense will now be definitely associated with this treatment instead of hidden in a mass of other work, but it will be justified on economic grounds alone; many who would otherwise be sources of loss will thus become earners and producers.

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[3] Brit. Med. Jour., Dec. 9th, 1911.

of Cripple Children, Brit. Med. Jour., May 22nd, 1920.

OSTEITIS DEFORMANS?

BY FRANK ROMER, M.R.C.S. ENG., L.R.C.P. LOND.

With Observations by SIR W. ARBUTHNOT LANE.

IN the very clear and full description of osteitis deformans given by Sir James Paget, based on his observations of many cases, two points stand out—namely, the subsequent affection of the skull and other long bones and the comparative freedom from pain. I have had the opportunity of closely observing in the last four years the progress of an osteitis affecting the tibia, which from its likeness to Paget's disease caused many of us to regard it as such. Lately, I have come across cases showing deviations similar to the classical description of Paget's disease, which have caused me to wonder if there are not two distinct types of this condition.

Symptoms often differ in many well-known diseases without affecting the diagnosis, and I am writing this paper in the hope that other observers may have come across cases which, while resembling Paget's disease in certain particulars, show similar differences to the cases I propose to describe. The operative treatment, undertaken at my request, will be detailed by Sir W. Arbuthnot Lane; not only did it give instant relief to the pain, but was followed by the formation of healthy bone.

Three Cases Described.

The first case was that of a healthy man, 44 years of age. In June, 1915, he was descending a ship side in a rough sea by means of a Jacob's ladder. The drop was deeper than anticipated, and in landing he struck his right tibia on the gunwale of the boat. The pain at the time was exasperatingly severe, but passed off shortly; the shin, however, remained painful to the touch for about a month. In October a slight enlargement of the tibia became noticeable, together with a sensation of itching, unrelieved by scratching, as it appeared to be in the bone itself. The sensation of itching drew the attention of the patient to the small enlargement. A radiograph showed a small patch of osteitis. The patient had never suffered from syphilis, and subsequent blood-tests eliminated this as a possible factor. The patient ignored the condition till December, 1917, when the steady increase of pain and ensuing lameness, combined with the obvious enlargement of the upper end of the tibia, caused him to ask his colleague at Millbank Hospital, the late Dr. Cecil Lyster, to radiograph the limb. The radiograph showed the whole upper third of the tibia to be affected by an osteitis. By the advice of Dr. Lyster iodide ionisation was tried, but with no result.

Œdema was present over that portion of the tibia affected by disease. The pain varied from a dull ache to acute lancinating pains, running down the shaft of the bone. Exercise and such things as the vibration caused by railway trains or a motor-car increased the pain, which, like all bone pains, was invariably worse at night. To be roused at night by cramp in the calf of the affected limb was of constant occurrence and after the muscular spasm had passed off the bone would ache for hours. Pressure or light tapping during examination of the leg invariably set it aching. Rest might possibly have given relief, but the patient was attached to various military hospitals necessitating daily travelling, so was unable to lie up.

As the pain and lameness were affecting the patient's well-being it was decided to try the effect of an operation. This was done in February, 1918, and by the end of March the patient was about on crutches attending the surgical gymnasium at Millbank for special exercises. At the end of a month's sick-leave all pain had gone and he could walk without difficulty. In May he returned to duty and continued free from pain till the end of July. Towards the middle of that month the sensation of itching had returned in the middle third of the tibia and pain gradually took its place. A radiograph was taken and it was seen that the area of operation was filling up with healthy cancellar bone; the middle third, however, was showing signs of further osteitis. The pain and subsequent disability became so troublesome that the patient applied for a board and was invalided from the Service. Since the first operation had proved so successful it was decided to clear out the diseased portion in the middle third, and this was done in January, 1919. The subsequent history was much as after the first operation, and a radiograph shows healthy bone replacing the diseased area.

There has since been a return of pain in the lower third, but no definite osteitis can be detected at present. The patient gets about on a crutch stick, and, provided no undue strain or use is given the leg, suffers but little, and then only in the lower third. It is hoped that in the course of a few months' comparative rest he will be able to get about normally; but should the disease show definite signs in the lower third he will unhesitatingly have a further operation. Radiographs of the skull and other bones show no signs of disease. Cultures were made from the debris and found sterile, whilst microscopical examination merely showed the normal abnormalities of osteitis.

In another case, that of a lady, there is a definite history of trauma in which she struck her shin against the edge of a punt some 20 years ago. Within a few months enlargement of the upper end of the tibia was noticed, and the patient complained of severe pain. Radiographs taken at this time are singularly like those in the first case. The patient complains of cramp at night, and any attempt at walking causes so much pain that she scarcely attempts to get about. The tibia is now very thickened and bowed. No other bones have been affected. Operative treatment has been advised.

In a third case enlargement of the right side of the lower jaw followed a blow. The osteitis was limited to that portion of the lower jaw, and no other bones appeared to be affected.

Discussion.

The question arises whether these cases are merely a variation of Paget's disease or whether they are entirely distinct. In all three cases the cause was definitely traumatic in origin, whilst in true Paget's the origin is obscure and injury not mentioned as a factor. In the first two cases a period of 5 and 20 years respectively have elapsed and no other bones have become involved. This is distinctly against the normal course of osteitis deformans. Pain, which is practically negligible in the cases described by Paget, in all three cases under discussion has been severe. In fact, were it not for the pain the enlargement of the bone would cause no inconvenience.

The value of operatic interference has been so manifest, followed as it was by freedom from pain and growth of healthy bone, that one wonders whether similar operations would arrest the progress of the more ordinary type of osteitis deformans.

Observations by SIR W. ARBUTHNOT LANE.

At the first operation the inner wall of the tibia was removed along the upper two-thirds of its length. The structure of the tissue removed did not differ in any way from that with which one is familiar in osteitis deformans. On the second occasion a similar operation was performed upon the lower third of the shaft of the tibia.

I have seen several cases practically identical with this, in which in most cases the tibia, but occasionally some other bone, has taken on this condition, the adjacent bones being only affected when the changes in the ends of the diseased bone necessitated corresponding mechanical alterations in the bones with which they are articulated. Most of the discomfort or pain is due to the implication of the joints in the infective process. They all gave a history of a traumatic origin.

I see no reason to call the condition osteitis deformans since its clinical history is quite distinct.

Reviews and Notices of Books.

A CONSULTING SURGEON IN THE NEAR EAST.

By A. H. TUBBY, C.B., C.M.G., F.R.C.S. Eng. London: Christophers. 1920. Pp. 279. 15*s.*

IN 1915 the Army Medical Department decided on the appointment of consulting medical officers to serve with the A.M.S., and Mr. Tubby was one of the surgeons to whom this important post was offered. He received the offer on June 12th, 1915, and on June 20th was on his way to Egypt via Malta, where two of his colleagues were to be landed. Mr. Tubby had a wide experience; he served first in Alexandria, then at Imbros, Mudros, and the Gallipoli peninsula, then in Egypt again as consulting surgeon at Cairo; he was then sent back to Alexandria, visited Khartoum, and finally went to Palestine. In all these spheres he did varied and valuable work, and the book before us is a modest and unassuming record not only of his own labours, but incidentally of those of others. Like many another account of medical matters during the war the feature which strikes us most is the extraordinary powers of organisation and forethought which must be attributed to Sir Alfred Keogh, the Director-General, though it must not be forgotten that he was often served by excellent subordinates.

Mr. Tubby's account of the Gallipoli campaign is sad reading in so far as regards the sufferings of the troops, but it fills the reader with pride in his nationality. The camp at Cape Helles was anything but sanitary, despite all efforts to keep it so, and dust, flies, and lice—especially the last—tried the troops severely. Mr. Tubby quotes the simple remark of a captain, "Here am I, Lord —— and ——, with one hundred and fifty thousand a year and ——lousy." After the heat, the cold. In November, 1915, a sudden storm of rain at Gallipoli was succeeded by two nights' severe frost, and many cases of frost-bite occurred, some leading to amputation, especially amongst the Ghurkas. Possibly the most interesting part of Mr. Tubby's book is that dealing with the Palestine campaign—not that he ventures upon military details, but he gives various little touches which are very real. Thus he describes how when the railway from Egypt into Palestine was being made, the old road—the road that goes back to the ancient Kings of Egypt—was still employed. Progress was naturally slow and toilsome. Some unrecorded genius proposed laying down ordinary wire-netting on the sand to make a track, and this not only made marching easy, but afforded an excellent roadway for motors. The chapter called "The Consulting Surgeon in War" contains much valuable information and suggestion, and altogether the book is well worth reading.

INTESTINAL AUTO-INTOXICATION.

Contribución al Estudio de la Auto-intoxicación Intestinal. By C. J. DIAZ, Professor of Clinical Medicine, University of Madrid. Madrid: Hermanos Ruiz. 1920. Pp. 144. 3.50 ptas.

THIS is a concise and excellent little work of its kind and, coming from the pen of a distinguished author, will be perused with the attention and interest it well deserves. It is partly a compilation from, and commentary upon, the researches of other workers in the field of intestinal auto-intoxication, and partly an exposition of the writer's own views and experience of the subject, which are supported by clinical notes of nine cases under his observation. A large amount of contemporary literature is introduced, with comments, especially that of Lane, Hurst, Herter, Cammidge, Wells, Mellanby, and others in this country, and Combe, Schmidt, and Strasburger on the continent. The author criticises the methods of research into the mechanism, physiological and pathological, of fermentation and putrefaction, the action of toxic products formed in abnormal intestinal processes, and [illegible] absorption of lipoids. He considers that there [illegible] factors to be taken into account in eluci- [illegible] problems of intestinal auto-intoxication, the one corresponding to the chemical substances generated, the other following physical factors, and that the means which are at our disposal for coprological chemical analysis are sufficient to give a good general guide as to the processes which take place. The intestinal flora is as yet little understood, and the functions of certain micro-organisms are twofold, which detracts from the value of methods which rest exclusively on their identification. The author agrees with Oshima that the presence of dissolved albumin in the stools indicates lesion of the mucosa, and that intestinal putrefaction may occur without albumin in the dejecta, and he admits the existence of a dyspepsia, or rather a dystrypsia, from putrefaction in opposition to the "fermentative" of Schmidt and Strasburger. He considers that the fatty acids when absorbed are capable of producing symptoms of themselves, and not through withdrawal of alkali, and that, with the exception of indican, the exact quantity of sulpho-ethers in the urine has no significance. He conceives a "proteinæmic diathesis" which takes the place of the classical arthritism, and explains the transient hypertensions of the constipated by distension of the colon. There are several misprints, which do not, however, detract from the value of the book, such as animo-acids for amino-acids; this occurs several times.

A NATURALIST ON LAKE VICTORIA.

With an Account of Sleeping Sickness and the Tsetse-fly. By G. D. HALE CARPENTER, D.M., B.Ch., Uganda Medical Service. London: T. Fisher Unwin. 1920. With 2 coloured plates, a map, charts, and 87 illustrations. Pp. 332. 28*s.*

IN 1910 Dr. Hale Carpenter went to the north shore of Victoria Nyanja (not Nyanza as it is usually written; the author states that Nyanza "means nothing"). His object was to investigate the bionomics of the tsetse-fly, *Glossina palpalis.* The book is an attempt, and we think a successful and interesting attempt, to give an account of the life on the islands of the Victoria Nyanja, and of that group of islands lying at the north-west of the lake just south of the Equator. The author is primarily an entomologist, so that the chief interest centres round his observations in regard to insects. There are extensive observations on coloration of insects, illustrated by two coloured plates of model species of Planema with mimetic forms of *Pseudacræa eurytus.* The chapters on mammals, birds, and reptiles are confessedly not so ample. In the short space of not quite three years the author accumulated a wonderful body of observations of island life, and as Professor Poulton remarks, the observations recorded "are both loving and accurate." Apart from the earlier chapters on the Natural History of Sleeping Sickness, the most important, according to Professor Poulton, are those which add to our knowledge of *Papilio dardanus*, and the breeding experiments which brought final confirmation to the conclusions that the wonderful series of mimetic butterflies are forms of a single species—*Pseudacræa eurytus.* It appears that the African butterflies include what are probably the two most remarkable examples of mimicry in the world—*Papilio dardanus* and *Ps. eurytus.* To the purely medical reader the chapters which tell the story of sleeping sickness in tropical Africa will be the most attractive. The author concludes that in order to exterminate sleeping sickness the animals must be kept from each other—the Situtunga antelope from which the fly obtains the trypanosome, and the fly which inoculates the Situtunga with the trypanosome. To the naturalist proper the careful and many new observations on the coloration of insects and allied subjects and the discussion on mimicry will perhaps prove the most attractive part of the book; nor must the entrancing account of the doings of the totally blind reddish ant, the Dorylus or "Safari Ant," that lives entirely by hunting live prey, be forgotten.

Altogether, Dr. Carpenter's sojourn on the islands of Lake Victoria has yielded interesting results for the naturalist, and his written record of his work, his voyages by canoe, and descriptions of the scenery make the printed account pleasant as well as profitable reading, even to one not deeply versed in zoological lore.

DIABETES IN INDIA.

Being a Collection of Reprints from the *Indian Journal of Medical Research*. By D. McCAY, Major, I.M.S., Professor of Physiology, Medical College, Calcutta, and Others.

THE prevalence of diabetes mellitus in India is well known and presents a vast problem, which will require many years of detailed work before a solution is reached. The Imperial Indian Research Fund has wisely devoted funds for the purposes of the investigations recorded in the papers, and the authors of this contribution are to be congratulated on the results of the expenditure of much time and labour. A large number of interesting facts have been revealed. The first paper deals with the sugar in the blood and urine in the Bengali. The sugar in the blood of the normal Bengali is found to be 0·13 per cent., a much higher figure than that obtained in the normal average European, and largely explained by differences in the carbohydrate content of the diet in the two races. This excess of sugar in the blood leads to the deposition of fat, and eventually to glycosuria. The sugar tolerance of such individuals becomes lower and lower as the percentage of sugar in the blood increases and with the rising body-weight. Each individual, however, possesses certain narrow limits within which his blood-sugar concentration varies, as also the concentration of blood-sugar at which the kidneys begin to excrete sugar in abnormal amounts. It was found in examination of the urine of the Bengali that the well-known tests often gave indefinite results, and this was especially true of Fehling's test. This is not surprising when quantitative estimations reveal the normal variations of sugar in the urine as between 0·015 and 0·15 per cent. Further, there was no parallelism between the sugar in the blood and that in the urine in people of normal health, in those suffering from a-glycosuric diabetes, in different individuals suffering from varying degrees of glycosuria, or even in the same individual. The authors are of the opinion that the predisposing cause of glycosuria is a gastro-duodenitis leading to an exhaustion or actual inflammation of the pancreas and a disturbance in the internal secretion of that organ. The march of events leading to glycosuria as conceived by Major McCay is given in tabular form, and expresses very clearly his main conclusions.

The most interesting paper in the whole series relates to the causation of death in diabetes mellitus as met with in India. There is no evidence of actual ketosis, and the onset of diabetic coma (air-hunger) as met with in England. On the contrary, the patients almost invariably die of uræmic coma. This uræmic coma is the result of the functional derangement of the kidneys brought about by the continued passage of large quantities of sugar over a prolonged period. The onset of this type of coma is not necessarily dependent upon a definite pathological lesion of the kidneys. The whole of this work is unfortunately lacking in complete proof owing to the absence of post-mortem records—an insurmountable difficulty in the present social and caste conditions in India. However, numerous analyses of the blood are given to support this important conclusion. The last paper deals very thoroughly with the treatment of diabetes in India. One is struck with the ease in which a more restricted dietary removes the glycosuria even in severe cases. This is partly explained by the fact that diabetes mellitus in India is of a mild type, and differs from the severe form as met with in England, where death is due to true diabetic coma. Again, reduction of the carbohydrate in the diet does not lead to ketosis, and diacetic acid is rarely found. As early as 1913 the plan of inducing a raised glucose tolerance by gradually increasing the carbohydrates was adopted. This in essentials was the same plan of treatment as that devised by F. M. Allen, and worked out quite independently by McCay. The difference was that starvation as advocated by Allen was not ordered, simply because it was quite unnecessary in the treatment of the mild type of case met with in India. The observations recorded in these papers are of great interest, and the authors are to be congratulated on an excellent piece of work. That difficulties were overcome and such good results obtained reflects great credit on Major McCay and his stimulating influence on those working in his laboratory.

CHILDREN'S DREAMS.

By C. W. KIMMINS, M.A., D.Sc. London: Longmans Green, and Co. 1920. Pp. 126. 5s.

As Dr. Kimmins points out, little attention has been paid to the dreams of normal people since the psycho-analysts first applied their methods to this subject. Freud's *Traumdeutung* is based mainly on the dreams of his psycho-neurotic patients; and the gradually recognised importance of the study of dreams during the past six years has been due to their value in the exploration of the minds of those suffering from the psychoneuroses of war. In Dr. Kimmins's book we have a collection of dreams obtained from nearly six thousand children of various ages (from 5 to 16), in elementary, central, and secondary schools, in industrial schools, and in schools for the blind and deaf. The conclusions drawn from this important and fascinating study throw a vivid light on the inner lives of children (e.g., the elder girls' fear of strange people), on their waking desires as fulfilled in dreams (children in industrial schools have more idealistic and exciting dreams than children whose lives are more fortunate), and on the changes in the dream content with differences in age and sex, and with deafness and blindness. The dreams of the children of eight years of age and over were recorded by themselves, and it is interesting to note that their power of graphic description of their dreams "so far exceeds their ability in ordinary essay writing on topics selected by the teacher ...... that it would appear as if some fresh mental element had come into play." The matter is, as Dr. Kimmins observes, worthy of further investigation.

DIRECTIONS FOR A PRACTICAL COURSE IN CHEMICAL PHYSIOLOGY.

Fourth edition. By W. CRAMER. London: Longmans, Green, and Co. 1920. Pp. 138. 4s. 6*d*.

THIS excellent and concise handbook has now reached its fourth edition—a sufficient recommendation of utility. The book is small and its scope is necessarily limited, but it embodies most of the recognised tests in general use, as also the practical demonstrations, and it is specially designed for medical students possessing only an elementary knowledge of organic chemistry. The tests for various substances in the blood, gastric contents, urine, &c., are clearly set out, and particular attention is given to the small technical details which are so essential for the successful application of such tests. A pleasing feature of the book is the array of questions which accompany certain tests, as also the excellent notes pointing out the fallacies of the tests. The author is to be congratulated on the demonstration of coagulation of the blood, the description of which is clearly and concisely put. The student is given a clear insight into the phenomena of coagulation without the use of a cumbersome and meaningless terminology.

The importance of the maintenance of acid and base equilibrium in the body is also dealt with in a separate chapter at the end of the book, and a difficult subject is made quite clear by the presentation of several tests and demonstrations. The book should appeal to the general practitioner, especially that part dealing with pathological metabolism. The tests described can be carried out without the necessity of elaborate apparatus or a well-equipped laboratory. The description of acetone bodies in the urine and the tests for their presence is well done and in accord with modern views. The author introduces his own test for the detection of sugar in normal urine, but omits all mention of Benedict's test, which is far superior to some of those described, and should be used in preference to that of Fehling. The book is of small size, and from its undoubted excellence, apart from its price, is to be recommended as a laboratory manual.

MEDICAL EXAMINATION OF AIRMEN.

By Dr. MAUBLANC and Dr. RATIÉ. Translated by NORMAN BALL, M.R.C.S., L.R.C.P. London: John Bale, Sons, and Danielsson, Ltd. 1920. Pp. 88. 5*s.*

THIS little book in its original form was intended as a practical guide for use in the examination of members of the French Air Service and its recruits. Wing Commander Martin Flack contributes an introduction to the English translation without discussing French methods at any length. The authors state that their methods were applied in systematic fashion to every recruit as well as to pilots who arrived from other sections and to applicants for rest-leave, but it is, unfortunately, not very easy to glean from the text complete details of this systematic examination. They express the hope that the book will help the practitioner who may, without previous experience, suddenly be called upon to act as doctor to a flying squadron. In England, at any rate, such a condition is not likely to occur now that systematic courses of instruction and lectures are given to all medical officers charged with the care of flying personnel. The book, indeed, gives the impression of having been compiled during the stress of war and to take little notice of contemporary work on medical aviation. No doubt the authors have themselves moved forward since then in their methods and practice, and we should like to see any set of forms now in use for the examination of pilots in flying, together with proper statistical tables of the results.

Dealing with the physical examination of candidates, the authors advocate the anthropometric factor of Bouchard and do not mention the work of Professor Georges Dreyer. They follow the physical measurement of a candidate with an inquiry into his family history, and apparently recommend that if this is unsatisfactory on account of epilepsy, madness, paralysis, or tabes he should be rejected. It seems a waste of time to go to the trouble of taking physical measurements if the applicant is to be rejected on other grounds. The methods of examination of the heart are not described, and reference is made to instruments unfamiliar to the practitioner in this country. Here some explanatory notes with diagrams and instructions would have been useful. The all-too-short description of a special apparatus for measuring equilibrium is of interest. With these provisos the book is one that can be recommended to English readers for its conspectus of air medicine in France.

ADVANCED LESSONS IN PRACTICAL PHYSIOLOGY.

For Students of Medicine. By RUSSELL BURTON-OPITZ, S.M., M.D., Ph.D., Associate Professor of Physiology, Columbia University. Illustrated. London and Philadelphia: W. B. Saunders Company. 1920. Pp. 238. 18*s.*

THIS excellent guide to experimental physiology is essentially on the plan of teaching practised in English schools of medicine. It is made up of 50 lessons, each for a practical class lasting three hours; 9 lessons are allotted to muscle and nerve, 3 to blood, 13 to heart and circulation, 6 to respiration, 4 to nervous system, 7 to the sense organs, 5 to digestion and absorption, and 3 to excretion—a very judicious and well-balanced distribution. The subject is presented in a practical manner—practical in the sense that many of the exercises lead up directly to the future clinical work of the student. Obviously in American schools of medicine the conditions under which a student is allowed to perform experiments—blood pressure, sections of nerves, fistulæ, tracheotomy, ligature of vessels, &c., under proper anæsthetic safeguards—are far different from those allowed in this country. In the higher grade medical schools in the United States about 300 hours are allotted to physiology—exclusive of physiologic chemistry and clinical physiology or experimental medicine—about 180 hours being [illegible] to practical work and 120 to lectures and con[illegible] Each student must devote 10 hours per week to physiology in an academic session of 30 weeks. At the end of the book a list is appended of over 30 demonstrations given in connexion with the preceding lessons. These include demonstrations on Pflüger's law, electrical phenomena of muscle and nerve, galvanometers, electro-cardiography, polygraph, decerebrate pigeon and cat, lesions of cerebellum, semicircular canals, removal of thyroid, parathyroid, and suprarenal glands, &c. The text is illustrated with 213 figures, some in colour. Perhaps Zöllner, the astronomer of Leipzig, would have preferred his name printed with umlaut instead of as on pp. 204 and 238. Any student who works carefully on the lines here laid down will find that he has acquired an admirable training for his future clinical work, and indeed for other subsequent subjects of his medical career. This is a comprehensive, judicious, well-selected and admirably practical course on experimental physiology—a meet companion to the author's text-book (THE LANCET, July 24th, 1920, p. 190).

THE PSYCHOLOGY OF PHANTASY.

Collected Papers. By CONSTANCE E. LONG. London: Baillière, Tindall, and Cox. 1920. Pp. 216. 10*s.* 6*d.*

THIS book consists of a number of papers written by Dr. Constance Long during the past four years, some of which have already appeared in various journals. Dr. Long is one of the leading exponents in this country of that "Analytical Psychology" which is associated with the name of Dr. C. G. Jung, of Zurich, and in these papers she expounds in an elementary and popular way some of the main tenets of the school to which she adheres. Here, as in the school of Freud, great importance is ascribed to phantasy and dream, but each school puts its own interpretation on the real significance of these products of unconscious functioning. Dr. Long lays stress on the compensatory function of the unconscious and of the prospective or teleological character of the unconscious thoughts and feelings which emerge in dreams and phantasies. The balancing or compensatory function of the unconscious implies that what is missing in the conscious will be found in the unconscious, and that for the purpose of adaptation to life both the conscious and the unconscious attitude towards any given situation should be taken into account. Indeed, it would seem that Jung and his followers are coming to lay more and more stress on the importance of the guidance in the actual conduct of life which can be obtained from dreams and other products of the unconscious. Dr. Long says that Jung, like Freud, attributes neurosis to repression, though he does not base its whole ætiology on sexual repression, but on a one-sided development of the various psychological functions of thinking, feeling, sensation, and intuition. Whatever is repressed or under-expressed links itself up with unconscious elements, and from the psychic tension produced between what is conscious and what is unconscious, the phantasies arise, representing in symbolic form what is missing from conscious consideration. But, according to this view, what is missing from consciousness seems to be missing mainly because it is "neglected." Neglect, however, is a very different thing from repression. The predominating psychological function is said to be over-developed, the other functions being "relatively repressed," but it is hard to find any justification for using the term "repression" to account for the presence in the unconscious of the relatively undeveloped or undifferentiated function.

In a book of this kind, consisting of a number of separate papers, it is inevitable that there should be a considerable amount of repetition, but for those to whom the subject is new this will be no drawback. The topics dealt with are by no means easy of comprehension, and there is much to be said about them that could not readily find a place in these papers. Those readers who accept the doctrines of Freud will find little in this book to coincide with their beliefs, but for the followers of Jung it will prove a useful and interesting compendium of the views to which they subscribe.

GEORGE MILLER STERNBERG.

A Biography. By his Wife, MARTHA L. STERNBERG. Chicago: American Medical Association. 1920. Pp. 331. $5.

George Miller Sternberg was born in 1838 and died in 1915. He received his medical education at Buffalo and at the College of Physicians and Surgeons in New York City, which body gave him the degree of M.D. in 1860. He proceeded to Elizabeth City, N.J., directly afterwards, where he practised until the outbreak of the Civil War, when he was appointed assistant surgeon, U.S. Army, on May 28th, 1861. During the war he saw a good deal of service, and, amongst other experiences, was taken prisoner at the battle of Bull Run, but managed to escape. After the war he served in various places, mainly frontier posts. He had much experience of Indian fighting, and in 1875 suffered from a severe attack of yellow fever, from which, however, he recovered. He was granted six months' sick-leave and went to Europe to recruit, returning to the States in 1876. He served through the Nez Perces campaign of 1877, and in 1879 was made a member of the first Havana Yellow Fever Commission, which was the outcome of the widespread mortality from that disease during 1878. Much good work was done by the Commission, but the specific cause of the disease remained a mystery.

For the next ten years Sternberg did the bacteriological work for which he is so justly well-known, and discovered in February, 1881, the pneumococcus, which had, however, been already described by Pasteur in January of the same year. He had never lost his interest in yellow fever, and in 1887 he took up the subject again on behalf of the Government Commission which had been appointed. In 1890 he published his conclusions, which were negative. In 1900 Sternberg, who had been appointed Surgeon-General of the army in 1893, instituted the Yellow Fever Board, which in turn appointed a Commission, with Major Walter Reed as President. This Commission went to Havana in 1900, where Reed and his companions established the fact that yellow fever was transmitted by the bite of a mosquito, even though the actual causative organism remained unidentified. In 1902 Sternberg retired from the army and was given the chair of Preventive Medicine in George Washington University, and from this date until the time of his death he devoted himself to the anti-tuberculosis campaign and matters of public health.

Mrs. Sternberg has written an interesting account of a long and busy life. Sternberg's researches are one more instance of the fact, so well known in scientific work, of how apparently unsuccessful toil leads to great results. It was his patient research in eliminating the causes to which yellow fever is *not* due, which paved the way for the immortal work of Reed, Carrol, and Lazear, and enabled Gorgas to carry to a successful conclusion the Panama Canal.

JOURNALS.

Journal of Neurology and Psychopathology. Vol. I., Nos. 2 and 3.—The second number of this new journal maintains the promise of its first. The chief article is one by Dr. R. M. Stewart, of Prestwich, on the Histopathology of Carbon Monoxide Poisoning, the case being that of a man who died from the effects of gas-poisoning on the twenty-fourth day of his illness. Histological examination revealed the presence of an intense and universal myelin degeneration, bilateral softening in the basal ganglia, and a widespread cortical softening strictly confined in a curious way to the deeper layers of the grey matter. Dr. Stewart considers that this peculiar selective action of what must certainly have been a diffuse intoxication is to be explained by certain anatomical peculiarities of the blood-vessels supplying the central nervous system. It seems clear that an anoxæmia alone could not have produced the peculiar zones of softening and that carbon monoxide must have a specific action of its own on the parenchymatous elements of the nervous system.—Dr. William Brown, of London, contributes a brief paper on Some Factors in Psychotherapy, emphasising the importance of what he calls psychocatharsis, a process by which suppressed emotions are worked off, while at the same time reassociation of forgotten incidents takes place in the mind. He also describes the working of another therapeutic process called by him autognosis, in which the patient is led backwards in memory and encouraged to discuss emotional memories of the past, especially those where he failed to adapt himself adequately to his physical and social environment.—A clinical paper on the Acute Confusional States in the Psychoneuroses is contributed by Dr. W. Johnson, of Liverpool, based on his examination of some thousands of military cases admitted to an army centre for psychoneurosis. About 10 per cent. showed definite evidence of confusion. Three fairly distinct types appeared—(1) simple type with short confusional period of not more, perhaps, than of 24 hours; (2) severe type of pronounced but temporary state of confusion; (3) type associated with definite mental disorder.—The Nature of Insomnia in Cases of Psychoneurosis is discussed by Dr. R. G. Gordon, of Bath, who comes to the conclusion that the insomnia is the result of the patient's giving his attention to keeping some unpleasant or insupportable idea out of his mind, and trying to cut it off from all other associations. This effort of attention is the first step towards the formation of a barrier which will repress the complex. Since, however, in order to achieve normal sleep all effort of attention must be relaxed, the patient finds himself in a sort of impasse, for if attention be relaxed, then the complex finds expression in consciousness and disturbs the monotony necessary for sleep; on the other hand, to avoid this relaxation of attention he becomes more alert than ever, and the more he tries to sleep the wider awake he seems to become.—Dr. M. A. Blandy, of London, describes in a brief clinical note a typical case of Torsion-spasm or Torsion-dystonia, apparently the first that has been recorded in England, and her article is illustrated with excellent clinical photographs.—Dr. Aldren Turner, of London, publishes a critical review on Modern Opinions in Regard to Epilepsy.

In the November issue the first article is from the pen of Professor C. Lloyd Morgan, of Bristol, and is concerned with the question of Psychology in the Medical Curriculum. The article is written in that delightful literary style of which Professor Lloyd Morgan is a master, and constitutes a cogent plea for the instruction of all medical students in psychology. Man is not only a complex physiological system, but an equally complex psychical system, and the time has come to consider whether the psychologist should not have a status on the staff of a medical school analogous to that of the physiologist.—A clinical symposium on Epidemic Encephalitis, for which Sir Thomas Horder supplies a brief introduction, is contributed by a number of writers from Bristol and its neighbourhood, where in the course of the summer and autumn a definite local epidemic has been raging. The clinical descriptions of the various types of the disease then encountered constitute a useful contribution to a subject of great practical importance.—The Importance of Education in the Prevention of the Neuroses receives consideration in a paper by Dr. J. Ernest Nicole, of Manchester. Psychologists and others are coming to the conclusion that the normal and abnormal developments of child mentality exercise their influence on adult character, and that there is a great need for an individual and rational education which will help to close the wrong paths and open up the right ones that are essential to human progress and development.—A remarkable series of cases of Familial Tabes Dorsalis has been under the care of Dr. J. Le Fleming Burrow, of Leeds, who supplies the details in a short article. Briefly, of six surviving members in a family of eight born of healthy parents, four acquired undoubted syphilis from absolutely different sources, yet with a resulting tabes dorsalis in all. The conclusion is justified that tabes cannot be attributed to a special strain of spirochæte introduced at the time of the initial infection, but is much more likely to be due to the spirochæte acting upon tissues specially sensitised either by natural familial peculiarity or by certain methods of treatment.—Dr. Henry Devine, of Portsmouth, writes a critical review on the Neuropathic Individual as a Social Unit, with special reference to the recent illuminating work by Professor Pierre Janet in this connexion.

The Journal of Physiology. Edited by J. N. LANGLEY, Sc.D., LL.D., F.R.S. Cambridge University Press. 1920. Vol. LIV., No. 4. Pp. 203–318. Price 9*s*.—The Influence of Venous Pressure upon the Heart-rate, by K. Sassa and H. Miyazaki. The authors confirm Bainbridge's results as to reflex effects on vagus and accelerator tone. They find that the greater the vagus tone, the more effective is the rise of venous pressure upon the acceleration of the heart in different species of animals or different individuals of the same animal. In frogs and rabbits where the vagus tone does not normally exist, no appreciable accelerator effect was found, the sympathetic nerves alone being not sufficient to produce this effect.—On the Correlation of the Rate of Heart-beat, Breathing, Bodily Movement, and Sensory Stimuli, by Water M. Coleman.—Studies on Muscular Contraction. I., The Influence of Temperature on the Mechanical Performance of Skeletal and Heart Muscle, by Yasukazu Doi.—On the Existence of

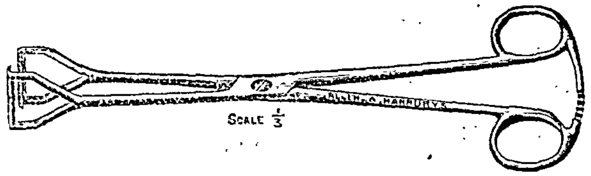
Antidromic Fibres in the Frog and their Influence on the Capillaries, by Yasukazu Doi.—On the Permeability of Epithelial Layer of the Bladder to Water and Salt, by Rinnosuke Shoji.—Cardiac Tetanus, by W. Burridge. Under certain conditions the superposition of contractions and a condition approximating to the tetanus of skeletal muscle is possible in the heart—e.g., poisoning of heart with muscarine or chloral hydrate. The author's experiments on the perfused frog's heart were performed on hearts subjected only to alterations in the proportions of their normal environment. They indicate that the greater richness of cardiac muscle in phosphates as compared with skeletal muscle is an important factor in determining its mode of behaviour. The author describes the chemical constitution of the perfused fluids which enabled him to obtain a preparation which can be fatigued, thrown into tetanus, and shows von Kries's phenomenon, such as are manifested in skeletal muscle. His experiments indicate that differing capacities to adsorb different elements of a common environment may be an important factor in determining differences of muscular behaviour.—Variations in the Resistance of Protozoon Organisms to Toxic Agents, by R. A. Peters. The author experimented with a culture of the ciliated protozoon colpidium, using a heat-standardised solution of $HgCl_2$ as the toxic agent. The animals die in such a way that there is a straight-line relationship between the time and the logarithm of the percentage of survivors for a large part of the death process. The apparent logarithm law can be interpreted in terms of the variation in the resistance of individuals of the protozoon culture to the toxic agent.—The Action of Certain Serum Constituents upon the Heart and Plain Muscle, by A. J. Clark. Various preparations and derivatives from sheep's serum were used on isolated tissues of the frog and mammal. The action of the serum is the sum of the serum proteins and of the alcohol-soluble constituents, but these two sets of substances have totally distinct actions. The serum proteins produce strong vaso-constriction and have little action upon other tissues, while the alcohol substances produce slight vaso-dilatation, a great augmented effect on the frog's heart, a moderate augmented effect upon the frog's stomach and the mammalian gut and uterus, but no effect upon the mammalian auricle. The mode of preparing the serum derivatives probably removed such substances as adrenalin and histamine that might be present in the serum. The action of the alcoholic extract of serum and of lecithin in stimulating plain muscle indicates that an alcoholic extract of any tissue is likely to cause stimulation of plain muscle and that this general action must be distinguished from the specific action of special glands such as pituitary extract.—The Effect of Alterations of Temperature upon the Functions of the Isolated Heart. By A. J. Clark.—Physical Exertion, Fitness, and Breathing, by Henry Briggs. Experiments were made to determine the oxygen consumption of persons engaged in different kinds of physical work. The methods and apparatus used are described, including ergometer tests and the results of walking and climbing experiments. Experiments were made on men climbing the main incline in a limestone mine in Midlothian, while breathing normal air and while breathing oxygen. Physical work is easier to unfit men when oxygenated air is breathed than when normal air is breathed, but no such difference is to be observed in fit men. When exertion of steadily increasing magnitude is undertaken the expired CO_2 percentage first rises and then falls. The load at which that percentage is a maximum the author calls the "crest-load," which also demarcates between normal loads and overloads, but the demarcation line is not constant. On an overload even the fittest man derives benefit from breathing "enriched air." The benefit of breathing enriched air when doing physical work is limited to air containing about 60 per cent. oxygen. Enrichment above that proportion has no effect during exertion except on unfit persons. Tables showing the oxygen consumption when walking, running, climbing, or doing ergometer work are given.—Other papers deal with Nitrite Methæmoglobin and Related Pigments, by H. Hartridge. The author gives evidence in favour of this substance being a definite chemical compound. The use of thermionic valves—a well-known piece of mechanism used with wireless apparatus and long-distance telephony—in combination with the string galvanometer, as applied to obtaining an electro-cardiogram, is described by I. de Burgh Daly and K. E. Shellshear. H. Hartridge makes an interesting suggestion as to "the ear as morphologically an apparatus for perceiving depth below sea-level," which was fully referred to in an annotation in THE LANCET last week.

THE Medical Branch of the Board of Education has been transferred from Cleveland House, St. James's-square, London, S.W., to Bridgewater House, Cleveland-row, London, S.W.1. (Telephone: Gerrard 3410.)

New Inventions.

IMPROVED DUVAL'S FORCEPS.

WHEN using Duval's special lung forceps in chest cases during the war I was impressed with their extremely sensitive and at the same time assured non-slipping grip, and came to employ them largely in abdominal surgery, where their tenacious but delicate hold proved invaluable, notably for holding or retracting the uterus, appendages, cysts, small tumours, and even gut when applied over gauze. The original model has a triangular head, of which the angles are too prominent and the bite wider than necessary. I have therefore modified it (see illustration) by removing the sharp angles of the jaws and increasing the length of the instrument, thus making it more suitable for deep abdominal work. The bowed end lock prevents sutures getting caught up between the finger rings as in the ordinary pattern of forceps.

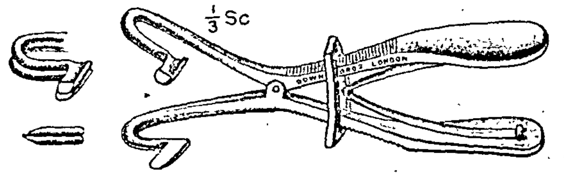


Messrs. Allen and Hanburys, of 48, Wigmore-street, London, W., are the makers of the instrument.

BRYDEN GLENDINING, M.S. Durh., F.R.C.S. Eng.
Aspley Guise, Beds.

AN IMPROVED MOUTH-GAG.

THE frequent difficulty of inserting the tooth-plates between the teeth in an emergency as well as the liability of the gag to slip forward and outward when they open the jaws are overcome entirely by the mouth-gag illustrated. Its chief features are as follows: There are projections extending inwards from the tooth-plates; these are set at a knife-edge and in cases where patients are anæsthetised with their jaws closed the gag can be inserted quickly and easily between the teeth and the mouth opened. The advantages of this non-cutting knife-edge must be obvious to all anæsthetists; and in cases for dental extractions, particularly where the prop, which is often used, fails or falls out, it is specially useful. With this gag the prop can be dispensed with for dental extractions. There are ridges, or lips, at the posterior and inner edges of the tooth-plates, and these effectually prevent the gag slipping forwards and outwards when the mouth is forced open. There are no ridges on the anterior and outer edges, as the gag when opened does not tend to slip backwards or inwards. The angles and length of the gag are so arranged as to give the greatest leverage possible combined with strength and lightness. The handle is broad and concave, and facilitates the opening of the gag, as it provides a large broad surface for the hand.



There are fine serrations on the ratchet and these allow the gag to be fixed open in any desired position. It is unnecessary and undesirable to use rubber to cover the tooth-plates; the spring is detachable and easily cleaned.

The instrument has been made for me by Messrs. Down Bros., Ltd, St. Thomas's-street, London, S.E.

KENNETH BLACK, F.R.C.S. Eng.,
Welsh Hospital, Netley. Major, R.A.M.C.

THE LANCET.

LONDON: SATURDAY, JANUARY 8, 1921.

Medicine and Industry.

THE annual report of the Medical Research Council for 1919–20, which has just appeared,[1] points out that the problems of industrial medicine are not easily separable from those of public health in general; the overwhelming majority of the people are engaged in industry, and the greater part of prevalent disease is connected either in its origin or its extent with industrial occupations and the conditions of life which have been imposed during industrial development. When the Medical Research Committee was reconstituted as the Medical Research Council, in the middle of the year's work under review, it entered thereby into relationship with the needs of other State departments without loss of direct touch with the Ministry of Health; it came to form a constitutional nexus of a novel kind between the scientific forces of the country and the State. It would be hardly fair yet to look for results from the drawing together of this fine mesh; research is necessarily limited by the supply of well-trained men of ability available to do it. But fortunately in the field of industrial medicine it has not been hard to find eager minds, and the Industrial Fatigue Research Board, as to one half of which the Medical Research Council is responsible, has made investigations in the iron and steel trade, the cotton trade, the boot and shoe trade, the silk trade, and laundry work—the task of the Board being to combine these investigations into a concerted scheme. Great issues of health and happiness to the human race are inherent in this task, which should make an economic return altogether incommensurable with its small cost.

The outlook for industrial medicine is full of promise. Although medical service in the factories and mines of this country, when compared with the United States, is developing somewhat slowly—due possibly to the long overdue remodelling of the office of certifying factory surgeon—nevertheless important steps are being taken. The labour world, without waiting for legislation, is busy profoundly modifying hours of work: the 48-hour week has come to stop; work in factories before breakfast has almost entirely ceased, with a suddenness no one could have foretold a few months ago—soon it will become merely a subject of antiquarian interest. An Act has been placed on the statute-book permitting machinery tended by women and young persons to run for 16 hours daily, from 6 A.M. to 10 P.M., so long as no protected person is employed for more than eight hours a day; the effect of this Act upon the elasticity of employment and of production may be far-reaching. Full advantage is being taken of the powers conferred by Sec. 7, Police, Factories, &c. (Miscellaneous), Act, 1916, to make orders concerned with the provision of welfare accommodation in many industries; these orders relate to drinking water, first-aid stations, seats, cloakrooms, meal rooms, and rest rooms; in practice they simultaneously call into existence welfare supervision, and cannot fail to exert a widespread influence upon the health of industrial workers. The inspectorial staff of the Factory Department are being reorganised to deal with their new responsibilities, and the medical strength is being increased, notably by the appointment of a woman doctor. These officers have even further duties to anticipate, since a new Act consolidating legislation passed since 1901, when the last main Act was passed, may be shortly expected. Further legislation restricting the use of lead in paints may ere long be introduced in order to deal a last blow at plumbism, which would thenceforth become a medical curiosity.

Meanwhile, the Industrial Fatigue Research Board is settling down to its work, and, as the results of careful investigation, is publishing reports, to which attention has from time to time been directed in these columns, setting forth knowledge of practical value to industry and gradually revealing the laws which guide the working of the human machine. Employers reading these reports must be struck with the way in which the same ends serve the interests of productivity and of health. A new science, the science of activity and health, is here rapidly developing. The Mines Regulations Acts have received fresh inspiration from transference to the Ministry of Mines under a special department devoted to safety and health; while an expert committee of the Medical Research Council is giving close attention to that distressing and increasingly prevalent disease, miners' nystagmus. The first scheme under the Workmen's Compensation (Silicosis) Act, 1918, has been established; it only applies to a small but important industry, the refractories industry, which includes ganister mining; but it may well be the forerunner of more extended schemes dealing with the grinding of metals on sandstone wheels, the potteries, stonemasonry, and other industries with exposure to inhalation of silica dust. Kindred work going on in South Africa on the gold-fields cannot fail, as it throws light on the ætiology and prevention of silicosis, to influence in this country schemes drawn up under this Act. All in all, medicine and industry are running well in harness.

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The Vital Properties of Milk.

FROM time to time we have drawn attention in our columns to irreconcilable statements concerning the loss of vital and nutritive properties sustained by milk on sterilisation or on cooking. In the light of recent bio-chemical advances in relation to the dependence of growth and nutrition upon certain accessory food-factors, we take some credit to ourselves for having anticipated, as far back as 1901, the views which are to-day held in scientific circles with respect to the changes brought about in milk by heat. Although there is good evidence to show that the excessive or repeated cooking of milk does, in some way, render it unfit as an exclusive food for infants, there is no reason for suggesting that such milk sustains any loss of nutritive value having regard to its main constituents. Those who claim that milk is less nutritious when boiled than in the raw state should make it clear to themselves as well as to others what they exactly mean by loss of nutritive value. The caloric value of boiled milk is identical with that of raw milk, but all the same boiled milk, or perhaps more accurately speaking overcooked milk, will not serve as an exclusive food for infants or, indeed, for adult individuals, for the reason that it contains in deficient amount certain accessory factors which are essential for growth and adequate nutrition. The name vitamines, which has been given to these intangible substances, cloaks our ignorance rather than reveals the truth.

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[1] H.M. Stationery Office. Cmd. 1088. Price 9d.

It is claimed that in raw milk there are at least three varieties of vitamines, one of which—viz., the anti-scorbutic—is destroyed or impaired in quality by exposure to heat. It was suggested by Professor Gowland Hopkins at the last meeting of the British Medical Association that it was not so much heat that destroyed this vitamine as oxidation processes to which a rise of temperature conduced. This view is supported by a vast amount of clinical evidence which goes to show that infants can grow and develop perfectly satisfactorily on dried milks which have been submitted to considerable degrees of heat without any supplementary addition of the anti-scorbutic vitamine in the form of fruit juice or other substitute. Authorities are, however, at the present time fully agreed that, since there is a risk of loss of activity in the properties of the anti-scorbutic vitamine on exposure to heat, or by prolonged preservation, it is a wise precaution to provide a supplementary supply of this accessory food factor whenever cooked foods constitute the exclusive dietary of growing children. The wider deduction that the nutritive value of boiled milk when used as a component element in a mixed dietary is inferior to that of unboiled milk is quite unjustifiable and possibly dangerous, for there is ample evidence to prove that unboiled milk can be a serious source of danger as a medium for the conveyance of many infective diseases in addition to tuberculosis itself. Even if we admit that immunity to tuberculosis, and possibly other diseases, may be acquired by the repeated oral ingestion of such small doses of the living bacilli as raw milk commonly contains, the occasional and beneficent result cannot compensate for the risk of a lethal dose of the same poisons contained in more seriously infected milk. If prophylactic inoculation against specific diseases is to be secured by the inoculation of the living germ, surely it is wiser to secure the desired end by means of the accurate and measured doses of the bacteriologist than by the haphazard and possibly dangerous method of employing the accidental impurities of milk.

The Subcommittee on Milk appointed by the Standing Committee on Trusts under the Profiteering Act have issued a Report this week, in which they come to the satisfactory conclusion that the large combinations of distribution have dealt fairly with the public, and in which they also make some interesting comments on the milk-supply of the country. Perfectly clean raw milk, in a bacterial sense, is an impossibility, but milk with a very low bacterial count is a practical proposition. In a circular issued to the local authorities by the Ministry of Health last autumn attention was called to the regulations in regard to the sale of graded milk, but little advantage appears to have been taken of the official arrangements. We think it very desirable that producers and distributors should be encouraged to undertake the supply of high-grade milk in accordance with the prescribed conditions. The designations of graded milk are: (1) Grade A Milk, and (2) Grade A (Certified) Milk. former is defined as milk produced under lly clean and hygienic conditions from a herd m tuberculosis, and it should be a matter of common kowledge that such milk is fit for human consumption without being heated. Grade A (Certified) Milk, also obtained from a herd free from tuberculosis, must be bottled in accordance with certain rules and show a satisfactory result on bacteriological examination. This is as near as we can get to a perfectly clean raw milk, and it can only be put upon the market at an enhanced price and treated as a medical diet. The public are advised to insist upon its supply to them should their doctors consider it essential, when retailers and combinations will allow them to have their rightful way. On the other hand, pasteurised, sterilised, and bacteria-free dried milk can be supplied to the public, not only without raising the cost of production, but actually with a considerable saving. In a recent contribution by Mr. R. Stenhouse Williams, of the Research Institute in Dairying at Reading, he shows that the loss of milk in the London area alone from souring represents something like a million gallons a year. Although the greater part of this loss could be obviated by increased care and cleanliness in the production, the application of heat in the form of pasteurisation or sterilisation would probably effect the same object at a smaller cost. For the above and other reasons it is important that irresponsible statements with regard to the impaired nutritive qualities of cooked milk should not gain a wider currency than is at present the case. There is, however, a wide field for research still open in connexion with the nature of those illusive accessory food factors which are essential for satisfactory nutrition, which are known to exist in raw milk, and which, if cooked milk is employed, can be supplied from other safe sources.

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The Insurance Medical Records.

The Insurance Medical Records, both the way in which they are to be collected and the policy which has led to their existence, are being criticised in certain quarters of the public press, and although the controversy has not met with much reflection among the vast body of persons immediately concerned, sufficient distrust has probably been engendered to prejudice the work of the Ministry of Health in this direction. All who have been made to feel uncomfortable should purchase for themselves through any bookseller, or directly from H.M. Stationery Office, at the price of *3d.*, the Report [Cmd. 836] of the Inter-Departmental Committee which was published last summer. This Committee was appointed to decide upon the form of medical record to be employed under the terms of service for Insurance practitioners in the New Medical Benefit Regulations, 1920, and its conclusions were commented upon favourably at the time, not only in The Lancet[1] but in the general press. A full abstract of the Report was published in the *British Medical Journal*, when the serious faults now alleged against the document went unremarked. Correspondence ensued predicting irritation at the waste of time involved in the procedure laid down, and at the Conference of Local Medical and Panel Committees, held under the ægis of the British Medical Association in October last, there was opposition on this and other grounds, but the serious crime of incitement to the violation of medical confidence was not suggested.

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[1] The Lancet, July 31st, 1920, p. 254.

The regulations under the Insurance Acts *require* that records should be kept by all practitioners accepting panel service of the treatment of their patients; and the fact that during the war this work fell into abeyance cannot be used as any argument for depriving the nation of the value that may be derived from the maintenance in respect of the individual patients of a continuous medical history. Moreover, such records form evidence that those who have charge of a vast proportion of the health of the country are carrying on their duties in an orderly manner, and especially in a manner which shall make the study of disease a coherent thing and not dependent upon changes of individual practitioners. The aim of the Ministry of Health was from its earliest days to bring preventive medicine into its proper place as the ideal of every doctor, and, through the doctor, of the whole country. No pains, it was decided, ought to be spared in ensuring that the treatment of the diseases which are with us should be prompt and adequate; but, over and above, it was considered necessary—and this with universal approval—to take all possible precautions against the spread of these diseases, using every weapon that came to hand against early manifestations. Prevention and early detection are alike simplified by the possession of continuous records. In making the records required by the National Insurance Acts the rival claims, arising out of the need for statistical information and of the ability of the hard-worked practitioner to supply it, must be adjusted. All useless copying from card to card must be avoided, and only such clinical information as will be useful to the practitioner or his successors in charge should be included. This is the scope of the records required by the Ministry of Health. It is true that such records will be far less valuable to science than more elaborate notes properly collated might be, but neither the time nor the reward of the general practitioner allows for anything more.

All must agree that the objects in view, when it was decided that these records should be kept, were sound, though the machinery may be open to criticism. Now, however, and very late in the day, it is suggested that to keep these records is in itself a violation of one of the primary rules of medical ethics—namely, that the doctor should never disclose, save with the patient's permission, the medical confidences he has received. We have every sympathy with those who, in all times and in all places, fight for this great privilege of our profession, but we find here that the sentiment is being strained. The privacy of the records is well guarded and their contents are so limited that any hurtful leakage can hardly occur. It has been objected by different members of the medical profession that the records are too scanty to be valuable, and also that the writing out of forms ought to be left to clerks. We must point out that the two objections are mutually destructive. To take the work of keeping the records from the doctor to give them to clerks certainly spares the doctor from doing non-medical work and would allow the records to be much fuller, but the procedure would blow sky-high any defences against ethical indiscretion.

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INDEX TO "THE LANCET," VOL. II., 1920.

THE Index and Title-page to Vol. II., 1920, which was completed with the issue of Dec. 25th, will shortly be published in THE LANCET.

Annotations.

"Ne quid nimis."

NEW YEAR HONOURS.

THE honour of knighthood has been conferred upon four medical men in this country: Mr. Charles Ryall, senior surgeon to the Cancer Hospital and to the Bolingbroke Hospital; Dr. William Hodgson, sometime mayor of Crewe and well known for his services to scientific education in Cheshire; Dr. Dawson Williams, editor of the *British Medical Journal*; and Dr. Squire Sprigge, editor of *The Lancet*. The chairman of the Irish Public Health Council, Dr. E. Coey Bigger, also receives a knighthood, and Dr. Alexander J. Hood, of Sydney. Among naval and military honours Major-General Robert Porter, M.B., becomes C.B. (civil division); four lieutenant-colonels in the Indian Medical Service receive the C.I.E.—namely, David M. Davidson, Frederick O'Kincaly, William Frederick Harvey, and John L. Van Geyzel. Dr. Frederick S. Hewett, surgeon-apothecary to the King and to Queen Alexandra, has been appointed K.C.V.O. To all our colleagues we tender our hearty congratulations.

A FUNCTION OF THE GREAT OMENTUM.

THE question of intraperitoneal absorption of microscopic particles, alive or dead, is one of considerable clinical importance, and the respective parts played by the diaphragm and great omentum have not infrequently been the subject of experimental and pathological investigation. Several years ago the younger Heger, of Brussels, showed that the omentum was a vigorous absorber of fine inorganic particles—of China ink—in fact, a kind of "sweeper" of the peritoneal cavity. Finely granular particulate substances, such as carmine, China ink, starch grains, lycopodium powder, are known for the most part to pass into the lymphatics of the diaphragm, whence they reach, via the lymph stream, the liver, lungs, and spleen, where they are stored up. The question remains, however, how they reach the lymphatics, directly or by phagocytic leucocytes. The classical experiment of Ludwig showed that through the central tendon of the diaphragm and its stomata coloured fluids—e.g., soluble Brücke's blue—rapidly passed into the lymphatics, even in the dead rabbit, when the movements of the diaphragm were imitated by artificial respirations. This was proved by a really beautiful display of the blue injected lymphatics. Granular particles are absorbed by the same surface, although this obviously must depend on the size of the stomata. By coating the under surface of the central tendon with collodion in animals, Clairmont, Haberer, and Peiser showed that the absorption of fluids from the peritoneal cavity was considerably diminished. E. Seifert, of Würzburg,[1] adds considerably to our knowledge of the function of the great omentum and the channels and means of absorption of finely divided particles present in or introduced into the peritoneal cavity. The experiments were made on guinea-pigs, and by way of identifying the specific forms of leucocytes that might be concerned in the process, the method of vital colouration or staining by means of a 1 per cent. solution of isamin-blue was used, the fluid being injected (6–10 times) at certain intervals under the abdominal wall. The omentum was fixed in formalin, stained, and studied, when it was found that the migratory leucocytes, the fibroblasts of the connective tissue, and the cells covering the serous membrane were coloured in the chief degree, and very faintly the epithelium of the convoluted tubes of the kidney. The groups of cells—visible to the unaided eye in the omentum, and long ago described by Ranvier as "*tâches laiteuses*" (milk spots)—were coloured blue, and the leucocytes of which they principally consist had blue-coloured granules in their protoplasm. With a view to a further study of foreign granular particles in relation to the omentum, animals previously injected with isamin-blue had 3 c.cm. of a 10 per cent. emulsion of China ink in warm normal saline injected into the abdominal cavity, and were then killed at varying intervals. A certain proportion of the black particles rapidly disappeared from the cavity via the lymphatic vessels of the diaphragm, and were carried by the blood stream and stored in the star-shaped Kupfer cells of the liver, and in the lungs and spleen. The remaining particles were "phagocytised" by the microphages, and from the second day onwards there was a great increase of the cells of the milk spots, the spots themselves becoming larger and new ones being developed. The wandering cells laden with ink particles returned to the omentum and formed "spots." These cells died slowly, the spots themselves became surrounded by concentric layers of fine connective tissue, the capillaries degenerated, and the spots passed into a permanently passive state. There are no lymphatics present in the great omentum.

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[1] Brun's Beiträge z. klin. Chirurgie, vol. cxix., 1920.

After the injection of a virulent emulsion of bacteria, phenomena similar to those of injection of China ink are observed. Some of the tubercle bacilli pass via the lymphatics of the central tendon of the diaphragm to the retrosternal gland and there excite tuberculous inflammation. The bacteria also pass to the liver, spleen, and lungs, where again specific tuberculous change is set up. The remaining bacilli are taken up by the leucocytes originating in the omentum, which return laden with bacilli to the omentum, causing excessive growth of milk spots in which the omental tubercles develop. In the case of China ink particles a state of repose or subsidence of action is set up in the milk spots, but in the tubercle invasion the phagocytes composing the spots are not able to overcome the infective pathological attack. The phagocytes themselves disintegrate, as shown by their inability to undergo vital staining, and there results an aggregation of tubercles. In spite of its marked absorptive and protective functions the omentum is not able to ward off the invasion of infective processes from the other surfaces of the peritoneal cavity.

TUBERCULOSIS OF THE STOMACH.

ACCORDING to Dr. Wilhelm Baetzner,[1] assistant at Professor Bier's surgical clinic in Berlin, who records an illustrative case, tuberculosis of the stomach is very rarely found at autopsy. The statistics of the Kiel Pathological Institute show that among 2000 cases of tuberculosis there were only eight examples of the kind, and Eisenhardt, among 6000 cases of tuberculosis, which included 600 of intestinal involvement, found only one case of tuberculosis of the stomach. Clinical cases are naturally rarer still, according to Albu only about two dozen genuine examples being on record. Tuberculosis of the stomach is usually secondary to pulmonary or miliary tuberculosis. Infection may take place by the blood and lymph stream, but is usually produced directly by the swallowing of infected sputum. The rarity of gastric infection is due to the physiological action of the gastric juice and the active movements of the stomach and also to the anatomical structure of the organ with its scarcity of follicles. The lesion usually found is an ulcer, which is situated most frequently at the pylorus and is liable to all the complications of ordinary gastric ulcer such as hæmorrhage, perforation, and fistula. The symptoms are the same as those present in ordinary gastric ulcer or carcinoma—viz., dyspepsia, motor and chemical disturbances, and stenosis—when the pylorus is affected. Dr. Baetzner's patient was a woman, aged 38, who sought advice for a feeling of hunger and severe pain half an hour after food. Nothing could be detected on palpation. Gastric analysis showed an absence of free hydrochloric acid and the presence of lactic acid, and the X ray examination indicated an ulcer on the greater curvature. On operation, at which Dr. Baetzner performed transverse resection, the ulcer w[illegible]ed to involve the mucous membrane only. Its floor was studded with nodules and the stomach showed a well-marked inflammatory infiltration. On microscopical examination typical miliary nodules were found in the mucosa and submucosa, but no bacilli were seen. The patient remained free from symptoms for three months and then had a recurrence of nausea and vomiting, with loss of weight. A second laparotomy was performed and posterior gastroenterostomy carried out. Recovery was delayed owing to the development of active disease in the lung. At the time of publication there was distinct improvement, but the outlook was doubtful owing to the possibility of a recurrence of the gastric process.

SPLENIC LEUKÆMIA IN PREGNANCY.

AT a recent meeting of the American Association of Obstetricians, Gynæcologists, and Abdominal Surgeons, Dr. George W. Kosmak,[1] of New York, read a paper on splenic leukæmia in pregnancy, of which he had collected 12 examples, including two cases of his own. The ages of the patients ranged from 24 to 40, the majority being between 32 and 36. All but one were multiparæ. A possible hereditary history was mentioned in only one case. In most of the cases the children were born alive and showed no tendency to the disease up to the time of the report, but in a few instances the babies died at varying periods after labour from a few days to five months. In four cases the birth of a macerated or stillborn fœtus took place. The mother survived in only two cases, but for how long was not determined. In many cases a prodromal period had been observed in which a pregnancy was followed by progressive emaciation, anæmia, and loss of strength from which no recovery took place, though another pregnancy supervened. Leukæmia therefore did not appear to interfere with conception. Although, judging by the recorded cases, leukæmia was a very rare complication of pregnancy, Dr. Kosmak was of opinion that a considerable number of cases of pregnancy, accompanied by marked anæmia, in which no satisfactory blood count had been made, had probably been instances of this disease. As the occurrence of pregnancy in leukæmia indicated a most unfavourable outlook for the mother, he maintained that pregnancy should not be allowed to take place when leukæmia was suspected. When the disease was already present abortion appeared to be the rule, with a rapidly progressive course and fatal issue. Owing to the harmful effect which X rays would have on the fœtus they should not be employed until after the induction of labour.

JAUNDICE DUE TO ASCARIDES.

THAT worms in the alimentary canal may give rise to toxic symptoms in consequence of absorption of toxins produced by them is now recognised. Among the toxic symptoms produced by ascarides jaundice does not appear to have been observed, though a case in which it occurred in ankylostomiasis has been recorded. At a meeting of the Société Médicale des Hôpitaux of Paris on Dec. 3rd the following case was reported by Mons. Henry Bourges. A young soldier of the colonial infantry was admitted to hospital on Jan. 4th, 1916, for anæmia, weakness, and splenic hypertrophy. For some time he had suffered from passing febrile attacks without apparent cause. On examination he was found to be wasted and there was pallor of skin and mucous membranes with a subicteric tint in the conjunctivæ. The stools were not decolorised. The spleen was enlarged and tender on palpation. The urine did not contain biliary acids or pigment, but urobilin in large amount. There was no fever at the time. Blood examination showed: red corpuscles 3,350,000 and white 16,000, of which 58 per cent. were polynuclear neutrophiles, 7 eosinophiles, and 35 mononuclears. There were a few myelocytes and nucleated red corpuscles. The "fragility" of the red corpuscles was increased. The Wassermann reaction was negative. Two ascarides were passed spontaneously. This fact, with the eosinophilia, led to the administration of santonin for three days, which was followed by the passage of 13 ascarides. But the state of the patient was not much altered. A new series of administration of santonin at intervals of eight days was followed by expulsion of 14 ascarides. Then the patient gradually improved. The pallor decreased, the conjunctivæ lost their subicteric tint, the spleen diminished, strength was regained, and appetite returned. Two months after the first examination the blood showed: red corpuscles 4,455,000, white 10,000, of which 53 per cent. were polynuclear neutrophiles, and 47 mononuclears. The "globular resistance" of the red corpuscles had increased. Thus the patient was admitted with a complete hæmolytic syndrome, which disappeared under administration of santonin. The destruction of red corpuscles could not be attributed to syphilis, tuberculosis, or malaria, or other recognised cause. The only toxic influence which could be invoked was the ascaridiasis, and its potency was borne out by the result of treatment. Ascaridiasis is now regarded as an auto-intoxication. The chemical composition of the parasites has been investigated by Mons. Fury, who has found that they contain free fatty acids, aldehydes, ether salts, and a compound previously unknown, ascaryl alcohol. Similarly, in their excretions have been found fatty acids, aldehydes, mercaptans, and ammonia. These substances not only are irritants of the mucous membrane, but on absorption produce the nervous symptoms frequently observed in those who harbour ascarides. According to Mons. Fury the non-saturated fatty acids, such as oleic and acrylic acids, are destroyers of the red corpuscles. In the case of ankylostomiasis referred to above the icterus was also hæmolytic, appeared during the anæmia produced, and was cured by administration of thymol.

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[1] [illegible]rliner klinische Wochenschrift, Dec. 27th, 1920.

[1] New York Medical Journal, Nov. 13th, 1920.

QUIET HIP DISEASE.

"Benign from its onset, benign throughout its course, it tends without any treatment to terminate in almost complete functional restitution."

IN a recent monograph on "Malum Coxæ Calvé-Legg-Perthes," Dr. Halfdan Sundt,[1] medical superintendent of Fredriksvern Coast Hospital for scrofula and surgical tuberculosis in Norway, gives an account of a disease which only a decade ago was practically unknown and commonly mistaken for tuberculosis of the hip. Yet it appears to be of frequent occurrence; so frequent, indeed, that Dr. Sundt's material consists of as many as 66 cases. Most of these were sent to hospital with the diagnosis of tuberculous disease, and it is amazing to find how greatly the number of cases diagnosed as tuberculous can be whittled down by the help of modern methods of diagnosis, notably the X rays and von Pirquet's test. Indeed, it appears from the records of Fredriksvern Hospital that no fewer than 43·4 per cent. of all the cases of hip disease proved, after careful sifting, to be non-tuberculous. The recognition of "quiet hip disease"—a term given by Taylor and Frieder—as a well-defined entity has thrown much new light on the frequency and seriousness of true tuberculosis of the hip. For when these benign, non-tuberculous forms of hip disease are sorted out from cases of definite tuberculosis of the hip, this is shown to be a far more serious and far less common condition than was once thought to be the case. Hence Dr. Sundt's conclusion that all statistics which have dealt in the past with the incidence and severity of tuberculosis of the hip are hopelessly incorrect and misleading. He has come to the conclusion that when a case of hip disease clears up completely, tuberculosis can be confidently excluded from the diagnosis. One of the most instructive chapters in his monograph deals with the results of treatment, or absence of treatment. In 19 cases the patients were treated as for tuberculosis by immobilisation for one to four years, and an average of more than two years. In another group of 16 cases immobilisation or relief from pressure was prescribed for less than a year, the average duration of treatment being about six months. Finally, in a third class of 23 cases, observed over a period of nine months to 12 years, with an average observation period of more than three years, no treatment was prescribed, and the children were allowed to run about freely in spite of limping. The final results were equally good for the three classes, a finding that betrayed the unwisdom of treating these cases by immobilisation. But, as the short paper on this subject by Mr. H. A. T. Fairbank in THE LANCET for Jan. 1st shows, English surgeons have not come to the same conclusion on this point. Dr. Sundt disagrees with Perthes's term "osteochondritis" for this condition, as he believes inflammation plays no part in its genesis; this appears to be multiple, with trauma, age, sex, and predisposition playing important parts. It is to be hoped that Dr. Sundt may find a translator to collaborate with him in making this valuable monograph accessible to English readers.

FOOT-AND-MOUTH DISEASE.

THE epidemic stomatitis of cattle is a plague alike to beast and man, for while it has not a high case mortality convalescence in cows is long and capricious, and the loss of milk is as serious to the producer as the precautions against infection are exasperating. For summer after summer, in 1914 especially, many attractive Swiss passes were closed to the tourist in order that he should not carry the contagium from pasture to pasture, and in this country the embargo on importing live stock is likely to become a serious obstacle to the solution of the milk problem. The present outbreak of foot-and-mouth disease in the Midlands is unfortunately one of the worst this country has suffered from. There is a grave danger of pedigree herds of cattle and sheep (whose loss would be almost irreparable) becoming affected. Little definite has been fully decided as to the method of spread of the complaint, but it has been shown in Switzerland and Germany that the administration of sulphate of iron in the drinking-water and cacodylate of iron subcutaneously has a marked effect in reducing the virulence of an attack and in curing the disease. The milk-supply, especially in the case of children, needs watching, since the disease may be transmitted to man by raw or uncooked milk and its products. The malady, however, always runs a mild course in human adults, although in children gastric catarrh may result and even death has been recorded. The heavy mortality among Welsh sheep which recently attracted sensational notice was not attributable to foot-and-mouth disease, as investigation proved it to be due to liver rot or fluke, a disease always very prevalent after wet summers. We may well hope that the research work now being conducted on board old ironclads will soon throw some light on the habits of the contagium if not on its actual appearance, for it may well be as elusive as that of small-pox. The close clinical parallel between the two diseases has, indeed, already suggested the same kind of remedy. At the Bavarian vaccine station, Privat-dozent A. Groth has succeeded in inducing an apparently specific local disease by intracutaneous injection of material from an aphtha; in the swine and sheep the infiltrations so produced may break down and a general aphthous attack follow, but in the more refractory rabbit the infiltration may remain localised and it is hoped prove the source of a preventive vaccine. The work at all events promises well.

PROFESSOR CARL TOLDT.

A MAN of science whose publications began in 1868 with a method of injecting lymphatics, and, ranging over the fields of comparative and descriptive anatomy, embryology and histology, extend to 1915 when he contributed a note on the development of the mandible, has left a record of his life's work which needs no embellishment. Carl Toldt, Emeritus professor of descriptive and topographical anatomy in the University of Vienna, died recently at the age of 80, and his mind retained so much vigour and enthusiasm that he will be missed by his colleagues more than would many a younger man. Born at Bruneck, in the Tirol, he qualified in 1861, and after serving in the war against Italy became assistant in the physiological department of the Josepho-Akademie, later succeeding Professor Ewald von Hering as its director. In 1869 Toldt began to specialise in histology, became professor of anatomy, with charge of histological teaching in Vienna and later in Prague, eventually returning to Vienna in 1884 as professor of descriptive and topographical anatomy, an appointment which he retained for 24 years. His most famous work is connected with the mandible and its surrounding structures and his best-known publication, at least outside his own country, is the Anatomical Atlas, which appeared in 1896–1900. Since his retirement Professor Toldt had been chiefly concerned in anthropometrical investigations and the study of prehistoric forms of man, and his observations in this region of knowledge were no less sincere and important than his contributions to descriptive anatomy.

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[1] Undersökelser over Malum Coxæ Calvé-Legg-Perthes. By Halfdan Sundt. Christiania: Jacob Dybwad. 1920. Pp. 231.

MEMORIAL TO THE LATE DR. A. J. CHALMERS OF KHARTOUM.

THE late Dr. A. J. Chalmers, the well-known authority on tropical diseases, and joint author with Dr. Castellani, of "Tropical Medicine," whose sudden death on his way home on leave in April last was a great loss to the profession and his numerous friends, left a splendid collection of medical books, mainly on tropical diseases, and including some almost priceless incunabula. The whole of these, with the exception of a small number presented to the Royal College of Physicians of London, have been given by Mrs. Chalmers to the Royal Society of Medicine. The Society has wisely decided that the collection shall be kept together and be known as the "Chalmers Collection," and now we are informed that Mrs. Chalmers has presented the Society with the sum of £500 for the shelving and furnishing of a room in which the books will be kept as a memorial of her husband. It is hoped that the collection will be added to from time to time, and the room chosen for the Chalmers Library is well adapted for the purpose.

This admirable donation coincides happily with the reconstruction of the new Section of Tropical Medicine and Parasitology. The Section was formed in 1912, but was suspended during the war, and has only this session been formally constituted, and among the first nominated officers are Lieutenant-Colonel Sir Leonard Rogers as President, and as Vice-Presidents, Professor Leonard S. Dudgeon, Lieutenant-General Sir John Goodwin, Vice-Admiral Sir Robert Hill, and Professor G. H. F. Nuttall. That all these at once accepted office is a good omen for the success of the new Section. Sir Leonard Rogers recently presided over the first meeting of the new Section, when an exceptionally interesting programme was provided,[1] and we are now able to congratulate it on starting with a library of its own, which is probably the finest collection of books on tropical medicine to be found.

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[1] THE LANCET, Dec. 11th, 1920 (p. 1193).

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(FROM OUR SPECIAL COMMISSIONER.)

Droitwich, December, 1920.

THOUGH the statistics might have been more carefully kept and more extensive there can be no doubt as to the excellent results often obtained from the brine baths of Droitwich. The nearest approach to a record on an extensive scale will be found at the St. John's Brine Bath Hospital, a charitable institution supported by voluntary contributions and erected in 1892. Here there is room for 24 male and 17 female patients. Till recently the treatment was, with some exceptions, limited to two weeks, and under these conditions the figures for ten years show that an average of 650 patients have been treated per annum. The secretary of this hospital has informed me that, after 25 years of personal experience, and on records kept from time to time, the result would show that 75 per cent. of the patients obtained permanent benefit. But it should be noted that of the 25 per cent. who received no benefit several received no treatment. In the course of a day or two it was discovered they were afflicted in a manner which the treatment could not alleviate—malignant growths or certain forms of skin disease—and they were therefore at once sent away. The hospital is only intended for the treatment of gout, sciatica, rheumatism, and kindred complaints. During the war, and as a result of the hardships endured in the trenches, many soldiers suffered in these ways, and no less than 50,000 baths, free of cost, were given to officers and men serving mostly in the army, but occasionally in the navy. Mr. Hollyer, the general manager, converted his private house into a convalescent home for 20 officers. Then a hospital with 40 beds for private and discharged soldiers was opened, and the War Office expressed the thanks of the Army Council for this generous and whole-hearted attention, which proved of great practical value.

Opportunities and How to Meet Them.

Evidence and statistics might have been collected on a much larger scale, giving more conclusive figures as to the benefits of the brine-bath treatment. Not that there is any lack of such evidence. Piles of letters are forthcoming from grateful patients, but there has been no centralised and systematic effort to group the facts and give a summary of the results. In this, as in other respects, Droitwich has trusted too much to individuals and has somewhat neglected to organise collective effort for the common good. As a consequence magnificent opportunities were lost. None could have been more evident than that created by the war when so many patients were unable to go to the continental thermal stations they were in the habit of frequenting. That was the moment when all the citizens of Droitwich should have gathered together and insisted on organised action, and when, it might be thought, medical men would have seized the opportunity for study afforded by a large number of patients, more or less belonging to the same class, suffering under conditions brought about by circumstances common to them all. The stress caused by the war, the need to unite every effort to relieve the wounded, and the acknowledged services, in so many cases, which the brine baths at Droitwich had been proved to render—these things would have rallied both Government and public to the support of some practical scheme to convert Droitwich into a national asset, if such a scheme had been brought forward. In this spirit Droitwich fully participated by giving free baths, free hospital treatment, and friendly sympathetic hospitality to the war victims. But there the movement seemed to stop; yet there was so much to follow. The war has ceased, but the consequences of the war are only beginning to be fully understood, and will only be met by broad national efforts such as those which won the war.

So far well-to-do private patients, who can pay for all they require, are generally able to take sufficient care of themselves. Nevertheless, they are fully entitled to ask why a place like Droitwich cannot be brought up to the level in ordinary amenities which many continental spas have attained. In such places the hotel manager participates in the actual treatment. The patient's medical adviser sends his prescriptions round not only to the dispensing chemist but also to the hotel manager, who has to be prepared willingly to provide any special diet considered desirable. Indeed, all *the hotel and lodging-house keepers should be grouped* together and periodical lectures given to explain how they can best second the efforts of the medical profession to cure the patients and thus contribute to improve national health and local prosperity. If hotel managers consider patients who need special diet too much trouble and strive to get rid of them, they must not be surprised to find that preference is shown for continental spas. British hotel-keepers, especially in a place which has legitimate aspirations to be considered a health resort, have got to learn that they are engaged in a national work, and that the resources of this country ought to be developed for the sake of all. Incidentally they would put money in their pockets. More baths, more houses, more enterprise, are wanted. It is not because some enterprises are paying concerns that nothing further is to be done. By all means let those engaged in the business earn good profits; but *the first consideration is that the nation should be able* to avail itself of the healing qualities of the Droitwich waters. As matters now stand, striking cures are effected, but the advantages of such cases to the reputation of Droitwich are often lost because the facts are insufficiently known, and there is not the necessary accommodation for a large increase of patients.

The Housing Difficulty.

The main or the most immediate problem is the housing problem. It presents the same aspects here as everywhere, but I may be excused for setting it out, as it shows how in numberless other places, as well as at Droitwich, the obvious needs of development cannot be immediately met. More houses and more baths are urgently wanted at Droitwich; but at the present cost of building it is difficult to find anyone ready to risk the necessary outlay. There is a Government scheme for the construction of 56 houses, which have to be completed by June, 1922. Of these 16 have already been erected. They are all to be working-class cottages and none are to be let at a higher rent than 8*s.* a week, *which, it is calculated,* will not represent more than 2 per cent. on the capital outlay, if estimated at the present cost of building. Also these houses must not be rated at more than 1*d.* in the £. So that the State stands to be a heavy loser, while it is thought that this will not increase, but will more probably check, speculative building. In any case these 56 cottages are to be let for less than half the rent that should be paid to cover the cost, and the question is asked who are to be the privileged tenants. Yet and whatever the answer may be to this question, it is but a detail, for something on a much larger scale is needed.

It is a matter of national importance to preserve the health and strength of all those who by productive work are helping to rebuild British prosperity. Curing the sick is but a small part of the problem before the Ministry of Health, though newspaper critics are clearly blind to the fact. The prevention of sickness and its remedy in early stages are the great desiderata. One of the real benefits of the compulsory system of insurance is that it enables the poorest sections of the community to seek medical advice at a much earlier stage of the disease. At Droitwich local practitioners expressed the opinion that anyone who has suffered from some rheumatic complaint of sufficient severity to be laid up for two or three weeks should take a course of brine baths as a preventive against other and more severe attacks of a similar nature. Certain it is that many patients would have given themselves a much greater chance of complete cure had they commenced the treatment at an earlier stage. It is not as a last hope that patients should come to Droitwich, but rather as the first form of treatment, and this will only be largely available when building, reconstruction, and coöperative organisation are set going.

Spa Treatment on a National Scale.

These considerations open out a gigantic problem for so small a place as Droitwich to handle. There were 11,500,000 persons entitled to medical benefit under the Insurance Act in 1919, and it will probably be found that the number has been increased by about a million in 1920. There were, in 1919, *in England and Wales*, 20 million weeks of unfitness for work among insured persons. If only a very small proportion of these 20 million weeks of sickness were spent at Droitwich what a colossal undertaking this would represent for so small a place. Yet there is nothing new or out of the way in such a suggestion. It has been done, done for years and very successfully, but, of course, only on a small scale. Still, shall it be said that what a few workmen have been able to achieve for their own benefit cannot be accomplished on a much larger scale *by the united forces of the entire nation?* In both cases the position is identical; the only difference is in the number of persons involved. This is what happened. When the St. John's Brine Bath Hospital was first started every person who subscribed a guinea per annum had the right to send a patient, who was admitted in his turn. The patient had to pay 10*s.* a week for his maintenance, and received medical advice, complete board, and the necessary baths for a fortnight. These rules have now and quite recently been altered. The voluntary subscription has been *raised to 3 guineas, and the time of treatment to three* weeks. But these are only details that do not affect the principle, for this depends not so much on the amount paid, but on who it was who paid. Now, in this respect, the remarkable fact, that cannot be too carefully noted, is that the hospital, in the earlier stages of its existence, owed its success mainly to the Hearts of Oak Friendly Society. Here, then, we have, on a smaller scale, conditions similar to those that obtain under the Insurance Act. A sick fund is created by small weekly subscriptions, when experience demonstrates that, *by sending some of the patients to* Droitwich, they were sooner able to return to work. Thus the amount of sickness and the drain on the sick fund is reduced—a double saving, which other similar institutions soon learnt to appreciate. Sick funds established in large works or factories began to send some of their patients. This was notably the case at Coventry. The Birmingham Saturday Hospital Fund has now a beautiful convalescent home at Droitwich with some 60 beds. The benefit societies have found it cheaper in the long run to send their patients here. Then what *about the panel patients? Is there not a saving to be* effected with them on what might be called a national scale? This would undoubtedly be the case, especially if a large number of patients could be sent sooner. Here are the means of economising health and money; all that is needed is the power of organising and the initial outlay, to be ultimately refunded. It is not a question of spending money, but, by reducing the prevalence and duration of sickness, of saving money. What the Hearts of Oak Club has satisfactorily demonstrated on a small scale it should be for the Government and the public to assist in realising on a national scale.

The waters of Droitwich are recognised as the strongest natural brine in Europe. They contain more than 20,000 gr. of chloride of sodium per gallon. They also give off radio emanations, which *the patients inhale* while bathing. The curative and tonic properties of these waters have been proclaimed by numerous competent authorities. Such a source of health and wealth should be developed to the uttermost, and not be allowed to languish for want of enterprise. Droitwich deserves to acquire popularity equal to that of the best continental balneological resorts.

MANCHESTER ROYAL INFIRMARY.—A tablet to the memory of resident surgeons of the Manchester Royal Infirmary who were killed during the war is to be placed in the main entrance of the building. The cost, about £100, will be defrayed out of the Medical Board Fund.

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Opportunities and How to Meet Them.

Evidence and statistics might have been collected on a much larger scale, giving more conclusive figures as to the benefits of the brine-bath treatment. Not that there is any lack of such evidence. Piles of letters are forthcoming from grateful patients, but there has been no centralised and systematic effort to group the facts and give a summary of the results. In this, as in other respects, Droitwich has trusted too much to individuals, and has somewhat neglected to organise collective effort for the common good. As a consequence magnificent opportunities were lost. None could have been more evident than that created by the war when so many patients were unable to go to the continental thermal stations they were in the habit of frequenting. That was the moment when all the citizens of Droitwich should have gathered together and insisted on organised action, and when, it might be thought, medical men would have seized the opportunity for study afforded by a large number of patients, more or less belonging to the same class, suffering under conditions brought about by circumstances common to them all. The stress caused by the war, the need to unite every effort to relieve the wounded, and the acknowledged services, in so many cases, which the brine baths at Droitwich had been proved to render—these things would have rallied both Government and public to the support of some practical scheme to convert Droitwich into a national asset, if such a scheme had been brought forward. In this spirit Droitwich fully participated by giving free baths, free hospital treatment, and friendly sympathetic hospitality to the war victims. But there the movement seemed to stop: yet there was so much to follow. The war has ceased, but the consequences of the war are only beginning to be fully understood, and will only be met by broad national efforts such as those which won the war.

So far well-to-do private patients, who can pay for all they require, are generally able to take sufficient care of themselves. Nevertheless, they are fully entitled to ask why a place like Droitwich cannot be brought up to the level in ordinary amenities which many continental spas have attained. In such places the hotel manager participates in the actual treatment. The patient's medical adviser sends his prescriptions round not only to the dispensing chemist but also to the hotel manager, who has to be prepared willingly to provide any special diet considered desirable. Indeed, all the hotel and lodging-house keepers should be grouped together and periodical lectures given to explain how they can best second the efforts of the medical profession to cure the patients and thus contribute to improve national health and local prosperity. If hotel managers consider patients who need special diet too much trouble and strive to get rid of them, they must not be surprised to find that preference is shown for continental spas. British hotel-keepers, especially in a place which has legitimate aspirations to be considered a health resort, have got to learn that they are engaged in a national work, and that the resources of this country ought to be developed for the sake of all. Incidentally they would put money in their pockets. More baths, more houses, more enterprise, are wanted. It is not because some enterprises are paying concerns that nothing further is to be done. By all means let those engaged in the business earn good profits; but the first consideration is that the nation should be able to avail itself of the healing qualities of the Droitwich waters. As matters now stand, striking cures are effected, but the advantages of such cases to the reputation of Droitwich are often lost because the facts are insufficiently known, and there is not the necessary accommodation for a large increase of patients.

The Housing Difficulty.

The main or the most immediate problem is the housing problem. It presents the same aspects here as everywhere, but I may be excused for setting it out, as it shows how in numberless other places, as well as at Droitwich, the obvious needs of development cannot be immediately met. More houses and more baths are urgently wanted at Droitwich; but at the present cost of building it is difficult to find anyone ready to risk the necessary outlay. There is a Government scheme for the construction of 56 houses, which have to be completed by June, 1922. Of these 16 have already been erected. They are all to be working-class cottages and none are to be let at a higher rent than 8*s.* a week, which, it is calculated, will not represent more than 2 per cent. on the capital outlay, if estimated at the present cost of building. Also these houses must not be rated at more than 1*d.* in the £. So that the State stands to be a heavy loser, while it is thought that this will not increase, but will more probably check, speculative building. In any case these 56 cottages are to be let for less than half the rent that should be paid to cover the cost, and the question is asked who are to be the privileged tenants. Yet and whatever the answer may be to this question, it is but a detail, for something on a much larger scale is needed.

It is a matter of national importance to preserve the health and strength of all those who by productive work are helping to rebuild British prosperity. Curing the sick is but a small part of the problem before the Ministry of Health, though newspaper critics are clearly blind to the fact. The prevention of sickness and its remedy in early stages are the great desiderata. One of the real benefits of the compulsory system of insurance is that it enables the poorest sections of the community to seek medical advice at a much earlier stage of the disease. At Droitwich local practitioners expressed the opinion that anyone who has suffered from some rheumatic complaint of sufficient severity to be laid up for two or three weeks should take a course of brine baths as a preventive against other and more severe attacks of a similar nature. Certain it is that many patients would have given themselves a much greater chance of complete cure had they commenced the treatment at an earlier stage. It is not as a last hope that patients should come to Droitwich, but rather as the first form of treatment, and this will only be largely available when building, reconstruction, and coöperative organisation are set going.

Spa Treatment on a National Scale.

These considerations open out a gigantic problem for so small a place as Droitwich to handle. There were 11,500,000 persons entitled to medical benefit under the Insurance Act in 1919, and it will probably be found that the number has been increased by about a million in 1920. There were, in 1919, in England and Wales, 20 million weeks of unfitness for work among insured persons. If only a very small proportion of these 20 million weeks of sickness were spent at Droitwich what a colossal undertaking this would represent for so small a place. Yet there is nothing new or out of the way in such a suggestion. It has been done, done for years and very successfully, but, of course, only on a small scale. Still, shall it be said that what a few workmen have been able to achieve for their own benefit cannot be accomplished on a much larger scale by the united forces of the entire nation? In both cases the position is identical; the only difference is in the number of persons involved. This is what happened. When the St. John's Brine Bath Hospital was first started every person who subscribed a guinea per annum had the right to send a patient, who was admitted in his turn. The patient had to pay 10*s.* a week for his maintenance, and received medical advice, complete board, and the necessary baths for a fortnight. These rules have now and quite recently been altered. The voluntary subscription has been raised to 3 guineas, and the time of treatment to three weeks. But these are only details that do not affect the principle, for this depends not so much on the amount paid, but on who it was who paid. Now, in this respect, the remarkable fact, that cannot be too carefully noted, is that the hospital, in the earlier stages of its existence, owed its success mainly to the Hearts of Oak Friendly Society. Here, then, we have, on a smaller scale, conditions similar to those that obtain under the Insurance Act. A sick fund is created by small weekly subscriptions, when experience demonstrates that, by sending some of the patients to Droitwich, they were sooner able to return to work. Thus the amount of sickness and the drain on the sick fund is reduced—a double saving, which other similar institutions soon learnt to appreciate. Sick funds established in large works or factories began to send some of their patients. This was notably the case at Coventry. The Birmingham Saturday Hospital Fund has now a beautiful convalescent home at Droitwich with some 60 beds. The benefit societies have found it cheaper in the long run to send their patients here. Then what about the panel patients? Is there not a saving to be effected with them on what might be called a national scale? This would undoubtedly be the case, especially if a large number of patients could be sent sooner. Here are the means of economising health and money; all that is needed is the power of organising and the initial outlay, to be ultimately refunded. It is not a question of spending money, but, by reducing the prevalence and duration of sickness, of saving money. What the Hearts of Oak Club has satisfactorily demonstrated on a small scale it should be for the Government and the public to assist in realising on a national scale.

The waters of Droitwich are recognised as the strongest natural brine in Europe. They contain more than 20,000 gr. of chloride of sodium per gallon. They also give off radio emanations, which the patients inhale while bathing. The curative and tonic properties of these waters have been proclaimed by numerous competent authorities. Such a source of health and wealth should be developed to the uttermost, and not be allowed to languish for want of enterprise. Droitwich deserves to acquire popularity equal to that of the best continental balneological resorts.

MANCHESTER ROYAL INFIRMARY.—A tablet to the memory of resident surgeons of the Manchester Royal Infirmary who were killed during the war is to be placed in the main entrance of the building. The cost, about £100, will be defrayed out of the Medical Board Fund.

HYGIENE ON THE SEA:

ACCOMMODATION FOR SEAMEN IN SHIPS OF TO-DAY.[1]

(BY OUR SPECIAL CORRESPONDENT.)

VI. A UNITED STATES PASSENGER LINER.

THE *Panhandle State* (10,553 tons), of the United States Mail Steamship Company, was lying in Tilbury Docks when I found her. She is quite a new ship, laid down during the war, twin-screw and oil-burning. She only carries 120 passengers, all in the first class, and all in the midship superstructure. Captain Cunningham, Dr. Robert, and her officers were most kind and anxious to take me to all of their ship, of which they are naturally very proud.

Passenger Accommodation.

The cabins, all outside, vary a little in size, but are, every one of them, quite commodious. The standard equipment is two beds, each with a shaded reading light at the bed-head, so that one can read without disturbing a cabin companion; there is a fixed basin with hot and cold water, and alongside it a thermos flask of iced water. Each passenger has five small drawers for necessaries of the voyage. In the larger cabins there is a settee with two longer drawers underneath it. There is artificial supply of air, an electric fan, a steam heater, and a wardrobe. Half the cabins have private bathrooms; there are also public bathrooms and over each bath is a douche, with mixer, so that the temperature of the shower is regulated at will. The saloon, at the fore end, is fitted with tables for four people each and with excellently pivoted chairs. The saloon is heated with hot air. Behind it is the pantry, directly over the kitchen, in which the cooking is done either by steam or on an oil-fired range; oil is said to be as great an improvement on coal in the kitchen as it is in the stokehold. Outside the kitchen is a bakery, where the dough is all made by an electric kneader, beyond that the butcher's room, steward's store, &c. There is also a laundry, with much machinery, but idle, because unneeded on this short run. The passengers have a music room or social hall (piano and gramophone), a smoking room (also with a piano), and a verandah café at the after end where they can sit on deck and yet be out of the wind; also there are two promenade decks, one enclosed in all its length, with sliding glass windows, so the passengers are not badly off. The officers, too, are well looked after and have plenty of room in their cabins, and these are well furnished. They also live in the superstructure, a deck or more above the passengers.

The doctor is very nicely treated. His suite is at the corner of the superstructure, portside aft. His sleeping cabin is right aft, his bathroom, basin, and w.c. are along the portside, behind a partition, and his office or surgery, between sleeping cabin and lavatory, opens off the passenger's alley-way. There is a large dispensary cupboard in the office, but the space is not much encumbered, though the furniture is "good and plenty." Another door in this bewilderingly large cabin gives access to a staircase leading to the crews' quarters, so that everyone can easily reach the doctor's office, passengers from one side and crew from the other, without crossing one another. Very well planned all of it, making first-class accommodation for a medical officer.

Seamen's Quarters.

The accommodation for the sailors is in keeping with that for the officers and passengers. It is such as I have never before seen. I was first taken to the sailors' mess place, it is amidships, not far from the kitchen. It had a mess-table for 12 men. I suppose it was 12 feet high, 10 feet wide, and 14 feet long; 140 cubic feet per man for the 12 men who messed here. There was the appropriate mess-rack and dresser, also a steam table for keeping food hot, with a cupboard below to warm the plates. This for 12 men, and similar equipment for every mess in the ship. Besides on the dresser there was a steam coffee machine, the same pattern as in first-class passengers' pantries in English lines, and coffee free for the sailors all day and all night long for the turning of a tap. I was curious to hear how much coffee this meant, and was told that 2 oz. daily, 1 lb. a week, was, in practice, the expenditure per man. There were similar messes for petty officers and for the engine-room staff. There are lavatories for firemen, with douche and two fixed basins, so far as I can remember exactly the same as for the first-class passengers. In their w.c. I found a roll of latrine paper, provided apparently by the public conscience of the messes. Next I came to the firemen's sleeping berths: they are cabins for three men. The first I estimated as 12 feet high, 6 feet long, and 10 feet broad; this works out at 240 cubic feet per man, and in their sleeping place, quite apart from the 140 cubic feet each I have mentioned in the mess places, apart also from the bathroom accommodation, both of which are included in the English official 120 cubic feet per man. I expressed some surprise at this generous allowance, so much larger than any I had ever found, and doubted my calculation, but was assured that 240 cubic feet was all right, that being the legal minimum for a member of the crew in an "American" ship. And this firemen's cabin was not bare. Besides the bed places (iron), one single, one double-tiered, there was a toilet-rack for tooth and shaving brushes, little cupboards in it too, a looking-glass for each man, and a steel clothes locker of the pattern so familiar in U.S. factories; it varied in size according to the position in which it must be placed, but a standard size would be 6½ feet high, 10 inches wide, with a shelf across about 1½ feet from the top and below that hooks for clothes. The steel door has three ventilating louvres and is secured by a padlock. There are many hooks about the walls for the men's other clothes. There is an electric fan, and plenty of electric light, which spreads its effect widely because the cabin is so lofty, and there is a good heater.

Baths and Lavatories.—Hospital.

The sailors of the crew are berthed in a deck-house aft, and their accommodation is quite similar. They have a bathroom and lavatory, painted, not white, as I like, but a light slate-blue, and no abominable brown or yellow dado. The showers supply warm fresh water, and the men have plenty of room. The stewards' accommodation is on the deck below and is very similar. There are some 40 stewards, and they have two douches of their own. The hospital is right aft, astern of the deck-house for the crew. There are four beds, double-tiered, and the operating-table is amidships; the whole well lighted. There is a fixed basin with water steriliser and a w.c. Here I got a surprise. I had seen baths, basins, w.c., &c., throughout the ship, and had taken them for ordinary white earthenware and good of its kind, but happening to say so when in the hospital I was told I was quite mistaken. They were one and all of iron, porcelain enamelled, the enamel baked on. Lighter, cheaper, and less breakable than earthenware, and giving exactly the same security for cleanliness and the same decorative effect. The only fittings in the ship I should like to see changed are the w.c.'s for the crew; they are not well-shaped and are less easily flushed therefore, nor so well enamelled and smooth. That such a complaint should alone emerge seems to suggest that the rest of the ship was very good. Besides, I did hear there was some thought of replacing these w.c.'s by a better pattern.

Coming away from the hospital I noticed what the French call a *gouttière*, a gutter stretcher of steel frame with wire netting over, for moving and perhaps for hoisting out a lying-down case. It had a short pillar to steady the patient by the perineum, and the necessary hand-holds, also serving for securing bandages or the slings for hoisting a patient out. I mentioned the gyroscope compass on the bridge of *Imperator*. On board the *Panhandle State* I was shown the gyroscope itself, in a special compartment, the gyroscope room. There are two gyroscopes—heavy wheels revolving 10,000 times a minute; they are fixed parallel in a frame, and as each when revolving takes up its position with its axis parallel to the axis of rotation of the earth, the line between the poles, the index of the frame points always to the north, and is not diverted by the local variation or the quadrantal or other deviation of the ship, and one of their great anxieties is off the navigator and the captain. The ship has a very delicate "wireless" receiver in which the officers are much interested. I was allowed to listen, and heard quite distinct clicks, which they told me were signals from a wireless station in the United States. This at 4 P.M. at Tilbury.

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[1] Previous articles which have appeared in THE LANCET describe the accommodation on *Aquitania* (Sept. 11th, 1920), *Olympic* (Sept. 25th), *Imperator* (Oct. 9th), *Achilles* (Nov. 27th), and Cargo Steamers (Dec. 18th).

Summary.

On her small displacement this ship does more for her officers and crew than any ship I have seen up to the *Aquitania* and *Olympic*, five times her size. The men are treated more kindly than in any English lines. They ship at New York for the voyage or for six months, whichever is the shorter. When they return to New York they are discharged, but any man who wants to go on again, and is appreciated, signs on again next day. Service for approved men is thus practically continuous. That means no boarding-house bill, fewer temptations, more saving. This ship is not a charitable institution but a business proposition, and I therefore feel emboldened to impress on British shipowners that other people can give their crews better accommodation, free coffee all the time, and continuity of service, and will find it pay to do so. Also, that they can lodge their doctor comfortably; doubtless the owners get a more skilful surgeon who gives them better service.

I must express my thanks to the U.S. Mail Steamship Company for kindly letting me go on board this very interesting ship. I expected to find something rather good in accommodation for sailors on board a United States ship and I was not disappointed.

CONTROL OF VENEREAL DISEASE.

The Dangers of Half Measures in Syphilis.

PUPILS of Cæsar Boeck, late professor of dermatology in Christiania, used to speak almost apologetically of his antagonism to the exhibition of mercury in syphilis. He argued that, particularly in early syphilis, mercury is apt to modify the reaction of the organism to the invader, and by rendering the course of the disease atypical do the patient more harm than good. At the time his distrustful attitude towards mercury was rather contemptuously condoned as the foible of an otherwise gifted scientist. Now, however, there seems to be a growing conviction that timid specific treatment with mercury or salvarsan may divert the disease from other parts of the body to the central nervous system. At a recent meeting of the Medical Society in Christiania Boeck's successor, Professor Bruusgaard,[1] discussed two series of cases which throw light on this point. The first included the 630 cases of early secondary syphilis treated at the Dermatological Department of the Rigshospital in Christiania since 1912. Among these were ten cases of neuro-recurrence, and a feature common to all was the timidity, dilatoriness, unmethodicalness, and general inadequacy of the specific treatment they had received. In one of these cases there were signs of meningeal irritation early in the disease which terminated fatally 16 months after infection. The lepto-meningitis found post mortem was, in Professor Bruusgaard's opinion, undoubtedly fostered rather than checked by the few intramuscular injections of salvarsan which were given at long intervals. His second series of cases, a total of 420, concerned patients with early secondary syphilis treated since the summer of 1915 with large doses of salvarsan and mercury. In this series there was only one case of neuro-recurrence, the patient being a workman, aged 20. The cerebro-spinal fluid was normal on his admission to hospital. He was discharged, after a combined course of salvarsan and mercury, symptom-free and with Wassermann's reaction negative. A month later he reappeared with signs of severe syphilis of the brain. Had he but examined the cerebro-spinal fluid before the patient's discharge, Professor Bruusgaard thinks this disaster might have been avoided, as the evidence of lumbar puncture would probably have indicated further treatment. Though he attaches great importance to pushing specific remedies to the utmost, he recognises conditions under which the affinity of the poisons of syphilis for the nervous system may be so great that, with the best of care, the disease is apt to settle in the nervous system, thwarting the most heroic efforts to dislodge it. The figures given in this paper certainly suggest that neuro-recurrence is more common after casual than after systematic and vigorous treatment, but they do not show that syphilis of the central nervous system is more common after casual specific treatment than in the absence of any treatment. In the nature of things this point must be difficult to settle by statistics, for to control specific treatment by a comparison of treated with untreated cases involves unjustifiable methods.

The German Association for Combating Venereal Diseases.

A pamphlet issued by this Association, and recently received by the N.C.C.V.D., to which we are indebted for the following notes, gives in brief space a comprehensive review of its history, ambitions, achievements, and, perhaps most instructive of all, its failures. The Association has now been at work for over 16 years, and to judge from its candid survey, its activities have grown rapidly, and its sphere of usefulness has been greatly enlarged. The original objects of the Association were the recruiting of the greatest possible number of members from all strata of society, the formation of branch associations, convening of meetings and giving of lectures on sexual hygiene, distribution of popular educational literature, direct and indirect exercise of pressure on legislative bodies, reform of the treatment of venereal disease, supervision of prostitution, sympathetic contact with the daily press, and the founding of a special journal. Altogether an ambitious programme. It was soon found that educational propaganda was the first and most essential need; ignorance as to the dangers and consequences of infection proved to be enormous. But the wording of educational propaganda was at first a serious stumbling block, for marked differences of opinion arose as to: (1) the effect of sexual continence on health; and (2) the morality and tactical wisdom of advocating prophylactic measures. The upshot of these differences appears to have been a compromise; the exact nature of this compromise is not disclosed, but is said to be "tactful." Many millions of pamphlets have been published for the guidance of men and another pamphlet has been published for the benefit of women, in which both the hygienic and ethical aspects are emphasised. It was, however, found that the information given in these short pamphlets was too sketchy and more elaborate publications were called for. These proved useful as material for popular lectures and instruction of children by their parents. Pictorial propaganda in the form of lantern slides and cinema productions have also been pushed with vigour and success, and a travelling exhibition has also proved very effective. The translation of Brieux's play, *The Shipwrecked*, by Professor Flesch, was a considerable but not complete success when staged in Germany; its dramatic force made a deep impression, but from the artistic standpoint it was faulty. Many hundred thousands first learnt of the importance and great dangers of venereal diseases through this play. It was also filmed under the title of *And There Was Light*, but it had to be confessed that the artistic blemishes were emphasised on the film, and the educational utility of the work was largely obscured by side issues dragged in by producers anxious to add to its commercial value.

So far the efforts of the Association to introduce sex hygiene into the curriculum of schools of various grades have met with much passive obstruction and have been fruitless. But its original ambition to publish a journal in which every aspect of the problems involved could be discussed from every point of view has materialised in 16 volumes of *Mitteilungen der Deutschen Gesellschaft zur Bekämpfung der Geschlechtskrankheiten*, and in 18 volumes of the more scientific publication *Zeitschrift für Bekämpfung der Geschlechtskrankheiten*. An example of the usefulness of these publications was their free ventilation of the problem of infection conveyed to their homes by discharged soldiers. This discussion prompted the establishment of consultation centres and dispensaries for venereal disease in many parts of Germany.

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[1] Norsk Magazin for Lægevidenskaben, November and December, 1920.

In the field of legislative reforms the activities of the Association appear to have been numerous. Its agitation against penalising insured persons suffering from venereal disease and disqualifying such persons for insurance benefits quickly led to reforms. The Association has also made its influence felt in legislative measures dealing with such matters as the sale of preparations supposed to prevent conception. It has also succeeded in extending the obligations of professional secrecy, incumbent on doctors, to officials employed in the administration of sickness insurance. Further, its interest in the problems of prostitution led to its appointment of an independent commission of experts whose recommendations were largely reflected in the Bill submitted to the Reichstag in 1918 on the control of venereal disease. Much has also been done by the Association to get venereal disease treated as a specialty by specialists. It has also secured chairs at certain universities for venereology which has become a compulsory subject for examinations in medicine. It would thus appear that many, if not most, of the reforms carried in Germany with reference to the venereal diseases have been instituted by *Die Deutsche Gesellschaft zur Bekämpfung der Geschlechtskrankheiten.*

Prophylaxis in a Texas Camp.

In a recent number of the *Military Surgeon* Captain T. Hall, of the Sanitary Corps, U.S. Army, presented a summary of the reports on the 10,000 cases of venereal disease notified to headquarters between Sept. 10th, 1919, and Sept. 13th, 1920. Amongst them there were, per cent., 66 cases of gonorrhœa, 21 of chancroid, and 13 of syphilis. It may be noted that in 1914, the last year for which statistics are available, the figures for the British Navy were almost the same—68, 22, and 19—amongst some 8000 cases. In the American Army the prophylaxis of venereal disease seems to be increasingly, though only slightly, justifying itself. The town from which most cases (456) are reported is in Texas, four miles from a great camp, and the second paper is a particularly interesting account of prophylaxis at that camp. In an account, which will well repay perusal by all who are engaged in minimising the disasters of venereal disease, Major C. W. Shaffer, Medical Corps, U.S. Army, who was sanitary inspector of the second division, quartered in that camp, describes the measures he took between January and July, 1920, to draw the men to avail themselves of the prophylaxis offered them. He desired to get prophylaxis taken and to get it taken early. There was a treatment centre already in the town, but it was out of the way. He got space in an army hut, close to the centre of the town, near the theatres, and near the station from which the trams and 'buses started for the camp. Men on pass would not leave the town early in the evening to go out to the camp for treatment and lose the rest of their leave; so he brought treatment to them and they took it. He had a very neat equipment installed, had a trustworthy orderly always on the spot, and saw that the place was kept as perfectly as an operating room. The orderly saw disinfection thoroughly done, otherwise each man had complete privacy for his ablutions. The equipment and the minute routine of treatment, both very judicious, must be read of in the paper. The men reacted to this care for them; 10 was the approximate number per night, but 63 were treated on one single evening. In all 1361 men were dealt with in six months. Of these, 572 belonged to the camp, so that their history could be followed. Amongst them there developed only 3 cases of disease, and it is suspected that these came late for disinfection. Major Shaffer tried tactfully to get the men to take treatment and was successful; he tried to get treatment taken early, and here again he had success. How little weighs his trouble, the cost of the equipment, and the wages of the orderlies, how little they all are compared to the damage to the nation and expense to the army of the possibly 250 additional cases of venereal disease saved in six months in the town which in this year inflicted 456 cases on the United States Army.

The All-America Conference.

The Washington Conference last month was attended by over 400 delegates, there being representatives from Argentina, Brazil, Chile, Ecuador, Cuba, Honduras, Mexico, Paraguay, and Porto Rico on the New World side. Canada was officially represented by Dr. John A. Amyot, deputy Minister of Health. Sir Arthur Newsholme was put down as English representative, although he still occupies a chair at Baltimore. Dr. T. F. Ritchie, Lieutenant-Colonel, R.A.M.C. (retired), came from the League of Red Cross Societies. Czecho-Slovakia sent two delegates.

The conference is described as one of the most remarkable medico-sociological gatherings ever held in America. A General Conference Committee was selected by the president, Professor Wm. H. Welch, on the nomination of the Administrative Committee, to include pathologists, bacteriologists, syphilographers, urologists, gynæcologists, general clinicians, statisticians, clergymen, educators, psychologists, psychiatrists, sociologists, law enforcement officers, social service workers, and others. At the first meeting of the Conference they were divided into 12 groups, each dealing with a special group of problems, presented in the form of questions previously prepared by the Administrative Committee. At the afternoon session each section chairman reported for general discussion the conclusions arrived at by his section in the morning meeting. These discussions often showed that conclusions quite valid from the restricted view-point of one section had to be modified considerably to meet the requirements of other sections or of the entire committee. In some instances conclusions presented by one section and sharply combated by members of another section were referred to a joint meeting of the respective sections and of such others who were interested with instructions to submit a report on the following day. In other instances conclusions presented to the General Conference Committee by one section were adopted with little or no change.

In this way a number of conclusions were reached by the whole Conference, of which the following were noteworthy:—

Immunity.

With *reference to gonorrhœa*, there is no evidence of the establishment of any immunity to disease beyond that of a more or less temporary immunity in the case of existing individual infections. Such a temporary relative immunity may be lost either as the result of disturbed relations between the infecting organism and the host or through the introduction of a new gonorrhœal infection.

With reference to *syphilis*, there is no evidence of an absolute and permanent immunity to syphilis unless it be that due to an existent infection. There is evidence to show that *infection* may exist without obvious manifestations of the disease. The immunity ensuing in such an infection may extend even to the degree of a commensal or symbiotic adaptation.

Wassermann Reaction.

The blood Wassermann reaction should not be used as a sole guide to the duration of a syphilitic infection. The blood Wassermann reaction should not be used as the sole evidence of the effectiveness of a *particular drug or method of treatment.* The blood Wassermann reaction should not be used as the sole evidence of "cure," no matter how many times repeated.

The complement-fixation test has not yet been shown to be of value in the diagnosis of doubtful cases of gonorrhœa. It is possible, however, that the precipitin test recently reported by Meader and Robinson may be of great value.

Venereal Disease Clinics.

The treatment of venereal diseases in the same institution with other diseases promises a better understanding on the part of young physicians, especially among interns and medical students, regarding the importance of these diseases and of the true relation established between them and other pathological conditions.

Education.

Fear should not be deliberately stressed as a deterrent. The element of fear should appear only to the extent that it is inherent in the presentation of the facts themselves. Any morbid tendencies resulting from such unavoidable fear should be corrected by positive and constructive teaching as to the prevention and cure of the disease.

Law Enforcement.

The establishment and maintenance of high standards of sex conduct is the best protection of public health from venereal diseases. Up to the level of the highest standards which can be sustained by public opinion, laws penalising the promotion of, and the indulgence in, illicit sex relations, constitute sound and practicable public health measures.

The establishment of reformatories with standard equipment for examination, classification, training, recreation, and parole is the most hopeful method of rehabilitating the old offender.

Psychological Aspect.

Although there is danger that a superficial and erroneous interpretation of the Freudian psychology in regard to the repression of the sex instinct may be detrimental to the successful development of the programme for the control of venereal disease, a more thorough-going, complete, and scientific interpretation, however, tends to aid such a programme, in that it places the emphasis upon the practical means for guiding the sex instinct into socially useful and constructive activities.

A detailed account of the proceedings is in course of preparation.

HOUSING NOTES.

The Government Building Scheme a Success.

IN spite of shortage of labour, and especially of skilled labour, very considerable progress has been made with the Government housing scheme during the last 12 months. The extent of the difficulty caused by the shortage of labour can be gauged from the following approximate comparative figures for England and Wales as to labour in the whole building trade:—

	1910.	*1911.*	*1914.*	*1920.*
Masons ...	73,012 ...	52,188 ...	34,381 ...	19,310
Slaters... ...	9,706 ...	8,391 ...	4,154 ...	3,673
Plasterers ...	31,301 ...	25,082 ...	19,479 ...	12,067
Joiners ...	265,000 ...	208,995 ...	126,345 ...	103,199
Bricklayers	*115,995* ...	*102,752* ...	*73,671* ...	*53,063*

Steady progress has been made in private building, aided by the Government subsidy. In April last the grant was paid to the builders of two houses; now money is paid each week in respect of 300 completed houses; in nine months 4443 houses built by private builders have been completed. Under schemes of local authorities and public utility societies 11,122 houses have been completed, as compared with 848 in January last. Some 60,000 houses were commenced in 1920. The London region has up to the present exceeded all the others in the number of houses built and certificates applied for under the grant to private builders. These figures speak for themselves.

Building by Direct Labour.

The Ministry of Health has required the Metropolitan Borough Council of Poplar to accept the lowest tender for housing work rather than build by direct labour at a slightly higher cost. Much is to be said in favour of the Ministry's decision. There is perhaps a likelihood, if building by direct labour is carried out by a municipal corporation, for the workmen to make demands which would not receive the support of the general public; men working for a municipal council are at times apt to think they can impose conditions which a private contractor would not entertain. This is one of the weaknesses of local government; a councillor's seat of course depends on his retaining the suffrages of his constituency, and a section in his ward at times obtains an undue ascendancy in voting power. It is often stated that building by direct labour has very considerable advantages over building by ordinary tender; in several instances within the writer's knowledge direct labour has not been the only factor in the problem which has rendered such a course advisable. The authority has, through the energetic action of one or more of its members and officials, taken advantage of offers to obtain building materials at favourable prices when the opportunity presented itself, although they were not requiring such materials for immediate use. This is, of course, an argument for granting chairmen of committees reasonable executive powers. But it is also well known that a private contractor can usually buy much cheaper than a public body; unless a public conscience is awakened among the commercial members of the community generally this state of affairs will continue.

Houses Built of Concrete.

No subject has been of greater interest to the public in connexion with building than the use of alternative new methods of construction. Cement concrete is the material which seems to the layman to be the most obvious substitute for brick. H.M. Office of Works has obtained the sanction of the Richmond (Surrey) Town Council to erect in concrete a number of houses in connexion with the municipal housing scheme; Pattinson's process will be employed. This patent shuttering system provides a hollow concrete wall with 4-inch inner and outer casings and a 1¾-inch cavity; houses of a similar type are in the course of erection in Bedford. Although this form of construction cannot be condemned on the ground of instability, to produce a satisfactory structure much depends on the careful mixing of the materials in correct proportions; the complete filling of the shuttering requires careful workmanship and close supervision. H.M. Office of Works provides a working foreman who has had experience of the making of houses by this method; when he has imparted his knowledge to one or more of the workmen engaged in the erection of these concrete houses he passes on to another area where his services are needed. The Building Board appointed by the Scientific Industrial and Research Society is carrying out experiments on a site allotted at East Acton for practical research as to the best and most economical means of erecting cement concrete houses. It would seem that the committee has formed the interim conclusion that wooden shuttering enabling a cavity wall with iron ties to be built constitutes a practical proposition. It is doubtful if anybody is in a position to compare houses built of cement concrete with those built of brick; the stability of both the concrete and brick depends in a large measure, if not entirely, on the care and skill with which the foundations are laid. If more or less superficial cracks appear in the concrete walls these can be patched up. As the cement houses built for the Richmond housing scheme are to be covered with rough cast the addition of more of this material will prevent any trouble arising from cracks. Even in houses constructed of brick an unsightly appearance caused by aqueous vapour in the air condensing on the walls (water of condensation) is only too frequently found; by adding a proportion of coke-breeze to the material used to make the inner wall of the concrete houses it is expected that in this particular these houses will compare very favourably with the usual house built of brick; if the inner wall is finished with plaster instead of cement an additional safeguard against water of condensation is provided. A builder who in 1870 erected at Folkestone on the lower sea-front a crescent of 14 houses built entirely of cement concrete claims that concrete houses cannot be equalled for warmth in winter, coolness in summer, dryness, and being soundproof by any brick house of the same age; he holds that their solidity increases each year with their age, as shown by the condition of the walls when workmen have to cut openings in them to make alterations. The walls were 14 inches thick and built entirely with unskilled labour—not a bricklayer was employed on the job. H.M. Office of Works does not claim that it costs less to build a house in concrete than brick; the great scarcity of bricklayers, however, demands that if housing schemes are to be completed within a reasonable time the houses must be constructed by some such process as that mentioned above. Although stonemasons hold that the laying of concrete blocks is within their scope, it is usual to employ bricklayers for this purpose. To build houses of concrete blocks does not solve the problem arising out of scarcity of bricklayers; in the shuttering process much of the work can be done by unskilled labour. Ex-Service men out of a job can therefore be employed.

Pisé de Terre (Rammed Earth) Houses.

Where walls cannot be built as quickly or cheaply in brick or stone, pisé de terre serves. For this material to be an economical substitute for brick or stone a suitable material must be available at the site; shuttering and tools of an approved type must be used; the work must be well thought out beforehand so that it can be carried out quickly; lastly, the labour for hand ramming must be cheap or power ramming must be substituted. For building soundly the foundations must be solid; above all, the walls must be protected from damp, above and below, from rain, and from accidental water; effective protection must be provided against attack by rats and other vermin. As regards material, anything which will bind into a footpath which will keep clean in both wet and dry weather will make a good pisé wall. Unfortunately the builders of some of the mud cottages erected within recent years in some parts of England have not always been so fortunate as to select suitable materials. Any material or mixture of materials which has not been proved should be subjected to a pressure test by a competent expert. The great disadvantage of mud walls is that water once let into a wall will almost certainly bring it down. Protection against rain is afforded by using a waterproof solution such as silicate of soda to mix the material, or by spreading a waterproof coat on the external surface; damp-courses are necessary not only at the base of the wall but at the top and under all window sills. As regards cost, in ordinary circumstances in view of the present price of labour no economy would be effected by erecting pisé walls in place of brick unless some efficient mechanical means were used for ramming instead of ordinary hand labour.

Timber-framed Cottages.

Timber-framed cottages are being erected under the housing scheme of the Bradfield Rural District Council. The foundations are brickwork on cement concrete. The walls above the level of the damp-course are made up of timber frames, to the outer side of which felt and weather-boarding are fastened; the inner surface is plastered. The contract price for a pair of three-bedroomed houses, a ground floor of which includes a living-room, parlour, scullery and wash-house, and a barn, together with a well, paths, and fencing, is £1355.

Bermondsey Borough Council v. Heath, Brook, and Sneath.

A case of considerable importance to local public health and housing committees has been decided by Mr. H. T. Waddy, the magistrate at the Tower Bridge police-court. It goes to show that local authorities need have no fear of being unable to recover the cost they incur in making houses reasonably fit for human habitation if the owners fail to comply with the notices served upon them. The Bermondsey Council took proceedings against the owners of property in the borough to recover the expenditure incurred by the council in making the property reasonably fit for human habitation under Section 28 of the Housing and Town Planning Act, 1919, the work having been carried out by the council after the owners had failed to do so within the time specified in the notice served upon them under that section. The defendants were concerned with 550 houses which they owned or managed and kept a small staff of workmen permanently employed in attending to their properties. Even under the pressure of statutory notices (76 intimations of work to be done were served under the Public Health Acts between Jan. 1st and April 23rd, 1920, in addition to some 39 notices later, including 28 under the Housing and Town Planning, &c., Act, 1919) the defendants never had more than 22 men engaged at any given time. The magistrate considered that if the defendants had chosen to obtain the services of further workmen they could have done so, and seeing that the local authority, when they took in hand themselves the work of the five houses which were the subject of the action, completed the whole of the work in 15 or 16 days, the period of 21 days stipulated in the notices as the time within which the work was to be completed was on the whole a reasonable time.

ROUMANIA.

(FROM OUR OWN CORRESPONDENT.)

Insanity in the Balkan States.

RECENT statistics show that the number of registered cases of insanity is steadily increasing year by year in all the Balkan States. This increase is generally supposed to be largely due to the war and to the accumulation of chronic cases dismissed from asylums for want of accommodation. It is pointed out in a report dealing with the subject that the science of eugenics must play a very important rôle in the prophylaxis of insanity, and should be carefully studied. When national eugenics become practical politics, the problem of the prevention of insanity will have been largely solved. A Bulgarian neurologist has proposed the sterilisation of degenerates as a means of checking the increase of insanity and degeneracy. Expression of his views has given rise to considerable discussion; the chief superintendent of the hospitals and asylums stigmatised the method as inhuman and inefficacious. He advocated the segregation of degenerates in special colonies, as practised in Sweden; in this way they are prevented from propagating children, and cannot exercise a bad influence on the community.

Mercuric Oxycyanide Powders Instead of Quinine.

A nurse in Professor J. Lovrich's department of the obstetrical clinic at the University of Budapest recently made the mistake of putting 30 mercuric oxycyanide powders into medicine cases instead of as many quinine powders. At the same time a fever patient in one of the gynæcological wards required a dose of quinine; her nurse took one of these powders from the quinine box and administered it; the unfortunate patient died four days later. Both nurses were placed under arrest.

Infectious Pneumonia in Cattle.

In Poland cases of infectious pneumonia have occurred in cattle, infection coming from the Eastern border. Several cases were observed in the neighbourhood of Vilna, but every precaution was taken; the Hungarian frontier was closed against cattle, and numerous veterinary surgeons were sent thither with strict orders to kill every suspected animal, for if the epidemic entered the country about 80 per cent. of cattle would probably be lost. The last two oriental cattle plagues in Hungary occurred in 1871 and 1882, and both were very disastrous. In Bulgaria an outbreak of this disease was checked early in 1914.

The Spread of Venereal Diseases in Budapest.

An institution has been established by the State police where food, work, and shelter are provided for women coming from the provinces; in this way hundreds have been saved from prostitution. Housing conditions render it impossible to extend the scope of surveillance work at present, but whenever possible women who are found unwilling to earn a wage except by prostitution are liable to punishment and transportation from the capital. The venereal hospitals are crowded; daily reports are furnished, giving the numbers of vacant beds, but the latter are immediately filled. The spread of venereal diseases is shown by the following numbers. During police raids on cafés, cabarets, &c., on Nov. 13th 51 women were arrested, of whom 21 were found to be infected; on the 20th, of 25 women arrested 14 required treatment; on the 21st 37 were arrested, of whom 27 had been ill. The authorities are entirely unable to check the rapid spread of secret prostitution. The building of a large new venereal hospital has long been discussed; the Government has promised financial support, and the city of Budapest has granted free ground for the site, but the present expense of building stands in the way of this much-needed means of dealing with a very serious question.

Protection of Children from Alcoholism.

Dr. Doczy, President of the Budapest Order of Good Templars, referring in a recent address to abortion, premature birth, and infant mortality caused by alcoholism in parents, said that the giving of alcohol to children even in very small doses caused chronic general and organic disturbances. In order to avoid the alcoholisation of infants nurses should be forbidden any alcoholic drinks. Children hereditarily disposed to alcoholism should, if possible, be segregated from their families; homes for the protection of children should make definite provision for the care of the young families of habitual drinkers.

Dec. 20th, 1920.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

The Yellow Cross.

As the matter has excited interest outside this country, I am sending you further details of the Yellow Cross insurance scheme. The events leading up to its formation were as follows. The problem of the general practitioner had been for some time a matter of much discussion in this country, but through the effects of the legislation of the last few years it became a burning one, since the number of possible private patients for the general practitioner was being constantly cut down. An ever-increasing number of people were made more or less compulsory members of the Krankenkasse, or sickness insurance institute, by law. Whilst formerly only manual labourers, artisans, factory hands, &c., had to become members of these institutes, later on the membership was extended also to people earning higher wages. It was originally intended to provide for medical help and sick pay in case of illness, which generally involved a loss of earnings. By the pressure on other classes of population, paid by the month, to become members of the Krankenkasse, these were taken away from the general practitioner. This was bad for the doctor, but also not satisfactory to the insured person, because our system of sickness insurance does not permit free choice of doctor, but allows the patients to attend only those doctors appointed by the Krankenkasse. During the last two years persons without independent means earning anything up to 96,000 kronen a year, have become entitled to free medical aid, remedies, and sick pay from the Krankenkasse, and many have availed themselves of these facilities. Within the last few months endeavours have been made to form a sickness insurance institute for civil servants, and negotiations are even now going on between the Government and the medical organisations with this object. The latter desire to break the prevailing system of appointed doctors and to introduce the system of free choice in order that the pecuniary advantages of these schemes shall be shared by all doctors. However, a voluntary society, the Yellow Cross, founded two years ago to insure persons of the middle classes against sickness, is now conducted on lines worked out by Hofrat Blaschke, a well-known actuary, and apparently reconciles the needs of the public and the profession more successfully than the State schemes. The professional and business classes are not seriously inconvenienced by an occasional illness of short duration; but an illness involving large expenses, such as an operation, or tuberculosis, is a real menace to them, for the fees of surgeons and the cost of nursing homes and sanatoriums are at present very high. An operation followed by two weeks' treatment in a home may cost up to 12-15,000 kronen, or about 10-25 per cent. of the year's income.

Insurance against Operations and Tuberculosis.

The Yellow Cross has managed to secure the principle of free choice of doctors by adopting the rules laid down in the English National Insurance Act of 1911, which says that any practitioner desiring so may be placed on the list of doctors working under this Act, and that the patient may choose his doctor from amongst the names on the list. The Yellow Cross at present insures its members against only two contingencies—surgical operation of any kind, on the one hand, and tuberculosis, alone among medical conditions, on the other. In case of such an illness the patient chooses his doctor and his sanatorium, arranges as to costs, and he gets his expenses refunded by the Yellow Cross up to the sum insured by him. If, however, the costs are less than the insured amount only the actual costs are refunded; if they amount to more the patient has to find the balance. The unit of insurance is 3000 kronen for any operation, 2500 kronen for tuberculosis; the premium is 6 kronen a month, covering both insurances; 3 kronen a month against an operation only. These premiums are less than half of the ordinary premium paid by members of the Krankenkasse, who get sick pay of 10 kronen a day, but have to rely on the appointed doctor and have to go to a general hospital for operation. The units of 3000 kronen (operation) 2500 (tuberculosis) may be increased up to five times that sum by payment of adequately multiplied premiums. Only such operations are covered by the premiums which cost, according to the minimum fee list of the Vienna Medical Council, at least 600 kronen (so that minor surgery is excluded). A list is issued giving the sum that is payable in the event of any one of the numerous specified operations which are covered by the premium. A number of major operations are given herewith, as examples, together with the sums which are insured by payment of the simple premium.

	Kronen.
Mastoid operation	1300
Enucleation of the eye...	1000
Removal of hæmorrhoids	1300
Appendicectomy	1800
Obstetric operations ...	1200-2000
Cancer of the larynx with removal	3000
Thyroidectomy	2000
Amputation of the mamma	1600

It will be understood that these are only the units and that a doubled or trebled premium will insure for a higher amount in exact proportion. At the present time three units suffice to cover all expenses connected with an appendix, kidney, or mastoid operation in one of our second-class private sanatoriums. As regards tuberculosis, a treble unit will no doubt meet the expenses of a stay in a home for about two months. The insured sum is not to cover all expenses, but to form a substantial help.

The Coöperation of Banks and Businesses.

As regards the possibilities of meeting the financial requirements of the Yellow Cross, actuarial investigations have shown that a membership of at least 10,000 members would be necessary if the association were to rely only on its own income. But by means of re-insurance with the two biggest insurance companies —a private one and an official (State) insurance company —the risks of the association have become almost nil. A special feature is the opportunity for collective insurance by corporations, banks, schools, industrial concerns, &c., of their members against tuberculosis alone or operations alone, if a minimum of 100 persons is insured by them. If a number of annual premiums are paid in advance certain discounts are allowed. The Union of Specialists of Vienna, with a membership of about 550, has joined the Yellow Cross insurance against tuberculosis. Each member pays a yearly premium of 24 kronen to his union, which in its turn arranges payment with the Yellow Cross. The Medical Sickness Club of Vienna has insured its 1200 members against operation. At present the number of persons insured in the Yellow Cross, which has recently changed its name and is in future to be known as "Krankenschutz" (protection against illness), amounts only to 2600, but the membership has increased very considerably during 1920. Up to now sums amounting to 50,000 kronen have been paid out, being equal to about 50 per cent. of the premiums received last year. Taking into consideration the difficulties with which the association had to grapple, since its aims are distinctly opposed to those of the now defunct social-democratic government, it is no wonder that its expansion has not been greater. But the advantages offered by this scheme are now becoming clear.

Within the last few weeks it has been found necessary to take certain precautions when accepting candidates for insurance. Persons applying for insurance against tuberculosis must submit to a medical examination by a doctor appointed by the association, whilst those applying for insurance against an operation have to produce a certificate of health from their regular medical adviser. When corporations join the Yellow Cross collectively certificates or examination of their members are not insisted on. The medical organisations in Vienna have asked their members to point out to their patients the advantages of insurance in the Krankenschutz, and the movement is expected to have important developments.

Dec. 31st, 1920.

URBAN VITAL STATISTICS.

(Week ended Dec. 25th, 1920.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 18 million persons, the annual rate of mortality, which had been 13·2, 12·9, and 15·3 in the three preceding weeks, fell to 15·1 per 1000. In London, with a population of nearly 4½ million persons, the death-rate was 15·3, or 0·7 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 6·5 in Darlington, 7·4 in Ipswich, and 8·0 in Enfield, to 23·0 in Southport, 23·9 in Exeter, and 24·2 in Middlesbrough. The principal epidemic diseases caused 216 deaths, which corresponded to an annual rate of 0·6 per 1000, and comprised 79 from infantile diarrhœa, 64 from diphtheria, 34 from measles, 20 from scarlet fever, 16 from whooping-cough, and 3 from enteric fever. Measles caused a death-rate of 2·8 in Walsall and 2·9 in Middlesbrough. There were 4780 cases of scarlet fever and 2547 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 4994 and 2654 respectively at the end of the previous week. The causes of 41 of the 5149 deaths in the 96 towns were uncertified, of which 8 were registered in Birmingham and 3 each in Southend-on-Sea and Barrow-in-Furness.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2¼ million persons, the annual rate of mortality, which had been 13·5, 15·2, and 16·1 in the three preceding weeks, further rose to 16·2 per 1000. The 338 deaths in Glasgow corresponded to an annual rate of 15·8 per 1000, and included 7 from whooping-cough, 5 from diphtheria, 4 from scarlet fever, 3 from infantile diarrhœa, and 1 each from enteric fever and small-pox. The 116 deaths in Edinburgh were equal to a rate of 17·7 per 1000, and included 4 from measles and 2 from diphtheria.

Irish Towns.—The 141 deaths in Dublin corresponded to an annual rate of 17·7, or 2·5 per 1000 below that recorded in the previous week, and included 6 from infantile diarrhœa. The 136 deaths in Belfast were equal to a rate of 17·2 per 1000, and included 3 from infantile diarrhœa, 2 from diphtheria, and 1 from scarlet fever.

(Week ended Jan. 1st, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 18 million persons, the annual rate of mortality, which had been 12·9, 15·3, and 15·1 in the three preceding weeks, rose to 16·6 per 1000. In London, with a population of nearly 4½ million persons, the death-rate was 16·5, or 1·2 per 1000 above that recorded in the previous week, while among the remaining towns the rates ranged from 7·9 in Ilford, 8·1 in Oxford, and 8·3 in East Ham, to 24·8 in Sunderland, 27·1 in Hastings, and 27·7 in Bath. The principal epidemic diseases caused 249 deaths, which corresponded to an annual rate of 0·7 per 1000, and comprised 96 from infantile diarrhœa, 63 from diphtheria, 34 from measles, 33 from whooping-cough, 17 from scarlet fever, and 6 from enteric fever. Measles caused a death-rate of 1·1 in Newcastle-on-Tyne, 1·3 in Warrington, and 2·5 in Middlesbrough, and whooping-cough of 1·4 in Sunderland. There were 4817 cases of scarlet fever, 2642 of diphtheria, and 1 of small-pox under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 4780, 2547, and 0 respectively at the end of the previous week. The causes of 45 of the 5679 deaths in the 96 towns were uncertified, of which 11 were registered in Birmingham, 6 in Liverpool, 5 in London, and 3 in Gateshead.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2¼ million persons, the annual rate of mortality, which had increased from 13·5 to 16·2 in the four preceding weeks, further rose to 18·4 per 1000. The 375 deaths in Glasgow corresponded to an annual rate of 17·6 per 1000, and included 12 from whooping-cough, 5 from infantile diarrhœa, 3 from diphtheria, 2 from small-pox, and 1 from scarlet fever. The 126 deaths in Edinburgh were equal to a rate of 19·3 per 1000, and included 2 from diphtheria, and 1 each from measles, whooping-cough, and infantile diarrhœa.

Irish Towns.—The 214 deaths in Dublin corresponded to an annual rate of 26·9, or 9·2 per 1000 above that recorded in the previous week, and included 2 from infantile diarrhœa, and 1 each from enteric fever, whooping-cough, and diphtheria. The 166 deaths in Belfast were equal to a rate of 21·0 per 1000, and included 2 each from scarlet fever, whooping-cough, and infantile diarrhœa.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lieut. (D) M. F. Hopson to be Surgeon Lieutenant Commander (D).

ROYAL ARMY MEDICAL CORPS.

Major G. W. Heron relinquishes the acting rank of Colonel.

Capt. S. Arnott is restored to the establishment.

Temp. Capt. W. W. Forbes relinquishes the acting rank of Major.

The undermentioned Lieutenants (temporary Captains) to be Captains: D. J. H. Jones, T. H. Twigg, J. K. Holland, K. Masson, and R. S. Strachan.

J. A. B. Sim to be temporary Lieutenant.

Officers relinquishing their commissions:—Temp. Maj. W. A. Brend retains the rank of Major. Temporary Captains retaining the rank of Captain: O. V. Burrows, F. H. Cleveland, J. A. MacSweeny, S. Wigglesworth, and W. Kingdon. Temp. Lieut. D. M. O'Dwyer retains the rank of Lieutenant.

SPECIAL RESERVE OF OFFICERS.

Lieut.-Col. J. H. P. Graham relinquishes his commission and retains the rank of Lieutenant-Colonel.

TERRITORIAL FORCE.

Major M. J. Mahoney resigns his commission and retains the rank of Major.

Capt. G. R. E. G. Mackay resigns his commission and is granted the rank of Major.

Capts. J. Paton and P. J. Watkin (late R.A.M.C.) to be Captains.

Capt. L. R. G. de Granville to be Lieutenant and to relinquish the rank of Captain.

Capts. J. Ramsay and G. B. Gill to be Majors.

Capt. A. E. Richmond to be Adjutant of the R.A.M.C. School of Instruction, West Lancs. Division (T.F.).

H. M. Brown (late Devon Regiment) to be Lieutenant.

Supernumerary for Service with the Officers Training Corps.—Temp. Capt. V. G. L. Fielden resigns his commission and retains the rank of Captain.

TERRITORIAL FORCE RESERVE.

Capt. E. G. Annis resigns his commission and is granted the rank of Major.

ROYAL AIR FORCE.

The undermentioned Flight Lieutenants are granted the honorary rank of Squadron Leader: J. Keenan, J. N. Macdonald, and J. Valerie.

ORDER OF THE BRITISH EMPIRE.

Surg.-Cmdr. T. W. Myles, R.N., has been appointed a Commander of the Civil Division of the Most Excellent Order of the British Empire; and Surg.-Lieut. J. D. Bangay, R.N., an Officer of the Civil Division of the Order.

TERRITORIAL FORCE DECORATION.

The King has conferred the Territorial Force Decoration upon the following officers:—Major J. F. Christie, attached 4th Battalion, Gordon Highlanders; Major A. C. Turner, attached 49th (West Riding) Divisional Engineers; Major E. L. Anderson, 2nd West Lancs. Field Ambulance; Major J. W. Mackenzie, 1st Highland Mounted Brigade Field Ambulance; Major A. H. Horsfall, attached Royal Herbert Hospital, Woolwich; Major J. M. Bowie, attached 9th Battalion, Royal Scots; Lieut.-Col. A. W. Mackintosh, 1st Scottish General Hospital; Lieut.-Col. (Brevet Col.) A. Napier, Honorary Surgeon-Colonel (Honorary Surgeon-Colonel, retired, Volunteers), 4th Scottish General Hospital (retired).

DEATHS IN THE SERVICES.

Lieut.-Col. Richard Henderson Castor (late I.M.S.), at his residence at Croydon, aged 59. He retired from the Service in November, 1920, after 33 years' active work. He served with the Wuntho Expedition in Burma in 1891, was mentioned in despatches and received the medal and clasp. He was an authority on tropical diseases, and established infant welfare work in Burma, in recognition of which he received the Kaisar-i-Hind medal. Col. Castor joined the Ministry of Pensions medical staff, and was appointed to Croydon.

WEYMOUTH HOSPITALS: PROPOSED AMALGAMATION NEGATIVED.—The committees of the Weymouth hospitals have suggested the advantages of the amalgamation of these charities. A public meeting was recently held at Weymouth to consider the matter, the mayor presiding. Eventually the proposition in favour of the amalgamation was defeated. The result of the vote has been conveyed to the joint committee of the hospitals, and it will be for them to decide what further action shall be taken in the matter.

Correspondence.

"Audi alteram partem."

THE BRITISH COMMITTEE FOR AIDING MEN OF LETTERS AND SCIENCE IN RUSSIA.

To the Editor of THE LANCET.

SIR,—We have recently been able to get some direct communication from men of science and men of letters in North Russia. Their condition is one of great privation and limitation. They share in the consequences of the almost complete economic exhaustion of Russia; like most people in that country, they are ill-clad, underfed, and short of such physical necessities as make life tolerable. Nevertheless, a certain amount of scientific research and some literary work still goes on. The Bolsheviks were at first regardless and even in some cases hostile to these intellectual workers, but the Bolshevik Government has apparently come to realise something of the importance of scientific and literary work to the community, and the remnant (for deaths among them have been very numerous) of these people, the flower of the mental life of Russia, has now been gathered together into two special rationing organisations which ensure at least the bare necessities of life for them.

These organisations have their headquarters in two buildings known as the House of Science and the House of Literature and Art. Under the former we note such great names as those of Pavlov, the physiologist and Nobel prizeman; Karpinsky, the geologist; Borodin, the botanist; Belopolsky, the astronomer; Tagantzev, the criminologist; Oldenburg, the orientalist and permanent secretary of the Petrograd Academy of Science, Koni, Bechterev, Latishev, Morozov, and many others familiar to the whole scientific world. Several of these scientific men have been interviewed and affairs discussed with them, particularly as to whether anything could be done to help them. There were many matters in which it would be possible to assist them, but upon one in particular they laid stress. Their thought and work is greatly impeded by the fact that they have seen practically no European books or publications since the Revolution. This is an inconvenience amounting to real intellectual distress. In the hope that this condition may be relieved by an appeal to British scientific workers, Professor Oldenburg formed a small committee and made a comprehensive list of books and publications needed by the intellectual community in Russia if it is to keep alive and abreast of the rest of the world.

It is, of course, necessary to be assured that any aid of this kind provided for literary and scientific men in Russia would reach its destination. The Bolshevik Government in Moscow, the Russian trade delegations in Reval and London, and our own authorities have therefore been consulted, and it would appear that there will be no obstacles to the transmission of this needed material to the House of Science and the House of Literature and Art. It can be got through by special facilities even under present conditions.

Many of the publications named in the Oldenburg list will have to be bought, the costs of transmission will be considerable, and accordingly the undersigned have formed themselves into a small committee for the collection and administration of a fund for the supply of scientific and literary publications, and possibly if the amount subscribed permits of it, of other necessities, to these Russian savants and men of letters. We hope to work in close association with the Royal Society and other leading learned societies in this matter. The British Science Guild has kindly granted the committee permission to use its address.

We appeal for subscriptions and ask that cheques should be made out to the Treasurer, C. Hagberg Wright, LL.D., and sent to the British Committee for Aiding Men of Letters and Science in Russia, British Science Guild Offices, 6, John-street, Adelphi, London, W.C. 2.—We are, Sir, yours faithfully,

MONTAGU OF BEAULIEU,
ERNEST BARKER,
E. P. CATHCART,
A. S. EDDINGTON,
I. GOLLANCZ,
R. A. GREGORY,
P. CHALMERS MITCHELL,
BERNARD PARES,
ARTHUR SCHUSTER,
C. S. SHERRINGTON,
A. E. SHIPLEY,
H. G. WELLS,
A. SMITH WOODWARD,
C. HAGBERG WRIGHT.

Dec. 30th, 1920.

ORAL SEPSIS.

To the Editor of THE LANCET.

SIR,—It would be unfair to British medicine, and more especially to the dental section of it, were Dr. W. Bertram Watson's paper on this subject in your last issue to pass unchallenged. His contention that medical men in this country are now learning from America the dangers of oral sepsis and the value of radiography in its diagnosis is grossly unfair. To consider oral sepsis first. The first great stir on the subject was made by Dr. W. Hunter in 1898, and immediately the subject was taken up by dental surgeons and others in this country, as is proved by the steady stream of papers from 1898 on. At the Royal Dental Hospital the gospel of the clean mouth has been taught at least since 1904, when instructions were issued by the hospital authorities that no conservative work should be undertaken until the mouth had been rendered free of sepsis by the removal of septic teeth. At the Great Ormond Street Children's Hospital, to my own knowledge, the radical removal of all septic teeth was instituted in 1902, and a post-graduate lecture on the subject was delivered the same year. In American literature you will find practically no mention of the subject down to 1910 or even later. The earliest reference to the subject in the bibliography attached to Rosenow's paper on Elective Localisation, referred to by Dr. Watson, is 1912. It is quite true that American doctors have recently taken up the subject with a characteristic vigour and thoroughness.

With regard to dental radiography, Rontgen rays were discovered in 1895. In England Mr. A. C. Cossar designed a special dental tube in 1896, and in the same year Mr. C. A. Clark, a dentist, took up the subject and has practised it as a specialty ever since. In 1908 Mr. Clark was appointed radiographer to the X ray department at the Royal Dental Hospital. In the Odontological Society's transactions for April, 1900, there is a paper by Mr. Goldie, of Edinburgh, in which there is a beautiful reproduction of a dental radiogram showing rarefaction of the bone due to periodontal trouble. The fact that increased transradiancy means rarefaction of bone is pointed out and has been the common knowledge of medical radiologists almost since the inception of the science. Had Dr. Watson known of this paper or been familiar with radiographic findings he would not have had to wait until 1919 to learn this very elementary fact at the Mayo clinic.

It is not my intention to criticise the scientific value of Dr. Watson's paper. He admits that his experience in the subject is "small," and were his knowledge of its history larger, he would have realised that it was the doctors in this country rather than the dentists who were so long in grasping the importance of this condition.—I am, Sir, yours faithfully,

London, W., Jan. 3rd, 1921. STANLEY COLYER, M.D.

X RAY TREATMENT OF RINGWORM.

To the Editor of THE LANCET.

SIR,—The letter of Dr. James Neal, Joint Secretary of the Medical Defence Union, is one of great interest to all those who are concerned with the X ray treatment of ringworm, but it would perhaps be as well to point out, as doubtless Dr. Neal knows, that in spite of the violent reaction which at times occurs no ultimate harm results to the child's head of hair, although at the time possibly some slight irritation, readily allayed by soothing applications, is experienced. At the same time I might point out the great importance of after-treatment of children who have been X rayed. In the course of treatment of ringworm of the scalp, in my experience by no means does epilation occur so satisfactorily as is commonly thought; it is the case over again of the old fairy tales, so many of which end "they married and lived happily ever *afterwards*." After X ray treatment for ringworm all the children should be seen at regular intervals in order to ensure that the hair on the rims, which appear to be unavoidably left in some instances, does not contain ringworm, and if it does that the ringworm hair should be epilated. Unfortunately, not only are rims left, but the actual patches of ringworm do not always epilate satisfactorily.

My letter does not in any way militate against the treatment of ringworm of the scalp by X rays. As a result of actual carrying out of the treatment of a considerable number of cases myself, and seeing the children shortly after other workers have X rayed the children's heads, I consider that at least one in ten of the children require constant care and epilation. This view, it would seem, was also held by Dr. R. H. Crowley when medical superintendent for the Bradford Education Committee; many will agree that the application of X rays facilitates epilation, even in these obstinate cases.

I am, Sir, yours faithfully,

Richmond, Surrey, Jan. 1st, 1921. C. W. HUTT.

To the Editor of THE LANCET.

SIR,—Referring to the warning and recommendation of the Medical Defence Union in your issue of this date, it may interest your readers to know that 12 or more years ago I had printed a number of forms, of which I enclose one, with the idea of getting parents of children with ringworm of the head to sign one before undertaking treatment. These forms I copied from one in use in a London hospital. Not once did I succeed in getting any parent to sign and the mere suggestion of danger frightened the parents into a refusal to allow X ray treatment. Our methods were bad in those days, and I had several permanent alopecias to my discredit. In fact, so worried was I over the subject that for five years I absolutely refused to touch ringworm of the scalp with X rays, no matter what fee was offered. The Bradford Education Committee then approached me with a view to treating the Bradford school children. Taking my courage in both hands, I started to work out a technique which I could rely upon and in a few months I succeeded. In the past four years I have treated over 600 cases without a single failure to get the hair out or for it to come in again, and last year I treated 175 cases, and the average time from commencement of treatment to readmission to school was 23 days. Every child treated is inspected by me six months later to see the final results. Every case has the *whole* head epilated by the Kienboch method.

In my opinion no one who has not qualified in the bitter school of experience in all classes of X ray work, and it takes years, ought to attempt the X ray treatment of tinea tonsurans, which is the most exact and exacting form of X ray treatment there is. I do not believe, as Dr. Neal says, that minimum doses ever produce violent dermatitis. Such is produced only by over-dosage and usually by too soft a tube. Personally I work with a small milliampèrage (0·5 ma.) for two reasons: first, because the tube remains more constant, and, secondly, because the margin for error is larger than when using a larger current. I use a light anode tungsten target tube, as I find heavy anode tubes are apt to give out occluded gases and become soft. I always use a filter of 0·2 mm. of aluminium, and I use pastiles for *every* exposure—i.e., five for each case. I also use the Lovibond tintometer as devised by Dr. Dudley Corbett and have found it to be absolutely correct. When working with "Sabouraud and Noiré's pastilles" I give 1 B. dose, but when using "London pastiles" I give 4/5 B., as I find there is 1/5 B. difference between them. It is very important to get accustomed to one class of pastile and to stick to it. There are other tintometers on the market and several are far from reliable. Of one make I purchased two, one for my own private use and one for the Royal Infirmary. Neither was correct, and more astonishing still, there was 100 per cent. difference between the two, although made by the same firm. In conclusion, I should say that I never use a tube emitting rays less than 1 Benoist.

With this technique thoroughly standardised I never have the slightest nervousness as to results. Of course, it is important to watch that the child does not move its head during treatment otherwise an improper overlap might occur. This is best achieved by a watchful nurse, as retentive appliances frighten the children.

I am, Sir, yours faithfully,

Bradford, Jan. 1st, 1921. WILLIAM MITCHELL, M.B.

[ENCLOSURE.]

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CHILDREN SUFFERING FROM RINGWORM.

I quite understand that there is a very slight risk in carrying out the X ray treatment of Ringworm, namely, that the re-growth of the hair may be incomplete, and I am prepared to take that risk, realising that the hospital authorities are doing their best for my child.

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THE RADIOGRAPHY OF THE CHEST.

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CLASSIFICATION OR SUMMARY (?)

To the Editor of THE LANCET.

SIR,—It is an open secret that the Health Ministry has under consideration the classification of tuberculous cases for administrative purposes, and much informal discussion has taken place, some of it resulting in interesting papers in the journals.[1] There appears to be some confusion in the minds of some who are called upon to deal with tuberculosis statistics. Classification in these cases is required for two distinct reasons—administrative and clinical respectively. In the first case we require the statistics as a guide to the prevalence of such cases in the locality, and to their probable future and needs; in the second as a guide to progress and the effects of treatment.

Much more detail is needed for the second purpose; but all the details are not suitable for use in classification. By far the most convenient method is to employ a simple classification based upon a few outstanding facts and to reserve other details for periodical summaries. If these are put into abbreviated or symbolic form and recorded on a card index comparison at different periods is easy, whereas if we merely record "Much improved" or some similar comparative statement such comparisons are impossible. Four groups of facts may be conveniently symbolised to record progress: systemic disturbance, respiratory disturbance, complications present, and capacity for exercise or work. The first three may be recorded in one of three degrees, the last in hours per day. All these should be subordinate to the anatomical condition, which is more permanent and better suited as a basis for classification.

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Tuberculosis Officer to the Surrey County Council.

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SIR,—On reading over recent issues of your journal I was very much surprised that no account of the above meeting, which was held on Thursday, Nov. 18th, 1920, at 3 P.M., appeared in the issue of Nov. 27th. Since I became a member of the Society of Members—some 18 years ago—I have never failed to read an interesting and fairly full account of the proceedings at the annual meeting at our College in the issue of THE LANCET immediately succeeding that function. Owing to this omission, perhaps you will not object to my informing you that the two resolutions brought forward on behalf of the society were both carried nem. con. We therefore trust that, as last year, they will be sympathetically considered by a committee of the Council specially detailed for the purpose.

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I am, Sir, yours faithfully,

SIDNEY C. LAWRENCE,

Hon. Secretary, Society of Members of the Royal College of Surgeons of England.

61, Wellington-road, Bush Hill Park, Enfield, Jan. 2nd, 1921.

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Lectures: Under the scheme for the exchange of lecturers between Holland and England the University has invited the undermentioned Dutch lecturers to give one lecture each on a medical subject, in English, during the present session: Dr. W. Einthoven, professor of physiology, Leyden; Dr. C. M. Ariens Kappers, director of "Herseninstituut," Amsterdam; Dr. J. K. A. Wertheim Salomonson, professor of neurology, Amsterdam; Dr. Bolk, professor of anatomy, Amsterdam; Dr. J. Boeke, professor of embryology and histology, Utrecht; Dr. Hamburger, professor of physiology, Groningen. The first lecture, entitled "Some Considerations on Tonus and Reflexes," will be delivered by Dr. Wertheim Salomonson at the rooms of the Royal Society of Medicine on Monday, Jan. 17th, at 5 P.M., when the chair will be taken by the Vice-Chancellor.

A course of eight lectures on the Physiology of the Embryo, Fœtus, and Newly-born will be given at Guy's Hospital by Dr. M. S. Pembrey, professor of physiology in the University, on Thursdays at 4.30 P.M., beginning on Jan. 13th. The lectures are addressed to advanced students and to others interested in the subject, and are recognised as advanced lectures which a candidate at the B.Sc. Honours Examination may name for part of his examination. Admission is free for all these lectures without ticket.

On Feb. 3rd, 10th, and 17th, at 5.30 P.M., at University College, Gower-street, Professor J. E. G. de Montmorency, LL.B., will lecture on Mother-right and Matriarchy.

In the Psychological Department, King's College, Strand, Dr. William Brown will give a course of ten lectures on Psychopathology on Tuesdays, at 5.30 P.M., beginning on Tuesday, Jan. 18th. These lectures are open to medical students and medical practitioners without fee or ticket.

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Studentships and Scholarships: The Senate invites applications for the Graham Scholarship in Pathology of the value of £400 per annum for two years, founded under the will of the late Dr. Charles Graham to enable a young man to continue his pathological researches and at the same time to secure his services to the school of advanced medical studies connected with University College Hospital as a teacher under the direction of the professor of pathology. Intending applicants who desire fuller information of the conditions on which the scholarship will be held may call personally on the professor of pathology, University College Hospital Medical School, London, W.C.1.

Lectures: Under the scheme for the exchange of lecturers between Holland and England the University has invited the undermentioned Dutch lecturers to give one lecture each on a medical subject, in English, during the present session: Dr. W. Einthoven, professor of physiology, Leyden; Dr. C. M. Ariens Kappers, director of "Herseninstituut," Amsterdam; Dr. J. K. A. Wertheim Salomonson, professor of neurology, Amsterdam; Dr. Bolk, professor of anatomy, Amsterdam; Dr. J. Boeke, professor of embryology and histology, Utrecht; Dr. Hamburger, professor of physiology, Groningen. The first lecture, entitled "Some Considerations on Tonus and Reflexes," will be delivered by Dr. Wertheim Salomonson at the rooms of the Royal Society of Medicine on Monday, Jan. 17th, at 5 P.M., when the chair will be taken by the Vice-Chancellor.

A course of eight lectures on the Physiology of the Embryo, Fœtus, and Newly-born will be given at Guy's Hospital by Dr. M. S. Pembrey, professor of physiology in the University, on Thursdays at 4.30 P.M., beginning on Jan. 13th. The lectures are addressed to advanced students and to others interested in the subject, and are recognised as advanced lectures which a candidate at the B.Sc. Honours Examination may name for part of his examination. Admission is free for all these lectures without ticket.

On Feb. 3rd, 10th, and 17th, at 5.30 P.M., at University College, Gower-street, Professor J. E. G. de Montmorency, LL.B., will lecture on Mother-right and Matriarchy.

In the Psychological Department, King's College, Strand, Dr. William Brown will give a course of ten lectures on Psychopathology on Tuesdays, at 5.30 P.M., beginning on Tuesday, Jan. 18th. These lectures are open to medical students and medical practitioners without fee or ticket.

Royal Society of Arts.—The Aldred lecture will be delivered by Dr. C. S. Myers, F.R.S., on Wednesday, Jan. 12th, at 8 P.M., on Industrial Fatigue, at the House of the Society, John-street, Adelphi, W.C.

Colonial Medical Service.—Sir James Kingston Fowler will deliver an address entitled "The Colonial Medical Service" at the Middlesex Hospital Medical School on Thursday, Jan. 20th, at 3 P.M., when the Earl of Athlone will preside.

Society for the Study of Inebriety.—The next meeting of the society will be held in the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, London, W., on Tuesday, Jan. 11th, at 4 P.M., when Dr. H. M. Vernon will open a discussion on Alcohol and Industrial Efficiency. Each member and associate is at liberty to introduce visitors.

Harveian Society of London.—The annual general meeting will be held on Thursday, Jan. 13th, at the rooms of the Medical Society of London, 11, Chandos-street, W. The Presidential Address will be delivered by Dr. William Hill on the Great Advances in the Investigation and Treatment of Diseases of the Œsophagus during the Present Century.

West London Medico-Chirurgical Society.—A special general meeting will take place in the society's rooms at the West London Hospital on Friday, Jan. 14th, at 8.30 P.M., in order to discuss the Interim Report on the future provision of medical and allied services recently drawn up for the Ministry of Health. Medical practitioners are cordially invited to attend and take part in the discussion.

Tiverton Hospital and Paying Patients.—At a meeting of the subscribers of the Tiverton (Devon) Hospital held last week it was decided to alter the rules to enable a charge to be made to in-patients.

Irish Hospital Grants.—The Chief Secretary for Ireland has appointed the following committee to advise on the distribution of the portion applicable to Ireland of the National Relief Fund grant towards the war deficits of voluntary hospitals: The Master of the Rolls in Ireland (chairman); Sir Edward Coey Bigger, Mr. Stephen Grehan, Sir James Johnston, Mr. T. B. Lillis, Sir Henry McLaughlin, Mrs. McMordie, and Mr. Laurence Waldron.

Royal Medical Benevolent Fund Guild.—A serious effort is being made to raise more money to help in educating the children of medical men who have died or lost their health before they have been able to make adequate provision for their dependents. The matinée held at His Majesty's Theatre and a dance held on Dec. 23rd last at a house in Wimpole street were both very successful. The owner of this house generously bore all the expenses, including the band and refreshments. Tickets at a guinea each were all sold very quickly. Other doctors who possess suitable houses either in London or in the provincial towns are asked to make a similar effort and thus give their patients an opportunity of materially assisting this charity. Anybody who is willing to lend his house for the purpose of a dance is invited to communicate with the secretary of the Guild at 19, Portland-place, London, W. 1.

National Association for the Prevention of Infant Mortality.—A course of advanced lectures on Infant Care, for infant welfare workers, teachers, mothers, &c., will be held at Morley Hall, George-street, Hanover-square, London, W., on Mondays, at 6 P.M., from Jan. 17th to April 11th. The lecturers include: Mr. Eardley Holland, Mr. Gordon Ley, Dr. Flora Shepherd, Dr. Eric Pritchard, Dr. H. C. Cameron, Mr. M. S. Mayou, Mr. Philip Franklin, Mr. C. F. Peyton Baly, Dr. S. Roodhouse Gloyne, Dr. J. Lawson Dick, Dr. Maurice Craig, and Dr. Harold Waller. Fee for the whole course of 12 lectures, 7s. 6d.; for one lecture, 1s.—A special course of lectures on Infantile Care for health visitors, nurses, midwives, school teachers, voluntary infant welfare workers, committees of nursing associations, &c., will be held in the Lecture Theatre of the Victoria Institute, Worcester, by kind permission of the Higher Education Subcommittee, on Saturday afternoons, from Feb. 12th to March 12th inclusive. Lectures will be given each day, from 2 to 3 P.M., and from 4 to 5 P.M.—Under the joint auspices of this association and the National Society of Day Nurseries a course of elementary lectures on Infant Care, especially intended for creche nurses and probationers, will be held at the Essex Hall, Essex-street, Strand, London, W.C., on Thursdays, at 7.30 P.M., from Jan. 20th to April 14th. The lecture fee for each of these two courses is 10s. each person for the course and 1s. 6d. for a single lecture. Tickets should be obtained in advance from Miss Halford, secretary, National Association for the Prevention of Infant Mortality, 4 and 5, Tavistock-square, London, W.C. 1.

The Fellowship of Medicine and Post-Graduate Medical Association.—At a general Council meeting held on Dec. 10th, 1920, the following resolutions were adopted and referred to the newly-appointed executive committee:—

1. That the executive committee be requested to consider the advisability and practicability of appointing a general organiser of post-graduate medicine, with full powers to take such action as he thinks fit in order to promote the facilities for post-graduate education in the United Kingdom for practitioners registered in this country and for visitors from Dominions and foreign countries. And that the Government be approached with a view to obtaining an annual grant.

2. That the executive committee be requested to report at an early date upon the possibility of providing a hospital solely for post-graduate study and the possibility of obtaining a grant in aid.

3. That it is desirable to obtain as early as possible suitable accommodation for post-graduates attending courses of instruction.

The first meeting of the executive committee will be held at 1, Wimpole-street, London, W., on Tuesday, Jan. 11th. at 5.30 P.M.

Medical Society of London.—The syllabus of the second half of the 148th session has just been issued. On Monday, Jan. 10th, at 8.30 P.M., a pathological evening will be held; specimens and demonstrations by Dr. B. H. Spilsbury, Dr. E. H. Kettle, Dr. E. H. Shaw, Dr. Carnegie Dickson, Dr. A. Fleming, Dr. John Matthews, Dr. Robert Knox. Dr. Crofton Atkins, Dr. Harrison Orton, and Mr. C. A. Clark, M.R.C.S., L.D.S. On Jan. 24th, at 8.30 P.M., a paper on Multiple Neuritis. will be read by Dr. Anthony Feiling, followed by one on Handprints in Mongolian and other Imbeciles by Dr. F. J. Crookshank. On Feb. 14th a discussion on Skin Disease, its relation to Internal Disorder, will be opened by Sir James Galloway, and on Feb. 28th a discussion on the Chemical Estimation of Gastric Function will be introduced by Dr. J. H. Ryffel. On March 14th Sir Henry Gauvain will speak on Non-operative Treatment of Surgical Tuberculosis. The Lettsomian lectures on Surgery of the Lung and Pleura will be delivered on Mondays, Feb. 7th and 21st, and March 7th, at 9 P.M., by Mr. George E. Gask. The annual dinner will be held at the Wharncliffe Rooms, Hotel Great Central, on Tuesday, March 8th, at 7 P.M. for 7.30 P.M. The annual oration will be delivered on May 23rd by Lord Dawson of Penn.

Birmingham Medical Psychological Society.—This society has recently been formed with a membership limited to medical men. The subscription is 5s. per annum, and meetings are held monthly on Wednesdays at 4.15 P.M. The next meeting will take place on Jan. 12th, when Dr. G. J. Branson will read a paper on the Neurotic State. Subsequent meetings will be notified in our Medical Diary. The officers for the session are Dr. A. W. Moore (President); Dr. H. E. McCready (Vice-President); Dr. E. Gordon Anderson (Treasurer). The secretary is Dr. Ernest W. Jones, The Manor House, Aldridge, from whom further information may be obtained.

Birmingham Children's Hospital.—The authorities of the Children's Hospital are about to make an important innovation to meet the needs of those patients, who, whilst above the so-called hospital class, are yet unable to meet the expenses of private nursing homes and operation fees. The new hospital, erected as a memorial to King Edward VII., has 100 empty beds which cannot be used owing to the financial condition of the institution. As a beginning it is proposed to set apart a private ward of six cots for paying patients. The hospital will make a charge of £3 3s. per week, which represents the actual cost to the hospital of food, drugs, and dressings. In addition there will be a fee for medical or surgical treatment, the amount of which will be a matter of arrangement between a member of the staff and the patient's friends. But it is stipulated that this fee shall not exceed a maximum of £3 3s. per week, or, as an alternative, that £21 shall be an inclusive fee, however long the patient may stay in the hospital. For some time the advisability of making a maintenance charge for all patients has been discussed and opinion has been divided on the principle involved. It was felt that it would be more satisfactory if contributions from patients generally could be avoided. Many special hospitals have arranged for payments by patients, but children's hospitals with one or two exceptions have considered the proposal impracticable. Another aspect of the subject has reference to the number of patients drawn from outside districts; of 100 children treated, 78 resided in Birmingham and 22 in other districts. The committee of the hospital has intimated to the local authorities its willingness to negotiate with public health departments with a view to the resources of the hospital and its out-patient department being made available for infant welfare schemes. Whilst most anxious to meet the demand for extra beds, the committee points out that the income of the hospital does not meet the expenditure by some £5000 a year, and therefore this work for local authorities can in future be done only at their expense.

MEDICAL OFFICERS OF HEALTH AND WAR BONUS.—At the last meeting of the Radstock (Somerset) urban district council it was reported that Dr. J. E. Scales, the medical officer of health, and Mr. G. Pearson, the clerk, had resigned their appointments in consequence of the refusal of the council to grant them a war bonus, as recommended in the latest circular of the Ministry of Health.

HOSPITAL CONDITIONS IN MANCHESTER DISTRICT.—The Salford Royal Hospital will probably be faced with a deficit of £10,000, which represents the post-war increase in the cost of running the hospital. The Manchester Children's Hospital at Pendlebury has a deficit of £11,993 on its income and expenditure for 1919, and its bank overdraft stands at £16,500. Already one ward of 30 beds has been closed, and if generous help is not forthcoming immediately more beds must remain unoccupied, in spite of the large waiting list of cases.

PAYING PATIENTS IN POOR-LAW HOSPITALS.—The Manchester board of guardians have decided to provide, from Feb. 1st, limited accommodation—about 200 beds—at their hospitals at Nell Lane, Withington, and Crumpsal, at a charge of 3 guineas weekly inclusive. This charge, it is believed, will cover the cost of the maintenance and treatment of patients. The scheme proposes to utilise the vacant accommodation for patients who cannot be treated at once in the overcrowded voluntary hospitals or who are unable to pay the high fees charged in private nursing homes, and the fees of consulting physicians and surgeons for attendance. It is expected that most of the patients will be emergency surgical cases requiring immediate treatment, the conditions and treatment being the same as in a private hospital. There is a staff of visiting specialists, physicians and surgeons, as well as a visiting gynæcologist, aurist, laryngologist, radiologist, and ophthalmic surgeon.

BRISTOL ROYAL INFIRMARY.—The chairman of the Bristol Royal Infirmary committee, Alderman Frank Sheppard, recently addressed a meeting representative of the employees of the principal firms of the city and appealed for increased support for the infirmary. There is an adverse balance of over £50,000, and expenditure is so largely in excess of income that the committee is faced by the prospect of having to close a number of beds. It is possible that this may be in some measure averted by the Ministry of Pensions, which has offered to use a certain number of beds. Plans for the collection of payments by patients are also under consideration.

ANNUAL RETURNS OF MATERNITY AND INFANTS' HOMES.—In May, 1920, the Minister of Health asked for certain information to be furnished annually to him by the authorities of maternity homes and hospitals on the one hand, and of infants' and children's homes and hospitals on the other. The period then contemplated ended with March 31st, but as the information can be more readily supplied for the calendar than for the financial year, the particuars are in future to be given for the year ending Dec. 31st. It will be remembered that *immediate* information is asked for in regard to every case of maternal mortality occurring in an institution or due to illness contracted there, every case of notified puerperal fever, and every death from gastro-enteritis or epidemic diarrhœa in an infants' hospital.

TREATMENT OF VENEREAL DISEASE IN DUNDEE.—There were 11 applicants for the post, to which Dr. A. C. Profeit was appointed, of medical officer under Dundee's scheme for the treatment of venereal disease. Dr. Profeit, who is an M.D. and D.P.H. of Aberdeen University, is at present in private practice in Ballater, Aberdeenshire, where he holds the post of medical officer of health. From 1900 to 1903 he was in charge of the venereal wards at the Royal Victoria Hospital, Netley, and for several months in 1904 he was in charge of wards in the military hospital at Shorncliffe.

ABERDEEN ORTHOPÆDIC CENTRE.—At a meeting of the Aberdeen Rotary Club held on Dec. 30th, 1920, Dr. Middleton Connon gave an account of the work being done under the auspices of the Ministry of Pensions at the Aberdeen Orthopædic Clinic and Limb-Fitting Centre. Aberdeen was the first city in the British Isles to have an out-patient orthopædic centre. There are now in Scotland four similar centres with a number of subsidiary ones. Aberdeen is the centre for the northern area, said Dr. Connon, which includes all the counties and islands north of and including Kincardineshire, to the Orkneys and Shetlands. The staff includes two assistant medical officers, 26 masseuses, one plaster worker, one qualified surgical nurse, and four clerks. There are at present 623 men under treatment. In the area served there were 670 limbless men. All the eight men in the limb-fitting shop are discharged disabled men wearing artificial limbs.

DIPLOMA OF PSYCHOLOGICAL MEDICINE.—Should sufficient applicants be forthcoming, a third course of lectures and demonstrations for Part I. of the Diploma will be held at the Maudsley Hospital, beginning in April. Intending applicants should communicate at once with the director, Pathological Laboratory, Maudsley Hospital, Denmark Hill, London, S.E. 5.

LITERARY INTELLIGENCE.—The Oxford Medical Publications announce the early publication of a new issue (Vol. I. of the Fourth Series) of Guy's Hospital Reports, under the general editorship of Dr. Arthur F. Hurst, assisted by an editorial committee. The first number will contain articles by Sir W. Hale-White, Dr. G. Newton Pitt, Dr. Hurst, Dr. J. A. Ryle, Mr. R. P. Rowlands, Mr. W. M. Mollinson, and others.—The new edition of the "Literary Year Book" for 1921 will be issued on Jan. 10th by its new proprietor and editor, Mr. Mark Meredith, from the "Year Book" Offices, 67, Dale-street, Liverpool.

Obituary.

THOMAS H. LIVINGSTONE, M.D., F.R.C.S. EDIN.,

HONORARY SURGEON, THROAT, NOSE, AND EAR HOSPITAL, NEWCASTLE-UPON-TYNE.

THE death occurred on Dec. 25th, 1920, in Newcastle-upon-Tyne, of Dr. Thomas Hillhouse Livingstone. He was the younger son of the late Dr. Thomas Livingstone, of Stanhope, in Weardale, who was for over 30 years in practice in Stanhope and who occupied a very prominent position in the public and social life of the dale. Dr. T. H. Livingstone was educated at Wolsingham Grammar School and Uppingham, and proceeded to Edinburgh University, where he graduated M.B., Ch.B., in 1899. He filled the post of house surgeon at Rochdale Infirmary and later carried on his father's practice at Stanhope with much acceptance till 1903. He then returned to Edinburgh for a period and took the M.D. and F.R.C.S. degrees, afterwards settling in practice in Newcastle. He became honorary surgeon to the Hospital for Sick Children and retired from this position in 1912, when he was appointed surgeon to the Throat, Nose, and Ear Hospital. During later years he confined his work entirely to this special branch, to which he had always had a leaning, and in it he had the satisfaction of being able to do much good work. He held a commission in the Territorial Force, and was mobilised at the outbreak of the war. When under orders to proceed to France he was taken seriously ill and was admitted to the 1st Northern General Hospital with the malady which eventually proved fatal. Partially recovering from this illness, he was attached to the ear and throat department of the 1st Northern General Hospital. In 1914 he was made Vice-President of the Ear, Nose, and Throat Section at the annual meeting of the British Medical Association.

By nature Dr. Livingstone was of a most refined and gentle disposition, possessed in a marked degree of innate courtesy and kindness to others. He was much attached to his native dale, and occasional visits from busy Newcastle to his old quiet home in the country always gave him the greatest pleasure. To his many friends both in Weardale and Newcastle his death at the early age of 43 has come as a great grief. His remains were interred in the old churchyard of Stanhope.

THE LATE DR. ROBERT SLATER MAIR.—Dr. Mair, who died on Dec. 21st, 1920, at the ripe age of 95, was a well-known medical practitioner in Bayswater, physician to the Persian Embassy, and for many years certifying factory surgeon for the City of London. Educated at Edinburgh and Glasgow, he graduated at St. Andrews in 1850 and almost immediately went to India, where for 17 years he practised in Madras, for which city he was also deputy coroner. Dr. Mair, who became a Fellow of the Royal College of Surgeons, Edinburgh, in 1863, was the author of a medical guide for Anglo-Europeans, which was published in 1873, and a book on the management of children in India, published two years later.

S.M.S. MEDICAL COLLEGE,
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Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Jan. 11th.

SECTION OF PSYCHIATRY: at 8.30 P.M.

Paper:

Dr. Meroweka: The Morbid Conditions of the Choroid Plexus in Mental Disease (illustrated by epidiascope).

Thursday, Jan. 13th.

SECTION OF NEUROLOGY: at 8.30 P.M.

Informal Meeting for free discussion (tea, coffee, smoking).

N.B.—As this is the first of these evenings it is hoped that Members will endeavour to attend and, if possible, exhibit objects of interest.

Friday, Jan. 14th.

CLINICAL SECTION: at 5.30 P.M. (Cases at 5 P.M.)

Cases: The following will be shown by—

Mr. W. E. Tanner: Case of Osteochondritis Deformans.

Mr. W. H. Ogilvie and Mr. Massie: Two Cases of Fracture-Dislocation of the Ankle.

Mr. [illegible]: Impacted Fracture—Separation of Lower Epiphysis of the Femur.

Other cases will be shown.

SECTION OF OPHTHALMOLOGY: at 8.30 P.M. (Cases at 8 P.M.)

Cases and Exhibits:

Mr. G. Winfield Roll: Foreign Body Retained in the Eye for Many Years.

Mr. B. T. Lang: A New Scotometer.

Papers:

Dr. Ransom Pickard: Variations in the Size of the Physiological Cup, and their Relation to Glaucoma.

Mr. B. T. Lang: Scotometry.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Jan. 10th.—8.30 P.M., Pathological Evening. Specimens and Demonstrations by Dr. B. H. Spilsbury, Dr. E. H. Kettle, Dr. E. H. Shaw, Dr. C. Dickson, Dr. A. Fleming, Dr. J. Matthews, Dr. R. Knox, Dr. C. Atkins, Dr. H. Orton, and Mr. C. A. Clark.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

WEDNESDAY, Jan. 12th.—8 P.M., Aldred Lecture:—Dr. C. S. Myers: Industrial Fatigue.

HARVEIAN SOCIETY OF LONDON, at the Medical Society's Rooms, 11, Chandos-street, Cavendish-square, W.

THURSDAY, Jan. 13th.—Annual General Meeting. Presidential Address:—Dr. W. Hill: The Great Advances in the Investigation and Treatment of Diseases of the Œsophagus during the Present Century. General Conversazione.

BIRMINGHAM MEDICAL PSYCHOLOGICAL SOCIETY.

WEDNESDAY, Jan. 12th.—4.15 P.M., Dr. G. J. Branson: The Neurotic State.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, Jan. 10th.—12.15 P.M., Dr. Burnford: Pathological Demonstration. 2 P.M., Mr. B. Harman: Eye Department. Dr. Morton: X Ray Department. 5 P.M., Lecture:—Dr. A. Saunders: The Clinical Investigation of Cases with Symptoms of Digestive Trouble.

TUESDAY.—12 noon, Mr. T. Gray: Demonstration of Fractures. 2.30 P.M., Mr. Baldwin: Operations. Mr. Addison: Visit to Surgical Wards. 5 P.M., Clinical Lecture I.:—Mr. Banks Davis.

WEDNESDAY.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Mr. Gibb: Eye Department. 5 P.M., Lecture I.:—Dr. Simson: Obstetric Emergencies.

THURSDAY.—2 P.M., Dr. G. Stewart: Medical Out-patients. Mr. D. Armour: Operations. Mr. Baldwin: Orthopædic Department. 5 P.M., Special Lecture:—Dr. S. Taylor: Some Points in Connexion with the Circulatory System (open to all medical practitioners).

FRIDAY.—[illegible] A.M., Dr. G. Stewart: Neurological Demonstration. 12 noon, Dr. McDougal: Electrical Department. 2 P.M., Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. 5 P.M., Lecture I.:—Mr. Baldwin: Appendicitis.

SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Dr. Owen: Medical Out-patients.

DAILY:—10 A.M. Ward Visits. 2 P.M., In-patient, Out-patient Clinics and Operations.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Jan. 13th.—4 P.M., Lecture:—Mr. T. Higgins: The [illegible] of Lump.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

THURSDAY, Jan. 13th.—5 P.M., Chesterfield Lecture:—Dr. J. L. Bunch: Drug Eruptions.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

Christmas Lectures on the Haunts of Life, by Prof. J. A. Thomson—

TUESDAY, Jan. 11th.—3 P.M., Lecture VI.—The Mastery of the Air.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

TUESDAY, Jan. 11th.—4.30 P.M., Lecture:—Sir William Thorburn: Surgical Treatment of Neuralgia.

SALFORD ROYAL HOSPITAL AND ANCOATS HOSPITAL POST-GRADUATE DEMONSTRATIONS, at the two Hospitals alternately.

THURSDAY, Jan. 13th.—4.30 P.M., Mr. Diggle: Diagnosis and Treatment of Carcinoma of the Larynx. (At Ancoats Hospital.)

ST. MARY'S HOSPITALS, MANCHESTER. POST-GRADUATE LECTURE, at Whitworth-street West Branch.

FRIDAY, Jan. 14th.—4.30 P.M., Dr. Donald: Bladder Symptoms in Gynæcological Practice.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

EVANS, G. I., M.B., Ch.B. Oxon., has been appointed Resident Medical Officer to the King Edward VII. Hospital for Officers, Grosvenor-crescent.

GARSTANG, W., M.B., Ch.B. Vict., Certifying Surgeon under the Factory and Workshop Acts for Hucknall.

GODDARD, C. E., M.B., B.S. Lond., Medical Officer of Health for Harrow, in addition to Wembley.

LITTLE, P. M., M.B., Ch.B. Edin., M.C., House Surgeon to the Royal Devon and Exeter Hospital.

M'GIBBON, J., M.B., F.R.C.P.E., Professor of Midwifery in the University of Johannesburg, South Africa.

MOORE, C. A., M.S. Lond., Ch.M., F.R.C.S., Surgeon to the Bristol General Hospital.

MURRAY, J., M.B., B.Ch. R.U.I., Medical Officer of Health to the Leadgate U.D. Council.

ROGERS, Sir LEONARD, Stuart Mill Lecturer in Tropical Medicine at the London (R.F.H.) School of Medicine for Women.

STIDSTON, C. A., M.D., B.S. Lond., Honorary Surgeon to the Wolverhampton and Staffordshire General Hospital.

THWAITE, B., M.B., B.S. Lond., Physician to Out-patients to the Birmingham and Midland Free Hospital for Sick Children.

Vacancies.

For further information refer to the advertisement columns.

Altrincham General Hospital, Cheshire.—H.S. £175.

Bath, Royal United Hospital.—H.S. and H.P. £150 each.

Birkenhead Education Committee.—Asst. Sch. M.O. £450.

Bradford Royal Infirmary.—Res. Surg. O. £250. H.S. £200.

Cardiff, King Edward VII. Hospital.—H.S. £200.

Cardiff, King Edward VII. Welsh National Memorial Association.—Med. Supt. at North Wales Sanatorium, near Denbigh. £500. Tuberc. P.'s. £500. Also Asst. Tuberc. P.'s. £300.

City of London Hospital for Diseases of the Chest, Victoria Park, E.—Res. M.O. £250.

Colonial Service.—M.O.'s for West African Medical Staff, Government Service in Malaya, East African Protectorates, West Indies (including British Guiana), Fiji, and the Western Pacific, &c.

Derby, Derbyshire Royal Infirmary.—Ven. Dis. O. £750.

Doncaster Royal Infirmary and Dispensary.—Sen. and Jun. Res. M.O.'s. £250 and £225.

Down District Asylum, Downpatrick.—Sen. and Jun. Asst. M.O.'s. £350 and £300.

Durban, Government Hospital.—Asst. M.O. £484.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Res. M.O. £200.

Evelina Hospital for Children, Southwark, S.E.—Hon. P. to Out-patients.

Glamorgan County Council.—M.O. £700.

Hackney Metropolitan Borough.—M.O. 10s. per hour.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Asst. Res. M.O. £150. Also H.P.'s.

Hospital for Women, Soho-square, W.—Hon. Radiologist.

Hull Royal Infirmary.—Asst. H.S. £150.

Ilford Urban District Council.—Female Asst. M.O.H. £400.

India, Countess of Dufferin Fund.—Three Med. Women. Rs. 350 per mensem.

Kirkburton, Storthes Hall Asylum, near Huddersfield.—Asst. M.O. £400.

Lincoln County Hospital.—Jun. H.S.—£150.

Liverpool Hospital for Children, Moreton, Birkenhead.—Jun. M.O. £250.

London County Mental Hospital Service.—Sixth Asst. M.O. £300. Also Clin. Assts. £200.

Macclesfield, Cheshire County Asylum, Parkside.—Asst. M.O. £350.

Manchester, Ancoats Hospital.—H.S. £150.

Manchester, Barnes Convalescent Hospital, Cheadle.—Res. M.O. £300.

Manchester Royal Infirmary.—Accident Room H.S. £200. Also Radiological Tutor in X ray Department. £50.

Metropolitan Hospital, Kingsland-road, E.—Cas. O. and Res. Anæsth. £120.

Middlesex County Council.—Asst. M.O. £500.

Newark Hospital and Dispensary.—Res. H.S. £200.

Newport, Mon., Royal Gwent Hospital.—Jun. Res. M.O. £180.

Nottingham General Hospital.—H.S. £200.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. S.

Queen Mary's Hospital for the East End, E.—Hon. Dental S.

Royal Free Hospital, Gray's Inn-road, W.C.—H.P. £50.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Cas. O. £150. Also Res. H.P. £125.
South Eastern Hospital for Children, Sydenham, S.E.—Res. M.O. £150.
Southend-on-Sea County Borough.—Asst. M.O. £500.
Sheffield Royal Hospital.—Asst. Cas. O. £150.
Stoke-on-Trent, North Staffordshire Infirmary.—H.S. £200.
Taunton and Somerset Hospital.—Res. Asst. H.S.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—H.P. and H.S. £100.
Warrington Infirmary and Dispensary.—Jun. H.S. £200.
Wells Asylum, Somerset.—Asst. M.O. £300.
Western General Dispensary, Marylebone-road, N.W.—Res. H.S. £250.
West London Hospital, Hammersmith-road, W.—P. Also Hon. Obstetric Registrar.
Westminster Hospital (opposite Westminster Abbey).—H.P.
Wigan Education Committee.—Asst. Sch. M.O. £500.
Willesden Hospital.—Additions to Hon. Med. Staff.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Dalmellington and at Fishguard.

Births, Marriages, and Deaths.

DEATHS.

CASTOR.—On Dec. 30th, 1920, at his residence, Lodge-road, Croydon, from pneumonia, Lieutenant-Colonel Richard Henderson Castor, I.M.S., K.I.H., aged 59 years.

CRONIN.—On Dec. 30th, 1920, at his residence, Old Manor House, Clapham, S.W., Eugene Francis Cronin, M.D., M.R.C.S.

EVANS.—On Dec. 30th, 1920, at the Mental Hospital, Brentwood, George Evans, M.B., Medical Superintendent.

FRANKS.—On Dec. 31st, 1920, at Craiglands, Rowlands Gill, Emilie, beloved wife of Dr. Charles Franks.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

ALLEN, GEORGE, AND UNWIN, LTD., London.
- Studies in Dreams. By Mrs. H. O. Arnold-Forster. Pp. 188. 8s. 6d.

BAILLIÈRE, TINDALL, AND COX, London.
- The Sex Complex. By W. Blair Bell, M.D. 2nd ed. Pp. 251. 21s.
- Pocket Anatomy. By C. H. Fagge, F.R.C.S. 8th ed. Pp. 313. 5s.
- Aids to Pathology. By Harry Campbell, M.D. 4th ed. Pp. 248. 4s. 6d.
- Organic Medical Chemicals (Synthetic and Natural). By M. Barrowcliffe, F.I.C., and F. H. Carr, F.I.C. Pp. xii.+331. 15s.

BELL, G., AND SONS, London.
- Pocket Guide to the Chess Openings. By R. C. Griffith and J. H. White. Pp. 116. 3s. 6d.
- Practical Biological Chemistry. By Prof. G. Bertrand and Mons. P. Thomas. Translated from the Third Edition by H. A. Colwell, M.B. Pp. 348.
- The World of Sound. (Royal Institution Juvenile Lectures, 1919.) By Sir Wm. Bragg, F.R.S. Pp. 196. 6s.

CHAPMAN AND HALL, London. WILEY, J., AND SONS, New York.
- Laboratory Manual of Organic Chemistry. By H. L. Fisher, Ph.D. Pp. 331. 12s. 6d.
- A Text-book of Organic Chemistry. By A. F. Holleman. 5th ed. Pp. 642. 18s. 6d.

HEINEMANN, WILLIAM, London.
- Gout. By L. J. Llewellyn, M.B. Lond. With a Section on Ocular Disease in the Gouty. By W. M. Beaumont. Pp. 469. 30s.
- Diseases of the Throat, Nose, and Ear. By Dan McKenzie, M.D. Pp. 646. 42s.

HOEBER, PAUL B., New York.
- Hygiene of Communicable Diseases. By F. M. Munson, M.D. Pp. 792. $5.50.

LANE, JOHN, London and New York.
- Macedonia: A Plea for the Primitive. By A. Goff and H. A. Fawcett, M.R.C.S., D.P.H. Pp. 274. 21s.

LEWIS, H. K., AND CO., London.
- A Guide to Anatomy for Students of Medical Gymnastics, Massage, and Medical Electricity. By E. D. Ewart. Pp. 301. 16s.
- Syphilis and its Treatment, with Especial Reference to Syphilis of the Skin. By W. S. Fox, M.D. Cantab. Pp. viii.+195. 36s.
- On Diseases of the Lungs and Pleuræ, including Tuberculosis and Mediastinal Growths. By Sir R. Douglas Powell, Bart., K.C.V.O., M.D. Lond., and P. Horton-Smith Hartley, C.V.O., M.D. Cantab. 6th ed. Pp. xx.+798. 42s.

LIPPINCOTT, J. B., COMPANY, Philadelphia and London.
- Essentials of Medicine for Students, &c. By Charles P. Emerson, M.D. 4th ed. Pp. 401. 12s. 6d.
- Scurvy, Past and Present. By A. F. Hess, M.D. Pp. 279. 18s.

NISBET AND CO., London.
- Bolshevik Russia. By G. E. Raine, in collaboration with E. Luboff, LL.D. Pp. 192. 1s.

ROCKEFELLER INSTITUTE, New York.
- Studies from the Rockefeller Institute for Medical Research Reprints. Vol. XXXIV. Pp. 612.

SPRINGER, JULIUS, Berlin.
- Lehrbuch der Differentialdiagnose innerer Krankheiten. Von Professor Dr. M. Matthes. Pp. 621. M. 68.
- Einfaches Pharmakologisches Praktikum für Mediziner. Von Prof. R. Magnus. Pp. 51. M. 17.

Notes, Short Comments, and Answers to Correspondents.

SOME PROBLEMS IN MARINE HYGIENE.[1]

WITH SPECIAL REFERENCE TO MERCHANT SHIPS.

BY SURGEON VICE-ADMIRAL SIR ROBERT HILL, K.C.M.G., C.B., C.V.O.,

MEDICAL DIRECTOR-GENERAL OF THE ROYAL NAVY.

II. WATER-SUPPLY OF SHIPS AND DISEASES OF SHIP LIFE.

The Water-supply of Ships.

THE important problem of water-supply is easily solved. Many diseases, ranging from simple outbreaks of diarrhœa to cholera, the typhoid group and the dysenteries, are classed as water-borne. Metallic poisoning and many parasitic intestinal worms are sometimes water-borne. It is essential to safeguard the drinking water-supply in a ship, where the main difficulty is that of storage. In old days rain-water was collected and stored in casks; in 1772 distillation was first used in the Royal Navy, and later iron tanks were employed for storage. In all ships the water-supply should be most liberal, as in the Royal Navy.

Regulations for supply.—The rules laid down in the Merchant Shipping Act and by the Board of Trade leave a wide margin of danger. Section 206 of the former merely states that "if the inspecting officer finds that the water has not been inspected, or to be deficient in quality, the ship shall be detained until the defects are remedied to his satisfaction." The regulations for supply of drinking-water in H.M. ships are much more stringent, and I cannot do better than give a brief description of them. The lowest limit of amount provided should be 10 gallons per head per day for all purposes, increased to 12 gallons in the tropics. The storage tanks are of iron, coated with a preparation known as rosbonite, and roughly of a capacity of 30,000 gallons for 1000 men. They should be so arranged, by means of a pipe connexion for attachment to the water-boat's hose, that water can be passed from these boats to the tanks without opening the manholes, and the manholes should not be situated in a sleeping or messing compartment. These manholes should be raised into a coaming to prevent soakage of wash-deck dirt into the storage tank.

Cleansing of tanks.—Tanks should be cleaned out every six months—in merchant ships at the end of each voyage—or when known pollution has occurred. This should be done by men specially inspected for disease by a medical officer; they should wear clean overalls and sterilised rubber boots, and the cleansing should be under the supervision of a medical officer or competent executive officer. From the storage tanks the water is pumped up to gravity tanks on the superstructure of the ship; these gravity tanks are made of galvanised steel plates, and it is recommended that they be fitted with raised hinged manholes for inspection purposes. Gravity tanks seldom require cleansing; from them the water is passed through galvanised pipes to the drinking or issuing tanks in various parts of the ships convenient for the men to draw the water off. They are covered-in tanks of a capacity of from 25 to 200 gallons. In the lids of these issuing tanks is an opening for filling, protected by a perforated metal disc and funnel-shaped guard. The branch pipe from the main should end a short distance from the funnel; the latter should be fitted with a metal cover. When the drinking supply in a ship is by distillation there is little danger, but it must be remembered that leakage of salt water through cracked condenser tubes is a grave source of pollution, especially if the water is from a harbour source. Distilled water is tested for the excessive presence of common salt by the engineers during the process of distillation. Only the purest sea-water should be used for distillation; polluted harbours and rivers should not be employed.

Dangers of shore supply.—When water is brought from the shore to a ship the strictest precautions must be taken against dangers arising, firstly, at its source on shore, and secondly, in the method of transport. Strict inquiries and inspection should be made, and if the source is in any way doubtful reports of analysis should be obtained. However pure the water may be at its source grave danger may occur in transport, which is usually carried out by water-boats. It should be required by all shipping companies that these boats be modern in type, consisting of vessels containing steel tanks free of the vessel's side, with a space between to allow of inspection, and situated amidships well away from such sources of heat as the engine room aft and the pump room forward. They should have raised manholes on the top, with a coaming of at least 4½in., and with hinged water-tight cover. Canvas hoses for supply to ships are perhaps the best. No boat for the supply of drinking-water should carry water for boiler purposes as well. There should be general adoption of the special rules laid down by the Admiralty as regards the care of these boats and the cleanliness of their crews. As an example of danger arising even when the shore supply is above suspicion, this instance may be quoted. One of H.M. ships visited a certain island in the southern Indian Ocean where the shore water was very pure, but when the medical officer inspected the water-boat it was found to be of old rotten wood with unlined wooden tanks, into which sea-water leaked. When not in use the water-boat was moored in the harbour just where the town sewage was discharged.

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[1] Being portions of a Chadwick Trust lecture delivered at Newcastle-upon-Tyne, Dec. 3rd, 1920.

Chlorination.—When all precautions are taken to ensure safety there is still an element of doubt in shore water; therefore chlorination is carried out in H.M. ships by regulation. This process is easily within the powers of any merchant ship, large or small, and should be adopted as a part of the Merchant Shipping Act. Chlorination is done simply by adding 30 gr. of chloride of lime to every hundred gallons of water when the tanks are being filled. This is best done by first making the requisite *solution of chloride* of lime and adding it to the water. The lime should be fresh and kept in amber-coloured air-tight bottles, in which manner it is supplied to H.M. ships; it rapidly loses its sterilising effect if exposed. For this reason chlorination is more efficient when use is made of liquid chlorine gas stored in cylinders; but this method has so far only been applied to the chlorination of town water-supplies. Filters should be regarded as a potential source of danger on board ship; they are frequently neglected, and have then been a means of pollution, for which reason they have been abandoned in H.M. ships.

Diseases Incidental to Ship Life.

Certain diseases appear more persistently on board ship than ashore owing to the environment of the seaman, to diet, and to climatic exposure.

Most of the common diseases from which seamen suffer are diseases of the respiratory system, including tuberculosis and influenza; overcrowding and inefficient ventilation are the causes and the means of spreading infection. Diseases directly due to faulty diet are scurvy and ship beri-beri. Diseases due to climate are numerous; malaria is pre-eminent, sunstroke or heat-stroke being a near second. Infectious and contagious diseases are very liable to spread and more difficult to control owing to the close proximity of individuals and the extreme difficulty of segregation on board ship. I propose only to deal with those diseases which will be materially affected by improvements in the construction of ships, pointing out some indications for preventive measures.

Tuberculosis.—In spite of all our modern improvements in ventilation and accommodation, this disease remains one of the chief causes of invaliding in the Royal Navy. It is unfortunate for comparison's sake that the only records available in the Merchant Service are death returns. The recent war has rendered both the Royal Navy and the mercantile records incomplete since the year 1914; it is hoped that both these will be available shortly, but they will contain abnormal returns owing to the war, and comparison will therefore be unfair. In the year 1914 the mercantile death returns under tuberculosis and phthisis amounted to 87 out of a total of 245,619 men serving, excluding fishermen. This does not sound a large number, but there must have been a large percentage of cases occurring besides those which terminated fatally. In the Royal Navy for 1914, with a total force of 158,300, there were 336 cases, with 269 invalidings and 42 deaths, the case invaliding and death ratios being 2·12, 1·69, and 0·26 per 1000 respectively, as compared with 2·35, 1·82, and 0·24, the ratios for the previous five years. These figures, if they do nothing else, show that much has yet to be done in construction to lessen the incidence. The environment of the seaman in the Mercantile Marine and in the Royal Navy must be improved. In the future ships must be constructed so that the men are given better accommodation, more natural light, and more natural ventilation, for however good artificial (or pumped) ventilation may be, it is never the same as pure fresh air.

Medical examinations.—Early recognition of the disease and prompt removal of cases from the ship will do much to diminish the incidence. Very careful recruiting is done for the Navy, quarterly examinations of men are carried out, at which weights are taken, and anything holding a suspicion of the disease is noted and the individual kept under observation and, if necessary, sent to hospital. Such measures are more difficult to undertake in the Mercantile Marine, but more could be done if shipping companies increased their medical staff ashore, and instigated a more rigorous examination of men signing on for voyages. Mercantile seamen dislike a too frequent medical examination, but this is a matter of that discipline and routine to which war service will have helped to accustom them.

Tropical diseases.—The best means of prevention of malaria on board is to construct mosquito-proofed ships for trading in malarious areas. This method is now adopted in all ships of the Royal Navy going to West Africa and Persian Gulf and other bad malarious areas; all ports and doorways are fitted with fine wire gauze, and it is recommended that shipping companies should supply similar fittings. Sunstroke and heat-stroke may be lessened by good awning provision, and the supply of some ice-making machine in ships going to tropical countries. Increased ventilation by wind-sails, wind-scoops, &c., will, of course, be essential.

Against infectious and contagious diseases in general, improved ventilation, better accommodation, and provision of adequate working facilities and latrine systems are the main preventive measures; but it is absolutely necessary that in all merchant ships some isolation space be provided where adequate temporary treatment can be given for such diseases until the case can be moved ashore; some means of steam disinfection should also be provided, as such means is now our main preventive in typhus fever. It is hoped that a simple means of steam disinfection applicable to any size of steamship will shortly be on the market, the inventor being an army medical officer. I am not at present free to describe this apparatus, as it is under trial.

Typhoid.—In addition to the precautions already named, I must mention the proved value of preventive inoculation against typhoid. Seafaring men proceeding to countries where this disease is common, such as the Eastern Mediterranean, India, and China, should be given facilities for inoculation, and its advantages should be urged upon them.

Small-pox.—Seamen are particularly exposed to small-pox in their service abroad; efficient vaccination should be one of the articles insisted upon when men are signing on for voyages abroad.

Venereal diseases.—These diseases may not be more rife amongst seafaring men than among the shore population, but in ships the treatment necessary for prevention and cure is almost nil, except, perhaps, in the largest ships. We in the Royal Navy have proved in the past that as good treatment can be given on board ship as on shore; and at present the most recent preventive and curative measures are being organised on board our ships. I would urge on the Shipping Federation and shipbuilding companies to see to it at once that such measures are installed in all merchant ships, or at any rate in those carrying a doctor. Every such ship should have an ablution cabinet or treatment centre. I can assure them that all possible help will be forthcoming from the Royal Navy. Lectures should be given by medical men to the officers and men of the Mercantile Service on this subject; and medical officers engaged by shipping companies should produce evidence of some special knowledge of these diseases and their treatment. The subject is too long for deep discussion here, but the responsibility of shipping companies extends to the provision of adequate treatment for their men when they go on shore at home and abroad. There must be no penalising, and free treatment, including drugs, should be supplied. Since it resumed its work at the termination of the war the Office Internationale d'Hygiène Publique has had under consideration the importance of the establishment and maintenance of venereal treatment centres, open to merchant sailors and watermen of all nationalities, in all the chief sea and river ports. Medical—and, if necessary, hospital—treatment and medical necessaries are all to be supplied gratuitously. The propaganda work now being carried on by the National Council for Combating Venereal Disease is ably furthering the useful preventive measures which the above office has been advocating for so many years. The Marine Department of the Board of Trade, the Ministry of Health, the Shipping Federation, and various shipping companies are now fully alive to the importance of this matter.

COLONIAL HEALTH REPORTS.

Cyprus.

IN the Government report for 1919-20 an improvement in the public health is recorded. The prevalent diseases were those of the digestive and respiratory systems, influenza, malaria, skin diseases, rheumatism, and enteric fever. An epidemic of small-pox, almost entirely confined to the Limassol district, occurred in August, 1919. There has been a steady and well-maintained decrease in the number of cases of malaria treated in Cyprus since anti-malarial measures were instituted in 1913 by Sir Ronald Ross, K.C.B., the yearly total of cases having fallen from 10,000 in 1912 to less than 2000 in 1919, whilst the "spleen rate," perhaps the best index of the incidence of malaria, has shown a proportionate decline from 17·2 in 1913 to 5·2 in 1919. A slow but steady annual reduction is observed in the number of patients admitted to the leper asylum at Nicosia. During 1919 Cyprus enjoyed complete immunity from plague, cholera, and typhus, although these diseases prevailed in neighbouring countries. The estimated population at the end of 1919 was 311,108, an increase of 4111 over that of 1918. The birth-rate for the year was 29·8 per 1000 of the population (as against 31·3 in 1918), and the death-rate was 18·5 per 1000 (as compared with 26·1 in 1918).

Bermuda.

The population at the end of 1919 was estimated at 21,869, exclusive of the naval and military establishments. The proportion of coloured persons to white is about 2 to 1. In 1911 the population was 18,994, and has been gradually increasing since. The increase for 1919 was, however, the lowest on record, being only 29. This was partly due to the cessation of immigration from the West Indies owing to additional restrictions placed on immigrants and the insistence upon a money deposit on entry. The number of persons leaving the colony, especially among the labouring and domestic servant classes, is causing some anxiety. There has always been a comparatively regular and considerable immigration to the United States and elsewhere, but hitherto it has been counterbalanced by the entry of immigrants from the West Indies. The high wages prevailing in the United States of America are the principal attraction, and the bulk of those who leave the colony do not return. The population is large for the area, and the figures given take no account of the large number of tourists visiting the place, amounting in some years to more than the resident population. The birth-rate in 1919 was 24·87 per 1000 and the death-rate 17·28, both rates being considerably higher among the coloured population than among the whites. The infantile death-rate was 16·6 per 100 living births—6·1 among whites and 20·5 among coloured children. In 1919 rain fell on 183 days, the total fall for the year being 48·84 inches. The highest temperature was 90·2° F. on August 20th, and the lowest 46·8° on Feb. 12th. The colony offers unusually favourable health conditions. There are no extremes of temperature, and it is beyond the range of the usual tropical diseases. Malaria is unknown, but there are occasional outbreaks of a mild type of dengue fever. Mosquitoes are prevalent in summer, but as they are regarded more as a nuisance than as a menace to health it is difficult to arouse interest in measures for their eradication. It would, however, add greatly to the attractions of the islands and to the amenities of life if these pests could be eliminated or substantially reduced, and measures to that end are now under consideration. The reduction of the common house-fly, which is very numerous in summer, is an equally important object of the proposed measures.

Fiji.

In his report on the Blue-book for 1919 Mr. T. E. Fell, Colonial Secretary, states that the estimated population at the end of the year was 163,847 (as against 139,541 at the Census of 1911), comprising 4584 Europeans, 2824 half-castes, 62,640 Indians, 2664 Polynesians, 87,493 Fijians, 2157 Rotumans, 892 Chinese, and 613 others. The early months of the year were marked by the epidemic of influenza, which continued its ravages until March, when it gradually subsided. Medical relief parties from New Zealand and Australia, under Colonel Jennings and Major Alexander respectively, continued their good work until the end. Medical officers generally worked at exceedingly high pressure, and in many districts under stupendous difficulties, arising from the lack of means of conveyance. Their efforts, together with those of voluntary workers organised by European committees for service throughout the group amongst natives and Indians, were the means of saving many lives. The estimated number of deaths from the disease was 8145, the European victims being 1·41 per cent. of population; half-castes, 2·75; Fijians, 5·66; Indians, 4·17; and others, 6·93.

In the Colonial Hospital in 1919 1965 patients were treated, of whom 180 were Europeans. At the branch hospital at Levuka the admissions during the year were 496. Native Fijians generally derive medical treatment at the 11 provincial hospitals controlled and supervised by district medical officers. Some of the latter were still absent on war service, and in those areas the hospitals were left in charge of native medical practitioners. The number of admissions to provincial hospitals was 2816. The lunatic asylum at Suva, under the management of the resident medical officer of the Colonial Hospital, who acts as superintendent, and a board of visitors, receives patients of both sexes of all nationalities. There is separate accommodation for Europeans. The inmates numbered 70 at the close of the year. The leper asylum on the island of Makogai contained at the end of the year 352 inmates under the management of the superintendent, Dr. F. Hall, and six European nursing sisters supplied by the Catholic Mission, and five Fijian nursing sisters, all greatly devoted to their good work. The high degree of efficiency which has marked the institution since its inception has been maintained. During the year 11 lepers were conditionally discharged from the asylum.

The total rainfall recorded at Suva in 1919 was 138·18 in., as against 103·84 in. in 1918 and 162·05 in. in 1917. This rainfall is 25 in. above the average for 25 years and fell on 248 days. The average temperature for the year at Suva was 76·3° F., the mean shade temperatures being 71·3° minimum and 81·3° maximum.

Basutoland.

In his report for 1919-20 Mr. J. P. Murray, Government Secretary, writes: The anticipated recrudescence of typhus fever occurred early in January, 1919, in the same neighbourhood that the disease first appeared in 1918—viz., the Quthing district along the Orange River. There were no cases in the Qacha's Nek district. The epidemic was of a much milder type. There were 243 cases with only 50 deaths, compared with 241 cases and 111 deaths in 1918. The mildness of the epidemic renders it more difficult to deal with, as it is often weeks before outbreaks are reported, generally in some remote mountain village. In spite of vigorous efforts made to stamp out the disease it is feared that it will be found endemic in the Quthing district as it has become in some of the native territories of the Union. It is still the Tembu who are the chief sufferers, due to the dirty habits and surroundings of this clan, as opposed to the Basuto, who are naturally a clean race. Tuberculosis is neither increasing nor decreasing, the number of cases being about the same from year to year. Syphilis is becoming an increasingly serious problem and danger to the nation. 4216 cases were treated, but these must form a small percentage of the total number of cases in the territory. The type of disease is altering slightly. Formerly primary sores were seldom observed; now they are common and present the usual classical symptoms. There was no recrudescence of the severe type of influenza which devastated the country in 1918, but a fair number of cases of the usual mild form of the disease were observed; this type may be regarded as endemic. There were only 87 cases of enteric fever recorded. A dry summer and autumn is always followed by a low incidence of enteric. Where it had been possible to provide preventive inoculation, as on the Government reserve, cases were practically unknown. Dysentery was unusually prevalent, mostly of the bacillary type. There were no cases of small-pox, but chicken-pox was prevalent in some areas. During the 12 months ended March 31st, 1920, there were 62 new cases admitted to the leper settlement, and the total of inmates on April 1st was 349 (168 males and 181 females). There are still a good number of lepers at large.

HOME SERVICE AMBULANCES.

ON the release from war work of the ambulances of the Joint Committee of the British Red Cross Society and the Order of St. John the Home Ambulance Service was established to alleviate suffering by provision of transport for the sick and injured throughout the country. Its aim is a distribution of ambulances on such a scale that wherever illness or accident may occur there shall be a motor ambulance within a convenient distance to convey the patient with a minimum of pain to the point where medical and surgical skill can be most efficiently applied. The Hon. Sir Arthur Stanley is chairman of the Home Service Ambulance Committee, Sir Dawson Williams is the medical member, and Mr. F. C. Davies secretary. A list is now issued, arranged on a county basis, showing where the ambulances are stationed, and to whom application should be made for them. Applications from the London Area should be made to the Secretary of the Home Service Ambulance Committee at 19, Berkeley-street, London, W. 1. (Telegrams: Assistance, Piccy, London. Telephone: Mayfair 345.) The following example will show how the county list is set out:—

BEDFORDSHIRE.

Co. Director: Lt.-Col. F. A. Stevens, C.B.E.
Address: The Shire Hall, Bedford.
Telegrams: The Shire Hall, Bedford.
Telephone: Bedford 143.

District.	*Stationed at—*	*Officer in Charge.*
Luton.	Police Station Garage. Tel. No.: 39.	Chief Constable, Luton.
Morbanger.	Moggerhanger Park, Nr. Sandy. Tel. No.: Sandy, 25.	Dr. Welch, M.O.H. Tel. No.: Bed. 341.
Dunstable.	The Hospital, Dunstable. Tel. No.: 72.	The Matron (same address).
Leighton Buzzard.	Messrs. Parrot and Janes, North-street. Tel. No.: 122.	Chairman of the U.D.C., Council Offices, Leighton Buzzard.
Biggleswade.	Isolation Hospital, Potton-road. Tel. No.: 25.	Henry Chaundler, Esq., Biggleswade Joint Hospital Board, Biggleswade. Tel. No.: 6.

DIET KITCHENS FOR FRENCH HOSPITALS.

THE close association of the British and French Red Cross volunteers during the war has had many happy results for both countries. Amongst these must be counted the introduction of the diet kitchen into French hospitals. This essential institution was added to the equipment of French military hospitals during the war through the initiative of Miss Madge Oliver. Dr. Marcel l'Abbé, writing in *La Presse Médicale* for Dec. 22nd, 1920, describes how he was impressed with their value during the war to such an extent that he has now succeeded in arranging the transfer of their organisation to the Hôpital de la Charité at Paris. A series of diets are tabulated, so that the prescribing physician has merely to indicate a number on the diet sheet, as has long been done in many English hospitals.

GERMAN MEDICAL TERMINOLOGY.

STUDENTS of contemporary medical literature, who are otherwise fairly well versed in modern languages, are apt to find names or phrases or turns of expression in foreign journals for which the ordinary dictionary affords them no help. In French the noble series of reference books issued by the Librairie Larousse is the standby in such emergencies. In German medicine and the allied sciences nothing can take the place of Dr. Walter Guttmann's "Medizinische Terminologie," a new edition of which has just appeared (Urban and Schwarzenberg. 1920. Pp. 1311. M.90). The book appeared first in 1902, the author setting himself the task of providing short but clear definitions, and avoiding "every unnecessary ballast," but at the same time inserting any doubtful or interesting etymology, and the names of laws, symptoms, or phenomena associated with their discoverers. In later editions short biographical notices were added and the range of subject was increased, pharmacology, neurology, and medical zoology receiving special attention. Some 450 small illustrations of a rather trivial nature serve to break up the text; it is curious how the encyclopædic dictionary with really well-chosen pictures is still to be sought in any language. Although neither paper nor binding of the present edition of Guttmann is of good quality, all the essentials of convenient arrangement and easy reference are present.

SWISS SPAS.

WE have received an elaborate brochure from the pens of 12 Swiss M.D.'s and one Ph.D. describing the attractions offered by Switzerland in the way of natural medicinal waters. The following nine stations are included: (1) Eaux thermales de Baden; (2) Bex-les-Bains; (3) Bains du Gurnigel; (4) Bains de Passugg; (5) Eaux thermales de Ragaz-Pfæfers; (6) Bains salins de Rheinfelden; (7) St-Moritz-les-Bains; (8) Tarasp-Schuls-Vulpera-les-Bains; (9) Bains de Val Sinestra. Some of these are of very ancient reputation. Tacitus mentions the waters of Baden, and the bath at Pfæfers was founded in 1038. Dr. H. Keller contributes a careful analysis of the saline and other constituents of the waters with admirably clear percentage charts, from which emerges the following working classification:—

1. Eaux thermales simples: *Ragaz-Pfæfers.*

2. Eaux alcalines: (a) Alcalines terreuses: *Passugg:* source Hélène. (b) Alcalines chlorurées sodiques: *Passugg:* sources Ulricus et Fortunatus. (c) Alcalines-chlorurées sulfatées sodiques: *Tarasp-Schuls-Vulpera:* sources Lucius, Ursus, Emerita et "Neue Bulquelle."

3. Eaux sulfureuses: (a) Eaux sulfureuses thermales: *Baden.* (b) Eaux sulfureuses froides: *Gurnigel.*

4. Eaux chlorurées sodiques ou salées: *Rheinfelden, Bex.*

5. Eaux ferrugineuses: *Saint-Moritz:* sources Surpunt, Mauritius et Paracelsus. *Tarasp-Schuls-Vulpera:* sources Boniface, Carola, Val Fuschna, Sotsass, Val Plavna, Val Pizza et Wy. *Passugg:* source Belvedra.

6. Eaux iodurées: *Passugg:* source Fortunatus. *Tarasp-Schuls-Vulpera:* source Lucius.

7. Eaux lithinées: *Tarasp-Schuls-Vulpera:* source Lucius. *Passugg:* source Fortunatus.

8. Eaux arsenicales et ferrugineuses: *Val Sinestra:* sources Ulrich, Jean, Conradin et Thomas.

There follows a very practical list of the foreign (i.e., non-Swiss) spas which the Swiss resorts may adequately replace.

1. *Ragaz-Pfæfers* may replace Badenweiler, Schlangenbad, Warmbad près Wolkenstein, Warmbrunn, Wildbad (Germany); Gastein (Austria); Luxeuil, Plombières (France); Cormano (Italy); Buxton (England).

2. *Passugg: source Hélène:* Apollinarisbrunnen, Gerolstein, Neuenahr, Salzmatt, Obersalzbrunn (Germany); Bilin, Giesshübel (Austria), Vals and Vichy (France). *Sources Ulricus et Fortunatus:* Wildungen, source Hélène, Fachingen, Ems, Roisdorf, Nieder-Selters (Germany); Gleichenberg (Austria); Royat and Vichy (France).

3. *Tarasp-Schuls-Vulpera: sources Lucius, Ursus, Emerita et Neue Bulquelle:* Bertrich, Elster, Kissingen and Grenzach (Germany); Franzensbad, Marienbad, and Karlsbad (Czecko-Slovakia); Brides-les-Bains (France); Cheltenham and Leamington (England).

4. *Baden:* Aix-la-Chapelle (Germany); Herkulesbad, Budapest-[illegible], Pistyan (Hungary); Aix-les-Bains, Amélie-les-Bains, Bagnères-de-Luchon, Bagnols-Lozère, Eaux-Bonnes, Saint-Gervais (France); Acqui, Vinadio, Viterbo (Italy); Panticosa (Spain); Hélouan (Egypt); Brousse (Asia Minor).

5. *Gurnigel:* Nenndorf (Germany); Allevard, Enghien, Pierrefonds (France); Harrogate (England); Tabiano (Italy); Santa Agueda (Spain).

6. *Rheinfelden et Bex:* Dürrheim, Kreuznach, Nauheim, Reichenhall, Kösen (Germany); Ischl (Austria); Biarritz and Salies-de-Béarn (France); Salsomaggiore and Monte-Catini (Italy); Droitwich, Nantwich, Woodhall Spa (England).

7. *St. Moritz-les-Bains:* Antogast, Petersthal, Rippoldsau, Pyrmont, Schwalbach, Steben (Germany); Franzensbad and Marienbad (Czecko-Slovakia); Forges and Lamalou (France); Recoaro (Italy); Tunbridge Wells (England); Spa (Belgium).

8. *Val Sinestra:* Cudowa, source Guber (Silesia), Levico Roncegno and Recoara (Italy); Vichy, La Bourboule, Mont Dore, Royat and Vic-sur-Cère (France).

Of course, the indications are reversible, and we may suggest on our part that *Buxton may replace Ragaz* and so on. We cannot, however, with justice make quite the same claim as Switzerland does to the position of international health resort, for Dr. Zollinger writes:—

> Pendant toutes les tempêtes politiques qui ont secoué le monde, la Suisse a donné la preuve que des peuples de langues et de caractères différents peuvent travailler en harmonie à la formation d'un état; elle a prouvé victorieusement qu'elle peut devenir un digne membre de la grande communauté des peuples et qu'elle peut être un élément de forces constructives dans l'élaboration du statut de l'humanité de demain.

Nor can we provide to the same extent certain other curative factors set out as: Le soleil et la lumière, l'air pur des montagnes, la chaleur et le froid, facteurs qui constituent la climatothérapie et l'héliothérapie.

A Radiant Heat Conserver.—Mr. C. Wray's device, described in our last issue, may be obtained through the Canadian United Manufacturers Agency, Ltd., of 12, Charterhouse Buildings, Goswell-road, London, E.C. 1.

S.M.O.—The principal part of the Porteus outfit for mental deficiency is the so-called maze test. Apparently this can only be obtained from the Vineland Training School, New Jersey, U.S.A.

Corrigendum.—In Major H. C. Brown's paper on "The Use of Citrated Media," published in our last issue, "lead acetate" in the eleventh line from the bottom, column 1, p. 23, should read "lead *citrate.*"

Communications, Letters, &c., to the Editor have been received from—

A.—Major H. Acton, I.M.S.; Dr. E. E. Atkin, Lond.
B.—Mr. H. Barwell, Lond.; Dr. G. Blacker, Lond.; Birmingham Medico-Psychological Society; Dr. M. Bruce, Lond.; Dr. J. Bannerman, Stanhope; Board of Education, Lond.; Brooklyn Cardiological Society.
C.—Dr. F. G. Chandler, Lond.; Sir F. Colyer, Lond.; Mr. E. M. Corner, Lond.; Dr. E. P. Cumberbatch, Lond.; Chadwick Trust, Lond.; Dr. W. Cramer, Lond.; Chelsea Hospital for Women, Lond.; Dr. W. F. A. Clowes, Colchester; Dr. S. Colyer, Lond.; Messrs. Constantidini and Co., Lond.; Dr. C. Coombs, Bristol.
D.—Deutsche Gesellschaft für Schädlingsbekämpfung, Frankfurt-a-Main; Dr. H. B. Day, Lond.; Dr. G. Dinolt, Vienna; Col. L. S. Dudgeon, A.M.S.
F.—Dr. F. Fox, Lond.; Sir A. D. Fripp, Lond.; Lt.-Col. F. E. Fremantle, M.P.
G.—Dr. W. H. Gregory, Beverley; Messrs. J. J. Griffin and Co., Lond.; Great Northern Central Hospital, Lond.; Messrs. C. Griffin and Co., Lond.; Dr. G. Graham, Lond.; General Medical Council, Lond., Registrar of; Dr. S. R. Gloyne, Lond.
H.—Prof. L. Hill, Lond.; Col. C. B. Heald, Lond.; Harrogate Corporation; Dr. C. W. Hutt, Lond.; Dr. A. J. Hall, Sheffield; Prof. F. G. Hopkins, Cambridge; Sir W. H. Horrocks, Lond.; Mr. J. T. Henderson, Pietermaritzburg; Major W. E. Home, R.A.M.C.; Dr. R. C. Holt, Didsbury; Hospital for Sick Children, Lond.
I.—Dr. R. Ishiyama, Seattle.
L.—Maj.-Gen. Sir W. B. Leishman, Lond.; *Literary Year Book*, Liverpool, Editor of.
M.—Medico-Legal Society, Lond.; Mr. J. B. Macalpine, Manchester; Dr. E. W. G. Masterman, Lond.; Ministry of Health, Lond.; Middlesex Hospital Medical School, Lond., Sec. of; Dr. W. Mitchell, Bradford; Mr. G. Mayall, Bolton; Ministry of Agriculture and Fisheries, Lond.; Dr. G. D. Madill, Dublin.
N.—National Council for Combating Venereal Diseases, Lond.
O.—Dr. J. S. Owens, Lond.; Dr. W. Overend, St. Leonards-on-Sea.
P.—Panel Doctor.
R.—Dr. D. G. Rice-Oxley, Lond.; Royal Sanitary Institute, Lond.; Mr. H. Rundle, Southsea; Royal Society of Arts, Lond.
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Y.—Dr. M. L. Young, Lond.
Z.—Dr. T. Zangger, Zurich.

Communications relating to the editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.

THE LANCET, JANUARY 15, 1921.

ARMY MEDICAL COLLEGE LIBRARY

A Statistical Investigation

OF

RECORDS OF TREATMENT AND BLOOD EXAMINATION IN 18,731 CASES OF MALARIA.

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AND
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MAJOR, S.A.M.C.

THESE investigations were carried out during the war on cases of malaria returned from the German East African campaign and admitted for treatment into military hospitals in South Africa. A routine system of blood examination was instituted, each man's blood being examined by the thick-film method on admission and subsequently at weekly intervals. Special malaria cards on which laboratory reports and records of treatment were kept were taken out for each man, and provided ample material for statistical research. These cards on sorting gave the following groups:—

Classification of Series.

1. Total cards analysed	18,731
2. Total cards clinically diagnosed malaria with negative smears ("negative cards")	9,943
3. Total cards diagnosed malaria with positive smears ("positive cards")	8,788
4. *Total smears carried out in series*	74,022
5. Positive cards—	
(*a*) Benign tertian	5,393, or 61%
(*b*) Malignant subtertian	1,977, or 23%
(*c*) *Mixed infections* (B.T. and M.T.)	1,418, *or* 16%

The large number of *mixed infections indicates that infection with one type of malaria in no way protects against invasion with another.* The converse is more likely to be true; the debility produced by malarial infection naturally reduces the effectiveness of the protective mechanism.

ROUTINE TREATMENT OF MALARIA.

The earlier records of this series showed marked variation in the actual dosage of quinine employed and in the duration of quinine treatment. A dosage of quinine of 5 or 10 gr. daily was frequently recorded, and was commonly associated with repeated relapses and progressive anæmia. *Whatever may be said for the successful employment of such doses in mild cases of malaria, they were found to be totally inadequate for the severe massive and mixed infections commonly observed in troops invalided from the German East African campaign.* Apart from the necessity of controlling infection as early as possible from the point of view of the ultimate cure of the disease, the question arose of undue pressure on the hospitals owing to the increased period in hospital of each case inadequately treated.

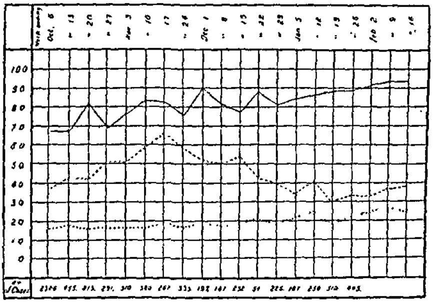
In November, *1917, definite instructions for the* routine treatment of malaria were issued. All ordinary cases, irrespective *of type, were ordered 10 gr. of* quinine in solution three times daily *for three weeks, followed* by the same dose twice daily for one month and then 10 gr. daily for two months.

The beneficial effects of the increase of quinine employed in all cases of malaria is reflected in Chart 1. It will be observed that an increase in the number of days on which quinine was administered and the average daily dose of quinine is associated with a reduction in the number of days in hospital, and that the percentage number of days in hospital on quinine in October, 1917, rises from 67 per cent. of the total stay in hospital to over 92 per cent. in March, 1918. The average amount of quinine administered in all cases of malaria similarly rises from 16 gr. per case per day in October to 23 gr. per case per day in April. The gradual rise in these factors is accompanied by a gradual fall in the average period in hospital of all cases.

Period in Hospital of Each Type of Malaria.

It should be borne in mind that the same standard of clinical fitness and two consecutive negative smears at weekly intervals was required of all cases before discharge, irrespective of the particular type of malaria recorded. Furthermore, with regard to treatment, although the average daily quinine employed shows a gradual rise the increase applies generally to all cases of malaria. Under these circumstances, for the same period the average duration of treatment of each type of malaria before discharge reflects—with a considerable degree of accuracy considering the large number of cases in each group—the relative resistance of each type of malarial infection to treatment. It should also be remembered that practically every man admitted to hospital had suffered at some time or other during the campaign from attacks of malaria. Table I. summarises the results of analysis in each type of case.

CHART 1.



Showing the beneficial *effect of increase of quinine dosage on* the length of malaria attack as evidenced by the number of days in hospital. Upper line = percentage number of days in hospital on quinine. Middle line = average number of days *in hospital per* case. Lower line = daily average grains quinine per case. The figures below the chart give the actual number of cases.

TABLE I.—*Relation between Quinine Treatment and Days in Hospital in 4905 Different Infections.*

Type of case.	No. of cases.	Average daily quinine (gr.)	Average days in hospital.
Benign tertian	1670	24·7	45·4
Malignant subtertian	473	25·2	43·6
Mixed infection (B.T. and M.T.) ...	318	24·2	63·1
Total positives...	2461	24·7	47·3
"Negative" cases	2444	22·5	32·3
All cases	4905	23·9	39·9

In reviewing the above figures *it is clear that:* (1) Mixed *infections are more resistant to treatment than either* B.T. *(benign tertian), or* M.T. *(malignant subtertian)*; (2) B.T. is as resistant or even more resistant than M.T., when the question of parasitological and clinical relapse is taken into consideration.

Benign tertian and malignant subtertian infections.—The ready response of B.T. infections (excepting chronic resistant cases) to quinine administration is reflected more in the rapid disappearance of parasites from the finger blood than in the freedom from relapses. M.T. infections, although in the first place more obstinate and difficult to eradicate from the finger-blood, once controlled, are far less prone to relapse. It should be noted that the occurrence of a parasitological relapse prevented the discharge of a patient in military hospitals until two consecutive negative blood reports had been recorded, although negative tests may have been recorded previous to the relapse. The long period of detention of benign tertian cases is largely due to the high percentage of relapses both clinical and parasitological which occurred in this infection.

Mixed infections.—The prolonged treatment required in mixed infection (M.T. and B.T.) is due partly to the resistance of these infections to the action of quinine, and partly to the frequency with which relapses of either one or the other (usually benign tertian) infection takes place. Almost without exception the occurrence of two types of malaria together in the same patient increases enormously the difficulty of control and eradication of either infection, and indicates a less favourable prognosis than in the case of pure infection with any one type.

Syphilis and malaria.—The resistance of malarial infections, even when involving one type only of malaria, in syphilitic subjects is very marked. Relapses are frequent and anæmia severe. The natural protective forces of the body are reduced in effectiveness by any debilitating influence. The chronicity of malaria in syphilitic subjects, in spite of thorough antisyphilitic and of antimalarial treatment, emphasises the importance of the natural protective mechanism of the body in combating malaria and in rendering effective the administration of quinine.

PARASITOLOGICAL RELAPSE UNDER QUININE TREATMENT.

Viewed in the somewhat indefinite light of ordinary clinical interpretation the word "relapse" would appear to imply a recurrence of acute symptoms in a resolving pathological condition which otherwise might reasonably have been expected to proceed to complete cure. The "relapse" of malaria, however, does not admit of such simple and precise interpretation, for it need not imply the presence of subacute or even chronic symptoms prior to the onset of the more acute manifestations; nor need it imply that a complete cure might reasonably have been expected. Relapses in malaria are the acute exacerbations of an otherwise continuous, and it may be entirely latent, systemic infection, where sooner or later the recurrence of acute manifestations is the invariable rule. Moreover, the term "relapse" is used not only where the latency interval is ten days to two or three weeks, but similarly to indicate an acute attack supervening after a latency interval free of all malarial symptoms extending over a period of from one or two months to one or two years.

Classification of Relapses.

(1) *Clinical or pyrogenic relapse.*—A recurrence of fever and its associated acute symptoms after a period of quiescence constitutes the true clinical relapse of malaria. Parasites are present in the peripheral blood.

(2) *Parasitological relapse.*—The reappearance of asexual parasites in the peripheral blood after one or more consecutive negative findings constitutes "parasitological relapse," which frequently occurs without clinical relapse, but will include any clinical relapse which may take place, its recorded duration being longer. For the parasitological relapse, based entirely on parasitic findings, embraces the whole period of the persistence of asexual parasites in the peripheral blood, and parasites can be demonstrated in the blood for some days before the onset and for a varying period after the subsidence of clinical symptoms. Frequent relapse is a clear indication that the host's defensive mechanism and any remedial measures adopted have failed to control the vegetative activities of the parasite. It is most prone to occur in untreated infections, in massive multiple, and particularly in mixed infections, in conditions of low vitality, and especially in the presence of a debilitating disease, such as syphilis. During the interval between attacks the parasites may either fall below the "detectable limit" or persist in numbers well above this limit.

In quiescent chronic malaria there exists a condition of armed neutrality—of temporary adaptation of host to parasite, of parasite to host. The extraordinary power of persistence exhibited by malarial infections, in spite of sustained and vigorous treatment, is a characteristic [illegible] the disease—a characteristic single, significant, [illegible]ant; a characteristic which demands cautious [illegible]ance and careful investigation of all so-called [illegible]" of malaria. It is common knowledge that all other protozoal diseases of man and the lower animals exhibit tenacious persistency and are difficult of eradication.

Variations Presented by a Subclassification of Parasitological Relapse.

(*a*) Relapses to same type—simple infection:—

1. Malignant subtertian to malignant subtertian.
2. Benign tertian to benign tertian.
3. Mixed (M.T. and B.T.) to mixed (M.T. and B.T.).

(*b*) Relapses to different type—mixed infections:—

1. Benign tertian to malignant subtertian.
2. Malignant subtertian to benign tertian.
3. Mixed to benign tertian.
4. Mixed to malignant subtertian.
5. Malignant subtertian to mixed.
6. Benign tertian to mixed.

(*c*) Relapse from negative smears:—

1. Negative to malignant subtertian.
2. Negative to benign tertian.
3. Negative to mixed.

In examining the following tables it should be remembered that (1) these final figures are obtained by reduction from numerous preliminary detailed tables (unpublished). It is not possible to employ the results in one table in association with the results in any other table; and that (2) the total number of cases investigated vary in different tables owing to the fact that the data available in some cards are not sufficiently complete for all investigations, but may provide facts which can be utilised for statistical purposes. For example, a card may show full records of the various blood examinations made, but the records of the treatment given during the whole period of stay in hospital may be incomplete. Such a card would be of service for an investigation of parasitological relapse, but would be of no value in a correlation of relapse incidence and quinine dosage.

TABLE II.—*Final Analysis of 1281 Relapses under Quinine to Same Type of Cases Positive on Admission: Analysed Totals.*

Type of relapse.	Before parasite relapse—	
	Average interval under treatment.	Average daily quinine.
M.T. to M.T. (156 relapses)	17 days.	21 gr.
B.T. to B.T. (1112 relapses)... ...	18 ,,	23 ,,
Mixed to mixed (13 relapses)	18 ,,	21 ,,
1281 relapses	18 ,,	23 gr.

TABLE III.—*Final Analysis of 399 Relapses under Quinine to Different Type of Cases Positive on Admission: Analysed Totals.*

B.T. to M.T. (116 relapses)	15 days.	20 gr.
M.T. to B.T. (144 relapses)	16 ,,	22 ,,
Mixed to B.T. (62 relapses)	21 ,,	20 ,,
Mixed to M.T. (24 relapses)	20 ,,	17 ,,
M.T. to mixed (22 relapses)	12 ,,	18 ,,
B.T. to mixed (31 relapses)	18 ,,	20 ,,
All positive cases relapsing to different type (399 relapses)...	17 ,,	21 gr.

TABLE IV.—*1276 Cases Negative on Admission Relapsing under Quinine to Different Types: Analysed Totals.*

Malignant subtertian. (232 cases)...	12 days.	20 gr.
Benign tertian. (995 cases)	14 ,,	20 ,,
Mixed infections. (B.T. plus M.T.) 49 cases ...	14 ,,	21 ,,
All cases negative on admission relapsing under treatment (1276 cases)	13 ,,	20 gr.

Frequency of Relapses Under Quinine in Each Type of Malaria.

The final results arrived at from an analysis of 2649 relapses occurring in a series of 14,802 cases of malaria under treatment in military hospitals are as follows.

Percentage Relapse Incidence.

1. All relapses in series—2649 out of 14,802 cases, or 17·9 % relapsed.
2. Of cases with initial negative smears... ... ... 14·1 % ,,
3. Of cases with positive smears ... ... 23·7 % ,,
4. In benign tertian malaria—
   881 out of 3877 cases, or 23·8 % ,,
5. In malignant subtertian malaria—
   143 out of 1565 cases, or 11·2 % ,,
6. In mixed B.T. and M.T. malaria—
   393 out of 1232 cases, or 39·4 % ,,

An examination of these figures indicates that the most intractable type of malaria from the point of view of control and prevention of relapses is a mixed infection of benign tertian and malignant subtertian. Moreover, the chances of relapse are more than twice as great in benign tertian than in malignant subtertian. The lower percentage incidence obtaining in cases with initial negative smears indicates that this group included the lighter infections, which were more easily controlled by the routine treatment employed in all military hospitals. The percentage of relapses in cases diagnosed clinically but not microscopically as malaria approximates sufficiently to the percentage relapses in malarial cases in which the diagnosis was proved microscopically to support the conclusion that the negative cases included in this series are cases of malaria. If cases wrongly diagnosed as malaria had been included the percentage relapses would be reduced to a figure markedly below that for known positives. All cases included in this series were troops returned from the German East African campaign; practically all had at some time suffered from malaria.

TABLE V.—*Relapse Analysis in Different Infections (6674 Cases) under Quinine.*

Infection.	Total cases positive on adm.	Total cases relapsing.	Av. No. relapse per case.	Cases relapsing per cent.	Av. relapse interval (days).	Av. daily quinine per case during interval.	Av. No. of days in hospital.
B. T.	3877	881	1·3	23·8	17·9	23·0 gr.	47·5
M. T.	1565	143	1·2	11·2	16·4	21·3 ,,	45·5
Mxd.	1232	393	1·1	39·4	16·7	20·6 ,,	66·3

The relapse-rate in each type per week is as follows:—Benign tertian, 3·5 per cent.; malignant subtertian, 1·7 per cent.; mixed infection (M.T. and B.T.), 4·1 per cent.

TABLE VI.—*Correlation of Quinine Treatment, Period in Hospital, and Relapses under Quinine.*

(A) *Cape Coloured Corps (All Types of Malaria).*

Period of observation.	No. of cases.	Per cent. relapses.	Average daily quinine.	Average period in hospital.
June–July, 1918	124	32·3	21·8	70
August, 1918	223	19·7	26·9	42
September–October ...	345	17·6	27·1	46
—	693	21·0	25·0 gr.	49 days.

(B) *Europeans (All Types of Malaria).*

Period of observation.	No. of cases.	Per cent. relapses.	Average daily quinine.	Average period in hospital.
January to March, 1918..	1871	18·8	23·8	38
April to June, 1918	919	11·1	23·5	31
July to September, 1918..	520	11·9	25·9	36
—	3310	15·6	24·0 gr.	36 days.

(C) *Benign Tertian Malaria: in Cape Coloured and Europeans.*

Race.	No. of cases.	Per cent. relapses.	Average daily quinine.	Average days in hospital.
Cape coloured	334	36	26 gr.	51
Europeans	1080	32	25 gr.	40

The relapse statistics in regard to the Cape Coloured Corps are of interest in view of the fact that an increase in daily quinine dosage from 21·8 gr. to 27·1 gr. is associated with a fall in the average period in hospital from 70 to 46 days and a reduction in the percentage relapses from 32·3 per cent. to 17·6 per cent. It will be observed that for the same type of malaria (benign tertian) the relapse incidence and average stay in hospital are greater for the Coloured Corps as compared with the European figures. This divergence would appear to be partly accounted for by the lessened resistance exhibited by coloured races to infectious diseases.

Relapse Interval.

It is necessary to emphasise that the relapse interval of these records refers only to parasite relapses under quinine, which may be considered to be more reliable data for study than records of clinical relapses unsupported by microscopical examination. The average number of days of the relapse interval are as follows: Benign tertian relapse: from initial negative smear, 14 days; from initial positive smear, 17·9 days. Malignant subtertian relapse: from initial negative smear, 12 days; from initial positive smear, 16·4 days. Mixed infection (M.T. and B.T.) relapse: from initial negative smear, 14 days; from initial positive smear, 17 days.

PERSISTENCE OF ASEXUAL PARASITES.

Before discussing the question of the persistence of asexual forms in the peripheral blood it is necessary to state that in all cases under examination included in this investigation the *thick film* was used throughout. The information available from weekly analyses, apart from its interest from a research point of view, supplied valuable indications as to the results obtained in each area from the treatment administered. In view of the almost universal prejudice of the soldier against quinine, and the firm belief held by some that quinine is distinctly harmful and liable to cause heart disease, it was necessary to exercise the greatest vigilance in regard to its administration. The persistence of parasites in the blood over a long period focussed attention on these cases, and resulted in either an alteration or modification of treatment, or discovery of a patient who was deliberately but covertly avoiding his doses of quinine. The fact that except in unusually chronic cases asexual parasites are not found in thick smears after a few days' administration of quinine raised the question as to what proportion of these cases in which asexual parasites persisted indefinitely in the blood were due to avoidance of quinine. Accordingly a system of recording each dose administered to each patient was instituted in one hospital, the quinine being administered in solution; each dose was actually seen to be swallowed and was then noted.

The results obtained in this hospital were in accordance with those generally obtained in the treatment of malaria in military hospitals in South Africa. Records of presence or absence of parasites in finger blood were available at about weekly intervals; cases responding to treatment were separated from resistant cases, and especial attention was thus secured for the latter group.

It should be noted that in each type of malaria the interval between blood examinations is less than the average relapse interval, so that although records of daily blood examinations were not available it is reasonable to assume the presence of parasites in the blood on the days intervening between two positive examinations, especially in view of the large proportion of heavy and resistant infections.

Final results of analyses of the records with regard to persistence of asexual parasites are set out in the following tables:—

TABLE VII.—*Persistence of Asexual Forms under Quinine.*

Type of malaria.	Total of cases.	Average interval between blood examinations.	Cases positive on re-examination.		Average persistence of asexual forms in cases positive on re-examination.
			Number.	Per cent.	
Malignant subtertian	591	8 days (21·4 gr.*)	82	14	16 days.
Benign tertian	3171	8 ,, (23·2 gr.*)	710	22	19 ,,
Mixed M.T. and B.T.	281	8 ,, (20·6 gr.*)	155	55	22 ,,
All types positive on admission...	4043	8 ,, (22·7 gr.*)	947	23	19 days.

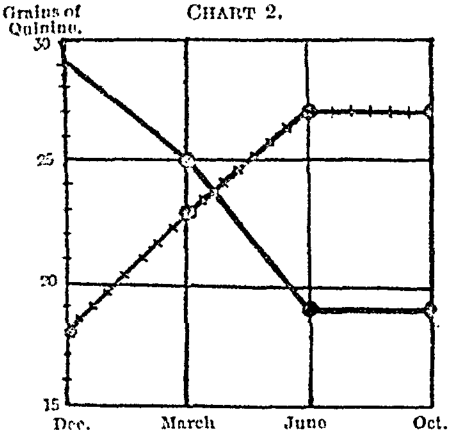
* Average daily quinine in interval.

Owing to continued pressure on the "small dosage" school the average daily quinine in all cases showed a gradual rise. This desired result was further assisted by the issue of definite instructions laying down a "standard" treatment for malaria. Table VIII. is an analysis of 4013 cases indicating that the rise in quinine was associated with a marked reduction in the number of positive cases remaining positive at the end of eight days' treatment.

TABLE VIII.—*Results in 4013 Malaria Cases Admitted to Hospital with Positive Smears on Re-examination After an Average Interval of Eight Days' Quinine Treatment.*

Three months ending—	Number of cases.	No. of cases positive on re-examination.	Per cent. positive on re-examination.	Average daily quinine.
Dec. 29th/17 ...	1031	313	29%	18 gr.
March 30th/18	1491	368	25%	23 ,,
June 29th/18 ...	900	160	19%	27 ,,
Oct. 5th/18 ...	562	106	19%	27 ,,

CHART 2.



Showing how a rise in quinine is associated with reduction in the number of positive cases remaining positive at the end of eight days' treatment. Hatched line = average daily quinine in interval between examinations. Continuous line = percentage cases positive on re-examination.

It will be observed that of 4013 cases of malaria admitted into hospital with positive parasite findings 23 per cent. show parasites persisting in the blood on the 8th day in spite of an average daily dose of quinine of 22·7 gr. The average persistence of parasites in the finger blood in these cases was 19 days. This fact indicates the severe nature of the malaria cases admitted to military hospitals, and demonstrates the ineffectiveness and slow action of quinine in destroying malaria parasites in unhealthy and debilitated individuals.

Recent publications viewed from the point of view of the specific action of quinine disclose a certain degree of shaken confidence in the parasitotropic value of this drug. Quinine is undoubtedly the most valuable single remedy at present known, but its repeated failure to eradicate malaria, even when exhibited in doses and amounts limited only by the toxicity of this drug, indicates that unless it is aided by the natural protective mechanism of the body frequent relapses and long-continued illness occur, as was clearly shown in recent campaigns in malarial countries; the exigencies of military service gave rise, especially in the tropics, to conditions in which the individual's natural resistance to disease is reduced to the minimum. In the German East African campaign, owing to the extreme exhaustion of the troops admitted to field hospitals for treatment, the action of quinine could not be described as more than palliative, most cases progressing to massive infections, frequently relapsing, which were not reduced until better health conditions—as on turn to South Africa—gradually engendered a more ctive natural resistance. It seems highly probable the latter is largely represented by "phagocytosis." is possible that the action of quinine in malaria nalogous to the action of opsonins on bacteria in infected tissues. Parasites damaged but not destroyed by quinine may then be actually ingested and destroyed by phagocytosis. There appears to be no doubt that the leucocyte is of paramount importance in the prevention and cure of malaria. Perusal of published works on malaria, particularly those of the earlier writers, leaves the impression that parasites disappear from the finger blood soon after the administration of quinine. The above figures show that on an average in 4043 cases parasites could still be demonstrated in 23 per cent. of cases when examined after an average interval of eight days, and that the parasites in these resistant cases persisted for an average period of 19 days, treatment being 22·7 gr. of quinine per day. In considering this apparent anomaly it is necessary to bear in mind the following points: (1) In this series the thick-film method is used for diagnosis which increases the chance of a positive result by about 30 times, and in the publications referred to the usual method of examination is presumed to be the thin-film method. (2) The bulk of available literature refers to quinine treatment carried out amongst civilians reasonably fed and acclimatised and for the most part protected from mosquitoes, exposure, and fatigue.

The resistant cases in this series were often severe massive infections, frequently of mixed type occurring in non-acclimatised individuals recruited from South Africa; owing to exigencies in warfare in German East Africa they were subjected to severe physical strain and hardship involving exposure to tropical sun and rains and unsuitable or insufficient food. In such cases the therapeutic effects of quinine are more slowly produced.

THE SEXUAL PARASITE OF MALIGNANT SUBTERTIAN MALARIA.

The gametes of subtertian malaria are sausage-shaped bodies, longer than the diameter of a red corpuscle showing pigment aggregated into a clump near the centre. These bodies are commonly known as "crescents" in view of their characteristic appearance. The importance of this phase in the life-history of *P. falciparum* is that its presence in sufficient numbers in the peripheral circulation renders the individual infective and a danger to a community in which malaria-transmitting anopheles are present.

Frequency of crescents in peripheral blood.—Considerable difference of opinion prevails as to the frequency with which crescents are found in malignant tertian infections. Deaderick states that, in his experience,

> "Crescents are very rarely seen in blood obtained from the superficial circulation. They are also infrequent in the experience of Plehn, Stephens, Christophers, Ziemann, Wellmann, Annett, Dutton, Elliott, Kendall, and others."

Craig states that:—

> "It often requires a long and patient search to demonstrate the presence of crescents in the blood of individuals who have suffered from æstivo-autumnal infections, and while I believe that a prolonged search would show crescents in 50 per cent. of such cases, still in the study of several hundred cases I have only been able to demonstrate this form in a little over 33 per cent. Rogers found that crescents were present only in 10 per cent. of the cases he observed in Europe. Mason believes that crescents are more frequently observed in cases of malaria which have been contracted in the tropics, but have returned to temperate regions, and that in the tropics it is much more rare to observe this form of plasmodia."

Craig does not agree with Mason, as he has found that the percentage of cases showing crescents in the tropics is practically the same as in temperate regions.

With regard to the frequency of crescents in the peripheral blood it is necessary to consider the following points: (1) method of examination (thick or thin blood smears); (2) number of consecutive examinations; (3) stage of disease at time of observation (acute, convalescent, or chronic); (4) influence of previous treatment; (5) influence of treatment at time of observation; and (6) defensive mechanism of patient (general health).

The statistical records in regard to crescents available from these investigations refer only to the results of examination of thick blood smears, the average number of consecutive examinations being four in each case, each separate examination taking up a maximum of about five minutes. The treatment laid down for all cases of malaria has been previously noted. The thick film method of examination increases the chances of finding crescents by about 30 times when compared with half an hour's examination of a thin blood film. The original infection in these cases was usually contracted several months previously in German East Africa under active service conditions. During this time quinine prophylaxis was usually carried out, and there was generally a history of repeated attacks necessitating admission to field hospitals. The cases were therefore usually admitted to union hospitals with an acute or subacute attack occurring in a more or less chronic infection associated in the more severe cases with a markedly debilitated condition characterised by anorexia, wasting, shortness of breath, and anæmia. (Tables IX. and X.)

TABLE IX.—*Classification of Cards Showing Crescents During Period in Hospital under Quinine Treatment.*

Three months ending—	Total cards showing C.	Cards showing C only.	Cards showing first C's then R's, or R's & C's.	Cards showing first R's then C's, or R s & C's.	% C cases showing R's during period in hospital.	% C cases showing C's only during period in hospital.
Dec. 29/17 ...	576	495	60	21	14·1	85·9
March 30/18	760	475	79	206	37·5	62·5
June 29/18 ...	469	346	64	59	26·2	73·8
Oct. 5/18 ...	167	126	15	26	24·6	75·4
Total all cases...	1972	1442	218	312	26·9	73·1

R = ring form of parasite; C = crescent.

TABLE X.—*Frequency of Crescents in Peripheral Blood.**

Three months ending—	M.T. infection	Mixed infection	Total cases with M.T. infection.	Total cases showing crescents.	Per cent. M.T. infections showing crescents in peripheral blood.
Dec. 29/17...	790	487	1277	576	45·1
Mch. 30/18...	662	497	1159	760	65·6
June 29/18...	334	290	624	469	75·2
Oct. 5/18 ...	191	144	335	167	49·8
Total ...	1977	1418	3395	1972	58·1

* Average period of observation 52·4 days.

The production of crescents in sufficient numbers in the peripheral blood to enable their presence to be discovered in a thick film indicates that an environment has been created (usually by quinine treatment) sufficiently unfavourable to menace the existence of the asexual generation, the presence of the sexual parasites being an effort on the part of the parasite to prevent total eradication by transference by means of a mosquito to a more favourable environment. So long as the parasite is able to maintain its numbers by a vegetative cycle this method of propagation is selected and preferred by the organism. This is indicated by the fact that crescents are not found in acute stages or in untreated cases of the disease.

The continuous exhibition of inadequate doses of quinine appears to favour the production of crescents owing to the fact that while an unfavourable environment is produced the dosage of quinine employed does not reduce the crescent-forming "rings" sufficiently to prevent the detection of the crescents produced. The presence of numerous crescents in the blood suggests that the asexual generation has been damaged and reduced but not eradicated. The disappearance of crescents shows that progress has been maintained in reducing the infection.

It will, therefore, be seen that crescent formation occurs in infections resistant to treatment in which the destruction of parasites has been slowly effected. The formation of crescents may be prevented in malignant subtertian infections by vigorous and effective quinine treatment in suitable cases owing to the rapid reduction and destruction of the asexual generation, thereby cutting off the supply of "ring" forms destined to develop into crescents. Crescents do not appear similarly in the peripheral blood in untreated infections or markedly resistant infections inadequately treated owing to the fact that the measures adopted for treatment do not menace the asexual generation or establish an unfavourable environment. The appearance of crescents is not an unfavourable sign in the treatment of malignant subtertian malaria in which "rings" only are present in the finger blood, as it is an indication that the therapeutic measures employed are to some extent effective against the asexual generation. Disappearance of all "ring" forms from the peripheral blood and failure to produce crescents indicates that the infection has been hard hit and so reduced in numbers as to justify a favourable prognosis.

CASES UNDER TREATMENT: TIME OF APPEARANCE OF CRESCENTS IN PERIPHERAL BLOOD.

With regard to the time of appearance of crescents in the blood the results of treatment with varying doses of quinine in cases of malignant subtertian malaria showing at first "rings" only in the peripheral blood are indicated in the following summarised tables:—

TABLE XI.—*Quinine Treatment and Time of Appearance of Crescents in Blood.*

Series. (Daily quinine treatment).	No. of cases.	Days of treatment until appearance of crescents.	Average daily quinine.
10 gr.	26	11	10 gr.
11 gr. to 20 gr. ...	110	11	16 „
21 gr. to 30 gr. ...	164	9	28 „
31 gr. to 45 gr. ...	12	9	39 „
	312	9·5	22 gr.

It will be observed that the time of the appearance of crescents is a shorter period in the case of the larger doses of quinine, but that the average time of appearance of crescents is 9·5 days, with an average daily dose of quinine of 22 gr. The shorter interval suggests that an unfavourable environment was more quickly established in the case of the larger doses of quinine.

DURATION OF CRESCENTS IN PERIPHERAL BLOOD.

The crescent is a form of the malignant subtertian parasite particularly resistant to the action of drugs. Quinine has no obvious direct action on crescents, but indirectly it is the most powerful remedy at present available for ridding the blood of them. Its action in these cases is entirely on the ring forms of the parasite which are controlled, reduced, and destroyed, thereby eliminating the forms of the parasite from which crescents are produced. In one series of 1798 crescent infections in which the average daily quinine administered during the persistence of crescents was 25 grains, the average persistence of crescents in the peripheral blood was 15 days. It is therefore clear that crescent infections are not formidable, and tend to clear up in the ordinary way on adequate quininisation. In cases where quinine is insufficient to control the infection and prevent relapses, as in very debilitated individuals, supplementary treatment with organic arsenic preparations, especially "606," given intravenously, has proved useful in breaking down the resistance of the asexual parasites to the action of quinine. These preparations do not appear to exercise any direct destructive action on crescents. A series of 27 cases was treated with intravenous injections of tartar emetic without any definite action of this preparation on crescents being demonstrable. Tartar emetic also has no influence in preventing relapse in malarial infections.

The following figures indicate that so long as an adequate dosage of quinine is employed no obvious advantage as regards persistence of crescents is gained, in ordinary cases of malignant subtertian malaria in which crescents are present in the finger blood, by the addition of intramuscular injections of soamin or intravenous injections of "606" preparations. It should be noted (see Table XII.) that in 1577 cases treated with an average dose of quinine of 24 gr. daily the crescents persisted in the blood for 15 days for all treatments.

TABLE XII.

No of cases.	Average daily quinine.	Duration of crescents.	Treatment series.	No. of injections per case.
952	25 gr.	15	Quinine only.	—
506	21 „	15	Quinine and inorganic arsenic.	—
56	23 „	16	Quinine and soamin.	3
63	24 „	21	Quinine and "605."	3
1577	24 gr.	15	All treatments.	—

It is therefore clear that the eradication of crescents is satisfactorily secured by the control of the asexual generation of the malarial parasite by adequate quininisation. The same is true of the sexual forms of the benign tertian parasite.

This paper is included in a report by the Director of Medical Services to the Minister of Defence, Union of South Africa, on "Malarial Research in South Africa during the War." Acknowledgments are due to Colonel P. G. Stock, Director of Medical Services, and Colonel G. H. Knapp, Deputy Director of Medical Services, for sympathetic support in sanctioning the necessary arrangements for carrying out malarial researches; to Lieutenant-Colonel Andrew Balfour, and Lieutenant-Colonel J. W. W. Stephens, for valuable criticism and advice; to the commanding officers and medical officers of S.A.M.C. hospitals, and medical officers of S.A.M.C. laboratories, Lieutenant-Colonel G. W. Robertson, Majors Targett-Adams, D. Pullon, J. C. Venniker, Captains Pearson, Impey, Luke, Garrow, and Walker, without whose keenness and coöperation it would not have been possible under war conditions to carry out these researches.

THREE CASES OF
INFLUENZAL PNEUMONIA
WITH SEPTICÆMIA AND EXTENSIVE MEMBRANOUS COLITIS.

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THE cases here recorded occurred among a series of severe influenzal pneumonia cases during the winter of 1919 at the No. 2 N.Z. General Hospital, Walton-on-Thames. The details of history and of bacteriological and pathological findings are given as fully as possible, because the post-mortem examinations revealed a condition of the alimentary canal which has, as far as I know, not been definitely recorded or frequently observed.

The interest centres about the following points:—

(1) The cases were not in any way associated with one another before or during their illness.

(2) They were all apparently definite respiratory infections in which an initial "influenzal" attack developed a rapidly progressive broncho-pneumonia, becoming markedly septicæmic.

(3) Alimentary symptoms were practically absent in each of the cases, and any marked pathological condition of the gut was not anticipated from the slight clinical symptoms observed.

(4) Vaccinal prophylaxis had not been undertaken, except in one case, where a single dose had been administered five days previously to the commencement of the illness.

(5) Treatment during illness varied in each case. In Case A, two doses of 1/12th gr. corrosive sublimate in 1 c.cm. of saline had been given intravenously on the fifth day before death; some abdominal discomfort was complained of the same night and following day, and seven evacuations occurred during this interval, but there was not any violent intestinal disturbance, and during the last three days semi-normal stools were passed. It was very largely because of interest attaching to several influenzal cases in hospital at the same time, in whom more violent intestinal disturbance had followed the intravenous use of corrosive sublimate, that especial attention was directed to the alimentary condition in this case at the post-mortem examination, for no other case which had received intravenous mercury died. In Case B no mercurial or other intravenous medication was given, and in Case C intravenous corrosive sublimate was not given; a mixture of urotropin 25 per cent. and phenol 1 per cent. in saline, a total dose of 8 c.cm., was given intravenously on three occasions on the fourth and second day before day.

(6) Blood culture was attempted four days before death in Case A only, but proved negative. Cultures made at the post-mortem examination from heart, blood, and spleen gave pure streptococcal cultures in each case; the organisms were also present in direct film examinations from the spleens of Cases A and B.

(7) The pathological condition of the respiratory organs of Cases A and C were practically identical. A patchy broncho-pneumonia, becoming confluent through associated œdematous infiltration of intervening lung tissue, was most marked in the lower lobes of both lungs, extending discretely in the upper lobes. Bronchial secretions were not markedly purulent, but fairly profuse and frothy. The bronchi, trachea, and larynx were deeply injected. These broncho-pneumonic areas caused an obvious dark coarse mottling where they reached the pleural surface, but no obvious pleurisy occurred, nor was there excess of pleural effusion.

Definite hæmorrhagic areas, varying from microscopic sizes to extravasations of about ½ inch across, were irregularly distributed throughout the more intensely infected lower lobes. Film preparations of the bronchiole secretions of the more confluent areas showed the presence of pneumococci, streptococci, and *Micro. catarrhalis*, the two former predominating. A few *B. influenzæ* were present, with *M. catarrhalis* and a smaller proportion of streptococci and pneumococci in the less markedly inflammatory areas. Streptococci (markedly hæmolytic), pneumococci, and a few *B. influenzæ*, as well as *M. catarrhalis*, staphylococci, and *B. proteus*, were obtained by culture from the lung tissue.

Detailed Conditions.

Lungs and pleura:—The lung condition of B differed considerably from those of A and C. In this case, accompanying a less intense broncho-pneumonia of the right lower lobe and a still slighter condition of the left, there was an abscess cavity situated near the lower border of the right upper lobe, about 1¼ inches in diameter, its wall reaching but not perforating the pleura at one point; its cavity was full of pink-coloured pus and masses of necrotic tissue; the wall was ill defined. An extensive pleurisy was associated with this abscess, thick, lightly adherent flakes of purulent exudate covering the whole pleural surface, and a fair amount of purulent fluid being present in the pleural cavity. The left pleura was normal. Smear preparations and cultures made from the pleural fluid indicated pure streptococcal infection, while those from the abscess a mixed infection, in which streptococci largely predominated. In all cases the bronchial and tracheal glands were enlarged, congested, and œdematous, being most marked in B, where evidence of early suppurative change was found in the larger glands.

Heart.—The heart in each case was of normal size, the evidence of disease being only found in the dark congestive state of the muscle walls, some small endothelial hæmorrhages occurring around a more general endothelial injection and a pinkish coloration of the aortic cusps, most evident in A. Pericarditis or excess of pericardial fluid was absent in each case. Blood-smears and cultures were made; in each case streptococci were recovered by culture in A and B, a heavy growth in C sparingly. Film preparations showed the organism present in A only.

Spleen.—The spleen of each case showed the usual signs of an intense septic infection, being slightly enlarged, abnormally pink in colour, soft and friable in consistency. Numerous small hæmorrhages occurred in A, and a single abscess about the size of a pea in B. Smear preparations gave evidence of streptococci in B only, but by culture streptococci were recovered from both A and B.

Kidneys.—The kidneys showed the usual pathology—acute septic infection in each case, more intensely congested in A and C than in B, and by microscopic section showing cloudy swelling, acute parenchymatous degeneration of tubules, and intense congestive glomerulitis in each case. In A especially hæmorrhagic effusions into Bowman's capsules and renal tubules were numerous.

Suprarenals, pancreas, liver, peritoneum.—The suprarenals in B and C were apparently normal; in A they were necrotic and degenerative. The pancreas was normal in each case. The liver showed in each case signs of all parenchymatous changes, being unduly pink in colour and increased in size and weight; Glisson's capsule was tense, the parenchyma bulging at the cut surface and its normal pattern indefinite, these changes being most marked in A. The peritoneum in each case was apparently normal; no excess of peritoneal fluid occurred, and no external evidence of the extensive alimentary condition found later was apparent from a general inspection, except in A, where a dull, congestive coloration of the cæcum and transverse colon first attracted attention.

Alimentary Canal.

Œsophagus and stomach.—The inflammatory changes found present commenced in the œsophagus in A and B, but not in C. Both of these cases showed a deeply injected mucosa, which for the lower 1½ or 2 inches became dark in colour and œdematous. This condition extended into the stomach, the cardiac region being intensely injected in A and besides two small superficial ulcers showed the earliest signs of a minute membranous desquamation of the gastric mucous membrane. This condition was not observed in B or C, in which, however, the mucosa was very definitely injected.

Duodenum, jejunum, ileum.—In the duodenum of A and B there occurred further intense congestion, submucous hæmorrhages, and in the former loss of epithelium from the free edges of several rugæ, but no evidence of the membranous necrosis. In C the duodenum was not affected. The jejunum in all cases was respectively much less affected, small isolated areas of the same submucous injection occurring in A only. In the ileum of A and B the intense congestive condition present in the duodenum was again very evident, and in both cases the final 3 feet of the small bowel was marked by extensive submucous hæmorrhages and patches of necrosis. In C the congestive stage only was present.

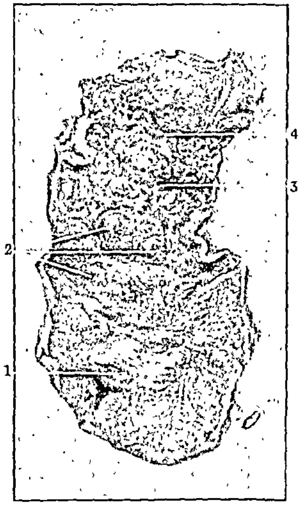

FIG. 1 (Case A).—Cæcum opened out and showing at—1. Ileo-cæcal valve, congested. 2. Three of the many intensely congested and necrotic green lymph follicles, which obviously protrude from the greatly thickened and inflamed mucosa. 3. Area of more intense hæmorrhagic infiltration of mucosa, intensely red and less necrotic. 4. Area of necrotic superficial desquamation.

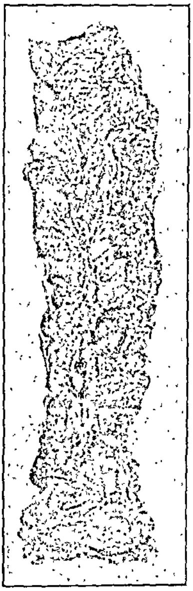

FIG. 2 (Case A).—Transverse colon, showing the condition of necrotic pale-green superficial desquamation, continuous with that of the cæcum and descending colon. The whole submucosa is intensely hæmorrhagic and swollen.

Cæcum.—The cæcum of each case showed the most marked condition. In A practically the whole mucosa consisted of a mass of diphtheritic necrosis of a slate-green colour, with here and there small areas of intense congestion; the lymph follicles were greatly swollen and obvious. This condition extended for 3 to 4 inches up the ascending colon, in which region the necrotic areas were showing some desquamation. There was no definite ulceration, and the appendix, although injected, showed no evidence of necrosis. In Case B the condition was similar to that of A, only of much less degree, while in C there was no evidence of diphtheritic colitis present, but the same intense submucous injection and small hæmorrhages.

Transverse and descending colon.—In each case these portions of the bowel showed a similar picture, but of less intensity and more circumscribed in area. In A the condition extended from the cæcum to within 5 inches of the anus.

This condition of membranous colitis was found in only these three cases who died from influenzal pneumonia. It must be admitted that at previous post-mortem examinations complete investigation of the bowel was not always carried out—the absence of any peritoneal appearance suggestive of such profound colitis having been taken in such cases as sufficient evidence of apparent normality, especially as sufficient reason of cause of death had been demonstrated in the pulmonary lesions found, and in some cases by the source of septicæmic infection by positive blood culture. It is, however, quite possible that some of the earlier cases examined may have also had a similar bowel condition, which was missed by failing to carry out a complete investigation, for until the gut was opened up both B and C, as described above, showed no evidence of the inflammatory changes found.

Conclusion.

A. Abrahams, N. Hallows, and H. French[1] do not describe this condition in their post-mortem findings, and apart from mentioning the fact of the apparent normality of the appendix and bowel generally, do not definitely state whether the bowel was examined in detail throughout. In the Special Report of the Medical Research Council on influenza[2] the intestinal conditions observed were apparently not severe, and, except for the reference to the probability of enteritis being fairly common but that records were not sufficiently kept to give figures on the point (p. 104), the colitis above described is not noted. There is just the possibility that unless the bowel was examined in detail in all cases this condition may have been missed, for one of the features of the condition has been the absence of peritoneal involvement. The acute colitis described in these three cases is, I believe, in keeping with an intensely virulent septicæmic infection, in which profound cytological necrosis may be very rapidly produced; and somewhat similar conditions have been reported to occur in puerperal septicæmia.

I am indebted to my wife for the skilful water-colour drawings from which the illustrations were made.

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[1] THE LANCET, 1919, i., 1.

[2] Medical Research Council, Special Report Series, No. 36.

AMPUTATIONS:

THE EFFECT OF WAR KNOWLEDGE ON TEACHING, PRACTICE, AND AFTER-CARE.

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IN many fields of knowledge the experiences of the recent war have led to considerable change; the latter is, perhaps, more evident in the teaching and practice of such operations as amputations than in any other sphere of medical work. Before the war amputations amongst the civilian population were few and small. Mr. W. Woods, of St. Thomas's Hospital, made me a list of the amputations done there, which made this clear. During the war they have been frequent and have accentuated the fact that the surgeon's work, although the determining factor, was also a bridge to the work of the limb-maker, which has been raised to a higher level of art, with a correspondingly higher level of results and criticism. Our recent knowledge of amputations was derived from the infected cases treated during the war, so that when surgeons returned to civilian practice and relative asepsis it was possible that the old methods would come back, but the instrument-maker has learned that he can get better results after some amputations than in other cases; hence much of our recently gained knowledge has come to stay. This is a great convenience for the student, who will only have to learn about few amputations instead of many.

Amputations of the Lower Limb.

Beginning with leg amputations, from amputations at the metatarso-phalangeal joints to a high Syme above the ankle-joint, all have gone. No longer will student or teacher be bothered with the operations of Lisfranc, Chopart, Pirogoff, Roux, Tripier, Skey, Hey, &c. The high Syme, which gives a very good stump, will remain; the patient will learn to walk well and be nearly as active as he was before. By losing the front of a foot, the patient has lost all spring; moreover, the artificial limb is an unsightly nuisance, the ankle being much broader than the normal ankle and necessitating odd boots and considerable wear of clothing. In some instances the tendo Achillis becomes attached to the scar and tilts the stump forward, making the patient bear on the scar and rendering the stump useless. There are many objections to a stump of a Syme amputation; the foot being largely a passive agent for transmitting pressure, is therefore easily and satisfactorily replaceable, so that the operation is likely to be largely replaced by the easier and more satisfactory one through the middle of the leg.

From accounts given by patients, those who have been amputated through the middle of the leg get along nearly as well as do those who have had a "Syme," whilst they also avoid unsightliness and expensive upkeep. In this amputation the scar must not be terminal; the operation is done with anterior and posterior skin flaps. The former is the larger, making the scar posterior. In this way the amputations of Teale, Hey, and Farabœuf are dispensed with. Ascending the leg, Stephen Smith's operation, together with Price's modification of it, is gone, from useful knowledge and practice. The retention of the patella, as in the operations of Lister, Gritti, and Stokes-Gritti, is not asked for or desired by the limb-maker. Moreover, it has been learned that the patella often becomes loosened and drawn forward by the quadriceps, making the stump and the operation useless. All that remains in the thigh is amputation with anterior and posterior flaps with a posterior scar, like a Carden, but higher up.

Amputation at the Hip.

Perhaps the greatest change has been evolved at the hip joint. Esmarch's modification of Furneaux Jordan's amputation was more widely taught than any other method, but it was soon found to yield a large bulky useless stump, including irregular and new-formed periosteal bone, which had to be re-shaped at a further operation in order to remove all redundant soft tissues defining the pressure points, particularly the tuber ischii, all muscles being cut 1 inch long. The new operation is amply described in Martin Huggins's excellent book on amputation stumps,[1] and is somewhat like the amputation at the hip-joint, advocated by Sir Frederick Treves, surgeon, and Faraboeuf, anatomist. It will suffice here to say that skin flaps are used, and muscles are cut short; by sawing through the neck of the bone the femoral head is left behind, filling the acetabulum instead of leaving a hollow cup behind. It is really an amputation through the neck of the femur by means of an anterior racquet incision. The triradiate scar is anterior, pulling the skin flap tight over the tuber ischii so as to leave it prominent, and giving the limb-maker no excuse for a badly fitting limb. The soft parts are cut so short that they cannot push the artificial limb off the tuber.

Thus of all the many amputations at the hip-joint only one remains. It is usually performed after an amputation of the thigh, to adapt the patient for the work of the fitter. Further, the student has not even to remember any name in connexion with the operation. It may well modify or even replace the second stage in Esmarch's modification of Furneaux Jordan's operation or remain with us as an operation adapting the part for the limb-maker.

It is no use operating less than 3 inches above or below the level of the knee-joint. In the thigh there is an anomaly, the man with a long stump and a long bony lever has to lift a lesser limb and lighter weight than does the man with a short stump and a short bony lever. This is a wrong state of affairs which can only be met at present by supplying the short thigh-stump man with a very light strong artificial limb. If this should prove uncontrollable it can easily be altered. Hence it is no use operating to divide the bone less than 3 inches below the lesser trochanter. Let the amputation be done through the neck of the femur and the man will walk farther, better, and with less aid from a stick.

Amputations of the Upper Limb.

The upper limb is not restricted to weight-bearing; its skilled and active uses have spurred the ingenuity of men in replacing it.

Amputations of the upper limb have been immensely simplified; all forearm amputations are now done with equal anterior and posterior skin-flaps and circular division of muscles and bone. It is no use amputating less than three inches below the elbow. Such an amputation is treated and fitted with an above-elbow artificial limb. Amputations of upper arms are done with a circular incision, which, as it nears the axilla, is met by an internal incision along the vessels, making the circular amputation racquet-shaped. At the shoulder-joint the amputation is carried out similarly. All names are gone. Nothing useful can be fitted to a short upper-arm stump; a long upper-arm stump can be made very useful, and a forearm stump is excellent. It is a very great loss for a man to lose his elbow-joint by re-amputation; the stump should always be considered by surgeon and instrument-maker before anything is done.

Amputations Remaining in Use.

In the lower limb there remain (1) amputations of toes: (2) a Syme's amputation; (3) through leg amputations with skin-flaps; (4) amputations of thigh with long anterior and short posterior flap; and (5) a new amputation through the neck of the femur with skin-flaps. In the upper limb there remain (1) amputations of fingers; (2) amputations of forearm with equal skin-flaps; (3) a circular amputation of upper arm; and (4) Spence's amputation at shoulder.

Linear Amputation: Re-amputation and Excision.

No amputations should leave the limb in its final condition less than 3 inches below or above the elbow- or knee-joints. Amputations through the knee- or elbow-joint have been shown to be inferior to others and are to be discarded. There is another form of operation introduced by Major Fitzmaurice Kelly, R.A.M.C. It was designed to save as much of the limb as possible and to be followed by a further operation, often cinematising in the upper limb, adapting the stump to the fitter, to be performed later under more favourable circumstances. It was simply a flapless through-and-through chop or guillotine amputation. It was used also and independently by the Central Powers and called the "linear amputation." In consequence of this operation and of the almost universal sepsis two other operations have come more into vogue than they ever did before; they have been called re-amputation and excision. Both are measures designed to trim and adapt the stump for the work of the limb-fitter.

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[1] Oxford Medical Press: Messrs. Frowde, Hodder and Stoughton.

Re-amputation has the great advantage that all nerve-ends and scar tissue are removed completely. Excision of nerve-ends without the whole of the surrounding scar tissue being removed often fails, its smallness and incompleteness accounting for the result. The healing of a wound by primary union, first intention, in no way excludes the presence of micro-organisms in the scar tissue within them. This has been proved by the observations of Dr. L. S. Dudgeon and Lieutenant-Colonel P. W. G. Sargent[2] and later again by Dudgeon.[3] Indeed, a wound that has healed by first intention seems more likely to have irritant infective scar tissue shut up in it than one which has suppurated and been adequately and frankly drained. In fact, drainage in war wounds is the key to their successful treatment. The presence or absence of suppuration is only an indication of the number and character of micro-organisms present in the wound. Local excisions are very likely to be incomplete, too little being removed.

In one case, after a surgeon had very successfully excised some nerves, pain returned, becoming so bad that the suffering man travelled all the way home from Barbadoes; he was unable to wear his artificial leg and had considerable pain night and day. On examination the fibula looked and felt rather longer than the tibia, but a skiagraph showed the apparent elongation of the fibula to be due to the deposit under its end of a substance permeable by X rays. The bone had not been sealed and there was some new-formed bone thrown out near its end. The tenderness, as shown in the patient's own diagram, was in this area; the existence of irritative infective scar tissue under the fibula was diagnosed and the nerves, regenerating, had grown into it. The lower end of the fibula, with the cicatrix, cutaneous and subcutaneous, below it, and with the posterior tibial artery and nerve, were excised through a racquet-shaped incision. The effect was shown at once; pain ceased and pressure over the fibula could be borne. Finally the patient returned to Barbadoes well.

Nerve Regeneration and "Malingering."

During the interval between the amputation and the fitting of the artificial limb the scar tissue in the wound usually becomes non-irritant and non-infective, through the agency of the plasma and lymph. The ordinary cutting short of nerves prolongs this time, as does the injection into them of alcohol, giving the plasma and lymph more chance. But from time to time, as in the case related,[4] the nerves grew, reinfecting the scar tissue by carrying organisms into it, or they re-innervate tissue which has remained infective and irritant, so that pain returns after an interval of comfort. Sleeplessness, drawing, and aching return, and the phantom limb reasserts itself. Patients thus afflicted are in great danger of being regarded as malingerers; indeed, such patients have been submitted to me, and I have learnt again and again that regeneration of nerves into still irritant and infective scar tissue may be responsible for the return of the patient's pain. This danger was illustrated in the case of a soldier sent to me at the 5th London General Hospital, who had had an amputation through the upper leg, just below the knee; later, parts of his internal and external popliteal nerves had been excised higher up, leaving behind the painful bulbs. The nerves regenerated and innervated the still irritant and infective nerve bulbs, with return of the pain and the phantom. The length of the illness depressed the patient and convinced him that he would not recover, and operations did him no good; it is easily comprehensible how he became neurasthenic. His condition deceived his Board, who found that he was a malingerer; but he was not, and after re-excision of the nerves, nerve-bulbs and scar tissue he began slowly to improve—slowly because of his convictions that he would not get better. He did not become well enough to work; his nervous system has never recovered He is useless and miserable. The more operations a man has the deeper is impressed upon his mind the impossibility of recovery. Pain is worse if a nerve is in the proximity of an artery with a silk ligature on it. Such ligatures are better excised, as they or their representatives maintain the irritation, although some of them do no harm. The silk becomes broken into fragments, which are carried away.

Heat, massage, exercise, and like measures bring more blood to the part, quickening the circulation and sterilising the scar tissue, but they act slowly, and the sufferer is usually impatient.

Neurasthenia.

As it is impossible to stop the regeneration of nerves it is necessary to take care that the new fibres do not grow into infective irritative tissue. It is very important in such cases to estimate the degree of neurasthenia present. In almost all cases some degree will be found, for the patients have a hideous past to reflect on, a miserable present to bear, and a dark future to look forward to. The very poverty of our artificial limbs convinces them of their future uselessness. It is sometimes necessary to be very patient before a man can be got to try to help himself. Over such people there must be no differences of opinion. Almost all are neurasthenic, but at the bottom of the neurasthenia is a real cause, however much it may be exaggerated by the patient. It is the duty of those in charge to find that cause, to advise the Ministry of Pensions of it, and not to follow the easy path of regarding all complaints as due to the action of the central or psychological factor.

Conclusion.

For some time we have been conducting experiments with light metal limbs at St. Thomas's Hospital, with the help of Sir Arthur Stanley and the consent of Colonel Webb, Director-General of the Ministry of Pensions. These experiments have been most successful, showing that about 90 per cent. of thigh amputations can advantageously be fitted with light metal limbs, with which the men are able to work with less fatigue and more satisfaction. Moreover, in her excellent instructions Miss Randall showed that men fitted with light metal artificial limbs could be more easily and perfectly instructed in the use of their stumps. They learn more easily. In some cases Dr. Burnett Rae, late of the Cambridge Hospital, Aldershot, and of Millbank, has given most helpful information and treatment by hypnosis. He has done few cases for me, and those the worst, yet they have all permanently improved, and some have become quite well. After-treatment is necessary in most cases—in such a form as return to work without undue delay. Pains and troubles may recur and then they seem to be more definite than they were formerly. Patients should not be kept in hospitals or homes, but should be sent back to work and healthy surroundings.

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[2] Bacteriology of Aseptic Wounds, Medical Societies' Trans., xxx., 27.

[3] Horace Dobell Lecture, R.C.P., 1908.

[4] Dr. Urquhart of St. Thomas's Hospital has shown that regenerating nerves can carry organisms with them. Months before this it was known that they carried down foci of inflammation. These were shown in the Arris and Gale lecture for 1919 before the Royal College of Surgeons of England, and in the illustration, p. 88, in the *Practitioner* of February, 1920, of the section of a regenerative neuroma.

ENCEPHALITIS LETHARGICA IN LANCASHIRE.—The case of a young woman in Bolton suffering from this disease has been reported to the medical officer. Two other cases are under observation in Ashton-under-Lyne, where, during the past 12 months, six cases have occurred, only one ending fatally. None of the Ashton patients has, it is stated, been in contact with one another. The two patients have been under observation for several months.

ADOLESCENT ALBUMINURIA IN RELATION TO LIFE ASSURANCE.*

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WITHIN half a century of Bright's discovery of the connexion between albuminuria and disease of the kidney, observers in several countries had noticed that there were types of albuminuria which did not seem to connote kidney disease. Besides those due to the admixture of secretions from the bladder, glands, or urethra, there were other forms produced by temporary causes, such as pyrexia, pregnancy, severe exercise, the taking of alcohol or of drugs. But apart from all of these albuminuria was found to be common in younger subjects, chiefly children or adolescents, without obvious causation, and leading to no ill-results, at any rate in the immediate future. It was often found in candidates for life assurance, and it has exercised the minds of more than one generation of medical examiners. Much has been written upon the subject, and the present author need not repeat what he wrote in 1906.[1] But we may now ask ourselves whether the advance of knowledge has enabled us to define this form of albuminuria more clearly and what its true nature may be. Questions arise as to (1) its possible relation to arterial blood pressure; (2) any series of observations which have been made on the point; (3) any chemical or physio-chemical change in the blood during the disorder; (4) the possibility of any endocrine influence at work; (5) the tests by which it can be distinguished from other forms of albuminuria; (6) its prognosis and possible predisposition to nephritis. The following notes bear on some of these points.

Many names have been given to this form of albuminuria, none of them quite satisfactory, since they are taken from various symptoms or conditions not always present or denote some hypothesis at present unproved. The two least objectionable terms, in the writer's opinion, are albuminuria of adolescents, and hæmatogenous albuminuria. The former (W. Moxon) alludes to the epoch at which it chiefly occurs; the latter (Sir Nestor Tirard) to its dependence on a state of the blood circulation or of the blood itself, rather than of the kidney, a dependence which has come to receive increasing credence.

Causation.

The principal theories of the causation of albuminuria of adolescents are as follows:—

(1) Some early observers connected it with masturbation.

(2) Mechanical conditions of the circulation have been regarded as its cause (F. W. Pavy and others)—either a low, a high, or a variable arterial blood pressure. The effects of posture support this view. It is well known that the albumin is commonly absent during rest; and in many subjects the action of the heart is habitually unstable, and the response to exertion exaggerated. Puberty, with its augmented nervous and vascular tension, may be contributory (Clement Dukes). The lymphatic temperament or diathesis has also been invoked.[2] Vaso-motor instability has therefore been inferred as a cause. There is also a response to emotion, a sort of blushing of the kidney, in some bashful persons.[3]

(3) The blood itself has been thought to be at fault (Sir Almroth Wright). It has been found deficient in coagulating power; this deficiency has been attributed to disordered calcium metabolism due to rapid growth, especially of the bony system. Such rapid growth has taken place in some subjects; and the characteristic skin condition (urticaria-like tache, chilblains, hæmorrhages, and other concomitants of hypo-coagulable blood are often in evidence. Acting on this theory calcium salts have been administered, and in many cases the albumin has disappeared for the time. Large doses must generally be given for this purpose.

(4) The fault has been laid at the door of the digestive system. Sir James Goodhart, reviewing 200 cases of his own, noted the appearance of the albumin in the after-breakfast hours, a period when phosphates and sugar are apt to be passed. He thought there was a state of surfeit, with subtoxic effects. Mr. H. G. Armstrong, however, with large experience of boys at Wellington College, found the albumin in "chapel-fainters" before breakfast. Rapid growth—over-weights were to under-weights as 3 to 2 —and bolting of the food, were, in Goodhart's view, the two chief causes. Dr. R. Saundby also laid stress on large eating and goutiness.[4]

(5) The lordotic theory has been advanced by some German physicians, who found in some cases an exaggerated lumbar spinal curve.

A Case of Albuminuria of Adolescents.

The following is a description of a well-marked case of this form of albuminuria:—

A student, aged 17 years, was sent to me by his family doctor in 1908 on account of the presence of albumin in his urine. He had a fair family history, but an uncle and great-aunt had had much rheumatic fever; there was a personal history of rheumatism in knee and wrist three years earlier, also of severe measles three months ago, during which the albumin was discovered. He was liable to acute headaches, sometimes with vomiting. He had grown very fast, and was now 6 ft. 1½ in. in height, weighing 12 st. 5¾ lb. in ordinary clothing. The pulse-rate varied greatly, between 70 and 135, being increased unduly on exertion. The radial arteries felt hard, but the arterial tension showed much variation at different times, generally raised on exertion and falling during rest—I cannot usefully give figures because the sphygmomanometer then employed was of an old type. The heart's impulse was situated 2½ inches below the nipple, and was sometimes of a forcible knocking character. The urine was examined many times. That passed in the forenoon always contained a good deal of albumin; on one occasion there was only a whitish cloud on boiling, but at other times about 0·5 per cent. by Esbach's tube. The urine passed in the early morning always contained much less, and once was found quite free from albumin. That passed in the evening varied much, but was never free. The urine was concentrated, s.g. usually 1026–1030, very acid, and contained much urates, deposited on cooling, or on using Simon's test (nitric acid introduced through a pipette under the column of urine), when the whole column was filled with the dense mass of urates. Crystals of uric acid were also deposited, and under the microscope some crystals of triple phosphate and calcium oxalate were seen, with mucus cells, an occasional red blood disc, squamous epithelium and cylindroids, but no casts. The coagulability of the blood was tested by Sir Almroth Wright's method, and found apparently deficient. A small proportion of the albumin was thrown down by saturating the urine with magnesium sulphate in the cold, and was therefore judged to be globulin. Mr. Devereux Marshall reported that the vessels of the fundi were quite normal, and in all other respects the patient appeared to be in excellent health. Calcium lactate was given, but in doses not exceeding 30 gr.; it appeared to diminish the amount of albumin. Had it been administered in larger doses it might have had a fuller effect. The patient was advised to leave his studies, and spend six months in open-air work in the country. He did very well, and is now, 12 years later, aged nearly 30 years, said to be in excellent health, an athlete, and engaged in physical training.

In this case the conditions often found in adolescent albuminuria were present in a marked degree. He had both the circulatory instability, with great variability of heart-rate and arterial tension, on the one hand, with the rapid bodily growth and hypocoagulable blood on the other. The albuminuria was considerable in degree and not easily controlled either by rest or by calcium lactate.

Diagnosis.

The diagnosis of this form of albuminuria rests on the following points:—

1. The age is juvenile or adolescent and the general health is good, but the temperament is most often neurotic. There is a form of senile albuminuria which appears to be harmless, but that is not now in question.

2. None other of the signs of kidney disease are present, such as dropsy, hypertrophied heart, continuous high arterial tension, habitual headache, or dyspepsia.

3. The albumin present is not in large quantity (say, under 1 per cent.), and it is absent, or at all events diminished to a very small quantity, in the urine passed after the night's rest.

The above are submitted as the three leading diagnostic tests. The following are confirmatory conditions, but are not in all cases uniformly present.

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* An introductory paper read at a discussion at the Assurance Medical Society, Nov. 3rd, 1920.

[1] Trans. Life Assur. Med. Off. Assoc., 1906–7, p. 61; THE LANCET, 1906, ii., 477.

[2] See note by the author, THE LANCET, 1907, i., 1456.

[3] See the author's paper, Trans. L.A.M.O.A., loc. cit.

[4] Discussion in Proc. Roy. Soc. Med., iv., Sect. Med., p. 123.

4. The urine is generally acid to excess, depositing a dense mass of urates when nitric acid is introduced beneath a column of urine. Numerous crystals of calcium oxalate are often formed on standing.

5. There are neither renal cells nor blood cells in the urinary sediment, nor any casts, except, perhaps, a few of the hyaline kind.

6. The albumin contains a larger proportion of globulin than is found in the albuminuria of kidney disease.[5]

7. The passing of albumin is generally stopped for the time by the free administration of calcium salts, say one drachm of the lactate on three successive nights.

8. The arterial blood pressure is usually low, and almost always varies much with slight causes. The pulse is often quickened and the heart's action excitable. Sir W. Broadbent found the right ventricle beating powerfully, whilst the left acted weakly.[6] A history of fainting attacks is not uncommon.

9. The coagulation index of the blood is lowered, with signs of increased transudation.

10. In many cases there has been rapid bodily growth.

It would be of importance if we could add a test to measure the efficiency of the kidneys. A good many such tests are on their trial, based on the output of water, of urea, of diastase, or of salts, or on the removal of indigo-carmine or other substances from the blood.[7] But none of these are yet available for clinical use in the examiner's room. Sir Almroth Wright and Dr. G. W. Ross, of Toronto, published in 1905 a method of estimating renal function by determining the salt-concentration of the urine. They found that the efficiency so estimated continued normal in this form of albuminuria.[8]

Prognosis.

The prognosis of this form of albuminuria is of especial interest to us. The lapse of time since the disorder was first recognised should surely provide data for forming conclusions. Unfortunately few observers keep complete records, and they must needs for our purpose cover many years; impressions and incomplete histories are of but little value. Some data may, however, be put forward.

(1) Dr. Clement Dukes, whose observations on numerous Rugby scholars led him to recognise the disorder as long ago as 1878, is convinced that there is "little likelihood of its proving the precursor of organic disease of the kidneys." In a number of instances Dr. Dukes examined the urine of the same persons in after years. In all cases except one, he tells us, he found it free from albumin; the exception was in a case examined shortly after leaving school.[9]

(2) Sir J. Goodhart noted the after-history in 38 cases, in most of them for over five years. None of them had passed on into Bright's disease, but the period of observation was short.[10] Dr. R. Saundby recorded a like experience with 24 cases, the period ranging from 6 to 13 years.[11]

(3) Dr. Hugh Maclean has reported on the percentage occurrence of albuminuria among 50,000 (healthy) soldiers in France and 10,000 recruits at Aldershot. These reports deal with a large area of statistics, and, being drawn up with much exactitude, will probably become classical of their kind. Albuminuria was found in 5 per cent.; in 2 per cent. "gross albuminuria," and in the remaining 3 per cent. traces of albumin only. Military training was found to have no influence in producing this albuminuria. Of those who were subsequently attacked with war nephritis, the great majority had not shown albuminuria earlier. "Previous albuminuria," Dr. Maclean concludes, "plays little or no part in the ætiology of war nephritis." This is valuable evidence. If the adolescent albuminuria were due to kidney injury, it would surely predispose to nephritis, but it is clear that at any rate war nephritis is not promoted by it.[12]

Summary of After-history of 20 Cases.

In 1906 I submitted a schedule[13] showing the after-history of 19 cases in whom I had found albuminuria of this type when examined for life assurance. The albumin was detected by boiling the acidulated urine, and when only a trace was present this was neglected. Adding a further case, I can now give a summary account of 20 consecutive cases of albuminuria of adolescents, examined between 1884 and 1896. Their average age on entry was 27·7 years. Of the 20, 5 have died: (1) after 7 years, of phthisis; (2) after 7 years, of accident; (3) after 25 years (at the age of 75 years), of senile decay and cardiac failure following accident; (4) after 19 years, of phthisis, in an asylum; (5) after 32 years (at the age of 59 years), of chronic arthritis. Two others were last heard of at periods of 16 and 15 years after entry. They were then living, aged 50 and 48, and believed to be healthy. Of the remaining 13 (two-thirds of the whole number) I have been able to obtain information to the present time. They are all living. The average period since the albuminuria was discovered in these 13 cases is 30 years; their average age is now 56 years, and they are all so far as known healthy persons. No evidence appears from the after-history of these cases, prolonged in some of them for more than 30 years, of any subsequent kidney trouble. The numbers are small, but the notes and histories have been carefully and accurately kept, and the results are now placed upon record as a contribution to the prognosis of this form of albuminuria.

Eligibility for Life Assurance.

If the adolescent type of albuminuria is clearly indicated and the life is in all other respects a healthy one, I would accept it at ordinary rates for an endowment policy payable in 25 years. For a whole-life policy a small advance would in most cases be imposed. If the conditions in any respect fail to reach the first-class standard an advance would be advisable, whatever the form of policy. For although the evidence points, in my view, decisively to the harmless nature of this form of albuminuria, one must regard the general opinion of life office examiners, who have not yet reached this position; and one must give the office the benefit of a cautious estimate.

A Hypothesis of Pathology.

I should like, in conclusion, to try to state a working hypothesis of the pathology of this form of albuminuria. Perhaps we may get some light upon it by approaching the subject from another side. Why does not the colloid albumin of the blood always pass through the walls of the blood-vessels of the kidney into the urine, as it passes through those of the pancreas into the juice of that organ? Urea passes through, and uric acid, pigments, and salts; why not dextrose and albumin? Moreover, if egg albumin is injected into the blood it passes out into the urine; not so serum albumin. Why is one taken and another left?[14] Physiologists can only tell us that such selective action is commonly associated with living cells. The epithelial cells of the glomerulus have a secretory action as to urea and a defensive action as to albumin; but how it is done we do not know.

We may then inquire as to what causes may disturb the defensive action of the epithelial cells of the kidney towards albumin and lead to its passing into the urine. First, the cells may be diseased. In nephritis we see the cells, granular and degenerate, cast off into the urine, and albumin comes with them, no longer retained by the defensive mechanism. Then, in the second place, are there any conditions apart from the healthiness of the cells which may disturb their defensive action? Two such conditions may be suggested. One is the tension of the blood in the capillaries. It is reasonable to suppose that the cells can only work normally when the blood tension is within certain limits, and that a very high or a very low blood pressure may interfere with the defensive mechanism and lead to the passage of albumin. If, then, the vaso-motor control of the arteries of the kidney is disturbed, so that a much higher or lower tension is produced in the capillaries, the cell functions may be impaired. Another condition of the efficient action of the cells may be the integrity of the blood itself. On this much more light is needed, but the suggestion may be made that in hypocoagulable states of the blood—associated with deficiency of calcium salts—the colloid albumins, and especially globulin, are much more ready to pass through the vessel walls. Then the defensive mechanism of the cells may fail and albuminuria appear.

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[5] Dr. Mackenzie Wallis has recently established this fact on a firmer basis (see Proc. Roy. Soc. Med., xiii., Sect. Med., p. 96).

[6] Sir W. Broadbent: The Pulse, 1890, p. 270.

[7] Professor J. B. Leathes, Dr. Langdon Brown, and others, in a recent discussion at the Medical Society of London, THE LANCET, 1920, ii., pp. 933, 949.

[8] Wright and Ross, THE LANCET, 1905, ii., p. 1164; Ross, Trans. L.A.M.O. Assoc., 1906–7, p. 85.

[9] Dr. C. Dukes: The Albuminuria of Adolescents, Brit. Med. Jour., 1905, ii., p. 848.

[10] Proc. Roy. Soc. Med., iv., Sect. Med., pp. 109, 144.

[11] Ibid., p. 120. For Teissier's observations on 28 cases during ten years, see Trans. Med. Soc. Lond., xxvii., p. 80.

[12] Dr. H. Maclean: Albuminuria and War Nephritis among British Troops in France. Medical Research Committee, Special Report No. 43, 1919.

[13] Loc. cit.

[14] Stewart, Manual of Physiology, p. 494.

These hypotheses would account for the occurrence of albuminuria in earlier life, from causes connected, not with the kidney, but with the blood and its circulation. A further suggestion may be made. Is it possible that the cells of the kidney epithelium may sometimes, in old age, undergo a senile change, which is not what we commonly understand by nephritis, nor attended by its clinical signs, and that this change may allow albumin to pass through into the urine? This would explain the cases of long-standing senile albuminuria which have been recorded (by the present writer amongst others) in which death eventually occurred from other causes, sometimes at a very advanced age. Some of the cases lately described under the name of "leaky kidneys" appear to be of this class.[15]

A CONSIDERATION OF THE

POST-OPERATIVE MORTALITY OF APPENDICITIS,

ESPECIALLY IN CHILDREN.

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WITH BACTERIOLOGICAL REPORT OF BLOOD IN A FATAL CASE

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OPERATIONS for appendicitis are a development of the past 30 years, although the condition was recognised and treated by operation a few years earlier; but after 1890 more and more cases were treated by operation, and early in the present century the name of the disease became widely known.

Twenty-five to twenty years ago late operations were the rule and early operations decidedly exceptional. Cases were not diagnosed as readily or as quickly as they are now, and the sufferers were not so easily persuaded to undergo an operation. No doubt many cases died undiagnosed or unoperated on; and a large proportion of operations were for abscesses of many days' duration, which were treated with great success by simple drainage. Cases of general peritoneal infection seldom recovered. It is not altogether surprising that the mortality from appendicitis 20 years ago was barely half the rate at the present day, according to the Registrar-General's returns. At the present day the disease is rarely undiagnosed. Fortunately many cases are discovered at onset, and are submitted to an immediate operation, with the happiest results.

Owing to the advance of surgical knowledge and technique, general peritoneal infection is robbed of much of its terror, and a very considerable proportion of patients with general infection recover. The operation is a very common one; cases are treated almost daily at all large hospitals. Every operating surgeon has had a large experience in these cases, and yet the mortality shows no sign of diminution. Dr. A. M. N. Pringle, medical officer for the borough of Ipswich, has kindly furnished me with the local records and the Registrar-General's report of the mortality from appendicitis in England and Wales from 1901 to 1918, inclusive; the mortality in 1918 was almost double that of 1901.

Another interesting fact is that the period of childhood and early youth is the most dangerous, nearly half the total number of deaths from appendicitis occurring between the ages of 4 and 20. Of course, it may be argued that the number of cases suffering from appendicitis has increased in an equal or even greater proportion during this period; but, as appendicitis is unfortunately not a notifiable disease, it is not possible to verify this. Certainly far more cases are diagnosed and operated upon now than was the case even 20 years ago, and I think it may be taken for granted that the figure 2416 represents little more than the post-operative mortality for the year 1918. Very few, if any, practitioners at the present day would not advise operation, and few patients decline to avail themselves of it. Is this large mortality unavoidable?

Advantages of Early Operation.

It is an undoubted fact that an operation during the first 24 hours is practically free from danger, and every operating surgeon is glad to see a case as early as this. The appendix is removed with the poison contained within it, the abdomen closed without a drain, and convalescence is rapid and uneventful. During the second 24 hours often the result is as satisfactory, although, of course, there is some risk that the infection may have spread beyond the appendix wall. It is of supreme importance to the sufferer that the disease should be recognised at the earliest possible moment, and the operation performed without any avoidable delay. Too frequently the patient, or the parents or friends, do not at once realise the gravity of the trouble and send for a doctor. The disease is not easily diagnosed at its commencement, and the doctor may hesitate about sending the case to a hospital or calling in a surgeon until he is convinced of the necessity; very precious hours may thus be lost. The larger number of cases are still operated upon after the ideal time has gone, and when the infection has already spread beyond the appendix; there is then peritoneal suppuration, either localised or general.

The increased risk of operation, especially upon children, during the first week, after the time of election has passed—*i.e.*, during the third, fourth, fifth, and sixth days—is, I think, recognised by a good many surgeons. Figures given at an interesting discussion at the Medical Society of London some years ago showed that the death-rate rose rapidly at this time from 2 per cent. on the first day, 2·8 per cent. on the second, to 19 per cent. on the fifth and 22·7 per cent. on the sixth, subsequently falling to 8 per cent. on the seventh and 7 per cent. on the eighth day, and thereafter continuing to fall. An operation during the second week, which usually consists in opening and draining a fairly large abscess, is attended by little danger.

Deaths Due to Infection of Blood During Operation.

Some ten years ago it was my misfortune to lose several cases of children who were operated on during the fifth or sixth days of the disease. The cases were all very similar, treated in the same way, and died with the same symptoms. In each case there was a localised abscess well shut off from the general peritoneal cavity, and in each the condition appeared satisfactory at the time of operation. The abscess was opened, after carefully packing off the peritoneal cavity with gauze, if this had to be crossed, the pus as it escaped carefully mopped up, the abscess cavity swabbed out with gauze till all pus had been removed, a drainage-tube and gauze wick left in the cavity, and the wound closed around the drain. At first the patient appeared to be doing well, but after a definite incubation period, generally about 24 hours, a serious change took place. The pulse became rapid, the face pallid, expression anxious, sometimes there was a rise of temperature, but sometimes it became subnormal; drowsiness with intervals of restlessness and, perhaps, delirium, followed, with an occasional shrill "meningeal" cry; the pupils became dilated and irresponsive to light, and death followed in a few hours. Post mortem nothing could be found. There was no peritonitis, no pus, and only a little serum in the abscess cavity.

What was the cause of death? It was certainly not due to shock or delayed chloroform poisoning. I have no doubt whatever that it was due to the direct infection of the blood at the time of operation.

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[15] Mackenzie Wallis, loc. cit.

Defence against Infection Outside the Appendix.

A localised abscess is the result of natural effort to fight the infection. In some cases the disease is thus overcome without surgical interference, although at the present day a case is not often left to chance in this way. There are two main walls of defence set up when the infection has passed beyond the appendix to prevent the lethal germs becoming active in the blood. The outer wall is the layer of plastic lymph which is rapidly thrown out from the surrounding tissues, sealing off the general peritoneal cavity and preventing the rapid diffusion of the infected pus through the abdomen. But it also sets up a barrier against invasion of the blood and lymphatic vessels in the omentum, intestine, &c., which form the abscess wall. The layer of lymph lining the abscess acts like the porcelain of a Berkefeld filter, allowing fluid toxins to pass through into the circulation, but holding up the living particulate organisms, bacilli and streptococci, and preventing their entrance into the blood stream. This wall, often lightly disregarded, is in reality of the greatest importance. In course of time the toxins which have entered the blood, bringing about a rise of temperature and pulse and febrile symptoms, cause the development of antibodies which gradually neutralise them, until some time during the second week a condition of equilibrium may be established in the blood and the temperature and pulse may fall to normal. The abscess has "ripened," to use an obsolete term, and a condition of comparative immunity brought about. An operation during this stage is almost free from danger. In the opening of such an abscess fœtid pus with the characteristic odour may flow over the wound in the abdominal wall, which may be sutured round a drainage-tube, and may heal without redness practically by first intention. This is the second wall of defence, taking a week or more to build.

I conclude that in the fatal cases mentioned above by swabbing out the abscess cavity I removed some portion of the protective layer of lymph, thus damaging or destroying the first means of defence, and that owing to the early date, the fifth or sixth day of the disease, the second means—the antibody protection—had not been built up, and that a direct infection of the blood with some of the lethal organism, probably the *Streptococcus fæcalis*, occurred. After a short incubation period the symptoms of a severe blood infection declared themselves. I brought forward this theory in an article[1] published in 1910. I am now in a position to supply what I believe to be a proof of its accuracy.

A child, aged 10, was admitted to the East Suffolk and Ipswich Hospital at 3 P.M. on Oct. 10th suffering from appendicitis. The illness commenced on the morning of the 8th with pain in appendix region, followed by vomiting. Temperature on admission 100° F., pulse 108, condition good. There was a small tender lump in the right iliac region, obviously an inflamed appendix. It was decided to operate at once. The abdomen being opened at the edge of the rectus the appendix at once came into view. It was acutely inflamed, curled on itself, and adherent to cæcum and meso-appendix. The adhesion was firm, evidently due to a previous attack; the appendix was dissected off and removed. The meso-appendix was much inflamed and thickened; a small quantity of pus, about half a drachm, escaped during the separation and was at once mopped up. A clean area was left, which was swabbed out with weak carbolic lotion, a drainage-tube and gauze wick impregnated with bipp introduced, and the rest of the wound closed. On the following day, the 11th, the child appeared to be doing well; temperature 98°, pulse 108. She had slept well during the night.

On the 12th she did not seem quite so well; temperature 97°, pulse 120, abdomen normal, drain removed. On the 13th she had had a restless night, with vomiting; bowels acted. She was drowsy during the day, and at 6 P.M. was evidently much worse; restless, screaming at intervals, with pupils widely dilated. Pulse 140; expression anxious. Some blood was drawn from the basilic vein and one pint of normal saline with bicarbonate of soda introduced. Temperature 97°. The child was very restless all night, pulse becoming more rapid and feeble; death took place at 4 A.M. on the 14th, three and a half days after the operation. The blood was given to Mr. Cade, bacteriologist to the hospital, for bacteriological examination. A streptococcus grew readily in the cultures and was proved by various tests to be *Streptococcus fæcalis*.

The clinical symptoms in this case were identical with those of the cases previously described, and were proved to be due to the invasion of the blood stream by the *Streptococcus fæcalis*—there was nothing else to account for them—which no doubt gained entrance to the blood during the removal of the inflamed and adherent appendix. I think it may reasonably be concluded that the other cases which I have mentioned, in which the symptoms were identical, died from the same cause.

Conclusions as to Treatment.

What conclusions are we to draw to guide us in our treatment? There will be general agreement as to the great importance of operation at the earliest possible moment after the commencement of the attack, preferably during the first 24 hours, while the infection is confined within the appendix. But when the patient, a child, is seen for the first time by the surgeon during the third, fourth, fifth, or sixth days, when the infection has spread beyond the appendix and a localised abscess is formed, the alternatives are immediate operation or delay until the second week (when there is considerable immunity to blood infection).

I cannot help thinking that the safer, though certainly not the easier, course is to wait, although if anything untoward results the surgeon will probably be blamed for his Fabian tactics. Appendix abscesses very rarely burst into the peritoneal cavity if the patient is kept at rest in bed, on a scanty and easily absorbable diet, and the bowels are not disturbed by aperients. During the second week the abscess may be opened and drained with the minimum of danger. But if it is decided to operate at once during the dangerous period I think it is absolutely essential that nothing but the introduction of a drainage-tube into the abscess cavity should be attempted with no swabbing, no handling, no interference of any kind, and, above all, no removal of the appendix. The latter may be safely done many weeks later when all infection has subsided. The great danger of blood infection occurs especially in children; adults appear to have a far greater power of resistance, but to them, too, the same rule should apply.

In cases where there is general peritoneal infection, when the appendix is perforated or gangrenous and free in the abdominal cavity, I think it should always be removed with as little disturbance as possible, and free drainage to the bottom of the pouch of Douglas with a large drainage-tube provided. Of course, with the Fowler position I should not think it justifiable in such case to delay operation, at whatever stage of the disease the patient is seen.

Bacteriological Report of Examination of Blood in a Fatal Case by H. M. CADE.

Varying amounts of blood were inseminated in nutrient bouillon and a taurocholate of soda broth. After 48 hours' incubation at 37° C. these were found to contain a pure culture of a short-chained streptococcus. Subcultures were made on agar, blood-agar, and gelatin. After 48 hours' incubation examination showed a pure culture of the organism. In order to determine, as far as possible, into which group of streptococcus this organism could be relegated, its fermentative reactions were tested on various sugars in peptone water and the following results obtained: Acid formation in lactose, glucose, saccharose, and mannite; no change in inulin. Litmus milk was clotted with the formation of acid and neutral red reduced. No hæmolysis was observed in the blood-agar cultures. A white mouse was inoculated with 1 c.cm. of the 48 hours' broth culture; the organism was non-pathogenic to this animal. Whilst admitting that various strains of streptococci show variability in fermentative reactions, especially when old cultures are used, I am of opinion that, taking into consideration the fact that all the tests were made with fresh cultures, together with the morphology of the organism, its non-hæmolytic power and non-pathogenicity to the white mouse, it should be grouped as a *Streptococcus fæcalis*.

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[1] *Brit. Med. Jour.*, 1910, ii., 508.

TWO UNUSUAL CASES OF SMALL INTESTINE OBSTRUCTION.

By W. H. OGILVIE, M.A., M.Ch. Oxon., F.R.C.S. Eng.,
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Strangulation by a Band, with Absence of any of the Usual Symptoms on Admission.

In most surgical cases the history, the patient's symptoms and the objective signs combine to build up a picture on which a diagnosis may be founded and treatment decided upon. In the following case I had to decide whether to trust my eyes or ears, to explore the abdomen on the history alone in face of the clinical findings, or to trust the latter and mistrust the history. I wrongly chose the latter course. Three things influenced me in this decision: first, that I did not know the patient, and had no confirmation of his story from a medical man; secondly, that the passage of flatus as well as fæces is very unusual in any obstruction other than that of a Richter's hernia; thirdly, that the man was a plumber, and since he had very good teeth he might be suffering from lead colic without showing the characteristic blue line on the gums.

CASE 1.—R. H., aged 23, a male, was admitted into Guy's Hospital with a typical history of acute obstruction of the small intestine of three days' duration.

History.—The illness started at 4 P.M. on Oct. 20th with a sudden agonising pain following on three days of vague discomfort. From this time onwards he had been in continual pain, though not so severe. He had vomited such fluids as he had taken by mouth, and had passed nothing per rectum. Further inquiry showed that he had only vomited after food, and that the vomit had never smelt fæcal.

Examination.—On admission he looked well and comfortable, with a clear complexion, and clean moist tongue. Temperature was 100° F., pulse 88, respirations 20. The abdomen was slightly full, but moved well, and there were no distended coils or visible peristalsis. The abdominal muscles were "on guard," but allowed deep palpation if his attention was distracted. There was no definite tender spot, only a vague tenderness to the left of the umbilicus. On rectal examination masses of scybala were felt, but there was no tenderness whatever and no ballooning.

The findings appeared to contradict the history, and a soap-and-water enema was therefore given, and a half-hourly pulse taken. After the enema he passed a large formed motion, with flatus. The pain was relieved and he went to sleep. Next morning (24th) he woke feeling very well, and his pulse was now 68, temperature 98·4°. There was no pain, and only slight tenderness. He remained like this till midday, Oct. 25th, taking fluids with no vomiting, his temperature remaining normal and pulse below 80. At midday, however, his abdomen was definitely more distended, and he did not look so well, though he felt quite comfortable.

Operation (on the 25th).—Laparotomy through a left paramedian incision. Moderately distended coils of small intestine were seen, and the general peritoneal cavity contained a little blood-stained fluid. On passing the hand downwards a band was felt at the pelvic brim passing from right to left, which snapped while being palpated. A mass was felt in the pelvis and brought into the wound, where it was seen to consist of several coils of intestine matted together and surrounding a loop of the lower ileum about 5 inches long, which was gangrenous and greenish-yellow in colour; 12 inches of bowel were resected and a lateral anastomosis performed. The abdomen was closed without drainage. Following the operation recovery was uneventful, and he was discharged perfectly well on Nov. 28th.

Remarks.

The passage of flatus was probably due to bacterial action on the fairly abundant contents of the large gut distal to the obstruction. The absence of any tenderness probably means that the gut had become absolutely gangrenous just before admission, and the same pathology would account for the cessation of the pain and of the vomiting, which in such cases is at first a reflex act, and only later a back-flow due to obstruction. When the bowel became dead painful and reflex stimuli would cease. Had the patient been examined earlier he would probably have been exquisitely tender per rectum. It is very hard to account for the complete absence of vomiting or of any rise of pulse-rate during the next two days, the fourth and fifth of a complete obstruction in the ileum.

With regard to the operation, the choice lay between resection and drainage of the upper ileum by anastomosis to the transverse colon, end-to-end suture, and lateral anastomosis. The good condition of the upper segment rendered the first procedure unnecessary. End-to-end suture is, I think, the operation of choice when dealing with resection of portions of a perfectly healthy intestine, as in gunshot wounds of the abdomen. It is rapid, and gives an almost perfect anatomical restoration. Where the intestine to be resected is in a less healthy condition as in this case, and the reparative powers reduced, one has to be very careful that no leakage can occur at the junction. If end-to-end suture is done with ample invagination of the suture line, drainage of the upper segment is inadequate at the time, and there is a real risk of a stricture at the line of juncture later. With lateral anastomosis a wide opening can be made, and at the same time the sutured edges can be well turned in; the line of junction is further protected by the surrounding coils of intestine.

Reduction "En Masse" of an Inguinal Hernia: Strangulation in the Reduced Sac Six Months Later.

With regard to Case 2, I can only trace two reports of similar cases, one by G. A. Harrison,[1] the other by W. J. Walsham[2]; the latter reports seven cases in all, but in only one case is it clear that the reduction en masse occurred some time before the strangulation for which operation was performed.

CASE 2.—A man of 73 was admitted into Guy's Hospital on the night of Nov. 23rd, with a history of acute obstruction of two and a half days' duration. He was wearing a double inguinal truss.

History.—He said he had had a left inguinal hernia since a young man, for which he had worn a truss. Following a fall at the age of 45 (28 years ago), the hernia became irreducible, but was replaced by manipulation at St. Thomas's Hospital. During the following years the hernia came down frequently, but was always reduced, though often with considerable difficulty. Finally, six months ago, the left inguinal hernia came down into the scrotum, became fixed, and was very tender. He worked at the swelling himself, applying fomentations, and trying various manipulations, and after two hours of these attempts, it went back suddenly into the abdomen, and had never since appeared.

Three days before admission he felt vague abdominal discomfort, but slept well and passed a normal motion next morning. During midday dinner on the 21st he complained of pains in the epigastrium, and at 5 P.M. he commenced to vomit. Next day the abdominal pain was very acute, and the vomiting continued all that day and the next (the 23rd), when, however, the abdominal pain was easier. From the onset of pain on the 21st till admission nothing was passed per rectum, in spite of two enemas.

Condition on admission.—The patient was a stout, well-built old man, but very collapsed. The pulse was 90; temperature under 95° F. He was vomiting frequently, bringing up a brownish fluid with a fæcal smell. The abdomen was not distended, moved well, and was nowhere tender. Both inguinal and femoral canals were empty and not tender at all. Per rectum there was no ballooning of the walls and no fæcal matter; the prostate was large and hard. In view of the extreme collapse, continual vomiting, and absence of distension an obstruction of the jejunum was diagnosed, the most probable cause, in view of the history, being thought to be a band of omentum adhering to the neck of an old left inguinal sac. He was warmed in bed for an hour and then taken to the theatre and given a spinal anæsthetic, but before any incision could be made he was obviously so collapsed that he was returned to the ward, where he died ten minutes later.

Post-mortem.—A very distended jejunum was traced down to the left iliac region, where at a distance of 36 inches from the duodeno-jejunal flexure it entered a peritoneal ring with very hard edges, easily admitting one finger. The emerging gut was narrow and empty. On stripping back the peritoneum this ring was found to lead to a globular sac the size of a large orange, lying between the peritoneum and the transversalis muscle. No part of the sac was in the inguinal canal, but a prolongation upwards of the tunica vaginalis was intimately blended with the fundus of the sac. On pulling the left testis the fundus of the sac was drawn against the internal ring, and conversely on pulling the sac the testis was drawn up against the external ring. This serous process was separable from the sac wall and was a distinct structure. On opening the sac it was found to contain a loop of jejunum 9 inches long, which, though inflamed, was neither adherent nor gangrenous. When the intestine was laid open the walls of the upper jejunum were much hypertrophied, and two constrictions in the wall marked the points of entrance and exit of the obstructed loop, suggesting that it had been in the sac for a considerable period and had suffered partial obstruction for some time. In addition the lower ileum was matted by adhesions into a globular mass not attached to parietes, the cæcum was adherent to the right iliac fossa, and the tip of the appendix was lying free in a very small and short right inguinal sac which barely entered the canal.

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[1] Brit. Med. Jour., 1917, i., 763.
[2] Ibid., 1901, i., 691.

Remarks.

"Reduction en masse" is frequently described as one of the dangers attending the use of taxis in attempts to return the contents of a strangulated or obstructed hernia into the abdomen. Such "reduction en masse" may be due to replacement of the whole sac and its contents within the abdomen, to displacement of the contents into a lateral diverticulum of the main sac, or to rupture of the sac and replacement of the contents only into the abdomen, leaving the neck of the sac still intact and still causing obstruction or strangulation. Such an accident is nearly always followed by a continuation of the symptoms of intestinal obstruction, leading either to operation or to a fatal result. It must be very rare indeed for reduction en masse to be followed by relief of symptoms, and yet for strangulation to occur at a later period in the sac so displaced. That this is what occurred to this man six months ago when he manipulated his own rupture during an attack of obstruction is, I think, indisputable. The hernia had never been down since, and, as found post mortem, it could not enter the inguinal canal, which would barely admit two fingers. There was no pain or tenderness in the left inguinal region, which seems hard to understand. There is no doubt, however, that had one pulled on the left testis it would have put tension on the sac and caused acute pain, and if a case of this nature were to be seen again it would be a valuable diagnostic sign, and would give one some indication as to where the abdomen should be opened. I intended to make a paraumbilical incision, which in such a fat patient would have needed considerable extension before the point of obstruction could have been reached.

For permission to publish the above cases I am much indebted to Mr. R. P. Rowlands, surgeon to Guy's Hospital.

A NOTE ON

PSYCHOTHERAPY IN GENERAL PRACTICE.[1]

BY W. THOMSON BROWN, *M.C.*, M.B., CH.B. EDIN.

SINCE December, 1919, I have used psychotherapy based on neuro-induction[2] (as opposed to hypnosis or neuro-conduction) in general practice, as far as the requirements of a busy middle- and working-class practice have permitted. I have found it curative in many conditions and also useful in promoting anæsthesia for minor operations, dental extractions, and obstetric cases, as the following instances will show.

I. *Dental Anæsthesia.*

CASE A.—Patient, Mrs. A., has suffered from V.D.H. and auricular fibrillation; also from pyorrhœa alveolaris and dental caries. In March, 1920, I sent her to hospital for extraction of teeth. She fainted in the hospital waiting-room. Her heart was examined and she was recommended for immediate admission. Dental extractions, with or without anæsthetic, were definitely refused as "her heart was too bad." She was told that she might drop dead at any time! She went home and to bed for a week, and feared a sudden death until I disabused her of this notion. On April 24th and 29th I gave her preliminary interviews, suggesting calmness of mind, painless and almost bloodless extractions, and rapid painless healing of the gums, and on the 30th I attended the patient at the dentist's. Twenty-five teeth were extracted in the one sitting. The patient remained placid throughout, except for catching her breath at two specially difficult extractions. When all were out she laughed at the sensation of total absence of teeth. Bleeding stopped immediately, and five minutes later she walked out and left for home. I saw her next day; the gums were very clean, not at all swollen, not at all painful. The minimal pain felt with the two extractions above mentioned amounted to mere discomfort: "I would go through it again any day. I felt I could make a joke of it."

II. *Obstetrics.*

CASE C.—I was called by the nurse to see the patient, Mrs. C., primipara, at 5.50 A.M., on account of her pain, as the nurse had had much difficulty in examining. The patient was slightly deaf (Eustachian catarrh). She allowed me to examine her without fuss. Os not fully dilated, membranes not ruptured. I began induction. The patient complained of "feeling sick." This passed off under suggestion. *After* perfect analgesia was secured I told her it did not matter whether she went to sleep or not, but I suggested that as she had nothing to do she might just as well go to sleep. At 6.15 A.M. the patient was snoring. I left her, promising to return in two hours. At 8.15 A.M. I called again to find the baby had been born at 8.2 A.M., the patient having been perfectly quiet. I expressed the after-birth and left. On my later visit the patient said she remembered relaxation and the pain getting easier and she had heard my talking of going away. She then slept till near the end. She was aware of the last three or four contractions and remembered bearing down for these pains. She described them as violent, but as giving her no sensation of pain. She also felt the head coming out, but had no pain. She had apparently had natural sleep (with, of course, amnesia) for over an hour, analgesia being perfect. The puerperium was normal.

Nervousness in Children.

CASE H.—The parents of this girl, age 10 years, brought her because of her inability to sleep and her troublesome demands on their attention at night. She had defective vision (wore glasses) and had an inherited deformity of pupils. She suffered from visual hallucinations and persisted in "seeing" ghosts, figures on the roof, &c., in spite of parental admonitions to the contrary. She was afraid to be left alone and was frightened of dogs, cats, and mice. Her difficulty in getting off to sleep and her fear of being alone had some relationship with the last phobia. She was impatient, slow to obey, had small powers of attention, and complained frequently of headaches. There being no self-reliance she could not be sent on errands by herself. She was not truthful, and invented complaints to avoid going to school, to escape irksome tasks, or to cover other complaints. She was constipated, and there was marked frequency of micturition at night.

The treatment had in view: (1) training in truthfulness (very important); (2) a rational explanation to the child of her hallucinations; (3) the correction of phobias; (4) the cure of bowel and bladder conditions. I began treatment in the middle of May, 1920, the result being the removal of every symptom complained of. Her school report, July, 1920, states: "...... was hindered by *illness* at the beginning of this term, but she has worked hard during the past six weeks and has gained a much higher place in the class; last March she was near the bottom of the list." That this is not "forcing" but a mere release of mental activity is seen from her mother's statement five months later (October): "Everybody says how different and how well she looks." "A different girl about the house—not the worry she used to be. Is a happy girl now; sleeps well at night. No trouble in any way."

Remarks.

Psychotherapy is still carefully avoided by most general practitioners, partly from a belief that it is too elusive and too far-fetched a subject for the plain man, partly because of its popular association with quackery or with the transcendental psychopathology of the psycho-analysts, and partly from a well-grounded opinion that pecuniary loss or financial ruin would ensue from the use of so-called "hypnotism" in general practice. I wish to emphasise that psychotherapy need have nothing whatever to do with any of these associations and that *anyone* can practise it who cares to acquire the requisite knowledge and learn the technique, qualified medical men only being properly and safely equipped.

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[1] These cases are selected from among those shown to the Walthamstow and District Clinical Society, Nov. 2nd, 1920.

[2] Haydn Brown: Advanced Suggestion, 1918.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF

LEUKÆMIC POLYNEURITIS.

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SEVERE forms of anæmia, cachexia, and senility have been stated occasionally to produce definite multiple neuritis, though the occurrence of well-marked polyneuritis in lymphatic leukæmia has not, so far as I can ascertain, hitherto been recorded. In hæmophilia neuritis has been ascribed to the pressure of the effused blood on nerve trunks, but the resultant neuritis would be local, asymmetrical, and quite unlike the usual form of toxic polyneuritis. Similarly, unilateral facial paralysis has been described in leukæmia.

The case described below illustrates symmetrical polyneuritis as an early and prominent symptom in a case of lymphatic leukæmia, before the definite diagnosis of the blood condition was possible to establish.

W. J., a youth aged 17, attended the out-patient department early in April, 1920, on account of weakness of the legs, saying that for the past five weeks he had noticed that his legs were becoming stiff, followed two weeks later by unsteadiness on his feet, and numbness and tingling of his finger pads. The spleen was noticed to be definitely enlarged, about three fingers-breadth below the costal margin, and the notch easily felt. A slight degree of anæmia was evident, and he was sent into the hospital, being admitted on April 15th. His gait was weak and unsteady, and there was definite weakness of dorsiflexion of the feet, the electrical reaction of the leg muscles showing partial reaction of degeneration. Tests of sensation showed diminution to touch and pin-prick on the feet and legs up to the knees, though the vibration sensation to a large tuning-fork placed on the tibiæ was normal. The knee-jerks, Achilles, and forearm-jerks were all absent, nor could any plantar reflexes be obtained, though the cremaster reflexes were present. Sphincters normal; eyes and discs normal. The blood examination showed a red cell count of 3,400,000, with hæmoglobin content 60 per cent., the colour index being 0·88. There was a degree of leucopenia, the white cells numbering only 5800, though the differential count showed the polymorphs to be reduced to 23 per cent., the lymphocytes amounting to 68 per cent. Wassermann test negative. Numerous small lymphatic glands soon became palpable in the posterior triangles on both sides of his neck, and one of these was removed for microscopical examination. The healing of this wound was very troublesome, recurrent hæmorrhage occurring for several days, and his temperature, which previously had been normal, now began to show oscillations, with rises to 99·5° to 100 F. Gradually he became weaker, and he died on May 29th. Post mortem, the spleen was found considerably enlarged and soft, the liver fatty and weighing 74 oz., while microscopical examination revealed leukæmic infiltration of the liver, nerves, and kidneys, with lymphocytes.

Remarks.

The diagnosis of the case on admission presented a pretty problem. Splenic anæmia with combined sclerosis was negatived by the fact of the absent reflexes, normal vibration sense on the legs, with no involvement of the sphincters, while the clinical picture was indeed characteristic of polyneuritis. The recognition of the type of anæmia was more difficult, the leucopenia being suggestive of splenic anæmia, but the greatly inverted lymphocytic preponderance was against this diagnosis, and was more suggestive of lymphatic leukæmia or lymphadenoma. One of the slightly enlarged glands was therefore excised for microscopical examination, but the pathological report was that it was normal, and again we were at fault. The troublesome hæmorrhage from the small wound in the neck made by the surgeon was more suggestive of leukæmia than of lymphadenoma, but the diagnosis of leukæmia was not established until the tissues were microscoped after the post mortem. The extremely rare combination of well-marked polyneuritis with leukæmia makes it desirable to place this case on record. What exactly is the association between the two conditions is perhaps hard to say. The symmetry of the polyneuritis and its resemblance to many forms of toxic polyneuritis preclude the possibility of the neuritis being due to leukæmic infiltration of the nerves producing paralysis by pressure on the nerve fibres. Clearly it was an instance of toxic degeneration of the peripheral nerves, though, as in so many unexplained forms of "toxic polyneuritis," the source and nature of the toxin remain obscure.

A CASE OF

OPHTHALMIA NEONATORUM BEFORE BIRTH.

BY GRACE H. GIFFEN DUNDAS, F.R.C.S. IREL., D.P.H. CANTAB.,
MEDICAL OFFICER TO MATERNITY AND CHILD WELFARE, MIDDLESBROUGH.

MRS. X., a 2-para, was admitted to the Municipal Maternity Home, Middlesbrough, on Oct. 6th, 1920. Labour pains had commenced ten hours previously. The child was born two hours after the mother was admitted. I saw it within five minutes of its birth, when it was found to have ophthalmia neonatorum. The lids were red and œdematous, and pus was discharging from both eyes. The obstetric sister who conducted the delivery reported the case as left occipito-anterior.

The following history was obtained from the mother:—

Her first child was born healthy; a "creamy discharge" commenced before the second pregnancy and continued during the pregnancy; a fortnight before labour pains set in "the waters began to come away, dribbling all the time," so that the patient was "never dry." The case was evidently one of intra-uterine infection made possible by the draining away of the liquor amnii, and presumably the presentation had been a brow converted into an occipital during labour. Labour pains only lasted 12 hours, but the brow must have been in contact with the infected cervix for some time previous to the commencement of the pains. The mother's puerperium was normal, and she left the home at the end of a fortnight to be treated by her own doctor. The child's eyes received the usual treatment, including hourly saline irrigation, and the discharge began to clear up; intracellular diplococci were demonstrated in the pus. Apart from the eyes the child seemed healthy at birth and weighed 6 lb. 12 oz., but on the third day it began to refuse its feeds, and was slightly cyanosed. The cry was feeble; twitching of the facial muscles occurred several times; the power to suck gradually disappeared, whereupon the child was spoon-fed with the mother's milk. The temperature remained subnormal; the child gradually became more feeble and more cyanosed, and died on the tenth day.

Within 18 hours of the death I received permission to do a limited post-mortem. On removing the calvareum extreme intracranial congestion was found. The sinuses were full of fluid blood, and injection of the pia mater was intense. When the brain was removed a purulent exudate was found on the middle of the base of the skull extending from the optic commissure backwards. There was no disintegration of the globe of either eye. The secondary condition was evidently due to infection by blood or lymph stream.

A CASE OF

AMŒBIC DYSENTERY IN A BOY AGED THREE.

BY M. L. YOUNG, M.B., B.CH. CANTAB.,
HOUSE PHYSICIAN, PADDINGTON GREEN CHILDREN'S HOSPITAL, LONDON.

THE age of the patient and the absence of any obvious source of infection are noteworthy features of this case.

Stanley K., aged 3 years, was admitted to the Paddington Green Children's Hospital on Nov. 3rd, 1920, with the following history. During the six weeks prior to admission he had suffered from persistent diarrhœa, sometimes passing as many as seven stools in the 24 hours, and during the latter four weeks streaks of bright red blood and some slime had been noticed by the mother in almost every stool. Throughout this period of six weeks the boy had been bright and happy, and there had been no complaint of pain or discomfort.

When admitted to the hospital he looked a perfectly healthy and unusually high-spirited boy. During the first 24 hours four loose stools were passed containing a large amount of mucus, well streaked with bright red blood, but very little fæcal matter. Laboratory examination of a stool revealed the presence of the *Entamœba histolytica*, much blood and mucus, and a relatively small amount of pus; no dysentery bacilli were found.

It was then decided to proceed with a course of emetine hydrochloride by hypodermic injection: 1/12th gr. was given on the first occasion, and during the following 24 hours one loose stool was passed containing much mucus but less blood. A second injection of 1/6 gr. was then given, and resulted in further improvement. Two more injections of 1/6th gr. at intervals of 24 hours were given, and a semi-solid partially formed stool was examined and found to contain a considerable quantity of mucus, a few red blood cells, and one or two amœbæ. At this time the diarrhœa was entirely checked. After two further injections of 1/6th gr., at intervals of 24 hours, the child was constipated. Examination of a stool revealed no blood, no amœbæ, and no cysts.

The child was kept under observation in the hospital for another fortnight, and then discharged apparently completely cured. At no time during his stay in hospital did the child appear in the least unwell. The father has never been out of England, and no source of infection has been established. As this is the only case of amœbic dysentery which has been detected at the hospital since the war, it would be interesting to learn the experience of other children's hospitals.

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Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

A Further Series of 500 Goitre Operations.

A MEETING of this section of the Royal Society of Medicine was held on Jan. 5th, Mr. W. G. SPENCER, the President, being in the chair, when Mr. JAMES BERRY contributed a paper on a Further Series of 500 Goitre Operations, with special reference to the after-results. Numerous charts were exhibited showing the age and sex incidence, the type of tumour, reasons for operation, the lobes affected, the after-results, &c. Many patients were present and a large number of pathological specimens were on view. On the epidiascope were shown photographs of patients, and photographs and coloured drawings of the tumours which had been removed. Of the 500 cases all but 14 had been traced, and Mr. Berry said that from a study of these 14 cases he had no reason to suppose that the after-results were anything but satisfactory. He commented upon the comparatively large number (7 out of 63 men) of men over 70 years of age in his series; there were no women over 70. A large proportion of his cases were women, and this he attributed to the fact that men sought operation only when the tumour was causing discomfort or when it was so enormously large as to produce inconvenience or such unsightliness as would prevent them from getting employment. Women, on the other hand, often came largely for operation for cosmetic reasons, the goitre being usually more in evidence with them than was the case with men.

With regard to the immediate reason for operation, in more than half of the cases of this series (274) operation was performed for dyspnœa. He was anxious to hear opinions as to the suitability of intra-tracheal ether as a mode of anæsthesia for operations of this kind. He urged the importance of the anæsthetic in goitre operations, and said that he never used chloroform but nearly always very light open ether. The intra-tracheal method always seemed to him to be dangerous for just those operations where he would like to use it—namely, cases of extreme dyspnœa with very narrow trachea. So far he had not ventured to try it with goitre operations of this class. In these patients the trachea was so narrowed from pressure by the tumour that its lumen was a mere chink. The deep anæsthesia and extreme extension of the head, both of which appeared to be necessary for the introduction of the tube in intra-tracheal anæsthesia, he thought most dangerous in goitres with extreme suffocative dyspnœa. The pressure of a tube, however soft, in the trachea in contact with the delicate lining of the already narrow trachea, seemed to him not unlikely to produce a dangerous post-operative swelling. For these reasons he had never employed it. On the other hand, it might safely be employed in the less severe cases, but here there seemed no particular advantage in it.

With regard to malignant growths, he urged very strongly that operation should never be performed unless the thyroid not only moved up and down with the trachea, but was also movable on the trachea. He had come across cases where this point had been overlooked and the results had been most disastrous. The patient would probably live only a few weeks after the operation. He also urged on those who were thinking of taking up the surgery of the thyroid gland the importance of a sound and extensive knowledge of its pathological anatomy. The hundreds of specimens in the London museums gave those who lived in London ample opportunity for study.

Mr. Berry demonstrated his method of removing an intrathoracic tumour. Having cleared the tumour around the base of the neck, he levers it up by means of a spoon about the size of a dessert-spoon bent to an angle and thrust through the thoracic inlet and beneath the tumour. At the same time the tumour is pulled from above by means of forceps. Removal of intrathoracic goitres was rendered possible by the fact that, in growing downwards, they carried their vessels with them. In the case of intrathoracic tumours he usually employed light general anæsthesia. If local anæsthesia only were used the patient was apt to move at the most dangerous time—when the tumour was being pulled out of the thorax. Nevertheless, there were certain cases where local anæsthesia alone might be advisable.

Mr. Berry said that he nearly always drained by means of a short glass tube reaching just below the infra-hyoid muscles. This was practically always removed within 24 hours. Of the two deaths which occurred among patients with simple goitre, one was a lady of 38 who had glycosuria. She died of pneumonia ten days after the operation without gross evidence of sepsis. The other case was that of a pregnant woman of 41, on whom the operation was performed on account of dyspnœa. There were 78 patients who had had operation for true exophthalmic goitre (one being operated upon twice) with three deaths, all of which were due to heart failure within a few hours. Among the cases shown was a professional singer, who consulted Mr. Berry because she was losing her voice and thus her means of livelihood. After operation she had regained her voice completely. She demonstrated to the meeting her ability to sing sustained notes.

Discussion and Reply.

In the course of the discussion Sir STCLAIR THOMSON suggested that the word "stridor" should be used instead of "dyspnœa." Stridor was an objective symptom, but dyspnœa was a subjective symptom. In his opinion there were three conditions of stridor which demanded operation—stridor when at rest, stridor when asleep, and stridor on exertion. Fixation of the vocal cord was also an indication for operation, and recovery sometimes followed successful operative treatment. Paralysis of the vocal cord was rarely due to cutting of the recurrent laryngeal nerve. Voice change often came on some weeks after operation, and was probably due to slight suppuration and fibrosis.

Mr. A. J. WALTON gave his opinion as to the indications for operation. Operation should be performed on well-defined adenomata, but if the adenoma was soft and ill-defined, immediate operation was not necessary and the condition often improved under medical treatment. When a goitre was complicated by pregnancy he would always postpone operation until the pregnancy was over, unless the tumour was enormous. In "parenchymatous" goitre there was not a true increase of parenchyma, but much increase of colloid. He preferred to call this type "colloid goitre." Apart from dyspnœa, no colloid goitre should be operated upon, as the condition usually disappeared. Operation should be *performed in cases of extreme dyspnœa.* He said that cases sometimes occurred in which atrophy of cartilage was so great that tracheotomy had to be performed after thyroidectomy. He considered that operation was *the* treatment for exophthalmic goitre of longer standing than about six months. He had seen any permanent benefit from X rays in this dition. He had had 11 cases in which prolonged X treatment had been carried out elsewhere. Two these had squamous carcinoma, and there was scarring in the other cases. None appeared to h benefited. In relapsing cases X ray treatment appeared to be unsuccessful.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF

LEUKÆMIC POLYNEURITIS.

BY WILFRED HARRIS, M.D. CANTAB., F.R.C.P. LOND.,
SENIOR PHYSICIAN, ST. MARY'S HOSPITAL, LONDON.

SEVERE forms of anæmia, cachexia, and senility have been stated occasionally to produce definite multiple neuritis, though the occurrence of well-marked polyneuritis in lymphatic leukæmia has not, so far as I can ascertain, hitherto been recorded. In hæmophilia neuritis has been ascribed to the pressure of the effused blood on nerve trunks, but the resultant neuritis would be local, asymmetrical, and quite unlike the usual form of toxic polyneuritis. Similarly, unilateral facial paralysis has been described in leukæmia.

The case described below illustrates symmetrical polyneuritis as an early and prominent symptom in a case of lymphatic leukæmia, before the definite diagnosis of the blood condition was possible to establish.

W. J., a youth aged 17, attended the out-patient department early in April, 1920, on account of weakness of the legs, saying that for the past five weeks he had noticed that his legs were becoming stiff, followed two weeks later by unsteadiness on his feet, and numbness and tingling of his finger pads. The spleen was noticed to be definitely enlarged, about three fingers-breadth below the costal margin, and the notch easily felt. A slight degree of anæmia was evident, and he was sent into the hospital, being admitted on April 15th. His gait was weak and unsteady, and there was definite weakness of dorsiflexion of the feet, the electrical reaction of the leg muscles showing partial reaction of degeneration. Tests of sensation showed diminution to touch and pin-prick on the feet and legs up to the knees, though the vibration sensation to a large tuning-fork placed on the tibiæ was normal. The knee-jerks, Achilles, and forearm-jerks were all absent, nor could any plantar reflexes be obtained, though the cremaster reflexes were present. Sphincters normal; eyes and discs normal. The blood examination showed a red cell count of 3,400,000, with hæmoglobin content 60 per cent., the colour index being 0·88. There was a degree of leucopenia, the white cells numbering only 5800, though the differential count showed the polymorphs to be reduced to 23 per cent., the lymphocytes amounting to 68 per cent. Wassermann test negative. Numerous small lymphatic glands soon became palpable in the posterior triangles on both sides of his neck, and one of these was removed for microscopical examination. The healing of this wound was very troublesome, recurrent hæmorrhage occurring for several days, and his temperature, which previously had been normal, now began to show oscillations, with rises to 99·5° to 100·1° F. Gradually he became weaker, and he died on May 29th. Post mortem, the spleen was found considerably enlarged and soft, the liver fatty and weighing 74 oz., while microscopical examination revealed leukæmic infiltration of the liver, nerves, and kidneys, with lymphocytes.

Remarks.

The diagnosis of the case on admission presented a pretty problem. Splenic anæmia with combined sclerosis was negatived by the fact of the absent reflexes, normal vibration sense on the legs, with no involvement of the sphincters, while the clinical picture was indeed characteristic of polyneuritis. The recognition of the type of anæmia was more difficult, the leucopenia being suggestive of splenic anæmia, but the greatly inverted lymphocytic preponderance was against this diagnosis, and was more suggestive of lymphatic leukæmia or lymphadenoma. One of the slightly enlarged glands was therefore excised for microscopical examination, but the pathological report was that it was normal, and again we were at fault. The troublesome hæmorrhage from the small wound in the neck made by the surgeon was more suggestive of leukæmia than of lymphadenoma, but the diagnosis of leukæmia was not established until the tissues were microscoped after the post mortem. The extremely rare combination of well-marked polyneuritis with leukæmia makes it desirable to place this case on record. What exactly is the association between the two conditions is perhaps hard to say. The symmetry of the polyneuritis and its resemblance to many forms of toxic polyneuritis preclude the possibility of the neuritis being due to leukæmic infiltration of the nerves producing paralysis by pressure on the nerve fibres. Clearly it was an instance of toxic degeneration of the peripheral nerves, though, as in so many unexplained forms of "toxic polyneuritis," the source and nature of the toxin remain obscure.

A CASE OF

OPHTHALMIA NEONATORUM BEFORE BIRTH.

BY GRACE H. GIFFEN DUNDAS, F.R.C.S. IREL., D.P.H. CANTAB.,
MEDICAL OFFICER TO MATERNITY AND CHILD WELFARE, MIDDLESBROUGH.

MRS. X., a 2-para, was admitted to the Municipal Maternity Home, Middlesbrough, on Oct. 6th, 1920. Labour pains had commenced ten hours previously. The child was born two hours after the mother was admitted. I saw it within five minutes of its birth, when it was found to have ophthalmia neonatorum. The lids were red and œdematous, and pus was discharging from both eyes. The obstetric sister who conducted the delivery reported the case as left occipito-anterior.

The following history was obtained from the mother:—

Her first child was born healthy; a "creamy discharge" commenced before the second pregnancy and continued during the pregnancy; a fortnight before labour pains set in "the waters began to come away, dribbling all the time," so that the patient was "never dry." The case was evidently one of intra-uterine infection made possible by the draining away of the liquor amnii, and presumably the presentation had been a brow converted into an occipital during labour. Labour pains only lasted 12 hours, but the brow must have been in contact with the infected cervix for some time previous to the commencement of the pains. The mother's puerperium was normal, and she left the home at the end of a fortnight to be treated by her own doctor. The child's eyes received the usual treatment, including hourly saline irrigation, and the discharge began to clear up; intracellular diplococci were demonstrated in the pus. Apart from the eyes the child seemed healthy at birth and weighed 6 lb. 12 oz., but on the third day it began to refuse its feeds, and was slightly cyanosed. The cry was feeble; twitching of the facial muscles occurred several times; the power to suck gradually disappeared, whereupon the child was spoon-fed with the mother's milk. The temperature remained subnormal; the child gradually became more feeble and more cyanosed, and died on the tenth day.

Within 18 hours of the death I received permission to do a limited post-mortem. On removing the calvareum extreme intracranial congestion was found. The sinuses were full of fluid blood, and injection of the pia mater was intense. When the brain was removed a purulent exudate was found on the middle of the base of the skull extending from the optic commissure backwards. There was no disintegration of the globe of either eye. The secondary condition was evidently due to infection by blood or lymph stream.

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Discussion and Reply.

In the course of the discussion Sir STCLAIR THOMSON suggested that the word "stridor" should be used instead of "dyspnœa." Stridor was an objective symptom, but dyspnœa was a subjective symptom. In his opinion there were three conditions of stridor which demanded operation—stridor when at rest, stridor when asleep, and stridor on exertion. Fixation of the vocal cord was also an indication for operation, and recovery sometimes followed successful operative treatment. Paralysis of the vocal cord was rarely due to cutting of the recurrent laryngeal nerve. Voice change often came on some weeks after operation, and was probably due to slight suppuration and fibrosis.

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Mr. BERRY said that he only knew of three cases of paralysis of the vocal cord in this series, though there might be others. He thought that X rays had a definite field of usefulness in the cases of early and mild exophthalmic goitre, but it was wrong to continue treatment too long. He had seen cases of mild exophthalmic goitre which had certainly benefited. In answer to a question by the PRESIDENT, Mr. Berry said that he paid no attention whatever to the parathyroid glands. He must have removed them many times, but none of his patients had at any time developed tetany.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

MEDICAL SECTION.

A Case of Bubonic Plague in Dublin.

AT a meeting of this section on Dec. 10th, 1920, Dr. *H. C.* DRURY and Sir ARTHUR BALL reported a case of Bubonic Plague which had occurred in Dublin. The woman, aged 25, was seen by Sir Arthur Ball, who found a gland in the groin the size of a walnut, with a history of intense local pain of three days' duration. On admission her temperature was 104° F. The skin over the gland was not inflamed. The patient was covered with flea-bites. The excised gland was examined by Dr. V. M. Synge who found that it contained large numbers of plague bacilli. When Dr. Drury first saw the case on the third morning after operation, he was struck with her typhus-like aspect. The temperature was then 102°, pulse-rate 100 but very weak, respirations 22. Except for a deep and exquisitely tender swelling, 2½ by 1 in. immediately above and parallel to Poupart's ligament, the abdomen was normal. There was no vesicle or pustule to indicate the site of inoculation. On the sixth day of the disease the temperature began to fall steadily, rising again on the eleventh day to 102°, and becoming definitely normal on the thirteenth day. The swelling above Poupart's ligament gradually subsided.

Discussion.

Dr. J. W. BIGGER, in describing the precautions taken by the authorities to prevent extension of the disease, said that as no case had occurred in Dublin for 200 years an entirely new problem was presented. Some connexion with the shipping of the port might have been expected, but this case had none, except that she lived near the docks. She had, however, a pet cat which slept in her bed and which was in the habit of disappearing at intervals. This animal might have been infected by rat fleas, but it was not possible to ascertain the fact owing to its prompt destruction by the sanitary authorities. No unusual mortality had been noticed among the rats at the docks, and the specimens examined were negative as regards plague. The usual measures of disinfection were adopted, and the health authorities in England and Scotland were notified. As no further case had been reported after the lapse of nearly two months this would probably prove an isolated case.

Dr. W. F. LAW had never seen a case of plague in his colony (B. Guiana), but it had occurred in Trinidad on two occasions to his own knowledge. He was surprised to hear that direct infection played such a prominent part; he thought the rat flea was generally accepted as the infecting agent.

Sir J. W. MOORE thought the introduction of plague into this country quite a possible event. A relative in the Royal Navy had told him on his return home after visiting Algiers and Lisbon that plague existed in Algiers and in Lisbon, both places in fairly close communication with the British Isles.

Dr. J. SPEARES instanced an outbreak in a family in Malta, two members of which died before the diagnosis was made. The laboratory attendant punctured his finger during an autopsy on one of the cases, developed plague, and died.

Dr. SYNGE said that the gland removed by Sir Arthur Ball was about 1½ inches in length. It was œdematous and hæmorrhagic. Smears from the gland showed very large numbers of Gram-negative bacilli. These bacilli were short and thick, and stained darkly at both poles, the centre of the bacillus remaining unstained. Cultures on blood-agar after 36 hours showed small whitish-grey colonies. These consisted of bacilli similar to those found in the direct smears of the gland. Cultures on salt agar after three days showed marked involution forms. A guinea-pig injected with material from the gland died after seven days. It showed general œdema with areas of congestion. The glands in the groin were much enlarged, œdematous, and hæmorrhagic. The spleen was greatly enlarged and studded with large numbers of white spots. Smears of the glands and spleen, and cultures from the glands, spleen, and heart's blood all showed bacilli similar to those found in the patient's gland. A culture from the patient's blood on the seventh day of her illness was positive, but bacilli were not seen in a direct examination of blood films. The morphological and cultural appearances and the result of animal inoculation proved that the bacillus found in the patient's gland was *B. pestis*, and that the patient was suffering from bubonic plague.

Dr. DRURY, in reply, said that the entire credit of the case was due to Sir Arthur Ball, who recognised the inflamed gland as something unusual, and to Dr. Synge, who had the courage to make what appeared at first a very improbable diagnosis. He did not suggest that direct infection in plague was a common route, but it had been shown to occur. He thought anti plague serum more useful in prophylaxis than in treatment.

Acute Leukæmia.

Dr. F. C. PURSER showed blood films of Acute Leukæmia. The child, a male, aged 3 years 2 months, was admitted as a case of acute purpura with temperature of 103° and pulse 138, and died 36 hours after admission. The blood showed 72,812 leucocytes per cubic centimetre of mononuclear type. Hæmoglobin 50 per cent., red cells 2,800,000.

Dr. SPEARES commented on the bluish appearance of the red cells in the films prepared with Leishman's stain, and said this was generally due either to the films having been kept a long time before staining or to the stain not being sufficiently alkaline. On account of the peculiar staining, he found it difficult to pronounce on the character of the white cells, but he considered that the majority were myelocytes, myeloblasts, or metamyelocytes. He thought the case undoubtedly belonged to the myelogenous variety of leukæmia.

Dr. G. E. NESBITT, having seen the case on its admission to hospital, was much interested in the subsequent details. He was struck by the peculiar pallor, the petechial eruption, and the blood-stained oozing from the mouth, which had been present in some form in every case of acute leukæmia he had seen. He thought a bluish tint in the red cells was a common experience, and he did not find that it prevented recognition of the leucocytes, which often seemed to stain unusually well under these conditions. The patient was an exceptionally fine child, and the sudden occurrence of such a profound and mysterious disorder was quite inexplicable.

Dr. R. J. ROWLETTE also often obtained a grey appearance of the red cells with Leishman's stain, but as regards the white he would judge more from their morphology. He thought the blood did not conform to either established type, but as usual in acute cases the cells more closely resembled the large lymphocytes, and this appearance was characteristic of the condition.

Dr. PURSER, in reply, said that Dr. J. H. Pollock had been responsible for most of the work on the case. He agreed that bleeding from the gums was a characteristic feature of acute forms of leukæmia. The stain used was probably bad, but he thought it likely that the alcohol was to blame.

OBSTETRICAL SECTION.

A MEETING of this section was held on Dec. 10th, Dr. E. HASTINGS TWEEDY, the President, in the chair. Dr. BETHEL SOLOMONS read a paper on

Herpes as a Type of Vicarious Menstruation.

He reported a case which had been referred to him by Dr. Wallace Beatty. The patient was a girl, aged 27, who complained of getting a sore on her left cheek every month, which Dr. Beatty described as catarrhal herpes. Bimanual examination under anæsthetic revealed absence of the essential genitalia. It was thought well to confirm this diagnosis, and the abdomen was opened. It was then seen that a candle-like structure passed from one internal abdominal ring to the other, and that the uterus, tubes, and ovaries were absent. On a further search an ovary of normal size was found attached to a very thin fold of peritoneum, which was in such a position that it might have been intended to represent the broad ligament. The ovary was anterior to this. There was no ovarian or ovario-pelvic ligament, and the ovary was obviously obtaining its blood-supply from the peritoneum in which it was nestling. Dr. Solomons, having discussed the question, considered that the case might be ranked as one of vicarious menstruation.

Dr. SPENCER SHEILL said that he agreed with many present-day authorities that vicarious menstruation does not exist. In cases of pink discharge coming monthly from axillæ neither red cells nor hæmatin were found in it. He looked upon herpes as a very common accompaniment of menstruation, just as headaches, swellings, &c., are. These symptoms increase in menstrual derangements, and are merely manifestations of vaso-motor disturbance due to internal ovarian secretion. When periodical hæmorrhages occur—e.g., epistaxis—local causes have invariably been found which, when treated, removed the so-called vicarious menstruation.

Dr. DAVID MADILL asked if any form of pluriglandular extract had been tried in this case.

Mr. A. K. HENRY said that menstruation involved notable vaso-motor changes, and these were controlled by the autonomic nervous system which, taken as a whole, was concerned with widespread reactions. Dermographism, for example, was described as being specially pronounced in certain individuals during menstruation, and it was possible to account for this, and for catamenial herpetic eruptions, by a diffusion of exaggerated vaso-dilator response; or, as in Dr. Solomons's case, by a complete shunting of vaso-motor effects into extra-genital channels. In dermographism urticaria was simulated, while in herpes the results of vaso-motor activity proceeded to the formation of vesicles.

Dr. SOLOMONS, in reply, said that he was one of those who believed that vicarious menstruation did exist. It was open to question as to whether his case was actually an example of the condition. According to Dorland's definition it certainly was. All drug treatments had been tried, and still the herpes recurred every month. He did not remove the ovary, as he thought the absence of its secretion would be more harmful to the girl than the presence of the herpes.

Dr. R. A. MACLAVERTY gave an account of some observations made during a recent American tour.

ULSTER MEDICAL SOCIETY.

A MEETING of this society was held on Jan. 6th, Dr. T. HOUSTON, the President, in the chair.

Hæmaturia: Surgical Aspect.

Mr. A. FULLERTON introduced a discussion on this subject, basing his remarks upon a series of 600 cases, illustrated by lantern demonstrations. The cystoscope, combined in many cases with radiography, was indispensable for the examination of hæmorrhage from kidney, ureter, bladder, or prostate, and the urethroscope for doubtful cases of ureteral hæmorrhage. Its indiscriminate use should, however, be discouraged, as it might prove a dangerous weapon in certain cases of tubercle, malignant disease, sepsis, and incipient or established uræmia. The ordinary methods of examination should first be employed, the cystoscope being used when required. When blood is intimately mixed with the urine it was probable that the source of the hæmorrhage was the kidney, but the rule was not absolute. All that could be said in such cases was that the blood had been shed in small or moderate quantity, allowing of intimate admixture before clotting had taken place. The presence of frequency of micturition was strongly suggestive of the bladder or prostate as the source of the hæmorrhage, but dependence could not be placed upon this rule. Frequency of bleeding in an old man would at once suggest enlarged prostate, but might depend upon papilloma of the bladder or other conditions. When frequency of urination and hæmaturia were combined with pain in the glans penis, scalding, urgency, and the presence of pus and mucus, cystitis was probable, but malignant growths and calculus must be excluded by direct examination. Pain in one lumbar region was sometimes present when the disease was in the opposite side. Initial hæmorrhage pointed to the prostate or the urethra as the seat of the bleeding. Blood issuing from the urethra independent of micturition came from a source distal to the compressor urethra. Hæmaturia with massive clotting was often of bladder origin, but might depend upon wounds or tumours of the kidney. A long cast of the ureter pointed to its origin. Casts formed in the urethra were thicker and often showed constrictions corresponding to those normally present in the canal. Microscopical examination of the urine might give useful information by showing the presence of renal casts, cells from the bladder, ureter, or kidney, portions of tumour, pus cells, crystals, micro-organism, &c. Mr. Fullerton then analysed his own cases as follows:—

Tubercle of the kidney.—Tuberculosis of the urinary tract was common in the North of Ireland, nearly 10 per cent. of his cases of cystoscopy belonging to this category, of which 75 per cent. had hæmaturia. Tuberculosis of the urinary tract usually began in the kidney and was very rarely, if ever, primary in the bladder. The blood usually came from ulcers in the bladder, severe hæmaturia from the kidney being rare.

Symptomless renal hæmaturia.—He had seen 47 cases of renal hæmaturia in which it was the only symptom, the "renal epistaxis" of Gull. The hæmorrhage had been more or less severe and persistent, with intervals of freedom when the urine was normal. The bleeding was unilateral. The patient was otherwise in fair or good health, and the hæmaturia might persist for years without any serious results. Various hypotheses had been put forward with regard to these cases, but the real cause or causes remained obscure. He had seen 44 cases of renal calculus with hæmaturia. Renal colic, hæmaturia, and vomiting were common, but not invariable, in cases of renal calculus. At the present time he would be reluctant to operate without an X ray examination. The symptoms of renal calculus might be closely simulated by tuberculosis of the kidney, new growths, hydronephrosis, the presence of an accessory renal artery, pyonephrosis, hydatid cysts, and ureteral spasm. The most usual cause of pyelitis was the presence of the *B. coli communis*, but streptococci, staphylococci, the *Diplococcus fæcalis*, diphtheroid bacilli, and other organisms might occur. The amount of blood was usually small. Every case of pyelitis should be X rayed. He had seen a patient treated for months by vaccines when the exciting cause proved to be a stone in the pelvis of the kidney.

Renal tumours and cysts.—This group included 21 cases. In congenital cystic kidney the bleeding might be profuse. As this type of tumour was bilateral it was useless to remove one kidney. In some cases of renal tumour the bleeding was very profuse. It might be painless or associated with symptoms of renal colic. He was not sure that every case of renal hæmaturia of doubtful origin should not be explored so as to avoid missing early cases of malignant disease. The appearance of a tumour in the side showed that the disease was in an advanced stage. Radiography might be useful in these cases. Nephritis belonged to the sphere of the physician. Their chief feature, from the cystoscopic point of view, was the presence of blood on both sides. Other signs or symptoms of renal disease, such as the presence of casts in the urine, cardio-vascular changes, albuminuric retinitis, would be found on examination. Hæmaturia was not a cardinal sign of hydronephrosis, but was often present. The chief signs of hydronephrosis were pain, sometimes developing into renal colic with vomiting, a tumour in the lumbar region varying in size from time to time and sometimes disappearing. In 4 cases of pyonephrosis, in 3 of movable kidney, in 2 of horse-shoe kidney, in 2 of oxaluria and in 1 of Henoch's purpura hæmaturia was present; with accessory renal artery hæmaturia was occasionally present. In 9 cases hæmaturia was due to urethral calculus. There were 113 cases of cystitis in which hæmaturia was present, the hæmorrhage in all cases being moderate and often found only on microscopical examination. When visible it was usually of the terminal type. There were 72 cases of tumours of the bladder, in most of which the bleeding was severe and associated with the formation of massive clots in the bladder. In some cases, however, the hæmorrhage was trifling. In 34 cases of vesical calculus hæmaturia was present, the hæmorrhage varying from a microscopical to a moderate amount. The signs of stone in the bladder were sometimes obscure and the calculus was sometimes only accidentally discovered. The usual causes of ulceration of the bladder were tubercle and malignant disease. Superficial ulceration sometimes occurred in cystitis.

Bilharzia hæmatobia.—Two of these cases were included in the series. Hæmorrhage in cases of enlarged prostate was sometimes severe. Two cases of papillomata of the urethra were included.

The underlying cause suggested the right treatment.

Medical Aspect.

Professor J. A. **Lindsay** dealt with the subject from the medical point of view. Hæmaturia lay on the borderland of medicine and surgery, and while a large proportion of these cases rightly reverted to the surgeon, some belonged to the physician, who was often the first to see the patient. Omitting bladder, prostate, and urethral cases, hæmaturia might be divided into three groups.

In the first group diagnosis was more or less obvious. This group included hæmaturia from poisons—turpentine, cantharides, carbolic acid, &c.—cases connected with the infective fevers, cases depending upon general diseases, such as scurvy, purpura, hæmophilia, leukæmia; cases associated with heart disease. Where hæmaturia was a feature of heart disease inquiry should be made for ulcerative endocarditis. In the second group diagnosis, if not obvious, presented little difficulty. To this group belonged such conditions as granular kidney and oxaluria. A sharp hæmorrhage might be the first symptom to attract attention in granular kidney, but corroborative signs and symptoms would always be found upon examination. In the third group diagnosis often presented serious difficulty. To this group belonged tuberculosis of the kidney, calculus, and new growths. The examination of the urine was often indecisive, but the presence of renal casts, shreds of tumour, crystals, or micro-organisms might give the requisite clue. The cystoscope was of paramount importance, but Mr. Fullerton had given useful cautions as regards its indiscriminate use. Radiography was often of service, especially in the cases of calculus. Tuberculosis of the kidney was common, but was rarely primary. The diagnosis might present great difficulty. Early polyuria might occur, and later the presence of blood and pus and tubercle bacilli in the urine. Albuminuria might be present. The constitutional symptoms might be slight and the general health well maintained. The course of these cases was very variable, and remedies might get the credit which was really due to nature. There was much difference of opinion regarding the value of tuberculin. In certain cases operation was indicated. Calculus was not common in the North of Ireland. The usual type was oxalate of lime. Renal colic and hæmaturia were common, but might both be absent. Cystoscopy might show a unilateral diuresis and diminished specific gravity of the urine on one side. Radiography was of essential service. The early diagnosis of new growths in the kidney was of cardinal importance in view of the value of early operation. A sharp hæmorrhage with little pain, recurring at intervals, was often the earliest sign. The constitutional symptoms might be slight. A dull aching pain in one loin might appear early, but when a definite tumour was recognisable the case was already advanced. These cases should be explored, as their distinction from the cases known as "symptomless renal hæmaturia" might be difficult.

The treatment of hæmaturia depended upon cause. Only rarely was symptomatic treatment justifiable. There was no trustworthy astringent in renal hæmorrhage. Opium and calcium salts might be tried, but their value was doubtful.

In the subsequent discussion the following members took part: Dr. **John Campbell**, Dr. R. W. **Leslie**, Dr. W. **Calwell**, Dr. J. E. **MacIlwaine**, Mr. S. T. **Irwin**, and the **President**.—Mr. **Fullerton** replied.

LIVERPOOL MEDICAL INSTITUTION.

A **meeting** was held on Jan. 6th, with Dr. J. E. **Gemmell**, the President, in the chair, when Dr. C. J. **Macalister** read a short paper on

Left-handedness and Conditions Associated Therewith.

After referring to some of the theories concerning the hereditary explanations of right-handedness and left-handedness and the statistics concerning the proportionate incidence of the latter as compared with the former, he indicated that he did not wish it to be suggested that every case of left-handedness was liable to the functional disorders or ataxias to which he directs attention. By far the greatest number of left-handed people are perfectly normal physiologically, but he particularly referred to certain abnormalities which he felt sure depended upon transposed function. He showed a case of a left-handed girl, aged 13½, who was practically aphasic, whose language was one of signs and gesticulations resembling those natural ones used by the deaf. She had a fair amount of intelligence and a wonderful memory, her backwardness depending, to a certain extent, upon simple lack of education. She was being taught to sign and to read and write by the methods adopted among deaf-mutes.

He laid great stress upon ancestral and collateral history as bearing upon the question, and instanced cases of left-handed stammerers having left-handed relations and of right-handed stammerers also having a left-handed ancestral history. He suggested that in these cases of marked incoördinations occurring in the left-handed the right speech centre might be unbalanced by some unusual development of function of the left one, thus giving rise to a confusion of coördination. The same principle might apply to cases of chronic hemichorea. Having noted that although transposition of the viscera might be thought to be associated with left-handedness, this is not constantly the case, there being a good many records of this condition where there has been right-handedness.

He next emphasised the fact that a certain number of left-handed people have left speech centres, proved by those cases of cerebral hæmorrhage affecting the right speech motor area where there was no aphasia. He quoted cases described by Dr. Foster Kennedy in the *American Journal of Medical Sciences*, where injuries involving the right Brocal areas in left-handed people had not been associated with defects of speech, and another series of cases of right-handed people where involvements of the right Brocal areas had been associated with aphasia. The lesson derived from Dr. Kennedy's paper was that where there is a known hereditary or collateral history of left-handedness the speech centres appear to have been transposed, whereas in a number of cases of which no such history had been discovered transposition had not taken place. Dr. Macalister expressed his opinion that there might be a Mendelian explanation of this, and that the occasional incomplete cases as well as the complete ones might be the result of hybrid marriages.

Dr. **Dingwall Fordyce** read a paper on

Thyroid Function in Sick Children and its Influence on Treatment.

He stated that thyroid enlargement is a common phenomenon in the locality of Liverpool. He considered that there is reason for connecting gastrointestinal disorder with this cause and for expecting general lymphatic hyperplasia as a concomitant. This general condition is associated with symptoms markedly anaphylactic in nature. The clinical examples which he described varied markedly in intensity of symptoms and according to age.

ASSURANCE MEDICAL SOCIETY.

At a meeting of the society held on Nov. 3rd, 1920, the President, Dr. T. D. **Lister**, being in the chair, Dr. R. **Hingston Fox** opened a discussion on

Albuminuria in Relation to Life Assurance, especially in Adolescents,

by reading a paper which appears in full amongst our original articles this week.

The **President** said that Dr. Fox had thrown out a challenge to the physiologist and pathologist, to the physician and to the Assurance Medical Society, which he hoped they would take up.

Dr. **Ogier Ward** added a few facts of his own observation. In his last 1400 cases he found albumin present in 68, a percentage of 4·9. Of the 1010 cases over 30 albumin was present in 35, a percentage of 3·4. Of the 390 cases under 30 years of age albumin was present in 33, a percentage of 8·5. Of these 33 under 30 years of age 19 had nothing else against them, even in family history, beyond build, nerves, or bad teeth. He was now convinced that those 19 cases might one and all have been accepted at ordinary rates. That was tantamount to saying that where neither family history nor physical examination shows any of the other defects which called for extra rating the mere presence of albumin in an applicant well under 30 might be passed over as of no account.

Dr. HUGH MACLEAN said that the question of albuminuria had always been a difficult one. One came across numbers of cases undoubtedly in which there was no reason whatever to believe that the condition had any detrimental effect on the kidney, or, in other words, that the kidney was more liable to subsequent nephritis than was a normal kidney. It would be a great help if any tests could be carried out giving even a hint as to the causation of the condition. The relationship of the albumin to the globulin had been suggested as of value; also the presence of globulin, as indicated by the addition of 30 per cent. solution of acetic acid to the urine. Should a precipitate form, the presence was assumed of something which was called globulin, and it had been stated that this result with acetic acid was much more frequent in cases of physiological albuminuria than in albuminuria caused by nephritis. He had examined 60–70,000 cases of albuminuria in soldiers, testing all the urines of the first 10,000 that had a fair amount of protein with acetic acid; in only two or three cases was there any precipitate at all, and there were obviously many cases of undoubted functional albuminuria in which there was no acetic acid reaction. He also carried out the diastatic reaction in nearly all the albuminous urines from the first 10,000 cases, and the results were normal. To determine the relation of albumin and globulin was not within practical politics for an ordinary examination. There seemed to be some association between the presence of calcium oxalate crystals and albuminuria, and large numbers of such crystals might suggest that the condition was not pathological in the ordinary sense of the word. The significance of the cast was a difficult question. The presence of a few epithelial casts, he thought, justified the assumption of a definite kidney lesion which might or might not go on to nephritis. In a case in which it was difficult to say from the symptoms what the albuminuria amounted to, the urea concentration test might afford a good deal of help. It was exceedingly simple; the patient was given 15 g. of urea and asked to empty his bladder beforehand and again one hour afterwards, the amount of urea in the urine being estimated.

Dr. R. L. MACKENZIE WALLIS said that in examining a large number of schoolboys among whom there had been almost an epidemic of albuminuria, and also a number of medical students over a period of several years, the albuminuria had proved to be due mainly to euglobulin, the acetic acid test revealing its presence. He applied the test in the following order:—

> First test for the presence of protein; 3 to 6 drops of salicyl sulphonic acid are added to about 10 c.cm. of urine, and the appearance of a white precipitate noted. The presence of the particular type of globulin that occurs in adolescent albuminuria was determined by adding 3 to 6 drops of diluted acetic acid to 10 c.cm. of urine, when a white precipitate or opalescence appeared at once.

In a large number of cases a gelatinous precipitate appeared after a time, due to mucin and not euglobulin, and especially common in urine of high specific gravity and strongly acid reaction. To label cases as non-nephritic albuminuria required more thorough examination of the urine than was possible in insurance practice. The ratio of albumin to globulin in ordinary nephritis was generally 6 : 1, but in functional and adolescent albuminuria only 2 : 1. In leaky kidneys of the non-progressive type of albuminuria in older people the ratio was generally reversed. Many cases of adolescent albuminuria cleared up, but with intercurrent illness the albuminuria readily returned. A man,[1] aged 29, who had albuminuria with large quantities of euglobulin for 13 years, remaining in perfect health with no obvious signs of renal trouble, died of acute uræmia a month after the urine was examined. During that month albuminuric retinitis developed and all the signs of small white kidney. He was beginning to think that any form of albuminuria was pathologically dangerous. The whole question of why globulin appeared in the urine in certain conditions required further elucidation.

Sir DOUGLAS POWELL quoted a statement made with regard to the soldiers in France. Some albuminuria having been found in 5 per cent. of 50,000 men, yet of all the cases in which organic disease of the kidneys arose scarcely any came from the number of those in whom temporary albuminuria had been noted. His disposition would be to regard these functional cases of albuminuria as negligible and pass them as ordinary lives if perfectly sound in every other respect.

The PRESIDENT emphasised the difficulty in diagnosing the adolescent type from other types of albuminuria in adolescents. He asked Dr. Wallis and Dr. Maclean whether they had observed under the microscope the centrifuged deposit in their cases of albuminuria, and whether they made blood pressure examinations.

Dr. MACLEAN said that out of the total of cases he had examined 5–6 per cent. had albuminuria, 2 per cent. in marked degree albuminuria, and something over 1 per cent. had fair numbers of casts. There was no opportunity of doing blood pressure experiments in France, but at home he had not found that the administration of urea exerted any effect on the pressure. Among certain cases of non-nephritic type of albuminuria the blood pressure was distinctly low and oxalates were found in the centrifuged deposits.

Dr. MACKENZIE WALLIS said he had noticed the constancy of oxalates in these cases of adolescent albuminuria. In a centrifugalised deposit he did not pay much attention to the presence of hyaline casts. With regard to blood pressure, that had been recorded in nearly all his cases, and was generally normal. The patient whom he had described had a normal blood pressure for 13 years; then he had an illness and developed albuminuria, and up went the blood pressure at once to over 200 mm. Hg.

Dr. LANGDON BROWN thought that a patient under 30 without other signs might be regarded as a normal risk. The globulin test was important, and had the advantage of being easily applied. Some people passed mucin and not albumin or globulin at all. He agreed with regard to the liability of a person who had had functional albuminuria to a return under strain of illness. The experience of school medical officers was of value. Dr. Clement Dukes had taken every opportunity he could to test old Rugbeians who had had "functional" albuminuria, and only in one of those cases had albuminuria persisted in later life. Functional albuminuria below 30 years of age was very important from the life assurance point of view, because of the number of cases; leaky kidneys were so rare as to be unimportant.

The Discussion Resumed.

When the discussion was resumed on Jan. 5th Dr. F. PARKES WEBER divided the albuminuria of youth and early adult life from the point of view of prognosis and examinations for life assurance and appointments into four main classes:—

1. Albuminuria connected with definite nephritis, chronic heart disease, acute febrile diseases, amyloid disease, and other conditions, such as are met with in hospital wards and ordinary medical practice. In these cases the amount of extra on the life should depend on a variety of circumstances—for instance, the presence or absence of tube-casts, the amount of the leakage of albumin, the results of various tests as to efficient functional activity of the kidneys, the length of time that the albuminuria had lasted, the blood pressure, and the condition of the candidate in other respects.

2. Transient albuminuria due to various causes. In

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[1] This case was recorded by Dr. Ivor J. Davies in THE LANCET of Dec. 18th, 1920, p. 1249.

such cases several examinations were often required before the life could be regarded as a first-class one.

3. Postural or orthostatic albuminuria. In uncomplicated cases of orthostatic albuminuria he was convinced that the life might be regarded as a normal one from the life assurance point of view. No young person should be prevented from living an ordinary active life merely because of the presence of orthostatic albuminuria. In regard to prognosis help might be obtained by estimating the relative proportions of serum-albumin and globulin in the urine, but it was of at least as great importance to ascertain whether albumin was altogether absent from the urine passed immediately on getting out of bed in the morning.

4. The presence of albumin (frequently only a trace) accompanying minute quantities of pus, blood, or semen in the urine. The slight opacity in the urine in these cases might easily be overlooked, or wrongly neglected *as of no importance, in examinations for life assurance.*

Sir **JAMES GALLOWAY**, Dr. **H. BATTY SHAW**, Dr. **H. M. ABEL**, Dr. **H. W. COLLIER**, Dr. **F. G. CHANDLER**, and Dr. **A. WITHERS GREEN** also spoke.

Dr. **HINGSTON FOX**, in replying, suggested that the interesting case of a rare form of albuminuria described by Dr. Wallis and others did not fall into the category under discussion, for there was continuous high arterial tension, albumin was present in large quantity, and persisted during bodily rest. Evidently the tests for the efficiency of kidney function were not yet in a position to be fully relied on; he hoped more work would be done with the urea-concentration test in albuminuric cases. The discussion had led to a fuller recognition of a type of albuminuria, occurring commonly in adolescence, harmless in its nature and independent of any disease of the kidney. Dr. Fox concluded by citing a table (prepared for him by the kind offices of Mr. F. J. Cameron, of the Friends' Provident and Century Life Office) showing the mortality of assurers in whose urine albumin was found once, at entrance or within two years previously, but no casts were reported present. The lives were very carefully selected and few, if any, taken "until there was reason to believe that the presence of albumin was temporary and unimportant." The policies were issued in the 24 years 1885 to 1908, and the period of observation varied much; in about two-thirds of the whole number of lives it was five years or less.[2]

Ages at entry.	Actual deaths.	Expected deaths.	Ratio of mortality.
15-29	70	65·16	107%
30-39	58	43·75	133%
40-49	37	33·47	110%
50-59	29	27·20	107%
60-end	8	5·48	146%
All ages	202	175·06	115%

It would be seen that for those entering in adolescence, before the age of 30 years, the mortality hardly exceeded the normal for healthy lives, while there was a considerable rise for those entering in the next decade.

SOCIETY FOR THE STUDY OF INEBRIETY.

AT a meeting of this society, held in the rooms of the Medical Society of London on Jan. 11th, Sir **ALFRED PEARCE GOULD** presiding. Dr. **H. M. VERNON** opened a discussion on

Alcohol and Industrial Efficiency.

At the present time, he said, public opinion would not sanction any direct limitation in the amount of alcohol consumed, but temperance could be promoted by the physiological regulation of the conditions of drinking. It was easier to investigate the effects of alcohol on the efficiency of manual workers than on that of the non-manual, but the conclusions arrived at concerning the importance of regulation in the former class apply equally to all workers. The effects of alcohol on typewriting were systematically studied, as this was a class of manual work in which accuracy and speed could be easily measured. The subjects of experiment typed a memorised passage at frequent intervals before and after drinking the alcoholic liquid, and it was found that in each of the seven subjects the adverse effect of the alcohol was about twice as great when it was taken 3¼ hours after food, or on an empty stomach, as when it was taken with food. In a fresh series of experiments Dr. Vernon drank whisky containing 45 c.cm. (1½ oz.) of alcohol at various periods after a substantial meal had been eaten. He found that whilst the effect produced was comparatively slight up to two hours after food, it then underwent a sudden jump, and 3½ hours after food the effect was increased to more than double. With more prolonged fasting (up to 20 hours) the effect became greater still. When vigorous exercise was taken at the end of a 13 hours' fast the effect of the alcohol was greatest of all, and for a few minutes induced a condition not far removed from intoxication. Conditions similar to the experimental ones described were sometimes observed in industrial workers before the war, when they worked hard for two or three hours in the early morning on an empty stomach and in the breakfast interval visited the public-houses (then open at 5 to 8 A.M.) before eating food. On comparing the toxicity of beers containing 5, 4, and 3 per cent. of alcohol (by volume) it was found that dilution had a much more than proportionate effect in reducing toxicity. For instance, 90 c.cm. of alcohol taken in the form of 3 per cent. beer produced only as much effect as 46 c.cm. of alcohol in the form of 5 per cent. beer. In fact, the speaker concluded that it was practically impossible to get intoxicated on beer containing 3 per cent. of alcohol. This conclusion was borne out by what is observed in Denmark, where the Government allow beer containing 2·6 per cent. (by volume) of alcohol to be produced and sold free of all taxation, though the stronger beers are taxed, and are therefore more expensive. In consequence of this policy intoxication has almost ceased, and it is suggested that in this country a scheme of graduated taxation of beers of different gravity—such as was brought forward (without success) by the Chancellor of the Exchequer in 1915—would greatly increase sobriety. In confirmation of previous results he found that the toxic effects of whisky reached their maximum at 10 per cent. alcoholic strength (by volume), and at this concentration they were just as great as that of neat whisky 15° to 50° under proof. Hence, spirit-drinkers, by diluting their spirits moderately, would reduce the injurious action on the gastric mucous membrane without diminishing the alcohol sensation they desire. The typewriting method showed that alcohol disappeared from the human body at about the same slow rate as Mellanby found it to disappear in the dog. In Dr. Vernon's own case it was got rid of at the rate of about 13 c.cm. per hour, or nearly half an ounce. In that a pint of fairly heavy beer contained an ounce of alcohol, it followed that if a man drank a pint every two hours (as was observed during the daytime in some industrial drinkers before the war) his blood was never free from alcohol. The policy of the Central Control Board in shutting the public-houses for part of the day was valuable in checking this continuous drinking.

Discussion.

An interesting discussion followed. Dr. **M. GREENWOOD** spoke of the danger of the return to pre-war inebriety, when drink made industrial conditions less intolerable for the working classes. We must aim at a more ideal life for the worker, at the same time continuing the limitation in the hours during which public-houses were open. Miss **SQUIRE** lamented the failure to produce a popular drink which could be consumed with impunity. Good food had made an enormous difference to the physical and moral wellbeing of the munition workers during the war. The canteen had been a distinct achievement in the path of progress. Mr. **NICHOLSON** said that prohibition, whatever its merits, was looked upon as a class measure by the labouring man, and Mr. **THEODORE NEILD** added that in America an attempt was being made to eliminate the saloon without stopping the sale of liquor. The importance of a low-gravity beer was brought out in other contributions to the discussion.

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[2] Of the 202 cases, in 152 no examination was made for casts. On account of the smallness of the numbers the two groups had been combined. The effect of medical selection during the earlier years after entry had been duly allowed for in the "expected deaths."

leader of extraordinary intelligence—e.g., Mr. Seaton Thompson's *Lobo*. If we allow Mr. Read's Lycopitheeus to have arrived at the stage of developing imagination, we may equally allow the leader of the pack to have been endowed with extra intelligence and to have assumed or to have been credited with powers, belief in which may have been due to "illusory imaginations" in the subordinate members of the pack, but about which he himself had no illusions. That is to say, that the first priest or the first wizard may only have been a primitive man gifted with more intellect than his fellows and with "imagination" in the right sense of the word—i.e., the sense in which Tyndall wrote of the scientific use of the imagination, to which Mr. Read refers on p. 74. We see that on p. 337 Mr. Read allows that rain-makers learn to "operate for rain only when rain may reasonably be expected," and we do not see why the primitive wise man should apparently be credited with deception. It is interesting to note that an instance of rain or rather thunder making occurs among so civilised a people as the French so late as the seventeenth century, certainly a good example of illusory imagination. In Pepys's Diary for August 21st, 1665–6, there is the following delightful story:—

> "Mr. Batelier told me how, being with some others at Bourdeaux, making a bargain with another man at a taverne for some clarets, they did hire a fellow to thunder (which he had the art of doing upon a deale board), and to rain and hail, that is make the noise of, so as to give them a pretence of undervaluing their merchants' wines, by saying this thunder would spoil and turn them. Which was so reasonable to the merchant, that he did abate two pistolls per ton for the wine in belief of that."

If the Bourdeaux fellow with the board had lived in primitive times he would have been a most valuable acquisition to his pack, and we hope that he escaped the fate of the other well-known thunder-maker, Salmoneus, who came to a bad end as recorded in the Æneid.

The second and by far the larger portion of Mr. Read's book deals with magic, animism, and totemism. He ends on a sad note. Animistic illusions have in the past been the influence owing to which

> "nations have hitherto submitted to and enforced law and order ..... it is now everywhere noticeable in the more civilised countries that these illusions are being dissipated, and it is very difficult to judge how people will behave when they are gone. ...... Whilst some beliefs concerning supernatural things are being lost, others are being resuscitated: but the lapsing beliefs are noble and venerable, and have exerted great public power and authority; whilst those now eagerly propagated are the raw infatuation of quacks, on a level with the animism of an Australian medicine-man—and indeed much inferior to his, as having no moral influence or authority. What must come of this is so dubious as to discourage one about the future of the world." (Pp. 342–343.)

We fear that Mr. Read's doubts have only too much justification. Emerson was right when he said, "When half gods go, the gods arrive," but nowadays it looks as though the converse were true, and that we should say, "When the gods go half gods arrive." Still, it must be allowed that the world is as a whole better than it used to be, and it is a fact of history that when the world has seemed at its worst a Saviour, divine or human, has come to the rescue, from the time of the first Christmas down through the ages by the voice and example of Francis, Dominic, Ignatius, Wesley, and the countless thousands who have spent themselves to make men better.

Midwifery for Nurses.

A Practical Text-book. Seventh edition, revised and enlarged. By ROBERT JARDINE, M.D. Edin., F.R.S., Professor of Midwifery, St. Mungo's College, Glasgow. London: Henry Kimpton. 1920. With 60 illustrations and 3 plates. Pp. 296. 7*s.* 6*d.*

VERY little commendation is required for a book which has reached its seventh edition. This in itself is evidence of its usefulness and popularity. The book has undergone an extensive revision and has been enlarged. It is a good and sound guide for the midwifery nurse, and bears the imprint of the author's large clinical experience. We notice with regret that an old inaccurate figure from Playfair is reproduced, and in a book of this kind plates representing fœtal monsters seem a little out of place.

Operative Gynæcology.

Second edition. By HARRY STURGEON CROSSEN, M.D., F.A.C.S. London: Henry Kimpton. 1920. With 834 illustrations. Pp. 717. 63*s.* net.

THIS very interesting and instructive book includes a systematic presentation of almost all the operative procedures available for the treatment of any gynæcological condition. As the author rightly states in his preface, the best results both for the patient and the operator are likely to be obtained when the surgeon carefully selects that operation which is the most suitable in any given case. The aim of this work is to render such a selection on the part of the operator easier and more certain. For this reason a very wide range of operations is included, and we find no less than 109 pages devoted to a consideration of the different methods of dealing with retro-displacements and some 75 pages to the operations for prolapse and inversion of the uterus. The operative procedures are clearly described and well illustrated. There is a very full account of the various operations for dealing with fibroid tumour of the uterus. We notice with surprise, however, the recommendation to clamp the pedicle of a fibroid polypus, an entirely unnecessary procedure. Not only is the operation of extended abdominal hysterectomy well described, but there is also a very good account of the method of treating cancer of the uterus by heat as carried out by Percy. We are surprised to see so little allusion to the treatment of this condition by radium, nor can we find any mention of radium in the index. The author is in favour of removing ovarian cysts without preliminary tapping, and in this no doubt he is right.

A very interesting section is devoted to foreign bodies left in the abdomen, and the medico-legal aspect of such cases is considered. The author has done a good service in substituting a nomenclature of definite anatomical terms for many operations hitherto known mainly by the name of their originator. In this second edition much new matter has been added and some 60 new illustrations. The book reflects much credit on its author, and will be of great assistance to the gynæcological surgeon.

Obstetrics, Normal and Operative.

Third edition. By GEORGE PEASLEE SHEARS, B.S., M.D., Professor of Obstetrics and Attending Obstetrician at the New York Polyclinic Medical School and Hospital. Revised by P. F. WILLIAMS, Ph.B., M.D., Instructor in Obstetrics, School of Medicine, University of Pennsylvania. London and Philadelphia: J. B. Lippincott Company. With 423 illustrations. 1920. Pp. 745. 35*s.*

IN the third edition of this book a considerable amount of revision has been carried out, although in essential details it remains unaltered. The volume contains a good account of the important facts of obstetrics and is interesting as an example of the teaching in an important American school. In the diagnosis of pregnancy considerable importance is laid on abdominal palpation, and not only the recognition of the anterior shoulder but its exact location in regard to the middle line and the symphysis pubis is shown to be of much value. The section on anæsthesia in labour has been added to and there is a good account of the method of employing nitrous oxide oxygen analgesia in labour. The authors are not on the whole in favour of twilight sleep and do not practise this method to any extent. The section on backward displacements of the uterus complicating pregnancy is disappointing and the authors are too ready to recommend unnecessary and early interference. In the chapter dealing with extra-uterine pregnancy nothing is said of Taylor's work on advanced extra-uterine gestation and of the important distinctions demonstrated by him in the anatomical relations of these cases. The authors are wrong in imagining that the great advantage of placing the patient upon her side in difficult cases of bringing down a leg in impacted breech presentations is not generally recognised by obstetricians; the procedure is, as a matter of fact, commonly taught in this country. Considerable additions have been made to the sections dealing with Cæsarean section and the toxæmias of pregnancy. The book is a good one of its kind and clearly written.

THE SCHOOL OF SALERNUM

And the Regimen Sanitatis Salernitanum, with the English version of Sir John Harington, 1607. Together with a History of the School of Salernum. By FRANCIS PACKARD, M.D., and a note on the Prehistory of the Regimen Sanitatis. By FIELDING H. GARRISON, M.D. New York: Paul B. Hoeber. 1920. Pp. 214. $3.75.

THE School of Salerno and the Regimen Sanitatis are subjects of perennial interest, not merely from their intrinsic qualities but also because the origin of both is a matter of hopeless obscurity. In this edition of the Regimen, which includes a Latin text as well as Harington's translation, Dr. Packard and Dr. Garrison have written essays which gather up all that is known about the origin of both the School and the Regimen, and it does not amount to much. What evidence there is, is chiefly of a negative order—for example, there is not a particle of historical foundation for the theory that the rise of the School can be connected with the Benedictine House of Monte Casino.

The School of Salerno is now but a name, but the Regimen remains as a typical example of a mediæval popular treatise on medicine and the care of the health, one, moreover, which contains much sound sense; Harington's translation is well worth reading though not very literal. The book is well printed and the text is illuminated here and there by illustrations, some of them reproductions of German woodcuts of the sixteenth century, in all of which the execution is coarse, and in some of them the subjects as well.

PHYSICAL CHEMISTRY IN MEDICINE.

Die Physikalische Chemie in der Inneren Medizin: Die Anwendung und die Bedeutung der physicochemischen Forschung in der Pathologie und Therapie. Für Studierende und Aerzte. Von Prof. Dr. H. SCHADE, Vorsteher der physicochemischen Abteilung der medizinischen Universitäts-Klinik in Kiel. Dresden und Leipzig: Verlag von Theodor Steinkopff. 1921. Pp. vii. + 569. £1 1*s.*

PHYSICAL chemistry is now established as a distinct and definite part of physiology, medicine, and pathology, but it is scarcely realised that its ramifications extend over almost the whole range of medicine. The appearance of Professor Schade's book is therefore very welcome, for it summarises and explains various medical and pathological phenomena by physicochemical reactions. In the past we have relied largely upon histological evidence for an explanation. This evidence is not a real explanation; it merely indicates that something abnormal has occurred and a theoretical discussion on a biological basis has followed. No single physico-chemical process gives us sufficient information, but by a coördination of several processes we advance nearer to a better conception of certain pathological conditions.

As an illustration of the complexity of the processes occurring in disease, we may merely instance the author's interpretation of the phenomena of inflammation. The injury, caused by an external agent, first produces a change in the colloidal state of the cell protoplasm, such as an alteration of surface tension. The purely mechanical method of flow of light and heavy particles in a moving liquid, the lighter particles being at the edges, accounts for the movement of the leucocytes along the walls of the blood-vessels, so that they come into contact with the damaged tissue. The alteration in surface tension of the damaged cells causes the arrest of the leucocytes. The wandering of the leucocytes into the injured tissue probably corresponds to the streaming of droplets in a fluid in a direction opposite to the flow of substances lowering surface tension. At the same time the permeability of the cell wall is changed; its porosity is increased so that albumins and globulins can pass through to form the exudate. All three processes effect a conversion of the particular colloidal state to the *sol* form. Substances, such as the autolytic enzymes, are produced which hydrolyse the complex molecules of albumins, fats, &c., to smaller ones. The cell contents thus become hypertonic and liquid flows into the damaged area causing swelling. A calculation indicates that the osmotic pressure may reach 8 to 11 atmospheres. The high pressure affects the blood circulation to this area producing a diminished flow; the lymph circulation is also affected. It is the osmotic pressure change which causes the pain, and the actual pressure sets up the throbbing. The local heat appears to be the result of the intensive chemical changes set up, the heat not being carried away fast enough by the diminished blood flow. The various processes occurring may be summed up as being purely chemical, purely physical, and physico-chemical—namely, osmotic, ionic, colloidal, fermentative.

Throughout the book the author gives an equally clear description of other pathological conditions and we can recommend his book as an outline of this vast and important subject. The reader is helped to understand the complexities by a short account, in the first section of the book, of those parts of physical chemistry of importance in medicine, the last section being devoted to the practical description of these methods which would require some amplification for a novice, but which are most excellent for any worker with experience of physical chemistry.

PYORRHŒA ALVEOLARIS IN ITS CLINICAL ASPECT.

By D. A. CROW, M.B., Ch.B. Edin., Assistant Surgeon to the Sussex Throat and Ear Hospital, Brighton. With Foreword by Sir FRANK COLYER, F.R.C.S., L.D.S. Eng., Dental Surgeon, Charing Cross Hospital, and Royal Dental Hospital, London. London: Baillière, Tindall, and Cox. 1921. Pp. 111. 6*s.*

THE object of this little book, as stated in its introduction, is "to emphasise once again the overwhelming importance of pyorrhœa alveolaris in the causation of many of the diseases and minor complaints met with in medical practice." The chapters deal with clinical signs, X ray appearances, symptoms local and general, the neglect of pyorrhœa in classical medical literature, its treatment and prognosis. There follow a summary and analysis of 100 cases and an explanatory pamphlet for patients, which is by far the weakest section of an otherwise well-planned and pleasantly written treatise. Unfortunately the ætiology of the disease is still too obscure and debatable for any attempt to educate the public in prevention to be convincing. They are told that mouth-breathing should be avoided, and that (p. 110) "it is possible, but not certain, that a modification of diet would have a preventive influence in pyorrhœa." In an admirable foreword Sir Frank Colyer points out that the disease is neither of recent origin nor restricted in locality, and gives certain definite rules for maintaining the hygiene of the mouth in the young. Sir Frank Colyer agrees with Dr. Crow that the disease having once become established, neither physic nor vaccine-therapy is of use, and that extraction of every diseased tooth is the sole means by which a patient can be freed from the source of sepsis.

COMPENDIUM DER AUGENHEILKUNDE.

Für Studierende und Aertze. Eleventh and twelfth revised editions. By Professor Dr. PAUL SILEX. Berlin: S. Karger. 1920. With 95 figures and 2 coloured plates. Pp. 301. M.20.

THIS appears to be by no means a mere boil down of larger works, but a reliable introduction to the subject written by a man who has had considerable experience of teaching. The book, moreover, is small enough to be conveniently carried in the pocket. As a commendable example of simplicity we may cite the advice to use clean water as an eyewash in hyperæmia of the conjunctiva, and to permit smoking out of doors provided the pipe is sufficiently long. The ordinary rules for diagnosis and treatment are clearly expressed. The part devoted to operative surgery is somewhat meagre, the description of the operation for cataract, for example, being without any figure that would make it intelligible to the novice. The operative treatment of glaucoma, too, is barely indicated. On the other hand, two pages are devoted to a subject which one does not expect to find discussed in an elementary treatise of this kind—namely, the therapeutic employment of light and ultra-violet rays. A mercury vapour lamp (or an arc light) is used from which all the rays are screened off, save only those which it is desired to employ for the therapeutical purpose. Ultra-violet rays of wave length 300 μμ to 360 μμ are all absorbed by the cornea, and, if injudiciously applied, may cause an alarming reaction. Periodical exposures lasting from 5 to 20 minutes, however, are recommended as a treatment for corneal opacities.

We notice, what is not very usual in German text-books, the recognition of some English authorities, though in the pages devoted to colour blindness (which are so far up to date that the Holmgren wool test is stated to be fallacious) no reference is made to the work of Edridge-Green. In the section on Workmen's Compensation formulæ and tables are given to aid in the assessment of the loss of earning power due to injuries resulting in loss of vision of various degrees, in either one or both eyes. The Germans have a longer experience of workmen's compensation laws than we have, and those interested in this subject will find it useful to consult these tables.

ANNALS OF MEDICAL HISTORY, 1919. Vol. II., No. 4. New York: Paul B. Hoeber. Pp. 407. $2.50.

"Annals of Medical History" is always an interesting publication, and the number before us is particularly so. The first article by Dr. F. H. Garrison and Dr. E. C. Streeter deals with Sculpture and Painting as Modes of Anatomical Illustration, and traces the progress of anatomy in art from the earliest days of the Aurignacian period down to modern times. The authors' thesis is "that genuine anatomic illustration arose not in didactic hand drawings made by physicians, but without didactic intention, in the sculptures and figure paintings of the great Florentines." Dr. John E. Lane writes about Daniel Turner (1667–1741), the recipient of the first degree of Doctor of Medicine conferred in the English colonies of North America by Yale College in 1723. Turner, though a Licentiate of the Royal College of Physicians, was anxious for a medical degree, and apparently did not hold the Scottish degrees in high estimation. So he wrote a Latin letter to the authorities of Yale University offering them a gift of books, appended to which was a postscript in the regular schoolboy style of "PS.—Please send me a cake," and it ran thus:—

> "Si Dominationes vestrae me dignum judicatis Doctoratus Gradus Academiae Yalensis, et diploma mihi transmitti curatis, accipiam non tantum ut signum Gratitudinis Vestrae," &c.

Turner is chiefly remembered to-day by Turner's cerate, a calamine ointment.

Dr. John Ruhrah contributes an article upon Thomas Phayer or Phaer (1510?–1560), author of the first English book on the diseases of children. Dr. Ruhrah has collected a vast amount of information about Phayer, but unfortunately his article is marred by several careless statements and some gross misprints. To give an instance: Phayer composed a treatise on the plague, some extracts from which, says Dr. Ruhrah, were "used by Henry Holland in an appendix to 'Spiritual Preservatives against the Pestilence.' ...... This Henry Holland was a son of a physician, Philemon Holland, and was as assiduous a translator as ever existed, who also did the 'Regimen Sanitatis Salerni' into English." This is a muddled statement. Philemon Holland was the assiduous translator, not his son Henry, and though Henry, the son of Philemon, did translate the Regimen, the Henry Holland who wrote "Spiritual Preservatives" was another Henry Holland, a divine who wrote the book in 1593, when Henry, son of Philemon, was only 10 years old. In quoting Chaloner's epitaph on Phayer, in which reference is made to an accident sustained by the latter, Chaloner's lines—

> "Nam domini culter, quis vitet fata? cruorem
> Hauserat ......"

are printed—

> "Nam domini culter, quis vitet fata? Cruorum
> Housorat ......"

which makes nonsense. Outside of his professional writings Phayer won great praise by his translation into English of the Æneid, or rather of the first nine books and part of the tenth, the remainder being translated by Thomas Twine. It is curious that the last lines he translated on the day before his death were (Bk. X., 467–469):—

> "Stat sua cuique dies, breve et inreparabile tempus
> Omnibus est vitae; sed famam extendere factis,
> Hoc virtutis opus."

LES ANTIGÈNES ET LES ANTICORPS. By M. NICOLLE. Paris: Masson et Cie. 1920. Pp. 115. Fr.4.50.

THIS small monograph comprises the Harben lectures for 1920, delivered by Professor Nicolle before the Royal Institute of Public Health in London. The lectures, three in all, have also been published, more or less contemporaneously, in English, in the *Journal of State Medicine* for October, November, and December. The first lecture deals with the general characters of antigens and antibodies. The author classifies all toxins into three categories: (1) neurotoxins; (2) toxins generating dry slough; and (3) toxins generating damp slough. He points out that these toxins contain two distinct elements, active and inactive, or have, in other words, non-antigenic and antigenic properties. Interaction between antibody and antigen takes place by means of two processes, coagulation and lysis, the former active in the absence of complement.

The second lecture deals with the diagnostic applications of antigens. Here the author discusses the relative value of precipitation, agglutination, and complement-fixation as a means of classifying bacteria, and his remarks on the numerous pitfalls in the application of these methods will be endorsed by every bacteriologist. Indeed, the author's short homily on technique will appeal to all laboratory workers:—

> "Employer toujours les mêmes antigènes ......choisir les échantillons qui offrent les reactions les plus spécifiques; les garder dans les meilleures conditions; s'assurer fréquemment que leur sensibilité aux anticorps homologues n'a varié ni quantitativement, ni qualitativement ...... Travailler toujours dans les conditions identiques. Faire toujours des témoins. ......"

In the third paper Professor Nicolle discusses the therapeutic application of these principles, based chiefly on his own extensive experience in preparing anti-sera during the war. In this connexion he is careful to distinguish between: (1) pathogenicity or the ability to produce morbid lesions; (2) toxicity or production of a specific poison; and (3) virulence or ability to multiply in the tissues.

JOURNALS.

Brain. Vol. XLIII. Part 3. 1920.—The Symptom-Complexes of Lethargic Encephalitis, with Special Reference to Involuntary Muscular Contractions, by F. R. Walshe. The author pleads for the classification of the symptoms of any toxic infective disease of the nervous system according to an anatomical plan. By this means much confusion would be obviated. He instances encephalitis lethargica as a case in point, and shows how such a term as "myoclonus" may be used with varying significance by different authors. Application of a natural classification of symptoms in lethargic encephalitis has led him to the conclusion that whereas in the production of negative or paralytic symptoms the virus has shown a selective action on the cells of the basal ganglia and brain-stem, in its irritant effect it appears to act equally on any and every part of the nervous system.—On Decerebrate Rigidity in Man and the Occurrence of Tonic Fits, by S. A. Kinnier Wilson. This paper is considered elsewhere in THE LANCET.—Relation of the Form of the Knee jerk and Patellar Clonus to Muscle Tonus, by H. Viets. Experiments on cats, both spinal and decerebrate, showed that in the former the knee-jerk is a single twitch, in the latter a single twitch followed by a continued contraction of the muscle. This is the "plastic element" in the phenomenon, and it is an indication of muscle tonus. A certain degree of tonus is necessary for the production of clonus; this is termed the "neutral tension" of the muscle, and is a neutral point between the reflex tonus and the weight of the limb; if the tonus be raised or lowered from this "neutral tension" clonus will cease. This study of the form of the knee-jerk was necessarily performed on animals, because in man there are so many factors which cannot be controlled, such as voluntary inhibition of the reflex.—Alterations of the Golgi Apparatus in Nerve Cells, by W. G. Penfield. Variations in nerve-cell activity induced by tetanus, strychnine in doses sufficient to cause repeated convulsions, decerebation and high section of the cord produced no change in the appearance of the Golgi apparatus. The apparatus exhibited a delicate and specific response to a lesion of its axone outgrowth, whether central or peripheral. This feature, retispersion, is ordinarily the first, and in some cases the only manifestation of chromatolysis. By retispersion the author indicates the dispersion of the Golgi apparatus to the periphery of the cell.

American Journal of Ophthalmology. July to December, 1920.—July: S. L. Olsho, The Coördination of Refraction with Spectacle and Eyeglass Fitting. This is a useful article, containing several points about the fitting of frames which are not to be found in ordinary text-books. The author has devised a new trial frame adjustable for faces which are unsymmetrical as to the level of the two eyes. —M. Fringold, Peripheral Communicating Vessels between Retina and Choroid; Fold of Inner Limiting Membrane in Chorioretinitis. An anastomosis between the retinal and choroidal venous circulation is an ophthalmoscopic curiosity. A case was shown at a meeting of the Ophthalmological Society of the United Kingdon by A. Lawson in 1910. This paper gives drawings of three similar cases, one of them with an added anomaly attributed to a fold of the membrana limitans interna. Another similar case of peripheral communicating vessels, probably congenital, is described and figured in the November number of the same journal, by H. S. Gradle.—The July number also contains papers on Wasp-sting Keratitis with Special Colour Changes in the Iris, by Y. Yoshida; on Apparent Sympathetic Ophthalmia nine months after Enucleation, with Implantation of Gold Ball in Tenon's Capsule, by D. N. Dennis; on a case of Ocular Pemphigus, by W. Campbell Pisey; and a note by H. V. Würdemann on a case of Embolism of the Central Artery of the Retina where the circulation was restored by forcible massage applied within a few hours of the onset of blindness. The number of similar cases previously published is 15.

August: The original papers in this number include one by V. Morax on Cataract Operations on Glaucomatous Patients; one by Y. Matsuoka on the Nature of the So-called Blood Infiltration of the Cornea; and one by W. L. Benedict on the Early Diagnosis of Pituitary Tumour with Ocular Phenomena—this last is illustrated by a coloured plate showing different stages in the development of optic atrophy in this disease.—H. J. Howard discusses the Origin of the Vitreous and a note by Aaron Brav suggesting the term "retinitis disciformis" in place of the descriptive but unscientific phrase "hole in the macula," by which cases presenting this appearance have usually been described.

September: F. M. Fernandez, Multiple Aneurysms of the Retinal Arteries. A coloured plate illustrates a very rare condition, which in this case was accompanied by profuse retinal hæmorrhages. The patient died from cerebral hæmorrhage 40 days after the first consultation. The prognosis in these cases appears to depend principally upon the presence or absence of retinal hæmorrhages. A case was described by J. A. Pringle in 1917 without hæmorrhages which he took to be congenital.—W. S. Franklin and F. C. Cordes, Radium for Cataract. This subject is being studied in the Department of Ophthalmology in the University of California. A method of application is employed by which all but the "gamma" rays are screened off. Details of the treatment applied to 31 patients affected with incipient cataract are given in tabular form. The conclusions arrived at are as follows: (1) the application of radium does no injury to the normal structures of the eye; (2) it apparently has a selective action on the lens; (3) radium improved the vision in 84·3 per cent. of the cases for which it was used; (4) a consistent technique and known dosage seem advisable; (5) frequent treatments are necessary in the beginning.—F. T. Tooke, Three Unusual Cases of Foreign Bodies in and about the Eyeball. The first of these cases was that of a Canadian soldier, who had been blinded by the explosion of a hand grenade. One eye had been entirely destroyed and enucleated, and from the other a large piece of steel was removed. The eye was so disorganised by traumatic cataract and irido-cyclitis that at one time its enucleation was considered on account of the pain. For six months he was at St. Dunstan's, and two years after the accident was returned to Canada. There a successful needling was performed resulting in vision 6/12 and with J.2 with a + 10 lens. In the second case, also a war case, a small foreign body, after being lodged in the interior of the globe for a long period, was extracted with the help of the Haab magnet by the anterior route, and a visual acuity of 6/12 was obtained. In the third case the patient kept a piece of steel in his eyeball for 14 years. About once a year it caused an attack of slight pain and inflammation. Ultimately the foreign body found its way into the anterior chamber, apparently as the result of the patient's habit of sleeping on his chest with his face buried in the pillow. The foreign body was extracted, leaving the eye blind from detached retina.—W. Zentmayer, Recurrent Retinal Hæmorrhages. A. E. Davis, Recurrent Retinal Hæmorrhage of Adolescence. These two papers give case-histories of this disease, which was first described by the late Mr. Eales, of Birmingham, about 40 years ago. Its pathology is still obscure, but it may probably be a tuberculous affection of the retinal vessels. The first of these papers suggests that an interference with the functions of the ductless glands—probably the adrenals—may also be a factor in its causation.—The number also contains articles by E. Scott and F. F. Schmidt on Intradural Tumours of the Optic Nerve, with report of a case.—Also three articles by E. J. Brown, Homer E. Smith, and M. Goldenberg on Different Aspects of the Glaucoma Problem.

October: Gordon M. Byers, Reticular Keratitis. Partially opaque lines in the corneal substance may be due to a wrinkling of Descemet's membrane, such as occurs after some cases of cataract extraction ("keratitis striata"), or they may be found in eyes with persistently low tension, when they are due to wrinkling of Bowman's membrane—a series of cases of this sort was described by Holmes Spicer in 1916, under the name of superficial linear keratitis. Other cases, again, have been figured where the opacities, instead of forming approximately parallel lines, constitute a network. The case figured in this paper belongs to this last variety, but the author suggests that it belongs to the same group as Spicer's cases, and that the term "reticular keratitis" ought to be replaced by some such phrase as "anterior corneal corrugations."—Ignacio Barraquer, Phakoerisis. This word is used to designate a cataract operation performed at Barcelona on some thousand cases. The method is one of suction performed with a specially constructed aspirator through an ordinary corneal incision.—Other papers dealing with cataract are by G. R. O'Connor, who criticises adversely Smith's intracapsular operation, by H. W. Woodruff on Safety Procedures, and by W. A. Fisher on Delirium Following Cataract Operations.—W. R. Parker contributes a paper on a case of Cerebral Tumour involving the Right Optic Tract, Chiasm, and Adjacent Brain Substance, with charts showing the progressive loss of visual field.—The last original paper is by M. Lombardo, reviewing the literature of post-diphtheritic ocular paralysis.

November: H. Gifford, Rupture of Cornea by Contrecoup from Bullet Wound of Orbit. The paper proves the possibility of this occurrence, the observations on humans being confirmed by experiments on anæsthetised dogs.—V. B. Blair, Report of Two Cases of Kroenlein's Operation. The skin incision recommended by this operator differs from the usual one and is planned so as to do the least possible damage to the branches of the facial nerve supplying the orbicularis. The history of one of the cases is remarkable, the operation being undertaken on a woman of 31 to extract the blade of a knife 2¼ inches long and ⅝ inch wide. It had remained with the point lodged in the orbit as the result of an accident in childhood, its presence being long unsuspected, but proved by an excellent skiagram, which is here reproduced.—J. R. Slonaker, the Physiology of Accommodation in the Eye of the Bird. This paper is important to those interested in comparative physiology. One interesting point is that the ciliary muscle of birds, called Crampton's muscle, and also the sphincter and dilator of the pupil are striated, and therefore better adapted for the quick adjustments required in the course of rapid flight through the air than if they were unstriated as in man. Another point is one in which the author differs from some previous observers. He maintains that the ciliary muscle in birds does not act as in man by altering the curvature of the lens, but by a movement of the refracting media along the axis of vision, thus resembling the focussing mechanism of a camera rather than that of the human eye.—In addition to these articles C. F. Charlton discusses the Function of the Lacrymal Secretion from the Point of View of Chemical Physiology; G. H. Burnham relates a case bearing on the Medico-legal Aspect of Blows on the Eyeball in the Region of the Ciliary Processes; S. B. Chase gives a preliminary report on a case of Double Glioma of the Retina which he is treating with radium; C. E. Ferree and Gertrude Rand describe an adaptation of their apparatus for determining visual acuity at low illuminations to the testing of light and colour-sense; T. E. Oertel relates a case of Spontaneous Luxation of the Eyeball; and C. C. Rush gives charts showing the changes in the visual fields after operation for chronic glaucoma.

December: Edward Jackson, Thrombosis of Retinal Veins after Influenza. Two cases in women, aged 59 and 33, are recorded with illustrative plates. In one of them the mass of the hæmorrhage appears to be of the subhyaloid variety. Both patients recovered nearly full vision, and in general, the author remarks, venous thrombosis due to influenza has not the sinister significance of retinal hæmorrhage from some other causes.—H. Friedenwald, Self-inflicted Conjunctivitis. An hysterical girl deceived her doctors by producing a condition of the conjunctivæ which was diagnosed as trachoma. The eye was effectively treated by being sealed under a Buller's shield.—W. L. Benedict, Value of Dental Examination in the Treatment of Ocular Disorders. This paper, from the Mayo Clinic, is of considerable interest. Transmission of organisms from diseased teeth to the eye may happen in one or more of three ways: (1) by direct extension through bone; (2) by the periosteum; or (3) by the blood stream, this last channel being the most usual one. Extraction of teeth does not always yield beneficial results, for it is possible that after extraction a septic pocket may have remained a source of infection. In these cases the use of autogenous vaccines is advocated. Rosenow has shown that organisms taken from diseased teeth are capable of producing disease of the eye when injected directly into the blood stream of animals; and, furthermore, that such organisms have a selective affinity for certain structures of the eye, and that within limitations this selective affinity is characteristic of the strain, and is maintained through several cultural transplants of the organism. Nevertheless the writer believes that the urgency of obtaining surgical cleanliness of the mouth before ophthalmic operation on old people has been overstated, a view that encountered some opposition in the discussion that followed the paper. He also deals with reflex disturbances of the lids and eye muscles relieved by the extraction of decayed teeth.—H. Sewall, Some Optical Imperfections of the Eye and Some of their Uses. This paper is concerned with the effects of light entering the eye through the sclera and the psychological effect of the indirect field of vision on central vision, especially in the matter of colour contrast.—The number includes a report of two cases of Glioma of the Retina, by C. C. Rush; of Malignant Melanoma of the Choroid, with Gradually Decreasing Intra-ocular Tension, by L. M. Francis; of Anomalous Pigmentation of the Skin and Eyelids, by H. V. Würdemann; and of Orbital, Epidural, and Brain Abscess, by M. Blake. The last paper, by J. M. Banister, is entitled, "Hints in Relation to the Dynamics of the Extrinsic Ocular Muscles, with Suggestions as to Treatment of States of Muscular Imbalance."

DANGEROUS DRUGS ACT, 1920:

ISSUE OF DRAFT REGULATIONS.

DRAFT regulations have been issued by the Home Office in regard to the carrying out of the Dangerous Drugs Act which became law last August. Since Sept. 1st, 1920, and pending the issue of regulations under the Act, the restrictions imposed by Dora 40 B have remained in force.

The draft regulations are based upon two Sections of the Act: (1) Section 3, for controlling and restricting the possession, sale, and distribution of raw opium; (2) Section 7, for controlling the manufacture, sale, possession, and distribution of morphine, cocaine, ecgonine, and diamorphine (commonly known as heroin) and their respective salts, and medicinal opium, and preparations and substances containing not less than 1/5th per cent. of morphine or 1/10th per cent. of the other alkaloids.

Manufacture.—In regard to morphine and the other alkaloids enumerated no one shall manufacture them or carry on any process in their manufacture without a licence, except on licensed premises, or otherwise than in accordance with the terms of the licence.

Sale and distribution.—No one shall supply or procure (or offer to do so) raw opium or any of the drugs mentioned for any person whether in the United Kingdom or elsewhere, nor advertise them for sale, unless he is licensed to do so:

Except when the drugs are lawfully dispensed in pursuance of a prescription given by a legally qualified medical practitioner in accordance with certain conditions. Exemptions may be granted for dispensing at public hospitals and on board ship.

Prescribing and dispensing.—The prescription must be in writing, must be dated and signed by the medical practitioner with his full name and address and qualifications, and marked with the words "Not to be repeated," and must specify the total amount of the drug to be supplied on the prescription, except that in the case of prescriptions issued for National Health Insurance purposes on the form provided by the Insurance Committee the medical practitioner's address and qualifications and the words "Not to be repeated" need not be marked on the prescription.

The conditions to be observed by persons, *including any medical practitioner*, dispensing prescriptions for the drugs are:—

The drugs shall not be supplied more than once on the same prescription.

The prescription shall be marked with the date on which it is dispensed, and shall (unless issued for National Health Insurance purposes on the form provided by the Insurance Committee) be retained by the person, firm, or body corporate, by whom the prescription is dispensed, and shall be kept on the premises where it is dispensed.

The ingredients of the prescription so dispensed, with the name and address of the person to whom it is supplied or delivered, shall be entered in a book specially set apart for this sole purpose and kept on the premises where the prescription is dispensed, so that it shall at all times be available for inspection.

Possession.—No one shall be in possession of raw opium or of any of the drugs unless he is licensed to import or export, or to manufacture or supply the drug, or unless he can prove that the drugs were supplied in accordance with a legitimate prescription.

Any duly qualified medical practitioner, or registered dentist, or registered veterinary surgeon, or person employed or engaged in dispensing medicines at any public hospital or other public institution being a person duly registered under the Pharmacy Act, 1868, is authorised, so far as is necessary for the practice of his profession or employment, to be in possession of and supply the drugs.

Labelling.—No one shall supply any article into the composition of which any of the drugs enters in a package or bottle which has not plainly marked on it the amount of the drug in the article, and the total amount in the package or bottle, and in the case of solutions the amount and percentage of the drug in the solution.

Bookkeeping.—Every person who supplies raw opium or any of the drugs, *including any medical practitioner*, shall enter in a book kept for the purpose all supplies obtained by him and all dealings effected by him. Separate books are to be kept for: (*a*) cocaine and ecgonine and substances containing them; (*b*) morphine and substances containing it; (*c*) diamorphine and substances containing it; (*d*) medicinal opium. Entry is to be made on the day on which the drug is received and on the day on which the transaction is effected. A separate book is to be kept in respect of each set of premises. The book shall at all times be available for inspection. No cancellation, obliteration, or alteration is to be made, any mistake in an entry being corrected by a marginal or foot-note.

Pharmacists.—Any person lawfully keeping open shop for the retailing of poisons is authorised:

To manufacture at the shop in the ordinary course of his retail business any preparation, admixture, or extract of any of the drugs;

To carry on at the shop the business of retailing, dispensing, or compounding the drugs, subject to the provisions of these regulations.

In the event of conviction for an offence against the Act this authority may be withdrawn.

Schedules are attached showing the form in which records are to be kept.

BRIGHTON HOSPITAL SUNDAY FUND.—The 1920 collections in the places of worship of Brighton, Hove, and Preston, together with the amounts collected in boxes at hotels and clubs, amounted to £1419 17*s.*, as compared with £1537 0*s.* 8*d.* in 1919. After deducting expenses the Fund has been distributed as follows: Royal Sussex County Hospital, £624; Dispensary, £156; Queen's Nurses, £154; Royal Alexandra Hospital for Sick Children, £130; Women's Hospital, £104; Throat and Ear Hospital, £45; Eye Hospital, £45; Royal Surgical Aid Society, £29 10*s.*; Provident Dispensary, £26; Lady Chichester Hospital for Women, £20; New Sussex Hospital, £15; Sussex County Homœpathic Dispensary, £13; Dental Hospital, £13.

THE LANCET.

LONDON: SATURDAY, JANUARY 15, 1921.

The Hygiene of the Sailor.

THE first sailor required all the oak and triple brass he had around his heart to fortify him against the dangers of his risky enterprise. But he, and HORACE, saw only the menace of the sea, of drowning; little they recked of the hidden dangers of his environment—the causes of sickness were then unrealised. The first cargo vessel on record, the *Ark*, with its huge content and small crew, kept its ship's company on board for 370 days, yet no deaths are reported. In the next famous voyage, made by JASON and the Heracleidæ in the *Argo*, the deaths are due to violence or magic, as we also find in SINDBAD'S stories of his sailings in the Arabian Seas. Disease was in those days of unknown origin, doubtless supernatural, and its relation to surrounding conditions or personal carelessness was masked by the period of incubation, which delayed the outbreak of malaria or typhoid fever until a fortnight after the mosquitoes had begun to worry or the store of water had been renewed. Few general diseases have so constant and arresting a syndrome as small-pox, few so short an incubation as cholera; the origin of these from previous cases was, therefore, early recognised.

Every sailor of the eighteenth century lived a hard life. It was not only in the convicts' galleys that conditions were horrible. Excreta, indeed, could be somehow disposed of in the "head," under the bowsprit, always to leeward of the ship; but the wooden ships leaked, the bilge water and the wood rotting in it filled the ship with a putrid smell; the crowding of the mess decks explains the occasional complaints of officers about the heavy odour rising from the hatchways. Part of the smell was due to uncleanliness; where water was so scarce that a sailor must ask leave of the officer of the watch to get a cupful for a drink, there was little to spare for washing. This, no doubt, accentuated the evils of scurvy and helped to prevent its ulcers from healing. Food at its best was unsavoury; it was also insufficiently nutritious, so the men got scurvy, which lost them their teeth and prevented them from eating what little food there was. Then there were calms to break their hearts, give them fevers with delirium, called "calentures," and drive them overboard to reach the sunny green fields they thought they saw. The only alleviation was the good ventilation they got from the wind coming off the sails in fair weather, which poured down the hatches, blew the ship out, and dried it. The work of the old-time sailors was hard, their voyages uncertain, and when they got back we may be sure they were well pleased with their houses ashore, dark, stuffy, and ill-lighted though we now would think them. So that the sailor got real benefit when in the nineteenth century the era of iron and steam arrived. For he now had a dry bed, as leaks were few, there was no bilge-water and no smell of it; passages shortened and food improved, so scurvy ceased. Iron tanks for water replaced casks, and held more. No longer were there days wasted in the Doldrums; passages became much safer when captains had always a calculable driving power under their hands; and old salts shook their heads and feared there would never be sailors like there had been. Steam and iron widened employment, cheapened food, and increased marriages; vaccination and preventive medicine kept the children alive; so population grew. There was need for more sailors. But the accommodation in ships remained much as it had been, while ashore standards of comfort and of wages rose. Sailors of the better class were hard to get among Englishmen; those who joined were drawn by hunger, or recruited by a boarding-house crimp. Sailors have great difficulty in forming a trade union as they do not live or work together in crowds like miners or cotton-spinners. As they could do nothing to keep up wages, cheaper labour was engaged. Foreigners from poorer countries filled up English ships, content to live and work well and patiently in conditions that few Englishmen, who could keep sober, would face. And owners exploited their seamen, not by any means always or often out of design, but through lack of imagination or knowledge. Is it any wonder that the sailor could not believe the first humane advances of the owners to have any but a purely selfish motive? This is the explanation of the fact that when reforms began they were positively resented by those for whose benefit they were designed. The conditions of the merchant marine roused port medical officers of health, notably two in succession in London—Dr. W. COLLINGRIDGE and Dr. HERBERT WILLIAMS, and Dr. WILLIAMS did succeed in getting the cubic space for sailors in the mercantile marine increased in 1906 from 72 to 120 cubic feet. It is 200 cubic feet in the Royal Navy and 240 in the United States merchant marine. The Sailors' and Firemen's Union, late as it entered the field, has done much, and its work has been reinforced now by the opinion of the Royal Navy, first in Admiral BRUCE SOMERVILLE'S frequently quoted article and now, we are glad to see, by the important Chadwick lecture of the Medical Director-General of the Navy. Sir ROBERT HILL supports the claims of merchant seamen to proper treatment with all the weight of his long experience and high official position. For his help the men of the merchant service owe him deep gratitude.

The needs of sailors in ships fall into three classes. There are first the ships of the Royal Navy, with which must be considered the conditions of soldiers in transports. These have a large scientific staff in charge of them and elaborate statistics to manifest their difficulties. They need not be further considered now. Then there are the large passenger steamers with numerous crews; and last the cargo steamers with small crews, berthed probably on a single deck. If we take the *Olympic* as an example of the second class we find the men are well lodged in warmed airy cabins, with suitable spaces for mess-rooms and lavatories, and good food. It is the smaller ships that cause us anxiety, though we published last week an account of conditions in a United States ship of only 10,000 tons which gives its crew comforts superior to those in any English ship of the size that we have been able to visit. As Sir ROBERT HILL insists, and many port health officers will be in delighted acquiescence, the plans of all ships should be examined and approved by an expert medical officer before their building is begun, and each ship should be inspected and passed, sanitarily, before she goes to sea. Sufficient water should be carried under good arrangements, hot water should be supplied to douches and in lavatories, latrines should be provided with constant flush. There should be a drying-room; every living space should be warmed by radiators; unsheathed, unprotected iron in living spaces should not exist, and there should be artificial ventilation—for a dry ship is a healthy ship. Engine-rooms should be cool; there is just now a promising proposal to seal the engine- and boiler-rooms, and supply all air for the boilers through the engine-room. No sailor should be allowed to have his meals where he sleeps, and hospital accommodation, in isolation, for the sick is necessary. A Seamen's Home in every port will prevent much venereal disease. The mosquito-proofing of a ship in malarial harbours will save much illness. But a card register of the illnesses of all seamen is needed to eliminate the tuberculous, for whom special arrangements must be made at the cost of the owners. Lastly, if the seamen's health is put in the care of the Ministry of Health instead of the Board of Trade, a great deal will have been done to make seafaring an employment fit for the heroes this war again proved so many seamen to be. The report of Dr. J. HOWARD-JONES to the Newport Sanitary Authority, which is reviewed in our columns this week, takes up many of the points on which stress is laid above, and which have been mentioned also in the personal investigations undertaken for THE LANCET on board the ships of various lines.

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The Significance of Albuminuria.

THE differentiation of the varieties of albuminuria into those resulting from organic disease of the kidney and those due to some slight disturbance of its function is one of great practical importance. Two noteworthy discussions have taken place on this subject within the last few months—one before the Section of Medicine of the Royal Society of Medicine, to which we have already referred in THE LANCET[1]; the other before the Assurance Medical Society, of which we publish a record in this week's issue. It is interesting to note that the opinion was expressed by several of the speakers that, if the functional or non-nephritic origin of the albuminuria could be established, these cases could be accepted as ordinary risks, provided other conditions were satisfactory. There is now accumulating a great deal of evidence in favour of this opinion, although it must be admitted that before it can be proved definitely by statistical methods careful records of the life-histories of large series of cases must be collected and analysed —the necessary data for which cannot be forthcoming for many years.

Dr. R. HINGSTON FOX, in the careful paper which we publish in full, gave an interesting account of 20 consecutive cases of the albuminuria of adolescents, examined between 1884 and 1896, the average age on entry being 27·7 years. Eighteen of these are known to have lived for an average period approaching 30 years. Fifteen are now living and healthy so far as is known. The most striking fact is that in no case has there been any history of subsequent renal disease. He also drew attention to the fact that Dr. HUGH MACLEAN in his study of 50,000 healthy soldiers in France and 10,000 recruits at Aldershot found albuminuria in 5 per cent., and it appears that of those subsequently attacked with war nephritis the great majority had not shown previous albuminuria. It would seem from these observations that the subjects of functional albuminuria were not specially prone to war nephritis. The general outcome of the discussion was that if a case of albuminuria in a young person, even up to the age of 30, can be proved to belong to the functional or non-nephritic group, and if the case is otherwise unexceptionable, there is little, if any, risk in accepting the life as first-class from the insurance point of view. The difficulty is to establish the position by tests available in ordinary clinical practice or under the still more restricted opportunities of examination for life insurance. The matter is complicated by the fact that though many of the cases belong to the type variously described as postural, orthostatic, or lordotic, there are many other causes of temporary, transient, or variable albuminuria. It does not follow that a test or method of investigation which would demonstrate one of these would be of equal value in all. Indeed, another useful result of the discussion has been the clear demonstration that in the diagnosis of albuminuria from the insurance examiner's standpoint there is no one test, either clinical, chemical, or even microscopical, which can be relied on. An opinion can only be expressed after a careful review of the history, the physique, and general condition of the proposer, the condition of the urine being determined after several examinations at intervals and in some cases after actual investigation of renal function by means of the urea concentration and diastase tests. Dr. HINGSTON FOX gave ten criteria to distinguish what he describes as the albuminuria of adolescents. To these we may refer our readers, as they afford a valuable summary of the methods available. We may draw special attention to the high globulin content of the urine in these cases, which Dr. MACKENZIE WALLIS expresses as the albumin-globulin ratio, but, as we pointed out in regard to a case recently recorded in THE LANCET, this is not reliable by itself, since it has been present in a case of actual renal disease shortly before death. It would seem to be important to take the blood pressure in all of these cases, since it is low as a rule and varies from slight causes. The presence of large numbers of calcium oxalate crystals was a point mentioned by several of the speakers. A warning was also given not to mistake excess of mucin or nucleo-albumin for albuminuria, as is sometimes done. Dr. HINGSTON FOX made some suggestions as to the pathology of this form of albuminuria, but did not mention the work of some Danish observers, which appears to be little known in this country. They claim to have demonstrated by catheterisation of the ureters that the albumin in orthostatic albuminuria comes only from the left kidney, and suggest that it is due to pressure of the ureter on the left renal vein.

The whole subject of functional or non-nephritic albuminuria teems with interest, and still offers a useful field for special investigation. It is now becoming established that certain forms of albuminuria, even in old people, are not of grave import—such, for example, as the condition to which Dr. MACKENZIE WALLIS has applied the name of "leaky kidneys." Such conditions may be of less importance from the insurance medical examiner's standpoint, but they are none the less worthy of study from the point of view of the practitioner of medicine. The attention directed to these points will, we hope, result in further means of differentiating the varieties of albuminuria and appraising their significance.

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[1] THE LANCET, 1920, i., 858.

The League of Nations and the Opium Convention.

IN THE LANCET of May 29th, 1920, we sketched the story of the International Opium Convention from its signature at the Hague in 1912, and referred to the bearing upon its effectuation of the Peace Treaties and the League of Nations. At the recent meeting of the Assembly of the League of Nations at Geneva questions relative to the putting into force of the Opium Convention came under consideration and it may be well to indicate the position in which the matter now stands. A valuable memorandum prepared by the Netherlands Government was laid before the Assembly reciting the steps which had been taken by their Foreign Office, in accordance with Article 24 of the Opium Convention, to bring the articles of that Convention into operation. The authors of the memorandum set out that 42 States had signed, and 19 of these had ratified the Convention, while six of the latter had also signed the special protocol of 1914, which bound its signatories to enforce the Convention irrespective of the action or inaction of other Powers. It was further pointed out that under the several Peace Treaties their signatories bound themselves to enforce the Convention as if they had signed the special protocol.

Two other duties had also been confided by the Opium Convention to the Netherlands Government: 1. To act as intermediary between the Powers in regard to interchange of laws and regulations passed by them to restrict the trade in dangerous drugs, as well as of statistical and other information. 2. To arrange for diplomatic communications which might be required in order to arrive at solutions of any difficulties which might arise in giving effect to the Convention. The Netherlands Government were quite willing, if the Assembly approved, that all these duties should be handed over to the League of Nations and its Secretariat. One other question, however, presented itself, and that was that the Powers represented in the Assembly of the League were not identical with those which were parties to the Opium Convention. There were in fact four groups: (1) States which are members of the Society of Nations and also parties to the Opium Convention; (2) States which are not members of the Society of Nations, but yet are parties to the Convention; (3) States which are members of the Society of Nations, but not parties to the Convention; and (4) States which are neither members of the Society of Nations nor parties to the Opium Convention. The whole question as thus stated by the Netherlands Government was referred to Commission II., and on Dec. 15th a report was presented to the Assembly by Mons. JONESCU (Roumania) on the subject. The Assembly unanimously agreed that it would be preferable for the League to undertake the duties placed upon the Netherlands Government by the Opium Convention with regard to the collection of data and the solution of difficulties. The Secretary-General was accordingly authorised to collect information as to the arrangements made by various States for putting the Convention into force. In view, however, of the importance of securing the coöperation of States which have ratified, or who may hereafter ratify, the Convention, but which are not members of the League, the Netherlands Government was authorised to invite their coöperation, and to be the intermediary in regard to those States. It was, moreover, agreed that an Advisory Committee, representative of the countries chiefly concerned, should be set up, and that it should meet as often as desirable. The Assembly further authorised the Council of the League to add representatives to the Committee in respect of such countries not being members of the League which are nevertheless specially concerned in the traffic. An invitation thus to coöperate was to be specially addressed to the United States. The Advisory Committee has been instructed to present its report to the Council three months before each Assembly for submission to the Assembly.

The Dangerous Drugs Act, which was passed by our Parliament before the long vacation, carried out, as far as British legislation is concerned, the statutory obligations of this country. The all-important regulations to be made in order to give effect to that Act have just been issued in a draft, of which we give a précis on p. 134. Much will depend upon the thoroughness with which they are carried out. The question of our self-governing Dominions and dependencies, and especially India, remains to be considered. Slow though the progress has been in securing world-wide supervision of the traffic in these dangerous drugs of addiction, it seems nevertheless to be sure, and the Secretariat of the League will be well advised to expedite further progress with alacrity.

INDICES TO "THE LANCET."

THE Index and Title-page to Vol. II., 1920, complete with the issue of Dec. 25th last, are given in this number of THE LANCET. The Index and Title-page to Vol. I., 1920, were given in THE LANCET of July 10th, 1920.

Subscribers who write from time to time asking for other Indices should note that the Indices for the two Volumes of 1919 were given in THE LANCET on July 5th, 1919, and Jan. 17th, 1920, respectively. None of these Indices has been issued separately from THE LANCET.

Indices for the years 1916, 1917, and 1918 were issued separately, and were not given in THE LANCET owing to the scarcity of paper. Copies of these Indices for the two Volumes of 1916 and for Vol. II., 1917, can no longer be supplied, as the stock is exhausted. Indices for Vol. I., 1917, and for Vols. I. and II., 1918, can still be supplied.

Prior to 1916 the Indices were given, as now, in THE LANCET.

Annotations.

"Ne quid nimis."

FURTHER NEW YEAR HONOURS.

In addition to the honours conferred on New Year's day, knighthoods have been granted to two well-known members of the honorary staffs of Metropolitan hospitals. Dr. Maurice Craig, who received the C.B.E. in 1919 for his neurological work in the field, has been acting as consulting neurologist to the Ministry of Pensions. Dr. Percival Horton-Smith Hartley, who received the C.V.O. in 1912, was on the staff of the 1st London General Hospital, and has been connected with the King Edward VII. Sanatorium since its foundation. Sir Napier Burnett has been appointed a Knight of Grace of the Order of St. John of Jerusalem. We offer our sincere congratulations.

THE TREATMENT OF MALARIA: THE GERMAN EAST AFRICAN EXPEDITION.

In an article on the opening page of this issue Major J. Pratt Johnson and Major Kenneth Gilchrist formulate in a concise and closely reasoned statement the conclusions they have arrived at from a statistical inquiry into the results of treatment and blood examination of a large number of cases of malaria contracted in the course of the campaign in German East Africa. The epidemic appears to have been of severe type, with a large proportion of heavy infections, both with malignant and benign tertian parasites, and the article will well repay a careful perusal. The main features of malaria in East Africa do not appear to be essentially different from those observed during the war in other malarial districts. Thus there is to be found in the article evidence of a growing dissatisfaction with the method of treatment by comparatively small doses of quinine, and the gradual realisation of the good results to be obtained by increasing the dose to at least 30 gr. per day. The advantages of the latter system are seen in a shortening of the average period during which it is found necessary to keep the patients in hospital, and in a substantial reduction in the number of cases in which blood films are found positive on a second examination after an interval of eight days, with a lessened frequency of relapses and a diminished risk of grave consecutive anæmia. The authors found that, in order to attain a given standard of clinical fitness, no longer a stay in hospital was necessary for malignant tertian cases than for those of benign tertian infection; they regard this as due to the fact that the greater initial obstinacy of malignant tertian cases is counter-balanced by the special tendency of benign tertian infections to relapse. On the other hand, cases of combined infection with both types of parasite were more resistant to treatment and needed hospital treatment for a period on the average nearly half as long again in order to attain a similar degree of fitness. Comment is also made on the retarding influence of syphilis, and attention is drawn to the frequency of relapses and severe anæmia in cases where a syphilitic infection is combined with that of malaria. The routine treatment which eventually came to be adopted for cases of ordinary severity was 30 gr. of quinine in solution daily for three weeks, followed by 20 gr. daily for a month, and then 10 gr. daily for two months. No reference is made to the administration of quinine by channels other than the mouth, nor is any distinction drawn between the value of quinine in primary and relapse cases; a note on the experience of the authors on these points would have been of interest. Their statement as to the limitations of quinine treatment, which they describe as being not more than palliative, will receive the sympathetic endorsement of clinical workers in other malarial districts, though an exception might possibly be made in the case of primary malaria treated with larger doses than those stated. An examination of the figures relating to the frequency of relapse shows that the most intractable type of malaria from this point of view is a mixed infection with benign and malignant tertian parasites. Of such cases relapses occurred in a percentage of 39·4. The percentage of relapses in simple benign tertian infections was 23·8, while in malignant tertian infections the relapse incidence was as low as 11·2 per cent. The statistical value of these figures is weakened by the fact that the treatment factor was a varying quantity for individual cases; the average daily amount of quinine administered during the interval preceding the relapse varied from 20·6 gr. to 23·0 gr., and presumably the actual amount given in individual cases varied within even wider limits. The difficulty of securing a constant treatment factor is obvious, but conclusions based on observations in which this condition is not provided for lack precise value; a series of observations on cases receiving identical treatment might have been devised and would have carried greater weight. The views expressed by the authors on the influence of quinine in determining the production of crescent (sexual) forms of the malignant tertian parasite are ingenious, but further observations are needed before they can be regarded as forming more than an interesting speculation. The conditions which determine the production of sexual forms of the malaria parasites are far from being fully understood, and that quinine is one of the factors which may create an environment so menacing to the asexual forms that, through a process of self-preservation, crescents are produced in large numbers is a hypothesis that remains to be proved, though the authors' observations constitute an important addition to the study of the problem.

BACILLARY DYSENTERY WITH MEMBRANE IN THE VAGINA.

Dr. I. I. Lemann has recently reported[1] a complication of bacillary dysentery which does not appear to have been observed previously—membrane in the vagina with œdema of the abdominal wall.

A married woman, aged 48 years, was seen in consultation on Nov. 15th, 1919. On the 3rd she ate a cream puff which did not seem fresh. Severe pains in the epigastrium and diarrhœa began next day. She became so much worse that all food by the mouth was stopped. On examination she had improved, but her face was pinched, the temporal fossæ were sunken, and generally she looked prostrate. The stools were frequent and consisted of extremely offensive bloody mucus. She had vomited only once, though she suffered greatly from nausea. There was marked œdema of the abdomen, which was slightly greater in the right upper quadrant. The liver was felt three inches below the ribs. At the vaginal entrance a roughened corrugated elevation was felt. The vaginal walls and cervix felt œdematous. On inspection with a speculum the elevation proved to be due to a thick, tenacious, dirty-grey membrane, which was pulled off with difficulty, leaving a bleeding ulcer. On the cervix there were an erosion and membrane. Rectal examination was negative. The blood gave a strong agglutination reaction with the Shiga bacillus. This bacillus was cultivated from the vaginal membrane. Microscopical examination of the stools showed pus, blood, and epithelial cells. Treatment consisted in a liquid diet without milk, duodenal irrigations with sodium sulphate solution by means of the Jutte tube, irrigations of the vagina thrice daily with 1 in 1000 permanganate solution. Improvement began almost at once, and the symptoms disappeared in three weeks.

It is noteworthy that the vaginal membrane corresponded exactly with that present in the bowel in dysentery. Thus the bacilli acted on the vaginal mucous membrane in the same way as on the intestinal. How were the bacilli introduced into the vagina? Probably their source was the rectal discharge. This suggestion is borne out by the fact that the inflammation was most intense at the vaginal entrance. In this connexion the view of Flexner and Sweet as to the mode of production of membrane is interesting. They say that the bacilli may abound in the small intestine, where no lesions may be found, but that they give rise to toxins, one of which acts on the nervous system, the other on the lower bowel. The excretion of the toxin causes exudation of lymph into the submucosa, later into the mucosa, leading to ulceration. If the intestinal membrane is produced by excretion of toxins, may not the vaginal be produced in the same way? Another theory is that the infection may have been carried to the vagina by the blood stream. Cases of bacillary dysentery septicæmia have been reported. Of the œdema of the abdominal wall Dr. Lemann can give no explanation. He considers it analogous to the œdema frequently observed on the thoracic wall over empyemata and over abscesses of the liver.

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[1] Journal of the American Medical Association, Dec. 18th, 1920.

DR. BEATTIE CROZIER: MEDICAL PHILOSOPHER.

THOUGH it was neither in the practice nor in the scientific advancement of medicine that Dr. Crozier achieved his fame, his training had a profound effect on his subsequent activities. While in his early youth he derived inspiration from the study of phrenology, his medical studies directed his reading into more scientific channels, and the study of books by Darwin and Spencer altered his whole scheme of life. On his qualification at the University of Toronto in 1872 he decided to leave Canada, where he was born and had always lived, for England, where he settled nominally as a medical practitioner. His real work, however, rose out of his search among the philosophers of all ages for a school of thought which would satisfy his own aspirations while harmonising with some of the then new teachings of Herbert Spencer, whose materialistic outlook he could never accept. The middle period of his life Crozier spent in the study of the history of intellectual development, and his book on this subject, published in 1897, was an attempt to show that the laws governing the rise and fall of philosophies could be interpreted, and that at least some guidance for the future could be obtained by their study. In his later years, though his failing eyesight made work difficult, he thought and wrote on political economy. His final publication in 1917 was a survey of the economic, intellectual, and religious movements brought into being or influenced by the war. Dr. Crozier had a definite position in a field of thought not generally entered by medical men, and his high ideals and laborious efforts to further our national progress remain on record in his works.

STEPS TOWARDS BIOLOGICAL STANDARDISATION.

RECENT discussions on the best means of ensuring accuracy in dispensing have ignored the most important and probable source of danger in therapeutic agents administered to the public—that which is due to lack of standardisation and is beyond the control of the dispenser. Modern therapeutics has largely substituted for older drugs biological preparations, alkaloids, vaccines, and complex synthetic preparations which are not amenable to ordinary chemical tests. The need for the establishment of biological standards of measurement and of means for their ready application has been seen and emphasised by the Medical Research Committee since its formation in 1914. But the large amount of ultimate quantitative research required could not be undertaken in the war years except in so far as certain arbitrary standards of measurements had to be established at short notice, as, for example, those applied to salvarsan compounds sold in this country. At the end of 1916 the Committee issued a memorandum to the Government again urging the desirability of setting up official standards of value and authenticity for arsenical biological preparations, serums, and the like used in medical practice, and expressed the opinion that the absence of possibilities of control was not only discreditable to our national position in the world of science but a source of grave danger to the community. The Medical Research Committee urged strongly "the establishment of a Government laboratory for biological standardisation as needed for national purposes no less important than those of an analogous kind fulfilled by the National Physical Laboratory." A fuller statement of the need for such a laboratory was issued early in 1919, and various research schemes in preparation for its establishment have been centralised at the National Institute for Medical Research at Hampstead. A special committee on Biological Standards and the Methods of Biological Assay, consisting of Professor W. Bulloch, F.R.S., Dr. H. H. Dale, F.R.S., Professor G. Dreyer, Sir Walter Fletcher, F.R.S., and Professor C. J. Martin, F.R.S., has been appointed by the Medical Research Council to advise them on the promotion and coördination of studies of this kind. Moreover, Dr. Dale has been appointed to represent the Council on the Departmental Committee appointed last April[1] to advise the Minister of Health in the administrative and legislative measures that may be necessary. The report of this Committee should be issued shortly. Meanwhile, since the work in departments of bacteriology and pathology, biochemistry, and pharmacology at the National Institute is daily concerned with quantitative standards, the Council has invited Dr. Dale to serve as director of a Biological Standards Department. This department will have special relation to the central administrative organisation and supply of the separate departments of the Institute, and will, it is hoped, bring effectively into touch all the work likely to have a useful application to a national system of standardisation. For this the National Institute would seem to afford an appropriate permanent home.

GAS AND OXYGEN IN OBSTETRICS.

THE National Anæsthesia Research Society of America has issued a monograph on nitrous-oxide-oxygen analgesia and anæsthesia in normal labour and operative obstetrics. The publication is remarkable for several reasons. Its form is unusual, being more that of a presentation poetry-book than that generally associated with scientific productions; since this includes good paper, large clear type, plenty of space, and ornamental captions it is only to be commended. The matter is fairly comprehensive, including an account of the physiological actions of anæsthetics on pregnant animals and of blood changes due to various anæsthetics. At the same time there is a lack of definite practical details in the account of the applications of nitrous oxide analgesia to patients in labour. With the arrangements commonly in vogue in this country, where labour is conducted on a bed, and with the apparatus usually employed, nitrous oxide and oxygen is an extremely inconvenient anæsthetic. The patient's head is some distance from the edge of the bed and half immersed in a pillow. Doubtless our American confrères, who have employed nitrous oxide in labour far more freely than we have, have found means to increase its facility. A description of them would greatly have enhanced the practical value of this monograph. It is claimed for nitrous oxide that, so far from lengthening labour as other anæsthetics are accused of doing, it actually shortens the process. This is owing to the fact that during analgesia the patient will effectively coöperate. She is encouraged to assist the contraction of the uterus, and since this is prevented from giving her pain, she finds no obstacle to bearing down. Although self-administration of nitrous oxide and oxygen for the purposes of analgesia is possible, and has been often permitted by some of the writers, yet it seems clear that the use of this anæsthetic for labour necessitates the presence of a second medical man. Certainly this is the case if all the advantage possible is to be got from this particular agent. It may well be, indeed, that, as is suggested in the monograph, an ideal labour would be conducted through the presence of a skilled anæsthetist supplying the analgesia of nitrous oxide and oxygen for the pains of the first and the early part of the second stage, and full anæsthesia by the same drugs for the rest of the process. The baby is unaffected in ordinary labours conducted under nitrous oxide and oxygen.

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[1] THE LANCET, 1920, i., 974.

PRIMARY MESOTHELIOMA OF THE PLEURA.

ACCORDING to Dr. Ernest S. Du Bray and Dr. F. B. Rosson,[1] of the University of California Medical School, who report an illustrative case, primary tumours of the pleura are of very rare occurrence, being considerably less frequent than primary growths of the lungs or bronchi. Patterson, in 1909, reported two personal cases and collected 96 others from the literature, but some of these could not be considered authentic owing to the incompleteness of the data. The disease occurs twice as frequently in men as in women, and the greatest number of cases are found between the ages of 30 and 40. It is a little commoner on the right side than on the left, but it may be bilateral. The origin of these tumours is still obscure, as it has not been decided whether they arise from the lining cells of the pleura or from the intima of the lymphatics. The writers are in favour of a mesothelial origin, and therefore prefer the term mesothelioma to carcinoma, although most of these tumours have been described under the name of endothelioma. The onset is usually insidious and the course progressive, the average duration of the disease being from six to nine months. Pain in the chest, which is usually severe and persistent, is the earliest and most significant symptom. The physical signs are in no way pathognomonic, but a persistent, rapidly reaccumulating hæmorrhagic pleural effusion is suggestive. The temperature usually remains normal throughout the disease, only exceptionally is there a slight evening elevation, which is usually due to a superimposed pulmonary infection. X ray examination does not afford much help in the diagnosis, but merely shows a massive pleural effusion in the great majority of cases. Cytodiagnosis is of very limited value, as numerous observers have found that in many cancerous pleurisies cancer cells are not present in the transudate, or, if present, are very difficult to recognise. Chemical study of the pleural effusion is also of little value. The most important and difficult diseases to exclude are pulmonary tuberculosis with hæmorrhagic pleural effusion and primary malignant disease of the lungs and bronchi. In a case which occurred in a physician, aged 40, the diagnosis made during life of tumour of the left pleura with extension into the lung and peritoneal cavity was confirmed by the necropsy.

MID-BRAIN LOCALISATION.

IN the current number of *Brain* Dr. S. A. Kinnier Wilson makes another of his masterly contributions to our knowledge of localisation in the central portions of the brain, recalling his former work on the symptomatology of the putamen, which led to the acceptance of a new symptom-complex—lenticular degeneration. In the present article he correlates the clinical findings in cases where cortical control is partially or completely removed, with the results of experiments by Professor C. S. Sherrington and others designed to effect this removal. The result of his investigation may be summarised as follows. When cortical control is removed completely from the rest of the nervous system by experimental or natural lesion the body and limbs assume a characteristic attitude; the limbs become rigidly extended, the hands become extensor-pronated, there is some degree of opisthotonus and retraction of the head. Further, the removal of cortical control may be (*a*) incomplete or (*b*) intermittent. In the former case the resultant attitude will present only partially the postural features of decerebration, while in the latter there will be temporary accentuation of those features—i.e., the occurrence of tonic fits due to "attacks of decerebration." A critical analysis of the records of experiments leads Dr. Wilson to the provisional conclusion that the red nucleus, with its cerebellar, thalamic, and spinal connexions, is the "centre of this attitude or posture-producing mechanism." Further, that the "decerebrate attitude of mesencephalic origin is maintained by afferents reaching its source by spino-cerebellar paths and inhibited by stimulation of a ponto-cerebellar path via the neighbourhood of the vermis." Review of clinical material in the light of this theory results in simplification of exceedingly diverse phenomena. Tonic spasm in submeningeal or intraventricular hæmorrhage, meningitis, hydrops ventriculi, the well-known "cerebellar" attitude, the characteristic position of the hand in chorea, in athetosis and in hemiplegia, opisthotonus in tetanus, and even in hysteria are thereby all reduced to their common denominator—decerebration, complete or partial, permanent or temporary. The starting point of the train of thought was a passing allusion by that seer of neurology, Hughlings Jackson, to what he called "tetanus-like seizures" and "fragments of the tetanus-like condition." It appears that Dr. Wilson has succeeded in discovering for us the underlying significance of yet another of Hughlings Jackson's flashes of insight, many of which were given to the medical world in our columns under the general title "Neurological Fragments."

PHYSIO-THERAPEUTICS IN AMERICA.

THE noteworthy feature of the meeting of the American Therapeutic Association, reported in our present issue, was the importance ascribed to physiotherapy by those who contributed papers and took part in discussions. Treatment by electrical methods formed the subject of the greater number of the papers. Four authors contributed papers on actinotherapy, and treatment by radium needles was considered in one paper. Only in five contributions was treatment by methods other than physical proposed. Various standing committees presented reports at the meeting conveying suggestions and recommendations regarding the uses of various physio-therapeutic agents, including the direct current, rhythmic currents, mechanical vibration and exercises, and hot and tepid baths. No entirely new or previously untried physio-therapeutic method was described, but there were some interesting contributions which will attract the attention of workers in physio-therapy in this country. One of these deals with the use of diathermy and the galvanic current for treatment of occlusion, partial or complete, of the cerebral vessels. In another the slow sine wave alternating current is recommended for the treatment of fæcal impaction of the sigmoid flexure; Dr. F. H. Morse maintained that symptoms which were often attributed to catarrhal salpingitis, uterine displacement, or hæmorrhoids, were frequently the results of sigmoid impaction. The treatment of inflammation of the bladder, uterus, and sigmoid flexure by injecting them with argyrol and then passing the galvanic current through the inflamed parts was described by Dr. C. S. King, who claimed that better results could be obtained by the combined treatment than by either method singly. Treatment by diathermy seems to be increasing in popularity; the contributions on this subject dealt with the non-surgical uses of diathermy. The use of electrical methods for obtaining mechanical effects, such as contraction of muscle and the removal of inflammatory products, formed the topic of other contributions. Apart from the good results obtained, the use of electricity for the various diseases considered at the meeting appears to be rational and applied in the endeavour to obtain known chemical and physical changes and procure therapeutic results by means of these changes.

LORD CAVE is to preside over the committee appointed by Dr. Addison to enquire into the financial position of the voluntary hospitals.

DR. CONSTANTIN DANIEL, Professor of Pathological Surgery at the Faculty of Medicine of the University of Bucharest, has been transferred to the recently created chair of clinical gynæcology.

DR. CYRIL HARTLEY DURRANT, chief medical officer to the Presidency of Saint Christopher and Nevis, has been appointed an official member of the Legislative Council of that Presidency.

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[1] Archives of Internal Medicine, December, 1920.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Health of Belfast.

Dr. H. W. Bailie, medical superintendent officer of health, has published some figures dealing with the health of the city to Nov. 27th, 1920. The total deaths numbered 7450, as against 7278 in the previous 12 months, representing a death-rate of 18 per 1000, as compared with 17·9 in 1919. The deaths from phthisis show a substantial reduction in the previous year, the total being 774, a rate of 1·9 per 1000, as against 853 deaths, a rate of 2·1 per 1000, in 1919. This rate is the lowest recorded in Belfast since regular records were available. In 1899 the rate was 3·2 per 1000. The fall began in 1907, when the rate was 2·5 per 1000. There was a continuous fall until 1912, when the rate was 2 per 1000. From 1915 the rate steadily increased for three years, being 2·17 in 1916, 2·4 in 1917, and 2·7 in 1918 (the influenza year). The decline in 1920 is substantial and affords ground for congratulation; it shows that the antituberculosis crusade has not been in vain. Scarlet fever still continues very prevalent, the number of cases in 12 months being no less than 2334, as compared with 2793 in the previous 12 months. The disease continues to be of a mild form, but the attempts to check its excessive prevalence have been unsuccessful. There were 291 cases of diphtheria notified, 218 of typhoid, and 187 of erysipelas, as against 234, 110, and 149 respectively in the previous year. The deaths from zymotic disease totalled 749, representing a rate of 1·8, as against a rate of 1·5 in 1919. Infant mortality continues high. The rate was 130 per 1000 as compared with 113 in 1919, 144 in 1918, 130 in 1917, and 113 in 1916. These figures are disappointing in view of the considerable efforts put forth in Belfast to protect child life in the form of babies' clubs, ante-natal clinics, &c. The large amount of female employment is no doubt a factor. All the evidence goes to show that the most fundamental factors in reducing infant mortality are good mothering and attention to the diet and hygiene of the infant. In many counties in Ireland the infant mortality-rate is from 60 to 70 per 1000—one of the lowest rates in the world—in spite of a relatively low standard of housing and material comfort. Mother-care is the explanation. Large cities everywhere take a large toll of infant life, more especially when many avenues of employment are open to women.

"*83rd (Dublin) General Hospital.*"

The annual dinner of the Dublin unit of the 83rd General Hospital was held on Jan. 8th at the Royal College of Surgeons, under the chairmanship of Sir William Taylor, who, nearly five years ago, while President of the College, organised the unit. The members had as their guests General R. H. S. Sawyer, late A.M.S. (retired), who, during the greater part of the time the unit worked at Boulogne, was D.D.M.S. of that area, and Mr. Alfred Miller, the Registrar of the College. Mr. Edward Taylor, the present President of the College, himself a member of the unit, was kept away by illness, but nearly all the other members of the unit were present, and a pleasant evening was spent, reminiscent of the happy comradeship which existed while the unit was on active service. General Sawyer, as the immediate authority of the service in touch with the "83rd General Hospital," spoke highly of the medical and surgical work performed in the well-known huts overlooking the harbour at Boulogne.

The late Dr. John F. Knott.

By the passing away of Dr. John Knott on Jan. 2nd Dublin medicine has lost one of its most interesting figures, and the world of medical literature a prolific and racy writer possessed of an extraordinary knowledge of the history of medical science. After a distinguished career in the school of the Royal College of Surgeons and in Trinity College, and after visiting many continental centres, Dr. Knott settled in Dublin a generation ago as a private medical tutor or "grinder." Many of the most distinguished Dublin students of the "eighties" passed through his hands. He edited the third edition of Mapother's "Human Physiology," and he contributed largely to the periodical literature any time this 40 years, choosing topics usually from medical history. He made particular studies of the final illnesses of Lord Byron and of Napoleon. He had little belief in modern developments of medical science, and loved to have a tilt at such orthodox doctrines as that of the bacterial origin of infective disease. He was a great lover of books, and he must have left a valuable collection.

Jan. 10th.

SWITZERLAND.

(FROM OUR OWN CORRESPONDENT.)

The Medical Profession and the Sickness Insurance Unions.

THE relations between the medical profession and the sickness insurance unions is a subject which gives rise to much anxiety in our medical world. Sickness and accident insurance now covers a very wide field, but not in the same proportion in different parts of the country. In Geneva and Lausanne, with their highly individualistic populations, the sickness insurance unions are not nearly as popular as, for example, in Zurich and Basle. In Basle, which has 140,000 inhabitants, over 100,000 are members of the unions; these include the whole of the working class and a considerable part of the middle classes, and thus only some 30,000 people remain under private practice. As the Swiss Federal Insurance Act stipulates the free choice of doctor, practically all practitioners of the towns are attached to these unions, and, in fact, many are drawing their chief income from them. Up to the end of 1920 the fees were Fr. 1.50 for each consultation in the practitioner's house and Fr.2.50 for each visit. Now the charges are Fr. 2 and Fr. 3 respectively. Of the different sickness insurance institutes in Basle the Municipal Sickness Insurance Society is the strongest, as it is subsidised with public funds. The monthly premium is Fr.2.50. But according to the income of the member this premium is partly or wholly paid by the State. Of 66,000 members, 14,000 only pay the full premium. The members have the right to free medical treatment, including drugs, hospital, and sanatorium charges. The average cost of each member to the society is Fr.23.70. With the high cost of living and the very low premiums it is probable that more and more people will join the societies which are becoming increasingly powerful, and the decrease in private practice making the great mass of the practitioners entirely dependent on them. The whole system of sickness insurance is therefore being critically scrutinised by the profession.

For the discussion of all these questions a special weekly paper has been founded. The *Schweizerische Aerztezeitung für Standesfragen* (*Bulletin Professionel des Médecins Suisses*) is edited under the authority of the Executive Council of the Swiss Medical Association, and appears both in German and French. It is sent free to every practitioner in the country. Such an organ is doubly wanted, as a new Bill covering State insurance against old age and invalidity will soon be brought before Parliament. At the same time the old organisation of sickness insurance is awaiting revision, and it is highly necessary that the profession should have a voice therein. As Dr. Haemig, of Zurich, has recently pointed out in a well-documented article in the *Schweizerische Medizinische Wochenschrift*, sickness insurance has its very serious drawbacks. Dr. Haemig draws his conclusions from statistics of the Bricklayers' Insurance Union of Zurich. In 1894 the average member of the union had annually four and a half days' of incapacity for work; in 1913, however, 13 days; and in 1917, 13. Influenza renders the statistics of the follow years useless for comparison. In 1895, out of members. 25 were recorded as incapable of work; in 1913 more than 80; in 1917, 66. In the same period the claims on the fund arising from chronic diseases like tuberculosis or heart disease showed a decrease. The steady increase is due to more trivial ailments like pharyngitis, wax in ear, and so forth. This makes it clear that on the one hand the members, with gradually increasing frequency asked their doctor to certify them unfit for work, and, on the other hand, the doctors became more and more generous in notifying members as incapable of work. Such conditions have very serious economic consequences for the unions, and, further, they have a very deplorable effect on the psychical state of the people; ultimately they are apt to destroy in neurasthenics the incentive to work. Dr. Haemig sees the remedy first in the formation of a neutral control board and next in the insertion of a clause in the new Act that the daily insurance pay must in all cases be below the daily wage.

The Swiss Neurological Society.

The Swiss Neurological Society, under the chairmanship of Professor Robert Bing, recently held its annual meeting at Basle. The relation between the nervous system and internal secretion was the chief topic discussed. From the many other communications we may select for comment the studies of Professor Landau (Berne) on the brain of Gambetta preserved in Paris. It had been commonly stated that the brain of the great French patriot was abnormally small—only 1180 g. Landau found this to be false, the apparent small size being the effect of technical errors in its conservation. On the other hand, it appears that the centre of speech is enormously developed, an interesting fact, as Gambetta was notoriously lacking in the gift of oratory. Professor Hotz, director of the surgical clinic, spoke of the operation of sex-gland implantation, the so-called operation of Steinach, which has recently been advertised in the press. His experiments led Hotz to an entirely negative opinion, as he observed none of the results recorded by the originators of that operation.

Jan. 7th.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

Venereal Diseases among Women.

THE large amount of venereal disease in India and the frequency with which it is responsible for gynæcological trouble has been suspected for some time. The council of the Countess of Dufferin's Fund recently caused an inquiry to be made to discover how far this suspicion was correct and how far facilities for efficient treatment existed in women's hospitals. The result of the inquiry elicited the almost unanimous opinion of the medical men and women consulted that venereal disease was responsible for a very large proportion of gynæcological disease and a considerable proportion of the high infant mortality in India, and that facilities for modern treatment (at least in women's hospitals) were few indeed. The council then applied to the Government of India for a grant to enable it to organise post-graduate courses of instruction for medical women in the modern treatment of venereal disease. It also asked that medical women who had attended these or similar courses should be allowed to purchase necessary drugs from Government stores at reduced rates, and to have necessary pathological investigations done free of charge at Government laboratories. These proposals have been acceded to by the Government, and courses of instruction have been held at Deolali under the superintendence of Lieutenant-Colonel G. H. Frost, I.M.S., consulting dermatologist to the Government of India, during March, 1920. The courses last 12 days, and are well attended by medical women. The syllabus includes lectures, clinical demonstrations, instruction in the newer method of treatment, and a considerable amount of practical laboratory work. Courses for the coming year are now being organised, including two for medical women of the assistant-surgeon class.

Medical Aid in the Punjab.

In the triennial report on the Working of the Charitable Dispensaries in the Punjab for the years 1917, 1918, and 1919 it is stated that owing to the dearth of trained workers arrangements for medical relief in the Punjab are far from satisfactory. The report pays a tribute to the Punjab Medical School for Women, which is incorporated with the Woman's Christian Medical College, Ludhiana, and is the recognised Government school for the training of women for a medical career. This institution has continued to supply trained workers for employment in women's hospitals and dispensaries so far as it was in a position to do so. The number of non-medical students is still small, although the teaching and hostel arrangements leave nothing to be desired. Plans are under consideration for rebuilding the institution.

First Aid in Madras.

The executive council of the St. John Ambulance Association, Simla, has requested the assistance of the Madras Chamber of Commerce with regard to the formation of regular ambulance divisions for practical work in the mills and factories in the city. The Chamber has replied that classes in first aid have already been opened in several mills and have proved very successful, and that the movement will have the sympathy and encouragement of the Chamber.

Tibet Mission Medical Officer.

In response to several requests by the Dalai Lama and his Ministers that a British officer might be allowed to pay a friendly visit to Lhasa, the Government of India are sending Major R. S. Kennedy, I.M.S., as senior medical officer of the Mission.

AMERICAN THERAPEUTIC ASSOCIATION.

THE thirtieth annual meeting of this association was held in Atlantic City from Sept. 14th to 17th, 1920, with Dr. WILLIAM MARTIN, the President, in the chair.

Dr. EDWARD C. TITUS and Dr. FREDERIC DE KRAFT of New York read a contribution on the

Employment of Diathermy and Galvanism in Management of Sequelæ of Occlusion, Partial or Complete, and Rupture of Cerebral Arteries,

in which they referred to a report on the use of diathermy as an adjunct in the treatment of chronic syphilis published by them in the *International Journal of Surgery*. In this report they showed that there was induced a marked heating of all the tissues, followed by active hyperæmia, stimulation of the metabolic processes and increased elimination, local and general, profuse diaphoresis, and augmented secretion of urine. The conditions produced in the tissues were conducive to absorption of inflammatory deposits irrespective of their character. Later results had been equally satisfactory in various syphilitic manifestations. Extensive experiments with galvanism had shown that it improved the nutrition of the coats of the blood-vessels as well as of the surrounding tissues, and beneficially modified vascular tone. It would thus be seen that by the combined use of diathermy and galvanism effects were obtained which could not be derived from the application of either of the currents individually. During the past four or five years they had employed this combined method to remove as far as possible the results of cerebral hæmorrhage or embolism, also in cerebral endarteritis, nervous breakdown, and cerebral neurasthenia, due to impaired nutrition of the brain because of deficient circulation. The method used was as follows: An electrode, 2 by 4 inches, or slightly larger, was moulded to conform to the contour of the forehead. Under this electrode, in direct contact with the head, were placed 30 layers of surgical gauze, saturated in salt solution. The gauze pad was slightly larger than the metal electrode, so that none of the bare metal touched the skin. The electrode was then securely fastened over the gauze by means of a roller bandage and connected to the negative pole. The patient was then placed on a suitable table while the current was administered. A second electrode similar in size and construction to the one just described was placed on the neck just below the line of the hair. This electrode was connected to the positive pole and held in position by a suitable pillow. A current from a battery had proved the safest and most suitable for galvanisation of the brain. If a wall cabinet current was used it should have a volt-meter as well as a milliamperemeter. It was always well to begin with a mild current, about 1 to 3 milliamperes and 5 volts, and the current should be turned on and off slowly. The strength of the current with the low voltage (5) might be increased slowly to 10, 20, or even 30 milliamperes. The results of this galvanisation were better and more rapid if it was preceded by diathermisation of the brain, which seemed to prepare the way for the galvanic current by improving the circulation and the lymphatic flow.

Dr. FRED. H. MORSE presented a paper on

Sigmoid Impaction: Its Significance, Pathology, and Treatment,

illustrated with lantern slides. He stated that the sigmoid flexure was a field that urgently demanded relief. Dr. Morse was confident that many patients being treated for cystitis, prostatitis, hæmorrhoids, uterine displacements, and so-called catarrhal salpingitis were really suffering from displacement of the pelvic colon. If the distortions and bends with which we had to deal in sigmoid impaction and the conditions about the splenic flexure and descending colon were to be treated successfully, therapeutic effort must be carefully guided with a view to the effect desired. Direct rectal application must be made to the seat of threatened obstruction, and this could be done safely and intelligently since the use of the alternating current had been brought under control. A large amount of muscle stimulation could now be used without any possible harm to the inflamed mucous membrane. The results demonstrated on the screen, the speaker declared, were not merely hypothetical theories but legitimate clinical realisations.—Dr. CORA SMITH KING and Dr. ELNORA C. FOLKMAR both testified to the value of Dr. Morse's technique.

Dr. ELNORA CUDDEBACK FOLKMAR presented a communication on

Diathermy as a Therapeutic Agent, Especially in the Treatment of Sprains, Fractures, Adhesions, and Chronic Stiff and Painful Joints.

She stated that a therapeutic measure for the purposes of this paper was defined as one which aided nature on her own plan to restore physiological function which for some reason nature had not been able to initiate, or did so only in a feeble way. Diathermy was such an agent. Nature's cardinal method of restoration was the production of heat—inflammation locally, fever systemically. No injury, whether traumatic, chemical, thermic, or bacterial, could be recovered from except through the agency of heat, whether the heat originated within the system or was induced by external agents. Diathermy increased the temperature of the tissue, dilated the blood-vessels by direct influence, and increased the blood-supply to the area treated; it quickened the chemical processes of metabolism, and thus aided nature in making a cure. It relieved pain and tenderness by relieving pressure from exudates; it softened tissues and made them better conductors of low-frequency currents and more susceptible to mechanical treatment, such as vibration and massage. Dr. Folkmar described in detail the technique of diathermy as applied in the treatment of trauma, visceral adhesions, and chronic, stiff, and painful joints. She followed diathermic treatment with a surging faradic massage, and then gave what she had called the "faradic grip," which consisted in slowly moving the secondary coil over the primary until the patient gave an involuntary sound. This was repeated five or six times, and was followed by passive and active attempts at motion. Diathermy was destined to become quite as important to the orthopædist as splints and bandages. The odontologist must call on diathermy to assist nature in repair processes, as he now called on radiology to confirm his diagnosis. The surgeon must use diathermy in his fracture cases to promote rapid union and to relieve pressure and pain, and must take cognisance of diathermy as a valuable agent for the preliminary and subsequent treatment in pelvic and abdominal operations to prevent the formation of adhesions. The layman already demanded an X ray as a confirmatory diagnosis. He would soon demand diathermic treatments.

Dr. WILLIAM L. CLARK read a paper on

The Rôle of Radium Needles in the Treatment of Malignant Disease.

He described his early experiments in attempting to devise radium needles that would be suitable for the treatment of malignant disease. He was told that the secondary rays from the needles would produce necrosis and sloughing. On investigation he found it quite true that sloughs were formed from the secondary rays in dry skin, but in malignant disease this did not occur unless the exposure was too prolonged. This was explained by the fact that in malignant disease the moisture around the needles absorbed the secondary rays. Unless the tissue was very much devitalised, one could leave the needles in for 24 hours without causing sloughing. Radium capsules and plaques had a distinct field of utility, but the needles had made many things possible which were not possible without their use. The removal of a malignant growth from the mouth and of metastatic glands in the neck was pure folly because the migratory cells were not taken into account. The migratory cells in the ducts should be treated, not necessarily with the needle, because they might be reached by the element properly filtered. The needle might be inserted right into the gland, which was absorbed, inhibited, retrogressed, and disappeared. Where the glands had broken down it might be possible to excise them and then insert a radium tube. They had had cases treated in this way in which they appeared to have inhibited malignant conditions. Lantern slides were exhibited showing the use of radium needles in cancer of the stomach following gastro-enterostomy, squamous epithelioma of the lip, and a malignant growth of the mastoid region which when treated with the radium needles showed regression without great destruction. Results were also shown in other malignant conditions.

Dr. CORA KING read a paper on

The Continuous Current in Inflammatory Conditions.

She spoke more particularly of inflammatory conditions of the sigmoid, bladder, uterine endometrium, and the cervical and vaginal membranes. In the treatment adopted by her the sinusoidal current was used, with one pad under the sacrum and the other over the abdomen, as strong as the patient could comfortably bear it. When the muscles were well synchronised, with the bulb in the rectum but without a rectal tube, a bland soapsuds enema was given. In the proper posture gravity would carry the fluid to the transverse colon. After the patient had evacuated the enema she was placed in the knee-chest position, and two drachms of argyrol, 25 per cent., were introduced into the rectum. The uterus was then tamponed with 25 per cent. argyrol, and if there was bladder trouble argyrol was introduced into the bladder. The patient was then placed in the dorsal decubitus, and large pads were placed across the pelvis, low down over the pubic bone. The galvanic current was then passed to easy tolerance, three to five milliamperes, gradually raised to ten milliamperes in the course of 18 to 20 minutes. Dr. King considered that uterine inflammatory conditions, when not gonococcal in origin, were mostly due to extension of inflammatory conditions in the colon. At any rate, under this treatment the patients made remarkable improvement. Dr. King said she had used argyrol and the galvanic current separately, but neither alone gave the results that were obtained by this combination.

Public Health.

REPORTS TO SANITARY AUTHORITIES.

Newport Port.

IT is possible that our national system of supervision of the housing of seamen is, in part at least, responsible for the defective conditions far too frequently found on our merchant vessels. The whole question is very ably discussed by Dr. J. Howard-Jones in his 1919 annual report to the Newport Port Sanitary Authority. The Board of Trade is the department responsible for the supervision of the design of ships, including those parts of the vessel used for the accommodation of the crew. Without wishing to criticise a Government department that has done excellent work in many directions, we agree with Dr. Howard-Jones in thinking that the Board of Trade has not yet fully realised the great importance of marine hygiene, as vessels are still being built on which the accommodation provided for the crew is ill-designed and in many respects unsatisfactory. Often great improvement could have been effected by alteration of the design before the vessel was built, and such alteration would, in many cases, not have involved much, if any, increase in the cost of construction. Dr. Howard-Jones states that the crew spaces provided by some shipowners are far in advance of the requirements, and even of the recommendations of the Board of Trade, while many vessels which have recently been certified by the Board of Trade contravene the regulations of that department in many particulars. The present regulations of the Board of Trade are, in Dr. Howard-Jones's view, too indefinite, with the result that builders interpret them differently. In the past the British standard has been accepted by most nations, but some of them are now demanding in many respects a higher standard of hygiene, and the progress in Britain has not kept pace with that made in some maritime countries of Europe. In regard to cubic space the British minimum is 72 cub. ft. and 12 sq. ft. of floor space per man, where wash-houses and mess-rooms are provided, whereas the Norwegian, Swedish, and Australian authorities require no less than 140 cub. ft. and 18 sq. ft. floor space. Again, the British regulations require a sufficient height in cabins for men of ordinary stature to stand and move about in an upright position—that is to say, at least 5 ft. 6 in. between the floor and under surface of the beams. No provision is made for the comfort and convenience of taller men. They must accommodate themselves to the height of the quarters or remain on shore, where they are provided with bedrooms not less than 8 ft. in height.

The accommodation for seamen on board Scandinavian and American vessels is often far superior to that on the average British ship. In this connexion Dr. Howard-Jones gives an instance which recently came under his observation in which a British firm of shipbuilders built two vessels, one for a Norwegian and the other for a British company. He supplies details of the accommodation for the crew on the Norwegian and British vessel respectively, the former being in nearly every respect much superior to the latter.

Dr. Howard-Jones expresses the view that the control of shipbuilding by the Government of this country is carried on in a very unsatisfactory manner in so far as marine hygiene is concerned, and, in support of this contention, he alludes to the fact that the evils to which he has so frequently drawn attention in his annual reports are still being perpetrated without interference by the Board of Trade. It should be understood that vessels entering our ports in the ordinary course of trade are subjected to regular inspection by the medical officers of health and sanitary inspectors employed by the port and riparian sanitary authorities, with a view to the detection of conditions prejudicial to the health of the crews. Much excellent work has been done in this connexion and minor defects such as the lack of adequate ventilation or faults arising from disrepair, are generally at once rectified when brought to the notice of the shipowners or their agents. But, where much structural alteration is required in order to remedy the defects found, it is difficult for the officers of the port sanitary authority to take effective action, more especially in the case of a British vessel which has been certified by the Board of Trade as complying with their regulations. In such circumstances, the shipowners might very properly object to carry out the requirements of the Port Sanitary Authority on the ground that the vessel conformed in all respects with the regulations of the Government department responsible for the supervision of the design of British vessels. Obviously the proper time to draw attention to such defects is not after the vessel is built, but before she is built; and, if satisfactory results are to be obtained, it is essential that detailed plans of the officers' and men's quarters should be submitted for approval to persons possessing extensive knowledge and experience of marine hygiene previous to the construction of the vessel.

Dr. Howard-Jones makes some valuable suggestions with the view of remedying the existing state of affairs. He points out that the Ministry of Health was established to coördinate and improve public health administration in the country, yet supervision of the housing of seamen on board ship has not been included among the present duties of the Ministry. Marine hygiene is essentially an international question, and there would be much advantage if international standards were established. He also gives details of the improvements which he would like to see introduced in officers' and men's quarters on board tramp steamers. As these are the result of many years' patient study of the subject, they should receive the careful consideration of all interested in the welfare of our merchant seamen.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

County Palatine of Chester.

IN his annual report for the year 1919 Dr. Meredith Young refers to the increased number of deaths resulting from, or attributed to, malignant diseases during recent years. No fewer than 747 deaths were attributed to these causes, as compared with 678 in 1918 and 711 in 1917. The cancer death-rate per 1000 of the population was 0·70 in 1900, 0·77 in 1905, 0·84 in 1910, 1·25 in 1915, and 1·24 in 1919. In connexion with the cancer problem, it has occurred to many that there might be advantage in making the disease notifiable in a number of selected districts with a view to careful inquiry being made by trained observers into the circumstances associated with each case. Valuable information respecting the natural history of the malady would thus be obtained, which, together with laboratory research, might result in elucidation of some of the questions concerning the cause of the disease and the factors which predispose to attack.

Ten cases of small-pox occurred in the urban district of Lower Bebbington during 1919. These were attributed by the district medical officer of health, Dr. J. B. Yeoman, to spread of infection from the Liverpool Port Sanitary Authority's hospital at New Ferry. Dr. Meredith Young, though not a believer in the aerial transmission of small-pox infection, states that there are numerous other ways in which the disease may be carried from a small-pox hospital to adjoining premises, and adds that the outbreak in question is by no means the only one in which small-pox has appeared in the vicinity of the hospital under circumstances which appeared to point to the hospital being the direct or indirect source of infection. The deaths recorded as due to influenza in 1919 numbered 884, or approximately half the number which occurred during 1918. In some areas it was found practicable to enrol a number of women possessing a reasonable amount of skill in home nursing whose services were available, under professional direction, for the nursing of patients during widespread outbreaks of the disease. This system has much to commend it, particularly now when the exigencies of war have produced a large number of educated persons who have gained a fair amount of nursing experience. Work of this nature is suitable for those who have assisted to nurse the sick and wounded under the schemes of the Order of St. John and the British Red Cross Society.

The annual report contains, as usual, a section devoted to the important subject of maternity and child welfare, written by Dr. Jane R. Shaw, the lady assistant medical officer of health. The proportion of trained midwives practising in the county now amounts to 56 per cent., which shows a considerable falling-off of the "bona-fide" midwife. Great difficulty is still experienced in obtaining midwives to fill the places of those who retire, and this will always be the case until both the status and remuneration of the midwife are made commensurate with the responsible nature of the duties which she has to carry out. In certain districts midwives have been appointed each at a salary of £100 per annum, while in a number of other areas the services of nurse midwives have been obtained by arrangement with the County Nursing Association. This plan has been found to work most satisfactorily. The county maternity and child welfare staff comprises a lady assistant medical officer of health and 26 whole-time and one part-time health visitor. With three exceptions each health visitor is responsible for the visiting of children under 5 years of age. She also assists in the work of medical examination of school children, and in the treatment and prevention of tuberculosis, besides attending the maternity and child welfare centre in her particular area. The arrangements made for visiting infants during the period under review were similar to those of previous years. Cases attended by an untrained midwife were visited as soon as possible after the birth, and those attended by a doctor or a trained midwife were visited after the tenth day. The health visitors sent every week to the county medical officer of health a report of the work done during the preceding week, and a report, on special forms, of every baby visited and revisited. These reports are carefully scrutinised by the lady assistant medical officer of health and a duplicate of each form filed for future reference. During the first year of their age the babies are usually visited once a month, but it is found necessary in many cases to visit more frequently. During 1918, with one exception, the number of visits to notified babies under 1 year amounted to an average of ten visits per child, which was regarded as satisfactory. During 1919, however, the average fell to about six visits per child. This was due to the increased amount of tuberculosis and school inspection visiting that the health visitors had to do. Every branch of the health visitor's work is important, and if she is to devote sufficient time to each she should be given a much smaller area than is at present allotted to her. Such an arrangement would, of course, involve a considerable increase in the number of health visitors employed. In November, 1919, an antenatal clinic was opened as an experiment in this branch of the work. A specialist in obstetrics and gynæcology was appointed to attend at its fortnightly sessions. During the six months the clinic has been open 48 patients attended on one or more occasions, being sent by their own doctor or brought by the midwives engaged to attend the confinement. A complete history was taken in each case, the patient's condition being carefully investigated. The urine of every patient was examined, and where circumstances required pelvic measurements were taken. Advice was given regarding appropriate diet, exercise, and the general hygiene of pregnancy. In the event of any special medical or surgical treatment being necessary a letter was sent to the patient's own doctor on the subject.

It is obvious that excellent work is being carried on in Cheshire in connexion with maternity and child welfare, which will doubtless have important influence on the future health of the community.

City of Birmingham.

Dr. John Robertson's annual report for the year 1919 contains as usual much interesting material. He lays special emphasis once more on the importance of housing conditions in relation to health. In his opinion much still remains to be done in Birmingham to improve the health and social conditions of the people, and, in this connexion, the condition that overshadows everything else is the housing question. There are a large number of houses in the city where two or more families are living in the accommodation provided for one family. The shortage of houses is so acute that there does not at present appear to be any prospect of making up the deficiency for many years. If 2000 houses are built per year, it will not do more than meet the ordinary increase in population. Something more, therefore, is needed than 2000 new houses each year. In the meantime the old houses are getting into an increasingly defective condition. In some cases steps have to be taken to prevent parts of old dwellings from collapsing. In the ordinary course these houses would have been demolished at the rate of from 300 to 500 per annum, as they are old and dilapidated and the leases are running out. For the central areas of the city something more than mere house-building is required. It is most important that these districts should be subject to a modified form of town-planning, so that in time many of them, in which the conditions are at present degrading, may be brought to a standard commensurate with the minimum requirements for reasonable healthy existence. The arrears of work on housing are so great that, in Dr. Robertson's opinion, almost everything else in the way of city expenditure should give place to it. Having regard to the fact that Birmingham contains one of the largest industrial populations in the Empire, the health of the city is exceptionally good. The death-rate for 1919 was 13·0 per 1000; the infantile mortality-rate, 84; the phthisis mortality-rate, 1·10; the non-pulmonary tuberculosis-rate, 0·18; while the new cases of enteric fever gave a rate of 0·04 per 1000. Comparison of the health statistics of one community with those of other more or less similar communities is always interesting. For this purpose the general death-rate and infantile mortality-rate respectively of each of the eight largest towns may be given: Glasgow, 16·4 and 114; Birmingham, 13·6 and 88; Liverpool, 16·8 and 107; Manchester, 14·0 and 95; Sheffield, 13·7 and 96; Leeds, 16·0 and 112; Bristol, 13·1 and 82; Edinburgh, 16·8 and 117. It will be noted that the general death-rate and infantile mortality-rate of Birmingham are lower than the corresponding rates in any of the other towns with the exception of Bristol.

On the subject of the treatment and prevention of tuberculosis Dr. Robertson thinks that the persons who hold somewhat gloomy views as to the success of existing methods do not appreciate the following important facts—namely, that tuberculosis is mainly a very chronic disease, and that measures taken to-day will only be apparent in their effects in some years to come. In most areas what has been done is so trivial in amount that it could not be expected to substantially reduce the prevalence of such a disease. "Notification" has brought to light and labelled many persons whose deaths would have been classified under other headings but for notification. Four years of war have profoundly influenced many lives. War conditions put a strain on the soldier and the civilian alike, lowering resistance and making those with any nidus of infection succumb to it. The Birmingham figures were worse during the war years than before, so far as deaths go. Immediately the war terminated they commenced to improve. There are now fewer deaths than before the war and there are far fewer new cases. As regards the result of treatment, there is reason to value what has been accomplished. Treatment is directed to prevent infection spreading, and to the arrest of the disease in the individual. There is no doubt that fewer cases in young adults are now met with. In connexion with the arrest of the disease, the following figures for the first year of complete notification (1913), when a large number of chronic and severe cases came on the register for the first time, show what may be considered as the worst results, but even these are very much better than those reported from towns which have dealt with tuberculosis in a half-hearted way. The total number of cases of pulmonary tuberculosis notified in 1913 was 4146, and the number whose history has been followed up to April, 1920, was 3104. Of these 3104 cases, 1371, or 44 per cent., have died during the past six years; 1540, or 50 per cent., are doing usual full-time work, while 80 are doing part-time work; 89 are not able to do any work at all and 24 have no occupation. There were 935 deaths registered during 1919 as due to cancer. This is equal to 1 in every 13 deaths occurring during the year. Of persons 20 years of age and over the deaths during 1919 represented 1 in every 9 deaths. The total number of deaths attributed to cancer in each year since 1911 were as follows: 1911, 748: 1912, 791: 1913, 893; 1914, 773; 1915, 885; 1916, 897; 1917, 912; 1918, 883; 1919, 935.

The excellent work carried on in Birmingham in connexion with maternity and child welfare still continues and the year 1919 showed a lower infant mortality-rate than any previous year on record—namely, 84 per 1000 births. The rates in previous years were as follows: 1871–75 (old city area), 182; 1876–80, 164; 1881–85, 161; 1886–90, 173; 1891–95, 176; 1896–1900, 199; 1901–05 (extended city), 157; 1906–10, 131; 1911–15, 126; 1916, 104; 1917, 101; 1918, 99; 1919, 84.

City of Glasgow.

This is the first annual report issued by Dr. A. K. Chalmers since the commencement of the war, and it has reference to health conditions in the city during the six years 1914–19. Even a cursory examination of its pages shows the rapid progress that has been made in certain branches of public health work during the period under review. More particularly is this the case in connexion with maternity and child welfare, the treatment of tuberculosis, and the measures adopted for the prevention and treatment of venereal diseases. It is satisfactory to know that, despite the strain on the civil population during the period in question and the pandemic of influenza towards its close, which increased the death-rates of the fourth and first quarters of 1918–19 to quite unusual ranges, the average health of the population was fairly maintained, and the rates on the whole were lower than during any previous period of like duration. How much of this improved health was due to the more orderly lives of the civilian population, to the better feeding of children, and to reduced drunkenness may be matter of opinion and not readily demonstrable, but it was the uniform experience of the visiting nurses and others, whose daily work took them into the houses of the poorest of the population, that food and furnishings and habits were all improved.

The report contains an interesting preliminary statement respecting the results of an inquiry into the causes of stillbirths. It is frequently stated, and commonly accepted, that syphilis is a dominant factor among the causes of fœtal deaths, and the inquiry was instituted with the double purpose of ascertaining how far this is actually the case in children stillborn at full time, and also to learn what gross physical lesions were present in the stillborn children and whether they were of a character which made preventive treatment of the mother reasonably possible. The inquiry was conducted by Dr. R. M. Buchanan, the city bacteriologist, but it was not intended to report until a much larger number of examinations had been made, and the present preliminary statement was made in response to a request for information on the subject by the Scottish Board of Health. In summarising the results so far obtained by Dr. Buchanan, Dr. Chalmers states that as a cause of death at full time syphilis does not appear to be a predominant factor. There is some indication, however, that it is more frequently operative at earlier stages of pregnancy, as illustrated by the relatively large number of fœtuses in which its presence could be demonstrated in miscarriages occurring between the sixth and eighth month of pregnancy.

URBAN VITAL STATISTICS.

(Week ended Jan. 8th, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18½ million persons, the annual rate of mortality, which had been 15·3, 15·1, and 15·6 in the three preceding weeks, fell to 13·9 per 1000. In London, with a population of 4½ million persons, the death-rate was 12·9, or 3·6 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 6·5 in Rotherham, 6·7 in Walthamstow, and 7·4 in Bury to 22·6 in Hastings, 23·2 in Halifax, and 24·5 in Sunderland. The principal epidemic diseases caused 231 deaths, which corresponded to an annual rate of 0·6 per 1000, and comprised 90 from infantile diarrhœa, 60 from diphtheria, 28 from measles, 26 from whooping-cough, 22 from scarlet fever, and 5 from enteric fever. The mortality from these diseases showed no marked excess in any of the large towns. There were 4608 cases of scarlet fever, 2588 of diphtheria, and 1 of small-pox under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 4817, 2642, and 1 respectively at the end of the previous week. The causes of 38 of the 4964 deaths in the 96 towns were uncertified, and included 4 each in Liverpool and Preston, and 3 in West Hartlepool.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had increased from 13·5 to 18·4 in the five preceding weeks, was again 18·4 per 1000. The 382 deaths in Glasgow corresponded to an annual rate of 18·1 per 1000, and included 11 from whooping-cough, 6 from infantile diarrhœa, 3 from diphtheria, 2 from small-pox, and 1 each from measles and scarlet fever. The 145 deaths in Edinburgh were equal to a rate of 16·9 per 1000, and included 14 from influenza, 2 from measles, and 1 each from scarlet fever, whooping-cough, and infantile diarrhœa.

Irish Towns.—The 139 deaths in Dublin corresponded to an annual rate of 17·1, or 9·8 per 1000 below that recorded in the previous week, and included 3 from infantile diarrhœa, 2 each from enteric fever and diphtheria, and 1 from whooping-cough. The 157 deaths from Belfast were equal to a rate of 19·5 per 1000, and included 6 from infantile diarrhœa, 3 from diphtheria, and 1 from whooping-cough.

The Services.

HYGIENE IN THE ARMY.

THE important part which hygiene plays in maintaining the efficiency of troops is emphasised in an Army Order just issued. Command Schools of Hygiene are to be established at Aldershot (when the transfer of the school at Blackpool is effected); Hertford Barracks, Hertford; Strensall Camp, near York; Dreghorn Camp, near Edinburgh; Hilsea hutments, Portsmouth; and Carrickfergus. These schools are to be permanent centres of instruction for staff and regimental officers and for regimental sanitary personnel; and they will maintain close liaison with neighbouring units in order to facilitate the demonstration of the principles of practical hygiene on model lines. Four classes for officers will be held annually, and the classes for regimental non-commissioned officers and men will extend over a period of three weeks. Classes for personnel of the Royal Air Force will run concurrently with the Army classes, and Territorial Force sanitary companies will be attached to the Command Schools for instruction during their period of training.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Cmdrs. R. C. Munday, T. W. Philip, M. H. Knapp, and J. A. L. Campbell have been placed on the retired list with the rank of Surgeon-Captain.

ARMY MEDICAL SERVICE.

The undermentioned Major-Generals retire on retired pay: L. E. Anderson and G. Cree.

ROYAL ARMY MEDICAL CORPS.

The undermentioned are placed on the half-pay list on account of ill-health: Lieut.-Col. G. J. S. Archer and Major H. S. Dickson.

The undermentioned relinquish the acting rank of Major: Temp. Capt. R. B. Wallace and Capt. and Bt. Major J. D. Bowie.

Capt. W. Walker to be acting Major.

The undermentioned to be temporary Captains: Temp. Lieut. H. J. Brink and E. Tanton (late temporary Captain).

Officers relinquishing their commissions:—Temporary Captains retaining the rank of Captain: G. Fildes, P. A. Dargan and H. J. H. Symons (on appointment to I.M.S.), R. Stephens, P. MacD. Little, and T. Sheehan.

Temp. Lieut. J. S. F. J. Kerr retains the rank of Lieutenant.

TERRITORIAL FORCE.

Capt. R. Phillips to be Major.

Capt. T. M. Jamieson, from 4th Southern General Hospital, to be Captain.

1st London (C. of L.) Sanitary Company: Major L. T. F. Bryett resigns his commission and retains his rank, with permission to wear the prescribed uniform.

INDIAN MEDICAL SERVICE.

The King has approved the retirement of the following officers: Lieut.-Cols. J. L. Macrae, G. T. Birdwood, G. H. Frost, A. Miller, and Col. P. J. Lumsden.

ROYAL AIR FORCE.

Capt. A. E. McCulloch relinquishes his temporary R.A.F. commission.

Obituary.

SAMUEL ARCHIBALD VASEY, F.I.C., F.C.S.,

DIRECTOR OF "THE LANCET" LABORATORY.

THE death of Mr. S. A. Vasey on Jan. 7th, after a brief illness, came as a great shock to his friends.

Born in London on March 9th, 1866, the son of Samuel and Alice Marwood Vasey, he was educated at the Leyton and the City of London Schools, going on then to Charing Cross Hospital Medical School, as it was at that time his intention to become qualified as a practitioner of medicine. Always keenly interested in chemistry and its application to hygiene and industrial research, he took his Fellowship of the Chemical Society in 1883, and almost at once became assistant to Professor C. W. Heaton, who had made a name at Epsom College, and later as lecturer on chemistry at Charing Cross Hospital, by arousing a living interest for the principles of chemistry among his pupils. Professor Heaton, who was public analyst to the parish of St. Martin-in-the-Fields, was at that time supervising the conduct of THE LANCET Laboratory. Vasey became his assistant also in that work, and on his death in 1893 took over the whole responsibility at the early age of 27 years.

S. A. VASEY.

For 28 years Vasey continued to direct the inquiries of all sorts conducted at THE LANCET, and it may well be doubted whether in this time any important work in chemistry or physics, and having a bearing upon the health and happiness of humanity, escaped his notice. Already in his first year of office we find him reporting on an Inquiry into the Character and Quality of the Ice-supply of London, on the Metallic Contamination in the Manufacture of Mineral Water, on a Special Analytical Sanitary Commission on Gaseous Fuel, and on another Commission on Tannin and Theine in China and Indian Teas. This work was a continuation of a scheme laid down by the founder of THE LANCET and carried on with energy by him and by his son, Dr. James Wakley, who succeeded him as Editor. The scheme was to institute inquiries by the paper, to which the title "Lancet Commissions" was given, under which persons with particular knowledge and authority should institute close inquiries into the circumstances where the public health was indifferently safeguarded, and should publish their results, THE LANCET taking the consequences. At the time when the scheme took shape the public was without the numerous forms of protection which have since been furnished by various Acts of Parliament. To assist in the actual inquiries and to conduct any physical and chemical investigations necessitated, a laboratory was founded and a director appointed, whose first inquiry, which was published in January, 1851, proved that most of the coffee on the market, sold under various alluring titles, was grossly adulterated. The excitement was created which Wakley expected, and the method employed in dealing with the analysis of coffee was followed in the analyses of other food and medicinal substances during the next ten years, when the scope of the investigations assumed a different character and while all sorts of foodstuffs came under investigation, such great subjects as the conditions of out-door poor relief, the water-supply of London, and the baking trade were dealt with. In connexion with the last inquiry Mr. Adolphe Smith, later to be associated with Vasey in so much public work, made his first report to THE LANCET.

Thus, when Vasey came to the laboratory the terms of reference were of the widest, and during his tenure investigations have been undertaken of so heterogeneous a character that we can only single out for notice a few of them; and concerning these we may say that, while the wide range proves Vasey's catholic equipment, we are not compelled to praise our friend or the nature of his work, for in scores of text-books his findings have been recorded with approval, and into more than one Act of Parliament his recommendations have found their way practically unchanged. Vasey was the author of a shrewd series of articles on the nature of quack abortifacients and the part author of a useful report upon the standardisation of disinfectants. These things are mentioned to show his skill at the bench. He made a thorough investigation into the physics of gas lighting and into the whole subject of heating by means of gas, and in the course of the latter work he supplied manufacturers of gas stoves with much information which they required for regulating the mechanism, and for obtaining economical results. Later, Vasey brought his intimate knowledge of air impurity to bear upon the whole subject of coal-smoke abatement. He was a strong supporter of the Coal-Smoke Abatement Society, and one of the first stations fitted up by the Meteorological Office, when the subject was put on a sound scientific basis, was in THE LANCET laboratory. He was also the author of three exhaustive inquiries into the two forms of alcohol sanctioned by the British Pharmacopœia—brandy and sherry—and into claret, the most frequent wine of ordinary drinking. His chemical résumés of these subjects constituted only a part of the interest of the articles. He took full opportunity during his investigations at the vineyards, to acquire information about soil, weather, and traditional routine, giving a broad character to the history of the three fluids. Others of his inquiries conducted far afield were those into the chemistry and natural history of continental waters such as Apollinaris and Hunyadi Janos and to the stock-breeding areas belonging to the Liebig Company. The medical profession were wisely informed by him, also, on such various topics of public interest as the nicotine contents of tobacco, with reference to pipe-, cigar-, and cigarette-smoking; the food value of oysters and the risks in their breeding and supply; and the measure of danger incurred by using certain flannelettes. In stopping at this point in our enumeration we do so because it is not easy to select, for any reasonable summary, the particular inquiries which have been either the most useful publicly, or displayed his skill in the most marked manner. The results of 28 years of application, knowledge, and intuition are accessible in our files.

Vasey's application of science to the things of daily life was not conscious or intentional, it had become part of his mental make-up. This was notably the case in regard to food. A luncheon to him was not (say) sausage and potatoes, it was 1250 large calories with too low a protein factor and a probable deficiency in fat-soluble A. A walk along the Strand or a fog-delayed journey from Cannon-street to Charing Cross afforded him material for interesting and informed comment. His mind was arranged on the pattern of a Royal Institution Christmas lecture, to be addressed to grown-ups instead of to children. Atoms and ions and sols became simple when he wrote about them because they were not in a separate compartment of his thoughts labelled "science," but were jostling in familiar company with food and drink and clothes and the raw materials of industry. Doubtless the fact that he was largely self-taught, and had taken little pains to spread out his mental equipment before the cold eye of the examiner had much to do with this freshness and originality.

Vasey was a man of many accomplishments and interests outside his purely professional work, and the first of these was music, which was a never-ending source of pleasure to him. He had that gift which but few possess in like measure, a talent for improvisation; this showed itself, not as an aimless wandering from chord to chord, but as a well-ordered and formal treatment of a theme. His knowledge of harmony seemed intuitive, although modernists would have thought it dull. His favourite composer was Handel, and after him Bach and the dignified and restrained followers of the Church school of Palestrina, Gibbons, and the Elizabethan madrigalists. He took delight in plain-song, and his taste in hymn tunes would have satisfied Sir Hugh Allen, for he could not stand the washy part-song brand of tune. He could talk well and learnedly without being arid on the by-ways of chemistry and physics, and was a charming and sympathetic host. Until a form of writer's cramp spoilt his grip he was a keen golfer, and he was for five or six consecutive years captain of the Sundridge Park Golf Club, to the great and publicly expressed appreciation of the members.

Our readers will sympathise with us in the loss which we have sustained by this untimely death. We have endeavoured to show the wide range of his equipment and the practical nature of his services to the public for a long and uninterrupted period. He died in harness. Those who are responsible for the conduct of this journal will have an abiding recollection of many years of intimate association. We drew on his knowledge unceasingly, and from his fertile imagination and shrewd judgment we received many suggestions, valuable to ourselves, and having no close relation to his immediate sphere of activity. He has left in his laboratory an orderly collection of his voluminous contributions to our columns. This is particularly fortunate because Vasey was a living dictionary of public health, where public health was in contact with his work, and for many years his voice will be with us full of wise counsel.

He married in 1900 Gertrude, youngest daughter of John James Griffiths, J.P., of Highbury, and to his wife, who survives him, deep sympathy will go out.

The calamity was unexpected, though the end cannot be termed sudden. On Dec. 2nd, after a long day at his work, he was taken ill with acute bronchitis, which became broncho-pneumonia. There were periods of improvement, but signs of cerebral and meningeal involvement developed towards the end—and he died on Friday, Jan. 7th, at his house, "Beechcroft," Bromley, Kent, in the fifty-fifth year of his age. The funeral took place on Tuesday last at Plaistow Cemetery in the presence of a large attendance.

ROBERT JARED BLISS HOWARD, M.D., C.M. McGILL, F.R.C.S. ENG., L.R.C.P. LOND.

Dr. Robert Jared Bliss Howard, who died on Jan. 9th, was the only son of the late Dr. Robert Palmer Howard, dean of the Faculty of Medicine and professor of medicine in the University of McGill. Born in 1859, he was educated at the High School, Montreal, and afterwards at the University of McGill, where he graduated B.A. with first-class honours in Natural Science in 1879, proceeding to the M.D., C.M. degrees in 1882, again with honours, and taking the gold medal. In the same year he obtained the M.R.C.S. Eng. and the L.R.C.P. Lond., and went with the late Sir William Osler, who had been a student under his father, to Berlin, and afterwards visited clinics at Vienna and Leipzig. Later he assisted his father in practice at Montreal, and became demonstrator of anatomy and surgery at McGill University, pathologist and assistant surgeon to the Montreal General Hospital, and surgeon to the Montreal Dispensary. He became a Fellow of the Royal College of Surgeons of England in 1884, being one of the first graduates of a colonial university to take this diploma. During the South African War he worked at the Guards' Hospital, Rochester-row, and during the recent war he organised and supervised the Mount Royal Home for Officers at Bath, and also worked at the 3rd London General Hospital at Wandsworth. For his services he received special mention and was awarded the O.B.E.

Dr. Howard married in February, 1888, Margaret Charlotte, daughter of Donald Alexander Smith, afterwards first Baron Strathcona and Mount Royal, by whom he had three sons and two daughters. His second son was killed in action in May, 1915. The elder will succeed to his mother's barony.

EDWARD COLLINS BOUSFIELD, M.R.C.S. ENG., L.R.C.P. LOND., D.P.H.

Mr. Edward Collins Bousfield died at his residence, De Crespigny-park, London, S.E., on Jan. 7th, aged 65. He received his medical education at St. Bartholomew's Hospital, where he was physiological prosector from 1876 to 1878, in which latter year he qualified with the Membership of the Royal College of Surgeons of England. The following year he obtained the Licentiateship of the Royal College of Physicians of London, and devoted himself almost exclusively to the work of bacteriological research. The experience which he gained as pathologist to the Wellcome Physiological Research Laboratories and at the Medical Graduates' College and Polyclinic led to his later appointments as bacteriologist to the metropolitan boroughs of Camberwell and Hackney and as the director of the Camberwell Research Laboratories. He was also deputy medical officer of health for Camberwell and Metropolitan Asylums Board Ministry of Health representative.

As a microscopist he contributed several useful papers on various subjects to scientific societies, was the author of a work on microphotography, and edited the late Rev. J. G. Woods's "Common Objects of the Microscope." To our own columns he contributed an interesting article on "An Attempt to Rehabilitate the Permanganates" (vide THE LANCET, Oct. 10th, 1908, p. 1078), and as recently as August, 1919, he described as a unique disease a condition to which he gave the name of cryptopodia.

MANCHESTER RADIUM INSTITUTE.—Sir William Milligan, honorary secretary and treasurer of the Institute, has announced that out of £30,000 asked for barely £9000 have been subscribed by the public. Owing to the Institute's lack of radium it is impossible to give the necessary treatment with full dosage to the ever-increasing number of patients applying for relief. The new hospital, with its in- and out-patient departments—the first fully equipped radium hospital in the United Kingdom—will afford opportunities for much valuable work being done, not only from the therapeutic but also from the research point of view.

TURNER MEMORIAL HOSPITAL, KEITH: DISPOSAL OF A TRUST FUND.—The Second Division of the Court of Session have granted the petition of the trustees of the late William Gordon, who died in 1906. In 1905 by a codicil of his will he provided that the farm and lands of Rosehall should be held by his trustees as a permanent and inalienable endowment to the Turner Memorial Hospital, Keith. By a later codicil he gave a sum of £1000 as a further endowment to the hospital. From July, 1906, to December, 1918, the average surplus revenue paid in respect of the Rosehall subjects to the directors of the hospital was £28 4*s.* per annum. For the year 1919 there was a debit balance of £5 14*s.* due to the cost of repairs and increased rates. The trustees came to the conclusion that it would be of advantage if Rosehall could be sold and the proceeds invested in trust securities, in view of prospective heavy expenditure on the property and increased rates. The petitioners accordingly advertised Rosehall for sale, and got an offer of £1350. The present tenant offered £1450, which the petitioners now asked the Court to authorise them to accept. They submitted that this sum invested in Government funds would produce a net revenue for the hospital of £70.

Correspondence.

"Audi alteram partem."

OSTEITIS DEFORMANS?

To the Editor of THE LANCET.

SIR,—I read with great interest the note on osteitis deformans, contributed by my friends Mr. Frank Romer and Sir W. Arbuthnot Lane. Whether the cases described are identical with those originally observed by Sir James Paget it is not easy to decide. I have seen a number of cases where for years the affection has been localised to one or both tibiæ, but I have also seen a case where the disease became distributed after having been confined to one tibia for over ten years. In this case the second tibia, the clavicle, and the skull were ultimately attacked. I have operated on many cases generally with marked relief; on some I have had to operate a second time. Usually a linear incision along the length of the thickened bone right into the medulla suffices. In cases of marked bowing accompanied by pain both in the bone and knee-joint I have removed a wedge from the tibia and straightened the limb. The fracture heals readily. About 15 years ago I removed a wedge from a very crooked and painful tibia which presented symptoms very similar to those described by Mr. Romer's first patient. The microscopic appearances of the bone removed were described as those of chronic osteitis. I saw him five years later, and his leg had remained quite straight and his pain was trivial. Some of these localised cases give no history of accident.

I am, Sir, yours faithfully,

Liverpool, Jan. 8th, 1921. ROBERT JONES.

THE FUTURE OF THE POOR-LAW INFIRMARIES.

To the Editor of THE LANCET.

SIR,—I should regret if any observations of mine in opening the discussion at the Harveian Society on the future of the Poor-law infirmaries have brought annoyance to anyone professionally connected with these institutions. At St. Mary's we are not in the least likely to underrate the efficiency of the infirmary personnel. On the contrary, we are agreed that the successful development of the affiliation scheme between St. Mary's and Paddington Infirmary during the past year is due in great measure to the medical superintendent and his resident staff. In particular we have been impressed by the possibilities of such a post as medical superintendent of an infirmary, to which there is no exact analogy in a general hospital, when, as in the case in point, there is found a happy union of clinical acumen and administrative capacity.

Statements, when they are lifted not bodily but piece-meal from their context, can proverbially be made to mean anything. Those of which Dr. J. C. Muir complains in your issue of Jan. 1st were so qualified in the text that it was plain that they implied no personal reflections whatsoever. I had hoped that it was sufficiently clear in my paper that these shortcomings are, in my opinion, made inevitable "by the very nature of the limited personnel and the financial arrangements." The medical superintendent, with the help of two or three residents, and such assistance as may be forthcoming from weekly visits of one or two consultants, has to compete with a mass of clinical material which would elsewhere engage the whole energies of 12 to 20 residents, aided by clerks and dressers, and of a consultant staff 20 to 30 in number, to say nothing of registrars and accessory services. If they were archangels it could not be done. A few of the infirmaries, as we know, are exceptionally equipped, and the arrangements between St. Mary's and Paddington Infirmary are on more ambitious lines, but it was of the majority that I spoke. Of these I held, and still hold, that much remains to be done to convert them into modern hospitals. The statements that I have made in support of that contention are, according to Dr. Muir, misstatements. We must leave it at that. It is of more moment that we are agreed as to the necessity for change.

When I was asked to open this discussion I ventured to suggest that a medical superintendent should be invited to take part in the debate, and that suggestion I repeated when the question of an adjournment came up. I think we can learn a great deal from criticism—from mutual criticism—if of a constructive nature, and I was under the impression that I had made it clear that many of us who are associated with the voluntary system are very conscious that it is far from perfect.

I write because I am in full accord with Dr. Muir that the spirit in which we approach the linking-up of voluntary hospitals and infirmaries is of the very first importance. Whether his letter or my paper more conduces to that end must be left to others.

I am, Sir, yours faithfully,

South Audley-street, W. Jan. 11th, 1921. C. M. WILSON.

OCCUPATIONAL HYGIENE AND THE SCHOOL MEDICAL SERVICE.

To the Editor of THE LANCET.

SIR,—I was very much interested in reading your leading article of Jan. 1st, which ably illustrates the highly unsatisfactory position and prospects of the junior whole-time school medical officer. Undoubtedly his lot is not a happy one, and certainly commands sympathetic consideration. The work is departmental, entirely executive, running in a monotonous groove, and the greater the number taking it up the less chance there is for the individual to get out of it. I agree that the situation is serious and should be ameliorated. At the same time I am somewhat surprised at the remedy suggested by the writer of the article, and equally so at his apparent faith in the infallibility of his cure. I am not unacquainted with factory medical work or public health administrative methods, and therefore do not hesitate to assure you that absorption of the certifying surgeon would simply mean a further increase of junior whole-time officers without any real bettering of unsatisfactory conditions. The only one to enjoy variety would be the administrative officer, as the executive work of factory medical service, at any rate in industrial areas, would certainly have to be undertaken by a separate department. Apart, however, from its doubtful efficacy, is it wise or proper to advocate the advancement of one section of the profession entirely at the expense of another section?

The attempt at justification has no stronger foundation than conjecture and the average certifying surgeon would probably find little difficulty in proving this (to his own satisfaction at least) to be as fallacious as the recommended cure. At any rate, the pushing of a theory of this kind means the promotion of a serious dispute within the profession. This would probably end unsatisfactorily for both parties, and would certainly give a good fillip to a third method of dealing with industrial medical problems which has already many supporters outside the profession. At a time when our medico-political leaders are advocating unity of the profession, and are impressing upon us the necessity of showing ourselves capable of working out our own future, is it not best to leave contentious matter of this nature severely alone? My own view is that it would be much more to the advantage of both these sections of the profession, as well as of the community at large, if they worked together to obtain a useful coördination of their separate functions and a general improvement of the disadvantageous conditions under which both are employed. To my mind the appointment of whole-time junior officers for executive work has been overdone, and I would venture the opinion that the only satisfactory way to get out of the blind alley is by a more general establishment of part-time service.

I am, Sir, yours faithfully,

W. F. DEARDEN,
Hon. Secretary, Association of Certifying Factory Surgeons.

168, Trafford-road, Manchester. Jan. 7th, 1921.

TABES:

ITS EARLY RECOGNITION AND TREATMENT.

To the Editor of THE LANCET.

SIR,—Dr. E. F. Buzzard, in a valuable article with this title, published in THE LANCET of Jan. 8th, states:—

> "We are all asked 'How long must I go on with treatment before I am cured?' For many years my answer has invariably been, '*For the rest of your life.*' *I am never consulted about a primary chancre, but if I were my advice would be the same.*"

The statement is a pessimism not calculated to encourage prompt diagnosis and zealous early treatment, *and should not pass unchallenged.* On the contrary, I venture the dogmatic assertion that if a patient first comes under treatment while the blood is still negative (it is here the Wassermann test is of prime value) and receives the usual course of 2·6 g. of "606" and 8 gr. of mercury, the disease will be "knocked out." I shall be contradicted, but if I am not telling the whole truth, it is near enough for propaganda purposes. Personally I know of no exception and in the army I discharged such cases with much assurance. Unfortunately all trace of these men is lost, but surely by now there is sufficient material available to settle this important point and to define the rare exceptions which others may have to relate, where a full course has been given early and yet failed to eradicate the disease. The pathology of both gonorrhœa and syphilis teaches us that nothing can or ever will compensate for damning delay in diagnosis, but with early diagnosis one may be altogether optimistic concerning the ultimate result.

I am, Sir, yours faithfully,

Leicester, Jan. 9th, 1921. JOHN DONALD.

ORAL SEPSIS,

WITH SPECIAL REFERENCE TO CHRONIC DENTAL APICAL INFECTION.

To the Editor of THE LANCET.

SIR,—I find myself in agreement with much that Dr. Stanley Colyer says in his letter in your issue of Jan. 8th. It was not my object, however, to give an account of the history or literature dealing with oral sepsis or dental radiography. Had this been so I should have quoted the words of Rush, an American doctor, who, in 1801, only a quarter of a century after the Declaration of Independence, wrote: "I have been made happy by *discovering that I have only added to the* observations of other physicians in pointing out a connection between the extraction of decayed and diseased teeth and the cure of general diseases." Dr. Colyer will have noted that in my paper I referred to Dr. William Hunter as the pioneer in this field of research in England. Dr. Colyer appears to miss the purpose for which the paper was written, which was, as I stated, "to draw particular attention to one special part of the problem, that of chronic focal apical infection." For many years most of us have been preaching "the gospel of the clean mouth," but what I wished to emphasise was that the diagnosis of a clean mouth is impossible either by the doctor or the dentist without the aid of the radiographer. I submit that this fact is only beginning to be generally recognised in this country, and that a dental *radiographic* investigation does not form a part of the routine examination of the patient here as it does now in America. Further, the utilisation of radiography by the dentist for the many purposes for which it is helpful is in England the exception, in America the rule.

My experience is "small"—not with reference to oral sepsis in general, but merely in those cases with apparently clean and healthy mouths, revealing after radiographic and bacteriological investigation active foci of infection in the alveolus. Both doctors and dentists have been slow in grasping the importance of chronic dental apical infection and have not availed themselves *of this method of diagnosis to the extent* that they should. In my paper I asked the question, "Is simple extraction adequate?" I am sure your readers, like myself, would welcome Dr. Colyer's opinion on this point.—I am, Sir, yours faithfully,

Harrogate, Jan. 8th, 1921. W. BERTRAM WATSON.

DILUTE SULPHURIC ACID IN FURUNCULOSIS.

To the Editor of THE LANCET.

SIR,—I have read with much interest the "Dissertation upon Carbuncles" by Dr. Sidney Phillips in your issue of Jan. 8th, and agree with much that is contained therein; but when I read that among other internal remedies for this complaint he has found "dilute sulphuric acid" of *no good to him* I can only suppose that either he has not given it a sufficient trial, or that he has not used *dilute sulphuric acid* of the right strength. The proper strength is 10 per cent. of the strong acid, and the dose is 25 to 30 minims of this mixed with 2 ounces of water every four hours. I have now been in practice over 50 years, and have used this remedy with 100 per cent. successes for the last 40 years. If Dr. Phillips cares to know what this remedy can do I would refer him to a communication to THE LANCET of March 15th, 1913, also to the *British Medical Journal* of August 15th, 1908. Letters received from all parts of this country, and also reports from India, confirm my statements regarding this treatment. Lastly, the ordinary B.P. acid sulph. dil. is too weak to be of any use, unless given in *40 minim* doses.

I am, Sir, yours faithfully,

J. REYNOLDS, M.D. Brux., &c.

Brixton, S.W., Jan. 10th, 1921.

THE CULTURAL DIAGNOSIS OF ENTERIC IN INOCULATED INDIVIDUALS.

To the Editor of THE LANCET.

SIR,—Several recent numbers of THE LANCET have contained references to my article of Oct. 30th, 1920, on the Myth of "Atypical" Enteric Fever. It would be impossible to deal adequately with all of these in the form of a letter, and there is only one to which I wish to reply now. Dr. J. C. G. Ledingham, in THE LANCET of Jan. 8th, very justly questions my statement that "the difficulty of recovering enteric bacilli from the blood of inoculated soldiers is well known, even in the early stages of illnesses which clinically resemble enteric." This statement (especially having regard to the context) conveys the impression that I believe that in inoculated subjects enteric fever may exist without bacillæmia, or with a bacillæmia reduced in degree or duration or both, and Dr. Ledingham says that he is not aware of any published data in support of this view. Neither am I, and I thank Dr. Ledingham for drawing attention to the point. It is another of the myths arising out of a desire of some individuals to prove that agglutination provides the most reliable means of diagnosing enteric amongst inoculated soldiers. Dr. Ledingham's figures go far to dispel it.

It is a matter of great satisfaction to me to find that so distinguished an authority should be in sympathy with the substance of my argument. The question is, as Dr. Ledingham remarks, of high theoretical and practical importance. If the myth of "atypical" enteric fever prevails anti-enteric inoculation is not an unmixed blessing. Only when the myth is finally exploded and the dust has blown away can we get a clear conception of what a wonderful scientific achievement was the protection of the British armies from enteric. I am, Sir, yours faithfully,

Jan. 8th, 1921. R. P. GARROW.

RELIEF ON INCOME-TAX IN RESPECT OF SERVICE INCOMES.

To the Editor of THE LANCET.

SIR,—Towards the end of 1919 or early in 1920 the Board of Inland Revenue issued a Memorandum to the effect that civil practitioners doing work in military hospitals should be granted the same relief on their service incomes as army medical officers had received—this concession to be retrospective as far as the year 1916–17. To those whom it concerned this appeared to be a plain act of justice and it was welcomed accordingly. The question then arose, How would the

Memorandum be carried into effect? To many of us the answer seemed simple and to be the necessary consequence of the following considerations. The civil practitioner was to receive the same treatment as the army medical officer; the latter had already received a definite and easily calculated financial relief on his service income; this same relief, now to become available for the civil practitioner, was as readily calculable—then why not regard the problem as a case of excess payment of income-tax and refund the excess? The issue of the Memorandum, it must be urged, was tantamount to an admission that from the year 1916-17 the service income of the civil practitioner had been overtaxed.

On approaching the income-tax authorities on this subject we learned, to our surprise, that the matter could not be dealt with in this plain and direct manner, for the reason that, whereas the army medical officer was assessed year by year (at the special rates) on the actual amount of remuneration for the year of assessment, in the case of the civil practitioner who had included his Service income in the total income from all sources (as he was bound to do), the Service income had been subjected to the "three years' average method of calculation," and that this made all the difference. Following upon this pronouncement, and having submitted the figures for the Service incomes of the years in question, we next received a document which, as it stands, is literally a cloud of figures as appalling and confusing as a November fog. Speaking personally, I do not feel that I have the acumen, even if I had the patience and the necessary time, to subject these ranks of figures to a critical examination, and I think it likely that others will feel with me in this matter. What is to be done? For to accept results without being able to follow the steps of the argument commends itself as little, as to agree to the postponement of the full settlement of the claim for relief until the year 1922-23—i.e., seven years after the relief first came into operation; yet this is what is asked of us.

In these circumstances I propose that we examine, not the figures themselves, but the premisses on which they are based, for if it should appear that these premisses contain a fallacy the whole calculation will of necessity be fallacious. In like manner it is proposed to examine the results of the calculation, for if among these there should be found any one to which the *reductio ad absurdum* argument would be applicable, again the calculation would be invalidated. Now at the very outset the authorities contend that, as a result of the three years' average system of assessment, the amount received by the State in any given year (for income-tax purposes) is one-third of that year's income and no more, and that in consequence two more years must elapse, in order that this particular income may figure twice again in the averaging, before the State will have had the use of the whole sum. This contention is, in my opinion, a complete fallacy, for the three years' average pools the incomes of three whole years and three whole years divided by three yield one whole year's income, not one-third of a year's income. And even if we accept the ingenious way of putting it, adopted by the income-tax authorities—viz., that the figure obtained by the averaging consists of one-third of the given year and one-third each of the two preceding years (which is quite true)—we must point out that the year which *pays* for the sum of these three-thirds is the given year, and three-thirds make one whole. Therefore in any given year the State receives a whole year's income, averaged on three years. Indeed, if the year in question happens to be a lean one as compared with the two preceding years, then the taxpayer, so far from paying on one-third of his income, will pay on more than his whole year's income. The accompanying figures will show this: (1) £600, (2) £500, (3) £400 = £500 average for the three years—i.e., for year, No. 3, £100 in excess of the actual income. Of course, if the third year is a fat year the effect will be reversed. On reflection it must be apparent that the method of averaging does no more than distribute inequalities, an obvious convenience for Budget purposes. If the above reasoning be sound, the calculation is based upon a fallacy and its outcome must be fallacious, including the contention that the tax-payer must wait three years for the settlement of his claim.

Lastly, to examine one other of the actual results of the calculation. I find that for the year 1919-20 (in my own case) it is stated there is due to me in relief for the whole period since 1916-17—i.e., for four years—the sum of £20 18*s.* 6*d.*, but that, per contra, I am in debt to the Revenue to the extent of £89 8*s.* 5*d.*, leaving a balance against me of £68 9*s.* 11*d.* It is true that subsequent years are to make good and that by 1922-23 there is to be an effective ultimate relief of £97 2*s.* 1*d.*, though as far as I can gather it will not materialise in the form of a cheque; that, however, is not the point on which I would lay stress, but this—that in the year 1919-20, having paid in full all my income-tax demands, without any deduction whatsoever on account of my included Service incomes, this calculation finds me in debt to the Revenue to the amount of £68 9*s.* 11*d.*, and this is the result of the granting of a relief! Is not this a reductio ad absurdissimum?

The Trojans were bidden to fear the Greeks "et dona ferentes"; is this to become our attitude of mind towards the income-tax authorities?

I am, Sir, yours faithfully,
HARRINGTON SAINSBURY.
Wimpole-street, W., Jan. 10th, 1921.

SCALDED MILK.

To the Editor of THE LANCET.

SIR,—As there seems to be some confusion as to the wisdom of heating milk for infant feeding by boiling, pasteurising, so-called sterilising, or scalding, I venture to suggest, as the result of the following experiments, that scalding the milk is quite sufficient for all ordinary purposes. One of the principal objects in heating milk is the destruction of tubercle bacilli, and this is effectually accomplished in pasteurising, boiling, or "sterilising," but if the milk is allowed to remain at 100° C. for a considerable period, the activity of the antiscorbutic accessory factor is also all but destroyed. The question therefore to which an answer was required resolved itself into the following: "Is there a period in the heating of milk at which the destruction of tubercle bacilli is assured without serious interference with the activity of the antiscorbutic vitamine?"

To settle this question I was fortunate in seeing at the Lister Institute a monkey in an advanced stage of artificially induced scurvy. So bad was the animal that Miss Harriette Chick had decided to give it antiscorbutic treatment to save its life. She kindly agreed to try the effect of scalded milk. The method of scalding was as follows. The milk was warmed in the gas flame, without stirring, till it frothed up, when it was at once removed and allowed to cool. The milk took 5 minutes to heat and 20 to cool. It was at a temperature of 90° to 100° C. for about 1½ minutes. The monkey was allowed daily 200 c.cm. of this scalded milk and in a short time completely recovered.[1] Scalded milk did not, therefore, destroy the activity of the antiscorbutic vitamine.

The next point was to discover whether scalding was sufficient to destroy the tubercle bacilli. I therefore asked Dr. F. H. Teale's assistance, and he very kindly fell in with my wish. He inoculated milk with an active strain of tubercle bacillus, scalded it as above, and injected three guinea-pigs. In due time the animals were destroyed and were found to be quite free of infection of tubercle.

These simple experiments prove two points: (1) scalded milk retains at least a considerable portion of its vitamine activity; and (2) tubercle bacilli are destroyed by such scalding.

I am, Sir, yours faithfully,
E. A. BARTON,
Medical Officer to Infant Welfare Department,
Jan. 12th, 1921. University College Hospital.

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[1] Biochemical Journal, vol. iii., p. 317.

Col. Sir W. R. Smith, V.D., T.D., and Dr. G. S. Broc M.B.E., have received from the King of Italy the decoratic of the Cross of Commander of the Order of the Crown of Ital

Medical News.

Society of Apothecaries of London.—At recent examinations the following candidates passed in the subjects indicated:—

Surgery.—S. Davies (Sects. I. and II.), Univ. Coll. Hosp.; R. F. Divecka (Sect. II.), London Hosp.; W. Kilroe (Sect. I.) and M. Melglave (Sects. I. and II.), King's Coll. Hosp.; and J. B. Williamson (Sect. II.), Cambridge and Middlesex Hosp.

Medicine.—S. Davies (Sects. I. and II.), Univ. Coll. Hosp.; L. Dinerstein (Sects. I. and II.), Manchester; C. T. Gasking (Sects. I. and II.), Liverpool and Sheffield; H. D. L. Jones (Sect. I.) and R. J. Little (Sects. I. and II.), St. Mary's Hosp.; E. R. D. Nagel (Sects. I. and II.), St. Thomas's Hosp.; W. R. Ranson (Sects. I. and II.), Middlesex Hosp.; and C. Verheyden (Sect. I.), Utrecht and Univ. Coll. Hosp.

Forensic Medicine.—S. Davies, Univ. Coll. Hosp.; R. J. Little, St. Mary's Hosp.; S. E. J. Miedema, Amsterdam; W. R. Ranson, Middlesex Hosp.; B. W. Rotley, St. Mary's Hosp.; C. Verheyden, Utrecht and Univ. Coll. Hosp.; and J. B. Williamson, Cambridge and Middlesex Hosp.

Midwifery.—J. H. Cooper, Glasgow; S. Davies, Univ. Coll. Hosp.; S. E. J. Miedema, Amsterdam; and M. Tcherny, Zurich.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: S. Davies, R. F. Divecka, R. J. Little, E. R. D. Nagel, and W. R. Ranson.

London School of Tropical Medicine.—The following candidates passed the examination held at the termination of the sixty-fourth session (October-December, 1920):—

*P. A. Buxton (Duncan medal), *H. B. Parker, *H. G. Wiltshire, *L. C. D. Hermitte, *W. B. Cullen, *C. Heppenstall, *R. H. Luscombe, *R. E. Flowerdew, S. C. Bose, E. R. Kellersberger, G. V. Allen, A. A. Denham, H. S. Haji, A. S. Paranjpe, A. Das Gupta, C. J. Caddick, Z. Khaled, P. T. Liang, A. H. Patel, W. R. Taylor, F. Maya Das, S. Somasundram, W. E. de Silva, F. V. Jacques, Miss E. B. Salter, A. M. Kirdany, A. W. Hocker, Miss E. Lombard, A. K. Moilliet, Miss M. Gore, A. R. Mehta, O. van Stems, Miss A. Gore, J. M. McCleery, Miss D. G. D'Abreu, A. F. Abbassi, E. S. Palmer, K. Ponniah, R. Parmanand, A. S. Westmorland, E. T. Saravanamuttu.

* With distinction.

University of London.—*University College:* Courses on the History of Science this term include an introductory course of lectures, continued from last term, on the General History and Development of Science, by Mr. A. Wolf, on Wednesdays at 3 P.M. A course of six lectures, continued from last term, on the History of the Biological and Medical Sciences from Early Times to the Eighteenth Century, by Dr. Charles Singer, on Tuesdays at 5.15 P.M., beginning Jan. 18th, and three lectures on the Development of Medicine in Modern Times, also by Dr. Singer, on Mondays at 5.15 P.M., beginning on March 7th. Fees, for one course, £1 11s. 6d.; for two courses, £2 2s.

King's College Psychological Department.—On Jan. 19th, at 5.30 P.M., Dr. William Brown will begin a course of weekly lectures and demonstrations, extending over two terms, on Experimental Psychology, for medical men preparing for the Diploma in Psychological Medicine. The class will be limited to 10 members, and intending applicants should write to the Secretary, King's College, Strand, W.C. 2, for particulars.

London Dermatological Society.—A meeting will be held at 4.30 P.M. on Tuesday, Jan. 18th, at St. John's Hospital, 49, Leicester-square, W.C. Clinical cases will be shown by Drs. J. L. Bunch, W. K. Sibley, D. Vinrace, W. Griffith, S. R. Kapoor, E. J. D. Mitchell, Eva White, and J. Forbes.

Royal Chest Hospital: Proposed Amalgamation.—A special meeting of the governors of this hospital will be held at the Mansion House on Jan. 17th, at 3 P.M., to consider and, if thought fit, to pass the following resolution:—

> That this meeting of the governors of the Royal Chest Hospital, having considered the guiding features of the scheme laid before them for the amalgamation of the Royal Chest Hospital, City-road, with the Great Northern Central Hospital, and being of opinion that it carries out in effect the intentions of the subscribers and donors of this charity, so far as it is possible in a scheme of this nature, hereby approve the same, and sanction the carrying into effect of the details of the scheme as approved by the council of the Royal Chest Hospital.

Early in 1920 the council of the Royal Chest Hospital came to the conclusion that the financial position of the hospital was such that they could not continue to maintain the hospital for more than a short time, and the Great Northern Central Hospital authorities, having been approached by the council, submitted in March, 1920, a list of the conditions under which they would be ready to continue unimpaired the work of the Royal Chest Hospital. These conditions are now being recommended to the governors of the latter hospital for acceptance.

Royal Institution.—On Thursday, Jan. 20th, at 3 P.M., Dr. Arthur Harden will deliver the first of two lectures on Vitamines.

Post-graduate Course on Infant and Child Welfare.—A course of 12 practical demonstrations on the Management and Feeding of Infants and Young Children will be given by Dr. Eric Pritchard to qualified practitioners, commencing on Jan. 18th. The demonstrations will be given on Tuesdays and Thursdays at St. Marylebone General Dispensary, 77, Welbeck-street, Cavendish-square, London, W., from whose secretary further information and tickets for the course, £2 2s., can be obtained.

National Hospital for Diseases of the Heart: Post-graduate Course, 1921.—A special course of ten lectures, to be held on Mondays at 5.30 P.M., will begin on Jan. 17th, when Dr. B. T. Parsons-Smith will lecture on Mitral Stenosis. The clinical practice of the hospital, both in the out-patient department and in the wards, is open to members of the post-graduate course, for which a fee of £2 2s. per month, or £5 5s. for three months, is charged. Subsequent lectures will be announced in the medical diary of The Lancet. All inquiries should be addressed to the Dean, Dr. P. Hamill.

King Edward's Hospital Fund for London.—A meeting of the General Council of King Edward's Hospital Fund for London was held on Jan. 10th, at the offices of the Fund, 7, Walbrook, London, E.C., with Lord Stuart of Wortley in the chair. The order, signed by His Royal Highness the Prince of Wales, president of the Fund, appointing members of the General Council, members of committees, and officers, for the year 1921, was read. Resolutions providing for the work of the Fund for 1921, which were approved at the meeting or the President and General Council held at St. James's Palace on Dec. 4th, 1920, were formally adopted.

Honour to a Medical Man.—Mr. D. M. Greig, who has been appointed curator of the Museum of the Royal College of Surgeons in Edinburgh, was on Dec. 31st, 1920, presented with the freedom of the city of Dundee. Mr. Greig, one of the best-known surgeons in Scotland, has been in practice in Dundee for 30 years, and was senior surgeon to the Royal Infirmary there.

At the "Aal' 'Eel" gathering of members of the Aberdeen Buchan Association a collection was taken on behalf of Sir James Taggart's building fund for the Sick Children's Hospital, and amounted to £12 2s. 9d. As the result of a concert in aid of the funds for the same scheme a sum of £63 has been handed to Sir James Taggart.

Oldmill Hospital as a Curative Centre.—At a meeting of the Aberdeen Parish Council held on Jan. 6th a letter was read from the Works Department of the Ministry of Pensions confirming the proposed agreement for the Ministry to take over a part of Oldmill Hospital (late 1st Scottish General Territorial Hospital) as a curative centre for disabled ex-Service men.

Manchester Coroner's Report.—The Manchester coroner in his annual report comments on the increasing number of street accidents, and states that during the year 689 inquests were held—slightly in excess of the number in 1919, but 353 fewer than in 1914. 111 inquiries were held last year into the deaths of children under the age of 12 months; of these, 30 were suffocated while in bed with the parents. Of the total inquests held, a third were on children under 16 years of age.

Manchester Royal Infirmary.—The post-graduate lectures and demonstrations on medical, surgical, and special subjects, given by the honorary staff, have been resumed and will be held each week on Tuesdays, at 4.30 P.M. throughout the session. The lectures are free, and a notice of each lecture will be inserted in our diary of the preceding week. The next one will be held on Jan. 18th, by Dr. E. S. Reynolds, on Aphasia.

Manchester Hospitals.—The Manchester Children's Hospital has received from the National Relief Fund a gift of £20,000, a sum which will enable the hospital to pay off an accumulated debt to the bank, but leaves it burdened with making good the annual deficiency on income of many thousand pounds—during the year 1919 the deficit on income and expenditure account was £11,993. During the year 2227 patients were treated at the hospital, 20,000 at the out-patient department, and 317 sent to the convalescent home at St. Anne's. The annual return of patients admitted to the Royal Infirmary during last year shows 10,997 new in-patients, 21,014 new out-patients, 18,305 new out-patients at the infirmary and central branch, and 1482 new patients at the convalescent hospital.

THE Liverpool and District Overseas Medical Officers are holding their third annual dinner at the Midland Adelphi Hotel, Liverpool, on Friday, Feb. 11th, when Sir John Goodwin, Director-General, A.M.S., hopes to be present. Tickets may be obtained from the honorary secretary, Captain G. F. R. Smith, 19, Queen's-drive, Mossley Hill, Liverpool.

DONATIONS AND BEQUESTS.—Under the will of the late Mr. D. M. Currie the following bequests, among others, are made: £20,000 each to Greenock Infirmary, Poplar, St. Thomas's, St. George's, St. Bartholomew's, Westminster, London, Middlesex, and Guy's Hospitals; £10,000 each to the Royal Scottish Corporation, Liverpool Infirmary, and Sir Gabriel Wood's Mariners' Asylum; £5000 each to the Liverpool Southern Hospital, Liverpool Caledonian Association, Belfast Infirmary, King's College Hospital, St. Mary's Hospital, and King Edward's Hospital Fund.—The Chelsea Hospital for Women has received from the Grocers' Company £50 towards building its nurses' home, and £12 18*s.* 9*d.*, proceeds *of an offertory from Chelsea Old Church.—Under the will* of Dr. Willoughby Furner, of Hove, who died in October last, £2,000 were bequeathed to the Royal Sussex County Hospital, Brighton, for the endowment of a bed in his name.—By the will of the late Mr. George Tangye, of Handsworth, Birmingham, £1,000 have been bequeathed to the Children's Hospital, Birmingham; £1,000 to the *Central Hospital, Birmingham: £1,000 to the Queen's* Hospital, Birmingham; and £1,000 to the Women's Hospital, Birmingham.—The late Mrs. Louisa Maria Borradaile, of St. Hilary, Lincoln, has left by will £500 to the Lincoln County Hospital.—Colonel Hendley Paul Kirkwood, late R.E., of Bath, among other bequests, has left by will £500 to the Royal United Hospitals, Bath.

WEST SUSSEX CORONERS' ALLOWANCES AND SALARIES.—*The West Sussex County Council* on Dec. 31st, 1920, passed resolutions revising the salaries and allowances of the coroners for the Horsham and Chichester districts. For the Horsham district coroner special allowances of £104 per annum were granted, and for the Chichester district coroner the sum of £25, the latter district not entailing such a large amount of railway travelling as the *former. The salary of the Chichester district coroner was* increased from £101 to £125.

SUSSEX PROVIDENT SCHEME.—The following scheme is set out by Dr. Gordon Dill, senior physician to the Royal Sussex County Hospital. Residents in Sussex, who pay the annual subscription—£1 per annum for a single member, £1 10*s.* for a married couple without children or a widow or widower with one child, and £2 for married people with children—will obtain a number of valuable benefits at present out of their reach. The scheme does not aim at providing ordinary medical attendance or at giving benefits supplied by the State or local authorities, but the medical attendants of members will be able to arrange for private consultations at the following *hospitals:* Royal Sussex County Hospital, Royal Alexandra Hospital for Sick Children, *Brighton and Hove Hospital* for Women (for Obstetrics and Gynæcology), Brighton and Hove Provident Dental Hospital (for Dental Surgery), Brighton, Hove, and Preston Dispensary, Sussex Eye Hospital (for Ophthalmic Cases), Sussex Throat and Ear Hospital (for Diseases of the Throat, Nose, and Ear), Lady Chichester *Hospital (for borderland Mental* Cases), and New Sussex Hospital for Women and Children. Any treatment found to be necessary as the result of this consultation will be given at the hospital, while patients confined to bed will be visited by consultants at their homes. At the Dental Hospital members will receive ordinary dental treatment, and dentures will be supplied at hospital rates. All the resources *of the Stephen Ralli* Memorial Laboratory at the Royal Sussex County Hospital will be available, including bacteriological and pathological investigations, vaccines, and X ray examinations and treatment; also massage and electrical treatment. All who are insured under the National Health Insurance Acts will come within the scope of the scheme, and for others a maximum *income limit of £260 for single members,* £400 for married people without children, or a widow or widower with one child, and £500 for a family are suggested. All subscriptions received during the year will be divided among the coöperating bodies in proportions which have been already agreed upon for the first year; but this arrangement—as also the rates of subscription except in case of *original members*—will be subject to revision in the light of the year's experience. The first 10,000 members will receive an "original member's" card, and their subscription will not be raised while they continue to be members. The scheme is already at work and members have been elected to it. Forms of applic*ation for membership may be* obtained at 4, St. George's-place, Brighton.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Jan. 18th.

GENERAL MEETING OF FELLOWS: at 5 P.M.
Ballot for Election to the Fellowship. (Names already circulated.)

MEETINGS OF SECTIONS.

Tuesday, Jan. 18th.

SECTION OF THERAPEUTICS AND PHARMACOLOGY: at 4.30 P.M.
LABORATORY MEETING at the National Institute for Medical Research, Hampstead, by the invitation of Dr. H. H. Dale (two minutes' walk from Hampstead Tube Station).
Presidential Address:
Dr. H. H. Dale: Recent Tendencies in Chemo-therapy.
Paper:
Dr. J. H. Burn: A Comparison of Digitalis Tinctures by Different Physiological Methods.
Demonstrations.

SECTION OF PATHOLOGY: at 8.30 P.M.
Communications:
Sir George Lenthal Cheatle: Carcinoma of the Breast.
Dr. J. A. Murray: Multiple Nodular Hypertrophy and Early Carcinoma in the Mouse Mamma.
Mr. A. H. Drew: *Amitosis and Mitosis in in vitro* Cultures of Normal Tissues and of Tumours of the Mouse.

Wednesday, Jan. 19th.

SECTION OF HISTORY OF MEDICINE: at 5 P.M.
Papers:
Dr. O. C. Gruner: *The De Viribus of Avicenna; the Key to the* Interpretation of the Arabian Theory of Medicine.
Dr. W. J. Turrell: The Electrotherapists of the Eighteenth Century. John Wesley, Paul Marat, and James Graham.

Thursday, Jan. 20th.

SECTION OF DERMATOLOGY: at 5 P.M. (*Cases at 4.30 P.M.*)
Case:
Dr. H. W. Barber: Severe Case of Tertiary Syphilis.
Other cases will be shown.

Friday, Jan. 21st.

SECTION OF OTOLOGY; at 5 P.M. (Cases at 4.45 P.M.)
Paper:
Mr. T. Ritchie Rodger: Cavernous Sinus Thrombosis—Notes of Four Cases.
Cases will be shown by—
Mr. Colledge, Mr. Jefferson Faulder, Mr. A. J. Hutchison, Mr. Harold Kisch, and Mr. Mollison.

SECTION OF ELECTRO-THERAPEUTICS: at 8.30 P.M.
Paper:
Dr. W. J. Turrell: The Therapeutic Activity of the Galvanic Current. To be followed by a discussion.

MEDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendish-square, W.
TUESDAY, Jan. 18th.—8.30 P.M., Paper:—Dr. H. G. Sutherland Medical Evidence in the Staunton Murder Trial.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.
MONDAY, Jan. 17th, WEDNESDAY, AND FRIDAY.—5 P.M., Hunterian Lectures:—*Prof. A. Keith: The Principles of Human* Craniology (illustrated by specimens and preparations) (Lectures I., II., and III.)

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, Jan. 17th.—12.15 P.M., Dr. Burnford: Pathological Demonstration. 2 P.M., Dr. G. Stewart: Medical Out-patients. Mr. D. Armour: Operations. 5 P.M., Lecture:—Dr. A. Saunders: *The Digestive Disturbances of Infants* and Children.
TUESDAY.—10 A.M., Mr. Steadman: Dental Department. Dr *McDougal: Electrical Department. 2 P.M., Dr. Pernet: Skin* Department. 5 P.M., Lecture:—Dr. Burnford: Physiology of the Digestive Tract.
WEDNESDAY.—11 A.M., Mr. MacDonald: Demonstration of Cystoscopy. 2 P.M., Mr. Gibb: Eye Department. Dr. Morton: X Ray Department. 5 P.M., Lecture II.:—Dr. Simson: Obstetric Emergencies.
THURSDAY.—2 P.M., Mr. B. Harman: Eye Department. Mr. Baldwin: *Orthopædic Department.* 2.30 P.M., Dr. A. Saunders: Demonstration of Cases (Medical Wards). 5 P.M., Lecture-Demonstration: Prof. H. Littlejohn: The Medico-legal Post-mortem Examination of a *Newly-born Infant* (open to all medical practitioners).
FRIDAY.—9.30 A.M., Dr. G. Stewart: Neurological Demonstration. 2 P.M., *Mr. Banks Davis: Diseases of* the Throat, Nose, and Ear. 2.30 P.M., Mr. Addison: Visit to Surgical Wards. 5 P.M., Lecture II.:—Mr. Baldwin: Appendicitis.
SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., *Dr. Owen:* Medical Out-patients.
Daily:—10 A.M. Ward Visits. 2 P.M., In-patient, Out-patient Clinics and Operations.

MIDDLESEX HOSPITAL MEDICAL SCHOOL.
THURSDAY, Jan. 20th.—3 P.M., Address:—Sir James Kingston Fowler: The Colonial Medical Service.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W.
MONDAY, Jan. 17th.—5.30 P.M., Post-Graduate Lecture:—Dr. B. T. Parsons-Smith: Mitral Stenosis.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.

Post-Graduate Course on Infant and Child Welfare.

TUESDAY, Jan. 18th.—10.30 A.M., Dr. E. Pritchard: Practical Demonstrations on the Management and Feeding of Infants and Young Children—Demonstration I., Causes of Infant Mortality.

THURSDAY.—3 P.M., Demonstration II., How to Establish an Infant Welfare Centre and Conduct an Infant Consultation.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

THURSDAY, Jan. 20th.—3 P.M., Lecture:—Dr. A. Harden: Biochemistry.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

TUESDAY, Jan. 18th.—4.30 P.M., Lecture:—Dr. E. S. Reynolds: Aphasia.

SALFORD ROYAL HOSPITAL AND ANCOATS HOSPITAL POST-GRADUATE DEMONSTRATIONS, at the two Hospitals alternately

THURSDAY, Jan. 20th.—4.30 P.M., Dr. Langley: The Diagnosis of Diseases of the Liver. (At Salford Royal Hospital.)

ST. MARY'S HOSPITALS, MANCHESTER, POST-GRADUATE LECTURE, at Whitworth-street West Branch.

FRIDAY, Jan. 21st.—4.30 P.M., Dr. Lapage: Vomiting in New-born and Young Infants.

Appointments.

KENDREW, A. J., M.B., B.S Lond., has been appointed Certifying Surgeon under the Factory and Workshop Acts for Barnstaple.

Hampstead General and North-West London Hospital: HUDSON, F., M.B., B.S Lond., House Physician; FULTON, R. H., M.B., Ch B. New Zealand, House Surgeon; LAWRENCE, G. S., M.B., Ch.B. Aberd., Casualty Medical Officer; MILLER, W. A., M.B., Ch.M. Edin., Casualty Surgical Officer.

Women's Medical Service in India: LEACH, F., Medical Officer in Charge of Dufferin Hospital, Cawnpore; WATTS, A. M., Medical Officer in Charge, Dufferin Hospital, Lucknow; GHOSH, L. M., Medical Officer in Charge, Ishwair Memorial Hospital, Benares

Vacancies.

For further information refer to the advertisement columns.

Altrincham General Hospital, Cheshire.—H.S. £175.

Bath, Royal United Hospital.—H.S. and H.P. £200 each.

Birmingham City Education Committee.—Asst. Sch. M.O. £500

Blackburn and East Lancashire Royal Infirmary.—Second and Third H.S.'s. £250 each.

Board of Education.—M.O. £600.

Bradford City, Infants' Clinic and Hospital.—Female Asst. M.O. £450.

Bradford Municipal General Hospital, St. Luke's.—House Res. Asst. M.O. £350.

Bradford Royal Infirmary.—H.S. £200.

Canterbury, Kent and Canterbury Hospital.—Res. M.O. £175.

City of London Hospital for Diseases of the Chest, Victoria Park, E.—H.P. £100.

Colchester, Severalls Mental Hospital.—Asst. M.O. £510

Durban, Government Hospital.—Asst. M.O. £484.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Res. M.O. £200.

Eccles and Patricroft Hospital.—Res. H.S. £200.

Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Female Dent. S. to In-patients. £10 10s.

Evelina Hospital for Children, Southwark, S.E.—Hon. P. to Out-patients.

Glamorgan County Council.—M.O. £700.

Great Northern Central Hospital, Holloway, N.—Cas. O. £200. H.S. £150. Anæsth. £10 10s.

Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—Hon. Dent. S.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Asst. Res. M.O. £150. Also H.P.'s.

Hospital for Sick Children, Great Ormond-street, W.C.—Ophth. S.

Hull Royal Infirmary.—Asst. H.S. £150.

India, Countess of Dufferin Fund.—Three Med. Women. Rs. 350 per mensem.

Kettering and District General Hospital.—Res. M.O. £300.

King's College Hospital, Denmark Hill, S.E.—Clin. Pathol. £400.

Kirkburton, Storthes Hall Asylum, near Huddersfield.—Asst. M.O. £450.

Leeds Public Dispensary.—Res. M.O. £200.

Lincoln County Hospital.—Jun. H.S. £150.

Liverpool, David Lewis Northern Hospital.—Hon. Asst. M.O. to X Ray Dept.

London County Mental Hospital Service.—Seventh Asst. M.O. £300. Also Clin. Assts. £200.

London Homœopathic Hospital, Great Ormond-street, Bloomsbury, W.C.—Asst. P.

Macclesfield, Cheshire County Asylum, Parkside.—Asst. M.O. £350.

Manchester, Ancoats Hospital.—H.S. £150.

Manchester, Barnes Convalescent Hospital, Cheadle.—Res. M.O. £300.

Manchester Royal Infirmary.—Accident Room H.S. £200.

Manchester, Victoria Memorial Jewish Hospital, Cheetham.—Res. M.O. £150.

Middlesex County Council.—Asst. M.O. £500.

Newark Hospital and Dispensary.—Res. H.S. £200.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—Anæsth.

Nottingham General Hospital.—Res. Cas. O. £300. H.S. £200.

Oldham Royal Infirmary.—Third H.S. £200.

Plymouth, South Devon and East Cornwall Hospital.—H.P. £150. S.

Prescot Union.—Non-res. Asst. M.O. £450.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. S. Also Ophth. S.

Queen Mary's Hospital for the East End, E.—Hon. Dental S.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Cas. O. £150. Also Res. H.P. £125.

St. Mary's Hospital Medical School, Paddington, W.—Lecturer on Chemistry. £400.

St. Marylebone General Dispensary, 77, Welbeck-street, Cavendish-square, W.—Hon. P.

Salisbury General Infirmary.—Asst. H.S. £150.

Sheffield Royal Hospital.—Asst. Cas. O. £150.

Southend-on-Sea County Borough.—Asst. M.O. £500.

South London Hospital for Women, South Side, Clapham Common, S.W.—Female Asst. Path. £150. Anæsth. 10s. 6d. per attendance. Clin. Assts. H.P. and H.S. £100.

Stockport Infirmary.—Asst. H.S. £220.

Stoke-on-Trent and Stoke Rural Joint Hospital Board.—Res. M.O. £500.

Stoke-on-Trent, North Staffordshire Infirmary.—H.S. £200.

Stroud General Hospital.—H.S. £200.

Taunton and Somerset Hospital.—Res. Asst. H.S.

University of London.—External Examiners.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—H.P. and H.S. £100.

Wells Asylum, Somerset.—Asst. M.O. £300.

West London Hospital, Hammersmith-road, W.—P. Also Hon. Obstetric Registrar.

Westmorland Sanatorium and Home, Meathop, Grange-over-Sands.—Temp. Res. Asst. M.O. £7 7s. per week.

Willesden Hospital.—Additions to Hon. Med. Staff.

THE Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for the Sheriffdom of Stirling, Dumbarton, and Clackmannan. Applications for the post should be addressed to the Private Secretary, Scottish Office, and should reach him not later than Feb. 5th, 1921.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Arundel and at Long Buckby.

Births, Marriages, and Deaths.

BIRTHS.

MILLER.—On Jan. 8th, at 32, Abercorn-place, N.W. 8, to Dorothy wife of Dr. Reginald Miller, F.R.C.P. (of 110, Harley-street, W.1) —a daughter.

MOTT.—On Jan. 9th, at Glenlyon, Parkstone, Dorset, the wife of R. Culver Mott, M.B., of a daughter.

PATEY.—On Jan 8th, at Dagenham House, Newton Abbot, the wife of Walter Patey, M.D., of a daughter.

MARRIAGES.

DANE—NEWMARCH.—On Jan. 7th, at Havant, Robert Dane, M.R.C.S., L.R.C.P., to Ethel Margaret, daughter of the late John Newmarch and the late Mrs. Newmarch, of Howden Lodge, Southsea.

PARSONS—DAWNAY.—On Jan. 3rd, 1921, at the Church of St. Mary-le-Park, Battersea, Christopher Thackray Parsons, O.B.E., M.D. Lond., to Annie Burgess, widow of Archibald Hugh Payan Dawnay, F.R.C.S.

DEATHS.

BOUSFIELD.—On Jan. 7th, at De Crespigny-park, Denmark Hill, S.E., Edward Collins Bousfield, L.R.C.P., M.R.C.S., D.P.H. (Camb. and Lond.), aged 65 years.

HIGGENS.—Suddenly, on Dec. 28th, 1920, Charles Higgens, Consulting Ophthalmic Surgeon, Guy's Hospital.

HOWARD.—On Jan. 9th, at Green-street, W., Robert Jared Bliss Howard, F.R.C.S.

KINCAID PITCAIRN.—On Jan. 8th, at Richmond, Surrey, as the result of an accident, George Kincaid Pitcairn, M.B., C.M. Edin.

SOUTHWELL.—On Jan. 6th, at Hill-street, Stoke-on-Trent, Charles Edward Southwell, L.R.C.S. & P. Edin.

VASEY.—On Jan. 7th, at Bromley, Kent, Samuel Archibald Vasey, F.I.C., F.C.S., in his 55th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

ARNOLD, EDWARD, London.

The Treatment of Diseases of the Skin. By W. Knowsley Sibley, M.D. 3rd. ed. Pp. 248. 12s. 6d.

BAILLIÈRE, TINDALL, AND COX, London.

Lunacy in India. By A. W. Overbeck-Wright, M.D. Pp. 406. 21s.

Syphilis and Venereal Diseases. By C. F. Marshall, M.D., and E. G. Ffrench, M.D. 4th ed. Pp. 434. 25s.

BALE, JOHN, SONS, AND DANIELSSON, London.

Transactions and Ninth Annual Report of the London Dermatological Society, with list of officers and members. Pp. 59. 2s. 6d.

Diseases of the Newborn. By Dr. August Ritter von Reuss, Director of the Department for the Newborn at the First University Women's Clinic in Vienna. Translation revised by J. D. Rolleston, M.D. Oxon. Pp. 626. 52s. 6d.

CHURCHILL, J. AND A., London.

Surgery. By Ivor Back, M.B., B.C., and A. Tudor Edwards, M.C. Pp. 490. 15s.

LEWIS, H. K., AND Co., London.

Infant Weight Chart (One ounce scale), 24½ × 20 in., folded in cover, 8 × 5 in. 2s. 6d.

Notes, Short Comments, and Answers to Correspondents.

SOME BIOLOGICAL ASPECTS OF DISEASE.

An Abstract of a Lecture delivered under the auspices of the Chadwick Trust, on Nov. 25th, 1920, by
Professor J. B. FARMER, F.R.S.

IN his introductory remarks the lecturer said that he proposed to dwell on certain peculiarities or properties of the higher organisms with which healthy and normal discharge of function is intimately connected. The illustrations of the points raised in the lecture were largely chosen from examples drawn from the plant kingdom, partly because from an experimental point of view plants were more readily accessible than animals, and also partly because the things of most fundamental importance were those which are common alike to animals and plants.

Interaction of Parts of an Organism.

Although our knowledge as yet was but relatively small, an outstanding fact was that one part of the organism could, and habitually did, influence other parts, limiting and directing their possibilities of growth and determining the particular mode of development which would be actually followed in any given individual. It was shown by means of a number of examples drawn from the study of plants, and supplemented by others from animal life, how the organisation of an individual depended on the mutual influence of its constituent cells one upon another. The coördinated growth which led to the development of a particular form depended on the serial (or sequential) nature of the reactions which went on in the cells and tissues of the organism. An intelligent recognition of this fact and of its consequences was essential to a proper appreciation of the larger problems both of health and disease; for anything which could modify the chemical changes concerned in the production of a "normal" organ or tissue was reflected in a departure, to a greater or less extent, from the particular form or structure normal for that organ or tissue.

Modification of Organisms by External Conditions.

The lecturer then went on to show, by consideration of a number of selected examples, how differences in chemical or physical environment might produce definite changes in the organism subjected to them. He further insisted that it must not therefore be concluded that only the external conditions mattered; a closer analysis of the facts emphasised the essential point that only when the environment was able to interfere at all, so to speak, with the protoplasm itself could a response of the kind indicated be obtained. In other words, the course of development in any given cell, or in any given individual, was only subject to modification by external conditions in so far as it was itself susceptible to influence by those conditions. For, on the one hand, the effects of temporary isolation of parts of the body from the material influences exerted by adjacent parts might result in a permanent loosening of those ties which previously served to knit the constituent cells into a coherent organism. On the other hand, union of parts hitherto separate might result in the formation of a synthetic new organism, different from those from which it—the new organism—had been built up. Lichens afforded a striking illustration of this fact. Other illustrations were provided in the new relations that are so commonly established between fungi and roots or other parts of the higher plants. Further aspects of the matter were opened up by a consideration of the various abnormal growths which could definitely be traced to the substances injected by parasitic animals, and a study of the formation of vegetable galls afforded a suggestive outlook on the consequences of the mutual relations here established between parasite and host.

From the foregoing considerations and conclusions, the lecturer passed on to a brief discussion of those various abnormal growths, or neoplasms, which originate as the result of obscure changes taking place within the cells themselves.

Cancer.

The normal course of events which produced and maintained what is called organisation could be upset in various ways. How did this circumstance affect our outlook on the mysterious disease which we called cancer? The fundamental fact was that certain body cells broke away from that coördinating elusive influence which controls normal development. The change is accompanied by cellular and nuclear modification, some of which had already been recognised, others perhaps not as yet. As Sir W. Collins had long maintained, no specific causal organism, so far as is known, is responsible for the incidence of cancerous development; probably various stimuli are able to effect that wonderful change. The result, however, was always the same—freedom from that control which is essential for the maintenance of an organised cell community. The tissue often exhibited rapid cell multiplication, which accompanied the newly acquired independence, and might lead to transplantations or metastases of cells which had been derived from the original cancer cells. This occurred in varied degrees, and the cells themselves might still retain, to some extent, the form and qualities of the typical tissue cells in which the change first appeared. The characteristic effect, however, always seemed to be to produce a more generalised type, recalling in some measure that of the lower organisms. An essential fact was that these transplanted cancerous units did not infect the tissues in which they came to lie, though they might, and often did, produce changes in the growth of the tissues, leading to the formation of the stroma.

The circumstance that this kind of tissue could rise from once normal cells, as the indirect result of stimuli of various kinds—e.g., continuous irritation and inflammation, the effects of lesion or of other less clearly ascertained precursory conditions—served to emphasise the need of a much more thorough biological examination than had hitherto been made. A suggestive example which showed how the protoplasm could change its behaviour under certain conditions was furnished by the events in the life-history of a myxomycete. These small organisms started life as a number of independent amœbiform cells, each with its own power of movement and growth. By-and-by a number of these fused to form a protoplasmic living mass of slime, which then behaved as a lowly but really organised entity, capable of feeding upon various nutritive substances. The coalescence of the individual amœbæ to form the plasmodium was followed immediately by the fusion, in pairs, of nuclei. As soon as this had taken place no more amœbæ were admitted as partners into the new cell republic, but any that approached sufficiently near it were drawn in and devoured.

Survey of the Present Position.

Although the cancer problem still remained for the most part (and from the point of view of its victims entirely) an unsolved one, it could nevertheless be attacked with a fair chance of success; but failure seemed to be inevitable, unless the right measures were adopted in attacking it. Surveying the present position we might well ask how much have we actually found out, how much nearer we were to the understanding of the causes which bring about these far-reaching changes in previously normal body cells—changes which endowed them with such appalling qualities. It had been discovered that the cell nuclei exhibited remarkable modifications; that those wonderful structures the chromosomes had undergone suggestive alterations both in number and in form. This in itself was a step in the right direction, and the lecturer believed we were justified in correlating the nuclear changes with the new properties acquired by the cells individually—in other words, that there was a causal nexus between nuclear change and functional disturbance. But if we were asked what started these complex changes in the cell nuclei, we should have to answer that as yet we did not know. The older assertions as to the existence of specific parasites, whether bacteria, yeasts, protozoa, or even helminthines, had not stood the test of closer examination. The more hopeful line of investigation seemed to point in the direction of chemical or physico-chemical disturbances, which might act in various ways and themselves be traceable to more than one source; but the *result* was clear, so far as it is known up to the present time. The cells so affected passed through certain definite changes, and became freed from those coördinating influences by which their chemical processes were previously regulated, and by which their multiplication had previously been held in check.

Such a complex problem as that of cancer was not likely to yield up its secrets till it had been broken down into the smaller components of which it constituted the formidable sum. The smaller problems must then be systematically attacked, and upon their solution the issue of the whole matter would finally depend. It appeared to be clear that success could only be reasonably looked for if the new investigations were planned from the first on sound general lines and placed in the hands of the very ablest men who could be found for the purpose. In spite of the dangers and difficulties lying in the way of organising research, the latter could be organised if wisdom, and not merely administration, ruled. Indeed, it had already been found practicable in dealing with other scientific problems or groups of problems, though on a relatively smaller scale.

General Nature of Required Research.

We should, for example, need to know far more than was known at present as to the precise nature of those influences which, by controlling individual cellular activities, made possible the existence of an organism. In certain directions actual progress had already been made—for example, in the case of some internal secretions. Tasks such as these would fall naturally within the province of the physiologist and of the bio-chemist, both on the plant and on the animal side. Extensions into the region of comparative experimental research on the physiology and bio-chemistry of the lower organisms were also clearly indicated.

Far more must be known, also, of the minute cellular changes which were involved; this would fall within the scope of the cytologist. Furthermore, all that assistance which the medical profession alone was in a position to render would be required, inasmuch as cancer was most common in the human species, and from a practical point of view it was really to this circumstance that the real urgency of concerted action was mainly to be attributed. In order that such research, based on concentrated and coöperative action, might be carried on with a prospect of fruitful results, it was essential to attract and retain the best men. Ample means must be forthcoming for this purpose. The task itself was so big that unless we were prepared to see it through on a liberal scale it seemed hardly worth while to proceed with it at all, for judging by past experience, little was to be expected from isolated efforts or from half-measures. The question was, were we prepared to go on watching the daily ravages of an unsparing foe in our midst, which continued still to strike, even as other diseases struck, till they were brought under reasonable control by means of scientific discovery, first as to their real nature and immediate cause, and thence by rationally devised checks on their onslaught. It was true that so far as we could judge, this problem was far more complex than they have proved to be. It might well be that a long time would elapse before malignant disease could be brought under effective control; we should do well not to be too sanguine or too impatient.

The lecturer here emphatically stated that he was far from undervaluing the work now going on at various institutions in this and other countries; but it seemed to him that the full magnitude of the task had not been sufficiently realised, and hence that the means which were essential to success had hitherto been lacking.

Outline of a Scheme.

Although, he continued, it was obviously neither practical nor useful then and there to attempt to formulate a detailed scheme, he would venture to outline the principles which he believed should be kept in mind. About a dozen first-rate men attached to research in the different relevant branches of science should be working in collaboration, and they ought to be provided with the means of attracting to their laboratories a number of able research students. Of course, there would be difficulties, but he did not think they were insuperable. In order that such men might be attracted and retained, they should be really well paid and their future secured to them. The funds should be provided by the State, for the work would be for the benefit of the whole community. A large sum would be needed; the interest on one million sterling would not be too much to cover the annual expenditure required by the scheme as the lecturer visualised it. But not much could be hoped for unless the country was prepared to shoulder the expense and provide for something much better than had heretofore existed.

THE DOCTOR'S FREEDOM OF SERVICE: THE AMERICAN VIEW.

A RECENT issue of the *Journal of the American Medical Association* devoted a long leading article to Mr. Ernest Hutchinson's play, *The Right to Strike*, drawn from the annotation columns of THE LANCET and from the letters of Dr. A. Cox and Dr. A. Welply, from which it is concluded that it was not a strike which was proposed but a "measure of reprisal." We mention the article here in order to call attention to an interesting ethical statement on the physician's freedom of service issued by the American Medical Association. It runs as follows:—

> A physician is free to choose whom he will serve. He should, however, always respond to any request for his assistance in an emergency or whenever temperate public opinion expects the service. Once having undertaken a case a physician should not abandon or neglect the patient because the disease is deemed incurable; nor should he withdraw from the case for any reason until a sufficient notice of a desire to be released has been given the patient or his friends to make it possible for them to secure another medical attendant. This question must be determined between the individuals who are primarily interested. It cannot be settled on the basis of principles governing the ethical relationships of groups.

In passing we remark on a curious inability to quote correctly. The "personal service" of our annotation is rendered quite inappropriately "professional services."

PORTEOUS "MAZES."

To the Editor of THE LANCET.

SIR,—In reference to your answer to "S. M. O." in your issue of to-day's date may I say that the Porteous "mazes" can be obtained from the C. H. Stoelting Company, 3037-3047, Carroll-avenue, Chicago, Illinois, U.S.A. Almost any kind of psychological apparatus can be got from this firm. And it is not creditable to British enterprise that, so far as I know, there is no firm in this country which acts as agent for this form of scientific goods. Apart from the trouble of ordering from, and remitting to, America, a British depôt would have the great advantage of enabling one to inspect some particular form of apparatus before purchasing it. It is annoying to purchase some form of test and then to find it unsuited for the particular purpose for which one wanted it.

I am, Sir, yours faithfully,
M. HAMBLIN SMITH.

H.M. Prison, Birmingham, Jan. 8th, 1921.

DISABLED officers and nurses who served during the war, along with the widows and dependants of deceased officers, can obtain advice and information regarding their rights under the regulations of the Ministry of Pensions by applying to the "Officers' Friend," Ministry of Pensions, Cromwell House, London, S.W. 1, or to the "Officers' Friend" at any of the regional offices of the Ministry—viz., Burton Court, Chelsea, S.W. 1., Newcastle-on-Tyne, Manchester, Bristol, Leeds, Nottingham, Birmingham, Edinburgh, Dublin, Belfast, or Cardiff.

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THE LANCET, JANUARY 22, 1921.

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The Bradshaw Lecture

ON

THE SURGERY OF THE SPLEEN.

Delivered before the Royal College of Surgeons of England on Dec. 6th, 1920,

BY SIR BERKELEY MOYNIHAN, K.C.M.G., C.B.,
M.S. LOND., F.R.C.S. ENG.,
SENIOR SURGEON, LEEDS GENERAL INFIRMARY; PROFESSOR OF CLINICAL SURGERY, UNIVERSITY OF LEEDS.

IT was known to the ancients, and their knowledge has been confirmed in all later times, that the spleen is not essential to life. Aristotle wrote: "It is the position of the liver on the right side of the body that is the main cause for the formation of the spleen; the existence of which thus becomes to a certain extent a matter of necessity in all animals, though not of very stringent necessity." Erasistratus took the view that the spleen was wholly devoid of use. Galen spoke of it as an organ "full of mystery." In an old English translation by Holland of the "Natural History" of C. Pliny (23 to 79 A.D.) the following statement is found:—

> "*This member hath a proprietie by itself sometimes, to* hinder a man's running: whereupon professed runners in the race that be troubled with the splene have a devise to burne and waste it with a hot yron. And no marveile: for why? They say that the splene may be taken out of the body by way of incision, and yet the creature live nevertheless: but if it be man or woman that is thus cut for the splene, he or she looseth their laughter by the means. For sure it is that intemperate laughers have always great splenes."

Up to the last few years the operation of splenectomy was reserved *for cases of injury, for spleens with a* rotation of the pedicle, for cysts of the spleen, or for cases of enlargement of the organ due to causes which were not always discoverable. In the last few years splenectomy has been performed in certain of the anæmias associated with splenomegaly.

THE PATHOLOGY OF SPLENIC DISEASES.

The pathological changes found in the spleen can best be grouped according to the affinities which exist between the causative agents and the various parts of the spleen-liver system which they directly affect.

1. In the first type the provocative agent excites either a *mechanical effect or a local lesion of the exact kind pro*duced in other organs. The results will be expressed by the formation of an abscess, by a deposit of tuberculous nodules, by a metastatic new growth, and so forth.

2. In the second type an organism lodges firmly in the pulp of the spleen without actually producing a gross lesion there. Like any irritant of chronic character, it induces changes in the reticulum akin *to*, or *actually* constituting, fibrosis. The best example of this condition is afforded by the *chronic malarial spleen*, wherein, according to *modern* experience, the parasites lie apparently inert for long periods, to appear from time to time in the general circulation as a consequence of some excitant, suspected or unknown. The tropical splenomegaly may be regarded as a similar example, since here also the parasites are found embedded in the splenic pulp. It is probable that many *other chronic enlargements of the spleen may be regarded* in the same light, and it seems not unlikely that spirochætal infections, whether syphilitic or of an unknown type, may account for many forms of fibrosis and of chronic diseases. The work of W. J. Mayo on cases of splenomegaly associated with incoercible manifestations of syphilis is referred to elsewhere.

3. The third type of process is that which is set in motion by toxic substances reaching the spleen from some nidus *elsewhere in the body. Foci in the mucosa or submucosa* of various parts of the alimentary canal, in which there is no frank suppuration, but merely a subacute inflammatory cell-infiltration of slight or moderate extent, are easily overlooked, especially in the examination of the dead body. In pernicious anæmia, of course, definite lesions of this kind have been discovered by means of a special technique, and have been considered by Hunter, who first recognised them, *as the portal of entry of the causative infection.*

Given the primary infected lesion, the course of the toxic substances continually poured out into the vascular system is identical (for a part of the circuit) with that of the blood through the spleen, liver, and bone marrow. The toxic substances may be of various kinds, which may be named *according to their action.* They may remain in the blood-stream and act on the floating cells, or they may pick out certain tissues of the body. The *selective power of streptococci* (as shown by Rosenow) and of toxins is well recognised, and *mutual affinity of soil and seed may also be present.* There is nothing impossible, therefore, in conceiving *that some toxins will affect the cells of the spleen-pulp* exclusively, either causing degeneration in them, or *stimulating them to increased activity.* In either case the material which leaves the spleen may consist not *only of the original toxin, but also of the products of* degeneration or over-activity of the existing splenic cells. The poison contained in the blood leaving the spleen comes almost at once into contact with the blood from the stomach and the tail of the pancreas. In this way it may become altered enough to cease to have any deleterious action upon the cells next encountered—namely, the Kupffer star-cells and the other endothelial cells of the hepatic sinusoid, or the liver cell itself. On the other hand, the toxic substance or substances may arrive at the liver unaltered, and there set up changes in the respective elements which go to make up the unit of liver tissue. These changes are usually of a degenerative nature; but in some cases, owing to the toxins passing through the endothelium, reactive changes are excited in the fibre cells enclosing the lobule. This is the beginning of cirrhosis.

Another series of changes results when the brunt of the action of the poisonous substances is borne by the hepatic cell itself. As occurs in other parts of the body, the passage through the cell may cause no damage, but may provoke changes in the parts beyond; in this case in the smallest beginning of the bile-channel. Here the bile *itself may lose its fluidity, precipitates may form,* which in the minute channels cause blockage and a *mechanical biliary retention* (with or without jaundice). Or it may be that, without acting in any way upon the *bile, the noxious substances first affect the endothelial* lining of the bile-channels, and so set up some form of *cholangitis. In other cases, however, the liver cell is itself* affected, and a *series of clinical phenomena dependent on failure of the hepatic function takes place. After* that the stereotyped secondary cirrhosis may occur. *Leaving the liver the poisoned blood may pass through* the heart and lungs without losing its toxic character, *and may finally come in contact with the cells in the* sinusoids of the bone marrow, and interfere with their *function, if there is any affinity between them.* Where repression of function occurs, a certain type of anæmia results or a *diminution in the number of the white cells* which are being made there. Conversely, increase of white cells *may occur and leucocytosis form a con*spicuous feature.

Sufficient evidence has now been accumulated to enable us to form some idea of the varieties of toxins which may enter or leave the spleen; they are grouped according to their supposed actions: as causing anæmia, hæmolysis, asthenia with muscular wasting, cirrhosis of the liver, fibrosis of the spleen, or proliferation of various cells capable of active increase (for instance, in the germ centres of lymphoid follicles, or in the bone marrow in myeloid leukæmia). *Banti invoked the first* three types to explain the disease which goes by his name.

1. The most active *poisons causing anæmia* ("anæmising") are such as prevent the red cells from being formed. There is little doubt, however, that many substances are comprised in this group which produce anæmia *rather by destroying* the red cells or by rendering them vulnerable. In this case the phagocytes *of the spleen-pulp* become unduly active, and a complication is introduced, inasmuch as these pigment-laden cells carry their burden to the liver, disintegrate there, and overburden *this organ,* beside-

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*Published in full in the British Journal of Surgery, January, 1921.

producing another and peculiar type of change—siderosis and proliferation of endothelial cells.

2. The *hæmolysing poisons* are important. They play the chief part in hæmolytic splenomegaly, and in some forms of severe anæmia, as well as in some special types of cirrhosis. Chevallier and Tourkine have been at much pains to insist on the dual character of the hæmolying poisons, some of these having the property of actually destroying the red cells, while the others only cause them to become "fragile."

3. *Poisons which excite fibrosis* are very common. The process of fibrosis has been long assumed to be merely the last stage of an inflammatory process; but there is evidence to show that fibrosis of the spleen may be a specific phenomenon, just as in the liver biliary cirrhosis is certainly the result of active and direct stimulation of the connective-tissue cells.

4. *The poisons which excite cell-proliferation* may concern the cells of the Malpighian bodies, as in lymphatic leukæmia and some kinds of Hodgkin's disease, or the cells of the spleen pulp. In the latter case several things may happen. The pulp cells may assume the properties usually restricted to the cells of the bone marrow concerned with the formation of white cells; in these circumstances bone-marrow cells are produced. If this should occur in a slight degree it is only revealed by microscopic examination. Instances of this action are afforded by various acute specific fevers. If it occurs in a greater degree the enlargement of the so-called splenomedullary leukæmia is brought about. Sometimes the pulp cells develop enormous numbers of cells of all kinds, and so produce a tissue of very complicated structure, as in lymphosarcoma or Hodgkin's disease.

THE CLINICAL AND ASSOCIATED PHENOMENA IN SPLENIC DISEASE.

The list of symptoms and signs likely to be encountered resolves itself into a short one when the mechanical results which follow upon a gross enlargement of the organ, or upon the obstruction to the portal circulation by a terminal cirrhosis of the liver, are omitted.

1. *Anæmia.*

Anæmia is caused by many diseases. In this connexion it is only necessary to consider the type of anæmia which rightly directs the attention of the clinician to the spleen as its cause. It may be asserted that a disease of the spleen is to be suspected when there is any evidence that hæmolysis is associated with anæmia. What exactly is the full significance of the term "hæmolysis"? It may be taken to indicate the occurrence in orderly succession of the following events: A destruction of the red cells, the accumulation of their remains in the spleen, the ingestion of these remnants by the phagocytic endothelial and reticular cells, and, finally, the transmission of these engorged cells to the liver, in whose "sinusoids" they are disintegrated preparatory to the absorption of their particles by the stellate cells of that organ. Hæmolysis will be rendered an easier, and therefore a more frequent process, if any diminution occurs in the resistance offered by the red cells to their destruction. Such a change has been described by Chauffard, who speaks of a "dystrophy" of the red cells, a condition in which their vulnerability is increased, and there is consequently a special "fragility." It has been asserted that the presence of a fragility of the red cells indicates that the seat of any disease in which it occurs is in the spleen; but there is evidence to controvert this opinion. Such a fragility might be due either to an early error in the formation of red cells by which there was an attenuation (through defective supply of the necessary material) of their lipoid component, or to the inimical effects of a substance produced by bacterial agencies in some lesion, perhaps quite inconspicuous, in the mucosa of the alimentary canal.

But every anæmia associated with disorders of the spleen is not characterised by hæmolysis. There is another important group of anæmias in which the initial disorder is either in the bone marrow (and in the later changes in the spleen) or is dependent upon the same cause as that which affects the bone marrow. When once the process of hæmolysis has developed to the stage described above, the further course of events will depend on the manner in which the liver cells cope with their increased burden. On the one hand, the poison (which has destroyed the red cells) may pass through the liver cells without affecting them; the extra load imposed upon them is borne without injury. On the other hand, the poison may actually injure the hepatic cells, so that the excess of blood pigment is disposed of with a steadily increasing difficulty. Then, at last, under a continued strain, the inadequacy of the liver may become apparent, either clinically in the form of jaundice, or pathologically by reason of the appearance of urobilin in the urine. The great functional capacity of the liver cell accounts for the gradual, insidious, and tardy onset of the symptoms connected with the involvement of the liver in such conditions. It is interesting to find that the clinical phenomena due to a hæmolysis are absent in those diseases in which the liver cell is equal to its work and does not suffer impairment. In the enlargement of Hodgkin's disease, of myeloid and lymphatic leukæmia, of sarcoma of the spleen, of lymphogranuloma, all the phenomena associated with hæmolysis are characteristically absent. But none the less anæmia develops. The reason is, no doubt, the following:—

With the exception of the leukæmias, where the energies of blood formation become overwhelmingly directed to the formation of white cells instead of red, these various diseases of the spleen are associated with progressive fibrosis; there is consequently a gradual interference with the normal capacity of the endothelial cells to remove effete red cells. This entails a loss of iron to the body. The liver cells do not receive sufficient iron in that form which is suitable for reconstruction in the next step of the cycle. Even if phagocytes in other parts of the body assume the function of red-cell destruction, they have not direct access to the liver, and cannot therefore supply this organ with sufficient speed or adequacy. It seems quite clear, from the experiments in connexion with iron metabolism, that the spleen is situated where it is in order to enable the iron-laden endothelial cells to have a free channel for their passage into the minute capillaries of the liver, through which they are too large to pass.

2. *Jaundice.*

When jaundice arises as the result of a toxic process in the spleen-liver system two matters require consideration. These are the site of action of the poison and the nature of the poison. In splenic anæmia there is no primary interference with the activity of the liver cells; it is only when cirrhosis develops in the latest stage that the cells become affected, and then only in an indirect manner by compression from without rather than from disorganisation within the cell. In hæmolytic splenomegaly, on the other hand, the liver cells from the first are either poisoned or burdened beyond their normal capacity for dealing with blood pigment. The remarkable tendency to cholecystitis and cholelithiasis in this disease suggests the passage of toxic substances into the bile, acting, perhaps selectively, upon the mucosa of the gall-bladder.

Jaundice does not necessarily appear, even though the process of disposal of blood pigment is inadequately performed. The absence of jaundice, that is to say, does not justify the opinion that in any particular patient the successive steps in the cycle of the metabolism of hæmoglobin which have been taken between the spleen and liver are normal. When the blood pigment is broken down it gives rise to two portions, one free from iron, the other containing iron. The former, undergoing purely intramolecular change, appears in the liver cell as bilirubin and passes out into the bile capillaries; the iron-containing portion makes its way back to the site of the manufacture of the red cells. In disease this story becomes modified, either at the first stage or at the second. The division of the blood pigment molecule may not take place; hæmatin is then formed and gives rise (it is supposed) to one of two substances (maleic imide, maleic anhydride), either of which being *colourless* will escape observation in the liver cell. Or, on the other hand, the iron-free substance formed from the blood-pigment molecule may not become converted into bilirubin, but into a hæmopyrrhol, which is also colourless. In this case also bile pigment fails to appear in the liver cells (and in the bile in the gall-bladder ?) and jaundice is not present. These considerations provide a suggestive basis for the explanation of the anomalies which appear from time to time in reported cases of cirrhosis associated with splenomegaly.

It has been stated above that the liver cells become affected when cirrhosis occurs. It is desirable here to emphasise the mechanism of the production of cirrhosis, for the story is hardly complete without some reference to the pancreas. If so much has been said about the inter-relations of the spleen and liver, and so little about the pancreas, it is because there is a wealth of positive information respecting the former. If the secretion from the tail of the pancreas (where the islands of Langerhans are most numerous) plays a necessary part in the intravascular changes which take place between the spleen and liver, attention would naturally be directed to a determination of the frequency with which interstitial pancreatitis, focal or diffuse, is associated with splenic disease. Unfortunately our information is slender and uncertain. The direct connexion between pancreatic disease and hepatic cirrhosis is at present clear only in one form of cirrhosis, the so-called "pigmentary cirrhosis." It may be that the cirrhosis begins merely as a consequence of the disturbance initiated in the spleen. It is clear that the presence of iron which is not in a suitable condition for reconstruction in the liver, aided by the direct action of a poison (modified by passage both through the splenic endothelium and the endothelial cells of the liver sinusoids), may excite an overgrowth of the fibre cells outside the liver lobules. If it should do so, not only will there be cirrhosis of the Laennec type, but there will also be a special form of pigmentary deposit. A purely hæmolytic poison, that is to say, has modified the process of disposal of blood pigment, in spite of its own modification by the splenic products into a cirrhogenic substance. It is certainly significant that in such cases the pancreas not seldom shows a widespread change.

3. *Petechial Hæmorrhages.*

These are occasionally seen in cases of splenic disease, in leukæmia, and in von Jaksch's disease. They always denote damage to the endothelial cells of the capillaries in various parts of the body by a particular form of poison, named "endotheliotoxin," because its effects are known and obvious, and because there is no adequate knowledge indicating its chemical constitution. The minute petechial hæmorrhages are scattered through many organs, appear on serous surfaces, and may occur on mucous surfaces, as in the nose and on the gums or in the kidneys. In these cases they almost certainly denote the channel of excretion of the poison by which they are caused. Such clinical phenomena, as is well known, sometimes accompany the circulation of certain septic organisms or of the toxins derived from them; they here signify a special property of the leukæmia and allied poisons.

4. *Muscular Weakness.*

This may be associated with an actual wasting of the muscle, which partly accounts for the emaciation noticeable in advanced cases of leukæmia and of splenic anæmia. When we remember the intimate association between the spleen and endocrine system the question arises as to the extent to which the phenomena of muscular weakness and asthenia are to be attributed to a direct action upon the adrenal or thyroid glands. The inter-relation of these endocrine glands with each other and with the glands possessed of external secretions is only now being revealed to us by the work of many observers.

5. *Pyrexia.*

Pyrexia as a feature of splenic disease has only recently attracted close attention. There is a tendency to ascribe fever appearing in the course of diseases, hitherto regarded as intrinsically apyrexial, to a secondary infection with septic organisms, especially when the temperature curve, as is frequently the case, is intermittent. In Hodgkin's disease pyrexia is almost constant, is indeed regarded by some clinicians as almost essential to a correct diagnosis. In pernicious anæmia pyrexia runs in waves spread over three, four, or more weeks, to be followed by apyrexial phases; in leukæmia there are also pyrexial periods. The question is raised at once as to whether each of these diseases may be of microbic origin. In hæmolytic jaundice fever occurs periodically; it is generally slight and lasts for two or three days. In other cases it is severe, but of shorter duration; the temperature rises abruptly, remains at its maximum a very brief period, and falls quickly. There is the characteristic "steeple" chart of cholangitis. In such cases stones are often, but not always, present in the common bile-duct.

6. *Splenomegaly.*

When the spleen is recognised, by any method of clinical examination, as being enlarged, it is certain that it is at least twice the normal bulk. Any enlargement less than this, and often even this, cannot be discovered by palpation or by percussion. Perhaps, taking an average of all cases, the very largest spleen is to be found in Gaucher's disease, the next largest is leukæmia, and the next in malaria, though occasional instances are found in this last disease in subtropical countries which surpass all others. Then comes a series in which the spleen is large, but not excessively so, and, finally, there are cases in which the spleen is not enlarged at all. Thus the spleen may be involved in Hodgkin's disease without being clinically enlarged; it is not always enlarged in pernicious anæmia, and its enlargement then bears no discoverable relationship to the gravity of the case. These aspects of the subject are so well known that this symptom is only referred to for the sake of drawing attention to the fact that an absence of enlargement of the spleen does not relieve this organ from the suspicion of being the source of a patient's illness.

7. *Leucocytosis.*

The significance of this phenomenon lies in the fact that it affords an insight both into the nature of the agent at work and into the state of those tissues which are concerned in the manufacture of the leucocytes. There are some toxic substances which expend their whole baneful power upon the circulating leucocytes; others affect their formative tissues; while a few may act upon both. The action exerted may be one of stimulation, so that leucocytosis results, or it may be one of inhibition and result in leucopenia. In pernicious anæmia the poisonous action on the bone marrow affects the white cells as well as the red, so that a very low white-cell count is the rule. In hæmolytic jaundice, on the other hand, the action on the bone marrow is one of stimulation, and leads to an increased outpouring of leucocytes. Where the poisonous substances act upon the pulp tissue of the spleen, upon the endothelium of the liver sinusoids, and upon the whole reticulo-endothelial system, exciting the dormant cells to form myelocytes (myeloid metaplasia), stray myelocytes can be found in the blood-stream. This occurs in some forms of acute splenitis, occasionally in Hodgkin's disease, notably in infantile splenic anæmia, and sometimes in pernicious anæmia. The same process occurs in massive fashion in leukæmia, where every part of the reticulo-endothelial system competes against the rest in the effort to produce and pour out these abnormal cells. The pulp tissue of the spleen then appears almost as a replica of ordinary bone-marrow tissue, and the immature cells pass freely into the blood-stream. In virtue of the character of these cells, which, strictly speaking, are not leucocytes, such a phenomenon should not be described as an extreme leucocytosis.

It is therefore not sufficient in any case of leucocytosis to determine merely the presence or absence of an increase in the number of white cells. It is necessary also to ascertain which varieties of cells are represented in the increase, and to recall the significance of each specific increase. An increase of the neutrophiles indicates the presence of toxins of nucleoprotein form, or of the products of dissolution of albuminous substances. An increase of lymphocytes denotes activity of poisons of lipoid character, with whose destruction these cells are especially concerned. The large mononuclear leucocytes are increased when the particles of abnormal matter are large enough to be microscopically visible. When the eosinophiles are increased it may be concluded that the poisonous substances have an affinity for the sympathetic nervous system, although the relation of these cells to the integrity of the nervous system is not the only one they possess. Poisons may accumulate in various tissues and set up local accumulations of these cells (as in Hodgkin's disease) and at the same time excite the bone marrow, the spleen, and the lymph glands to join in the over-production of these cells. The tubercle bacillus and the spirochæte of syphilis are well known to secrete lipoid substances; the association of lymphocytosis with these diseases is to be expected. That stimulation of the lymphocyte formation occurs in pernicious anæmia, splenic anæmia, and Graves's disease indicates the direction of the inquiry to be made into the ultimate causation of these diseases.

8. *The Spleen and the Hæmorrhagic Diathesis.*

During recent years the suggestion has been made that the spleen may in some degree be concerned with the life-history of blood platelets. In a patient suffering from purpura hæmorrhagica there is a decided diminution in the number of platelets, and the spleen is enlarged. After splenectomy the normal conditions are restored; in proportion as the number of platelets is increased so the clinical symptoms disappear. Cases illustrating this experience are recorded by Schmidt,[1] Benecke,[2] and Kaznelson.[3] The name "splenogenic thrombolytic purpura" has been given to this condition, and a "thrombocytolytic syndrome" is described. It is supposed that there is an increased destruction of platelets by the cells of the reticulo-endothelial system. If, however, the whole of this vast system is implicated, it is not easy to understand why extirpation of the spleen should cure the disease or relieve the patient of symptoms. Katsch[4] has reported cases of thrombopenia where there is no purpura; and, conversely, cases of purpura where the number of platelets is not diminished.

9. *Urobilin in the Urine.*

Recent work shows that the presence of this substance in the urine is an indication of functional inadequacy of the liver cell, which is accompanied by some degree of obstruction in the minute extracellular bile canaliculi. A certain quantity of bile escapes through the ducts, undergoes the usual transformation into stercobilin in the intestine, re-enters the liver, but cannot find a free exit through the hepatic cells. The significance of this phenomenon is that there is an increased breakdown of red cells and hæmoglobin, and that there is a state of cirrhosis in the liver; the degree of disturbance of function is in proportion to the degree of "fragility" of the red cells.

Viewed in this light, the next step to be followed, after arriving at a conclusion that the spleen is diseased, is to determine the degree of damage to the liver, and instead of regarding cirrhosis as a collective term for many distinct morbid entities, to view all cirrhoses as representatives of degrees of implication in the one morbid process.

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[1] Wien. klin. Woch., 1918, 487, 959. [2] Deut. med. Woch., 1918, 5.
[3] Therap. d. Gegenw., 1917, December.
[4] Münch. med. Woch., 1918, 33.

PERNICIOUS ANÆMIA. ADDISON'S ANÆMIA. IDIOPATHIC ANÆMIA.

The work of the surgeons in the last few years has afforded some evidence, if not as to causation at least as to associated conditions, in cases of pernicious anæmia. N. M. Percy, whose work on this difficult disease has been marked by a most earnest devotion and remarkable success, has pointed out that since his attention was especially directed to the testing of Hunter's view of the infective origin of pernicious anæmia he has found evidence of infective foci in 95 per cent. of cases. In a consecutive series of 9 operations for pernicious anæmia, all specimens removed (spleen, gall-bladder, appendix) were sent at once for pathological examination. Bacteria were grown from 3 of the 9 spleens, from 4 of the 7 gall-bladders, and from 6 of the 7 appendices. The only case not giving a bacterial growth was one in which pyorrhœa had long been present. The chief organism found was the hæmolytic streptococcus (7 cases); in 5 the *Bacillus coli* was found; in 4 *Streptococcus viridens*. Smithies, of Chicago, has grown bacilli and cocci of the hæmolytic type from infected areas about the teeth, tonsils, and accessory sinuses. In a series of 24 cases, preceding the 9 just mentioned, Percy records the following gross lesions. In 20 there was chronic cholecystitis with or without gall-stones; in 17 of these there was evidence of old disease in the appendix; in 6 there were infective foci in connexion with the teeth, and in 1 in connexion with the tonsil.

Splenectomy in Pernicious Anæmia.

In the year 1913 three observers, Eppinger,[5] De Castello,[6] and Klemperer,[7] independently, and for different reasons, suggested the performance of splenectomy in cases of pernicious anæmia. The results, which were not long in coming, showed that the mortality of the operation was high, that the immediate benefit which not seldom followed was transient, that post-operative complications were frequent, and that, with few exceptions, the general course of the disease was not materially altered. That splenectomy alone might offer help seemed probable from the work of Robertson, who found, in cases studied by himself, that the rate and degree of hæmolysis in pernicious anæmia underwent a constant and marked decrease after removal of the organ. Largely owing to the work of W. J. Mayo and his most able band of colleagues, and of N. M. Percy, a wider view of the necessities of these cases was taken, with a great improvement in results. The anæmic condition of the patients was improved by transfusion of whole blood; and foci of infection, possibly "primary," but certainly co-existent, in the mouth or accessory sinuses, or in organs laid bare by the abdominal operation, were removed. The purpose of the extended operations consisted, as Percy said, of three main factors: (1) An attempt to stimulate the production of new blood by massive "step-ladder" transfusions of whole blood: (2) an attempt to overcome the absorption of hæmolytic bacteria or their toxins by the radical removal of local foci of infection; and; (3) an attempt to protect the newly formed and older red cells by removing the spleen. Each of these steps is important. The "step-ladder" transfusions bring about an elevation, step by step, of the quality of the patient's blood in respect of red cells, hæmoglobin content, &c.; they supply blood which is not only useful in itself, but acts also in a manner stimulating and nourishing to the bone marrow, encouraging it to still further efforts. The eradication of active foci of infection relieves the patient of a chronic toxæmia which is possibly an ætiological factor. The removal of the spleen reduces the abnormal amount of blood destruction. Discussion has recently ranged around the question as to whether transfusions frequently repeated are competent of themselves to produce an improvement in the patient's condition equal to that seen when both transfusion and splenectomy, or these two with the addition of the eradication of infective foci, are undertaken. Under what circumstances may these steps of treatment be taken? They are useless in the "aplastic type," and they are of little value, if any, in cases where cerebral or spinal symptoms are already present, unless the anæmia is profound, when transfusion alone may give some degree of transient benefit. In all other cases the repetition of a blood transfusion about every eight or ten days gives very striking results.

Dr. W. J. Mayo has very kindly given me the record of all cases of splenectomy performed in the Mayo clinic up to Sept. 20th, 1920. The following are the results in the cases of pernicious anæmia: There were 53 cases with 3 deaths, a mortality of 5·6 per cent.; 5 patients were living between four and five years after operation; 11 patients were living between three and four years after operation; 22 per cent. of patients lived two and a half times as long as the average. What may be said, then, of the efficacy of splenectomy in this disease? In the first place it cannot be claimed, and is not claimed, that any patient has been cured of his disease. The risks run in undergoing the operation are small, but not so insignificant that they can be ignored. A few lives are sacrificed. All the patients who survive are not benefited, but in the majority a degree of improvement results, and a prolongation of life, in greater comfort and with increased zest, can be recorded. The truth is approximately this: that as a result of repeated transfusions of blood, removal of the spleen, and eradication of all foci of infection, one-quarter of the patients are greatly improved, living happier and more useful lives, prolonged beyond the expectation by a period of two or three years; one-half of the patients are improved in some degree, they feel better, take nourishment better, sleep better, and live perhaps a few months, or even a couple of years longer than the average; the remaining one-quarter of the cases do not receive any help greater than that which could be derived from careful medical treatment, which may include the "step-ladder" transfusions of blood if these are found to be helpful, and the treatment of such foci of infection as can be found in the mouth, nose, or accessory sinuses. When the position is accurately stated to patients who suffer from this disease they are likely to decide the matter according to their temperaments. Surgeons should rarely, or never, urge operations, for they should rarely, or never, find it necessary to do so, if the problem to be decided is fully and honestly stated to a patient or his relatives. In cases of pernicious anæmia an operation is indicated for those who are found by such tests as I have mentioned to be likely to do well, and who are eager to get the most out of the remainder of their days and to prolong them.

LEUKÆMIA.

Leukæmia may be considered as a morbid process manifesting itself diffusely, and consisting of hyperplasia of various leucocytes—sometimes of the lymphocytes, sometimes of the myeloid cells scattered throughout the body. The severity of the degree of hyperplasia may be so great, and the type of cells produced may be such, that what is called a "sarcoid" process results. There are cases in which, however, the newly formed cells are found in the spleen, lymph-glands, and bone marrow, but do not enter the blood-stream; the blood on examination is normal. "Leukæmia," therefore, may be regarded as having two relationships: on the one side to the disease known as lymphosarcoma; on the other to Hodgkin's disease.

It was Pappenheim who elaborated the thesis that the virus at work may travel either by the lymphatic channels (producing a "lymphatic leukæmia") or in the blood-channels (producing a "myeloid leukæmia"), and that the purpose of an inquiry should be to ascertain the nature of the stimuli or irritants capable of exerting such effects.

Until recent years no treatment seemed to have any considerable effect in cases of leukæmia, but in 1912

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[5] Berl. klin. Woch., 1913, xxix., 2129.
[6] Deut. med. Woch., 1914, xl., 639.
[7] Therap. d. Gegenw., 1913, liv., 385.

Koranyi[8] observed the effects of benzol poisoning in girls working in a factory where benzol was used as a solvent for a rubber. The symptoms produced by this drug suggested to him the possibility of its use in the treatment of leukæmia. In reporting his experience he states that there were no failures with benzol in cases of chronic leukæmia; that the spleen and lymph nodes were little affected; that benzol given alone was of benefit, but, although more gradual in its effect than the X ray, it succeeded where this failed; and that patients responded better to benzol treatment after the spleen had been exposed to X rays. No serious ill-effects were observed to follow the treatment.

The application of radium produces the most astonishing effects in reducing the size of the spleen. As the spleen diminishes the general condition of the patient steadily improves, and the blood count approximates to the normal. In a very interesting paper Ordway[9] discusses the whole question of radium therapy very fully, and draws the following conclusions:—

> 1. Surface applications of radium in leukæmia produce striking, indeed remarkable, improvement in: (a) the blood picture, which becomes almost normal; (b) the size of the spleen and glands, which are reduced almost to normal; (c) the general condition of the patient, who, from being emaciated and weak, may become plump and strong.
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> 2. The duration of the remission is variable; it may last from months to years.
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> 3. The results of radium treatment are not regarded as curative. It is believed to be, however, the safest as well as the most prompt palliative measure in cases of chronic leukæmia, whether refractory or not to benzol or X ray treatment.

From the results of radium therapy in leukæmia it is believed to be the best form of treatment now at our disposal.

The mortality of splenectomy in these cases was so heavy that it was largely abandoned, but the removal of the spleen when reduced to normal size by radium is neither difficult nor so dangerous, and according to Dr. W. J. Mayo should be considered in selected cases.

[Sir Berkeley Moynihan then discussed the pathology of Hodgkin's disease, for which splenectomy was rarely necessary. He had performed only one such operation 22 months ago, and though the patient was still in good health and at work, it was very doubtful if the removal of the spleen had had any effect upon the progress of the disease.]

SPLENIC ANÆMIA. BANTI'S DISEASE.

Banti considered the disease as possessing clinically three stages, merging gradually into each other. These stages were: (1) One in which there was enlargement of the spleen and a secondary anæmia, the duration being 3 to 12 years; (2) one in which the liver gradually enlarged and the amount of urine underwent progressive diminution—the duration was brief; (3) one in which the liver gradually shrank in size and ascites appeared, the symptoms being those of an ordinary atrophic cirrhosis; the duration of this stage was between one and two years. The disease was invariably fatal, and death occurred either from hæmorrhage or from auto-intoxication from cirrhosis.

Clinical History.

Splenic anæmia was defined by Osler as "an intoxication of unknown nature characterised by great chronicity, primary progressive enlargement of the spleen which cannot be correlated with any known cause, anæmia of a secondary type with leukopenia, a marked tendency to hæmorrhage—particularly from the stomach—and in many cases a terminal stage with cirrhosis of the liver and jaundice." The clinical features of the disease then are the following:—

(1) A very chronic course; (2) a slowly progressive enlargement of the spleen; (3) changes in the blood (of the type found in secondary anæmia); (4) the tendency to hæmorrhages; (5) affection of the liver; (6) an unknown causation; and (7) other phenomena chiefly of negative importance.

The differential diagnosis from cases of gastric and duodenal ulcer, cirrhosis of the liver, and syphilitic enlargement of the spleen and liver is not, as a rule, difficult.

The Pathogenesis of Banti's Disease.

The fact of utmost significance in connexion with the causation of this disease is that it is cured or arrested by removal of the spleen. This fact may be accounted for either by assuming that the disease is primarily and essentially located in the spleen or by assigning to the organ the rôle of modifying the action of some agent situated elsewhere in the body.

If the disease is primarily splenic a search for a specific microbic infecting agent should ultimately be successful. Hitherto no convincing evidence of this has been found, although Hollins has argued strongly in favour of incriminating the colon bacillus. There is scope for further research in this direction, and the organ removed during life, if straightway examined, should provide profitable material for routine bacteriological investigation.

The enlargement of the spleen has been attributed to excessive hæmolytic activity by those who consider the disease to begin in some other part of the body. But such a view does not sufficiently explain the fibrosis which is the outstanding histological feature of the disease. A chronic infective process would account for the enlargement as well as the fibrosis, and accord better with the absence of undue hæmolysis of the red blood cells. In splenic anæmia the red cells never show "fragility." If there is a change the corpuscles may show increased rather than diminished resistance.

The anæmia, in like manner, may be regarded as an incident or as an essential part of the disease. Rolleston, a very distinguished authority, does not regard the anæmia as primary; he believes it to be secondary to attacks of very severe hæmorrhage, chiefly because he finds that regeneration of blood takes place after these events. This view, however, is, I think, subject to the criticism that such severe hæmorrhage is not invariable, and that the substance elaborated in the spleen need not be capable of affecting the bone marrow until after it has left the liver, where it has undergone modification. Further, whatever the poisonous substance may be, it need not completely arrest blood-cell development. A parallel case is, I think, sometimes furnished by subjects of leukæmia in which an intercurrent infection supervenes, with a temporary restoration of the normal blood-picture.

Hollins regards the disease as being due to an active "intoxication" produced by the colon bacillus, whose "colilysin" brings about the anæmia, whilst its actual presence in both spleen and liver accounts for the fibrosis of each organ. This view would put every kind of cirrhosis of the liver on the same level, because "colilysins" could not be expected to vary radically in their action. The facts would be better met were it suggested that the spleen harbours various organisms, some of which only excite a local fibrosis, others induce a simple cirrhosis of the liver, and still others produce that form of cirrhosis associated with Banti's disease, with a toxic anæmia and other specific symptoms.

In respect of the hæmorrhage which is so conspicuous and alarming a feature of some cases, Rolleston considers that the enormously distended vasa brevia rupture into the stomach as a result of the torsion of the splenic vein caused by the great bulk of the organ. This opinion is certainly correct in many cases. The hæmorrhage is so profuse and so swiftly escapes from the stomach that large vessels must be implicated. Such vessels as Rolleston describes are often seen in operations upon cases of splenic anæmia when abundant hæmatemesis has occurred. But this cannot, I think, be the whole explanation. The relationship between enlargement of the spleen and gastric hæmorrhage is cryptic, but certain; for, as Balfour was the first to show, removal of the spleen may cure a patient whose life has been jeopardised by severe and recurrent hæmorrhages from the stomach. Gastric hæmorrhage is known to be toxic in origin in certain cases, as, for example, those in which there is a lesion in the appendix, intestine, or gall-bladder; and those also in which the lesion lies in the spleen or liver, or both.

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[8] Berl. klin. Woch., 1912, xlix., 1857.

[9] Quoted by Ordway, Boston Med. and Surg. Jour., 1917, clxxvi., 490.

Treatment.

The only treatment for splenic anæmia is splenectomy. The appropriate moment for the removal of the organ is chosen. It is inadvisable to operate soon after a grave hæmorrhage, or when the spleen is extremely large. In the latter case the effect of radium on the tumour should be tried; almost certainly it will cause a rapid and considerable shrinkage in the organ. If this should happily be the case splenectomy is done when the spleen is at its smallest, and before it has begun to enlarge afresh, as it will certainly do after a few weeks. It is imperative to operate upon cases of this disease as early as possible. No other form of treatment needs consideration; the dangers and difficulties of the operation increase with the lapse of time; early operation means a more certain chance of recovery and a quicker convalescence. In the later stages the mortality of operation is higher, amounting to 25 per cent. as compared with an average of about 10 per cent. In the terminal stages operation becomes so dangerous that only the inevitably fatal outcome of the unhealed disease justifies its performance.

The degree of improvement that may take place is astonishing, even in the late stages of the disease, with advanced involvement of the liver. It is, as W. J. Mayo says, an evidence that the great power of the liver to regenerate its specific cells is utilised to the full.

The difficulties of the operation are greater in splenic anæmia than in any other disease. In almost all cases adhesions binding the organ especially to the under surface of the diaphragm are present. They may be numerous and exceedingly dense, and their separation may cause a copious and grave hæmorrhage. But they are never so dense nor so strong as to prevent the completion of the operation. The details of the operation in other respects are the same here as elsewhere. At the Mayo clinic up to Sept. 20th, 1920, 73 operations had been performed, with 9 deaths, equal to 12·3 per cent. The after-results are excellent; the rather high operative mortality is due to the technical difficulties of the late cases, which, apart from operation, would all be fatal.

HÆMOLYTIC JAUNDICE.

Two types of disease are recognised: the acquired form of Hayem and the congenital or familial form of Wilson and Minkowski. The former type has been the more fully described, and its clinical history and blood condition more critically examined by Widal. The latter type in respect of its hæmatology was especially studied by Chauffard, who first pointed out that the resistance of the red blood cells to hypotonic salt solutions was greatly diminished. This increased "fragility" constitutes the factor of chief importance in the disease. Of the two, the acquired form (the "Hayem-Widal type") is the more serious, and apart from surgical treatment, appears to be inevitably fatal.

Symptoms.

The symptoms in the two types are very similar—acholuric jaundice, enlargement of the spleen, and anæmia. There is no itching of the skin, and there is not that degree of rapid wasting so often seen in cases of obstruction to the common duct. The blood changes show a reduction in the number of red cells, an increased number of reticulated cells, and a lessened resistance to hypotonic salt solution. In two of the cases of the acquired type which I have seen the symptoms have very closely resembled those of obstruction of the common duct by calculus. In both there were exacerbations of jaundice preceded and accompanied by fever, and by pain and tenderness in the epigastrium. In one of these my diagnosis would certainly have been confidently given as "cholangitis due to calculus," but that a surgeon of great experience had explored the duct and discovered no stone. The diagnosis may be very difficult in cases in which gall-stones also are present. In about 60 per cent. of recorded cases stones have been found in the gall-bladder or in the ducts at the time that operation for removal of the spleen was undertaken.

The distinction between the congenital and acquired forms is real. The congenital form is exceedingly chronic in its duration and quiescent in its manifestations.

The acquired form may begin abruptly and run an eager rapid course from the first. Anæmia quickly becomes profound, the red cells falling to one million within a few weeks. The crises of pain, temperature, and deepened jaundice are more frequent than in the congenital type. In one direction the disease, whether congenital or acquired (generally the latter), may wander away into the neighbourhood of pernicious anæmia. Chauffard describes an "icteric form of pernicious anæmia which, when accompanied by diminished resistance and reticulated red cells, represents the least compensated form of hæmolytic icterus."

Pathogenesis.

The older views that this disease is primarily hepatic in origin are for ever set aside by our surgical experiences; for it is known beyond dispute that removal of the spleen "cures" the patient, who, if the operation has been done in stages earlier than the terminal, remains entirely free from symptoms at all subsequent periods. The spleen, if not the exclusive cause or seat of the disease, exerts the profoundest influence upon its pathogeny.

Several views as to the ultimate causation have been held. Chauffard at first, and Widal later, believed the essential factor to be a dystrophy, an increased fragility of the red cells. This view is held by the great majority of those who have studied the question in recent years. Other authorities, led by Minkowski, hold the opinion that the primary change is an increased hæmolytic activity, probably restricted to the spleen. Widal, the most earnest supporter of the former view, considers that the red cells which are congenitally infirm are destroyed in the general circulation; their remnants are taken up by the spleen, which undergoes enlargement, forming a tumour for which Ponfick introduced the term "spodogenous," and also by the bone marrow, kidney, and liver, all of which are found on post-mortem examination to be deeply pigmented. This opinion has lost ground since the many good results following splenectomy have been witnessed, though, as I shall mention, it does not appear from the very late examination of Sir Spencer Wells's case that the dystrophy of the red cells is always altered even after many years of perfect health following splenectomy. Consequently the altered character of the red cells may be sometimes evidence of faulty manufacture, their lipoid component being deficient, as I have already suggested. This does not nullify the opinion that the spleen has much to say in the subsequent treatment of such defective cells. In my own cases fragility of the red cells disappeared soon after splenectomy, and has not returned. The experience in Spencer Wells's case is, I think, exceptional.

Minkowski's view is held by a few later writers, including Banti, who consider that the spleen is not only enlarged as a consequence of the retention within it of cell remnants, but that within the spleen cells are prepared for destruction and are there actively destroyed. An examination of the spleens removed during life or obtained at autopsy shows no specific change. The deep congestion of the splenic pulp and of the sinusoids, constantly found, is common to many other forms of splenic disease. Occasionally biliary cirrhosis is found at autopsy.

Treatment.

Treatment of this condition is by no means always necessary. The symptoms may be very slight, or may even be absent. If crises occur they may be so infrequent and so speedily pass away that the patient, having suffered from them for years, may pay no serious heed to them. In cases rather more severe, general medical treatment and the use of radium therapy have proved to be valueless. Where the symptoms are troublesome to the patient, and especially so in the acquired form, recourse to operation should be had in as early a stage as possible. It is better not to operate in, or near, a time of crisis, and if the spleen is unduly large its size may be reduced temporarily by the application of radium. Splenectomy has proved to be a specific in this disease. Its dangers are slight; in Kanavel's collection of 48 cases there were 2 deaths; in Mayo's series of 32 cases there was 1 death. And the results are excellent. Within a few days the patient loses the tinge of jaundice entirely, all symptoms disappear, and there is never any recurrence. No operation in surgery gives such swift and striking results. It is very remarkable to witness the change in a patient who has been jaundiced for years or from birth; the skin becomes clear and white, sometimes within 48 hours.

The results at the Mayo clinic up to Sept. 20th, 1920, showed 32 cases with 1 death, a mortality of 3·2 per cent. Like all other statistics of this clinic, they represent the results obtained by a group of men of the highest technical skill, working under conditions unsurpassed elsewhere. They show the level which highly organised surgical endeavours can attain and are an example and an encouragement to all.

CONCLUSION.

It is evident that a consideration of the whole subject of diseases of the spleen must take a very wide view. A number of symptoms may direct attention to the spleen, even when clinical examination does not reveal the presence of splenomegaly. It is through the correct insight into the significance of the clinical symptoms and other morbid phenomena that the real understanding of any supposed case of splenic disease becomes possible. Instead of searching only for the existence of this or that splenic disease, *an inquiry should be directed to the determination of the functional capacity of all the various organs* likely to be deranged. The symptoms already named may be looked upon as evidence of some disorder in the particular *systems* now under consideration. This derangement must be regarded not merely as a restriction of the morbid changes to the spleen, but as a disturbance of wide ramification throughout the whole body, affecting one or other, or perhaps even all, of the four systems in which the spleen plays a part. The focus, at the moment, may in truth be in the pulp of the spleen; but even so, the general picture presented by the patient is the outcome of the participation of the *other systems* in the process which started in the spleen. It may be that splenectomy in any of these diseases will remove the obvious culmination of the morbid process, and thus bring about a "cure" of the disease or an arrest of its development; but it does not by any means follow that all the other related parts are thereby caused to return to their normal states. Absence of symptoms does not imply the restitution of normal functions.

A further step in the investigation of the clinical condition of the patient should aim at the exact discovery of the *site* of the lesion in certain particular cell types: (*a*) in the spleen-pulp; (*b*) in the bone marrow and in any part where reticulo-endothelial cells may exist in specially congregated or active masses; (*c*) in the liver; (*d*) in the endocrine organs, including the pancreas. This lesion being predicted or recognised, the question will arise as to whether it consists in, or entails the elaboration of poisons capable of causing hæmolysis, cirrhosis, or asthenia.

The tissue affected, and the changes therein resulting being recognised, further research must be directed to the discovery of *the type of infective agent* at work, whether bacillary, spirochætal, or other. In other words, the patient is no longer to be regarded merely as the victim of some type of "disease," but as the victim of disorders of a certain character in certain parts of certain anatomical or functional systems of the body. It is the form of the disorder, the form of distribution (determined by an assessment of the functional capacity of the several organs concerned or likely to be concerned), when correctly studied, will inevitably lead to the source and cause of the morbid state, and ultimately to the prospect of the "cure" of the patient.

INOPERABLE UTERINE CARCINOMA TREATED BY THE COLD CAUTERY METHOD OF PERCY.

A SERIES OF FORTY-THREE CASE

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IN 1914, at the meeting in London of the Congress of American Surgeons, Dr. J. F. Percy demonstrated his cold cautery method at the Cancer Hospital. It fell to my lot to open the abdomen and assist him by palpation the while he manipulated the cautery and explained the various points in technique. Percy's efforts and writings have stimulated discussion, particularly in America, as to the utility of heat as a palliative measure in the treatment of inoperable uterine cancer. Adverse criticism has not been wanting, and controversialists have demanded the production of detailed results. I have operated on 43 cases, and propose to give an unprejudiced account of the difficulties encountered, the dangers, real and fictitious, and the results obtained. I have been assisted throughout by Mr. O. T. Dinnick, whose collaboration has been most valuable. Unvarying assistance in an operation of this kind is an important factor, for experience gained in a succession of cases is the guerdon of operator and assistant alike and can be utilised and applied in a combined and coördinated progress.

Technique of the Operation.

The cautery is heated by electricity, led to it from the main current by way of a converter. The operation itself may be divided, for purpose of description, into (1) abdominal and (2) vaginal.

(1) *Abdominal part of the operation.*—A mid-line incision is made reaching from the umbilicus to pubes. The skin edges are protected and a pelvic retractor of the Doyen type having been inserted into the peritoneal cavity, the intestines are thoroughly packed off with hot moist pads, so that the upper abdomen is completely shut off from the pelvis because manipulations in the pelvis have to be continued over a period ranging from one to two hours. In some cases adhesions of omentum or intestine to the anterior abdominal wall or to the tubes will have to be freed before this procedure can be carried out. Thorough packing also ensures a clear and unobscured view of the pelvic contents. The internal iliac and the ovarian vessels, and the round ligaments are tied off in turn; this part of the operation takes from 10 to 30 minutes. The posture of the patient is then changed from the Trendelenburg to the horizontal position. The abdominal wound is isolated from the perineum by a towel clipped securely across the abdomen below the lower extremity of the incision, and thrown upward to cover the wound and the hand and arm of the assistant engaged in guiding during the next stage of the operation. The patient is then adjusted in the lithotomy position, and the second or vaginal portion of the operation is commenced.

(2) *Vaginal part of the operation.*—In most cases it will be found necessary to dilate the vagina, and this is effected by means of a flange and screw dilator, which is part of the operating outfit. The dilatation is carried to a sufficient degree to admit of the insertion of the water-cooled speculum, also provided with the outfit. This speculum has a surrounding water-jacket space through which water is conducted by means of rubber tubing connected to a raised reservoir and drained away into a bucket placed on the floor at the operator's feet. In this way a constant circulation of cooled water through the water-jacket of the speculum is ensured, and the vaginal walls are thus adequately protected. Several types and sizes of speculum are provided with the outfit and selection is made according to the size of the vagina, the situation and extent of the growth, and the particular area of the growth to be dealt with. Through this speculum a clear view can be obtained of the cervix and the vaginal vault, and decision can be made as to whether or not a curette may usefully be employed to remove the redundant growth. The position and direction of the uterine cavity is then determined by the passage of the uterine sound, and the position and relation of the bladder to the involved cervix is similarly ascertained. The manipulation of the cautery is then commenced. The assistant, with his hand in the abdomen, from

this time onwards grasps the fundus of the uterus and controls the position and direction of the cautery point, either by verbal directions to the manipulating operator or by movements destined to bring palpable growth in contact with the heating agent. As a rule, the cautery is passed through the cervical canal until its tip can be felt at the top of the fundus by the hand of the abdominal assistant. In this situation a thorough heating of the cervix and fundus is carried out. The ordinary cooking degree of heat may be roughly estimated by trying the cautery upon a piece of wood. The heat adjusted by means of a rheostat should be just insufficient to char the wood. When the cautery is in position and in contact with the tissues, a gentle sizzling sound can just be heard by the cautery operator. The estimation of adequate heating rests with the abdominal assistant. The part in process of treatment may be pronounced by him as adequately heated when the heat transmitted from the cautery through the intervening tissues to his gloved hand is such as to be just bearable. When fundus and cervix have thus been dealt with, the abdominal assistant directs the cautery towards outlying areas in the bases of the broad ligaments. The lower portion of the cervix and involved areas in the vaginal vault must be dealt with by the cautery operator, who has these parts under his direct survey, and it is particularly in these manipulations that care and discrimination must be exercised. Although a much greater degree of heat may well be utilised in forcing the passage of the cervix and destroying growth on a thickened posterior lip, no such heating can be tolerated in dealing with the anterior aspect of the cervix and the anterior vaginal fornix. For dealing with this particular area Percy has devised a speculum interrupted for about one-sixth of its circumference. He suggests that the interruption be made to coincide with the danger area lying anteriorly, and the necessary degree of heat may be obtained therein without direct contact with the cautery, the degree of heat being estimated by means of a thermometer passed through the urethra and resting in the bladder. The changes which occur in the heated parts are characteristic. The fundus becomes soft, tumid, and juicy, so that at the end of the cauterisation a varying quantity of slightly blood-stained fluid has accumulated at the bottom of the pelvis. In addition, the pelvic organs, which at the commencement of the operation had exhibited a more or less intensive degree of rigidity, exhibit a softness and mobility which is both unexpected and characteristic. The appearance of the treated area looked at from below is also characteristic. The cervix presents a large funnel-shaped crater, the sides of which are quite firm and perfectly dry and of a peculiar greyish-yellow colour.

This part of the operation being completed, the patient is released from the lithotomy position, all towels except those clipped to the skin edges are changed, and the abdominal wall sewn up in three layers by the assistant.

In 1914 the intra-abdominal portion of the procedure was confined to directing the position of the cautery by palpation. The first few cases showed clearly enough that severe secondary hæmorrhage was a danger to be anticipated. As a preventive measure it was decided to tie both internal iliac arteries, the ovarian vessels, and the round ligaments. In every subsequent case this has been done, and as a result no further instance of secondary hæmorrhage has occurred. It is interesting to note that Percy himself was compelled to adopt a similar procedure for the same reason.

Certain Difficulties.

The ligature of the internal iliacs may be very easy or very difficult. In many cases the tubes are bound down at the back of the uterus to the peritoneum covering the pelvic floor, to the pelvic colon, or to the mesocolon itself. Apart from any adhesions affecting the adnexæ, the pelvic colon with its mesocolon has often contracted adhesions or adventitious peritoneal attachments to the posterior and lateral pelvic walls. When tubes and ovaries are bound down in the manner thus indicated it is essential that they be thoroughly freed, and in this case their removal is indicated. Adventitious attachments of the colon must also be freely severed to allow free access to the outer aspect of the pelvic meso-colon to permit exposure and ligature of the left internal iliac artery. The pelvic viscera being thus freed the ligature of the iliacs is proceeded with. In a case presenting any or all of the inflammatory adhesions above described ligation of these vessels is almost certain to be difficult. These difficulties, however, are dependent on such anatomical factors as the depth and conformation of the pelvis and the thickness of the abdominal wall, for it must be remembered that a considerable amount of superficial fat is often enough encountered in operating upon patients in whom cancer of the cervix has developed to such an extent as to render the condition radically inoperable.

Danger to the ureters is practically negligible, for these structures, lying as they do immediately in front of the iliac vessels, must inevitably be exposed before the vessels can be reached. Occasionally, however, it happens that the vessels lie embedded in dense tissues, the nature of which, inflammatory or malignant, is impossible to determine. Even in such a case the danger of wounding the internal iliac vein is much greater than that of causing damage to the ureter. In an ordinary case, the iliac vein separates readily from the posterior aspect of the accompanying artery, and reasonable care only is necessary to avoid damaging it. In a case such as that predicated separation is difficult and the walls of the vein, stiffened by the surrounding tissue, may well be perforated unless the greatest care is exercised. Such an accident occurred on one occasion in this series and a fatal result ensued.

On one or two occasions adhesions of omentum to abdominal wall and pelvic viscera, and dense matting of the viscera themselves have been so extensive as to preclude a definition of the pelvic cavity, and in such a case operation must necessarily be abandoned, for it is not, I think, justifiable to proceed with the cauterisation per vaginam without control exercised from within the abdomen. The vaginal portion of the operation may be immediately complicated by inability to define the position of the cervical canal. In such a case a passage must be forced by the cautery heated to a relatively high temperature, and guided in its course by the orientating hand of the abdominal assistant. Often the posterior vaginal wall in the region of the fornix and the posterior wall of the cervix are so destroyed by growth that they consist of little more than peritoneum. Perforations in these situations by curette or cautery are not uncommon, but owing to the relation of the recto-vaginal pouch of peritoneum the rectum itself is in little danger, and, in fact, has never been injured. The anterior aspect of the cervix and the anterior vaginal vault are not so happily situated. The close relationship of the bladder must be constantly borne in mind, for the one great immediate drawback to the operation is the development of a vesico-vaginal fistula. The area of bladder thus liable to be involved is that extending from the level of the internal os above to within three-quarters of an inch of the urethral orifice below.

Mention has been made of the interrupted speculum devised to deal with growth in this region. I have, however, found this of little practical utility. A factor of greater importance is the size and shape of the active end of the cautery. The end usually employed has far too pronounced a shoulder at its junction with the handle-shaft, and I feel sure that a modification of the instrument along the lines indicated would prove more efficacious in preventing the formation of these distressing fistulæ than the use of the interrupted speculum. No instance of a uretero-vaginal fistula has occurred in this series, and this is somewhat extraordinary in view of the thorough heating to which the bases of the broad ligaments have been subjected and compares favourably in this respect with the Wertheim operation. No recto-vaginal fistula has been caused by the use of the cautery, but in a case operated on in January, 1920, a small recto-vaginal fistula followed the embedding of radium needles into the remnants of the posterior cervical wall. Secondary hæmorrhage, as has previously been mentioned, is a formidable complication unless the internal iliacs are ligatured. This being done, bleeding at the time of operation is very slight, and the hæmorrhage as an immediate consequence of the operation is almost unknown. In one case the separation of a large slough was accompanied by a smart outburst of bleeding, but this was not repeated, and the patient made an uninterrupted recovery.

As a preliminary to the application of heat, allusion has been made to the use of the curette as a means of removing redundant growth. This procedure was found to be considerably facilitated by the pelvic ligation of vessels, for oozing was reduced to a minimum, and a clear view obtained without the necessity for constant swabbing. This use of the curette is denounced by Percy,[2] but I am satisfied that it saves time, and cannot conceivably do any harm. Two grades of heat have been utilised—a high grade that destroys, and a lower grade that cooks. Percy originally was opposed to destructive heat, but he admitted that this may be of value in certain positions and under careful control. In forcing the passage of the cervix, and destroying superficial growth, the use of destructive heat is undoubtedly indicated, the heat-blocking effect of the eschar being obviated by the removal of as much burnt tissue as possible. This can readily be effected with a pair of stout sponge-holding forceps. In the great majority of cases the forcing of the cervical canal has demonstrated the existence of a condition of pyometra. The appearance of many of these patients was impressively indicative of toxic absorption, and the extraordinary improvement in their complexion and facial aspect within two or three days after operation can best be accounted for on the assumption that pyometra was the causative factor. The duration of the operation has varied from one to two hours.

The Type of Case.

Gauged by whatever standard the type of case subjected to operation was, from the radical point of view, inoperable. The cases were drawn from the chronic wards at the Cancer Hospital. The patients in these wards are recruited from inoperable cases so certified by practitioners or admitted as such from the out-patient department, and in every case their condition is verified by the visiting staff. By far the greater number in this series had been seen and rejected as inoperable by gynæcologists of repute at large London and provincial hospitals. The intra-abdominal condition obtaining in these late cases presented many points of interest. Matting and adhesions have already been mentioned. The rarity of demonstrable glandular invasion was remarkable. Comparative figures support the view that this freedom from glandular metastases was not only apparent, but real. Leitch,[15] in a series of 915 post-mortem examinations, found glandular invasion in 351, or 38·36 per cent. The number in which metastases of any kind occurred was 405, or 45 per cent.; in other words, 55 per cent. of cases which run their course without surgical intervention die as a result of effects determined by what remains to the last a local lesion.

These figures are confirmed by the notes of a series of 100 post-mortem examinations undertaken at the Cancer Hospital. Twenty-four cases had glandular deposits and 9 had visceral deposits, giving a total of cases with metastases of 39 per cent.; this percentage is lower than that recorded by Leitch, but the number concerned is smaller, and includes 5 cases which had been subjected to radical operation. Dilated ureters on one or both sides were commonly met with. Occasionally this dilation would be extreme, the ureter approximating in diameter to that of the little finger. It is interesting to note that Leitch in his series of 915 found the kidneys hydronephrotic and the ureters dilated in 75 per cent. of the cases.

No selection was exercised in the choice of cases in so far as concerned the local condition. Attention was directed to the general condition only, no case being dealt with unless this was sufficiently good to render reasonable the immediate risk incurred. Experience has shown that local conditions should be considered, and this aspect of the question will be referred to in discussing post-operative sequelæ. One case—not included in the series—was treated for recurrence in the vaginal vault, following a radical panhysterectomy. She suffered from oft-repeated hæmorrhage and died in a few weeks. The unsuitability of cases recurrent after radical operation had been confirmed by Percy.[6]

Post-operative Progress and Sequelæ.

The abdominal wall in every case has healed without a trace of suppuration. Allusion has already been made to the striking improvement in general aspect that occurs within two or three days of operation. Slight reactionary temperature may persist for the first few days. It has caused no more anxiety than that which frequently obtains after a supravaginal hysterectomy. Shock has never been encountered. This is the more noteworthy in view of the age of some of the patients. Several were over 50, and one was 68. These findings are at variance with those of Bancroft, who lays stress on shock and temperature as inimical factors.[7,8] In three cases sloughs of considerable size have been passed per vaginam, and in one case the coincident loss of blood was considerable, but was not repeated. A foul discharge may commence on the third or fourth day, and persist about a fortnight. It is advisable to administer a weak iodine douche beginning on the fourth day, and continued till discharge ceases. Patients are kept in bed for three weeks and leave hospital at the end of a month.

Vesico-vaginal fistula has resulted in seven cases. This is an uncomfortable and intractable complication. The leakage may diminish somewhat, but healing never takes place. In one case (No. 26) an attempt has recently been made to remedy the defect by converting the vagina into an annexe of the bladder. The fistula, however, was so close to the urethral orifice that control has not been established. One patient (No. 36) is dry while lying in bed at night, but constantly leaks during the day. It is particularly with regard to this unhappy occurrence that careful selection should be exercised in the choice of case. In considering the question of fistula formation it must not be forgotten that the condition must inevitably arise in a large number of cases as a direct result of the disease. Thus, Leitch, in his series of 915 end-results of inoperable cases, records 44·2 per cent. of vesico-vaginal and 16·5 per cent. of recto-vaginal fistulæ.

TABLE I.

Traced and died	29	Operation abandoned ...	2
Untraced	5	Living	7

TABLE II.

Not discharged.—Died in hospital, 8 (average 3½ months).
Readmitted.—Died in hospital, 4 (average 1 year 8 months).
Discharged.—Died outside, 17 (average 1 year 4 months).

TABLE III.

No.	Name.	Age.	Duration of life	No.	Name.	Age.	Duration of life
1	F. B.	65	1 yr.	23	C. A.	40	1 yr. 2 mths.
2	N. T.	49	Not traced.	24	M. E.	34	2 mths.
3	J. M.	42	7 mths.	25	F. B.	68	3 yrs. 1 mth. (l.)
4	H. P.	41	Not traced.	26	E. G.	34	10 mths.
5	E. S.	47	,, ,,	27	F. D.	53	9 mths.
6	E. S.	54	1 yr. 4 mths.	28	K. B.	41	2 yrs. 10 mths (l.)
7	K. H.	51	2 yrs. 2 mths.	29	E. J.	46	2 wks.
8	M. S.	58	1 yr. 3 ,,	30	M. D.	32	2 yrs. 5 mths. (l.)
9	F. F.	61	1 ,, 3 ,,	31	H. C.	?	3 yrs. 4 mths.
10	M. S.	28	1 ,, 3 ,,	32	M. N.	40	1 yr. 3 mths.
11	R. K.	50	4 mths.	33	J. G.	55	Not traced.
12	M. M.	31	Not traced.	34	S. C.	56	11 mths.
13	F. L.	56	9 mths.	35	I. W.	47	1 yr. (l.).
14	E. S.	39	7 ,,	36	R. W.	51	1 yr. 3 mths. (l.)
15	M. A.	56	1 mth.	37	M. S.	39	1 yr. 5 mths.
16	M. D.	57	2 yrs. 6 mths.	38	C. K.	67	8 dys.
17	E. R.	66	2 ,, 8 ,,	39	E. G.	34	8 mths.
18	E. P.	47	2 yrs.	40	S. F.	43	5 ,,
19	M. R.	51	Died same day.	41	M. N.	40	3 ,,
20	A. M.	40	9 mths.	42	M. G.	46	9 ,, (l.)
21	F. K.	48	1 yr. 8 mths.	43	H. W.	?	2 ,, (l.)
22	A. W.	66	3 yrs. 2 mths.				

(l) = living.

Consideration of Results Obtained.

The best estimate of the results will be obtained by considering separately the categories indicated in Table II. The first group—those not discharged from hospital—includes four cases who died within a month after operation, and this may be regarded as the primary mortality. The other four cases, although living for periods of from two to ten months, were confessedly failures in so far that no claim is made that any definite benefit was conferred upon them. The second group deals with four cases who were re-admitted and died in hospital. These were Nos. 7, 13, 22, and 27. The cause of death was as follows:—

Case 7 was seen as an out-patient six months after operation. She had then no discharge or pain, and had gained weight and strength. She was readmitted one month before she died on account of occasional hæmorrhage noticed for two months previously. Radium was embedded, followed by hæmorrhage, and she died of uræmia. This patient had two years of life free from symptoms and enjoyed throughout that time good health.

Case 13 was an utter failure. She was admitted for colostomy, and died as a result of the operation.

Case 22 was readmitted after three years for radium implantation, recurrence having given rise to some blood-stained discharge. Before any treatment was carried out she developed intestinal obstruction, from which she died.

Case 27 was quite well until immediately before readmission. She was admitted for hæmorrhage and died therefrom three weeks after.

The average life duration in this group is 20 months, and three of the patients were undoubtedly benefited to a very considerable degree. The third group include those cases who were discharged from hospital, were never readmitted, but died outside the institution. For the after-history of these cases one has been dependent upon the out-patient notes and answers to inquiries made by post. Out-patient notes on many of the cases are not existent owing to the fact that so many of these cases have been admitted from places situated a long distance from the hospital, a factor which has precluded their further attendance. The answer to inquiries have been disappointing, largely owing to the lack of education among the patients and their friends. In many cases nothing more than the date of death was indicated.

Notes on Certain Cases.

A few notes obtained on some cases may serve to indicate the relief, or otherwise, afforded. These notes have been culled from the sources above indicated, and are set forth without selection.

CASE 1.—Seen as out-patient eight months after operation. Uterus freely movable, slight bleeding on examination, no ulceration, some right-sided pain, diagnosed elsewhere as appendicitis. Cause of death unknown.

CASE 6.—Seen five months after operation. No discharge, no hæmorrhage, some pain radiating down the left leg. Died 16 months after operation. Cause of death unknown.

CASE 10.—Was discharged from hospital free from symptoms—no discharge, no hæmorrhage—greatly improved in health. Died 15 months after operation. Cause of death unknown.

CASE 18.—Seen three months after operation and noted as an excellent result in every way. Eight months after operation small local recurrence noted. Attended out-patients to within two months of her death, which was determined by hæmorrhage two years after operation.

CASE 23.—Seen seven months after operation and stated "that she never felt so well." Ten months after operation began to lose weight. This was shortly followed by polyuria. Died 14 months after operation from hæmorrhage.

CASE 32.—Seen two months after operation and noted as being better in every way. Seen again six months after operation, when there was no sign of malignancy locally, but it was noted that she had free fluid in the abdomen. This patient died 15 months after operation from diffuse malignant peritoneal invasion.

CASE 40.—Lived only five months, and although free from symptoms never recovered her health. No definite cause of death is known.

CASE 41.—Lived only three months. No definite cause of death known, but was free from discharge, hæmorrhage, and pain.

The average duration of life in this group was 16 months. All patients discharged were immediately relieved of all symptoms, and, basing our deductions upon known histories, it would appear that death usually ensues very soon after the onset of any symptom indicating renewed growth.

Leitch gives 21 months as the average duration of life from the commencement of the disease, as determined by the date of the exhibition of the first symptom. Every case in my own series had been pronounced inoperable, and in many cases application for admission was not made until the lack of facilities at home forced the patients to seek institutional aid. Again, varying periods necessarily elapse between application and actual admission. In view of these considerations, it is not, I think, unfair to estimate that the average expectation of life could not have exceeded six months.

A better idea of the economic value of the increased term of life thus conferred may perhaps be gathered from a consideration of the cases—seven in number—still living. These are Cases 25, 28, 30, 35, 36, 42, and 43. Of these, Case 43 has been operated on only two months and may be excluded from consideration. To take these cases separately:—

CASE 25.—This patient, seen on Nov. 24th, 1920, was in perfect health. She is able to live a normal life and to do quite as much as any normal person of her years. She has a vesico-vaginal fistula and is compelled to wear a urinal, but she has no discharge, hæmorrhage, or pain, and shows no sign of any malignancy.

CASE 28.—For two years this patient was absolutely free from any symptom associated with malignant disease of the cervix. She was normal in every way and in perfect health. Since then she has had several severe hæmorrhages and has been treated consistently with X rays. Between her admissions to the hospital she gets about, but her life for the last few months cannot be regarded as of economic utility.

CASE 30.—I saw this patient on Nov. 24th, 1920. She lives in Bedfordshire and walked five miles to the railway station. She has a husband and two children, the youngest being 4 years old. Her husband has been receiving a pension of only 25s. a week, and she has been enabled to go to work and be largely instrumental in keeping the family. She was only 32 when subjected to operation. She looked and is well and strong, and exhibited no indication of malignant disease. This is the most strikingly successful case in the series.

CASE 35.—This patient has a vesico-vaginal fistula and wears a urinal. She was admitted to hospital again in November, 1920. The closure of the fistula was impracticable, due to small recurrence close to its margin. Three radium needles were embedded. She had no discharge, no hæmorrhage, and no pain, and both looked and felt well. This case was at the time of operation noted as being particularly unsuitable.

CASE 36.—This patient, although free from discharge and hæmorrhage, has been a more or less chronic invalid. She was admitted in August, 1920, for radium embedding, but refused treatment. The operation was performed 15 months ago.

CASE 42.—I saw this patient on Nov. 24th, 1920. She was then in splendid health and showed no evidence of malignant disease. This case was remarkable in that in addition to the primary growth at the cervix she had a large secondary mass at the vaginal outlet. This was removed with a knife and the area freely treated by diathermy. The mass was submitted to the pathologist, who reported it to be a secondary epithelioma. The first operation was undertaken in January, 1920.

Remarks.

The penetrating power of the low heat advocated by Percy and the alleged vulnerability of cancer cells to a degree of heat insufficient to destroy the vitality of normal tissue cells are questions which existing data do not suffice to decide. Boldt[9] relates the result of a post-mortem on one case soon after operation, and concludes that Percy's contentions are thereby refuted. It is, however, not intended to institute a comparison between the cautery method and the radical panhysterectomy. It is frankly recognised that the operation is palliative and should be reserved for advanced cases, or for cases in which radical operation is deemed unsuitable. To this extent, then, it may be fairly regarded as a rival to treatment by radium. It is not my purpose or desire to institute such comparison, for of late I have learned to regard them not as rivals, but as partners. It must be frankly confessed that a number of cases in this series have failed, and that failures must be expected in a proportion of cases varying with the amount of selection exhibited. It must be remembered, however, that the condition of the patients in this series could with difficulty be made worse, and that to that extent any relief obtained is to the good. Bearing these facts in mind, and with determination to combat discouragement, it might, I think, fairly be taken that this operation, particularly when reinforced by consequent radium treatment, should have a place in the armamentarium of a surgeon who would endeavour to undertake the treatment of inoperable cancer. With the cautery and radium together, used discreetly and discriminately, a great deal may be done, perhaps more than has been done, to alleviate the distressing disabilities of inoperable uterine cancer, and in many cases to restore to those suffering derelicts peace of mind, together with the chance of an increased term of economically useful life.

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(Continued at foot of next page.)

ANXIETY PSYCHONEUROSIS.

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THE English language contains no single word which exactly expresses the meaning of the German "Angst" or the French "angoisse." The word "anguish" is generally too strong, while "anxiety," as commonly used, is far too weak—e.g., anxiety to catch the post or a certain train is expressed in everyday speech. The latter term requires qualification when applied to that type of anxiety experienced and manifested by the psychoneurotic. Were mental factors alone under consideration the term "morbid anxiety"[1] would be appropriate, but as the physical concomitants of this mental state must also be taken into account some term which includes them is desirable. This has been sought by such designations of the total symptom-complex as anxiety neurosis, anxiety hysteria, anxiety state, or, more rarely, anxiety psychoneurosis. The first two of these terms unfortunately stress a subsidiary hypothesis rather than the essential morbid anxiety. The term anxiety neurosis was introduced by Freud to describe a group of cases in which the symptomatology was considered to depend upon an actual physical tension. Since its introduction the term has been loosely and ignorantly used. Freud, of course, did not imagine that all morbid anxiety was thus determined; indeed, in a paper on "wild psycho-analysis," he states explicitly that "he who suffers from morbid anxiety is not necessarily the subject of an anxiety neurosis." Further study has shown that in all cases of morbid anxiety, even where a physical origin might be assumed, the mental factor always coexists and is the more important of the two. The term anxiety hysteria signifies that the mental mechanism concerned in the production of the symptoms is similar to that operative in other forms of hysteria. Unfortunately there is no general agreement as to what constitutes hysteria, and many different definitions are current at the present day.

Morbid Anxiety.

The term psychoneurosis does not labour under such great disadvantages, and if it be confined, as it should be, to functional nervous disorders with predominantly mental symptoms due to emotional disturbances the designation anxiety psychoneurosis would be most appropriate to that group of cases the main symptom of which is morbid anxiety with its physical concomitants. Defined in this way, anxiety psychoneurosis is the commonest of the many neurotic disturbances which have arisen out of the war, yet it has not received the amount of attention which its importance warrants. This is probably due to the fact that the more showy somatic dissociations, which, following Freud's nomenclature, are now termed conversion hysterias, absorb the attention of a majority of workers in this field of medicine. Upon closer study, however, morbid anxiety is found to be the primary mental disorder upon which the other psychoneuroses are built as superstructures, most of the superimposed symptoms being produced as the result of an effort to defend the Ego from the baneful effects of morbid anxiety.

At the present time few cases of conversion hysteria are met with among pensioners, while a high proportion of those coming before the neurological boards and clinics is found to be suffering from morbid anxiety alone. The reason for this need not now detain us, but if the view that in the psychoneuroses morbid anxiety is the primary mental disturbance be granted, one would expect to meet it uncomplicated in many early and slight cases, and as a corollary of this the removal of any superimposed protective symptoms which had temporarily masked morbid anxiety would, unless further and more radical treatment were employed, allow it again to become manifest. Experience shows that this is unfortunately of frequent occurrence, especially with conversion hysterias.

Symptoms of Morbid Anxiety.

Before entering into the psychopathology of morbid anxiety, it will be well briefly to survey the symptoms as exhibited by a moderately severe case. There is the typical anxious facies, the startled and strained expression with widening of the palpebral fissure and dilatation of the pupils; the speech, even if not definitely stammering, is characteristic; tremor and hyperhidrosis are almost invariably present. Respiration is shallow but hurried; there is tachycardia, experienced subjectively as palpitation or jumping of the heart. Often a sinking or fluttering sensation in the epigastrium is complained of and may be associated with diarrhœa and frequency of micturition. All the above symptoms indicate an overactivity of the vegetative nervous system and are recognisable as the physical concomitants of the emotion of fear. Yet as a rule the patient does not lay stress upon any of these symptoms nor, unless definite phobiæ have developed, does he realise that he is in any way suffering from fear. He complains rather of being easily upset, of headache, irritability, inability to concentrate, and easy fatigability; of bad dreams, and lack of sleep. It is this group of symptoms and not those previously enumerated which render him unable efficiently to carry out his daily work. Being easily upset is, in the absence of a definite phobia, always the cardinal symptom.

Use of Psycho-analysis.

As physical examination leads us no farther we must proceed by some method of mental exploration to inquire into the psychopathology underlying the production of the symptoms. Suppose we adopt analysis. The analyst asks the patient to relate freely everything he can about himself. The patient generally starts off well pleased, for there is nothing that the neurotic likes better than a sympathetic audience; but in this case he has reckoned without his host. Very soon the alert analyst notices hesitation, pauses and hiatuses in the story, or that his patient is getting uneasy, perhaps even showing an increase of tremor or sweating. The analyst, who has hitherto been passive though very much on the qui vive to detect such signs or any of the subterfuges by which they may be masked, now urges the patient and keeps him to the task, never allowing him to slur over or treat impersonally any subject which is coming up in his mind. The analyst must urge and encourage the patient, and must interpret to him the significance of any method of evasion which is either consciously or unconsciously employed, but in so doing must scrupulously avoid making any suggestions to him. By this means the patient is gradually brought to unfold his personality and the resistances are broken down. It has been found more advantageous to proceed by this method than to attempt a direct attack upon the symptoms while the resistances are still in force. The need for overcoming the resistances and bringing out the dissociated and repressed experiences in their minutest detail is exemplified by the following case:—

A soldier, in the R.F.C. at the outbreak of war, developed in 1917 an anxiety psychoneurosis after crashing near his aerodrome in France. He described the actual crash without much difficulty, but although he

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[1] The morbidity of the anxiety consists in its being out of proportion to the apparently exciting cause.

(Continued from previous page.)

Boldt (H. J.).—9. High Degree of Heat versus Low Degree of Heat as Palliative Treatment for Advanced Cases of Carcinoma of the Uterus, with Autopsy Report of a Case treated by Long Application of Low Heat, as advocated by Dr. J. F. Percy, Amer. Jour. Obstet., 1916, lxxiii., 1-15. 10. High Degree of Heat versus Low Degree of Heat in the Treatment of Cancer of the Uterus, Trans. Amer. Gynec. Sec., 1916, xli., 552-556. 11. Ibid., 542-551.

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had been conscious after the fall he showed an amnesia from that time until he found himself in the aerodrome again. This might easily have escaped notice, yet it contained an important clue to the cause of his morbid anxiety. Great pressure was needed before he could fill in that gap, but eventually the following story came to light. As he was being carried to the aerodrome he had to pass a spot where a great friend of his had previously crashed with fatal results. A rescue party, which included the patient, had set out on that occasion, but as they neared the spot the bombs on the crashed and now flaming aeroplane had detonated, killing several of the party.

The intolerable idea from the recollection of which he shrank was thus not his own crash. One might have been satisfied that in uncovering the second experience, which recalled the death of his friend, one had reached the root of his trouble. But the full story was not yet told; it appeared later that when the bombs on the burning aeroplane had detonated and killed some of the would-be rescuers, one of the party, mortally wounded, was hurled against the patient, knocking him down and falling on top of him. Lying upon the patient, this man died, a convulsive tremor shaking his body. It was the idea of this experience, seeking to return to his mind as he passed the spot, which was to the patient so intolerable that he "forgot" all about it. It is this "forgetting" of experiences with an unbearable affective tone which Freud has termed repression, and repression is the very foundation-stone of Freudian psychology and of psycho-analysis.

Repression: Substitution.

The development of symptoms is not an immediate result of repression, but is due to what Freud terms the return of the repressed material, which can take place only when certain conditions are fulfilled. The aim of repression is to keep from consciousness the unpleasant affective element of an experience. With this intent the whole experience is repressed. So long as it can be fully maintained the repression may be described as successful, but if only the ideational element of the complex is excluded from consciousness, while its affective element disturbs consciousness in the form of morbid anxiety or other symptoms there is a partial failure of repression. The anxiety properly appertaining to the dissociated idea now manifests itself in connexion with a suitably associated idea. That is to say, another idea is substituted for the repressed one, and the disagreeable effect is displaced on to the former. Displacement continues to spread, for it does not matter what is feared so long as it is something other than the original excitant of the emotion. Thus in course of time almost any disagreeable stimulus becomes capable of stimulating the complex through substitution, and so of affording an outlet to its affective element. This accounts for what was emphasised as the cardinal symptom in morbid anxiety—viz., "being easily upset." If a suitable symbolic idea is substituted for the ideational element of the complex a phobia for the object of this idea is developed. Morbid anxiety may then arise, either through the spontaneous activity of the complex, or through its stimulation, symbolically, by the object for which a phobia has developed.

For effective treatment of the condition the repressed idea which is symbolised by the object must be brought to consciousness. No amount of common-sense reassurance is adequate to free the patient from his phobia, which, indeed, he himself recognises as irrational. When, however, he can be brought to overcome the resistances determining the repression which motivated the development of his phobia the latter soon loses its morbid power over him. The soldier of whose history a fragment has already been given had a phobia for long narrow passages. Naturally he avoided such places, but if ever he did attempt to force himself to go into one a condition of panic ensued. We see, then, that the phobia is in a sense protective, its function being to keep the patient away from situations or objects which by stimulating his repressed complex produce in him a state of acute morbid anxiety or panic. Superficial analysis of the phobia of long narrow passages showed it to be connected, via the incidents already recorded, with repressed experiences which had occurred in some caves on the retreat from Mons, although, be it remembered, the patient had been a fit flying man during three years after these experiences. Great resistance was encountered in overcoming this repression, which finally was only cleared up by the aid of analysis of a recurrent dream. Into this there is no need to go; it is sufficient to indicate, in passing, the great help which in such cases may be derived from dream-analysis. A legitimate question which obtrudes itself here is as to whether a superficial analysis such as that fragmentarily reported above—which, nevertheless, sufficed to remove the patient's symptoms—is all that ought to be attempted. Can it be said that the patient is cured when his symptoms have been removed in this way? Is not the condition upon which they were enabled to develop left untouched? From the practical point of view we must generally rest satisfied when the symptoms have been relieved; yet during the course of an analysis even so superficial as that recorded above, glimpses are caught of deeper-lying repressed material, and we are compelled to inquire whether the repressions of later life can come about de novo in an individual whose previous development has proceeded harmoniously. Freud, by tracing the psychic ontogeny both of neurotic and of apparently normal[2] individuals, has answered this question in a very emphatic manner; though, needless to say, his answer has not met with anything like general accord. As a result of his studies Freud has come to the conclusion that "the repressions of later life are only possible in regard to the derivatives or other connexions of the primordial repressions which take place in infancy." Had Freud stopped here it is possible that few would have contradicted him, but after going on to show that morbid fear is only the obverse aspect of desire, he argued that in ultimate analysis all desire is "sexual" in origin. (It must be borne in mind that Freud's conception of sexuality is much wider than the current connotation of the word, so that even the admissibility of the term "infantile sexuality" has been hotly disputed.) The individual's primitive "sexual" wishes undergo repression in the course of his development, because they are repugnant to the standards of his later developing ego-ideal. According to Freud, it is upon this primordial basis alone that the repressions of later life are buildable and are built. In any case it is always a failure of adaptation to existing circumstances which leads to regression, and thus revives former modes of reaction. The later events, which are commonly regarded as causal, only play the rôle of favouring, through regression, a return of the repressed material.

Conclusion.

What the subject of morbid anxiety really fears is, therefore, in ultimate analysis his own primitive desires, or, more tersely, a part of himself. In conclusion, I would add that, so far as my experience goes, it is rarely necessary in the true war anxiety psychoneuroses, where the factors determining regression are quite unusually severe,[3] that mental exploration should proceed so far as the deepest levels; but in some of them, as in most civilian cases, it is therapeutically needful as well as scientifically interesting to reach the level of the primordial repressions.

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[2] The normal individual is only a scientific abstraction.

[3] In war cases, as I have previously pointed out (THE LANCET, 1919, ii., p. 193) dissociation may occur as the result of a sudden physical shock without prior morbid anxiety. Subsequently, however, if he tries to repress the recall of this disagreeable experience symptoms of morbid anxiety develop.

SCHOOL CLINIC AT POOLE (DORSET).—A new school clinic has recently been opened at Poole, the mayor officiating at the ceremony at which many of the local teachers were present. The clinic consists of dental and refraction rooms, waiting- and bath-rooms, and a well-lighted and well-equipped laboratory. The attendance of mothers seeking advice as to young infants is encouraged, in the hope of linking up infant welfare and school work as a means towards establishing a public health conscience among the people.

DISSECTION OF THE FAUCIAL TONSILS UNDER LOCAL ANÆSTHESIA.

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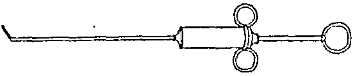
THE purpose of this communication is to describe briefly the technique adopted in the Mayo Clinic for the complete removal of the tonsils in adults. I am tempted to write it without apology, because the technique should appeal—by its very simplicity and the ease with which it is carried out—to those surgeons who, like myself, have experienced difficulty in arresting post-operative hæmorrhage, and even in removing the type of tonsil which I shall describe below. I found, during a recent visit to the Mayo Clinic, that dissection under local anæsthetic was the invariable method of removing tonsils in all adult cases. While the results obtained were naturally excellent I consider it a waste of time to adopt this method in cases where there is sufficient tonsillar tissue to be protruded through the ring of a guillotine and dislocated forwards in front of the alveolar process, as in Sluder's method. It is, in my opinion, pre-eminently suitable for small fibrotic tonsils, or those in which the bases only are left, after attempted enucleation by Sluder's method has been performed by an inexperienced operator.

The following instruments[1] are used:—

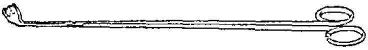
(*a*) All-metal syringe with a long shank. Total length 8 in. Needle ¾ in. long at an angle of 45° to the shank. Barrel of syringe to hold 1 drachm. (Fig. 1.)

FIG. 1.



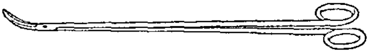
(*b*) Tonsil forceps (vulsellum type) 8 in. long, blades ¾ in. long, curved at an angle of 45° to the shank, and jaws opening laterally. (Fig. 2.)

FIG. 2.



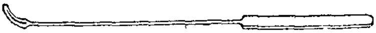
(*c*) Scissors 8 in. long, blades ¾ in. long, curved on the flat to an angle of 45°. Points medium blunt. (Fig. 3.)

FIG. 3.



(*d*) Dissector 8 in. long, flat, blunt-pointed blade ¾ in. long, curved on the flat to 45°, both edges being sharp. (Fig. 4.)

FIG. 4.

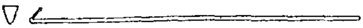


(*e*) Tonsil clamp. As scissors. Crushing surface ⅛ in. broad.

(*f*) Artery forceps. As scissors. Fine-pointed.

(*g*) Pillar retractor. (Fig. 5.)

FIG. 5.



(*h*) Coarse wire snare.

Anæsthetic. (To be injected at points shown in Fig. 6).—Adrenalin (1/1000), ♏1; cocaine hyd. sol. (0·2 per cent.), ad drachm 1.

Position of patient.—Sitting up in a high chair with a head support.

Operation.—The tonsil is firmly grasped by the vulsellum forceps and pulled towards the middle line. The capsule is then cut with the scissors in the supra-tonsillar fossa. The blunt point of the dissector is introduced into the opening thus made, and the tonsil separated from the anterior and posterior pillars by cutting the mucous membrane in a downward direction in front and behind the tonsil. This can equally well be done with the scissors by inserting the closed points into the opening already made in the supra-tonsillar fossa, and opening the blades in front of and behind the tonsil.

With the scissors the tonsil is then separated from its bed by small nibbling cuts, starting at the upper pole and working downwards for about two-thirds of the extent of the bed.

FIG. 6.

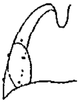


FIG. 7.

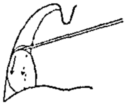


FIG. 8.

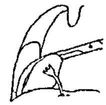


FIG. 7.—Separation of the anterior and posterior pillars with dissector.

FIG. 8.—Tonsil clamp applied to lower third of base of tonsil.

The tonsil is next pulled well towards the mid-line, and the tonsil clamp applied to the remaining undetached portion of the base of the tonsil. Removal of the tonsil is completed by passing a coarse wire snare over the vulsellum forceps, cutting through the remaining portion of the bed, and removing the clamp.

Some operators state that the use of the clamp is not advisable, as it occasionally gives rise to delayed hæmorrhage; they prefer to use the snare alone and ligature any bleeding points afterwards. The whole of the tonsillar fossa can now be exposed by pulling the anterior pillar forwards and outwards with the pillar retractor, and any bleeding points can be secured and ligatured. In expert hands the removal of each tonsil takes about two minutes.

After-treatment.—A plain mouth-wash three times a day and a mild laxative.

Diet.—Ice-cream for two days; then milk, custard, &c., until the patient can bear to swallow more solid food. Most of the patients were on full diet in six days.

In 72 cases witnessed during my stay I saw no ill-effects from the injection of cocaine. The bleeding during the operation is negligible, and a clear view of the operation field is always obtainable. No case is allowed to leave the theatre until the operator is certain that the bed of the tonsil is dry. The patients state that the operation is without pain.

I consider this to be the ideal operation for complete removal of the tonsils in those cases for which Sluder's method is impracticable for the reasons stated above. In the Mayo Clinic it is used for all adult cases; in my opinion this is unnecessary, as the majority of the cases could be completely enucleated with the guillotine. The operation is practically bloodless, and a clear view of the field is obtainable. All bleeding points are ligatured at once, and the risk of secondary hæmorrhage reduced to a minimum. The use of local anæsthesia gives the operator much more freedom and facilities than does the use of general anæsthesia.

A STUDY OF THE
INDICATIONS FOR REMOVING TONSILS
BY DISSECTION OR BY REVERSE GUILLOTINE.

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IN some cases, tonsillotomy—the removal of a portion of the tonsil—either by removing the superficially infected crypts or by securing drainage for the deeper ones, may relieve the patient of the symptoms for which the operation was indicated, but to-day it is universally accepted that the only operation that can be entirely relied upon to achieve this result is that in which the whole of the tonsil is removed together with its capsule. This is enucleation of the tonsil, or tonsillectomy.

It is necessary for the purpose of this paper to recognise two classes of operation—viz., those performed on (1) children, and (2) adults.

Enucleation of the Tonsil in Children.

The conclusions arrived at are based on a series of over 1500 cases. Prior to G. E. Waugh's publication in

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[1] These are being made for me by Messrs. Mayer and Phelps, of 59, New Cavendish-street, London, W.1.

THE LANCET of 1909,[1] it may be stated that in a general way *tonsils were removed by the now antiquated* guillotine method with which we are all familiar. The advantages claimed by him for his operation over that of the guillotine, as then practised, were so obvious that he immediately secured a crowd of disciples anxious to practise the technique that he had elaborated and preached.

Advantages of Enucleation by Dissection.

First and foremost he claimed that enucleation of the tonsil *by dissection* was the only known method for complete removal of the tonsil; his statement reads as follows: "Even in highly skilled and experienced hands *the complete removal of the* tonsil by means of the guillotine is a task of such mechanical difficulty as to be, except in a few rare cases, quite impossible." *Other advantages* claimed are that bleeding is slight, that the pillars of the fauces remain comparatively undamaged, and that it is the only true surgical method for the removal of the tonsil.

With respect to the first of these advantages, S. S. Whillis and F. C. Pybus[2] showed us that in a very large percentage of cases, but not in all, the tonsil can be completely enucleated by what is known as the "reverse" guillotine method. This statement is true as regards the tonsil itself, but not as regards its prolongation over the tongue. When the dissection operation first came into vogue great stress was laid on the fact that this lingual prolongation could by this method be removed. I must state, without denying that inflammation of this "tonsillar rest" may occur, that no case of this sort has come under my personal notice. Moreover, a large number of surgeons, perhaps the *majority, are not in* the habit of stripping this lingual prolongation off the *dorsum of the tongue.* They know how painful the raw surface so produced can be, and either complete their operations with the snare or guillotine.

That the pillars of the fauces are more likely to be damaged in the guillotine operation than in that of dissection no one who is an honest critic of his own handiwork will deny. I *have frequently* been surprised to note that tonsils which I imagined to have been neatly enucleated with the guillotine had taken a portion of the pillars away with them, although I have never found that this had produced a harmful effect. This view as to the damage to the pillars, however, is apparently not held by all laryngologists. Dan McKenzie, for instance, states that "a child's tonsils should never be dissected out. Dissection destroys more or less, usually more, of the faucial pillars .... Enucleation by the guillotine removes the whole of the tonsil yet spares the faucial pillars."[3] The contention that dissection is the only true surgical method of performing this operation is surely unsound. There does not happen to be any other anatomical structure in the body similar to the tonsil requiring similar surgical interference. The case must *therefore* be judged on its own merits; surgical tradition and inclination must, if necessary, be set aside.

Indications for Enucleation by Dissection.

If the above facts are true, one can infer that the outstanding indication for enucleation by dissection in children is the *presence of a* tonsil that cannot, or cannot for certain, be removed by the guillotine. My experience leads me to distinguish three main types of such a tonsil: (*a*) The "chopped" tonsil; (*b*) the small fibroid septic tonsil; (*c*) the "diffluent" tonsil.

(*a*) *Chopped tonsil.*—This type, which happily is becoming increasingly rare, can frequently be dealt with by the reversed guillotine. But as previous inflammation plus trauma and a buried tonsil may imperil complete oblation by this method, it would have to be left to the judgment of the surgeon as to which of the two procedures he would adopt.

(*b*) *Small fibroid septic tonsil.*—This type speaks for itself. It is a small, hard, fibrotic tonsil frequently buried, and with its oral surface sometimes concave. It is not commonly met with in children.

(*c*) *Diffluent tonsil.*—By a "diffluent" tonsil I mean one with a cauliflower-like appearance and somewhat paler than usual. It is usually soft and mushy, with a poorly developed capsule. It is sticky, *often refusing to engage completely* in the window of the guillotine, and is, moreover, difficult to remove by the dissection operation.

Advantages of Reversed Guillotine Method.

So far I have submitted that all tonsils can be successfully enucleated by the dissection operation, and that some in particular can be most satisfactorily removed by this method. In order to decide the more desirable method to employ in that large proportion of cases which can be satisfactorily dealt with by both, we must consider the advantages of the reversed guillotine over the dissection operation.

(*a*) *Time.*—The time occupied is in practically every case very much shorter than in the case of the dissection operation. Leaving out the shortened *period of induction of* anæsthesia, it is reckoned in seconds instead of in minutes.

(*b*) *Anæsthesia.*—The depth and length of the anæsthesia is in nearly all cases shallower and shorter. The statement is nearly correct that whereas a guillotine enucleation can be satisfactorily performed under ethyl chloride or gas and oxygen, a dissection operation cannot. Although their use is *sometimes necessary in many overcrowded* O.P. clinics I do not personally consider that short anæsthetics such as ethyl chloride are always satisfactory. I have sometimes found on examining hospital children at the post-operative weekly inspection portions of tonsil left behind which had escaped the ring of the guillotine in the scramble operation. The type of anæsthesia which is being considered in this connexion is a *light general anæsthesia,* sufficiently deep to allow of the jaw being gagged, without forcing, and whereby the pharyngeal reflexes are not necessarily abolished.

(*c*) *Convalescence and after-pain.*—The primary recovery at hospital and school clinics is of some importance in cases where the children have to go home the same day as the operation. At Charing Cross Hospital, for instance, the children are operated upon between 8.30 and 10 A.M. under the *light general anæsthetic above described.* They are marshalled for inspection at noon before leaving hospital; as a rule *they do not* complain of any severe pain. I am convinced that less traumatism of the tonsillar bed is produced by the smooth blade of the guillotine than by the dissecting strokes of the operator, however delicately the latter may operate. At the same time, I am equally convinced that the gentler the operator the *more he hugs the* capsule and the less he invades the constrictor boundary, the less traumatism, and consequently the less after-pain, is produced. If the capsular surface of two tonsils, one of which has been *enucleated by* the guillotine and the other by dissection, be inspected, it will be found that whereas *the capsule of the former* is smooth and white, the latter has a rougher surface and bears the ruddy tinge of its muscular bed. The shortened secondary convalescence is of equal importance in private practice, when the operation takes place in a nursing home and where expense to the patient should be considered by the surgeon.

Personally, I feel that, in the class of case under consideration, from the patient's point of view the reversed guillotine method is the one to be employed; from the point of view of the operator there is not the slightest doubt that operation by dissection is more satisfactory, being carried out with all the time-honoured surgical ritual. The surgeon takes his time; the blood is duly mopped away with gauze swabs, and inspection of the superior constrictor muscle fibres show the surgeon that his work has been well done, and that the whole tonsil with its capsule has been *removed.* The guillotine operation, per contra, is relatively messy; the surgeon is in a hurry to remove the first tonsil before the little blood that accumulates has had time to obscure the view of the second one. He may instinctively feel that he has effected complete removal, but cannot be certain until he examines the tonsil after removal and, later, inspects the throat at leisure.

A certain number of laryngologists and general surgeons who themselves no longer have to remove tonsils and adenoids en masse in out-patient clinics, never employ any other method in private than dissection, and are loud in their condemnation of any other method. They have been impressed by the advantages of dissection as compared with tonsillotomy, have acquired dexterity in the former operation, and for one reason or another have never troubled to practise the reversed guillotine method.

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[1] THE LANCET, 1909, i., p. 1313.

[2] THE LANCET, 1910, ii., 875.

[3] Practitioner, 1917.

If tonsils can be adequately removed by a simple, short operation, entailing less discomfort, less risk, shorter convalescence, and less expense to the patient, surely this operation should commend itself to the surgeon anxious to do his best for the patient. I have purposely not emphasised the fact that the technique of the guillotine is simpler to master than that of dissection; because I feel that if the dissection operation were the better in all cases, it should be cultivated, no matter what its difficulties might be; and, in any case, the throat surgeon should be master of both methods, since both have their uses. No good purpose is served by being dogmatic on the subject. When the surgeon has decided that it is in the child's interest to have his tonsils removed, then he should ask himself if they can be removed with the guillotine. Only if they cannot, in my opinion, should he have recourse to the dissection operation. The fact is now generally recognised that the timely removal of infected tonsils and adenoids is one of the most important advances in *preventive medicine*. Considering the very large number of cases that have to be dealt with, it is important that the general practitioner should have a sound method in readiness. I submit that the reversed guillotine method is safe, easy to master, and successful in nearly all cases; moreover, it does not require the assistance of an expert anæsthetist.

Enucleation of the Tonsils in Adults.

The differences between the diseased adult tonsil and that of the child, particularly with respect to suitability for removal with the guillotine, are as follows:—

Shape.—The infected adult tonsil tends to be elongated rather than globular, and is not, therefore, well adapted to insertion into the ring of the guillotine.

Consistency.—The infected adult tonsil is essentially but not necessarily a fibrotic tonsil. Repeated attacks of inflammation have been followed by repeated processes of repair, of which fibrosis is an expression. The organisms and their evil work have penetrated deeper. The fibrosis affects not only the tonsillar tissue itself with its capsule, but also the cellular tissue between capsule and muscle. There may be *no true line of cleavage for the blade of the guillotine to follow*. One must bear in mind that the size of a tonsil is no criterion of its infection. It is in adults that we most frequently find the small fibroid tonsils referred to above, and this of all tonsils is the one which defeats the guillotine and invites dissection.

By virtue of their fibrotic character the vessels supplying the tonsils have lost some of their power of retraction. Hæmorrhage may therefore be profuse and difficult to control. On the other hand, if dissected out at leisure the original line of demarcation may be more easily found and the bleeding vessels clamped. Some surgeons are not, however, in the habit of dissecting out all tonsils in adults. They feel that, in suitable cases, the advantage of a much smaller dosage of anæsthetic, a far shorter operation, and diminished after-pain outweigh the disadvantage of the brisk hæmorrhage that may result.

Conclusions.

1. That the method of operating in cases requiring tonsillectomy should be governed by the type of tonsil under consideration.

2. That in children tonsillectomy should always, except where contra-indicated, be effected by the reversed guillotine method, preferably under light general anæsthesia.

3. That in adults tonsils should preferably be dissected out.

EUGENICS EDUCATION SOCIETY.—The Galton anniversary meeting will take place on Feb. 16th at the Connaught Rooms, Great Queen-street, Kingsway, London, W.C. The Galton lecture will be given by Mr. W. Bateson, F.R.S., at 8.45 P.M., on Common Sense in Racial Problems. The lecture will be preceded by the Galton dinner at 7 P.M. for 7.30, and members are requested to apply for tickets, price 13*s*. 6*d*., at the offices of the society (11, Lincoln's Inn-fields, London, W.C. 2) as soon as possible. The financial position of this society is critical and donations or increased subscriptions are invited.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF
PERSISTENT HICCOUGH
COMPLICATED WITH SPASM OF THE LARYNX.

By MALCOLM SARKIES, M.R.C.S., L.R.C.P. LOND.

IN view of the epidemic of persistent hiccough now prevalent in France the following case may be of interest:—

The patient, a medical man 47 years of age and of rheumatic habit, had contracted a chill a week previously with a rise of temperature to 101° F., accompanied by an explosive cough. On the fourth night after the onset of the chill he was awakened at 2 A.M. with a hiccough which persisted till the morning. After his breakfast the hiccough stopped, but *no sooner he coughed it returned and persisted unremittingly* until more food was taken. It then stopped, only to become active once more as soon as he coughed again. He continued to carry on his practice for three days with the hiccough and then sought aid.

On examination no inflammatory condition of the pleuræ, peritoneum, or meninges could be discovered, nor was there any evidence of intracranial tumour. Reasoning: The vagi nerves along the trachea were stimulated by the cough, the impulse passing to the medulla, whence a reflex was sent down the phrenics to the diaphragm, producing the hiccough.

Therefore, by curing the cough one would hope to cure the hiccough. With this end in view the patient was put to bed on a milk diet, and the treatment was a tinct. camph. co. and squill cough mixture and inhalations of vapor benzoin. co. He was very much worse the next day, for, in addition to the hiccough, he had developed a recurring spasm of the larynx, which entirely prevented egress or ingress of air for perhaps half a minute at a time and which was most distressing to behold. He had had about 25 such spasms and was in a very exhausted condition.

On examination, the whole of the abdominal cavity was tympanitic and his heart was now remitting irregularly. Reasoning: The milk diet in an "acid" subject (rheumatic) produced much flatulence, some of which was belched up, the sudden forceful rush of wind upwards producing a closure spasm in a tired and overstrained larynx.

Therefore, by curing the flatulence one would hope to cure the laryngeal spasms. With this end in view the milk diet was stopped. In addition to the cough mixture the patient was given an alkaline mixture with some ammon. bromid. in it, a saline draught each morning, and the diet ordered was one of boiled fish, chicken broth, and a little thin bread and butter, with half an ounce of whisky in a wineglass of water twice a day.

In 24 hours the spasms were decidedly less severe and less frequent, and in another 24 hours both the hiccough and the spasm had entirely subsided. In the meantime the cough was very much improved.

The hiccough had lasted 6 days and 6 nights for perhaps 20 hours out of the 24, and occurred not as a single hiccough but in a series of 5 to 8 rapid percussions with an interval of a few seconds between each series; and the laryngeal spasms had lasted 48 hours. The patient made a rapid and uninterrupted recovery.

St. John's Wood, N.W.

A CASE OF HICCOUGHING.
ISOLATION OF AN ORGANISM.

By C. E. JENKINS, M.R.C.S., L.R.C.P. LOND.,
PATHOLOGIST TO SALFORD ROYAL HOSPITAL.

A PECULIAR epidemic of hiccoughing has appeared in various parts of the country. It seems to have started in Austria and spread to this country by way of Switzerland and Paris. It appears to be accompanied by *mild catarrhal symptoms* in many cases. A case examined by the writer had a profuse yellow nasal secretion of thin consistency.

Examination of Secretion.

A loopful was divided between two blood-agar plates and well spread. At the end of 24 hours both plates were covered with hundreds of tiny colourless colonies; there were also present five colonies of staphylococcus on one plate and three on the other, so that the organism just described was present in practically pure culture. A film made from one of the colonies revealed a very minute bacillus indistinguishable from *B. influenzæ*. Pleomorphic forms were extremely common and very varied in type. The organism was Gram-negative but did not take any of the ordinary stains well. A fairly strong solution of carbol-fuchsin was necessary in order to obtain a well-stained film. The appearance of colonies and films from subcultures did not differ from those of the original culture. No growth occurred on plain nutrient agar.

The organism certainly belongs to the influenza group, and its minuteness and extreme pleomorphism incline the writer to the belief that it is *B. influenzæ* itself rather than another member of the group. It is, of course, impossible to dogmatise on a solitary case, but if the bacillus of whooping-cough can cause spasm in the respiratory tract it is not unreasonable to concede the possibility of a closely allied organism causing spasmodic contraction of the diaphragm.

A NOTE ON THE

TREATMENT OF NERVOUS INSOMNIA.

BY THEODORE ZANGGER, M.D. ZURICH.

DISTURBANCES of the circulation play an important part in the causation of insomnia; that form of the condition which is associated with myocarditis and heart failure yields not so much to sedatives as to cardio-tonics. In arterio-sclerosis with reduced blood pressure I have found spirit of camphor give good results and also control the accompanying insomnia. Again, in arterio-sclerosis with increased blood pressure, if the kidneys were not diseased, small doses of nitroglycerine given for weeks and months kept the blood pressure almost normal and also relieved the insomnia. Excess of hydrochloric acid often causes irritation of the nerves of the stomach, eructations, and flatulence which contribute to sleeplessness; here an alkaline and dietetic treatment is of use, and I find tabloids of alucol,[1] a colloid hydroxide of alumen, slowly dissolved in the mouth, cure the insomnia.

Combination of Medicinal and Psychic Treatments.

My own treatment of nervous insomnia, which is often the principal and most distressing symptom of an underlying neurosis, consists of a combination of medicinal and psychic treatment.

Medicinal treatment.—For from four to eight days I prescribe 8 gr. of veronal or the soluble sodium veronal or 1½ gr. of dial-ciba to secure from the very first three to six hours of sleep every night, thereby quieting the patient and giving him confidence. Afterwards I give two tablespoonfuls (30 g.) of a solution of sodium bromide (1 in 20) just before supper, and add for a week half-doses of veronal or dial. As improvement continues the latter are reduced to half-doses every other day for a week, and are then completely discontinued. At the end of a month the bromide can also generally be gradually reduced to three-quarters or even half the amount. Of course these doses must be individually modified in each case. The whole bromide treatment lasts from one to three months according to the severity of the case: its action is not only sedative, but successfully combats the mental depression always present during nervous insomnia. As a tonic after the bromide treatment lecithin injections are often of great value. For the past 10 years I have used Professor Sereno's bioplastine, giving an injection three times a week for six weeks.

Psychic treatment.—First of all the physician must investigate the patient's mind in order to discover and discuss psychic shocks which may have originated the nervous disturbances. The patient should learn to confide completely in the physician; the latter must attempt not to bring the patient under the ban of his mental force and power of will, as do hypnotists and the modern school of what may be described as "sexual therapeutists," but to re-educate the patient's mind and will. The physician must also get into private contact with the patient's family or nearest friends to complete his knowledge of the case and to instruct the relatives as to treatment. Near relatives are, however, often most unsuitable companions and advisers, coming, as they may, from a neurotic stock; it may be desirable to remove the patient from harmful home influences for a period of weeks or months, or even permanently to employ a specially trained nurse or companion, or to make use of a medical home.

Satisfactory Results Obtained.

In over a hundred cases of psychoneurosis with insomnia that I have treated in the last five years the results have been satisfactory. I have not found it necessary or desirable to refer at length to sexual matters in more than half a score of cases, and then thoroughly and earnestly. I am greatly averse to the modern system of daily investigation of the sexual life. As Professor O. Veraguth said after a lecture on psychic treatment by the Freudian system, given some 15 years ago by Dr. Jung, of Küsnacht, to the Society of Medical Practitioners of Zurich: "For one complex you eliminate, you produce ten new ones."

Medical Societies.

ROYAL GLASGOW MEDICO-CHIRURGICAL SOCIETY.

TREATMENT OF GASTRIC AND DUODENAL ULCER.

AT meetings of this society held on Dec. 3rd and 17th, 1920, this subject was under discussion.

The Physicians' View.

Professor **RALPH STOCKMAN**, representing the physicians' view, commented upon the unsatisfactory state of our knowledge regarding the ætiology of these ulcers.

Gastric ulcer, he said, is common in anæmic young women; duodenal ulcer frequently occurs in men in the prime of life and apparently in perfect health. We do not know whether they are primary or secondary lesions following upon unrecognised deeper-lying causes. So far the ætiology of the recent clean-cut simple gastric or duodenal ulcer has not been adequately or definitely explained by any of the speculations put forward. It is certain that many people have acute ulcers of stomach and duodenum without any definite symptoms, the ulcers healing of themselves and probably never giving rise to further trouble. Should pain, indigestion, or hæmorrhage betray the presence of an ulcer, clinical experience has put in our hands fairly efficient methods of allaying these symptoms and presumably of inducing healing. Absolute rest in bed, light easily-digested food, attention to the bowels, and the administration of bismuth and earthy carbonates, seem in most cases to cause healing in from three to five weeks. Lenhartz's dietetic treatment was, Professor Stockman thought, on the whole, successful, although treatment was generally stopped too soon. In this way it should be possible to prevent the ulcer from becoming chronic.

Regarding systematic drug treatment designed to produce sound healing, physicians had shown a great want of enterprise. Many patients with gastric and duodenal ulcers keep well for long periods, relapsing under worry, business and domestic strain, or exposure to cold. Anæmia should be carefully attended to. It was, however, the chronic ulcer which gave us trouble in practice. Many of its victims were never free from symptoms, and their working capacity was greatly lowered. While medical treatment had shown lack of initiative, surgery had claimed much. Operation for perforation, pyloric stenosis, deformities, obstruction by adhesions, invasion of the pancreas, liver, and gall-bladder showed brilliant results, but by no means invariably; severe hæmorrhage seldom came into this category. Gastro-enterostomy for the cure of uncomplicated chronic or recurrent ulceration did not stand on a secure basis, and possibly should not be done at all. The strict rest and diet after the operation did good, but recurrence occurred very much as in unoperated cases, and regurgitation of bile was a dreadful sequel to the operation. Moynihan had abandoned gastro-enterostomy in favour of gastrectomy. Mayo advises gastro-enterostomy and burning out of the ulcer. But why operate at all? Perforation was a rare occurrence and could be dealt with efficiently by operation if it did occur. It was claimed that excision of the ulcer prevented the after development of cancer, but if ulceration was the determining cause, cancer should be equally common in the duodenum, which it was not.

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[1] Manufactured by Dr Wander, Berne.

The Surgeons' View.

Mr. JAMES H. NICOLL, representing the surgeons' view, said it was impossible to divorce the discussion of treatment from that of ætiology. Gastric and duodenal ulcers differed in two particulars: gastric ulcer tended to become malignant, duodenal ulcer hardly ever. Gastric ulcer was common in young females, duodenal affected middle-aged men. Pancreatitis, along with gastric and duodenal ulcers, were steadily following appendicitis, intestinal obstruction, and cholelithiasis in becoming the object of immediate surgical treatment. The last word in diagnosis lay with the surgeon. For duodenal ulcer, enfolding with closure of the pylorus was the proper course. This necessarily involved gastro-enterostomy. For gastric ulcer, excision or enfolding constituted the treatment; the superaddition of gastro-enterostomy then depended upon the site of the ulcer and the degree of distortion of stomach produced by the excision or enfolding. Concerning points of detail Mr. Nicoll said:—

(*a*) Large parietal incisions should be employed so that the other organs in the abdomen may be examined.

(*b*) Gastric and duodenal ulcers apparently cured by medical means not infrequently relapsed, perforated, bled, or became malignant.

(c) Microscopic examination of all excised gastric ulcers was advisable.

(*d*) When gastro-enterostomy was called for alone or in addition to pyloric closure or excision of the ulcer, in most cases the ordinary posterior operation answered well. Should this lead to bile regurgitation three methods were available. Gastro-enterostomy plus entero-enterostomy; Roux's gastro-enterostomy "en Y"; or a modification of that permitting of side-to-side union.

Mr. Nicoll preferred the third method.

The Practitioners' View.

Dr. R. O. ADAMSON presented the case from the point of view of the practitioner. Dr. A. F. Hurst had recently said that if practitioners and physicians only did their duty, cases of ulcer would never reach the stage in which the surgeon's help was required, from which it was clear that Dr. Hurst had never engaged in general practice. Sooner or later the majority of cases yielded to medical treatment when diet restriction and other treatment were relaxed. Many were cured because treated in their earliest stages. In the presence of proved ulceration the cure was often only partial, as the ulcer was not completely and soundly healed. Once the symptoms had disappeared patients returned to unhealthy surroundings, to food wrong in quantity and quality, naturally with a return of their trouble, which was then more difficult to heal. What was required was prolonged after-treatment in the early cases, for frequent recurrence was apt to be followed by deformities of the stomach, pylorus, and duodenum, which might be worse than the primary disease. Dr. Adamson then considered in more detail how the cases presented themselves to the practitioner.

(1) The type that is brought to our notice first by perforation. In these cases few, if any, symptoms have preceded the perforation, and in these cases the medical treatment only begins when the surgical treatment ceases. In young subjects the prognosis appears to be good.

(2) The type that begins with hæmatemesis, sometimes a pinhole perforation of a blood-vessel. Here also there is often little or no history of previous indigestion. The early recognition of the serious nature of the illness with the consequent prolonged and thorough treatment usually leads to recovery, which is generally enduring.

(3) The large group of cases labelled indigestion, dyspepsia, gastric catarrh, gastritis, or bilious attacks. These cases yield, for the time at least, to rest in bed, rectal salines, or other less drastic measures. In most, recovery is temporary and there is recurrence months or even years after. Many come to the surgeon for perforation or pyloric stenosis and the results of surgical treatment are highly satisfactory.

(4) Duodenal ulceration. This may appear as a simple hyperchlorhydric indigestion which comes and goes, often in the spring and autumn. In definite ulceration our medical treatment meets with success up to a point and chronicity is often established and then hæmorrhage and perforation are likely enough to occur.

He asked: What is wrong with our treatment? The methods are probably not at fault, but after-treatment is not sufficiently prolonged. It should be continued for years, the question of suitable diet being all-important.

Dr. JOHN COWAN said that the mortality of ulcer was considerable.

In a series of 120 patients who were in his wards suffering from some form of ulceration of the stomach or duodenum, 15 died—i.e., 12·5 per cent.; 8 died from hæmorrhage, 4 from perforation, 1 from toxæmia, 1 from exhaustion, and 1 from an unknown cause a few days after refusing operation. He had recommended operation in 21 patients (17·5 per cent.), and in two others operation had been required within a short period of their discharge from hospital. Operation had been performed in 17 cases, seven times on account of recurrent hæmorrhage, seven times on account of dilatation of the stomach, thrice for a perforation. Two of these patients died, both from perforative peritonitis. The ulcer was situated in the duodenum in 10 cases and in the stomach in 6. In the other patient no ulceration could be discovered at the operation. In another patient, who died from hæmorrhage, a small erosion proved the source of the bleeding. Operation was indicated in all cases with pyloric obstruction and in those with peritonitis.

The after-results of operation were still undetermined; only five had answered his inquiries, all being well 3 to 11 years later. The best results were obtained by close coöperation between physician and surgeon and careful examination by every possible means of the particular features of each individual group. In his series the mortality in the operation group was 11·7 per cent. and in the non-operation group 12·6 per cent.

Discussion.

Dr. SOUTTAR MCKENDRICK suggested that operation should be limited to gastric and duodenal ulcers attended with severe recurrent hæmorrhage, pyloric stenosis, gastric tetany, or perforation, or where evidence was present of a localised peritonitis or subphrenic abscess. X rays afforded a reliable guide when the results were carefully interpreted. When the stomach emptied in 5 to 6 hours prolonged medical treatment should be applied to patients resting in bed. Should pyloric stenosis follow operation could be resorted to. The mere presence of occult blood in the fæces was not sufficient reason for operation.

Sir KENNEDY DALZIEL agreed that a large proportion of gastric ulcers required operation, but acute ulcers did not call for intervention until prolonged treatment had first been tried. In America the feeling was in favour of gastrectomy. How many physicians or pathologists had seen a healed chronic ulcer? Professor Samson Gemmell had said that a chronic ulcer never healed. The results of gastro-enterostomy were better than they had been, and he had been struck by the good results of extirpation. Syphilis he did not consider a common cause of ulcer.

Resumed Discussion.

Professor WALTER HUNTER, the Chairman, referred to the question of a syphilitic ulceration of the stomach. In one case specific treatment was followed by cure, demonstrated by X ray examination. He also quoted several other cases treated in diverse ways.

Dr. G. HERBERT CLARK said that our unsatisfactory knowledge of the ætiology of gastric and duodenal ulcers at present precluded much advance in their treatment. Until the physiological functions and actions of the stomach and duodenum were taken into account treatment was liable to be only symptomatic.

The stomach was a muscular organ fixed more or less at both ends, and roughly divisible into a fundic or receiving and a pyloric or churning part. During digestion the pre-pyloric sphincter shows as a constriction. The fundic stomach supplies the pyloric stomach with food and acid juice, which the pyloric stomach churns up and propels against the pylorus, whence it passes on as acid chyme when the chemical and nervous stimulus opens the valve. The natural direction will continue so long as the pylorus is freely patent; and when, from stenosis, it becomes less so, the musculature of the pyloric stomach hypertrophies to meet the new conditions, just as does cardiac muscle. When the stenosis is very great and delay in emptying becomes extreme, the effect of gravity, distension with food and gas, &c., causes great stretching, and as a result the peristalsis loses its force and direction—possibly like an auricle or ventricle in fibrillation. In other words, compensation has broken down. Dr. Clark said that it was not difficult, then, to see why operative interference by gastro-enterostomy very often fails when there is no marked stenosis and consequent delay and dilatation; the emptying of food and acid juice mixture—not properly triturated chyme—occurs far too rapidly and intestinal and other troubles follow. He said that after cutting or cauterising raw injured surfaces were exposed to the gastric juice and the claim that operation removed the source of irritation could not be sound. He considered that the gnawing pain was due largely to muscular action, probably antiperistaltic action to return food unsuitable to the mucous membrane and digestive juices of the stomach concerned. The operation of ligating the pylorus, providing this were fairly patent, could only result in desperate efforts of the pylorus to open when the chemical and nervous stimuli reach their normal reacting point, added to by the forcible pyloric stomach peristalsis behind. No wonder there was gnawing pain. In the presence of marked stenosis, delay, and dilatation, with broken-down compensation, the performance of gastro-enterostomy was almost always brilliantly successful. In its absence failure was far too frequent to encourage its recommendation. If the patient took the same care in the way of rest, diet, &c., without operation as after operation, his relief would generally far outdistance any benefit he would obtain from surgical interference. Severe and uncontrollable hæmorrhage, like perforation, were conditions in which operation had no alternative.

Dr. W. R. Jack said that most physicians agreed as to the type of case suitable for operation, but that surgeons took a wider view. In his experience where, in acute gastric ulcer with hæmorrhage, an operation was performed to ligature the vessel the surgeon invariably failed. In similar conditions medical treatment had repeatedly succeeded. He asked for late results from surgeons and for statistics. Most methods succeeded temporarily, sometimes for years, but he wished to know if surgical relief was greater than medical and more prolonged. We all knew of cases where, after operation, symptoms similar to those occurring previously had persisted. Other cases had substituted an ulcer of the bowel for one of the stomach. He wished to have statistics of cases showing these results.

Dr. H. E. Jones *said that whereas the physician* and the surgeon saw the cases often after long duration, the practitioner saw them before, during, and after treatment. We needed complete statistics over long periods. Dr. Jones referred at length to the different types of case—of ulcer and of simulated ulcer—seen by the general practitioner, and commented upon the probable effect of the prolonged rest after operation upon the body and mind of the patient. He mentioned many different conditions leading to symptoms simulating gastric ulcer, and outlined the types of treatment he found most suitable in each case.

Mr. Alexander McLennan was convinced that in every case all available measures of investigation into the condition should be applied. X rays as well as chemical methods are necessary. Where the stomach is ptosed without pyloric stenosis surgical interference was not indicated, although if an ulcer existed the sufferer was in a most unhappy condition. So also was the patient who after operation suffered from regurgitation of bile with vomiting and distension. He said that the digital stretching of the pylorus for dilatation of the stomach had proved satisfactory. On the question as to whether immediate gastro-enterostomy should follow laparotomy for perforation, Mr. McLennan said that in the hands of his colleague, Mr. W. Campbell, who did not usually perform an enterostomy at the time, many cases did very well without further operation. The Mayo's said that a perforated duodenal ulcer healed better than an unperforated one for some unknown reason. Duodenal ulcers did not heal so well as gastric ones.

Dr. Douglas Russell said that he was becoming increasingly reluctant to advise operation, but believed more in mental and physical rest. Small doses of opium seemed to do good. He gave in detail his [illegible] of the suitability of various foods at various [illegible] of convalescence.

Mr. Archibald Young remarked that only by combining purely medical and purely surgical views could one arrive at a useful conclusion. He agreed with previous speakers that the aids to diagnosis available were often real and reliable. The surgeon had to deal mainly with the chronic ulcer. A proportion of acute cases with perforation or alarming bleeding occurred, but a majority are chronic.

The question therefore arose whether it could be true that a chronic ulcer never heals. Why should it not heal? The suggestion that all symptoms could disappear, perhaps permanently, and the ulcer still remain appeared to Mr. Young inconsistent with the facts of pathology and with the symptoms of disease. Few surgeons had escaped seeing evidence at operations of healed gastric and duodenal ulcers. Mr. Young asked why it was that symptoms of gastric and duodenal ulcers so often vanished in a single night, after days and weeks of almost constant distress. He then proceeded to analyse Mr. Nicoll's thesis that such ulcers should always be treated surgically on the ground that treated medically they frequently may relapse. He suggested that Mr. Nicoll's description of the second remedial operations for the correction of the unfortunate after-effects of the first ones showed that even the surgeon had no reliable panacea for these conditions. Mr. Nicoll had said that he was fast coming to the position that all cases of gastric ulcer should be treated by partial gastrectomy or excision of the ulcer. Mr. Young pointed out that of all those entering into the discussion that evening more than half had been at one time or another victims of the condition and many of the rest also. Were those persons prepared to accept the position that gastrectomy was the only possible treatment? They were not. *His own experience had convinced him that a posterior* (no loop) gastro-jejunostomy, without ligature or closure of the pylorus, was treatment that would give good results in a large proportion of cases. Since the last meeting he had made an inquiry into the subsequent progress of all his private and hospital cases of gastric and duodenal ulcers. So far the results had been more satisfactory than could have been hoped for. Mr. Young concluded by reading two sample replies. He promised to submit to the society later a digest of the complete figures obtained.

Mr. Nicoll, in reply, thought the discussion would do good. He would have preferred the consideration of gastric ulcer separately from duodenal ulcer. "Gastric ulcer" was passing to the position the "appendix" held some time ago. Gastric ulcers tended to become malignant and should be excised. Help was needed *from physicians, pathologists, and physiologists in the* treatment of gastric and duodenal ulcer.

Dr. Adamson, in winding up the discussion, said that the general practitioner saw things from both sides. What is the general practitioner to take out of the discussion? He was driven to the surgeon, at least in accidents and threatened accidents. It appeared that the worse the case the better the result; at any rate the greater the pyloric stenosis the better the result.

MEDICAL SOCIETY OF LONDON.

Pathological Evening: Exhibits.

A meeting of this society was held on Jan. 10th, Sir William Hale-White, the President, being in the chair.

Lysol Poisoning.

Dr. B. H. Spilsbury showed the Stomach and Intestines of a woman, aged about 40, who died about an hour and a half after having swallowed lysol.

Post mortem, brown staining had been noticed on the lips and extending from the angles of the mouth towards the chin. There were also brown staining of the lips on their inner aspect. The epiglottis was eroded, the larynx œdematous, and the air-passages were congested and contained stomach contents smelling of lysol. The urine was clear and did not darken. The tongue was white and furred, the soft palate injected, and the tonsillar surfaces were opaque and grey. The pharynx was also injected and there was some superficial erosion in the pyriform fossæ. The mucous membrane of the œsophagus was injected and in its lower part were superficial erosions running longitudinally. In the stomach was a large amount of brownish fluid mixed with food, with a strong odour of lysol. Its mucous membrane was swollen and dull grey except at the pyloric end, where it was bright red. The change was most marked along the lesser curvature, where the mucous membrane was soft and loosened and showed superficial erosions. The whole stomach wall was thickened, but its external surface was normal. The first part of the duodenum was injected, but the rest was normal. Of the jejunum the first foot was normal, but below this were 4 to 5 feet which were thick and œdematous and very congested, but without erosion.

Throttling.

Dr. SPILSBURY also showed a Larynx from a case of Throttling; it was removed from a woman aged 24.

There had been found post mortem, in addition to the pressure marks on the neck, petechiæ in the right conjunctiva and over the heart. The cricoid cartilage was fractured vertically anteriorly, but there was no hæmorrhage around the fracture. A small hæmorrhage was found beneath the perichondrium covering the posterior surface of the thyroid, and there were minute hæmorrhages in the larynx, chiefly below the vocal cords, and a large hæmorrhage in the wall of the left ventricle of the larynx. The air-passages were congested and contained frothy mucus, and the meninges were congested and their veins engorged. The tongue was slightly indented at its margin by the teeth. The fingers and finger-nails were livid.

Dr. SPILSBURY also showed a specimen of

Angioma of the Spinal Meninges,

from a man aged 42. In August, 1917, three years before death, he was at work, but was gradually getting weaker, and finally abandoned work in June, 1918. In the summer of 1919 he was in a hospital for nervous diseases for 12 weeks, where the diagnosis of lateral sclerosis was made. At the time of his discharge he had practically complete paralysis of the lower limbs. There had been pain in the lumbar region and in the legs. Cystitis and bedsores developed, and death occurred from suppurative nephritis. The spinal tumour was found in the meninges on the posterior aspect of the lumbar enlargement, and consisted of a congeries of markedly dilated and thickened veins.

Sir HUMPHRY ROLLESTON said it was difficult to realise how so soft a tumour could produce a descending degeneration from pressure, and asked whether it was certain that the dilated veins were primary and not secondary, and whether any changes had been found in the cord, and whether any similar tumours were found elsewhere.—Dr. PARKES WEBER said that tumours of this description had usually attracted attention by causing hæmorrhage into the pia-arachnoid or brain tissue in young people. He had never heard of a case in which compression of the cord had occurred.—Dr. W. H. WILLCOX, speaking of the first specimen, said that lysol produced marked whitening of the mucous membrane, and that the stomach was more affected than the œsophagus. He thought that in the case described the lysol must have been diluted three or four times or more.

Dr. SPILSBURY, in reply, said that the cord when first removed showed obvious denting in the region of the tumour. No section of the cord had been made. There were no other angiomata in the body. He had only seen two cases in which hæmorrhage into the meninges had occurred as the result of similar tumours. Surgical interference in one case of angioma at the base of the brain had led to fatal hæmorrhage, and death had occurred in another from rupture of an angioma of the choroid plexus.

Dr. E. H. KETTLE showed a specimen of

Carcinoma of the Thyroid Developing in an Adenoma.

The specimen showed a small rounded tumour about 3 inches in diameter and having a smooth capsule. The centre of the tumour consisted of soft white homogeneous material, which was bounded by the remains of the parenchymatous adenoma. The capsule was formed by compressed thyroid tissue. The central material had the structure of a carcinoma simplex. It was actively growing and was compressing the substance of the adenoma. The specimen was removed from a woman, aged 42, who had noticed the tumour for five years.

Dr. KETTLE also exhibited a specimen of

Malignant Disease of the Rectum,

the last 7 inches of which showed generalised polypoid hyperplasia of the mucosa, with a villous papilloma and two depressed malignant ulcers. There was extension of the growth to the glands in the mesocolon. The specimen was taken from a woman, aged 39, who had suffered from looseness of the bowels, with the passage of blood and mucus, for eight years. She dated her illness from an attack of "dysentery" nine years before. The specimens were shown in view of the infrequency with which the supervention of malignancy on a benign growth could be demonstrated clearly.

Mr. CHARLES A. CLARK described the

Radiographic Appearances of Pyorrhœa.

He also pointed out the value of X rays in the diagnosis of this disease.

It was often possible, he said, to decide by clinical examination that a patient had pyorrhœa, but in some cases the mouth appeared free, whereas on X ray examination the disease was found to be present; moreover, where it was known to exist its actual extent was not always fully discernible without the use of X rays. Changes due to the chronic inflammation which we knew to exist could not be demonstrated by clinical examination. The term "pyorrhœa"—which was synonymous with Riggs's disease, or chronic periodontitis—should be used only in its definitive meaning, whilst "oral sepsis" should be used in the general sense. Oral sepsis was a cause of most of the diseases of a chronic inflammatory nature, and its commonest symptom was lassitude. Patients were easily fatigued, and he thought that in some cases this was the source of that pernicious form of drinking known as "nipping." Radiographs of the teeth should be taken by films placed in the mouth, and the rays should be directed primarily at the apices as well as between the teeth, and overlapping of the teeth should be avoided. In the normal condition external to the root of the tooth was the periodontal membrane, thicker and more succulent in childhood than in adults and becoming thinned in advanced age. Next to this was the layer of compact bone or lamina dura lining the socket. In pyorrhœa the periodontal membrane becomes more or less swollen and there is absorption or destruction of the alveolar margins and of the lamina dura, so that when a radiogram showed absorption of the alveolus and a thickened periodontal membrane we were justified in speaking of the condition as chronic periodontitis. Another point to observe was absorption of the apical portion of the root, and this might be peripheral or might spread from the apex upwards. Abscesses were found at the apex as dark areas of irregular shape and size and ill-defined outline. At the apex of extracted teeth affected by chronic periodontitis a translucency was to be seen which might involve, in long-standing cases, the greater portion of the root. This translucency could not be detected definitely by X rays, but where it occurred the pulp canal became obliterated, and with obliteration one could presume the presence of translucency. It was due to chronic periodontitis, and the teeth in this condition were hopelessly affected. The age of the patient was an important factor in diagnosing the disease, for allowance had to be made for the absorption of bone due to senility.

The PRESIDENT and Dr. WILLCOX spoke of the assistance which they had had from X rays in this connexion and of cases of malignant endocarditis in which the source of the infection had only thus been elucidated.

Radiograms of Diverticulitis.

Dr. R. D. R. CROFTON-ATKINS showed several Radiograms of Diverticulitis, which had been taken by Mr. A. C. Marxer. In many of the cases there had been no symptoms.

Mr. HERNAMAN JOHNSON said that the radiograms demonstrated the advantage of X ray diagnosis after an opaque meal over that after enemata, and also that the characteristic features were seen after the meal had been evacuated. The sacculi often existed without symptoms, and caution was therefore needed in the diagnosis.—The PRESIDENT said that the radiograms were really those of diverticula and not of diverticulitis, for the inflammatory changes were not displayed. Diverticula were present in very large numbers of human beings, but only caused symptoms if they became inflamed or perforated.—Dr. CARNEGIE DICKSON showed an illustration of a radiogram of numerous and well-marked diverticula in an elderly patient who had been free from symptoms.

Dr. W. E. CARNEGIE DICKSON contributed a preliminary note on

Mites as Internal Parasites of Man.

He had recently investigated two cases in which large numbers of mites had been present in very carefully taken catheter specimens of urine.

The first of these was a young adult unmarried woman who had suffered for many years from symptoms variously interpreted by the many doctors whom she consulted as "chronic Bright's disease," "cystitis," &c. In April, 1915, a specimen of her urine contained a small amount of albumin, occasional hyaline casts, and very large numbers of surface epithelial cells, many of them in little sheets and groups, apparently from the bladder, and only very few pus cells. Nothing else of special note was detected. The symptoms continued in spite of treatment, the chief of these being frequency of micturition and constant irritation. Another specimen was examined about three weeks later with much the same result, except that the masses of epithelium were larger and made him speculate on the possibility of their being fragments of some neoplasm of the urinary tract. With this in view, the whole of the rest of the specimen was centrifugalised and the deposit examined for further epithelial masses, when there were seen an oval, clear-shelled body, three adult female mites, a larval form, and several ova. These were at first sight thought to be itch mites which might have been washed into the urine from the pudenda, and that the irritation of which the patient complained might possibly be of the nature of a *Sarcoptes* infection from the external genitals. Further examination showed that they were not *Sarcoptes scabiei*, so before sending the specimens to an expert for identification and to make sure that the mites came from the bladder, Mr. Thomson Walker was asked to cystoscope and remove the urine by catheterisation. On cystoscopic examination there were seen on the trigone of the bladder a large number of closely aggregated little raised hemispherical pinkish elevations, with an occasional detached elevation at the edge of the patch, the whole rather suggestive of grains of boiled tapioca of a pinkish colour. More mites were found in the catheter specimen taken from the bladder at this examination, but not in the urine from the ureteral catheterisation of both kidneys. After a prolonged course of treatment by Mr. Thomson Walker and Dr. Murray Leslie the condition gradually improved, and repeated examinations, over a dozen in number, failed to show the presence of any mites or ova. The mite was identified by Professor Ashworth as *Tyroglyphus* (*Aleurobius*) *farinæ* (De Geer), found usually in flour, grain, stored foods, &c. His diagnosis was based on the characters given by Banks, and he notes that this species has been much confused with *Tyroglyphus siro*, the common cheese mite, which is recorded as having been obtained from fæces and urine, but often regarded as a contamination. In the present case a few examinations of the fæces gave a negative finding. The blood was not examined.

The second case was that of a man of middle age who was suffering from a progressive general glandular enlargement, the spleen also being enlarged, firm, and palpable about an inch below the costal margin. The liver was not palpable, and to percussion its lower margin was about an inch below the costal margin in the right nipple line. The patient was very emaciated. There were firm mobile glands in both axillæ about the size of beans, and similar glands were present above the clavicles and in the groins. The condition was suggestive of lymphadenoma, and the blood was examined and gave the following count: Red cells, 3,930,000 per c.mm.; white cells, 22,000; hæmoglobin, 55 per cent.; colour index, 0·71. The differential count showed 78·34 per cent. polymorphs, 2·70 per cent. myelocytes, and 17·34 per cent. lymphocytes. The count suggested a mild degree of, or possibly a remission in, a mixed leucocythæmia, but the problem arose, when the mite infection described below was detected, as to whether it played some or even the chief part in the causation of the lymphatic and blood condition. In the centrifugalised deposit of a specimen of urine, passed with care so as to avoid contamination, he found two adult female mites, one immature mite, two cast cuticles, a mite in profile (stage indeterminable), and two ova. Numerous large masses of epithelial cells were also present, of much the same characters as in the previous case. Some large cells were a little suggestive of immature ovarian ova. The fæces were examined on several occasions, but always with a negative result as regards the presence of mites. The patient also suffered from severe pyorrhœa, and had had the affected teeth removed soon after Dr. Carnegie Dickson's examination. The patient was catheterised by Mr. Thomson Walker, and in the mixed urine from the bladder there were no whole mites or ova, but several disarticulated legs, perhaps parts of a cast cuticle, were found. Very large masses of epithelial cells were present, similar to those found in the ureteral specimens. A cystoscopic examination of the bladder gave a negative finding, the trigone and other parts appearing healthy. Washings from the bladder also showed no mites in the centrifugalised deposit. In the urine obtained by catheterisation of the right kidney only a single immature nymph was detected. In the urine from the left kidney no mites or ova were found, but numerous large masses of epithelial cells, similar to those from the other side. There appeared to be no clinical evidence of the prostate being the seat of the infection and the point was not investigated further. Specimens of carefully passed urine were examined for several days and several cast cuticles, fragments of legs, &c., and one good specimen of a male *Tarsonemus* were found. A lymphatic gland was excised from the left groin, but the changes noted did not appear to be typical of early Hodgkin's disease, the conditions found being equally common in various other diseases producing a toxic adenitis. The findings appeared to be compatible with some form of leucocythæmia, but the condition in the gland did not appear to correspond specially to that of the blood. It might be that the blood condition was in some way produced by the mite infection, but it was difficult to account for the glandular enlargement in a similar way. He knew of no recorded cases which would help to throw any light on the problem. According to Professor Ashworth, the mites were not the same as those of the previous case and belonged to a different family—the Tarsonemidæ—but he was unable from the material available to identify the species. The literature of the subject was scattered, and Professor Ashworth did not know of anyone who had been working in this country on the subject of Tarsonemus to whom he could refer for information or help. The chief difficulty in the identification was that females predominated, and males, upon which he relied for identification, were extremely few in number. There was no doubt, however, as to the genus being Tarsonemus, which is known as infesting various plants, on which it causes the formation of small galls. There was one previous record (1910) of Tarsonemus in the urine of a patient with cystitis, but Professor Ashworth came to the conclusion that the mites did not correspond with the species previously recorded as occurring in man. The patient soon afterwards became more seriously ill, with symptoms of cystitis and pyelitis, passing, in addition to pus and blood, a number of shreds and small sheets of fibrinous blood-clot containing pus cells, the most probable source of which appeared to be the pelvis of the kidney, or, less probably, the bladder. No mites were found in the specimen. The patient died soon afterwards, but the relatives would not allow an autopsy.

Dr. ALDO CASTELLANI said that the discovery of mites in the urine of human beings after it had been withdrawn aseptically was very important. Mites, however, were not uncommon in lower animals. The parasitic flora of man was very similar to that of the lower animals, and he thought that the parasites found in animals would sooner or later also be recognised in human beings.

Dr. F. PARKES WEBER described a case of

Intrahepatic Cholelithiasis,

with acute necrotic changes in the liver and renal convoluted tubules following ether anæsthesia.

When first seen in 1917 the patient was 52 years of age. She had been more or less jaundiced, or had been intermittently jaundiced for the previous two years, had complained of pruritus, and had often vomited after meals. She had sometimes had pain in the right hypochondriac region, suggestive of cholelithiasis. The fæces were pale and the urine contained bilirubin, urobilin, and urobilinogen, but was free from albumin and sugar, and the Wassermann reaction was negative. The liver seemed to be enlarged, but could not be felt distinctly. In hospital there was never any fever and her condition improved. About a month later the jaundice had almost entirely disappeared, there was no pruritus, the fæces were well coloured, and the urine was free from bilirubin, though there was a slight excess of urobilin and urobilinogen. On leaving the hospital she was told to avoid excess of fatty food and meat, and to spend part of every day in the open air. She was not seen again till 1920, after she had had an attack of hepatic colic, jaundice, and vomiting. The urine contained bilirubin, and there was a swelling in the region of the gall-bladder. An operation was decided upon and she was admitted to hospital. This was performed under general ether anæsthesia and lasted about 1¼ hours. The gall-bladder contained small calculi and dark bile-sand with which also the hepatic duct and common bile-duct were more or less blocked. The gall-bladder was excised and a Y-shaped drainage-tube was left with one limb in the hepatic duct and one in the common bile-duct. After operation dark bile came away by the drainage-tube. Two days after the operation the pulse was 120 per minute and the patient was apathetic and drowsy, as if a condition of cholæmia were commencing. The following day she was collapsed and more or less comatose, with suppression of urine, and she died, despite all treatment. There had been no fever. Post mortem there was no evidence of peritonitis.

The liver weighed 42 ounces and appeared somewhat atrophic. The two hepatic bile-ducts were full of blackish biliary calculi and "bile-sand." Microscopical examination showed a diffuse degenerative change of the hepatic parenchyma; the liver cells had a "woolly" appearance in the stained sections and their nuclei stained badly or not at all. The normal columnar arrangement of the liver cells was indistinct. There was no definite hepatic cirrhosis. The kidneys weighed together 11 ounces, and macroscopically showed no very decided change, but microscopically a diffuse necrotic change in the cells of the convoluted tubules. These cells had the same "woolly" appearance as the parenchymatous cells of the liver, and their nuclei stained badly or not at all. The spleen weighed 4½ ounces, and showed nothing special except thickening of the capsule at one part. Dr. Weber said that he had little doubt that the collapse and suppression of urine and the degenerative changes found in the hepatic cells and the renal convoluted tubules were in great part due to the ether anæsthesia, and were to some extent analogous to the symptoms and hepatic changes met with in cases of so-called "late chloroform poisoning." It was curious that in intrahepatic cholelithiasis, though the hepatic ducts appeared to be blocked with calculi and bile sand, jaundice might be very variable in degree, or even sometimes absent. Rolleston stated that not all patients in whom this condition is found after death have been jaundiced. With regard to non-operative treatment of cholelithiasis with chronic jaundice, Dr. Weber quoted the following example from Van Swieten's "Commentaries."

> "I cured a woman, aged 60, who had suffered from jaundice for 12 years. At the commencement it was intermittent, but in the last year it was continuous. Her whole body was almost black, and her conjunctivæ yellow, so that the unfortunate patient inspired all who saw her with horror. In spring the juice of green grass, whey, &c., were perseveringly employed; during the summer months spa waters, and in winter a large amount of Venetian soap with honey. At length the impacted material in the liver began to be loosened, and a flux from the bowels of six months' duration followed, with the disappearance of all the symptoms. A stinking clayey material was evacuated, mixed with small gritty granules of a calculous nature. The patient, whose strength was sustained by good food, and whose wealth enabled her to afford everything necessary, survived in good health for many years."

Green grass is said to have been given by the old physicians because Glisson stated that calculi tend to form in the biliary passages of stalled oxen in the winter and are voided by the bowel when the beasts return to the green food of the pastures in spring.

Dr. ALEXANDER FLEMING gave a demonstration of some

Plate Cultures of Fæces

to show the great preponderance of streptococci in the intestinal flora of some individuals. The question of intestinal conditions due to streptococci was, he thought, a very large one, but there were at present great difficulties in the way of its proper investigation, as we had at present no good method of classifying the streptococci. It was no uncommon thing to find in the intestine six or seven different kinds of streptococci, and until we had some good method of classifying them and ascertaining which of them were responsible for the various conditions, we must of necessity be working more or less in the dark.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

A MEETING of this section of the Royal Society of Medicine was held on Jan. 6th, with Professor HENRY BRIGGS, the President, in the chair, when Dr. A. LOUISE MCILROY read a paper on

The Use of Morphia in Labour.

She said that if a suitable drug could be found for the mitigation of pain during the whole process of labour, much would be gained from its administration. Two drugs had been employed—chloroform and scopolamine-morphine. Chloroform had been of incalculable value in operative obstetrics, but its prolonged administration caused atony of the muscles and diminution of uterine contractions. The need for an assistant to administer it was another disadvantage. As to scopolamine-morphine, most of those who gave it a trial agreed that it was useful in labour, but that it had certain risks. Dr. H. Williamson had summed up the question by saying that it often prolongs labour, increases the frequency of forceps deliveries, and that its most serious drawback is its effect upon the child. Dr. McIlroy held it to be of value in selected cases under constant medical supervision. Some had put down the risks of scopolamine-morphine to the administration of morphia, and had advised that never should morphia be repeated after the one initial dose given in the early stage of labour. There was no doubt that scopolamine-morphine is still in its probationary stage. Dr. McIlroy said that there was very little information in obstetrical literature as to the administration of morphia in labour. Her present preliminary communication was based on a year's work in the women's department of the 82nd General Hospital, B. Section, in Constantinople, where she was acting as gynæcological specialist. The department was created mainly for the treatment of British officers' wives, but a large number of Americans and better-class Turkish, Greek, and Russian women were admitted as obstetrical patients. The Russian patients were especially neurotic. The majority of the patients were primiparæ, for whom a sedative treatment was required. The patients were not selected or excluded because of the possible danger of morphia administration; it was given in the complications of labour and in cases of albuminuria. Morphia was used because it was more easily obtainable than omnopon, which Dr. McIlroy had used in pre-war days with satisfactory results. The usual routine of a hot bath and enemata was carried out at the commencement of labour. The patients were not shaved nor douched. Dr. McIlroy ascribed the absence of sepsis to the fact that no vaginal examinations were made unless in cases where some complication was suspected. No interference, with the exception of the administration of morphia, was allowed unless absolutely necessary, and the patients were kept in a dim light, though isolation from relatives was not always possible. In the first few cases morphia was given with the object of relieving pain in the first stage when patients were excited and frightened. It was found after experience with a number of patients that the drug tended to hurry the first stage rather than prolong it, and it was given in succeeding cases with the primary object of hastening their progress. It caused in some cases an apparent diminution of the uterine contractions as observed and felt by palpation of the abdomen; that dilatation of the cervix proceeded notwithstanding was evidenced in some cases where the patient, while in the first stage, slept after a dose of morphia had been given and awoke refreshed in the second stage. In some cases the head was observed to cause pressure on the perineum when the patient was still considered to be in the first stage. As no vaginal examinations were made except in complicated cases, it was difficult to ascertain progress as far as dilatation of the cervix was concerned, but Dr. McIlroy was convinced that the first stage was shortened. There was, unfortunately, no method of scientifically gauging the degree of uterine contractions. The general effect of morphia on the patient was that restlessness was controlled to a great extent, sleep was intermittent and refreshing, less fatigue was observed and less sickness. Thirst was a marked feature, and the patient was allowed to drink freely. Rupture of the membranes was delayed in a considerable number of cases. Only two cases of asphyxia of the child occurred, one in a Russian patient, badly nourished; the labour was short, and only one dose of morphia had been given. The other was in a breech case, the mother being very anæmic. The first dose was usually given when labour had fully commenced —⅙ gr. morph. sulph. hypodermically in upper arm. This was repeated according to the patient's capacity for bearing pain. If she complained of pain and was restless, or if pains were irregular, another dose was given, usually ¼ gr. Doses in some cases were repeated at intervals of 2–4 hours or 4–6 hours, but no definite rule was laid down. Doses were given throughout the second stage in some of the cases as they helped to diminish the pain, and there was no evidence of retardation. It was surprising how much morphia could be given with so little of its usual effects. The patient slept quietly, an apparently refreshing sleep; no excitement was observed. The smallest dose possible was always given, varying, as a rule, from $\frac{1}{6}$ to $\frac{1}{4}$ gr. In no case was the patient observed to be in a state of mental confusion. The pulse showed little change with the morphia administration. The fœtal heart sounds were also kept under observation. In some cases chloroform was given at intervals towards the end of the second stage, but it was found that only a small quantity was required. The third stage of labour did not appear to be prolonged; the placenta in some cases was expelled spontaneously. There was but one case of adherent placenta, and no case of post-partum hæmorrhage attributable to the administration of morphia. The cases of laceration of the perineum were few, most probably due to the better control of the patient. The umbilical cord was ligatured on the cessation of pulsation; the maternal end was not ligatured. There was less evidence of fatigue at the end of labour, and the puerperium was satisfactory. The milk-supply was not affected. There were fewer forceps deliveries, compared with Dr. McIlroy's pre-war numbers, and this was due to the lessening of fatigue of the patient during labour. Dr. McIlroy quoted two cases with suspected complications in which morphia was given. One was that of a Russian obstetric nurse, III-para. Her first pregnancy was terminated by Cæsarean section with a dead-born child. Her second pregnancy was terminated by pubiotomy, a stillbirth also. On examination a very small degree of pelvic contraction was found. Labour was allowed to proceed without interference, and morphia was given at intervals. A healthy child was born without any complications to the mother. The other case was that of a Greek patient sent in by her doctor for operative removal of a dead fœtus towards the end of pregnancy. The fœtal heart sounds could be heard faintly. Labour occurred and morphia was given. A living child was delivered, breathing normally.

Dr. McIlroy did not advocate morphia as a remedy for the complications of labour but had found it of use in the prevention of some complications and in the diminution of their severity, owing to reduction of fatigue in the patient. The advantages of morphia in labour were its dilating and softening effect upon the cervix, and its calming effect upon the patient. It did not require the constant attendance of the medical practitioner. No risks were observed in its administration, as was evidenced by the small number of forceps deliveries and the absence of asphyxia in the child. Further work was, however, required, and more accurate records would have to be kept of the progress of the labour than was possible under conditions existing in Constantinople.

Discussion.

The PRESIDENT congratulated Dr. McIlroy on her paper. He thought that morphia ought to be more used in labour.—Dr. AMAND ROUTH said that morphia had been avoided in the past for fear of lessening the pains. Dr. McIlroy did not examine patients per vaginam and yet expressed herself as convinced that the dilatation of the cervix was furthered by its use. He asked whether the abdominal muscles in the second stage acted when the patient was deeply under the influence of morphia. He recalled cases reported by himself and Mr. J. D. Malcolm where the spinal cord was paralysed in the region of the fourth or fifth dorsal vertebræ. No abdominal contractions took place except near the ensiform cartilage. Possibly the intervals between the pains were shortened by the morphia.—Dr. H. WILLIAMSON said he had used morphia only in combination with scopolamine, but his experience in the use of omnopon, a substance containing the total alkaloids of opium, had not coincided with that of Dr. McIlroy. He believed the action of morphia was to diminish the sensory impulses; there was no evidence that it influenced the dilatation of the cervix apart from uterine contractions. He suggested that the pain was so much lessened that observers did not notice the contractions, which could, however, be distinguished by a hand on the abdomen. If omnopon was used within two or three hours of delivery the child was sometimes born in a condition of oligo-apnœa. He considered that it might be dangerous to the child if given in the second stage. He thought that certain statements made by Dr. McIlroy, such as that morphia diminished the severity of complications, must at present be regarded as opinions rather than proved facts.—Dr. A. LAPTHORN SMITH said that he had found sodium bromide and morphia gr. $\frac{1}{4}$ of great use in nervous patients.—Dr. J. S. FAIRBAIRN had never used morphia systematically, but only occasionally in order to give the patient rest. Labour must be made more physiological. Emotional and sensory disturbances probably inhibited uterine action reflexly, and poor uterine action was the cause of a rigid cervix. The softening effect of morphia on the cervix probably depended on the better uterine action. The problem for obstetricians was to find the mean between doping the patient and the excessive use of instruments; Dr. McIlroy's work might be most helpful.—Dr. HERBERT SPENCER feared that a longer experience of the use of morphia would diminish Dr. McIlroy's enthusiasm for this drug in labour. In his opinion, opium was better than morphia, but the use of both should be confined to the early stages of labour in neurotic patients.—Dr. HAROLD WALLER asked whether sleep in a recumbent position was not a considerable handicap in labour.—Dr. MCILROY briefly replied.

Mr. PERCIVAL COLE read a paper on a series of 43 cases of

Inoperable Uterine Carcinoma Treated by the Cold Cautery Method of Percy,

which we publish in full in our present issue.

In the course of the discussion Mr. O. T. DINNICK said that the operation, of the value of which he had been sceptical at first, brought a measure of appreciable relief to the patient, and in some cases a reprieve. Though nearly all the cases were from one to two hours under spinal anæsthesia, the absence of shock was remarkable. The cases should, of course, be chosen with some care; the cold cautery could do nothing in uræmic cases. He had been struck by the frequency with which pyometra had been met, and by the relief of the toxic symptoms of the patient when it was exposed. The actual cautery was an escharotic, the cold cautery a coagulant, which, moreover, stimulated the stroma and caused a great formation of scar tissue.—Dr. A. E. GILES pointed out that the successful case of the woman of 35 was a good advertisement, because the prognosis in young women was bad. However, the immediate risks of the operation were definite, while these did not exist in other methods of dealing with inoperable cases. Seven vesico-vaginal fistulæ in 43 cases was a big percentage. Dr. Giles said that for many years he had treated these cases by scraping and packing with gauze soaked in a saturated solution of zinc chloride. Pads soaked with bicarbonate of soda were left in the vagina to absorb drainage and to prevent burning of its walls. The immediate risk was nil and the average duration of life probably one year at any rate. One patient he remembered seeing for three years after this operation.—Dr. H. SPENCER had seen Dr. Percy perform the operation at the Cancer Hospital. He asked what percentage of operable cases had been cured by this treatment. The hot cautery might have an advantage over cold in these cases. A vaginal hysterectomy, coupled with the use of a hot cautery, was at least free from mortal risk. He quoted a case, and showed the specimen, in which he had cut through the growth on one side and had completed the operation by the application of a kitchen poker, heated to a dull red, to the broad ligament. He had seen this case alive and well 12 years afterwards. After use of the actual cautery there was very little pain, and recurrence was never observed in the vagina though sometimes in glands. He agreed that pyometra was more common than was usually thought. In removing the growth before cautery he preferred Doyen's cutting forceps to a curette.—The PRESIDENT congratulated Mr. Cole on the excellent presentation of his subject. His own practice was to operate whenever he could get right round the growth, and the results were good even where there was very little margin. Liquor calcis bisulphitis 1 in 8 gave off sulphurous acid in the presence of a weak organic acid, and was a useful application. In considering length of life of patients it must be remembered that the duration of cancer was understated in text-books, and it was a more chronic disease than it was usually thought to be.—Mr. COLE, in reply, agreed with Dr. Giles on the discomfort to the patient of a vesico-vaginal fistula, and hoped to get fewer of these in his next series of cases. Zinc chloride had formerly been used at the Cancer Hospital, but he could give no comparative figures.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

TUBERCULOSIS GROUP.

AN ordinary general meeting of this group was held at the House of the Society, 1, Upper Montague-street, Russell-square, London, on Friday, Jan. 14th, with Dr. BENJAMIN MOORE in the chair, when Professor EDGAR L. COLLIS read a paper on

The Influence of Dust Inhalation on the Incidence of Phthisis.

Predisposition, he said, was the key-note to the tuberculosis problem, since eradication of the tubercle bacillus was not practicable in the same way as the eradication of the infective agent in other diseases, such as yellow fever and malaria by destruction of the mosquito, typhus of the louse, and enteric by ensuring a pure water-supply. Tuberculosis was an index disease—that is, it is correlated with the death-rate from all other causes, its prevalence being a direct indication of the prevalence of subnormal health in the community. Chief amongst the influences which lower resistance to disease, of which phthisis was a pointer, was the polluted state of the atmosphere, as Brend had shown for the excessive infantile mortality in crowded urban, industrial, and mining centres. The particulate matter found in the atmosphere was composed of viable cells, dead animal and vegetable matter, and inorganic material.

(*a*) Viable cells consisted of the tubercle bacillus alone. In spite of the theory that infection takes place chiefly by the alimentary tract, there was no doubt but that animals could be infected aerially and that, other things being equal, phthisis amongst adults was more prevalent in crowded communities and amongst workers at sedentary occupations, such as printers, shoemakers, and tailors, where aggregation of individuals was the distinguishing factor, though, of course, other factors—e.g., hereditary predisposition, might be incriminated. In these classes phthisis was the only common cause of death in great excess and so could not be due to a general lowering of resistance which, in theory, should produce an excess of deaths from every cause, exemplified by the increased mortality amongst innkeepers and others from the use of alcohol, just as a general increase of resistance, exemplified by the beneficial influence of fresh air on agricultural labourers, should diminish them. Lowered local resistance by dust inhalation would increase the incidence of disease affecting the part so influenced—in the present case, the respiratory system.

(*b*) Dead organic material, so far as phthisis was concerned, consisted of dusts which were either innocuous or were actually beneficial. It might be that dusts were the more injurious the less they approximated in constitution to the elements of which the tissues were composed, while also the particles might act as carriers of the infective agent. The evidence for the beneficial effect of dusts on phthisis was derived from coal-mining and from ganister brick-making, the former appearing to exert an inhibitory influence on the prevalence of phthisis, apart from the fact that there was little personal contact amongst the workers, and hence decreased opportunity of passing on infection.

(*c*) Most inorganic dusts predisposed to respiratory diseases excepting phthisis. Thus limestone, oxide of iron, and plastic clays were inert as regards pulmonary disease of any kind; basic slag, emery, and glass predisposed to pneumonia and bronchitis, but not to phthisis. Harmful dusts were those which contained free silica, and silica was an acid which, chemically, belonged to the same group as carbon, with which it shared the capacity to form colloidal compounds.

Professor Collis said that consideration of all the facts regarding the getting of coal, together with the "ripping" of the rocks with which it was mixed in the different coal-fields in relation to respiratory diseases, showed that on some coal-fields there was exposure to injurious dust containing silica which caused bronchitis and pneumonia and would cause excess of phthisis were it not for the coal-dust, which in some way interferes with the effect of silica in causing phthisis. On other coal-fields, where exposure to silica-dust was less, bronchitis and pneumonia were less prevalent and the favourable incidence of coal-dust was greater. Ganister was a quartzite rock containing upwards of 98 per cent. of silica used in the making of first-grade bricks, second-grade bricks being made of ganister containing an admixture of fire-clay derived from the coal-measures. Makers of the former had a heavy mortality from tuberculous silicosis (37 per 1000, as compared with 1·0 for ordinary brick-makers). The position thus appeared to be that silica, an acid material, reached the lungs in fine particles, and set up a reaction which resulted in the formation of fibrous tissue—i.e., silicosis—and lungs so damaged fell a ready prey to the tubercle bacillus. The property of forming colloidal compounds was interfered with by the presence of acids, which suggested that the increased plasticity of fire-clays by long "weathering" might be due to the washing away of organic acids derived through fire-clay from coal. When silica-dust was inhaled with raw fire-clay dust it might be that the organic acids in the latter prevent the silica particles from becoming colloidal before they are removed by phagocytic action. Fine silica-dust, not so prevented from becoming colloidal, might enter into the colloidal carbon compound, the protoplasmic tissue of the lungs, with the formation of a silica-carbon compound which we know as silicotic fibrosis, and that this tissue, of low metabolic activity, fell an easy prey to the tubercle bacilli. This theoretical reaction was akin to that proposed by Llewellyn for the formation of the tophi in gout, biurate of sodium being deposited in an organic framework; it did not contradict chemical theory, nor was it in opposition to Haldane and Mavrogordato's adsorption theory. The purely mechanical explanation depending on the hardness and sharpness of the particles would not suffice. The chain which determined tuberculosis might be said to have three links: (1) latent capacity—inherited predisposition; (2) the conversion of latent into real capacity, whether through trauma or other interference with normal metabolism; and (3) infection. The second of these was the biochemical link, and the problems which demanded solution were (1) what influence fine silica particles alone exerted on the tissues; (2) whether or not this influence was affected by the presence of fire-clay; (3) what influence coal-dust exerted on the tubercle bacillus; and (4) the relation between fibrous tissue and the tubercle bacillus. We must, he said, recognise, though we cannot yet explain, that the coal-miner experiences an unusually low mortality from phthisis.

The paper was illustrated by many tables, and after a short discussion the lecturer was given a very hearty vote of thanks.

PATHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND.

A MEETING of this society was held in the Medical School of the University of Leeds on Jan. 7th and 8th, with Professor M. J. STEWART in the chair.

Professor J. S. DUNN (Birmingham) described a fatal case of Chorea, in which a considerable number of embolic and thrombotic lesions were found in the brain with a few in the kidneys. There was no endocarditis or other obvious source of emboli and no naked-eye infarcts.—Professor H. S. RAPER (Leeds) had analysed a Human Enterolith of undescribed chemical composition; it consisted of fatty acids, fat, and cholesterol, with 72 per cent. of unconjugated bile acids almost entirely choleic acid.—Professor J. H. TEACHER and Dr. J. H. PRINGLE (Glasgow) gave a further account of Antemortem Digestion of the Œsophagus as a cause of Hæmatemesis especially after operation; and Professor E. E. GLYNN (Liverpool) described another series of cases. Stomach contents with active gastric juice are brought into the œsophagus by vomiting and may there produce serious ulceration, which is capable of healing; the œsophagus should be washed down after vomiting.—Professor STEWART (Leeds) demonstrated a Malignant Sacro-coccygeal Chordoma, and with Dr. W. H. M. TELLING (Leeds) a Primary Cancer of Liver in a case of Hæmachromatosis.—Professor R. MUIR (Glasgow) showed another example of a Malignant Hepatoma in a child.—Professor J. K. JAMIESON and Mr. J. F. DOBSON (Leeds) communicated the results of their inquiry into the nature of the lymphatic system, and strongly upheld the view that the lymphatic vessels end peripherally as closed tubes, and do not open into the tissue spaces.—Dr. H. W. CROWE (Harrogate) gave a demonstration of the facility with which streptococci could be differentiated in his medium of defibrinated blood three parts, trypsin agar one part, with 1 per cent. of dextrose sterilised in plates by successive heating to a "chocolate."—Dr. T. TANIGUCHI (Glasgow) had tried the Wassermann and Sachs-Georgi reactions in parallel in a considerable series of sera and found very few discrepancies. He also described experiments showing that rabbits injected with guinea-pig tissues or lipoids develop hæmolysin for sheep blood corpuscles and also become reactive in the Wassermann reaction.—Dr. N. YOSHINARE (Glasgow) had studied the hæmolysin for guinea-pig corpuscles which is normally present in ox serum; evidence of the independent existence of immune body was not obtained directly, but in filtrates through porcelain some combination with red corpuscles was found.—Professor C. H. BROWNING, Drs. E. M. DUNLOP, and E. L. KENNAWAY (London) find that the Wassermann reaction may be positive with unheated normal sera if too much alcohol is added to the system with the organ extract.—Professor BROWNING, Professor J. B. COHEN, and Miss R. GULBRANSEN (Glasgow and Leeds) had examined the antiseptic potency of a number of new compounds allied to acriflavine but had found none superior to the original diamino-acridine methyl chloride.—Drs. J. W. MCLEOD and P. COVENLOCK (Leeds), in an extensive inquiry into the production in bacterial cultures of diffusible substances with specifically inhibitory properties, obtained a number of results indicating auto-inhibition.—Dr. MCLEOD and Dr. G. A. WYON (Leeds) could find no clear evidence in favour of vitamines being important to promote bacterial growth.—On behalf of Dr. P. B. WHITE (Aberdeen), Dr. J. CRUICKSHANK gave a demonstration of *Tarsonemus Woodi*, the mite recently implicated as the cause of the Isle of Wight bee disease.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Cases and Specimens.

ON Jan. 7th a pathological meeting of this society was held at the West London Hospital, Dr. F. J. MCCANN, the President, being in the chair.

The following specimens were shown:—

Mr. MCADAM ECCLES showed: (1) A Toothbrush removed from the stomach on the day on which it had accidentally been swallowed. It was found partly through the pylorus. (2) A Clinical Thermometer removed from the urinary bladder of a young girl who for 18 months had had frequency of micturition and hypogastric pain. Cystoscopy revealed the thermometer surrounded by a phosphatic calculus. (3) A Chondroma of the Testis in a man of 33. It was associated clinically with a hydrocele. The testis was small and very hard, and microscopic section showed that hard cartilage had almost entirely replaced the body of the testis. (4) A "Teratoma" of the Testis removed from a man of 34 with six months' symptoms of enlargement with very little pain. Microscopically an encapsuled growth consisting of areas of "sarcomatous" type of tissue in which were numerous blood spaces, together with areas of scattered and ill-formed cartilage.

Dr. W. H. WILLCOX showed: (1) The Œsophagus and Stomach of an Infant, aged 9 days, who died from poisoning by carbolic disinfecting fluid. The child had been spoon-fed, and probably a spoonful of the fluid had been given in mistake. The stomach showed a black corroded area. Analysis of the disinfecting fluid showed that 3 per cent. of phenols were present. (2) The large Intestine and Rectum of a Man of 24 who died of amœbic dysentery in spite of full treatment by emetine, vaccine treatment, and colonic irrigation through a cæcostomy opening. Extensive ulceration was present in the cæcum and rectum. Microscopic examination of the ulcers showed the typical appearances found in cases of amœbic dysentery.

In reply to Mr. ASLETT BALDWIN, Dr. WILLCOX said irrigation with copper salts had not been used in this case.

Mr. O. L. ADDISON showed a Kidney removed by Nephrectomy from a man of 43 with a two years' history of hæmaturia. Sections showed a papillo-adenocarcinoma.

Mr. TYRRELL GRAY demonstrated a Myxo-sarcoma of the lower end of the femur in a woman of 60 removed by disarticulation at the hip-joint.

Dr. H. J. F. SIMSON showed: (1) A large Pelvic Tumour involving the rectum, uterus, and vagina, which on microscopic examination proved to be a lymphadenoma of the rectum; (2) a Tumour of the Round Ligament of the Uterus of uncertain origin.

Mr. SYDNEY MACDONALD showed two specimens of Papillomata of the Pelvis of the Kidneys. In one case definite carcinomatous changes, as shown by the microscope, had taken place at one spot. In this case recurrence had taken place in the nephrectomy scar. In the other case the growth was a typical papilloma and was associated with similar growths in the bladder.

Dr. J. BURNFORD showed two cases of Cirrhosis of the Liver, both of the multilobular type and definitely not associated with alcoholism. In one, a female of 24, ascites had rapidly developed and the spleen was also enlarged.

Mr. N. F. SINCLAIR showed: (1) The Pyloric Half of a Stomach the seat of two chronic gastric ulcers, one of which had been adherent to the pancreas. Partial gastrectomy had been done. Microscopically there was no evidence of malignancy. (2) A specimen of Volvulus of the Cæcum and Ascending Colon in which excision of the volvulus and ileo-colostomy had been done. (3) A spleen of normal size excised for traumatic rupture. Extensive laceration of the under surface with escape of the diaphragmatic surface had occurred. Acute symptoms developed 6 days after injury.

Dr. R. R. ELWORTHY showed: (1) The lower 18 inches of the large intestine after administration of ether by the rectum; (2) a slide showing an adeno-carcinoma of the cervix uteri.

Mr. B. SANGSTER SIMMONDS showed: (1) A Tibia the seat of extensive Acute Osteomyelitis. The knee-joint was infected. Drainage of the medulla of the tibia and of the knee-joint having failed to improve the general condition, amputation of the leg had been resorted to with success. (2) A Periosteal Sarcoma of the Femur in a girl of 18. Microscopically the growth showed great vascularity with myxomatous changes in parts.

Dr. J. E. EARNSHAW demonstrated various organs from a child aged 10 weeks, showing generalised miliary tuberculosis.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.

A MEETING was held on Jan. 11th at the Elizabeth Garrett Anderson Hospital, with Mrs. FLEMING, M.D., in the chair.

Dr. MARY BELL read a paper on

Psychological Forgetting in Relation to Lying, Giving of Evidence, and Medical Histories.

Dr. Bell said:—

The problem of life for each one of us is a problem of adaptation. The experiences of life press more or less hardly upon us, and our weaknesses and strengths are the resultant of the conflicting forces to which we are exposed, and the characteristics we exhibit are the measure of our ability or inability to make satisfactory adaptations to the stress of our environment and the strains of our personality. These reactions are primarily irrational—that is, they are not the result of reasoned thinking. For instance, the first child of a family is apt to be the centre of attention, and to come to regard itself unconsciously as the hub of the universe. When the next baby arrives the first has to make an adaptation and to learn that the parents now no longer give him their whole attention, nor do they demand from him so many signs of affection. If he does not adapt successfully, part of his libido will expand itself into jealousy, fits of naughtiness that draw attention to himself, or into phantasies of being misunderstood, and such emotional and irrational reactions will form the seeds of future characteristics of his personality, and will unconsciously lead him to defend himself from learning his unimportance by making him tend to dominate others and to manipulate situations to his own advantage. Such a complex may easily lead to lying and thieving in some cases, and it is important to remember that the causative complex is subconscious and that consciously such a person may have very high ideals of truth and honesty. We are all of us more or less victims of such complexes.

Dr. Jung says that in the case of normal people the principal function of the unconscious is to effect a compensation and thus produce a balance; and the irrational unconscious emotions have a curious way of acting as the God who tempers the wind to the shorn lamb. I know a lady possessed of a rather unusually good memory who was recently quite unable to recall her husband's regiment, though he had been two years in camp, during which time she must have addressed some 200 letters to him. In her case it seemed probable that the repressing factor was the unconscious wish to forget the emotional suffering caused by the fact that on two occasions he had been dangerously ill during this time. Similar repressions were noticeable in many soldiers who suffered from shell shock with amnesia. The forgetting (in cases where a physical factor due to commotio cerebri could be excluded) was a reaction to horrors seen and experienced.

I submit that in a like way psychological forgetting mars the accuracy of many medical histories. Freud gives several instances of this. Again, it seems that our tendency to replace accurate by phantasied memories should be considered much more seriously in courts of law. Take a case like the recent Greenwood poisoning case in which a year elapsed between Mrs. Greenwood's death and the final trial. Which one of us could remember the details of any one Sunday in 1919? It is true they might remember events during the evening when it was realised that Mrs. Greenwood was seriously ill, or if the possibility of poison had arisen at once they might have reconstructed the events of the earlier part of the day and kept them in mind, but as far as we know there was no intensity of feeling attached to the forenoon of that day. Any evidence given for the first time, 6–9 months later, as to whether Mr. Greenwood went into the pantry or no, or as to who drank wine on that particular Sunday must, to my mind, be pure phantasy. A remarkable instance of phantasied memory occurred also in the Tichborne trial, where the claimant was accepted from the first as her son by Lady Tichborne, though he differed completely from him in physique, in way of speech, and though she even recognised that the accounts he gave of past events were very confused and differed from her own.

Dr. Bell's paper was followed by a short discussion, in which Dr. Helen Boyle, Dr. J. E. Payne, Dr. Grace Briscoe, Dr. Eleanor Lowry, and others took part.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.—An ordinary meeting will be held at 11, Chandos-street, Cavendish-square, London, W., to-day, Friday, at 8.30 P.M. A paper on the Influence of Humidity on the Life History of Mosquitoes and on their Power to Transmit Infection will be read by Lieutenant-Colonel C. A. Gill, I.M.S.; and demonstrations will be given by Mr. A. Bagot on Rickettsia in the Bed Bug, and by Dr. P. Manson-Bahr and Dr. A. L. Gregg on Sigmoidoscopic Diagnosis of Amœbic and Bacillary Dysentery.

HARVEIAN SOCIETY OF LONDON.—The annual general meeting was held on Jan. 13th, when Dr. G. de B. Turtle was elected President for the ensuing year. Dr. W. Hill, the retiring President, delivered an address on the Great Advances in the Methods of Treatment of Diseases of the Œsophagus during the Present Century. The adjourned debate on the Future of the Poor-law Infirmary will be held at the Paddington Town Hall, Paddington Green, on Thursday, Jan. 27th, at 8.30 P.M., and will be opened by Dr. A. G. Stewart, of the Paddington Infirmary, and Dr. R. Dudfield, Medical Officer of Health for Paddington.

Reviews and Notices of Books.

PHYSIOLOGY AND BIOCHEMISTRY IN MODERN MEDICINE.

Third edition. By J. J. R. MACLEOD, assisted by ROY G. PEARCE, A. C. REDFIELD, and N. B. TAYLOR. London: Henry Kimpton. 1920. With 243 illustrations, including 9 coloured plates. Pp. xxxii. + 992. 42*s*.

THE outstanding feature of the book, which has run to three editions in as many years, is its modernity; the clinician reading it should find it no difficult matter to get au fait with current literature in any modern branch of physiology; the student who uses it as a text-book will carry into the wards an intelligent appreciation of modern physiology as well as a foretaste of its value in medicine; and the professional physiologist who can read the book without learning something can congratulate himself on being well read in his own subject. The fact that Professor Macleod is familiar with the work on both sides of the Atlantic lends still further charm to this excellent volume. The general impression given therein is one of sound common sense. The author is neither so astigmatic as to draw a distorted picture of modern physiology, nor so myopic as to ignore the great names of the past, nor yet gifted with such sublimely distant vision as to be unconscious of the existence of contemporaries, and so far as one of the latter is able to judge he appraises both liberally. This broad and sensible outlook is perhaps to some extent due to the fact that he has spent some of his best years in a young and virile country, but whatever its cause it is a matter for congratulation.

The first five chapters, dealing mostly with elementary chemistry, though clear and good, are perhaps superfluous, and add to the size and price of the book; the same applies, almost without exception, to the coloured plates. Among the best chapters are those dealing with the regulation of neutrality, acidosis, circulation, respiration, metabolism and vitamines, endocrine organs, and the central nervous system. One would have liked to have seen more about the recent work on the interpretation of electrocardiograms—for example, in connexion with auricular flutter and fibrillation. Modern physiological writings tend to run rather too much on the lines of pH and CO_2, and it is well, if only at times, to recollect that these are not the alpha and omega of physiological knowledge. The subject of internal respiration, so intimately fundamental to life, is dismissed, as in most books, rather curtly with a discussion of the properties of hæmoglobin; but perhaps one may assume that any really full discussion of the question would have led the author too far from the purpose of the book. One might ask, however, what are diabetes, or alcaptonuria, or perhaps even cancer, if not abnormal tissue activities associated with abnormal respiratory exchanges? Examples of the value of physiology to practical medicine are the chapters on the capillary circulation, surgical shock, diabetes, the therapeutic uses of oxygen, or, with limitations, the clinical uses of electrocardiography.

Perhaps unfortunately, perhaps not, the usual stereotyped chapters on reproduction, special senses, and nerve-muscle physiology are omitted from the book altogether; there is also no connected chapter on the functions of the liver, which, as it is quite a useful organ and much in evidence in the wards, is a pity. In view of some of these omissions one would hesitate to recommend it, at all events as the sole book, for the use of students preparing for their intermediate examinations in medicine, but it is so excellent in other respects that these difficulties could readily be overcome, for in spite of its title, the volume is in reality a text-book of physiology. The American spelling is also unsuited to students, who might suffer in examinations if they used such words as *edema*; the same applies to the use of casein and paracasein for caseinogen and casein. The collaborators, by introducing specialist knowledge on respiration, the central nervous system, and the neuro-muscular system, have materially helped in giving vitality to the production. The orthography of Russian names is irregular, some of these (e.g., Pavlov) being spelt according to English phonetics, while others (e.g., Borisov and Savitch, which are spelt Borisow and Ssawitsch) are phonetically German.

The index is clear and adequate, and the references well chosen.

Professor Macleod has really written this book in order to help the rapprochement of the estranged subjects of physiology and medicine. It will therefore appeal rather less to the student of what is now called "General Physiology" in its widest sense than ,to those who are to become clinicians, or those who, having become such, find their education incomplete. Physiology can no more be ignored at the bedside than in the Intermediate Examination Hall. The hearty reception which has been accorded to this work in its earlier editions makes one dare to hope that the day may not be far distant when the candidate for higher degrees in medicine may be required to show, not merely that he has not forgotten his physiology, but that he has so digested it as to be able to use it intelligently in his daily work. For it is certain that in the future the physician with only clinical and classical knowledge will, though cultured, be imperfectly equipped for his task.

Gastric and Duodenal Ulcer.

Symptoms and Treatment. By Dr. EUGEN ROSENTHAL, Budapest. Berlin: S. Karger. 1920. Pp. 72. M.12.

IN a book of 72 pages, illustrated by ten well-printed plates which are mostly reproductions of X ray photographs, Dr. Rosenthal gives the results of three and a half years' investigations on all gastric cases presenting themselves at the University Hospital, Budapest. Of these 3500 cases 326 had ulcers. The investigations have been carefully carried out and the results examined and set down in tabular form. Four-fifths of the book is devoted to methods of investigation and diagnosis, and the question of X ray diagnosis is dealt with in special detail and with admirable clearness. In the whole series the proportion of duodenal to gastric ulcers was roughly 1 to 2. Ulcers were twice as common in men, but whereas in gastric ulcers the preponderance of males was only slight, in duodenal ulcers it was 9 to 1. It is noteworthy that the incidence of the various ulcers in this general series is very different from that in recently published surgical statistics, where the number of duodenal ulcers has been much higher. The author examines in turn the diagnostic value of the various symptoms and finds, on the whole, that the history can only indicate that an ulcer is probable, and is of very little value in determining its site. The nature, site, and time relations of the pain he finds to vary considerably and sometimes to be quite misleading, one ulcer of the lesser curve, for instance, giving a typical history of hunger-pain coming on two hours after meals and relieved by food. Coming to investigation methods, he places little reliance on tests for occult blood, except in the differential diagnosis between ulcer and carcinoma. It was only found consistently in ulcers where there had recently been hæmatemesis or melæna; in cases with no manifest bleeding, the occult blood always disappeared after six days' dieting. He is unable to base a conclusive verdict on chemical analysis of test-meals, but finds that there is a definite relation between hyperacidity and site of ulcer, over 50 per cent. of those in the pylorus and duodenum and only 25 per cent. of those on the lesser curve showing hyperacidity. The method used was the single test, which has here been largely replaced by the fractional test-meal. On the whole, he places most reliance on X ray investigation with examination for localised tenderness to pressure controlled by the screen. The line of medical treatment adopted calls for little comment, except that the advocacy of atropine is of interest in view of Bennett's recent findings that this drug will lower the secretion curve of a hyperacid stomach. The conclusion that no ulcers except those accompanied by stenosis or hour-glass deformity should be treated surgically will, however, find very little support, while the statement that hyperacidity is more permanently reduced by medical than by surgical means is in direct opposition to experience in this country and in America. The number of cases treated surgically was small, but in these there was an operative mortality of 13·9 per cent., while in the series of 326 investigated there were 24 post-operative ulcers, figures which perhaps explain the author's conclusions.

Dr. Rosenthal's investigation forms a useful contribution to the literature of gastric and duodenal ulcer, coming at a time when there is an undoubted tendency on the part of writers to overstate the frequency of the "typical" case.

A Short Practice of Midwifery.

Eighth edition, revised. By H. JELLETT, B.A., M.D., F.R.C.P. Irel., late Master, Rotunda Hospital, Dublin. London: J. and A. Churchill. 1921. With 4 coloured plates. 1920. Pp. 548. 18s.

SO short a time has elapsed since the appearance of the last edition of this well-known text-book that very little revision has been called for. We notice that the author in cases of eclampsia in which ordinary medicinal treatment as carried out at the Rotunda Hospital has failed, suggests Cæsarean section as likely to give good results. The account of the treatment of these cases is interesting in view of the good results obtained by the Dublin methods. He does not favour Cæsarean section as a routine treatment of placenta prævia, but points out that the danger to the mother is not likely to be lessened by this procedure. A work of which 30,000 copies have been issued, and which is quite one of the best of the shorter text-books of midwifery, requires no further recommendation from us.

Die Lipomatosis und ihre Klinischen Formen.

By HANS GÜNTHER. Jena: Gustav Fischer. 1920. Pp. 216. M.40.

THE condition of lipomatosis is an interesting one from various points of view. Though the ætiology is still obscure, it is evident that it has some relation to the histogenesis of adipose tissue. For the sites where lipomata occur most frequently are also those where the primitive fat organs are formed in the embryo. Further, there is evidence that some of the endocrine glands affect the growth and metabolism of adipose tissue. In fact, one of them, the cortex of the adrenal, is always loaded with fatty material and might well be described as a glandular adipose tissue. Unfortunately the author of this monograph issued from Strümpell's clinic in Leipzig does not attempt to deal with these aspects of the subject. He describes an affection of adipose tissue in which there is an increase of this tissue restricted to definite circumscribed parts of the body. To this condition the term "lipomatosis" is applied. It is distinguished from the condition of "adipositas" where there is a general increase of adipose tissue all over the body. Single lipomata are by definition excluded from this condition of lipomatosis. The author distinguishes four groups of this condition. 1. *Lipomatosis indolens*, when multiple lipomata occur unaccompanied by any special symptoms. 2. *Lipomatosis dolorosa*, where there is always the symptom of pain (Dercum's disease). 3. *Lipomatosis atrophicans*, when the occurrence of multiple lipomata is always associated with a general disappearance of fat in the body. 4. *Lipomatosis gigantea*, where there is also a hypertrophy of other kinds of tissues, in other words, a partial gigantism. The author has collected a vast amount of clinical material recorded in the literature and added thereto some cases of his own, and he discusses the pathological anatomy, ætiology, and therapeutics of these different types of lipomatosis. His account of the histogenesis of adipose tissue is, however, extremely sketchy, and it would appear that he has not made a careful study of the very extensive literature on this subject. He ignores also the physiology and pathology of the endocrine glands. He does not mention the adrenal gland even where the subject-matter he is dealing with obviously calls for a reference thereto; for example, among the organs where there may be a physiological deposition of fat. In a record of a post-mortem examination of one of his cases of lipomatosis atrophicans he concludes (from naked-eye appearance apparently) that thyroid, hypophysis, and testis were normal, and omits any account of the condition of the cortical lipoid in the adrenal.

With all the extensive material which the author has collected the problem is left very much where he found it, and the volume scarcely justifies the claim made in the sub-title that it is "a contribution to the physiology and pathology of adipose tissue." An extensive bibliography, though by no means complete, forms a valuable part of the book.

FIRST LINES IN DISPENSING.

Second edition. By E. W. LUCAS, C.B.E., F.I.C., F.C.S., and H. B. STEVENS, F.I.C., F.C.S. London: J. and A. Churchill. Pp. 182.

THIS book contains excellent advice for those undergoing elementary courses of instruction in dispensing. Although the book is mainly introductory, a great deal of very useful information has been incorporated, and the sections on prescription writing and incompatibility are helpful to prescriber and dispenser alike. Explanations are clearly given, and the illustrations add to the general lucidity. In the new edition a section on ampoules and a table of solubilities have been added, and general pharmacy is more fully treated. The whole is thoroughly up to date; the suggestion, however, that one pan of a dispensing balance may be made of platinum "if money is no great object"—platinum being now worth more than four times as much as gold—is reminiscent of other days. This little book admirably fulfils its purpose as an introduction to the subject, and can be thoroughly recommended.

DISEASES OF THE THROAT, NOSE, AND EAR.

By DAN MCKENZIE, M.D., F.R.C.S.E., Surgeon to the Central London Throat and Ear Hospital. London: William Heinemann. 1921. With two coloured plates and 199 illustrations. Pp. 646. £2 2*s.*

IN spite of the multitude of text-books on the throat, nose, and ear, the advent of a new one, not merely a new edition, and one of an imposing size, is an event of some importance. The first part of this book contains a conscientious amount of diseases of the upper air-passages. The sections on the ear are the longest and by far the best, and contain an excellent simple description of the functional testing of the labyrinth and an unusually good account of the clinical aspect of the various forms of chronic deafness, which do not always conform to the standard tuning-fork tests. There are included several sections on subjects not usually included in text-books on the nose, throat, and ear—namely, on the thyroid gland, tongue, lips, and gums; these are not complete enough to be of real value, and might well be omitted in any future issue to make room for fuller discussion of more relevant matters.

The author states that the book has been written from the practical point of view, but that limitation of space has rendered it impossible to describe many modifications and variations of operations. But it could be wished that he had provided a more thorough description of the after-treatment, for instance, of the radical mastoid operation. No mention is made of the troublesome after-contraction which so often prevents a good result; moreover, the indications for this operation in chronic aural suppuration receive but scant attention. There is no reference to the method of immediate closure of the wound after the Schwartze operation. For the removal of tonsils and adenoids Dr. McKenzie prefers the patient to be in the sitting position, apparently at any age, and, it would seem, recommends chloroform in these circumstances—surely bold advice.

MEMORIES AND MUSINGS OF A HOSPITAL SURGEON.

London: Macmillan and Co.; Glasgow: Maclehose, Jackson, and Co. 1920. Pp. 192. 7*s.* 6*d.*

THIS little book may have an interest for laymen, but to all medical men who have worked in large hospitals the "Memories" will be perfectly familiar—that is to say, most of them will, though we envy the "Hospital Surgeon" for one of his experiences related on p. 88 et seq. We ourselves remember a man who went round the hospitals some forty years ago, not as a would-be patient, but as a demonstrator of the fact that he could produce at will nearly every dislocation known to surgery. But the patient in the book before us could in addition contract his abdominal muscles so as to drive the abdominal contents so far into the chest that the skin of the abdomen could be made to touch the front of the spine. The "Hospital Surgeon" refers to the fact that heavy drinkers and those affected with syphilis are bad subjects for operation, but we think that the pathology of the case cited (p. 28) is a little crude. It is misleading at least to say that an alcoholic patient who sustained a lacerated wound of the thumb followed by gangrene suffered this complication "because his drinking had so damaged his kidneys that they were unable to cleanse the blood of the poison." The best part of the book is the last chapter, upon "Hospitals and Medical Teaching in the Future," in which chapter there is much sound sense.

PRÉCIS D'UROLOGIE.

By FELIX LEGUEU and EDMOND PAPIN. Paris: A. Maloine and Fils. 1920. Pp. 710. Fr.50.

THIS book is a précis of genito-urinary surgery, containing neither theoretical considerations nor bibliographies. It constitutes a review of the whole subject put together in tabular form, so arranged as to make the information contained therein easily accessible. The initial chapter gives a description of the apparatus required by those investigating diseases of the tract. This is followed by a review of its anatomy from the point of view of its practical application. The physiological and pathological characters of urines, with special reference to the estimation of renal function, are considered in detail, also the uses of the cystoscope. The rest of the book is given up to the description of the various diseases affecting the genito-urinary tract. The schematic arrangement of the book is admirable. The illustrations, which are all diagrammatic, are original and demonstrate very clearly the subject matter of the text. This type of work is valuable to a busy practitioner and should be much appreciated.

FIRST-AID IN EMERGENCIES.

Third edition. By ELDRIDGE L. ELIASON, M.D. London and Philadelphia: J. B. Lippincott Company. 1920. Pp. 233. 7*s.* 6*d.*

THIS book has reached its third edition, so we presume that it has been found useful. Books on first-aid are very numerous and of varying excellence, and the one now before us is, to our mind, not one of the best. Some of it is good, but the work is unequal. Thus most of the first chapter, entitled General Considerations, is sound and clear, but in the section on "Carriage" the account of what Dr. Eliason calls "Across the Back Carriage"—i.e., what is called in this country "The Fireman's Lift"—is obscure, and no mention is made of the necessary modifications according to whether the patient is a man or a woman. In the section on bandaging the directions for rolling a bandage are singularly obscure and, we should have thought, quite unnecessary. The chapter on wounds is decidedly good. In the section on bee- and wasp-stings the author says that the poison is acid. This is true as regards the bee-sting only, that of the wasp is alkaline. No mention is made of the fact that some persons are very susceptible to either bee or wasp poison and may after a sting in any part of the body exhibit symptoms very like those of snake poisoning. In the chapter on fractures and dislocations it is stated rightly that when no doctor is available the renderer of first-aid may try to reduce a dislocation, but we cannot agree that in dislocation of the shoulder he should try the old-fashioned plan of pulling on the arm with his foot in the axilla. Manipulation, which he should have been taught, is far safer. On p. 166 a warning ought to have been given against the use of emetics if there is any suspicion of a caustic acid or alkali having been swallowed.

A POCKET MEDICAL DICTIONARY.

Giving the Pronunciation and Definition of the Principal Words Used in Medicine and the Collateral Sciences. Eighth edition, revised. By G. M. GOULD. A.M., M.D. London: H. K. Lewis and Co., Ltd. 1920. Pp. 1016. 9*s*. net.

"Pocket Gould," in its eighth edition, contains 40,000 words, and although it has been carefully kept up to date in all important respects, its size has not perceptibly increased and the book can still be carried in a fairly capacious pocket. Pronunciation and definition are given of the principal words used in medicine and the collateral sciences, and useful tables are added of the arteries, bones, muscles, nerves, and various groups of micro-organisms. In an appendix is a physician's dose table in both apothecary's and metric system, based upon the ninth revision of the U.S. Pharmacopœia.

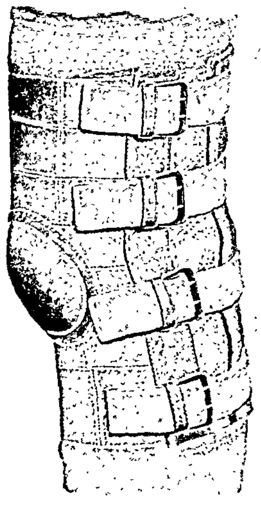
JOURNALS.

Hereditas.—The strong and growing tendency of modern science to hark back to connubial indiscretions in the ancestors of the present stock in order to explain some of its worst faults is reflected in the promotion of a new journal, *Hereditas*. Its first number has already been issued under the auspices of the Mendelian Society in Lund, Sweden. The international character of this journal is assured by the contributions being written in English; French, or German. The contents of the first number include a paper by H. Lundborg on Hereditary Transmission of Genotypical Deaf-Mutism, a paper by Nils Heribert-Nilsson on Zuwachsgeschwindigkeit der Pollenschläuche und gestörte Mendelzahlen bei Oenothera Lamarckiana, and another by Hans Tedin on the Inheritance of Flower Colour in Pisum. Emanuel Bergman contributes a paper on a Family with Hereditary (Genotypical) Tremor, and Hans Rasmuson a paper on Einige genetische Versuche mit Papaver Rhœas und Papaver Lævigatum. A. Akerman describes Spelt-like Bud-sports in Common Wheat, and J. Rasmusson discusses Mendelnde Chlorophyll-Faktoren bei Allium Cepa. Altogether an interesting assortment of papers by authors, some of whom are also well-known authorities. It must, however, be admitted that literary production with regard to the problems of heredity is apt to outrun writers' knowledge of this subject, with the result that they stand rebuked for their ignorance of the A, B, C, of the laws of heredity. Thus, in the present number, Dr. H. Lundborg takes his countryman, Dr. Ebbe Bergh, rather severely to task for his "insufficient knowledge of the laws of heredity." An interesting conclusion to which Lundborg comes in his paper on deaf-mutism is this: that, contrary to older views, acquired deaf-mutism is far more common than inherited deaf-mutism. Meningitis and scarlet fever are, in his opinion, the most frequent causes of the former. The editors of this new undertaking are to be congratulated on their promising start, and if the interest of succeeding numbers is maintained by an equally high standard of contributions, the subscription of 25 Swedish crowns for each volume of about 350 pages is a sound investment to all interested in this subject. The editor's address is Adelgatan 7, Lund, Sweden.

British Journal of Children's Diseases. Vol. XVII. October-December, 1920. Edited by J. D. ROLLESTON, M.D.—In a paper entitled "Pædiatro-Mathematics or the Application of the Principles of Mathematics (and Physical Chemistry) to the Study of Child Physiology and Pathology," Dr. W. M. Feldman deals with some of the quantitative researches that have been carried out in the human infant, including researches on infant mensuration, the law of minimal surface area, Guldberg and Waage's law of mass action, the application of optical methods, the application of electrical methods, and the principles of mechanics.—In the concluding part of his paper on Stigmata of Predisposition to Bone and Joint Tuberculosis Mr. W. C. Rivers discusses nasal defect, which includes ozæna, catarrhal rhinitis and their combination, hypertrichosis and squint. It was found that in bone and joint tubercle these non-tuberculous nasal abnormalities were more than three times as common as in the general population. Hypertrichosis was found in 3 out of 130 boys and in 3 out of 116 girls examined at the Treloar Hospital at Alton as compared with 0·5 per cent. among 181 normal schoolboys. Squint, on the other hand, occurred in only 0·5 per cent. of 350 children with bone and joint tuberculosis, whereas the normal occurrence is about 2 per cent.—Dr. Edmund Cautley reports a case of Congenital Pulmonary Regurgitation (Transposition of the Spleen) in a female infant aged 2 months, admitted to hospital for cyanosis and dyspnœa, some degree of which had been present since birth. The necropsy showed that both the right auricle and ventricle were relatively much hypertrophied and somewhat dilated, while the left auricle and ventricle were unduly small in proportion to the size of the child and still more so in proportion to that of the right side of the heart. The pulmonary artery and orifice were much larger than normal. The spleen was small and congested and situated between the right lobe of the liver and the diaphragm, together with many pea-like accessory spleens.—In his Brief Considerations on Surgical Tuberculosis in Infants, Dr. Charles Greene Cumston, of Geneva, discusses mesenteric adenopathy and tuberculous peritonitis, subcutaneous abscess, subcutaneous gummata, tuberculosis of the lymphatic glands, tuberculous infection of the epididymis and testicles, bone and joint tuberculosis, and tuberculous rickets.—Dr. Maxwell Telling reports a case of Primary Sarcoma of the Small Intestine Causing Unusual Symptoms in a boy aged 3½ years, successfully removed by laparotomy.—Dr. Hugh Ashby writes on Œsophageal Obstruction in Young Children, which he thinks is primarily spasmodic in origin and later becomes fibrous, as in hypertrophic stenosis of the pylorus.—Dr. D. H. Paterson reports a case of Transmitted Congenital Syphilis. The patient was a boy, aged 2½, with the characteristic facies of congenital syphilis and mentally deficient. The Wassermann reaction was positive. The mother also showed the characteristic features of congenital syphilis, and her Wassermann reaction was +++. The father's reaction was negative. The mother's mother had died of tabes, so that the disease had apparently been transmitted from the maternal grandmother to her daughter, who had given birth to a syphilitic child. The possibility of the mother having become reinfected prior to the child's birth had been considered, but there was no reason to believe that this was the case.—The abstracts from current literature are devoted to surgery and ophthalmology.

New Inventions.

AN IMPROVED KNEE-CAP.



A PERFECTLY fitting knee-cap—i.e., one which closely embraces the joint in all positions of flexion as well as in full extension—is probably unattainable, but it has seemed to me that it might be possible to improve upon the types usually supplied. The usual form with eyelets and laces proving unsatisfactory, some years ago, on the suggestion of a patient, I substituted straps and buckles, and the knee-cap shown in the figure was evolved. It is made in high-grade stout drill and best quality elastic web, so fitted in strands overlapping one another as to prevent any bulging on bending the knee, which would happen if the elastic were in one piece. A soft pad is placed over the front of the patella as an extra protection, while the back of the knee-piece is cut out to allow free flexion. The adjustment being made by the webbing straps allows of more or less pressure being applied at any particular point that may be necessary.

The appliance has been made for me by Mr. Albert Edward Evans, of 38, Fitzroy-street, London, W., who has most successfully carried out and improved upon my suggestions.

Marble Arch, W. E. MUIRHEAD LITTLE, F.R.C.S.Edg.

THE LANCET.

LONDON: SATURDAY, JANUARY 22, 1921.

The Question of Referred Pain.

No symptom leads with half as great frequency to the seeking of medical advice as pain in one or other form. Being essentially subjective, however, no symptom gives rise to greater difficulties in interpretation. There is a tale of a compensation-hunter who, on the threshold of the medical referee's consulting-room, received the last word of advice from his abetting friend: "Say you have pain in your back; he can't say you haven't." Compelled to derive his knowledge of the genuineness of the phenomenon from accompanying signs, if he has any reason to question the bona fides of the sufferer, the investigator is faced with theoretical as well as with practical difficulties when he pursues the matter further. Some would hold there is no such thing as a pain-sensation, that pain is an affective element accompanying sensation, as is pleasure, and can be differentiated into a tactile or temperature sensation on the one hand and a feeling of dys-pleasure on the other. Yet the apparently quite distinct peripheral physiological mechanism for the reception and conduction of pain impulses militates against the hypothesis. Assuming the similarity of pain to other sensations of the same order, we can understand that for its conscious appreciation an integrated nervous system and a degree of attention are requisite, and that with the appearance of the sensation in consciousness the matter of its localisation also arises inevitably. Only when consciousness is in partial abeyance is localisation, as it were, dissociated; a patient in the semiconscious state following a stroke will often indicate by a general restlessness, a diffuse motor reaction, that a painful stimulus applied to the skin is reaching his sensorium, and by the same token will show that he cannot place its origin. Ordinarily, a nociceptive excitant of a physical order sets going an impulse through a neural chain which at the cortical level (it is immaterial in this connexion whether the metamorphosis from physiological to psychical is thalamic or cortical) becomes pain, and at the same time consciousness says the pain "comes from" such and such a spot. All painful sensations, of whatever quality or intensity, are thus "referred," and the use of the term "referred pain" in a restricted sense is undeniably responsible for some confusion of thought. Correct reference of painful stimuli in the wide sense is simply a question of the application of the trial-and-error process, and the behaviourist might tell us some time at what day after birth the infant will correctly localise the offending pin. Throughout life, doubtless, accuracy of localisation varies with the individual. Under pathological conditions, moreover, pain of central derivation is well known to occur, as with certain kinds of lesion in, and in the immediate vicinity of, the optic thalamus, and, it may be, of the cord too; and these central pains are "referred" to some point or points on the somatic periphery: but most practitioners of neurology have had clinical experience of topoalgias and psychogenic pains due to a "lesion" in the psychical sphere, yet these "central" pains likewise are placed somewhere on an outer circuit.

Descending to a physiological level, but taking with us the fundamental fact that pain does not exist as such except in consciousness, we find a considerable number of varieties of pain-reference, among which it might be possible to introduce some order by an attempt at classification. Pain, for example, is sometimes felt in the ear with or after toothache, and neuralgia of the middle division or whole area of the trigeminal not uncommonly accompanies disease of the antrum; unilateral glossodynia may be a symptom of an impacted wisdom tooth. Pain thus excited in one branch of a peripheral nerve system from irritation in another branch might, as BEHAN suggests, be called "associated" pain, though the term is perhaps more usually employed in connexion with pain in organs physiologically associated though innervated by different anatomical nerve-groups—e.g., the breast and the uterus. When it is referred to a different peripheral distribution via the spinal cord or its analogue pain may be regarded as "transferred"—for example, the occipital pain of some forms of nasal disorder. The pain of irritation of a nerve trunk or root, or root ganglion, is not placed locally but is "referred" in an upward or downward or outward direction, as with the lightning and girdle pains of tabes, the pains of peripheral neuritis, of causalgia following wounds, pain connected with psoas abscess, and so on; and to this ordinary occurrence the term "referred pain" should perhaps be confined. The reference of pain by the cortex to the foot, say, and not to the posterior root ganglion concerned, is in reality a misreference. "Sympathetic" pain is observed when there is pain both in the part affected and elsewhere, as, for example, in severe facial neuralgia, when pain may appear also in neck and shoulder; the occasional simultaneous pain in heart region and left arm in angina is somewhat different. The pain in a phantom limb after amputation, or the anæsthesia dolorosa of some forms of advancing spinal disease, is a "projected" pain, being localised or projected either to a part that is wanting or to an area in reality anæsthetic, yet there is little to be gained by the use of the term, since, as a fact, all pain is "projected," if we remember its cortical source. Much controversy has raged round the question of referred in the sense of "reflex" or "reflected" pain from one sensory system to another—that is, its transference or deflection from viscero-sensory to somatic-sensory system. Half a century ago HILTON discussed, in his classic "Lectures on Rest and Pain," the origin of the "sympathetic pain" which he noted was referred to the surface of the body in disorders of viscera not necessarily immediately underlying. J. ROSS, too, who devoted much study to the subject, followed HILTON in supposing this somatic or cutaneous reference was due to a central connexion of viscero-sensory with somatic-sensory nerves; he was of the opinion that both "splanchnic" (visceral) and somatic (cutaneous) pain might exist in visceral disease. With the names of Sir JAMES MACKENZIE and of Dr. HENRY HEAD further research on the subject in England is chiefly associated; the former came to the conclusion that the abdominal viscera were completely insensitive, as have a number of surgeons and other investigators since then, the origin of the pain produced by certain forms of handling being situated in the end-organs mainly of parietal subperitoneal tissue. HEAD, however, considered that the viscera are endowed with "deep and protopathic sensibility in a low degree," and that when a painful stimulus is applied to a part of low sensibility, in close central connexion with a part of much greater sensibility, the pain is felt in the latter rather than in the former, to which the stimulus is actually applied. Recent research has not here been wholly confirmatory. In his Goulstonian lectures (1911) Dr. A. F. HURST confirmed the views of Ross that disease of the alimentary canal may cause true visceral pain, which is often present alone, but may be associated with pain referred to the skin connected with the same spinal segments. He pointed out that MACKENZIE did not take into consideration the fact that a nerve-ending may be sensitive to one form of stimulation—the adequate stimulus—but insensitive to all others, and that cutting, pricking, and pinching of viscera are not stimuli occurring under natural conditions; and he demonstrated tension to be the adequate cause of true visceral pain. Professor C. S. SHERRINGTON, too, has stated that the receptors of the intero-ceptive field, as he calls it (as opposed to the extero-ceptive or external-surface field), will always respond to the adequate stimulus, which must be of a certain kind; "if mechanical stimulation resembles that occurring in the natural accidents that concern medicine, the experimental results fall into line with those observed at the bedside."

The conclusion, therefore, is that the popular belief in actual visceral pain is supported by physiological research, and that reflex, reflected, or, better still, deflected pain is far from being the common accompaniment of abdominal disease it is uncritically taken to be. In his recent Croonian lectures HURST mentions that his first doubts on the reliability of the somatic-sensory signs of visceral disease arose when he had the opportunity of examining ten cases of gastric ulcer operated on by Sir BERKELEY MOYNIHAN. In every case he failed, on the day before operation, to find any cutaneous hyperæsthesia, yet the ulcer was demonstrated in nine out of the ten on the operating table. He concludes that "referred" pain in abdominal disease is so rare as to be of no diagnostic value, with the possible exception, in his experience, of its occurrence in conditions leading to distension of the pelvis of the kidney. Since the extero-ceptive field far exceeds the intero-ceptive in its wealth of receptors we can well understand the comparative poverty of visceral sensations, even in disease, and the tendency of the brain to misinterpret or misrefer an unusual or rare sensation. We do not, however, know under what conditions this occasional misreference from visceral disease occurs, nor are certain peculiarities it exhibits fully understood; MACKENZIE himself has pointed out that the areas seldom, if ever, correspond to the full distribution of a spinal segment, or segments, and are ill-defined and often overlap. In view of the fact that pain, of whatever origin, is "projected" by the cortex in the various ways and following the various physiological mechanisms mentioned above, the specificity and practical importance of the viscero-somatic transference of pain cannot be regarded as firmly established.

Reciprocity in Medicine.

A EUROPEAN Commission was invited last summer to attend a session of the American Medical Association, the Commission consisting of representatives of the English Royal Colleges —Sir HUMPHRY ROLLESTON and Mr. H. J. WARING; of the triple Examining Board of Scotland—Dr. NORMAN WALKER; and of the University of Paris—Professor G. ROUSSY and Professor E. E. DESMAREST. The reference of the Commission was, to be present at the examinations of the newly instituted National Board of Medical Examiners of the United States, and to visit a group of recognised centres of professional education, and thus familiarise itself with the machinery of medical training in the United States as a whole. The Commission was received on the other side of the Atlantic with great cordiality, when every facility was given for full comprehension of the conditions. Report has been made to the General Medical Council by Sir HUMPHRY ROLLESTON and Mr. WARING, and to the Royal Colleges of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow by Dr. WALKER, so that both documents are now public. Dr. WALKER'S report, with its interesting commentary, appears in full in the January issue of the *Edinburgh Medical Journal.*

The reports between them give an exhaustive picture of medical education as it now is in the United States, and show also various recent steps, some only just taken, for improvement of the curriculum. As was necessary in a rapidly evolving country, medical education in the United States until the beginning of this generation was somewhat chaotic. It was impossible for the newer States of the Union to start with a complete and perfect system of medical education when they had all the claims of a growing civilisation pressing upon them; and in the newer universities and institutions of the younger States the curriculum provided, while it was as good as could be expected, was greatly inferior to that which prevailed in the great centres of the New World, where the standard was as high as anywhere in the old. A practical step was taken in 1892, when a higher national standard was shown by the establishment of State Medical Boards, which abolished many institutions for students, finding them little more than private enterprises for the sale of degrees and diplomas. Then the American Medical Association, recognising the need for an adequate general pattern of training, if the doctors in one State were to be allowed to practise without question in any other—to say nothing of the acceptance of American practitioners by other countries on a reciprocity principle—graded all the American medical schools into three classes, A, B, and C, and, by adversely reporting on the conduct of those falling under B and C, led to the extinction of many of them. The process of destruction was indicated in a review of American medical education recently published in our columns.[1] There had been 439 medical schools existing and extinct in the United States, but in 1906 there remained only 162 medical colleges, and by 1920 the number had fallen to 86, and, while a few of these would receive no recognition in Great Britain, 70 are graded in class A. On this work the American Medical Association must be warmly congratulated. The next great step was taken in 1915, the object being to collect the movement centrally which had been growing peripherally under the separate State Medical Boards, and to ensure that the holders of national licence should be able to practise in all the States of the Union, accepting the certificate of a National Board of Examiners. Twenty States have now given adherence to this scheme, which owes its origin to Dr. W. L. RODMAN. A Board of 18 members has been constituted, on which sit representatives of the Army, Navy, and the public health services, of the State Medical Boards, and of the medical profession generally; two laymen also find seats on the Board, having been appointed for their knowledge of medical education and organisation. The National Board is for the present financed by the Carnegie Fund for the Advancement of Learning, whose president, Mr. H. S. PRITCHETT, is one of the lay members.

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[1] THE LANCET, 1920, ii., 667.

By consent among civilised nations medicine is an international affair, and the view is universal that common action should be taken to eliminate epidemics, to increase the world's stock of information, and to promote general public health. This is only another way of commending an ideal, whose value none will deny, that medical services should be international, and so organised that a qualified doctor of one country shall be at liberty to practise with due status in any other country. It is very satisfactory to learn from both these reports that the examinations conducted by the National Board of Examiners in Washington have so impressed the British members of the European Commission as to earn the recommendation that American practitioners holding the certificate of the Board should be admitted to our final examinations without further question. This, of course, is but a limited reciprocity, but to those who remember what medical education in the United States was 30 years ago it will come as a wonderful proof of the progress made. The reasons for the recommendations are set out in both reports with great particularity, different points being taken up, while a common message is delivered. We feel that these reports should be in the hands not only of the General Medical Council and of the various corporations directly represented on the Commission, but of all who take a personal interest in medical education.

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Chronic Farcy.

DURING the last six years, amongst the soldiers returned from active service, various types of ulceration of the skin and mucous membranes have been observed, commencing with some definite inflammation of the superficial or deeper tissues and the formation of bullæ, papules, and pustules; evacuation of the contents of these formations succeeds, and local extension of the eroded surface is followed by a more or less rapid and complete healing of the lesion. These were looked upon as having their origin in syphilis, but failure to obtain the Wassermann reaction often negatived this diagnosis. Glanders may, now and again, have been diagnosed, but, up to the present, few records appear to have been published, and it is certainly interesting to find that two of the few cases of glanders (or farcy) recorded—one[1] published by Colonel LEONARD S. DUDGEON, Major S. L. SYMONDS, and Captain WILKIN, working together in Salonica, and a second[2] by Dr. F. H. JACOB, Dr. HUBERT M. TURNBULL, Dr. JOSEPH A. ARKWRIGHT, and Dr. GERTRUDE M. DOBRASHIAN at Nottingham—both occurred in civil life. The patients appear to have been infected without coming into any sort of direct or intimate contact with horses or mules. In both the process was suspected to be of syphilitic origin, but in both the Wassermann reaction was negative. In the Salonica case Dr. DUDGEON had the advantage of the collaboration of a member of the Army Veterinary Service. In Dr. JACOB'S case it was unfortunate that the patient "attributed his complaint to infection from the diseased udder of a cow," for although this may be perfectly correct, cattle are said to be completely immune against glanders as regards spontaneous infection, and the statement was to that extent misleading, though it is known that localised ulceration, which rapidly heals, follows inoculation of these animals. Both cases ran a somewhat chronic course (there is no record of the death of the Salonica case, four months), the Nottingham case surviving for 13 or 14 months. These cases are of special interest in so far that the bacteriological and histological reports, in each case somewhat one-sided, are complementary to one another, Dr. DUDGEON'S case being studied very fully serologically and bacteriologically, Dr. JACOB'S case histologically. A point of interest is that the organism first isolated from Dr. DUDGEON'S case failed to produce the characteristic lesions of the testicle in the guinea-pig, whilst after passage through a mule a bacillus which had all the cultural and micro-chemical characters of the *Bacillus mallei* set up an acute septicæmia in the smaller animal. For the details of the blood immunity reactions the reader is referred to the original article, but it is of interest to note that the complement-fixation and agglutination reaction rise simultaneously, and that both attain their highest point just before the death of the animal. Unfortunately, in Dr. JACOB'S case no cultivation was made, but it may be accepted from Dr. TURNBULL'S report on the histological examination of the tissues submitted to him that changes, essentially those associated with glanders, were met with in the skin and lungs, those in the latter especially according well with the pneumonic processes reported by MCFADYEAN in his Harben lectures[3] for 1904. Dr. TURNBULL also describes with great care and much detail the bacteriæmia and the embolic character of the process, the necrosis and pus formation in the inflammatory centres, the karyorrhexis, the leucocytic infiltration, the increased number of mononuclear cells arising through the proliferation of the connective-tissue cells, with here and there the infiltration of the tissues with sero-fibrinous lymph. Here the nature of the process was scarcely realised until too late to obtain cultivations of the bacillus; this was specially unfortunate in view of the difficulty of staining the *B. mallei* in the tissues.

Dr. TURNBULL'S histological report is a model of its kind, and may well form a basis for the description of future cases of this type. Its value would, of course, have been enormously increased had it been possible to make a bacteriological and serological investigation of the case, and it is to be hoped that when opportunity occurs complete examinations corresponding to the two valuable contributions to our knowledge of the pathology of glanders made in these two cases may be carried out on a single case. In view of the manifestations of the disease here met with—a perivascular lymphatic and embolic infection—it might, perhaps, be well to speak of the condition described as chronic farcy. It is interesting to note that of 21 chronic cases of farcy in man recorded by HOWARD BENDALL as early as 1882, 15 recovered or were partially cured, the six that died succumbing in periods between 50 days and 14 months. In one of those that recovered the disease lasted as long as 2½ years. A disconcerting feature about the Nottingham case, but one that in future must be borne in mind, is that the tissues of the udder of a milch cow may become the temporary nidus of the *B mallei* and that a condition of mild chronic farcy may there be set up from which the milker may become infected. It then becomes possible for a glanders infection to be contracted by those who partake of the milk, even though in its passage through the bovine carrier host the organism has become greatly attenuated in virulence. The mild disease process thus set up may through its very modification be difficult of diagnosis, and yet from this mild infection centre a much more virulent type may be developed by passage.

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[1] Jnl. of Comp. Path. and Therap., 1918, vol. xxxi., p. 43.

[2] THE LANCET, 1920, ii., 941.

[3] Jnl. of Prev. Med., 1905, vol. xiii., pp. 1, 65, and 125.

Annotations.

"Ne quid nimis."

CARBON MONOXIDE IN COAL-GAS.

CARBON monoxide has been described by Brouardel as holding first place amongst the toxic gases—he was speaking of accidental poisoning and not of the deliberate use of respiratory noxæ; and the Registrar-General attributes 704 deaths in 1919 to the absorption of deleterious gases. It is, therefore, not merely a question of fuel value what proportion of carbon monoxide should be contained in the coal-gas supplied to us; it is a matter on which medicine is entitled to raise its voice. The number of cases in which coal-gas has been employed for suicidal purpose have shown some signs of increasing lately; such acute poisoning would be difficult in any case to prevent, but it is well known that carbon monoxide, by its peculiar power of monopolising hæmoglobin, is a cumulative poison, and it is important to limit its possibilities of harm. The question of the post-war basis upon which gas shall be sold, as well as the standard of quality to be applied to it, have both been the subject of considerable inquiry and discussion. The matter originated within the gas industry itself during the war, when it was found that the total yield of gas from a ton of coal could be greatly increased by combining the usual process of carbonising in retorts with the simultaneous production of water-gas by passing super-heated steam over the incandescent coke. Unfortunately, the resulting mixture of coal- and water-gas is not only of considerably lower heating power (a matter which can be adjusted by grading the price) but also contains much more of the poisonous carbon monoxide. The whole subject was taken up and reported upon by the Fuel Research Board; and, finally, the British Association Fuel Economy Committee, of which Professor W. A. Bone, F.R.S., is chairman, considered it and made certain recommendations. One of these recommendations was that in no circumstances should it be permissible for a public gas undertaking to supply to its consumers a product containing more than 20 per cent. of carbon monoxide. This recommendation was in harmony with the findings of a Home Office inquiry held in 1899, at which Dr. J. S. Haldane took part. It was then agreed that, in view of the imperfect state of the fittings in the poorer houses of urban districts, the only effective method of preventing danger from leakage was to fix a limit which the carbon monoxide should not exceed. When the Gas Regulation Act, 1920, became law last July the Board of Trade was instructed to hold a special public inquiry into the question, and a committee, consisting of Sir William Pearce, M.P. (chairman), Dr. T. Carnwath, Mr. William Doig Gibb, and Mr. T. Gray, D.Sc., will proceed in the immediate future to take evidence with a view to arriving at a decision which, under the provisions of the Act, will have statutory effect. In view of the importance of the decision from the hygienic standpoint, we trust that this committee will give due weight to the need of limiting the carbon monoxide proportion. Health must come first in such a matter, and due consideration for health will prove in the long run to be justified economically.

VOLUNTARY HOSPITAL FINANCE: A LAY COMMITTEE.

IT will be remembered that when the Ministry of Health (Miscellaneous Provisions) Bill was before Standing Committee a debate ensued over Clause 11, which was intended to regularise the taking over or founding of general hospitals by municipalities. It was, and is, an obvious responsibility of the Ministry of Health to further a general scheme for the country under which all classes of the population may obtain the benefits which can only follow upon institutional treatment, but the particular clause of the Bill was challenged from so many directions that Dr. Addison withdrew its criticised portion and offered to appoint forthwith a Committee "to inquire into and report upon the financial position of the voluntary hospitals throughout the country," adding that the Committee would consist of five members only, none of them being medical men or connected with hospital arrangements in any way. The Committee has now been constituted as follows: Viscount Cave (Chairman), Sir Clarendon Hyde, Mr. R. C. Norman, and Mr. Vernon Hartshorn. A fifth member, who will be a representative for Scotland, remains for appointment, while it has also been decided to include a chartered accountant of high standing, a very welcome addition.

HEREDITY IN CONGENITAL HIP DISLOCATION.

IN a recent bulletin of the Paris Academy of Medicine[1] L. Dubreuil-Chambardel discusses the hereditary factor in the incidence of congenital dislocation of the hip, and traces the later histories of five cases operated upon for this deformity. Judging by this and two previous papers by the same author, heredity is evidently regarded by him as playing a larger part in the production of this deformity than most surgeons would be ready to admit. Tubby[2] certainly says "heredity is a marked feature" in this deformity, and he quotes Marath[3] as finding a history of heredity in 40 per cent. of his cases and Vogel[4] in 30 per cent. of his. On the other hand, Whitman[5] says "hereditary influence can be established in a few instances" only, while Bradford and Lovett[6] and Taylor[7] would seem to agree with him. H. A. T. Fairbank found signs of hereditary influence in only 8 of 200 cases. It is probable that more extensive investigation into the family histories of these cases would have added to this figure, but the percentage could not have approached those given by Vogel and Marath. There does not appear to be any reason for regarding congenital dislocation of the hip as being the result of hereditary influences to a greater extent than other congenital deformities. In all we find an occasional case giving a history of the same or other congenital deformities affecting other members of the family, but this is the exception and not the rule. In the case of congenital deformities of the hand A. Steindler, in a series recently published, traced an hereditary factor in only 20 per cent. The five cases detailed by Dubreuil-Chambardel tend to show that reduction of the dislocation has no influence whatsoever on the incidence of the deformity in the offspring of the cases so treated. Treatment of a condition which is, at most, only the result of an inherited tendency, could hardly be expected to influence the possible transmission of that tendency.

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[1] Bull. de l'Acad. de Méd., 3e Série, vol. lxxxiv., p. 281.

[2] A. H. Tubby: Deformities, vol. i., p. 129. Macmillan and Co. 1912.

[3] Marath: Quoted by Tubby, ibid.

[4] Karl Vogel: *Zeitsch. f. Orth. Clin.*, 1905, p. 132.

[5] Royal Whitman: Orthopædic Surgery, p. 533. Lea and Febiger, New York. 1917.

[6] E. H. Bradford and R. W. Lovett: Orthopædic Surgery, p. 318. Baillière, Tindall, and Cox, London. 1912.

[7] H. L. Taylor: Orthopædic Surgery for Practitioners, p. 247. D. Appleton and Co., New York. 1909.

EDUCATION AND DEMENTIA PRÆCOX.

Dr. Deroitte, of Brussels, when on a visit recently in this country had the opportunity of comparing British asylums with those in his own country. He was greatly struck by the comparative rarity of dementia præcox in our institutions, and, casting about for an explanation, has hit upon the English educational system as the secret of our "solid nervous systems, the emotions always reined in by an ever-calm judgment." In *Le Scalpel* for Jan. 1st he devotes ten pages to a comparison of the English and Belgian methods of secondary education and an exposition of the wearing effect of the latter upon Belgian nerves. Long hours of monotonous work in school, work taken home in the evening (a thoroughly reprehensible system!) and, "sad to relate," long written punishments as well, all help to wear out the overtaxed brain. Corporal punishment is too violent and is one of the causes of mental shock. The English system avoids this danger by relegating punishment to a monitor or at least assuring that it is not administered by the same master who has cause for annoyance. Instead of punishing a boy for laziness he should be made to feel the sense of responsibility for his own mental and physical development. Dr. Deroitte quite rightly lays emphasis on the possibility of psychic shock through the careless exposure of sexual vices and their danger at the susceptible age of puberty. Public addresses on these subjects he condemns categorically. Strangely enough, he omits to mention that a child who has been properly educated in the years before puberty is not liable to shock from the discovery of his own sex mechanism. The practical deductions of this study are two: in school, the development of spontaneity, the exercise of the will, the culture of self-confidence; out of school, the encouragement of physical exercise and of hobbies.

THE CIRCULATORY FAILURE OF DIPHTHERIA.

THERE are a dozen ways in which the heart can be brought to admit defeat at the hand of disease, yet in the last resort it is true that all these diverse processes kill by the effect they produce on the metabolism of the myocardiac cell. In a recent elaborate study of circulatory failure in diphtheria Dr. Esther Harding[1] suggested a similar wealth of processes busy at the task of killing the patient and an ultimate convergence of all those processes on the one point of interfering with the peripheral circulation in such a way that the vital tissues, and particularly those of the brain, are no longer able to maintain their metabolic balance. According to Dr. Harding, whose studies were carried out in 1918 at the Plaistow Fever Hospital, neither myocardial degeneration, profound though it is in diphtheria, nor vascular relaxation, is sufficient to account for that failure of the circulation which is the lethal factor in diphtheria. She is impressed by a faint general œdema which is present early in diphtheria, to which she gives the name of "lymph-logging." This is accompanied by a rise in the specific gravity of the peripheral blood, and is ascribed by her to altered osmotic conditions and increased permeability of the capillary walls. A state of oligæmia, or shortage of blood in circulation (comparable to that observed in surgical and other forms of shock), is thus induced early in diphtheria, and is aggravated later in the disease by diminution in the cardiac output and by vascular relaxation. Each of these latter phenomena is traceable to a number of sources, which are examined carefully by Dr. Harding in an argument demanding close attention. Her tentative conclusions as to the actual nature and correct treatment of the circulatory failure have recently received support from experimental researches which she has been carrying out in the department of biochemistry and pharmacology in the National Institute for Medical Research at Hampstead. The condition has been found to resemble the experimental "shock" produced by histamine. In the words of the annual report of the *Medical Research Council*, "evidence has already been obtained pointing clearly to the possibility of saving life by symptomatic treatment of the circulatory condition in cases in which specific treatment by the antitoxin alone is of no avail." It is to be hoped that the clinical testing of these ideas, which is promised in the report, will confirm these anticipations, for it is possible that if so we shall be furnished with new means of saving life, not only in diphtheria, but also in other forms of infective disease.

RECENT RESEARCHES ON PELLAGRA IN EGYPT.

WITH surrender of the defeated Turkish Army in Palestine and arrival in Egypt of many thousands of prisoners of war for internment, unexpectedly favourable opportunities became available in 1918 to British Army medical officers for investigating pellagra. It may be mentioned that from their arrival in Egypt up to the end of 1919 there occurred among 105,668 Turkish prisoners some 9257 recognised cases of pellagra, but there were probably many other undiagnosed instances. A committee of investigation was appointed in 1918 by the Army Medical Department, consisting of Colonel F. D. Boyd, A.M.S., and Lieutenant-Colonel P. S. Lelean, R.A.M.C., with whom were associated a number of experts of various kinds. In their report, on which we commented in THE LANCET of Sept. 13th, 1919, it is stated that no ætiological relationship of the malady to bacteria, protozoa, or to blood conditions had been discovered, and that as regards food there was so constant an association between the biological value of diet and the occurrence of pellagra, they considered the lack of sufficient biological value of protein stood in ætiological relationship to pellagra, certainly as an exciting factor, and possibly as the determining factor.

As some uncertainty existed on several points connected with the disease another committee was appointed[1] by the Army Medical Department early in 1920, consisting of Major A. C. Hammond-Searle, R.A.M.C., and Captain A. G. Stevenson, R.A.M.C., with Lieutenant-Colonel P. J. Marett, R.A.M.C., as bacteriologist. The Committee began work in the spring of 1920, and their report, now issued, bears the date of Sept. 15th of that year. Some of the matters which were investigated could not be completed owing to the rapid repatriation of the Turkish prisoners during 1920, and the consequent disappearance of much of the material on which the inquiry was being carried out. One of the conclusions arrived at was that all the ætiological factors in pellagra are not to be explained solely on the theory of deficiency of protein of high biological value, and that therefore pellagra cannot be regarded in itself as a true "deficiency disease." There was evidence that an unhealthy or ulcerated intestinal mucous membrane becomes infected by anaerobes, with their resulting growth and toxic action. In post-mortem examination of fatal pellagra cases the intestine showed ulceration in a large percentage of them; the mucous membrane of the small intestine almost invariably showed denudation with, in certain instances, superficial ulcers, the pigmentation of which was a feature. Cultures, from fæces of definite pellagra patients and from the small intestine of post-mortem cases, were taken by Colonel Marett under anaerobic conditions after elimination of the ordinary intestinal organisms. In over 90 per cent. of cases organisms were grown that were morphologically indistinguishable from *B. welchii*, and in 85 per cent. of cases terminal or subterminal spore-bearing organisms were isolated. On the other hand, stools from healthy Turks similarly treated did not show the presence of anaerobes. Samples of maize and maize-flour, obtained from an endemic pellagra area in Egypt and examined for organisms, also showed the presence of anaerobic spore-bearers. This high percentage of infection by anaerobes in pellagra cases, and the knowledge that these organisms flourish on dead tissues, is highly suggestive, to the Committee, of causal relation, as also the presence of anaerobes in samples of maize. To assist in obtaining proofs of this relationship attempts were made to induce ulceration in the intestine of dogs by means of dysenteric strains, and it was intended to follow up this by the introduction of anaerobic infections. Up to the date of the report, however, the experiments with the dogs were unsuccessful, so that the action of these organisms still remains undetermined. There was no evidence that suprarenal insufficiency was a factor in pellagra. In the opinion of the Committee the disease develops, first, as the result of lack of suitable or sufficient diet, causing lowered powers of resistance against infection by disturbing the maintenance of the healthy and protective activity of the intestinal mucosa; secondly, possible intestinal disease, such as dysentery or helminthiasis, causing ulceration and "malaction" of the mucous membrane, and consequent malassimilation; thirdly, infection of the weakened or ulcerated gut by anaerobes, and ultimate development of the symptoms distinctive of pellagra. As regards seasonal variation of the disease there are three reasons suggested: (1) the infection by anaerobes occurs coincidently with the season of greatest activity of flies, which are the probable carriers; (2) the optimum temperature for growth of micro-organisms is in the spring and autumn months, with possibility of resultant intercurrent infections; and (3) lowered resistance, due to possibly insufficient diet, this being most probable after the winter months.

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[1] The Circulatory Failure of Diphtheria. By M. Esther Harding, M.D. University of London Press, Ltd. 1920. Pp. 176. 10s. 6d.

[1] Report on Investigations of Pellagra among Turkish Prisoners of War in Egypt in 1920. Pp. 65. With numerous charts and tables. Published at Alexandria. (Not on sale.)

The Committee state that although, "in a way, pellagra may be reckoned as a deficiency disease, yet the key to the deficiency is the amount and nature of the protein absorbed and metabolised; there need be no great divergence of views if it be recognised that an intestine, already damaged by previous ulceration, the presence of helminths *or some other cause*, is a priori incapable of the same degree of assimilation as a normal one." It will be conceded by most persons that under such circumstances toxins will almost certainly be absorbed from the intestines. In an addendum written after completion of the report the Committee give some interesting details of three pellagra cases which developed in August, 1920, among a batch of Turkish prisoners that had arrived from India and Mesopotamia about two months previously. One of these patients had been interned in India for five years and each of the other two for three years, during which period they had lived on a far inferior diet to that which they received in Egypt. Notwithstanding this better diet, the men developed pellagra in from two to three months after their arrival in an Egyptian endemic area of the disease. In the opinion of the Committee these facts point to some additional factor other than diet as the primary cause of pellagra; moreover, examination of the patients' stools showed, generally speaking, a similar infection to that already described in the previous pellagra cases. The histories of the three cases, it is suggested, bear out the theory, already mentioned, of anaerobic infection of the intestinal tract as the primary cause of pellagra. Had space permitted we could have drawn attention to the experimental and other work given in this interesting report. The findings of the Committee, it has to be admitted, are hardly in accord with the results obtained by other workers, and especially in the United States by Goldberger and Wheeler in their carefully planned and patiently carried out human experiments on volunteers in a Mississippi penitentiary, where all possible factors save diet seemed to have been excluded. The American experts have suggested that pellagra, as conventionally defined, probably includes at least two commonly associated but ætiologically and essentially distinct syndromes. It is possible that the group of symptoms, called pellagra, may originate from more causes than one. Recently Professor Gowland Hopkins[2] reminded us that the evidence pointing to an infection or toxic origin of pellagra had of late become weak, while that pointing to a dependence on diet had become strong. It is obvious that the ætiology of pellagra cannot be regarded as definitely settled. There is still room for the research worker to give us his help, either by confirming the findings of this Committee, or on other lines.

DENTAL DECAY.

THE cause, effect, and treatment of dental decay are dealt with at length in the annual report for 1919 of the chief medical officer of the Board of Education. The policy of the Board in taking a broad view of treatment and allowing each education authority to work out its own scheme gives an additional interest to the work, and makes for efficiency and good results. Obviously, a scheme suitable for an urban district is not necessarily the most suitable for a rural district, nor is that of a populous rural district necessarily the one for the scattered villages of a mountainous county. It is interesting to see how different authorities have tackled the problem. Various methods have been resorted to. The work has been done by private dental practitioners, dental hospitals, school dental clinics, and itinerant dentists, employing caravans or adapting rural centres for the purpose. A general recommendation is that until a full scheme is in operation it is better to deal effectively with a small area than inadequately with a large one. The statement that at least 50 per cent. of the elementary school population is found to be suffering from some degree of dental defect does not arouse in us the surprise expected, and instead of being horrified at Dr. Hamer's reference to the "notable improvement" in the London schools, where 51·5 per cent. of the children are still suffering from dental defect, we cannot for the moment help sharing his satisfaction. After all, 51·5 per cent. compares very favourably with the 94·5 per cent. of Northumberland and the 98·15 per cent. of Northampton. There is no doubt that in London the problem has been tackled courageously and effectively. The first records of the teeth of London children in 1905 show 90 per cent. with caries, 70 per cent. of them to a serious extent. There are a great many more children leaving school with clean healthy mouths than there were, and there is a marked diminution in the amount of serious decay. This is the branch of medical inspection and treatment which is bringing more apparent and more lasting results than any other. Under the present encouraging policy of the Board, which points out that the earlier inspection and treatment take place the better, the dental work in the schools is well on the way to being a model for other countries to copy. The large number of infant welfare centres now in existence ought to have a marked influence in lowering the incidence of dental decay in the elementary schools, not only by virtue of the arrangements for dental treatment but by the educational efforts in the way of proper feeding and ante-natal hygiene. Following up is possible through the nursery school, which establishes the link between infant welfare centres and the elementary school. We endorse Sir George Newman's plea for closer coördination between the various bodies dealing with dental hygiene from infancy to adult life. He explores the cause and effect of dental disease very thoroughly. Emphasis is laid on the connexion between the character of food and dental decay. The character of food is important, not so much in its effect upon the chemical composition of the teeth, but in its tendency, in certain forms, to promote fermentation—the forerunner of decay. W. Hunter has shown in his observations at the London Fever Hospital that cleanliness in children's mouths is most important. Serious conditions such as the septic complications of scarlet fever are much commoner when oral sepsis is marked. A certain amount of hard food is necessary for its cleansing properties and its place in promoting mastication.

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[2] THE LANCET, Jan. 1st, 1921.

The shortage of dentists in the United Kingdom has raised the question of the employment of dental dressers. Sir George Newman leaves the question an open one, with a bias in favour of their employment. The shortage has become an acute problem, due as it is in large measure to the success of the unqualified advertising dentist. The report deals energetically with the dangers of unqualified practice, and supports whole-heartedly the conclusions and recommendations arrived at by the Dentists Act Committee, which urges that steps should immediately be taken to safeguard the public, and incidentally the qualified dentist, from the unregistered practitioner. We hope that the suggestion in the report that a school dentist could "examine approximately 80 children in a normal school session of 2½ hours and record his findings" will not be taken literally. We cannot help feeling that the records of the latter half of the time would by their inaccuracies nullify the work of the first half. Surely the employment of dental dressers is indicated if only to cover the ground not requiring skilled work, leaving the dentist free to do the real work conscientiously and deliberately. The Board of Education is to be congratulated on its comprehensive and sound scheme for dealing with the problem of dental defect.

FRENCH OPHTHALMOLOGICAL ADVANCES.

A REVIEW of ophthalmology in France during the year 1920, from the pen of Professor F. Tarrien, ophthalmologist to the Hôpital Beaujon, occupies a large part of a recent issue of the *Paris Médical*. Examination of the anterior parts of the eye (cornea, iris, lens, and anterior layers of the vitreous) under high magnification (80 to 100 diameters) has been brought to a high state of perfection by means of the binocular microscope and the Nernst slit-lamp. Similar instruments are employed in Germany and have been there adapted for the examination of the fundus.[1] Monbrun and Gautrand have recorded four cases of double hemianopia with macular vision intact, in three of which binocular vision was retained. The post-mortem examinations went to confirm the view that the cortical centre for macular vision is situated at the most posterior end of the calcarine fissure. This is the conclusion also arrived at by Gordon Holmes.[2] Monbrun believes that in the majority of cases the whole macular field is represented in both occipital lobes. Gordon Holmes, on the other hand, maintains that the macular field has not a bilateral representation. A good deal has been written in France, as in this country, on the ocular symptoms of encephalitis lethargica. Mild cases are characterised by fleeting attacks of diplopia and of ptosis with somnolence, but there is only a difference of degree between mild cases and dangerous ones. The disease appears to be on the increase both in France and in Great Britain. A. Cantonnet believes that in some cases of tabes, with or without ataxia of the limbs, the eye-movements may be affected not only by paralysis of different muscles, but in rare cases by paralysis of associated movements—of convergence and of vertical or lateral movements of the two eyes, or by simple incoördination of eye-movements. An epitome of an article on the pathology and treatment of exophthalmic goitre is of sufficient interest to warrant a reference to the original.[3] Apropos of glaucoma, a thesis of Hélène Baute is quoted in support of Elliot's trephining operation. The danger of secondary infection is recognised as a possibility, but the conclusion is that it is the operation of choice for cases of simple chronic glaucoma with tension but without inflammatory symptoms. Many English operators would go further than this in its favour, while some, on the other hand, have abandoned it. The question of foreign bodies in the globe, which was very much to the fore during the war, still causes controversy. Rollet recommends that if a magnetisable foreign body is diagnosed by means of the giant magnet the next step should not be to extract it, but to perform an iridectomy, and to defer the extraction to a subsequent sitting, when the operation can be performed with greater ease and safety than if the iris were intact. The same difference of opinion as to the relative merits of the scleral and corneal routes for extraction exists in France as in this country.

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[1] See THE LANCET, Dec. 25th, 1920, p. 1310, Review of Dr. L. Koeppe's book on Examination of the Eye under High Magnification.

[2] Brit. Journ. Ophthal., July, 1918.

[3] Soc. de Biologie, No. 13, Sept. 27th, 1919.

OPERATIONS FOR THE REMOVAL OF TONSILS.

FOR many years the operation for the removal of tonsils was regularly performed with a guillotine, though before the introduction of this instrument surgeons operated by seizing the tonsil with forceps and cutting off the projecting portion with a curved probe-pointed bistoury. Some operators used the French Mathieu's guillotine, provided with prongs to lift the tonsil from its bed, but most surgeons in this country preferred the Mackenzie's "spade" guillotine. This was used with the handle directed to the same side as the tonsil which was being removed, and rarely succeeded in excising the entire tonsil. The amount of tonsil thus removed varied with its position and with the skill of the operator, but it is safe to say that, 20 years ago, the entire tonsil in its capsule was only occasionally and accidentally removed. Indeed, the anatomy text-books of that time do not describe the thin capsule proper which encloses the tonsil together with the so-called supra-tonsillar fossa. Within the next few years, however, surgeons with a large experience of these cases were recognising the bad results in many cases of leaving the deep part of the tonsil behind, and were endeavouring to assure a more thorough extirpation by improvements in technique, such as applying firmer pressure with the guillotine and carrying the shank of the instrument transversely across the mouth, and for certain cases were returning to and improving upon the method of removal by dissection. In 1909 G. E. Waugh, in a paper published in this journal,[1] strongly advocated removal by dissection in all cases, and unreservedly condemned the guillotine; but in the following year S. S. Whillis and F. C. Pybus[2] described their method of using the guillotine reversed, pushing the tonsil through the ring of the instrument with the forefinger of the other hand; and about the same time in America Greenfield Sluder[3] began to practise a similar method, using the angle of the jaw as a fulcrum to dislocate the tonsil through the guillotine. These methods have proved most successful, and a large number of practitioners have found that they can quickly learn to remove the ordinary tonsil entire with the guillotine by the manœuvre of Whillis and Pybus. Although on the continent partial removal, usually by "morcellement," is still the routine practice, in Great Britain and America it is almost unanimously agreed that tonsils which call for removal should be removed entire. Under these circumstances the best method for effecting this end still remains the subject of discussion; on a question, about which opinion has varied so greatly within the last few years, an occasional review of the matter helps to clear the air, and we believe that Mr. M. Vlasto, in the article which appears in this issue, presents the general consensus of opinion very fairly. "To make the punishment fit the crime" is a sound maxim in surgery, and a more serious operation should not be performed provided that a less serious one can be shown to produce as good a result. There is no doubt that some tonsils cannot be completely enucleated with the guillotine and that, whatever general principles are arrived at, there will always be room for individual judgment in particular cases. In this country these operations are usually performed under general anæsthesia, but it appears from the paper by Mr. W. Morris, which is also to be found in this number, that all adult cases are now operated on at the Mayo Clinic by dissection under local anæsthesia. His description of the technique there adopted will be useful to those who wish to try it here.

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[1] THE LANCET, May 8th, 1909.

[2] THE LANCET, Sept. 17th, 1910.

[3] *Journal of the American Medical Association*, March, 1913.

SUPPURATING MYOMA UTERI.

THE subject of suppuration in uterine fibroids is discussed by Dr. J. W. Nixon,[1] who reports a case in a woman, aged 20, suffering from gonorrhœal endometritis, which occurred in the surgical clinic of Dr. John B. Deaver at the Lankenau Hospital, Philadelphia. The rarity of this complication is shown by the fact that this was the first example of the kind among 1200 operations for uterine fibroids performed by that surgeon. It is true that some authorities estimate the frequency of suppuration in fibroids as high as 5 per cent. (A. Martin) or even 15 per cent. (Cullingworth), but Dr. Nixon attributes this to an inaccurate classification, which includes necrosis, gangrene, and other forms of degeneration. Although a fibroid may become infected at any time, infection is most likely to take place during the most active period of sexual life—namely, from the twenty-fifth to the forty-fifth year. The date of suppuration after the first appearance of the tumour varies from 2 years, as in Dr. Nixon's case, to 10, 20, or even 40 years. In order of frequency, the factors leading to infection of a fibroid are pregnancy, surgical and obstetrical trauma, direct extension of infection from endometritis in the interstitial variety, torsion of the pedicle, especially in the cases of the subserous fibroid, chemical irritation by ergot or other drugs intended to contract the uterus, and mechanical irritation by X rays and radium. There is no type of organism peculiar to suppurating fibroids, but Dr. Nixon's case is the first example on record in which gonococci have been found. The symptoms are not distinctive except that the pain, which has hitherto been dull and dragging, is likely to assume a stabbing character. In some cases there may be a rapid increase in size of the tumour, accompanied by local tenderness, fever, night sweats, and possibly a discharge of pus from the vagina. A high leucocytosis is also suggestive. The prognosis is grave owing to the complications liable to ensue as well as to the debilitated state of the patient at the time of the operation. The mortality has been variously estimated from 27 per cent. (Kelly and Cullen) to 70 per cent. (Berger). Early operation is essential, hysterectomy, total or subtotal, being indicated. In Dr. Nixon's case, in which subtotal hysterectomy was performed by Dr. Deaver, the uterus presented five myomata, the largest of which contained irregular ragged cavities full of thick greenish pus, smears from which showed a Gram-negative intracellular diplococcus. The patient left the hospital in good condition 27 days after the operation.

SELECTION OF STUDENTS AT CROWDED MEDICAL SCHOOLS.

AT a recent meeting of the General Committee of University College Hospital the following resolution was passed regarding the admission of women students to the Medical School:—

> That during the session 1922-23 and in subsequent sessions the number of women students to be admitted to the Hospital and Medical School be limited to 12.

We understand that the circumstances in which this decision was taken were substantially these. The School Committee felt that there was an actual danger of the school becoming swamped by women students, and that if an undue proportion of women students were admitted there would be considerable risk of men students being driven away from the Medical School. It was recognised that the decision would entail some hardship upon women now taking their preliminary and intermediate medical subjects at University College, although admission to University College does not confer any presumptive right to admission to the Hospital. Eight of the 12 places allotted to women will be filled on the nomination of the authorities of University College and the remaining four will be thrown open to competitive examination. The resolution limiting the number of women students to 12 does not come into force until October, 1922, leaving an interval during which it may be expected that the non-selected students will obtain admission to some other hospital admitting women students. The entry of men students to the Medical School is also restricted by the size of the Hospital. At the present the School is only able to admit for the full course men who have completed their preliminary and intermediate studies at University College and a certain number of selected men from Oxford and Cambridge. The total number of students admitted in any one year cannot exceed 80 and it is interesting to compare the method of selection with that adopted by the University of Minnesota, which, as we learn from Dr. Norman Walker's report cited elsewhere, can also only admit 80 entrants annually. The following is the method adopted at Minnesota, which, in all its details, could not be followed in this country with success:—

> The Dean of the Medical Faculty had 400 inquiries from those who proposed to enter last autumn. By a strict scrutiny of the educational qualifications of the applicants, he reduced it to below 200. The answers were then considered to the schedule of inquiry sent out to those concerned with the candidate's earlier education and examination, including a report on personal appearance, manner with associates, initiative, ambition, industry, tact, use of oral and of written English. The Dean by this means reduced the numbers to something like 150. But still this did not get down to 80, and they then applied mental tests, and a series of examinations on the Binet method were applied to the residue. At the end of the first year unsuitable students are again weeded out, and advised either to give up medicine or to find some other place to study it in, their places being filled by students from schools which have as yet no clinical facilities and only give the first and second year's instruction in medicine.

Popular schools all have to adopt some kind of entrance filter and are evidently within their rights in selecting the material likely to benefit most fully from the educational facilities provided. The contrivance of the filter will, however, leave ample room for the tact and discretion of the authorities.

H.R.H. the Prince of Wales has announced his intention of being present at the Hunterian festival dinner of the Royal College of Surgeons of England to be held on Feb. 14th, when he will receive his diploma as Honorary Fellow.

THE appointment is announced of Mr. S. P. Vivian, a Principal Assistant Secretary in the Ministry of Health and Deputy Registrar-General, to be Registrar-General in succession to Sir Bernard Mallet, K.C.B.

FOUR lectures on Communicable Diseases will be delivered by Sir Robert Armstrong-Jones at Gresham College, Basinghall-street, London, E.C., on Jan. 25th and the three following days, at 6 P.M. Admission is free.

AMALGAMATION OF ROYAL CHEST HOSPITAL WITH GREAT NORTHERN CENTRAL HOSPITAL.—At a special meeting of the governors of the Royal Chest Hospital, City-road, held at the Mansion House on Jan. 17th, the scheme, noted last week, for the amalgamation of this hospital with the Great Northern Central Hospital, Holloway-road, was approved. The latter hospital is to provide a number of beds allocated to diseases of the heart and lungs at least equal to those given up by the Royal Chest Hospital, and a block is to be named the Royal Chest Hospital block. The City-road premises are to remain open until such time as building becomes practicable, when the in-patient block and the nurses' home will be disposed of; the out-patient and X ray departments will be retained. It is stated that proper provision will be made for the medical and lay staffs of the Chest Hospital.

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[1] Journal of the American Medical Association, Dec. 15th, 1920.

TYPHUS IN TURKEY AND ADJOINING COUNTRIES:

ITS RECENT PREVALENCE.

BY F. G. CLEMOW, C.M.G., M.D.,
BRITISH DELEGATE, INTER-ALLIED SANITARY COMMISSIONS, CONSTANTINOPLE.

IN two earlier articles, published respectively in THE LANCET of Nov. 20th and Dec. 11th, 1920, brief accounts were given of the recent behaviour of plague and cholera in Turkey and some adjoining countries. In the present paper an attempt will be made to summarise the records, so far as they exist, of recent typhus prevalence in the same regions.

In Turkey the disease was rarely seen before the war, and in Constantinople it was scarcely known as an indigenous disorder. Since the outbreak of the war, however, it has become widely epidemic throughout the greater part of the country. Figures, more or less reliable, are available for the years 1916–19 inclusive, and these are quoted in the following table. These figures have been furnished by the Public Health Department of the Turkish Ministry of the Interior. They have a certain relative value, but can only be regarded as approximate, and must be accepted with the same (or even greater) reserve, as in the case of the analogous figures for plague and cholera. They are said to include both civil and military records:—

Typhus in Turkey in the Years 1916–19.

C. = cases; D. = deaths.

—	1916.		1917.		1918.		1919.	
	C.	D.	C.	D.	C.	D.	C.	D.
Vilayets.								
Constantinople	1840	92	3748	257	4842	788	1728	125
Adrianople... ...	341	15	1308	80	992	124	286	0
Erzeroum	137	29	29	13	1	0	4	0
Adana	552	67	255	26	234	48	1	0
Aidin	1268	313	3900	1148	771	124	261	67
Sivas	255	43	406	30	197	22	128	20
Broussa	1219	224	833	167	416	49	228	12
Diarbekir	183	35	118	13	112	27	20	4
Angora...	373	72	346	85	225	34	385	37
Castamouni ...	66	24	187	24	207	40	100	23
Konieh...	1099	171	539	31	435	73	135	17
El-Aziz...	68	14	144	54	153	42	90	8
Trebizond	338	55	4	0	11	4	81	13
Bitlis	76	32	5	0	1	0	1	0
Syria	2218	1767	1815	786	875	236	0	0
Beirut	3002	592	3073	452	948	160	0	0
Aleppo...	2106	582	758	79	1066	261	100	37
Mosul	773	63	129	48	21	4	0	0
Bagdad	2212	469	34	2	—	—	—	—
Sanjaks.								
Urfa	77	3	89	23	61	10	0	0
Ismidt	161	10	347	65	332	27	69	15
Adalia	64	24	79	9	23	2	11	3
Itchel	18	5	18	5	23	5	10	2
Bolou	46	15	149	24	304	39	146	25
Samsoun	451	27	242	4	123	17	51	13
Chataldja	40	0	106	0	136	18	20	6
Zor...	188	64	18	4	0	0	0	0
Karassi	941	133	994	185	187	22	138	40
Dardanelles ...	71	7	22	5	122	18	40	11
Jerusalem	2533	879	1010	154	—	—	—	—
Cesaræa	650	133	173	17	80	20	24	5
Kara Hissar ...	508	58	533	78	332	32	35	6
Kutaia	169	114	208	28	124	63	25	5
Eskishehir... ...	231	4	187	12	369	32	76	13
Marash...	245	42	74	23	36	3	8	2
Mougla...	11	6	20	0	115	16	2	0
Nighde...	456	74	433	66	113	18	40	5
Mt. Lebanon ...	530	78	2715	436	604	85	—	—
Medina	8	0	—	—	—	—	—	—
Aintab...	0	0	0	0	8	0	0	0
Batoum	—	—	—	—	15	0	5	2
Erzindjan	0	0	0	0	4	0	13	3
Totals	25525	6335	25139	4434	14745	2453	4261	519

The incompleteness of these figures is evident. Many of the blanks and "zeros" indicate, not that the disease was absent, but that the territory had passed out of Turkish possession, either temporarily or permanently. This, to a considerable extent, explains the lower totals for the last two years of the series. Moreover, since the Nationalist revolt in Asia Minor, the Turkish records have become more imperfect than ever, and are now almost confined to the returns for Constantinople itself. In the present year (1920) typhus again became epidemic in the capital in February, March, and April, mainly as a result of the influx of Russian refugees after the defeat of Denikin's army. The highest number of cases in any one week (that ending March 13th) was 78. In the summer the epidemic greatly declined but the disease never wholly disappeared. It has now again become active, with the arrival of a still larger crowd of refugees from the Crimea, after the collapse of Vrangel's army. About 100 cases have already been reported amongst them. Typhus, however, is not the disease from which this latest group of refugees is suffering most; relapsing fever is far more prevalent amongst them, and already the total number of known cases of the latter disease is not far short of 1000. The total number of cases of typhus in Constantinople during the year just closing will prove to be something between 600 and 700.

Winter Epidemics in South Russia.

In South Russia it has been known that typhus has been widely prevalent for some years past, and each recent winter it has caused an epidemic of considerable intensity. Exact figures, however, have for the most part not been available. The information received here from that country has been scanty and irregular, and it is only possible to quote occasional reports from reliable authorities, throwing more or less light on the degree of prevalence of the disease in certain places. Thus, in the winter of 1918–19 there was an epidemic of great severity. As late as April, 1919, it was known, from British sources, that 370 cases of typhus were in hospital in Novorossiisk, 460 in Batoum, and 200 in Alexandropol. The case mortality, however, was not high; it was estimated at about 3 per cent. only. The disease remained prevalent more or less throughout the rest of the year, and in January, 1920, it was again causing a severe epidemic. Exact figures were only occasionally received here; but it is known that in Novorossiisk alone, on Jan. 31st, 763 cases were in hospital; and in the week ending Feb. 7th 218 fresh cases were admitted to hospital, 193 were discharged, 75 died, and there were 872 (*sic*) remaining at the end of the week.

In March an interesting report was received from French sources upon the sanitary condition in South Russia. Novorossiisk, whose ordinary population numbered about 60,000, was then said to contain some 300,000 persons—mostly refugees from the Bolsheviks. In the Volunteer army, out of 45,000 sick and wounded, 33,000 were reported to be suffering from infectious diseases, and of these more than 25,000 were said to be cases of typhus. The hospitals were enormously overcrowded, and a harrowing account was given of the conditions in Novorossiisk, where large numbers of typhus cases were being treated in their houses, or dying in the trains, the stations, or even in the railway wagons, in which many of the population were living. In a later report the number of typhus cases outside the hospitals was estimated at about 15,000. Sevastopol was in much the same state. Its normal population was estimated at 50,000, and this figure had increased to 150,000 and the hospitals were full of typhus patients. The disease was also raging in other towns. The conditions prevailing at Kharkof, Rostof, Novotcherkask, Taganrog, and Ekaterinodar were said to be much the same as those at Novorossiisk and Sevastopol. The severity of the epidemic may be judged by the statement in a Kharkof medical journal that in that town alone 40 medical men died from typhus in two weeks in December, 1919. But other diseases also, and especially tuberculosis, were causing a high mortality everywhere. The lack of food, water, linen, coal, and all the other prime necessities of life were adding greatly to the sufferings of the people. Infant mortality was excessively high, and venereal diseases were reported to have taken on an immense extension.

In Novorossiisk, on March 30th last, there were 1159 cases of typhus fever in hospital, and on April 6th this figure had increased to 1336. The case mortality, however, was said to be still low. During the summer months the epidemic, as usual, declined. In the late summer and autumn, however, the disease was still present in the Crimea; thus in the week ending August 15th (28th), there were 10 fresh cases in the Russian garrisons of the Crimea; and on August 25th (Sept. 7th) 53 cases remained in the various hospitals; of these, 33 were in the Theodosia hospitals. Since the Crimea fell into the hands of the Bolsheviks, no information has been received as to the presence of disease or as to the other conditions of life prevailing there. With the exodus of some 150,000 refugees from the Crimea to Constantinople, typhus and other diseases have, as already stated, been imported to the Turkish capital. The special prevalence of relapsing fever amongst them has been referred to above, and mention may here be made (as a postscript to the earlier paper upon cholera) of an outbreak of cholera in a Russian refugee camp in the neighbourhood of Constantinople. In this camp, situated at Chilinghirkoui, not far from the famous lines of Chataldja and some 20 miles from the capital, some 10,000 refugees were interned. Cholera appeared amongst them in the night of Dec. 9th–10th. In all some 88 cases and 47 deaths occurred. Energetic measures, however, were put in force at the earliest possible moment, and the outbreak came to an end on Dec. 19th, since when no cases have been reported. Four other cases were seen in a French hospital in the town of Constantinople in the first few days of December. All four patients had been in hospital for some time for other diseases. Only one was a Russian, the others being a Greek man, a Greek woman, and a Syrian woman. Neither in these cases nor in those at Chilinghirkoui could the source of infection be traced, and it is believed to have been due to some germ-carrier or carriers from the Crimea. It is, however, to be noted that, so far as our information goes, cholera had ceased to be present in the Crimea some time in October.

Constantinople, Dec. 30th, 1920.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Sanatorium Benefit in Scotland.

THERE appears to be some misunderstanding of the position of sanatorium benefit in Scotland. In England sanatorium benefit will not cease until May 1st, to be included among the benefits conferred upon insured persons by Part I. of the National Insurance Act, 1911; but in Scotland this termination has actually taken place, and as from the first of the present month the local sanitary authorities have been required to make arrangements for the treatment of tuberculosis in insured persons. Special arrangements have been made to ensure that there shall be no break in the continuity of treatment resulting from this transfer, and a special scheme has been devised for the treatment of ex-Service men suffering from tuberculosis. The local authorities are to receive in respect of the treatment of insured persons suffering from tuberculosis an Exchequer Grant, which may be taken broadly as representing the amount that has been available to local Insurance Committees for institutional treatment. In respect of ex-Service men, they will obtain reimbursement of the entire cost and will also receive payment for the services of their tuberculosis officers.

Cameron Prize Lecture.

On Jan. 14th Sir Robert Jones, Inspector of Military Orthopædics, who last year was awarded the Cameron Prize in Therapeutics, delivered a lecture at Edinburgh University on the Necessity of Orthopædic Training and its Relation to the Prevention and Cure of Cripples. He emphasised the need for education of the student in orthopædic principles. Deformities which occurred early were mainly the result of tuberculosis, rickets, infantile paralysis, or were of congenital origin. Many of them might be prevented, and practically all of them might be corrected. They had to trust to the practitioner for early diagnosis, and he should at least know the possibilities of modern treatment. Nearly all crippling deformities of children and adults were included in "orthopædic" surgery, as well as a large proportion of war injuries. It was in consequence of the ever-increasing number of deformities that orthopædic centres were started during the war. They commenced with 250 beds in Liverpool, and eventually throughout the kingdom 20,000 beds were set apart. Specially qualified staffs were put in charge, and the patients were allowed a longer period of hospital treatment than in the general military hospitals. For psychological and reconstructive purposes curative workshops were introduced. The advantages of these methods had been very marked. Training in the treatment of fractures required to be more general than at present, and a thorough training in the simplest types of appliances and the principles governing their application would spare humanity numberless deformities. Appliances should be of the simplest kind. In every hospital there should be a fracture ward, and the chief should be both interested and competent. The treatment of fractures in this country was at present a sadly neglected art, and it was only recently and as a result of the war that the need for orthopædic instruction had become recognised. A thorough training in general surgery was an essential preliminary. In certain hospitals the orthopædic department was too often a mere out-patient clinic. It was better to have no orthopædic department than to make it a pretence. He welcomed the institution of an orthopædic lectureship in Edinburgh, and would like to see this new department add lustre to the glorious traditions of the University.

A Glasgow Society for Psychical Research.

A society has been formed in Glasgow for scientific research work into psychic phenomena. Its members are committed to no definite opinions on the subject of psychic phenomena, and their work is to be purely that of investigation. The medical office-bearers of the society, of which Mr. A. J. Balfour is president, include Dr. A. K. Chalmers and Dr. L. R. Oswald, vice-presidents. The honorary secretary is Miss Margaret H. Irwin, 58, Renfield-street, Glasgow.

The John Farquhar Thomson Lectureship.

The first of this year's series of lectures on the Structure and Functions of the Human Body was given in the Anatomy Theatre of Marischal College, Aberdeen, on Jan. 15th, by Dr. R. W. Reid, professor of anatomy at the University. The lectureship was founded by the late Mr. John Thomson, of the University Press, in memory of his son, formerly a distinguished student of the University. The lectures are open to the public, and are intended chiefly for young persons, to instruct them in the care of the body, its healthy development, and the prevention of its abuse by intemperance. The course consists of six lectures, which are to be delivered each winter, when a different lecturer will be chosen.

Infant Mortality in Inverness-shire.

The report of the medical officer of health for Inverness-shire for the year 1919 gives infantile mortality statistics for the last six years for each district:—

	Births.	Deaths under 1 year.	Infantile mortality.
Inverness...	790	... 65 ...	82
Aird	762	... 45 ...	56
Badenoch ..	619	... 42 ...	67
Lochaber...	558	... 22 ...	39
Skye	1266	... 69 ...	54
North Uist	317	... 12 ...	37
Harris ...	563	... 35 ...	62
South Uist and Barra	809	... 54 ...	66

The rate is thus lowest in North Uist with 37, followed by Lochaber. The infantile mortality rate for the county is 60.

The late Dr. J. W. Simpson.

On Jan. 11th the death took place at Edinburgh from pneumonia of Dr. J. W. Simpson. Dr. Simpson was best known professionally for his work on children's diseases, on which subject he had made numerous contributions to medical literature. His work as physician to the Royal Hospital for Sick Children and his ability as a teacher were recognised by students and graduates alike as being of an exceptional high standard. From 1893 to 1899 Dr. Simpson was well known as one of Scotland's most prominent Rugby internationalists, playing altogether in 13 internationals. He graduated M.B., C.M. at Edinburgh in 1896 and M.D. in 1906. He was a Fellow of the Royal College of Physicians of Edinburgh. For his sterling qualities Dr. Simpson was greatly esteemed and beloved by all who knew him, and his early death has caused widespread sorrow.

Jan. 17th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Health Insurance and the Medical Profession.

THE possibility of a forthcoming Health Insurance Bill before the French Parliament was recorded in the minutes of the last general meeting of the "Union des Syndicats Médicaux," which was held on the 4th and 5th of last month. The committee of the "Syndicat des Médecins de la Seine" has pointed out that such a medical act would completely transform the practice of medicine in France and has urged all practitioners to take an active interest in the question before the Bill is actually discussed in Parliament. The abovementioned committee has appointed a subcommittee whose members are: MM. Ferry, Gascuel, Hartmann, Lafontaine, Le Fur, Rinuy, and Rouyer. Mons. Rinuy has been appointed secretary. This body will deal with all matters concerning health insurance, and the results of its investigations will be regularly published in the *Bulletin*.

Rates and Payment of Pensions in Alsace.

According to Article 62 of the Versailles Peace Treaty, Germany is to pay in marks the pensions allotted to Alsatians who fought in her army during the war. Alsatians who fought in the ranks of the French army benefit from the French Pension Act, March 31st, 1919. Mons. Daussat, médecin-chef of the medical board for Strasbourg, has given recently a detailed account of the German Pension Act of May 14th, 1920, and has pointed out that on many points it is in accordance with the spirit of the French law. He mentions that owing to the disadvantageous rate of exchange of the mark the French Government have decided to make up the difference and to secure to the disabled Alsatians who served in the Germany army pensions approximately the same as those paid to pensioned ex-Service men in France.

Prophylaxis of Malaria.

Mons. Marcel Léger, Director of the Medical Service in French Guiana, has published a report on various matters concerning malaria in this French colony: "L'Endémie Palustre à la Guyane Française" (*Annales de Médecine et de Pharmacie Coloniale*, numéro exceptionel, 1920). Mons. Léger concludes by referring to the results attributable to prophylactic measures; according to statistics taken in prisons a marked decrease in the occurrence of malaria amongst convicts has been recorded since 1900. Moreover, since 1909 the number of patients suffering from malaria who have been admitted to hospitals has been gradually diminishing, leaving out of consideration an epidemic in the course of the years 1917 and 1918.

Jan. 15th.

ROYAL SOCIETY.—At the next meeting, on Jan. 27th, at 4.30 P.M., the following papers will be read: Mr. K. Sassa and Professor C. S. Sherrington, P.R.S., on the Myogram of the Flexor-reflex Evolved by a Single Break-shock. Sir Almroth Wright, F.R.S., on "Interaction" Between Albuminous Substances and Saline Solutions. Professor S. Russ, Dr. Helen Chambers, and Miss Gladwys M. Scott, on the Local and Generalised Action of Radium and X Rays upon Tumour Growth, communicated by Sir Walter Fletcher, F.R.S.

THE HYGIENE OF INDUSTRY.

Fatigue and Efficiency in the Iron and Steel Industry.

AN interesting study has been issued by the Industrial Fatigue Research Board relating to the iron and steel industry.[1] The inquiry upon which it is based was set on foot to establish a comparison between the 12-hour shift system of working and the 8-hour shift system, which commenced in February, 1919. The comparison was difficult to make, for Dr. H. M. Vernon, the investigator to the Board, who writes the report, found himself face to face with an intricate problem in attempting to estimate accurately the effect of work upon those employed. He describes clearly the processes of producing pig-iron, of converting it into steel by different methods, and of rolling steel. Readers unfamiliar with the industry will be struck by the complexity of the processes, by the variety of methods in vogue in different parts of the country, and by the difficulties to be surmounted in separating the human from the trade technical factors.

Unnecessary Labour is the Rule.

Dr. Vernon is not a technical metallurgist, but nevertheless his survey of the industry enables him to point to curious anomalies in working methods; indeed, we find ourselves wondering at the extent to which this key industry seems in this country to be behindhand rather than marvelling at splendours of metal smelting. Much of the work, on account of the physical labour involved, together with exposure to great heat and varying weather conditions, belongs to the heaviest which men have to undertake; but the picture drawn for us is that of human intelligence busied with the extraction of metal, absorbed in wrestling with metallurgical problems, with no time devoted to the working of the human beings who guide the operations—those beings who after all are part of the community needing the metal. Often, as in the case of blast furnaces, unnecessary labour seems to be the rule rather than the exception; here "the efficiency of mechanical charging is four to eight times greater than that of hand charging," yet in Scotland no furnaces were found mechanically charged, in Yorkshire only 21 per cent., in South Wales 26 per cent., and in Lincolnshire 32 per cent.; in all, only 18 per cent. out of 146 furnaces inspected. The men lose an undue proportion of time for sickness, and Dr. Vernon concludes that "a reduction of the 12-hour shifts to 8-hour shifts will lead to an improvement of time-keeping and thereby increase the efficiency with which the blast furnaces are run." Equally important would appear to be the introduction of labour-saving devices. The same story is told regarding open-hearth steel furnaces; here a steel melter transferred from a 30-ton hand-charged furnace to a 70-ton machine-charged furnace declared the latter by comparison to be almost child's play. In terms of man-power, machine-charged furnaces were about five times more effective than hand-charged ones. "There can be little doubt, therefore, that all hand-charged furnaces ought to be scrapped with the utmost expedition and replaced by machine-charged furnaces."

Efficiency and the Health of Workers.

Other factors adversely influencing production are also pointed out, such as the use for conversion into steel of metal still hot from blast furnaces instead of first allowing it to cool and then reheating it; and also imperfect balance in the plant leading to later processes being frequently delayed for lack of material—"the consistency of the delays," writes Dr. Vernon, "is very striking." He finally concludes that probably—

> "if all the iron and steel works in the country adopted the most efficient methods they could, on an average, improve their output by something between 50 and 100 per cent. In other words, they could enable their employees to earn more in 8-hour shifts than they had previously done in 12-hour

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[1] Fatigue and Efficiency in the Iron and Steel Industry. H. M. Vernon. Industrial Fatigue Research Board. Report No. 5. Pp. 99. H.M. Stationery Office. 1920. 3s.

shifts. . ... It is suggested that a technical inquiry into these proposed changes by a competent body of practical men is well worth consideration."

We agree, and venture to hope that the industry will either refute this accusation of partial inefficiency or remedy the condition. The matter would be foreign to our sphere of thought if the health of the workers were not intimately concerned. But Dr. Vernon and Mr. E. A. Rusher, after careful statistical inquiry into the morbidity and mortality experienced, indicate how activity is curtailed by sickness and life shortened by early demise. Thus we read:—

> "The steel melters and pitmen lost 23 per cent. more time than the average, the puddlers 20 per cent. more, the tinplate men 12 per cent. more. Almost all of these men frequently work at high temperatures, whilst the engine- and cranemen and the other workers (largely labourers), who usually work at ordinary temperatures and on less heavy work, showed 8 or 9 per cent. less sickness than the average. The excess of sickness shown by the puddlers was due entirely to rheumatism and respiratory diseases."

And again, steel workers—

> "showed 102 per cent. greater mortality from respiratory diseases, but 48 per cent. smaller mortality from tuberculosis (mostly phthisis). The steel-melters had a 20 per cent. greater mortality than all males, but the other men working at high temperatures and the engine- and cranemen had a smaller mortality. It is probable that all the records yield too low an estimate of the death-rate owing to withdrawals of some of the less vigorous men. The blast-furnace men had a considerably higher mortality than the steel-workers, presumably because of their great exposure to the weather."

Relation between Sickness and Mortality Returns.

Considerable interest attaches to this investigation since we have here the first attempt, so far as we know, made to show a definite association between the sickness experienced by any group of persons and their causes of death; here sickness from respiratory diseases goes hand-in-hand with mortality from these diseases, but no relation is stated between rheumatism and any form of death. Again, definite evidence is given as to the conditions associated with these forms of illness; thus, after stating the evidence, the authors draw the deduction that probably—

> "excess of sickness from rheumatism and respiratory diseases was due to exposure to weather; ...... work at normal temperatures in the open is more likely to cause rheumatism and respiratory disease than work at high temperatures, but under cover."

Investigations carried out by the Fatigue Board on these lines cannot fail to throw light not merely upon the occurrence of human fatigue, but also upon the causation of sickness of different kinds, and upon the relation between different forms of ill-health and different causes of death, matters concerning which there is to-day a great deal of a priori deduction to one pennyworth of fact.

Not less interesting than the high mortality from respiratory diseases is the low mortality from phthisis. Here is evidence, just as among coal-miners, of phthisis and respiratory diseases not moving together, while certain other occupations, such as printing, tailoring, and boot-making, provide instances of phthisis in excess with respiratory diseases below normal. In other words, statistics do not favour the idea that phthisis develops from bronchitis and pneumonia.

We recommend this report to all interested in industrial medicine: it is one of considerable importance. Dr. Vernon may be congratulated upon the way in which he has extracted valuable information from what must have at first appeared unpromising material.

MEDICO-LEGAL SOCIETY.—The meeting announced for Jan. 18th was postponed and will take place at 11, Chandos-street, Cavendish-square, London, W., on Jan. 28th at 8.30 P.M., when Dr. H. Gibson Sutherland will read a paper.

HUNTERIAN SOCIETY.—The annual dinner will be held on Wednesday, Feb. 2nd, at the Trocadero Restaurant, at 7 P.M. for 7.30. Dr. A. C. Jordan, President, in the chair. Ladies will be invited. Tickets, price 16s. 6d., exclusive of wine, may be obtained from Dr. R. L. Mackenzie Wallis, one of the honorary secretaries, at St. Bartholomew's Hospital, London, E.C.

The Services.

THE ARMY DENTAL CORPS.

BY Royal Warrant the formation of an Army Dental Corps has been authorised, which will be a joint service for the Army and the Royal Air Force. It will be administered by the Director-General of the Army Medical Service, and the personnel will be interchangeable between the two forces. Under regulations to be approved by the Army Council commissions, as lieutenants, will be granted to persons duly qualified, and officers will be eligible for promotion to the rank of captain on completion of three and a half years' service in the corps; while promotion to the rank of major and lieutenant-colonel to fill establishment will be made by selection of the Army Council. On the formation of the corps, certain appointments will be made in the rank of lieutenant-colonel and major to fill the establishment. The remainder of the appointments will be in the rank of lieutenant except in cases where service of three and a half years or more has been given as a temporary dental officer, when the rank of captain will be given. Service as a temporary dental officer will count towards the three and a half years for promotion to captain.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Lieut. G. L. Ritchie to be Surgeon Lieutenant Commander.

Surg.-Cmdr. J. A. L. Campbell is placed on retired list with rank of Surgeon Captain.

Surg.-Cmdrs. A. Woollcombe to the *Colossus*, and T. E. Blunt to Haslar Hospital.

ARMY MEDICAL SERVICE.

Col. E. M. Morphew is placed on half pay.

Col. C. K. Morgan retires on retired pay.

ROYAL ARMY MEDICAL CORPS.

Major J. Startin is placed on half-pay list on account of ill-health.

The undermentioned retire on retired pay: Col. J. McD. McCarthy, Lieut.-Col. A. F. Weston, and Major F. A. Stephens.

Capt. L. F. K. Way retires, receiving a gratuity.

Major F. T. Dowling relinquishes the acting rank of Lieutenant-Colonel.

Capt. D. T. M. Large to be temporary Major whilst specially employed.

Officers relinquishing their commissions:—Temp. Majors J. M. Mathieson and H. W. Wookey (retain the rank of Major). Temporary Captains retaining the rank of Captain: H. Bell, G. Cock, R. W. Harper, E. C. Lindsey, C. F. Maclachlan, O. Marshall, R. C. Phelps, H. Morell, and L. Fraser. Temporary Lieutenants retaining the rank of Lieutenant: E. P. O'Dowd and J. A. A. P. Scott.

GENERAL RESERVE OF OFFICERS.

A. L. Aymer, late Captain, R.A.M.C., to be Major.

SPECIAL RESERVE OF OFFICERS.

The undermentioned Captains relinquish their commissions and retain the rank of Captain: D. C. Pim, W. E. P. Briggs, E. R. W. Gilmore, S. P. Castell, K. McAlpine, J. L. Rowlands, and J. Aitkin.

TERRITORIAL FORCE.

Lieut.-Col. J. G. Martin to be Colonel and Assistant Director of Medical Services, West Lancashire Division.

Capt. A. A. Hingston to be Major.

Capt. R. F. Linton (late R.A.M.C.) to be Captain.

Capt. D. Buchanan is seconded.

Capt. L. R. G. de Glanville (late R.A.M.C.) to be Lieutenant.

INDIA AND THE INDIAN MEDICAL SERVICE.

Lieut.-Col. R. F. Baird, civil surgeon, Mussoorie, has been granted privilege leave for five months. Lieut.-Col. W. O. Anderson has been posted as Chief Medical Officer, N.W.F. Province. Major R. H. Lee holds charge of the appointment of Civil Surgeon, Ajmere, and Chief Medical Officer in Rajputana, temporarily in addition to his duties as Agency Surgeon in Kotah and Jhalawar. Lieut.-Col. L. J. M. Deas has been granted one year's combined leave. Major R. H. Lee officiates as Civil Surgeon, Ajmere. Lieut.-Col. F. A. Smith on return from leave has resumed charge of the duties of Residency Surgeon, Indore, and Administrative Medical Officer in Central India. Capt. T. L. Bomford has been appointed substantively pro tempore to be Resident Medical Officer, Medical College Hospital, Calcutta.

WAR HONOURS.

Appointments in the Most Excellent Order of the British Empire for services in connexion with the war have been made as follows:—Dr. M. A. J. de Lavis-Trafford, Senior Medical Officer, Red Cross Hospital, Turin, Italy, Officer of the Civil Division. Dr. W. L. Chubb, Medical Officer, Minley and Farnborough Court Auxiliary Hospitals, Hampshire, and Dr. E. Lloyd, in charge of relief and hospital work at Gaza, Members of the Civil Division.

MENTIONED IN DESPATCHES.

The following names are mentioned in a despatch, dated August 11th, from the General Commanding-in Chief, the British Army of the Black Sea:—Major-Gen. Sir M. P. C. Holt, K.C.B., K.C.M.G., D.S.O., K.H.S., A.M.S.; Lieut.-Col. and Bt. Col. W. H. S. Nickerson, V.C., C.B., C.M.G., R.A.M.C.; Capt. and Bt. Major (acting Lieut.-Col.) R. E. Barnsley, M.C., 84th Field Ambulance, R.A.M.C. Capt. W. Bird, 84th Field Ambulance, R.A.M.C.

Obituary.

CHARLES HIGGENS, F.R.C.S. ENG.,

CONSULTING OPHTHALMIC SURGEON TO GUY'S HOSPITAL.

Mr. Charles Higgens, who died suddenly while out shooting on Dec. 28th last, was born in 1846, and was educated at Brighton College and at Guy's Hospital Medical School, qualifying with the M.R.C.S. Eng., L.R.C.P. Lond., and L.S.A. in 1868. In 1871 he became F.R.C.S. Eng., and was appointed surgeon to the Central London Ophthalmic Hospital, and was assistant ophthalmic surgeon at Guy's Hospital two years later. In 1883 he became senior ophthalmic surgeon to Guy's and lecturer on ophthalmology in the medical school. Retiring in 1906 he was elected consulting surgeon. He was also for many years ophthalmic surgeon to the French Hospital and surgeon to the County of London War Hospital during the war.

Such is a brief record of Charles Higgens, who was a man of very lovable personality, and who enjoyed great and well-deserved popularity as well as the respect of a vast number of colleagues, senior and junior, and of pupils, all of whom admired his professional skill and resourcefulness and his high simple standards of conduct. The following is a picture of him by one who worked for many years in close association with him.

As a colleague Charles Higgens was markedly generous and always appreciative of work done for him by his juniors. He entrusted both his private and hospital work to them in any absence, and his experience was frankly shared with them. To his equals he was always cheery, wise, and full of common sense; and his honesty made him as ready to discuss any failures and disappointments in his cases as his successes, a trait that is not too frequently met with, while it is of far greater value for any man who is beginning an ophthalmic career to hear of the difficulties which may have to be avoided than to receive any long list of triumphs. His operating was good, he being of wiry physique, tireless, and entirely self-confident. He "impressed" his patients into confidence by his obvious capacity for the work he had to do—the assurance that he was equal to his job. *He invented no new operations, but he performed the "simple* extraction" of cataract in a perfect way, and his large practice was easily accounted for when one had an intimate knowledge of his straightforward way with his patients and his manual dexterity. As a consultant his younger colleagues *found him of great value; you could always take a difficulty* to Charles Higgens and be sure of sympathy and a concentration on it; he took the obvious and straightforward line, and was quite explicit in his decision. He did not always give elaborate reasons for his views—they were the result of long years of large and varied experience—but neither did he bother his head about possibilities and eventualities unlikely to occur.

He wrote little compared to some other ophthalmic surgeons holding positions as big; a small ophthalmic text-book of his had a large sale some years ago, but is now out of date and submerged by the never-ceasing stream of similar publications. More than anything else was he roused to write in censure of any "money-seeking merchants" in the profession, but only as a vent to his own feelings. Extreme honesty was his marked and finest trait, and such views were too outspoken for any but an editor thirsting for litigation, whom happily he never found. In his private life he was a sportsman at heart. Hunting and shooting were his relaxations on every opportunity, and advancing years never damped his ardour in these directions.

From such a description there emerges a very accurate picture of the man, and there may be added *to it some extracts from a sympathetic note received* from Mr. Tom Bird, consulting anæsthetist to Guy's Hospital, who lived with his friend for 14 years preceding Higgens's marriage. Mr. Bird says:—

"We resided together at 38, Brook-street in congenial companionship for 14 years. Our domestic partnership was broken in one sense by Higgens's marriage, but our personal and professional friendship remained inviolable until his passing away. I had reason to know the results of a great deal of his work, and positively I do not remember a single operation of his that went wrong in the half century over which my experience of that work extends—I am speaking, of course, of the operation per se. He was advanced in years when the war placed upon him hard work at the military hospital at Portland, but he delighted in the work, and *seemed sometimes to be inspired with a genuine desire to* tire out everybody else but himself. His manner of death was, I think, such as he would have wished."

Mr. Higgens left behind him very little written work beyond contributions to Guy's Hospital Reports, to the Transactions of the Royal Medical and Chirurgical Society, and of the Ophthalmological Society, and occasionally to the columns of THE LANCET. Among the last may be mentioned a note published in 1894 on 1925 Extractions of Cataract, and a paper published in 1907 on 130 Consecutive Extractions of Cataract without a Failure. In 1879 he published a little book on Ophthalmic Practice, and in 1903 the Manual of Ophthalmic Practice, referred to above, which was marked by the simplicity and straightforwardness of the accounts given of a number of diseases of the eye, and by the sensible and judicious advice in respect of treatment.

URBAN VITAL STATISTICS.

(Week ended Jan. 15th, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18½ million persons, the annual rate of mortality, which had been 15·1, 16·6, and 14·0 in the three preceding weeks, declined to 12·8 per 1000. In London, with a population of 4½ million persons, the death-rate was 12·6, or 0·3 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 3·8 in Ilford, 4·8 in Ealing, and 4·9 in Acton, to 21·7 in Merthyr Tydfil, 23·9 in Sunderland, and 24·2 in Tynemouth. The principal epidemic diseases caused 224 deaths, which corresponded to an annual rate of 0·6 per 1000, and comprised 92 from infantile diarrhœa, 69 from diphtheria, 31 from whooping-cough, 20 from measles, 8 from scarlet fever, 3 from enteric fever, and 1 from small-pox. Whooping-cough caused a death-rate of 2·0 in Warrington, but the mortality from the remaining diseases showed no marked excess in any of the towns. The fatal case of small-pox belonged to Bristol. There were 4413 cases of scarlet fever, 2597 of diphtheria, and 1 of small-pox under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 4608, 2588, and 1 respectively at the end of the previous week. The causes of 26 of the 4556 deaths in the 96 towns were uncertified, *of which 7 were registered* in Birmingham, and 3 each in Manchester and Blackpool.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 16·2, 18·4, and *18·4 in the three preceding weeks, fell to 15·9 per 1000.* The 329 deaths in Glasgow corresponded to an annual rate of 15·6 per 1000, and included 11 from infantile diarrhœa, 5 from diphtheria, 4 from whooping-cough, and 1 each from small-pox, measles, and scarlet fever. The 133 deaths in Edinburgh were equal to a rate of 15·5 per 1000, and included 7 from influenza, 3 from measles, and 1 each from scarlet fever, diphtheria, and infantile diarrhœa.

Irish Towns.—The 145 deaths in Dublin corresponded to an annual rate of 17·9, or 0·8 per 1000 above that recorded in the previous week, and included 4 from infantile diarrhœa. The 146 deaths in Belfast were equal to a rate of 18·1 per 1000, and included 2 from whooping-cough.

VITAL STATISTICS OF LONDON DURING DECEMBER, 1920.

IN the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the ten diseases notified in the table was equal to an annual rate of 12·3 per 1000 of the population, estimated at 4,358,309 persons; in the three preceding months the rates had been 11·3, 16·3, and 15·8 per 1000. Among the metropolitan boroughs the lowest rates from these diseases were recorded in *Paddington, Chelsea, the City* of Westminster, St. Marylebone, and Lambeth; and the highest in Hammersmith, Stoke Newington, Bethnal Green, Stepney, Poplar, and Deptford. One case of small-pox was notified during the month from the borough of Hampstead. The prevalence of scarlet fever was 26 per cent. less than in the preceding month; this disease was proportionally most prevalent in Hammersmith, Bethnal Green, Stepney, Poplar, Bermondsey, and Deptford. The Metropolitan Asylums Hospitals contained 4729 scarlet fever patients at the end of the month, against 3683, 5117, and 5508 at the end of the three preceding months; the weekly admissions averaged 590,

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING DECEMBER, 1920.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1919.	Notified Cases of Infectious Disease.												Deaths from Principal Infectious Diseases.									Deaths from all causes.	Death-rate per 1000 living.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	4,358,309	1	3150	1646	—	28	1	43	272	15	—	5156	12·3	—	7	34	118	19	1	90	269	0·6	6165	14·8
West Districts:																								
Paddington	143,936	—	71	37	—	1	—	4	6	1	—	120	8·7	—	2	—	4	1	—	1	8	0·6	200	14·5
Kensington	157,885	—	102	27	—	3	—	—	6	1	—	139	9·2	—	—	—	2	3	—	6	11	0·7	270	17·8
Hammersmith ...	130,931	—	158	45	—	—	—	4	11	—	—	218	17·4	—	—	1	6	1	—	2	10	0·8	189	15·0
Fulham	152,543	—	131	80	—	2	—	1	13	1	—	228	15·6	—	—	2	3	—	—	4	9	0·6	213	14·6
Chelsea	60,573	—	21	18	—	—	—	—	3	—	—	42	7·2	—	1	—	1	—	—	1	3	0·5	88	15·2
City of Westminst'r	127,533	—	34	46	—	1	—	1	11	—	—	93	7·6	—	—	—	2	—	—	5	7	0·6	191	15·6
North Districts:																								
St. Marylebone ...	97,953	—	51	12	—	—	—	—	7	—	—	70	7·5	—	—	1	—	—	—	2	3	0·3	121	12·9
Hampstead	88,012	1	58	26	—	1	—	—	6	—	—	92	10·9	—	—	2	—	—	—	—	2	0·2	93	11·0
St. Pancras	219,434	—	101	76	—	2	—	1	16	1	—	197	9·4	—	1	1	5	—	1	3	11	0·5	312	14·8
Islington	323,034	—	170	214	—	1	—	1	12	1	—	399	12·9	—	—	2	19	1	—	10	32	1·0	502	16·2
Stoke Newington...	50,954	—	47	34	—	1	—	—	3	—	—	85	17·4	—	—	2	7	1	—	1	11	2·3	68	13·9
Hackney	216,736	—	163	79	—	—	—	4	16	1	—	263	12·7	—	—	1	6	1	—	6	14	0·7	323	15·5
Central Districts:																								
Holborn	39,156	—	12	34	—	1	—	—	2	—	—	49	13·4	—	—	1	2	1	—	1	5	1·4	60	16·4
Finsbury	75,291	—	60	30	—	—	—	2	5	—	—	97	13·4	—	—	2	5	1	—	—	8	1·1	128	17·7
City of London	13,893	—	7	5	—	—	—	—	—	—	—	12	9·0	—	—	—	—	—	—	—	—	—	19	14·3
East Districts:																								
Shoreditch	93,134	—	58	51	—	1	—	—	9	1	—	120	12·8	—	1	1	2	—	—	4	8	0·9	141	15·0
Bethnal Green ...	110,035	—	122	56	—	—	—	—	13	—	—	191	18·1	—	1	—	—	3	—	2	6	0·6	172	16·3
Stepney	232,506	—	287	100	—	1	—	4	17	3	—	412	18·5	—	—	3	6	—	—	6	15	0·7	335	15·0
Poplar	153,644	—	205	96	—	2	—	1	7	3	—	315	21·4	—	1	3	7	—	—	3	14	1·0	227	15·4
South Districts:																								
Southwark	179,971	—	108	42	—	2	—	1	21	—	—	174	10·1	—	—	—	5	1	—	2	8	0·5	306	17·7
Bermondsey	124,239	—	139	38	—	—	1	3	10	—	—	191	16·0	—	—	—	1	1	—	2	4	0·3	163	13·7
Lambeth...	282,322	—	134	60	—	4	—	5	17	—	—	220	8·1	—	—	3	8	—	—	8	19	0·7	443	16·4
Battersea	159,316	—	91	57	—	—	—	2	12	—	—	162	10·6	—	—	—	3	3	—	1	7	0·5	218	14·3
Wandsworth... ...	333,693	—	226	112	—	—	—	1	18	2	—	359	11·2	—	—	2	7	—	—	5	14	0·4	392	12·3
Camberwell	273,602	—	182	93	—	3	—	1	17	—	—	296	11·3	—	—	3	7	—	—	9	19	0·7	366	13·9
Deptford...	111,205	—	147	29	—	1	—	—	6	—	—	183	17·2	—	—	—	1	—	—	3	4	0·4	142	13·3
Greenwich	98,484	—	82	50	—	—	—	2	2	—	—	136	14·4	—	—	—	2	—	—	1	3	0·3	110	11·6
Lewisham	157,754	—	90	57	—	1	—	2	5	—	—	155	9·6	—	—	3	4	—	—	1	8	0·5	215	13·4
Woolwich	136,237	—	92	42	—	—	—	3	1	—	—	138	10·6	—	—	1	3	1	—	1	6	0·5	158	12·1
Port of London ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

against 603, 873, and 780 in the three preceding months. Diphtheria was slightly less prevalent than in the preceding month; the greatest proportional prevalence of this disease was recorded in Fulham, Islington, Stoke Newington, Holborn, Shoreditch, and Poplar. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1773, 2284, and 2604 at the end of the three preceding months, numbered 2615 at the end of December; the weekly admissions averaged 316, against 266, 364, and 360 in the three preceding months. The prevalence of enteric fever was about equal to that in the four preceding months; of the 28 cases notified during the month, 4 belonged to Lambeth, 3 to Kensington, 3 to Camberwell, and 2 each to Fulham, St. Pancras, Poplar, and Southwark. There were 15 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 14, 19, and 16 at the end of the three preceding months; the weekly admissions averaged 2, against 3, 4, and 3 in the three preceding months. Erysipelas was proportionally most prevalent in Hammersmith, Fulham, the City of Westminster, Shoreditch, Bethnal Green, and Southwark. The 43 cases of puerperal fever included 5 in Lambeth, 4 each in Paddington, Hammersmith, Hackney, and Stepney, 3 in Bermondsey, and 3 in Woolwich. The 15 cases of cerebrospinal meningitis included 3 in Stepney, 3 in Poplar, and 2 in Wandsworth. No case of poliomyelitis was notified during the month.

The mortality statistics in the table relate to the deaths of civilians actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the five weeks ended Jan. 1st, 1921, the deaths of 6165 London residents were registered, equal to an annual rate of 14·8 per 1000; in the three preceding months the rates had been 9·9, 10·5, and 13·6 per 1000. The death-rates ranged from 11·0 in Hampstead, 11·6 in Greenwich, 12·1 in Woolwich, 12·3 in Wandsworth, 12·9 in St. Marylebone, 13·3 in Deptford, and 13·4 in Lewisham, to 16·2 in Islington, 16·3 in Bethnal Green, 16·4 in Holborn, 16·4 in Lambeth, 17·7 in Finsbury, 17·7 in Southwark, and 17·8 in Kensington. The 6165 deaths from all causes included 269 deaths which were referred to the principal infectious diseases; of these, 7 resulted from measles, 34 from scarlet fever, 118 from diphtheria, 19 from whooping-cough, 1 from enteric fever, and 90 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded in the City of London. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in St. Marylebone, Hampstead, Bermondsey, Wandsworth, Deptford, and Greenwich; and the highest in Islington, Stoke Newington, Holborn, Finsbury, Shoreditch, and Poplar. The 7 deaths from measles were less than one-twelfth of the average number in the corresponding period of the five preceding years; of these, 2 belonged to Paddington. The 34 fatal cases of scarlet fever exceeded the average by 18; of these, 3 belonged to each of the boroughs of Stepney, Poplar, Lambeth, Camberwell, and Lewisham. The 118 deaths from diphtheria exceeded the average number by 33; the greatest proportional mortality from this disease occurred in Hammersmith, Islington, Stoke Newington, Holborn, Finsbury, and Poplar. The 19 fatal cases of whooping-cough were about one-third of the average; of these, 3 belonged to Kensington, 3 to Bethnal Green, and 3 to Battersea. One death from enteric fever was registered during the month, against an average of 6. The 90 fatal cases of infantile diarrhœa showed a decline of 10 from the average; the greatest proportional mortality from this disease occurred in Kensington, the City of Westminster, Islington, Shoreditch, Lambeth, and Camberwell. In conclusion, it may be stated that the aggregate mortality in London during December from these principal infectious diseases was 23 per cent. below the average in the corresponding period of the five preceding years.

ROYAL SANITARY INSTITUTE.—A sessional meeting will be held on Jan. 28th in the Guildhall, Exeter, at 4.30 P.M., jointly with the West of England branch of the Society of Medical Officers of Health, when a discussion on the Sanatorium Question will be opened by Dr. E. Ward. The chair will be taken by Professor H. R. Kenwood. On Jan. 29th at 9.30 A.M. a short discussion on Housing will be opened by Dr. P. H. Stirk and will be followed by a visit to new houses and insanitary areas. Those proposing to attend are asked to notify the honorary local secretary, Dr. P. H. Stirk, Southernhay W., Exeter, not later than Jan. 22nd.

Correspondence.

"Audi alteram partem."

TABES: ITS EARLY RECOGNITION.

To the Editor of THE LANCET.

SIR,—Dr. John Donald accuses me of pessimism in regard to the treatment of syphilis on the ground that I would advise every patient who contracts that disease to be treated at intervals for the rest of his life. He states that this must not pass unchallenged, but fails to lay down anything in the way of a challenge. The best he can do is to state that he discharged the cases of syphilis which he treated in the army "with much assurance," and this is exactly what the medical profession has been doing without any justification for many years. The position is much the same as in the old days of mercury. If you take a hundred cases of syphilis and treat them all according to the standard methods of the day you are justified in believing that a certain proportion will have been cured, but you cannot honestly tell any single one of these patients that his disease has been eradicated. This is not pessimism, it is the truth. Personally I am optimistic enough to believe that if this truthful line were adopted and the patients urged to have periodic courses of treatment for the rest of their lives we should see very much less of the late syphilitic diseases than we do. As it is, a large amount of our time is taken up with the treatment of syphilitic affections of patients who have been told years ago that they have been cured of their disease, and this must go on so long as we lack the means of determining whether a cure of the disease has been effected.

I am, Sir, yours faithfully,

E. FARQUHAR BUZZARD.

Wimpole-street, W., Jan. 17th, 1921.

To the Editor of THE LANCET.

SIR,—The comments made by Dr. John Donald in THE LANCET of Jan. 15th upon Dr. E. Farquhar Buzzard's article on Jan. 8th, under this title, and with reference to the duration of the treatment of syphilis, are somewhat extraordinary. In his article Dr. Buzzard expresses the opinion—the correctness of which is daily becoming more recognised by syphilologists—that it is impossible to say in any given instance that a patient is cured of syphilis. The most that can be done is to tell the patient that he is non-infectious. To get a patient to this stage is comparatively easy. But, having reached this stage, and having obtained a negative blood-Wassermann, it is certainly not justifiable to stop all treatment and give the assurance that aortitis, aneurysm, or central nervous system syphilis are now impossible. The tyranny of the Wassermann reaction is at its worst when, after a short course of treatment and a negative blood test, the negative finding is accepted as a criterion of cure. It is by no means uncommon, even after prolonged treatment of primary syphilis, to find the blood negative and the cerebro-spinal fluid positive. It is unfortunate that when early syphilis is treated by the general practitioner, the cerebro-spinal fluid is so seldom subjected to serological and cytological examination. The treatment of syphilis is something more than trying to obtain negative blood-Wassermann results. In many cases which are non-infectious a permanent negative is impossible. It is not rare to find the blood negative and the patient suffering from undoubted cutaneous syphilis. The position is that we cannot guarantee to cure syphilis. As a test of cure the Wassermann reaction is treacherous—perhaps worthless. The only real test is an undoubted re-infection, but many of the reported cases are merely recurrences.

Dr. Buzzard's conclusions are perfectly correct. The tabetic must remain under treatment for the remainder of his life. It will be safer for the man with the primary chancre if he does likewise. Once having had syphilis, the only thing which precludes the reappearance of some syphilitic manifestation after the stoppage of treatment is death. Re-infection, the only test of cure, is rare. The long sorrowful tale of vascular degenerations and the experience of the neurologists show that, even after what is generally considered adequate treatment and cure, we have been living in a fool's paradise. There has been too much foolish optimism in burying our heads, ostrich-like, under sheaves of negative blood-Wassermann reports and imagining ourselves secure.

Dr. Donald rightly insists upon early diagnosis. The most severe attack upon syphilis can only be made in the chancre stage; but that attack, if it is to be of any avail, must be an overwhelming one. When Dr. Donald ventures "the dogmatic assertion that if a patient first comes under treatment while the blood is still negative (it is here the Wassermann test is of prime value) and receives the usual course of 2·6 g. of "606" and 8 gr. of mercury, the disease will be 'knocked out,'" he is merely scattering a few more negative Wassermann reports upon the head of the ostrich. His parenthetical remark is somewhat incomprehensible, and the "knocking out" of syphilis with 2·6 g. of "606" and 8 gr. of mercury is like trying to cure the Pope of the gout by putting a mustard plaster on the dome of St. Peter's.

Nervous syphilis has, within the last decade, become 20 times more frequent than it was in the preceding one. The main causes for this are undoubtedly inadequate treatment and the fetish of the negative blood-Wassermann as the criterion of cure. Salvarsan, properly used and its limitations appreciated, is a most valuable drug. It rapidly puts the patient in a non-infectious state, and it causes the disappearance of symptoms. But neither salvarsan nor mercury, either combined or separately, cures syphilis except in very rare cases. The curse of salvarsan is that both the patient and his medical attendant are too prone to regard the rapid disappearance of symptoms as equivalent to cure, and the result is that only the totally inadequate short course as advocated by Dr. Donald is administered.

My experience in dealing with syphilis in the army, at a venereal clinic and in private, is that it is just the cases which have been treated along these lines who are now appearing with symptoms of central nervous system syphilis. The course of treatment I now adopt in primary syphilis is based upon an appreciation of these facts, and has for its object the protection of this master tissue of the body. It is as follows:—Neokharsivan is given intravenously once weekly for six weeks, then 10 minims of mercurial cream are injected intramuscularly for four weeks. Then follow four weekly injections of neokharsivan and another four weeks of intramuscular mercury. Neokharsivan is again given for the succeeding three weeks, and then intramuscular mercury for four weeks. This is succeeded by two weekly doses of neokharsivan and the mercury is repeated for another month. A week after the last mercury injection one dose of neokharsivan is administered. The whole course lasts 32 weeks. The patient returns in four months, when the nervous system and the cerebro-spinal fluid are examined. The symptoms having disappeared, salvarsan is now replaced by mercury alone, of which two courses are given a year for the next two years. The patient is then recommended, as an "insurance policy," to have an annual mercurial course for the rest of his life.

Sufficient time has not yet elapsed to publish the after-histories of these cases. A course of treatment similar to the foregoing has been in operation for over a year at the Illinois Social Hygienic Dispensary, Chicago, and in this country, at the Venereal Clinic at Wigan. It is found that both at clinics and in private practice patients are very amenable to this treatment and attend regularly when they have been properly impressed. If several clinics were to carry out this scheme it would be interesting to compare results in ten years' time.

I am, Sir, yours faithfully,

Manchester, Jan. 15th, 1921. E. T. BURKE.

THE FUTURE OF THE POOR-LAW INFIRMARIES.

To the Editor of The Lancet.

Sir,—Dr. C. M. Wilson's letter in your issue of Jan. 15th may soothe hurt feelings, but he must forgive those who read his address and took it that he intended the plain meaning of his words. The medical superintendents are, to a peculiar degree, responsible for the infirmaries. Some of us have spent many years confronting their problems. Dr. Wilson proclaims our defects and does not hesitate to instruct us as to how we should proceed. But in one direction, at least, he does not, in my opinion, point out the right path of progress. He appears to indicate that a medical staff of the quality and dimensions of that of a general teaching hospital is the goal towards which the infirmaries should strive. If we are wise we shall attempt no such thing. Whatever changes occur the infirmaries will remain a charge upon public funds. They must be conducted economically. Every member of the medical staffs will quite justly demand to be properly remunerated. It is clear also that the main, almost the sole, function of the infirmaries will continue to be the treatment of the sick. They will never take any but a quite secondary place in medical education. Under such circumstances a staff of 20 residents and 30 consultants for, say, 500 beds would be immensely costly, quite unnecessary, and indeed preposterous.

At the present time the basis of the medical staffs of the infirmaries is the general practitioner, for what in the world else is the resident medical officer? This must remain. The medical work must be carried out mainly by general practitioners, whether whole or part time is debatable, but still general practitioners. And the specialist must play precisely the same rôle in the infirmaries as he plays in general practice. This principle is, in my opinion, fundamental.

Along these lines the medical superintendents have striven and are striving to progress. Their object is to obtain for the infirmaries an adequate—that is to say, what they consider an adequate—staff of efficient general practitioners or medical officers as they are usually called, and to make such provision as will ensure that they can obtain the services of specialists when they require them. They do not wish, or, at any rate they should not wish, to staff the infirmaries with specialists as the hospitals are staffed, and reduce the medical officers to the position of dressers or clerks.

With regard to the question of linking up with the general hospitals, I believe this to be cordially desired by the majority of medical superintendents. Dr. Wilson agrees that the spirit in which we approach one another is all-important. It is because they inevitably arouse resentment and antagonism that I beg that, in future, we may be spared the prominent publication of such essays by amateurs as were delivered at the Harveian Society.

I am, Sir, yours faithfully,
H. W. Bruce,
Medical Superintendent, Southwark Infirmary, and
Secretary to the Society of Infirmary
Medical Superintendents.
Jan. 15th, 1921.

PNEUMONIA AND MEMBRANOUS COLITIS.

To the Editor of The Lancet.

Sir,—Everyone will agree with Dr. E. Cronin Lowe (The Lancet, Jan. 15th, p. 112) as to the rarity of membranous colitis with pneumonia, but it is of interest that Bristowe in 1884, in his "Theory and Practice of Medicine," fifth edition, p. 407, writing of the morbid appearances met with in pneumonia, mentions "intestinal congestion, with sometimes membranous patches on the mucous surface of the large intestine." The occurrence of acute colitis with pneumonia is described in the article on Diseases of the Colon in Allbutt and Rolleston's "System of Medicine (1907, Vol. III., p. 815), and it is stated to be extremely rare. There is nothing to show whether in these cases the pneumonia was, as in Dr. Lowe's cases, influenzal, but as his cases are described as septicæmic, it is to be remembered that several cases of severe septic acute colitis, sometimes membranous, are mentioned on p. 814 and p. 824 of this article. In these cases the formation of a membrane is only an expression of the intensity of the inflammatory process. Very occasionally pneumonic infection may show itself in the bowel. I remember a man who was taken ill suddenly with a rigor and high temperature; he had also bloody diarrhœa, but no abnormal signs in his lungs. The diagnosis of pneumococcal infection was made and turned out to be correct, for next day the patient had characteristic pulmonary signs.

I am, Sir, yours faithfully,
London, Jan. 15th, 1921. W. Hale-White.

THE CULTURAL DIAGNOSIS OF ENTERIC FEVER.

To the Editor of The Lancet.

Sir,—The article which Dr. J. C. G. Ledingham contributed to your issue of Jan. 8th, and the letter from Dr. R. P. Garrow which appears to-day, indicate the serious disagreement still existing among those who are interested in the diagnosis of enteric infections among inoculated individuals, whether from the clinical or the bacteriological side, with regard to the interpretation of repeated agglutination tests. As the question is one of considerable importance, and as further discussion seems inevitable, and indeed desirable, may I suggest that the first requisite for a profitable consideration of the matter is a clear definition of the points at issue? It is unlikely that any argument which lays stress on an opposition between the clinical and bacteriological points of view, or which attributes to an opponent "the desire" to prove a given hypothesis will lead to any satisfactory result. Most of those, clinicians or bacteriologists, who are concerned in the solution of such a question are interested only in arriving at the truth. The regrettable habit of drawing an unhelpful distinction between the acquirement of new knowledge and its application to practical medicine, to which you have yourself drawn attention, and which is usually marked by the use of the word "academic," merely indicates a lack of understanding of scientific method.

The question raised by Dr. Ledingham is, however, of the first importance, and it was considered at some length in the report[1] from which you have already allowed me to quote. I do not suppose that there is a single bacteriologist who would not prefer to base a diagnosis of enteric infection on a positive blood-culture rather than on the results of agglutination tests. The position is simply this. It has been found by numerous workers that a proportion of cases of undiagnosed pyrexia, which have yielded consistently negative results on repeated cultural examination, show an agglutination curve having all the characteristics which have been accepted by certain authorities as diagnostic of an active infection with the organism concerned. In some of these cases the cultural tests have of necessity been carried out under conditions so disadvantageous as to minimise the significance of the negative results obtained; in others they have been made under circumstances entirely favourable to successful isolation of the infecting organism. The problem remains the same. What meaning are we to attach to a "typical" agglutination curve in the absence of confirmatory evidence? The answer to this question would seem to depend mainly on whether or no similar fluctuations can be shown to occur in cases in which enteric infection can be excluded. If so, then we must clearly discard all evidence as to the incidence of this disease among our armies in the late war, which depends upon this method of investigation.

The conclusion to which our own work led us, and which still expresses my own opinion, will be found in our report:—

"We must own to a considerable reluctance to rely on diagnoses made on serological tests alone. ...... Having regard to all the facts, including the clinical features of the cases, it seems to us that the weight of evidence is clearly in favour of the probable correctness of the serological diagnoses. ...... This investigation yields a tentative answer (to the question of the probable proportion of enteric infections among cases of undiagnosed pyrexia among our armies in France) which will be confirmed or refuted by the accumulation of evidence obtained by other workers."

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[1] Topley, Platts, and Imrie (1920): A Report on the Probable Proportion of Enteric Infections among Undiagnosed Febrile Cases Invalided from the Western Front since October, 1916. Med. Res. Council. Spec. Rep. Series, No. 48.

I am, Sir, yours faithfully,
W. W. C. TOPLEY.

Institute of Pathology, Charing Cross Hospital
Medical School, Jan. 15th, 1921.

THE INSURANCE MEDICAL RECORDS.

To the Editor of THE LANCET.

SIR,—Your leading article in THE LANCET for Jan. 8th will cause considerable distress, a great deal of irritation and ill-feeling among medical men, and particularly in the section unfortunately situated as "panel practitioners." The records are of the most foolish type for statistics; they were never submitted for the approval or otherwise of those who have to keep them, and many, if not most, will consider they are being put to do, at a great expense of time, very useless work. But the chief feeling caused by your article will be that you should lend your journal for propaganda work which is far from the interests of, I hope, a great proportion of your readers and to lend your pages for an article apparently written by one who will never be called upon to keep these records or to sign insurance patients' certificates. Personally I always thought THE LANCET was a "cut" above the tone adopted, which savours of Government contamination.

I am sure that if you, Sir, will put the question in your next issue, and allow it to be answered by postcard, there will be very few panel practitioners found in favour of the present type of records, which, I believe, are to cost the country in taxes another £30,000 a year.—I am, Sir, yours faithfully,

Kencott, Glos., Jan. 17th, 1921. F. W. PILKINGTON.

⁂ The form of the records is imposed by the need to limit the clerical labours, inasmuch as the records on ethical grounds must be kept by practitioners. We agree that in fuller shape such information would have far greater scientific value. Our correspondent has not read very carefully the article which he condemns, or he would have seen how far we are at one with him.—ED. L.

POST-OPERATIVE MORTALITY OF APPENDICITIS.

To the Editor of THE LANCET.

SIR,—Dr. Herbert H. Brown, writing in association with Mr. H. M. Cade on this subject in THE LANCET for Jan. 15th, provides food for serious thought. He states that during the first 48 hours after the commencement of a case and also during the second week, when an abscess may have formed, operation is practically safe, but during the intervening period there is great danger, even to the extent of 22·7 per cent. of a fatal issue. Those among us who can look back for 30 or 40 years to a time when the terms typhlitis and perityphlitis were in common use will remember cases of complete recovery after large swellings in the region of the right iliac fossa, and which under watchful and expectant treatment wholly disappeared, leaving no ill-results. My practice has always been to watch cases carefully, and not to advise operation until I have considered it necessary, and as over a period of 40 years I can recall no fatal case in my practice I am inclined to think there are people living who if they had been hurried off for operation would have helped to swell the high death-rate. It is quite certain that in general practice the great majority of cases will not come under the surgeon's hands within the first 48 hours, and in face of the statistics given in Dr. Brown's article it surely is both logically and morally wrong to put any patient to so great a risk during the dangerous period, except in very urgent cases.

I am, Sirs, yours faithfully,
F. L. NICHOLLS, O.B.E.

Fulbourn, near Cambridge, Jan. 19th, 1921.

MEDICAL PRACTICE BY FOREIGNERS IN SPAIN.

To the Editor of THE LANCET.

SIR,—In your issue of Jan. 1st (p. 58) you give the conditions as laid down by an old law which has just been rescinded by a Royal decree of Dec. 27th, 1920, owing to agitation by the Spanish medical profession. Foreigners will now only be admitted to practice in Spain if their respective countries give equal facilities to Spanish medical men, otherwise they must go through the whole course of study. The Royal decree translated reads as follows:—

Art. (1) The Article 96 of the law of public instruction of the year 1857 is re-established in all its vigour and effect, so far as it refers to temporal registration of diplomas obtained in foreign countries authorising practice in Spain.

(2) The Ministers of Public Instruction and Fomento (agriculture, engineering, &c.) in future can only authorise the registration of diplomas of the following professions: medical, dental, engineering, and foremen of mines, to such, in whose own country, diplomas conferred in Spain for the said professions will be recognised for registration and permission to practise.

(3) As soon as the time expires of authorised foreign diplomas of above professions such authorisation lapses.

(4) Any existing decree opposing the present to be null and void.

This decision is of importance to the medical profession in your country.

I am, Sir, yours faithfully,
C. W. HUYSSEN,
Surgeon to Rio-Tinto Cos. Hospital in Huelva.

Huelva, Jan. 8th, 1921.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—A quarterly meeting of the Council was held on Jan. 13th, Sir Anthony Bowlby being in the chair.—The President reported that the Prince of Wales would be present at the Hunterian festival dinner on Feb. 14th to receive the Diploma of Honorary Fellowship, to which His Royal Highness was elected on July 24th, 1919.—A vote of congratulation was passed to Sir Charles Ryall on having received the honour of knighthood.—Mr. C. H. Fagge was introduced and admitted a member of the Court of Examiners.—Reports were read from the secretary of the Conjoint Examining Board respecting candidates found qualified for the Diploma of Public Health of the two Colleges, for the Diploma in Tropical Medicine and Hygiene, and for the Diploma in Psychological Medicine. A list of the successful candidates is given below.—A letter was read from Mr. Philip Franklin stating that the Onodi Collection of Nasal Anatomy had been purchased by the Onodi Committee with the object of presenting it to the Royal College of Surgeons of England. It was agreed, on the recommendation of the Museum Committee, that Mr. Philip Franklin be informed that the Council is willing to accept the Onodi collection and to undertake the responsibility of preparing and mounting the specimens for exhibition in the Museum, and that he be requested to convey to the donors the thanks of the Council. The Conservator expressed the opinion that it would take the greater part of two years for the Museum Prosector to prepare the specimens for exhibition, and that the cost of their preparation would amount to about £650.—A report was received from the Finance Committee recommending a rearrangement of fees payable for admission to the several examinations for the Licence in Dental Surgery. This was adopted and was rendered necessary by a revision of the Regulations made by the Council on the recommendation of the Board of Examiners in Dental Surgery. Under these revised Regulations the examinations in General and Dental Anatomy and Physiology are separated from the examinations in General and Dental Surgery and Pathology, and now form Part III. of the First Professional Examination for the Licence, and candidates may enter for examination in these subjects after completing six months' study during the ordinary sessions at a recognised medical and dental school.—Mr. W. G. Spencer was reappointed member of the Central Council for District Nursing in London for three years from Jan. 1st, 1921.—Sir William Thorburn was appointed a member of the Court of the University of Liverpool for three years from Jan. 1st, 1921.—On a motion of Sir George Makins a committee was appointed to consider the question of establishing additional examinations in Ophthalmology and in Oto-Rhino-Laryngology for candidates who desire to take them after having passed the examination for the Fellowship.

Diplomas in Psychological Medicine, in Tropical Medicine and Hygiene, and in Public Health were conferred (conjointly with the Royal College of Physicians) upon the following candidates:—

Diploma in Psychological Medicine.—M. Dia, Cairo and St. Mary's; E. D. T. Hayes, Trin. Coll., Dublin; O. Sidney Martin, Univ. Coll.; and H. W. Parnis, Malta.

Diploma in Tropical Medicine and Hygiene.—G. V. Allen, Belfast and London Sch. of Trop. Med.; J. Anderson, Glasgow and London Sch. of Trop. Med.; S. C. Basu, Calcutta and London Sch. of Trop. Med.; C. J. Caddick and W. B. A. K. Cullen, Edinburgh and London Sch. of Trop. Med.; A. Dasgupta, Calcutta and London Sch. of Trop. Med.; A. A. Denham, Edinburgh and London Sch. of Trop. Med.; A. M. El Kirdany, St. Bart.'s and London Sch. of Trop. Med.; R. E. Flowerdew, Aberdeen and London Sch. of Trop. Med.; C. H. Heppenstall, Leeds and London Sch. of Trop. Med.; L. C. D. Hermitte, Edinburgh and London Sch. of Trop. Med.; F. V. Jacques, Bristol and London Sch. of Trop. Med.; Z. Khaled, Cairo and London Sch. of Trop. Med.; P. T. Liang, St. Thomas's and London Sch. of Trop. Med.; R. H. Liscombe, Univ. Coll. and London Sch. of Trop. Med.; A. R. Mehta, Lahore and London Sch. of Trop. Med.; A. S. Paranjpe, Edinburgh and London Sch. of Trop. Med.; H. B. Parker, London Sch. of Trop. Med.; A. H. Patel, Bombay and London Sch. of Trop. Med.; Evelyn Bessie Salter, Bristol and London Sch. of Trop. Med.; R. Silcock, St. Mary's and London Sch. of Trop. Med.; S. Somasundram, Ceylon and London Sch. of Trop. Med.; W. R. Taylor and A. S. Westmorland, St. Mary's and London Sch. of Trop. Med.; and H. G. Wiltshire, Cambridge and London Sch. of Trop. Med.

Diploma in Public Health.—P. F. Alderson, Middlesex and Haslar; Madeline S. Baker, Dublin; T. B. Batchelor, Oxford, London, and King's Coll.; W. W. Boyce, Dublin; J. W. Caton, Durham and Univ. Coll.; H. W. Catto, Guy's; K. Comyn, Cambridge and King's Coll.; T. A. Fuller, Edinburgh and Univ. Coll.; K. A. Gandhi, Bombay and Univ. Coll.; D. H. Goffen, Univ. Coll.; E. St. G. S. Goodwin, Cambridge and St. Thomas's; D. N. Gore, Bombay and Univ. Coll.; A. J. B. Griffin, Liverpool and Univ. Coll.; P. H. Henderson, Edinburgh and Royal Army Med. Coll.; Eileen Mabel Hewitt, Dublin and King's Coll.; E. T. Holden, Birmingham and Cardiff; P. G. Horsburgh, St. Bart.'s and Univ. Coll.; T. S. Keith, Guy's; N. S. Kotwall, Bombay and Roy. Inst. Pub. Health; T. A. Lawder, Dublin and Univ. Coll.; J. T. Macnab, London and Univ. Coll.; A. N. R. McNeill, Glasgow; C. T. Maitland, St. Bart.'s; Mary Martin, Edinburgh and London; J. S. Ranson, King's Coll.; H. J. Simson, Edinburgh and Univ. Coll.; O. C. S. Tandy, Dublin and King's Coll.; A. Viney, St. Thomas's and Univ. Coll.; A. S. Wakely, King's Coll.; and A. Woollcombe, St. Bart.'s and Univ. Coll.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Second Professional Examination in anatomy and physiology, held from Jan. 3rd to 9th, for which 129 candidates presented themselves, 70 were approved and 59 were rejected. The following are the names and medical schools of the successful candidates:—

W. E. Airey, Manchester; H. S. Allen, Cambridge and St. Thomas's; R. H. Amin, Guy's; W. B. Arnold, St. Bart.'s; E. E. E. Attale, St. Thomas's; G. F. Axon, King's Coll.; N. F. Azer, Cairo and King's Coll.; M. Bannounah, Guy's; R. C. Baxter, Charing Cross; D. R. Blunn, London; A. J. Boase, St. Thomas's; W. R. B. Booth and J. Chronnell, Manchester; W. Clark, King's Coll.; D. B. D'Alwis, Ceylon and London; J. R. Davies, St. Thomas's; H. C. de Penning, St. Mary's; G. A. Dolman, Cambridge; G. P. Driver, St. Bart.'s; Helen Mary Du Buisson, King's Coll; R. G. Eastwood, Leeds; Winifred Phœbe Edmunds, King's Coll.; L. C. J. Edwards, London; M. Farid, Birmingham; J. L. Faull, Guy's, Dorothy E. Galbraith, London Sch. of Med. for Women; J. E. Gardner, Edinburgh; F. W. Gayford, Middlesex; G. H. C. Harding, Liverpool, M. Hawke, Guy's; D. W. Hoodless, King's Coll.; L. G. Housden, Guy's; Katherine Edith Winifred Hulse, King's Coll.; Theresa Hettie Humphries, London Sch. of Med. for Women; N. I. H. Ibrahim, Sheffield; C. M. Jennings, W. M. Jones, and C. de W. Kiteat, St. Bart.'s; A. H. Kretchmar, Edinburgh; J. L. Lewthwaite, Liverpool; P. M. Lissack and J. Massie, St. Thomas's; Gertrude Mary Mayhall, Leeds; V. S. Monie, Edinburgh; O. G. Morris, Guy's; L. N. Moss, Cambridge; E. E. Neser, Guy's; A. P. Pearce, Leeds; V. D. Pennefather, L. S. Perera, and A. J. Reed, London; G. F. Rowbotham, Manchester; Mary Kathleen Ruddy and H. Rundstrom, King's Coll.; A. Schofield, Cambridge and St. Mary's; T. Seshachalam, Madras and London; K. S. M. Smith and N. Smith, St. Bart.'s; Edith Clara Summerskill, King's Coll.; H. H. D. Sutherland, St. Bart.'s; R. G. Tame, Guy's, T. B. Thomas, St. Bart.'s; A. Tom, Guy's; Henrietta Trend, London Sch. of Med. for Women; G. C. Vaughan, Birmingham; J. N. Wheatley, London; May Whittaker, King's Coll.; H. C. M. Williams, St. Bart.'s; and F. Woolford and T. Wooldridge, Guy's.

Materia Medica and Pharmacology.—Janet Mary Breakwell, Cambridge and Birmingham; G. Cohen, Guy's; A. C. D'Souza, Manchester; M. P. de Villiers and Margaret Findlay, London Sch. of Med. for Women; J. Fredman, St. Thomas's; G. Giloi, Middlesex; A. Gordon, M. Honigsberger, and C. E. Keast, Guy's; Doris Ethel Keeves, Birmingham; K. L. E. Kellgren, London Sch. of Med. for Women; M. A. Lautre, St. Thomas's; P. J. Levy, Guy's; Edna Lock, King's Coll.; J. Lurie, St. Thomas's; F. Martin, Guy's; E. B. Moffat, London Sch. of Med. for Women; A. L. te W. Naude, St. Thomas's; E. E. Neser, Guy's; R. F. A. Philpott, Oxford, Edinburgh, and St. Thomas's; F. R. Ratnagar, Guy's; J. Seelenfreund, London; Mary Agnes Elizabeth Somers, Bristol; Y. A. Sunbul, St. Mary's; Lucy Maud Summerhayes, St. George's; H. G. Triay, Edinburgh and St. Thomas's; F. S. Vaughan, Birmingham; M. Weinbren and R. E. Williams, Guy's.

UNIVERSITY OF OXFORD.—*Radcliffe Travelling Fellowship, 1921.*—An examination for a Fellowship, of the annual value of £200, tenable for three years, will be held during the present term, commencing on Tuesday, Feb. 22nd, at 10 A.M. Candidates must have passed the Final B.M. Examination not more than four years ago. The successful candidate must before election declare that he intends to devote himself during the period of his tenure of the Fellowship to the study of medical science and to travel abroad with a view to that study. The examination will occupy four days. Papers will be set in physiology, pathology, and preventive medicine, and a subject will be proposed for an essay; there will also be a practical examination in pathology. Any candidate desiring to offer in addition a special branch of either medicine or surgery must send notice of this to the Regius Professor of Medicine on or before Feb. 2nd. All intending candidates should send their names, addresses, qualifications, &c., to the Regius Professor of Medicine, University Museum, Oxford, on or before Feb. 2nd.

Ethnology of the Nile Valley.—A special course of lectures on the Ethnology of the Nile Valley will be delivered at Barnet House on Mondays at 5 P.M. during the present term by Dr. C. G. Seligman, F.R.S.

Degree days.—The degree days appointed for the present term are: Jan. 20th, at 10 A.M.; Feb. 12th, at 2.30 P.M.; March 3rd, at 10 A.M.; March 19th, at 10 A.M.

UNIVERSITY OF LONDON: *Middlesex Hospital Medical School.*—The following Emeritus lectures, to which visitors are invited, will be held this session at 3 P.M.: On Feb. 1st, 3rd, and 8th Surgeon-Rear-Admiral P. W. Bassett-Smith will lecture on Mediterranean Fever, Malaria, Trypanosomiasis respectively; on Feb. 22nd Sir Alfred Pearce Gould will lecture on Surgery; and on Feb. 25th Sir Richard Douglas Powell will lecture on the Ætiology of Phthisis. Subsequent lectures will be announced in our Medical Diary.

Dr. G. H. R. Gibson has been appointed a Deputy Commissioner of the General Board of Control for Scotland.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the Committee held on Jan. 11th 24 cases were considered and £255 voted to 18. The following is a summary of some of the cases relieved.

Daughter, aged 68, of M.R.C.S.Eng. who practised at Brighton and died in 1874. Applicant has supported herself for some years by teaching drawing and painting, but owing to age and deafness now unable to obtain pupils. Only certain income £26 per annum and a gift from friends of £10. Rent £20 per annum. Voted £18 in 12 instalments.—Daughter, aged 44, of M.R.C.S.Eng. who practised in the Navy and in Cornwall and died in 1918. Owing to ill-health applicant is unable to earn her own living and is entirely dependent on her mother, whose income is very limited. Until recently applicant's mother was an annuitant of the Fund, but gave this up to enable her to take the old-age pension. Voted £10 in two instalments.—L.S.A.Lond., aged 74, married, practised at Ledbury. Applicant had to give up practice as sight was failing, and through serious illness and several operations had to give up work entirely. Twelve months ago he underwent an operation for cataract, which was a failure; he is now awaiting another operation on the other eye. Has been staying with a relation, paying 10s. per week out of savings, but these are now exhausted, and only income 10s. per week from old-age pension, which pays for applicant's board, &c. Voted £26 in 12 instalments.—Wife, aged 39, of M.D.Dub. Husband missing. Was in practice in South Africa. Applicant has not received any support from her husband since July, 1920, for herself and son, aged 3 years, and she has been living on her savings; these are now reduced to 30 Rent 6s. per week. Applicant is anxious to take a post as a lad help and to find a home for her little son. Voted £10 in tw instalments.—Widow, aged 53, of M.R.C.S. Eng. who practised i London and Lincolnshire. Applicant earns her own living b giving music and singing lessons. Her daughter, aged 26, help her aunt with whom she lives, but owing to a breakdown th doctor orders her away for a rest and applicant asks for help t defray the expense. Applicant's rent, 5s. per week, with use sitting-room and piano with which to give her lessons in return f lessons in singing and music to nieces of landlady. Relieved s times £48. Last time £10 in two instalments, December, 1918. Vote £15 in two instalments.—Widow, aged 40, of M.R.C.S. Eng. wh practised in Swansea and Liverpool. Applicant, an invali and her daughter, aged 12, dependent upon aged mother. A allowance of £20, made by various people towards daughter schooling. Relieved six times, £72. Last time £12 in 12 insta ments, January, 1920. Voted £18 in 12 instalments.—Daughte aged 48, of F.R.C.S. Irel. who practised in India and di in 1899. Applicant shares house with a friend, and they deri and share a small income from letting rooms. Applicant's to income during last 12 months £40. Relieved once £10, Janua 1920. Voted £10.—Daughter, aged 44, of F.R.C.S. Irel. w practised in India and died in 1899. Applicant shares a cotta with a friend, and they make a small income by taking boarde Total income for 1920 £75. Owing to high cost of living and upke of cottage applicant requires help. Relieved once £10, Janua 1920. Voted £10.

Subscriptions may be sent to the honorary treasurer, Charters J. Symonds, C.B., F.R.C.S., at 11, Chandos-stre Cavendish-square, London, W. 1.

London Hospital: Liddle Triennial Prize.—This prize, value £120, in the gift of the London Hospital, has been awarded for the year 1920 to Surgeon-Commander S. F. Dudley, O.B.E., M.D., R.N., and Professor James McIntosh, M.D.

Complimentary Dinner to Sir Robert Jones.—A dinner to Major-General Sir Robert Jones will be held on Monday, Jan. 31st, at 7 P.M., at the Midland Adelphi Hotel, Liverpool, on the occasion of the presentation of his portrait by his old colleagues and friends at the Royal Southern Hospital, Liverpool. The Earl of Derby will preside. Tickets, price £1 1*s.* each, may be obtained from Mr. T. R. W. Armour, F.R.C.S. Edin., 42, *Rodney-street, Liverpool.*

The Welfare of Miners.—The Committee just appointed to manage the fund constituted under Section 20 of the *Mining Industry Act, 1920, for the improvement of the* social well-being, recreation, and conditions of living of workers in or about coal-mines, includes the names of Lord Gorell, as chairman, and Professor E. L. Collis. Communications intended for the Committee should be addressed to Mr. W. G. Nott-Bower, Acting Secretary, at the Mines Department, 46, Victoria-street, London, S.W. 1.

National Hospital for the Paralysed and Epileptic.—A two months' post-graduate course in Neurology will begin on Jan. 24th, when Dr. Greenfield will give the first of three lectures on Cerebro-spinal Fluid, at 3.30 P.M. Lectures and demonstrations will subsequently be given by Dr. J. S. Collier, Dr. Grainger Stewart, Dr. Risien Russell, Dr. Farquhar Buzzard, Dr. J. Taylor, Dr. Gordon Holmes, Dr. H. H. Tooth, Dr. S. A. K. Wilson, Mr. P. W. G. Sargent, Mr. S. Scott, Mr. D. J. Armour, Dr. Russell J. Reynolds, Dr. Saunders, and Dr. Hinds Howell, and will be announced in the medical diary of THE LANCET. The fee for post-graduate course (£7 7*s.*) should be paid to the Secretary of the Hospital at the office. A special arrangement can be made for students who can attend one day a week only. Holders of the Fellowship of Medicine's ticket will be admitted free. Those wishing to undertake Practical Pathology, for which a special fee is charged, should apply to Dr. Greenfield.

Scurvy in Pigs and Poultry.—*On Jan. 14th* Dr. R. H. A. Plimmer, chief bio-chemist of the Rowett Animal Nutrition Research Institute at Craibstone, Aberdeen, lectured before a joint meeting of the Aberdeen University Scientific Association and of the Agricultural Society at Marischal College on "The Need of Vitamines by Man and Animals." Dr. Plimmer referred to the work of Hopkins, Osborne, Mendel, McCollum and Davis, Funk, and Lind, and traced the history of the discovery of the accessory food substances and of the treatment, preventive and curative, of deficiency diseases. He emphasised the fact that the over-cooking of vegetables destroys their antiscorbutic properties, and he attributed the occasional occurrence of scurvy in the army to the cooks, who sometimes over-boiled the stew of which fresh vegetables formed a constituent. He had found cases of scurvy in pigs in Aberdeenshire. Their food, he supposed, had been cooked in the usual Scottish way, for four or five hours, thus destroying the antiscorbutic properties of swedes and potatoes. When given fresh swedes and potatoes, in addition to their other food, they had in four weeks' time, become quite well, and two months afterwards fetched full market prices. Dr. Plimmer said that he had recently seen a number of poultry suffering from polyneuritis and showed a lantern slide of a Leghorn cock paralysed in the legs, which had lost its "voice." He then produced from a portable coop a very robust-looking white Leghorn cock, which crowed lustily, flapped its wings, and flew through the lecture-hall. This was the former victim, now cured by the administration of water-soluble B food substance.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

Allen, C. H., M.B., F.R.C.S. Edin., has been appointed an additional general Medical Referee under the Workmen's Compensation Act for County Court Circuit No. 18.

Sandiland, E. L., M.B., B.S. Lond., D.P.H., Medical Superintendent to the Kent County Sanatorium, Lenham.

Vacancies.

For further information refer to the advertisement columns.

Bath, Royal United Hospital.—H.S. and H.P. £200 each.

Birkenhead and Wirral Children's Hospital, Woodchurch-road.—H.S. £150.

Birmingham City Education Committee.—Asst. Sch. M.O. £500.

Birmingham General Hospital.—Res. Anæsth., Two H.P.'s, H.S.'s. £100. Also H.S. to Special Depts. £125.

Birmingham Orthopædic Centre, Highbury, Uffculme, Sorrento Hospitals.—Medical Superintendent. £800.

Blackburn and East Lancashire Royal Infirmary.—Second and Third H.S.'s. £250 each.

Bloemfontein Municipality (O.F.S.), South Africa.—M.O.H. £1200.

Bootle Borough Hospital.—Sen. and Jun. H.S. £200 and £150.

Bradford City, Infants' Clinic and Hospital.—Female Asst. M.O. £450.

Bradford Municipal General Hospital, St. Luke's.—Res. Asst. M.O. £350.

Brighton Borough Sanatorium.—Res. M.O. £350.

Bristol General Hospital.—Sen. Res. M.O. £300.

Cambridgeshire County Council.—Tuberc. O. £650.

Central London Ophthalmic Hospital, Judd-street, W.C.—Hon. P.

City of London Hospital for Diseases of the Chest, Victoria Park, E.—H.P. £100.

Dorchester, Dorset Mental Hospital, Herrison.—Sec. Asst M.O. £400.

Eccles and Patricroft Hospital.—Res. H.S. £200.

Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Female Dent. S. to In-patients. £10 10*s.*

Evelina Hospital for Children, Southwark, S.E.—Hon. P. to Out-patients. Hon. Aural S.

Federated Malay States Colonial Service.—Pathologist to the Medical Research Institute. £1050.

Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—Hon. Dent. S.

Hertford County Hospital.—H.S. £200.

Holborn Metropolitan Borough.—M.O.H. £1000.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. 30 guineas.

Hospital for Sick Children, Great Ormond-street, W.C.—Ophth. S.

Huddersfield County Borough.—Asst. M.O.H. £550.

Hull Royal Infirmary.—Asst. H.S. £150.

Leeds General Infirmary.—M.O. £100.

Leeds Public Dispensary.—Res. M.O. £200.

Leicestershire County Council.—Asst. Sch. M.O. £500.

Lincoln County Hospital.—Jun. H.S. £150.

Liverpool, David Lewis Northern Hospital.—Hon. Asst. M.O to X Ray Dept.

London County Mental Hospital Service.—Seventh Asst. M.O. £300

Loughborough and District General Hospital and Dispensary.—Res. H.S. £200.

Macclesfield, Cheshire County Asylum, Parkside.—Asst. M.O. £350.

Manchester, Ancoats Hospital.—H.S. £150.

Manchester Children's Hospital, Pendlebury, near Manchester.—Res. M.O. £150.

Margaret Hospital for Consumption, 26, Margaret-street, W.—Asst. Hon. P.

Newark Hospital and Dispensary.—Res. H.S. £200.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—Med. and Hon Surg. Registrars.

Newport, Mon., Royal Gwent Hospital.—H.S. £180.

Nottingham General Hospital.—H.P. £200.

Paddington Green Children's Hospital, London, W.—P. to Skin. Dept. and P. to Out-patients.

Paisley, Royal Alexandra Infirmary.—Med. Supt. £500.

Plymouth, South Devon and East Cornwall Hospital.—H.P. £140. S.

Portsmouth Royal Hospital.—H.S. £150.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. S. *Res. M.O. £200 H.S. £100. Also Ophth. S.*

Queen Mary's Hospital for the East End, E.—Hon. Dental S.

Reading, Royal Berkshire Hospital.—Second H.S. £200.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Cas. O. £150. Also Res. H.P. £125.

Salisbury General Infirmary.—Asst. H.S. £150.

Sheffield, Jessop Hospital for Women.—Hon. M.O.

South London Hospital for Women, South Side, Clapham Common, S.W.—Female Asst. Path. £150. Anæsth. 10*s.* 6*d.* per attendance. Clin. Assts. H.P. and H.S. £100.

Staffordshire Education Committee.—Asst. Med. Inspec. £600.

Stoke-on-Trent and Stoke Rural Joint Hospital Board.—Res. M.O. £500.

Stroud General Hospital.—H.S. £200.

Swansea General and Eye Hospital.—H.S. £200.

Taunton and Somerset Hospital.—*Res. Asst. H.S.* £150.

University of London.—External Examiners.

Wallasey County Borough.—Asst. M.O.H. £700.

Warrington Infirmary and Dispensary.—Jun. H.S. £200.

West End Hospital for Nervous Diseases, 73, Welbeck-street, W.—Ophth. S. Also Out-patients' P. and Clin. Asst.

West Riding County Council.—Dist. Tuberc. O.'s. £600. Asst. M.O. (Res.). £325. Sch. Oculist. £600. Sch. Med. Inspectors. £500.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Chipping Campden, Kilbride, Moville, Tattenhall, Wansford, and Warminster.

is a creature of habits; the modern worker tends to demand interests. Whether work be carried out mechanically through mere habit, or purposefully through definite interests, the appropriate attitude has to be maintained. To maintain an attitude favourable to a given work means to repress the development of other attitudes less favourable or unfavourable for that work. In other words, all conflicting mental systems must be held in check. Untoward thoughts must be inhibited, and physical work is necessarily expended in such inhibition or repression. At first, whether through habit or interest, this process of repression or inhibition is unconscious. Later it can only continue by voluntary effort. Finally, voluntary effort becomes fatigued, and boredom, now already on the scene, makes its presence more and more felt as interest has waned. Distracting thoughts are no longer under control. The mental system tends to disorder. In the wake of contested boredom follows worry, which is inevitably accompanied by a wasteful dissipation of mental energy; and it must be remembered that whatever be its origin, no cause of mental inefficiency is so potent as worry.

SWISS MEDICAL DIRECTORY.

THE *Annuaire Médical Suisse* for 1920, published by the Société Suisse d'Edition (Lausanne, 4 Jumelles) at Fr.4.50, is in its seventh edition. Names of doctors, dentists, pharmacists, and veterinarians are given, first arranged topographically and then in alphabetical order. Then follow the federal and cantonal sanitary authorities and an excerpt of the regulations governing the professional examinations. A list of mineral and thermal waters concludes a business-like little directory which will be found of service by any medical men who send patients to Switzerland.

A MEDICAL CANDIDATE.

POLITICAL feeling in South Africa is running high in view of the pending General Election. A correspondent writes that after the nomination of Dr. J. A. Raubenheimer by the South African Party, leading Nationalists among his patients approached the doctor and asked for their accounts, which were forthwith settled. Dr. Raubenheimer, who is a very popular practitioner, is alleged to have informed these patients after this episode that on no account would he attend them if summoned for illness.

BOOKS OF REFERENCE.

AMONG handy books of reference "*Hazell*" holds an honoured place and the volume for 1921 (being the 36th annual issue) of the New Hazell Annual and Almanack, edited by T. A. Ingram, M.A., LL.D. (London: Henry Frowde and Hodder and Stoughton. Pp. lvi. + 823. Price 7s. 6d.) appears betimes. It contains all the usual topical information concerning the nations of the world, some 100 pages of space having been saved by omission or abridgement of certain summaries at the end. We miss the interesting little section on "Medicine in 1919," which had evidently been prepared with care and discretion. Among the current features are the texts of the Covenant of the League of Nations and Labour's Charter under the League, an account of the Peace Treaty negotiations, statistics of the casualties in men and officers during the war, a baronetage and knightage, and particulars in regard to the Ministry of Health, as well as of societies and institutions whose objects in one way or another are to promote the physical welfare of the country. Astronomical and everyday information common to almanacks also find a place.

HOW DOCTORS DIE IN AMERICA.

THE New Year issue of the *Journal of the A.M.A.* contains the usual prompt analysis of the deaths of medical men in the United States of America during the preceding year. General diseases accounted for 257 deaths, diseases of the nervous system 271, diseases of the circulatory system 401, diseases of the respiratory system 266, diseases of the digestive system 70, diseases of the genito-urinary system [illegible], senility 77, suicide 32, accidents 102, homicide 14, and sequels of surgical operations 74. The most frequent individual causes of death were: Organic heart disease [illegible], cerebral hæmorrhage 211, pneumonia 156, nephritis and uræmia 142, malignant tumours 91, tuberculosis 59, angina pectoris 50, pneumonia-influenza 37, and arteriosclerosis 35. The causes and distribution of the 102 deaths from accident were: automobile, 27; automobile-railway grade crossing, 22; [illegible], 9; falls, 8; firearms, 7; drowning, 6; railway and street car, each, 5; asphyxia, 3; [illegible] and burns, each, 2; crushing, 1, and other accidents, 5. The 32 physicians who ended their lives by suicide selected these methods: firearms, 15; poisons, 7; cutting instruments, 3; strangulation, 2; jumping from [illegible] and drowning each, 1. Of the 14 homicides, [illegible] by firearms.

BOOKS, ETC., RECEIVED.

LIPPINCOTT, J. B., COMPANY, London and Philadelphia.
The Basis of Psychiatry (Psychobiological Medicine). A Guide to the Study of Mental Disorders, for Students and Practitioners. By A. C. Buckley, M.D. Pp. 448. 30s.

LIVINGSTONE, E. AND S., Edinburgh.
Manic-Depressive Insanity and Paranoia. By Professor Emil Kraepelin of Munich. Translated by R. Mary Barclay, M.B. Edited by G. M. Robertson, M.D. Pp. 280. 21s.

MASSON ET CIE., Paris.
Précis de Microbiologie clinique. Par Fernand Bezançon, Professeur de Bactériologie à la Faculté de Médecine de Paris. 3e édition entièrement refondue. Pp. 600. Fr.30.

MILFORD, HUMPHREY (OXFORD UNIVERSITY PRESS), London.
A Physician's Anthology of English and American Poetry. Selected and arranged by C. A. Wood, M.D., and F. H. Garrison, M.D. Pp. 346. 8s. 6d.

ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH, New York.
Reprints Vol. XXXV. Pp. 616.

ST. CATHERINE PRESS, Stamford-street, London, S.E.
Adenoids and Enlarged Tonsils Curable without Operation. By J. Kynaston, M.R.C.S. Eng., L.R.C.P. Lond. Pp. 48. 3s.

SOCIETY FOR PROMOTING CHRISTIAN KNOWLEDGE, London. THE MACMILLAN COMPANY, New York.
Problems of the Birth-rate. By Dr. Isabel Pulteney. Pp. 12. 9d.

SPRINGER, JULIUS, Berlin.
Die Konstitutionelle Disposition zu inneren Krankheiten. Von Dr. J. Bauer. Pp. 650. M. 68.

STABILIMENTO POLIGRAFICO PER L'AMMINISTRAZIONE DELLA GUERRA, Rome.
La Chirurgia del Colon. By Professor A. Mattoli. Pp. 137.

THE CONNOISSEUR, London.
The Story of My Life. By W. D. Spanton, F.R.C.S. Edited by Eric E. Young, M.S. Lond. Pp. 403.

UNIVERSITY PRESS, Manchester. LONGMANS GREEN, AND CO., London.
On Bone Formation: its Relation to Tension and Pressure. By Dr. Murk Jansen. Pp. 114. 20s.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. E. E. Atkin, Lond.; Dr. F. V. Allen, Madura; *American Journal of Obstetrics and Gynæcology*, St. Louis, Editor of.

B.—Dr. E. A. Barton, Lond.; Col. R. J. Blackham, Lond.; Mr. T. Bird, Lond.; Dr. H. W. Bruce, Lond.; Dr. E. T. Burke, Manchester; Dr. A. M. Barford, Chichester; Miss M. Bellamy, Lond.; Dr. E. F. Buzzard, Lond.; Prof. W. A. Bone, Lond.

C.—Sir F. Colyer, Lond.; Mrs. A. E. Cockerill, Northam; Dr. H. P. Cholmeley, Forest Row; Dr. G. H. Clark, Glasgow; Chicago School of Sanitary Instruction; Dr. R. Cruchet, Bordeaux.

D.—Dr. J. F. G. Dill, Hove; Department of Scientific and Industrial Research, Lond.; Dr. W. S. Dawson, Lond.; Dr. D. Dougal, Manchester.

E.—Dr. T. W. Eden, Lond.; Eugenics Education Society, Lond.

F.—Mr. H. A. T. Fairbank, Lond.

G.—Sir H. J. Gauvain, Alton; Mr. H. Gardiner, Lond.; Mr. R. Goodman, Lond.; Dr. J. E. Gemmell, Liverpool.

H.—Mr. T. C. Heath, Lond.; Harrogate Corporation Baths, General Manager of; Sir W. Hale-White, Lond.; Hunterian Society, Lond.; Dr. C. T. W. Hirsch, Lond.; Mr. H. Harlé, Bordeaux; Messrs. A. Hilger and Co., Lond.; Harveian Society of London, Hon. Secs. of.

I.—Institute of Physics, Lond., Sec. of.

J.—Dr. E. Jodko, Lida, Poland.

L.—Mr. E. M. Little, Lond.; Listerian Society, Lond., Sec. of; Mr. N. C. Lake, Lond.; Lebanon Hospital, Lond., Director of; Dr. G. C. Low, Lond.

M.—Ministry of Health, Lond.; Metropolitan Life Insurance Co., New York; Dr. J. J. MacDonnell, Lond.; Ministry of Pensions, Lond.; Sir P. J. Michelli, Lond.; Mr. W. Morris, Lond.; Medical Research Council, Lond.; Middlesex Hospital Medical School, Lond.; Sir B. Moynihan, Leeds; Medico-Legal Society, Lond.; Dr. W. G. Macdonald, Boxmoor.

N.—National Hospital for the Paralysed and Epileptic, Lond.; Dr. R. Nixon, Liverpool; Dr. F. L. Nicholls, Fulbourn; National Medical Union, Lond., Council of.

O.—Dr. A. W. Ormond, Lond.

P.—Mr. S. A. Potts, Lond.; Sir J. Phillips, Lond.; Miss R. Paget, Lond.; Mr. J. H. Partridge, Lond.; Dr. F. W. Pilkington, Kencott; Dr. C. B. Pearson, Catonsville, Maryland.

R.—Royal Sanitary Institute, Lond.; Dr. R. P. Rowlands, Lond.; Royal Society, Lond.; Dr. H. Rundle, Southsea; Royal Medical Benevolent Fund, Lond., Sec. of; Dr. J. D. Rolleston, Lond.

S.—Prof. W. Stirling, Manchester; Dr. W. Schuurmans-Stekhoven, Ruinen, Holland; Save the Children Fund, Lond.; Mr. H. Sachs, Berlin; Selborne Society, Bromley; Capt. G. F. R. Smith, Liverpool; Dr. O. T. Stephenson, Woolston; Dr. H. B. Shaw, Lond.; Dr. H. Scurfield, Sheffield; Dr. J. Sorley, Lond.; Dr. J. K. A. W. Salomonson, Lond.

T.—Dr. F. W. Twort, Lond.; Dr. W. W. C. Topley, Lond.; Dr. F. Thomson, Lond.

U.—United States Public Health Service, Washington.

V.—Dr. P. C. Varrier-Jones, Cambridge; Dr. H. W. C. Vines, Cambridge; Virol, Ltd., Lond., Managing Director of; Mr. M. Vlasto, Lond.

W.—Dr. C. H. Warner, Nottingham; Westminster Hospital Medical School, Lond., Sec. of; Dr. E. W. A. Walker, Oxford; Sir G. S. Woodhead, Cambridge; Mr. R. Whitelaw, Aberdeen; Mr. H. Wright, Cleveland, Ohio; West London Medico-Chirurgical Society, Hon. Sec. of; Dr. S. A. K. Wilson, Lond.; Dr. H. J. Walker, Brighton; West London Hospital Post-Graduate College; Dr. S. L. Welsh, Lond.; Dr. S. R. Wilson, Manchester; Dr. O. K. Williamson, Lond.; Mr. J. Whittingdale, Leysin.

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The Hunterian Lecture

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COLECTOMY.

Delivered at a Meeting of the Hunterian Society on Jan. 19th, 1921,

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IN this paper I hope to indicate the purpose of colectomy, the risks associated with it, and the complications that may arise after its performance. I will also call attention to the conditions which are benefited by this operation.

CHRONIC INTESTINAL STASIS.

In the short time at my disposal it will be impossible to recapitulate, however briefly, what I have written during the last 20 years on chronic intestinal stasis, its causation and symptoms, since the subject has developed so much in that time. I have attempted to summarise it in two recent papers published in THE LANCET, The Evolution of Disease[1] and The Operative Treatment of Cancer of the Colon,[2] to which I would refer you for further details. Suffice it to say that the delay in the passage of the fæcal matter, which produces its earliest result in the pelvic colon, extends along the length of the large bowel and tends to distend, dilate, and prolapse the cæcum and the ascending and transverse segments of the colon.

In consequence of the stagnation of the contents of the large bowel mechanical changes take place in the rest of the gastro-intestinal tract. Associated with these there is an ascending infection of the originally sterile contents of the small intestine and duodenum, which results in a contamination of the food-supply of the individual by micro-organisms. The products resulting from the fouling of the intestinal chyme, the material from which the body obtains its nourishment, are absorbed into the circulation. A proportion escapes conversion or excretion in the liver and kidneys and produces a degenerative change in every tissue. This deleterious matter also throws an excessive strain upon the excretory and ductless glands, so that the latter undergo variations in structure and function. Organisms such as *Bacillus coli*, &c., may get into the blood stream. This condition, due to infection of the contents of the small intestine, I called intestinal auto-intoxication, which term, perhaps, describes it as well as any other. Too much importance cannot be attached to this result of chronic intestinal stasis, since upon it directly or indirectly depend the innumerable changes which take place in the body and which are called diseases. It is the disastrous consequence of simple stasis. The degenerative changes in such organs as the breast, ovary, uterus, pancreas, &c., are very liable to terminate in cancer.

I have fully described the effects of the toxins and organisms on the fat, muscle, cerebro-spinal system, circulatory system, thyroid, adrenal, pituitary, skin, uterus, ovaries, testes, kidneys, liver, and pancreas. The effect on these several structures is the result of the septic infection of the blood stream in which they are bathed and from which their component cells derive their nutrition. In the case of the liver and pancreas there is an added source of infection through the ducts of these organs.

MEDICAL TREATMENT.

Up to a certain point medical treatment may avail to stem the degree and effects of auto-intoxication. It consists in efforts to empty the large bowel by purgatives or by enemas, massage, electricity, and exercise; to sterilise the contents of the small intestine by the use of organisms, vaccines, and antiseptic drugs which exert an inhibitory or deleterious effect on the microbes which have invaded the small intestine, such as the Bulgarian bacillus, mercury, arsenic, iron, &c.; by giving such foods as break up easily and rapidly, and either remain in the small intestine for a short time or do not decompose if retained for an abnormal period; by avoiding all such forms of meat as take long to be digested, and so favour their decomposition; and by the use of large quantities of water which flush the intestinal tract and carry away effete products by the kidneys, &c. In the so-called water cures the essential factor in any success that may attend the treatment is the flushing of the intestine and circulation by the water, the salts playing a very secondary part.

One must realise that stasis commences early in the life-time of the individual. It is probable that when the napkin is discarded, and the infant is habituated to a single daily action, the pelvic colon, being unable to accommodate the amount of nourishment taken during 24 hours, gradually elongates or becomes fixed and obstructed by the formation of controlling bands or membranes. Once a mechanical disability to the evacuation of the fæcal contents arises in the end of the large bowel the sequence of events is inevitably progressive. Its rapidity varies with the vitality of the individual. In treating a case of stasis, whether chiefly mechanical or toxic in character, every means should be adopted as early in life as possible to stay the progress of the changes by diet, the more frequent evacuation of the bowel by the use of paraffin, by rest at suitable intervals, &c.

Indications for Colectomy.

If the symptoms are accentuated by bands, inflammation of the appendix, control of the ileal effluent by an anchored appendix, by obstruction at the duodeno-jejunal junction, or by the presence of duodenal or gastric ulcers surgical measures must be resorted to at once.

When all these means have failed to stay the progress of the disease what is to be done? It is absolutely necessary that the infection of the contents of the small intestine be eliminated, and while the obstruction to the free flow of the ileal contents exists in the form of a mechanically disabled and inflamed large intestine there is nothing left but to remove that diseased and obstructing structure. It is not an operation that should be undertaken lightly; it can only be considered when all other means have proved unsuccessful. The choice is between folding one's hands and watching or taking action which if successful affords the patient incalculable advantages. The necessity for this action is frequently accentuated by the fact that the lowered vitality of the tissues and the diminution of their resisting power make them a prey to organisms which may invade and obtain a foothold in them. It would appear that the organs or tissues most liable to degenerative change as well as the resisting power to the several kinds of organisms are not the same in different individuals, families, and groups, and vary in the same individual at different ages. While in the child the lymphatic tissue of the naso-pharynx is very prone to suffer, later in life the gums form a common seat of infection. The condition of the gums which is called pyorrhœa is perhaps the most frequent and obvious, as well as being one of the most important, examples of infection of devitalised tissues by organisms, not in itself necessarily calling for other than local treatment. Pyorrhœa when fully developed becomes, as do many other secondary inflammations, an additional source of infection of the system, and may seriously aggravate existing symptoms or be the source of new diseases. This is sometimes so marked that casual observers have been led to regard pyorrhœa as the primary factor in producing many diseases, and even in determining the changes in the gastro-intestinal tract. This is not the case, though, as I have indicated, pyorrhœa may become a secondary factor of considerable importance and may aggravate existing infection of the intestinal contents.

DISEASES ORIGINATING IN AUTO-INTOXICATION.

It is difficult to limit the number of diseases which depend directly or indirectly for their existence on auto-intoxication, for some of which colectomy may be performed with great benefit.

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[1] THE LANCET, 1919, ii., p. 1117.

[2] THE LANCET, 1920, ii., p. 1184.

The most frequent and obvious are rheumatoid arthritis, Still's disease, tubercle, Bright's disease, non-specific arteritis obliterans, Raynaud's disease, Addison's disease, melancholia, dementia præcox, dis- seminated sclerosis, pernicious anæmia, paralysis agitans, asthma, atheroma, infective endocarditis, angina pectoris, many forms of skin disease as pruritus, &c., ulcerative colitis, exophthalmic goitre, adenoma of the thyroid, microbic cyanosis, diabetes mellitus, and neuralgias. There are a host of other conditions which I might enumerate, cancer being the last and not the least important; but for cancer colectomy is useless except when the growth involves the large bowe primarily.

As regards surgical measures, assuming that an ileal kink or a controlling appendix does not exist, or has already been dealt with, that any definite obstruction of the large bowel by band has been divided, and that any angulation at the duodeno-jejunal junction sufficiently acute to necessitate a gastro-enterostomy has been treated, what means have we got of removing this obstruction to the ileal effluent? To deal with this effectually one must bear in mind that it starts primarily in the elongated and dilated pelvic colon, it may be accentuated or not at the last kink, it extends along the iliac, descending, and transverse colon. and is often aggravated by spasm consequent on an inflammation of the mucous membrane, commonly called colitis. The cæcum and ascending colon are usually distended with the intestinal contents, dammed back by this obstruction, whether produced by constriction by acquired bands or by great elongation of the bowel with associated inflammation of its mucous lining producing spasm of the muscle wall, while the dilated and prolapsed cæcum, falling to the bottom of the pelvis, may become so displaced as to twist and obstruct the terminal ileum, as Dr. A. C. Jordan has shown so clearly. While colectomy is urgently called for in many conditions which result directly from intestinal auto-intoxication, it is even more imperatively demanded in the case of those diseases which can only develop in a subject in whom the vitality and resisting power of the tissues have been sufficiently depreciated by stasis to allow of their being invaded and occupied by deleterious organisms.

METHOD OF OPERATION.

The method I employ in performing colectomy is the division of the ileum at a convenient point several inches proximal to its termination and the removal of the large bowel, leaving only enough pelvic colon to permit of a perfect end-to-end junction with the extremity of the ileum.

In most cases—more frequently in women, in whom the acquired bands are not usually as well developed as in men—this operation offers no special difficulty, but if the acquired membranes are strong it is important that the surgeon should be perfectly familiar with their arrangement, especially about the splenic flexure. I believe it is due to the trouble that many have experienced in dealing with this flexure that recourse has been had to the futile operation of removing the cæcum, ascending, and portion of the transverse colon. Many years ago I employed this method of partial resection, but discarded it at once on recognising its insufficiency to relieve the patient of the obstruction in the second half of the large bowel, for the relief of which an operation was performed.

There is one practical point of great interest in connexion with these operations. In the earlier colectomies I divided the pelvic colon at a point that enabled me to form a lateral anastomosis between the closed ends of the ileum and colon. The disappearance of symptoms followed this operation very rapidly, and the patient soon got quite well. After an interval of months or years the symptoms occasionally recurred, to my great disappointment. As an infection of the food-supply was evidently the original factor in the development of the particular disease I again explored [illegible] abdomen, and found that besides a considerable [illegible] of the residual pelvic colon, due to its [illegible] frequent evacuation, extensions of the [illegible] ileum had grown upwards and downwards, and that in these diverticula the contents of the bowel collected, decomposed, and interfered with the free effluent from the ileum. On cutting out this junction and taking away the excess of pelvic colon, together with the protruding large dilated ends of the colon and ileum, symptoms disappeared as before. This decided me to give up establishing a lateral junction and to put the divided extremity of the ileum directly into that of the pelvic colon. There is no difficulty whatever in connecting the end of the ileum with that of the pelvic colon, however different their calibres, if the sutures are radiated in such a manner as to include correct proportions of the circumference of each bowel. It is not necessary, nor is it advantageous, to attempt to increase the calibre of the bowel by splitting it or cutting it obliquely, as has been recommended. Such methods are liable to alter the relations of the long axes of the segments of bowel to one another, and to favour angulation and obstruction at the junction.

Complications following Colectomy.

A case of Still's disease on which I operated provided an excellent illustration of some of the complications which may follow a colectomy. It also proved the necessity of watching for a recurrence of any symptom and dealing with it at the earliest possible moment. It represents the kind of case in which colectomy in inexperienced hands may not ensure the permanent cure that should fairly be expected from it. The first operation undertaken in the case was an ileo-colostomy. It was followed by a freedom from symptoms for nearly nine months, after which some evidences of the disease reappeared. A colectomy was then performed. It was imperfect in the light of our present experience, since a lateral junction, not an end-to-end connexion, was effected. It gave a complete freedom from any joint infection for six years. The recurrence of symptoms which then appeared were met successfully by perfecting the colectomy, the dilated ends with the lateral junction and a length of the recently elongated pelvic colon being excised and replaced by an end-to-end junction; the importance of the frequent evacuation of the bowel was impressed on the patient.

I have referred to this case to indicate some of the complications which may arise in connexion with colectomy. In a certain small proportion of colectomies that escape from observation for a considerable time symptoms of obstruction or a recurrence of the disease may occasionally occur. I refer to such conditions as exophthalmic goitre, rheumatoid arthritis, epileptiform tic, Still's disease, Raynaud's disease, and some others in which, after an apparently magical cure, a relaps may take place months or years after; much disappointment may then be experienced, the patient having been delighted with the effect of the colectomy.

The two complications which are liable to affect thi operation disadvantageously are obstruction from inflammatory adhesions and obstruction from excessive elongation of the pelvic colon. The latter is avoided by evacuating the residual colon three times a day. The former can only be met by operative interference. The chief immediate risks of the operation are hæmorrhage, damage to bowel, and possibly shock. The former is most liable to take place in a fat patient, as a vessel embedded in fat may bleed after an interval of time, even if the ligature surrounding it appears to be very tight. This accident may be avoided by forcibly compressing the mesentery before the ligature is applied. Care must be taken to avoid damage to the duodenum, which in many cases is intimately associated with the ascending colon. Precautions are also necessary in ligaturing the mesentery of the colon where it is short and tight. It is quite possible to include a portion of the large bowel in the ligature unless care is taken to avoid such an accident, especially in the neighbourhood of the splenic flexure.

Avoidance of Shock by Saline.

Of course, if a patient is in an almost moribund condition at the time of the operation death may ensue very soon after, but this has not occurred in my practice. The complete freedom from shock is due, I believe, to the fact that ever since I saw L. C. Wooldridge's experiment of replacing the loss of blood by normal saline I have in all these operations introduced six or seven pints of this solution into the axillæ, starting the injection as soon as possible after the commencement of the anæsthetic. In the earliest cases the fluid was injected directly into the venous circulation. Wooldridge kept no record of this experiment, which I published after his death in THE LANCET under the heading of a Surgical Tribute to the late Dr. Wooldridge.[3] The advantage which humanity has derived from this manifestation of Wooldridge's remarkable genius is almost incalculable. His research completely negatived the conclusion arrived at by Professor Schäfer in the investigation on transfusion he carried out at the request of the Obstetrical Society of London.

Stimulation of Intestines after Operation.

An accident which may arise in effecting the junction of the end of the ileum to the pelvic colon is a rotation of the end of the ileum on its axis. This may result in the formation of a twist of the end of the ileum and in its partial obstruction. It also renders the closure of the interval between the mesenteries of the ileum and pelvic colon difficult and possibly imperfect.

It must be remembered that the vast majority of colectomies are performed for the direct results of stasis of the simple toxic variety or for those in which the superadded infection by organisms is the prominent feature. The muscles generally, and the muscular coat of the small intestine especially, are thin, atrophied, and sluggish, so that this portion of the bowel lies inert and flaccid for a long period after the large bowel has been removed, and usually requires to be stimulated into activity by drugs. To meet this requirement a little castor oil or phenolphthalein should be added to the paraffin, which is administered as soon as possible after the operation. This tends to prevent stagnation of the intestines by stimulating them to vigorous action, and so to obviate the formation of inflammatory adhesions.

If there is any surface of the surrounding abdominal wall which has been deprived of its normal smooth peritoneal lining the inactive bowel is very likely to form adhesions to it, and sooner or later obstruction may result, sometimes after a long interval of months or years. The development of these inflammatory adhesions can only be avoided by the most scrupulous care on the part of the surgeon to avoid ligaturing large masses of mesentery or omentum, to cover with peritoneum all areas deprived of its protection, and to commence stimulating the intestines to act as soon as possible after the operation by means of paraffin and other agents.

Difficulties Occasioned by Previous Operations.

A great difficulty the surgeon not infrequently experiences in colectomy is that the patient may have already undergone many operations—appendicostomy, cæcostomy, suturing the cæcum to the iliac fossa, resection of part of the transverse colon, shortening of mesenteries, fixation of the omentum to the abdominal wall, and a host of other procedures—all of which render the accurate apposition of the edges of peritoneum very difficult indeed, and increase enormously the risk of the formation of adhesions, which constitute one of the most troublesome complications met with. Should obstruction result from this development it is important that the surgeon should act promptly, and should deal with them as effectually as possible. Symptoms of obstruction are most liable to develop after the removal of the tube from the rectum.

I recently excised with complete success the colon from a man who had been seen by more than 50 surgeons in different parts of Canada and the States, and who had had 16 abdominal operations, including 4 lateral anastomoses. His condition was regarded as inoperable. In dealing with very complicated cases it is well to remember that life may be carried on in perfect comfort with only a short length of small intestine.

RESULTS OF IMPERFECT OPERATIVE PROCEDURE.

Diarrhœa following the operation is due to a partial obstruction, the frequent fluid motions being of the nature of an overflow, as in the analogous case of a leaking, over-distended bladder. This is frequently due to the surgeon not having taken sufficient care to avoid axial rotation of the end of the ileum, or to the imperfect union of the cut edges of the mesentery of the end of the ileum and of the pelvic colon, or to their separation subsequent to the operation allowing the intestines to prolapse through the interval and causing torsion of the terminal ileum. These mesenteries may become separated weeks or months after the operation for no very obvious reason.

The recurrence of superadded infections is usually due either to imperfect operative procedure or to the persistence of organisms in the wall of the small intestines which have not been destroyed by treatment after the operation, or more usually to the subsequent enormous elongation of the residual pelvic colon due to its over-distension from insufficiently frequent evacuation of its contents. The last condition arises because the patient will insist on having only one daily action, so that the intake of 24 hours is retained in the residual portion of the pelvic colon, which comprises only a fraction of the whole large intestine. Consequently it elongates, puddles in the pelvis, and obstructs the effluent from the ileum as effectually as it did before the large bulk of an elongated pelvic colon had been removed by a colectomy.

Many of the organisms that produce these diseases seem to invade and remain latent in the mucous membrane of the small intestine, and while they are enormously depleted in number by the freeing of the ileal effluent by the colectomy, they readily extend into and infect the contents of the ileum when stagnation again results from the subsequent development of obstruction. Fortunately, this only takes place in a small proportion of colectomies, yet the number is quite large enough to make it necessary to watch the progress of every case for some time and to endeavour to eliminate any residual organisms by drugs, vaccines, and diet. This is particularly called for when the residual pelvic colon is infected, as it may be in the case of dysentery and ulcerative colitis. Dr. N. Mutch lays great stress on the importance of the use of vaccines, &c., after some cases of colectomy. The surgeon must not consider the patient free from the possibility of recurrence till many years have elapsed, however extraordinary and remarkable may be the immediate success of the operation.

I think I have indicated clearly the causes of the failure and disappointment which occasionally exist after colectomy, and it is only by bearing them in mind and by taking every possible precaution to avoid them that the surgeon can hope to ensure a successful result. It is obvious that colectomy cannot be followed by equally beneficial results in many of the diseases which I have enumerated for the reason that much of the damage already done at the time of the [illegible] irremediable. For instance, teeth removed [illegible] rhœa cannot be replaced; changes in the [illegible] have resulted in permanent damage; [illegible] deformities, disabilities of rheumatoid arthri[illegible] bony ankylosis of joints, are unaffected by [illegible] tion; and the organ or articulation [illegible] tubercle cannot be restored to its normal st[illegible] usefulness, and so on. Yet in spite of all this [illegible] innumerable changes resulting directly and [illegible] from stasis which recover to an extent that [illegible] sight would seem quite impossible. The [illegible] aspect of it is the extraordinary rapidity with [illegible] they ensue in many conditions. In some the [illegible] almost instantaneous, while in others the sympt[illegible] disappear slowly.

CONCLUSION.

The mortality of the operation must vary largely w[illegible] the kind of case on which the surgeon operates. [illegible] man will confine the operation only to such as [illegible] appear to be what are called "good surgical risks"; another is prepared to interfere in cases of a very

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[3] THE LANCET, 1891, ii., p. 626.

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It must be remembered that the vast majority of colectomies are performed for the direct results of stasis of the simple toxic variety or for those in which the superadded infection by organisms is the prominent feature. The muscles generally, and the muscular coat of the small intestine especially, are thin, atrophied, and sluggish, so that this portion of the bowel lies inert and flaccid for a long period after the large bowel has been removed, and usually requires to be stimulated into activity by drugs. To meet this requirement a little castor oil or phenolphthalein should be added to the paraffin, which is administered as soon as possible after the operation. This tends to prevent stagnation of the intestines by stimulating them to vigorous action, and so to obviate the formation of inflammatory adhesions.

If there is any surface of the surrounding abdominal wall which has been deprived of its normal smooth peritoneal lining the inactive bowel is very likely to form adhesions to it, and sooner or later obstruction may result, sometimes after a long interval of months or years. *The development of these inflammatory* adhesions can only be avoided by the most scrupulous care on the part of the surgeon to avoid ligaturing large masses of mesentery or omentum, to cover with peritoneum all areas deprived of its protection, and to commence stimulating the intestines to act as soon as possible after the operation by means of paraffin and other agents.

Difficulties Occasioned by Previous Operations.

A great difficulty the surgeon not infrequently experiences in colectomy is that the patient may have already undergone many operations—appendicostomy, cæcostomy, suturing the cæcum to the iliac fossa, resection of part of the transverse colon, shortening of mesenteries, fixation of the omentum to the abdominal wall, and a host of other procedures—all of which render the accurate apposition of the edges of peritoneum very difficult indeed, and increase enormously the risk of the formation of adhesions, which constitute one of the most troublesome complications met with. Should obstruction result from this development it is important that the surgeon should act promptly, and should deal with them as effectually as possible. Symptoms of obstruction are most liable to develop after the removal of the tube from the rectum.

I recently excised with complete success the colon from a man who had been seen by more than 50 surgeons in different parts of Canada and the States, and who had had 16 abdominal operations, including 4 lateral anastomoses. His condition was regarded as inoperable. In dealing with very complicated cases it is well to remember that life may be carried on in perfect comfort with *only a short length of small* intestine.

RESULTS OF IMPERFECT OPERATIVE PROCEDURE.

Diarrhœa following the operation is due to a partial obstruction, the frequent fluid motions being of the nature of an overflow, as in the analogous case of a leaking, over-distended bladder. This is frequently due to the surgeon not having taken sufficient care to avoid axial rotation of the end of the ileum, or to the imperfect union of the cut edges of the mesentery of *the end of the ileum and of the pelvic colon, or to their* separation subsequent to the operation allowing the intestines to prolapse through the interval and causing torsion of the terminal ileum. *These mesenteries may* become separated weeks or months after the operation for no very obvious reason.

The recurrence of superadded infections is usually due either to imperfect operative procedure or to the persistence of organisms in the wall of the small intestines which have not been destroyed by treatment after the operation, or more usually to the subsequent enormous elongation of the residual pelvic colon due to its over-distension from insufficiently frequent evacuation of its contents. The last condition arises because the patient will insist on having only one daily action, so that the intake of 24 hours is retained in the residual portion of the pelvic colon, which comprises only a fraction of the whole large intestine. Consequently it elongates, puddles in the pelvis, and obstructs the effluent from the ileum as effectually as it did before the large bulk of an elongated pelvic colon had been removed by a colectomy.

Many of the organisms that produce these diseases seem to invade and remain latent in the mucous membrane of the small intestine, and while they are enormously depleted in number by the freeing of the ileal effluent by the colectomy, they readily extend into and infect the contents of the ileum when stagnation again results from the subsequent development of obstruction. Fortunately, this only takes place in a small proportion of colectomies, yet the number is quite large enough to make it necessary to watch the progress of every case for some time and to endeavour to eliminate any residual organisms by drugs, vaccines, and diet. This is particularly called for when the residual pelvic colon is infected, as it may be in the *case of dysentery and ulcerative colitis. Dr. N. Mutch* lays great stress on the importance of the use of vaccines, &c., after some cases of colectomy. The surgeon must not consider the patient free from the possibility of recurrence till many years have elapsed, however extraordinary and remarkable may be the immediate success of the operation.

I think I have indicated clearly the causes of the failure and disappointment which occasionally exist after colectomy, and it is only by bearing them in mind and by taking every possible precaution to avoid them that the surgeon can hope to ensure a successful result. It is obvious that colectomy cannot be followed by equally beneficial results in many of the diseases which I have enumerated for the reason that much of the damage already done at the time of the operation is irremediable. For instance, teeth removed for pyor*rhœa cannot be replaced; changes in the spinal cord* have resulted in permanent damage; the severe deformities, disabilities of rheumatoid arthritis due to bony ankylosis of joints, are unaffected by the operation; and the organ or articulation disorganised by tubercle cannot be restored to its normal structure and usefulness, and so on. Yet in spite of all this there are innumerable changes resulting directly and indirectly from stasis which recover to an extent that at first sight would seem quite impossible. The strangest aspect of it is the extraordinary rapidity with which they ensue in many conditions. In some the change is almost instantaneous, while in others the symptoms disappear slowly.

CONCLUSION.

The mortality of the operation must vary largely with *the kind of case on which the surgeon operates.* One man will confine the operation only to such as would appear to be what are called "good surgical risks";

serious nature, realising that with death or prolonged misery facing the sufferer he must take his courage in his hands and do what he conscientiously considers to be the best for his patients, although it may not coincide with the good effect he hopes to produce by favourable statistics. At the present time colectomy is performed very generally in many parts of the world. Such an advanced and progressive surgical community as the Argentine, for instance, is fortunate in possessing both Dr. Jose Arce, the professor of clinical surgery of the Faculty of Medicine of Buenos Ayres, and Dr. Artemio Zeno, the professor of surgery in the Litoral University of Rosario, who tell me that they have done very many colectomies, and are continuing to do them in increasing numbers with a very small mortality. Even in England, where progress is slow but equally sure, I find that many surgeons are doing this operation with great advantage to their patients.

Perhaps even more important than the operation is the wider knowledge of chronic intestinal stasis and of the conditions of which stasis is a necessary antecedent, together with their medical treatment, which surgical measures have tended to develop. Not its least result has been to make medical men concentrate their attention on this most important and very comprehensive subject.

LEGG'S OR PERTHES'S DISEASE.

THE DIFFERENTIAL DIAGNOSIS OF AFFECTIONS AT THE HIP IN CHILDREN.[1]

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WHEN a child who complains of pain in the hip and shows a limp on walking is brought for advice the suggestion of "hip disease" naturally occurs to us. Tuberculous disease is at once the commonest and gravest affection of the hip, necessitating early diagnosis and treatment if the functional utility of the joint is to be restored. It is always well, therefore, first to exclude this disease before proceeding to examine for other conditions. Throughout life the region of the hip is liable to such a variety of diseases, deformities, and injuries that at any age a most careful, methodical, and exhaustive examination is essential for an accurate diagnosis. On account of its inaccessibility both to visual and manual examination the hip-joint, of all joints in the body, presents the greatest difficulty. Without skiagraphy our conclusions, based largely upon indirect evidence, call forth the utmost diagnostic resource of the examiner. True, the advent of X rays has rendered the task more easy and proves of inestimable value in confirming or disproving our deductions, but complete reliance on such diagnosis without careful and methodical physical examination will lead, sooner or later, to serious error.

Limping.

The late Sir George Humphry's dictum that the human foot was God's last and most perfect work might very well be extended to include the whole mechanism of walking, which, being so intricate and perfect, like all complicated machinery, is very easily thrown out of gear by very slight causes, such, for instance, as a small corn on the little toe.

As limping is generally the first and most striking indication of something wrong, it may be well briefly to consider some of the causes of this symptom. For this purpose we may broadly classify limping into two categories:—

(*a*) *Painless limp.*—This may be due to shortening of the limb, paralysis, or stiffness of one joint. In all these conditions the limb is not spared as a means of support, but used to the full. The body inclines towards the affected side at every step: in shortening of one limb because one limb is shorter than its fellow; in the paralytic limp because the patient first supports himself vigorously on the affected leg, and then more firmly on the healthy leg in order to throw the diseased leg forward for the next step; and in painless stiffness of one hip because the entire extremity, including the half of the pelvis, is moved forward as a whole, the weight of the body being received by both legs equally.

(*b*) *Painful limp.*—The interdependence of all the joints of the lower extremity is very well shown when the movement of one of them becomes painful. In such a case the patient stiffens all the joints by muscular action, and avoids, as far as possible, putting any weight on the affected limb by inclining his body towards the healthy side.

Method of Examination.

In conducting an examination for conditions at or near the hip the patient should be stripped. If he is able to walk it will be easy to observe the gait and note to which category it belongs—painful or painless limp. By further inspection the experienced observer may be able, if not to make a positive diagnosis, at least to narrow down the possibilities to a very limited extent. For instance, the obliteration of the gluteal fold indicates slight flexion at the hip, which together with some muscular wasting of the thigh would indicate hip disease.

The patient should now be laid on a flat couch and directed fully to extend both lower limbs. Attention should be drawn to the comparative length of the two limbs and the curvature of the lumbar spine. If the curve be exaggerated (lordosis) *the sound limb should be flexed* as far as possible on to the abdomen—Thomas's manœuvre—for in this way the lumbar spine is flattened by rotation of the pelvis. If the affected thigh now takes up a position of slight flexion, abduction, and rotation outwards, it points to fixity of the hip-joint in this position due to muscular rigidity and most probably hip disease.

On further examination of the affected limb it will be found that the movements of the hip are restricted or abolished in every direction, all apparent movements taking place at the lumbo-sacral junction. Each movement—flexion, extension, abduction, adduction, internal and external rotation—should be tested separately and compared with those on the sound side.

Fixity of the Joint in Early Tubercle.

It is important to remember that in early hip disease a few weeks' rest in bed may cause all the symptoms to disappear; this is due to abatement of the disease brought about by the rest, and must not be thought to be due to a faulty diagnosis, as on resuming activity all the pain and rigidity reappear. The fixity of the joint in early tubercle varies in degree with whether the child is rested or tired. Abduction and rotation are the movements first interfered with. If a child is being examined after a period of rest flexion and extension may be very little restricted. In such a case a good test is to attempt to abduct the limb rapidly. Spasm of the adductors will indicate involvement of the hip-joint, even if flexion and extension are perfectly free. As the disease becomes less acute spasm becomes increasingly difficult to demonstrate, until eventually it completely disappears. Gauvain states that at the last it may be elicited in the following manner:—

> If the femur on the affected side be grasped firmly in the region of the condyles it will be found that the head of the bone may be gently rotated within the acetabulum, either inward or outward, through a varying but often considerable angle. At the point where this movement is checked a further slight sharp rotation is *instantly followed, should* the disease be still active, by spasmodic muscular contraction, not confined to muscles about the joint, but extending to the abdomen and visible in the abdominal muscles, or still more easily demonstrated if the palm of the hand is placed on the abdomen between the iliac spines. Quite a gentle and painless but sharp rotary movement is sufficient to provoke this reflex spasm of the abdominal muscles. Failure to elicit this induced spasm, Gauvain adds, "may not necessarily imply that there is no active disease, though very probably the disease is quiescent. Its presence certainly indicates an active lesion."

Direct pressure just below the mid-point of Poupart's ligament will cause pain. This is often an early sign of hip disease, and combined with muscular rigidity is pretty conclusive evidence of joint infection.

Subacute Infections Denoted by Fixity of the Joint.

Although fixity of the hip generally denotes tuberculous disease, there are other conditions which may cause a painful limp with muscular rigidity which must be excluded. Amongst these may be mentioned all forms of subacute infections of the joint. In this connexion it must be remembered that a tuberculous focus generally commences in the epiphyseal junction of the neck of the femur and must almost inevitably break through into the hip-joint owing to the anatomical relations of the epiphyseal line to the joint cavity. This sudden *breaking into the joint causes acute symptoms* with fever. A preceding history of slight articular pain would point to tubercle. A rigor or herpes labialis accompanying the acute exacerbation would be indications against tubercle.

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[1] A paper read before the Cambridge Medical Society, Nov. 5th, 1920.

Conditions Simulating Hip-Disease.

The type of arthritis deformans sometimes met with in adolescents presents the greatest difficulty in diagnosis, as the resemblance to tuberculous disease may be very close. Even the evidence of a skiagram *may fail to be conclusive. Detection of the disease in* other joints will clear up the diagnosis.

There are other conditions, independent of the joint, which may cause pain and some restriction of movement and so simulate in some respects tuberculous disease of the hip.

Amongst these may be mentioned tuberculous disease of the sacro-iliac joint, a tuberculous focus in the great trochanter or disease of the overlying bursa, disease of the sub-psoas bursa, and psoas abscess from tuberculous disease *of the spine. In this last condition the limb is flexed and* everted; there may be lordosis, and the patient may limp in walking, but the movements at the hip are restricted only in the direction of extension and inversion, while in hip disease they are restricted or abolished in all directions. New growth in the vicinity of the hip, myeloma or sarcoma of the upper end of the femur, may simulate hip disease by causing flexion of the hip-joint and pain, leading to a painful limp. Inflamed glands in the groin, a paranephritic or appendicular abscess, may all cause spastic flexion of the hip, and an incomplete examination may lead to an erroneous diagnosis. Sciatica, neuralgia, and hysteria may all present difficulties in diagnosis and should be remembered.

Measurement.

Having conducted our examination so far, and, from the absence of pain and restricted movements in every direction, come to the conclusion that the case is not one of hip disease, we now proceed to further examination in order to ascertain the cause of the limp, excluding, for the purposes of this paper, all conditions other than those in the neighbourhood of the hip-joint.

With the limbs lying side by side, or as near the same position on either side as the condition will allow, we proceed to measure both limbs (1) from the anterior superior spine to the tip of the external malleolus, and (2) from the tip of the great trochanter to the malleolus. (In cases of extreme external rotation it may be more convenient to use the internal malleolus.) We next ascertain the relative position of the great trochanters to the pelvis. There are many ways of doing this, but the most graphic and satisfactory method is by means of Bryant's triangle. With the patient lying on his back on a flat couch, a base line is drawn from the tip of the great trochanter, prolonging the axis of the femur towards the trunk. A vertical line is drawn from the anterior superior spine to this base-line, and a third line is drawn joining the iliac spine with the tip of the trochanter. The right-angled triangle so obtained is normally an isosceles triangle. Any displacement of the trochanter upwards or backwards will alter the character of this triangle. The triangle should always be drawn on both sides for comparison, as in unilateral conditions the sound side acts as control, and even in bilateral affections the alteration in shape of the triangle is a useful diagnostic factor.

Non-traumatic Deformities Apart from Legg's Disease.

Omitting from discussion all conditions causing displacement of the trochanter which may result from injury, there are several, for the most part painless, non-traumatic deformities at the hip which have to be differentiated.

1. *Congenital dislocation of the hip.*—In this condition the head of the bone, although still within the capsule of the joint, is no longer in the acetabulum. It is generally above and posterior. The position of the great trochanter is correspondingly altered, as revealed by a long narrow Bryant's triangle with a shortened base-line. As compared with hip disease, the joint is characterised by remarkable acrobatic mobility of the thigh. The head of the femur can be moved backwards and forwards on the pelvis, and traction on the lower limb gives the characteristic "telescoping" of the leg. There is marked lordosis of the lumbar spine due to the backward implantation of the head of the femur on to the pelvis, which causes the centre of gravity of the back to fall along a line anterior to the points of body support; the backward curvature of the spine is the endeavour to bring it back again over the feet. In thin girls it is quite possible to see the head of the bone moving about, with every step, in the gluteal region. But in small fat children it is not so *evident. A general anæsthetic may even be necessary to* form a definite diagnosis. Trendelenburg's sign is characteristic of this condition. Malgaigne lays the child upon the healthy side and flexes the leg of the affected side to a right angle and slightly adducts it. One hand manipulates the limb so as to press the head of the bone as far as possible away from the pelvis. At the same time the limb is rotated. By palpation with the other hand two protuberances may be felt, one being the trochanter, the other the head of the femur. If only one protuberance is felt this is the trochanter and no dislocation is present. The history that slight lameness or waddling gait was observed as soon as the child *attempted to walk completes the evidence in favour of* congenital dislocation of the hip.

2. *Infantile paralysis.*—This condition when affecting the gluteal muscles *may sometimes cause difficulty in diagnosis.* The paralytic limp is very similar to that of congenital dislocation. The trochanter is rendered prominent by the wasting of the gluteal muscles. The undue mobility of the hip combined with some shortening of the limb completes the deception. Here, again, the history of the child having walked quite well previously, the history of an infective illness followed by widespread paralysis which gradually subsided, gives a clue as to the true nature of the condition. On examination Bryant's triangle will be unaltered, showing that the great trochanter is in its normal situation in relation to the pelvis. In progressive muscular atrophy the marked lordosis is suggestive of congenital dislocation. Examination of Bryant's triangle again prevents an error of diagnosis. If Bryant's triangle shows an abnormal position of the great trochanter without undue mobility of the hip but rather restricted movements in certain directions the abnormal position of the trochanter must be due to changes in the head or neck of the femur.

3. *Coxa vara.*—The forces acting on the neck of the femur are: (1) the downward thrust due to the weight of the body pressing on the head of the bone through the acetabulum, and (2) outward rotation of the femur, which force is brought *into play during standing and walking by the powerful* action of the glutei. This latter force is resisted by the strong ileo-femoral ligament. Any condition which causes softening of the bone will allow these forces full play and a bending of the neck of the femur results. In true coxa vara, the deformity as first described by Kocher, both these forces have acted on the neck of the femur and resulted in a bending of the neck in two planes: (*a*) a curvature with its convexity upwards due to the bodyweight thrusting down the head of the bone; and (*b*) a curvature with its convexity forwards due to the outward rotating strain acting on the neck during standing and walking. If now the head of the femur retains its normal relation to the acetabulum, the shaft of the bone, and hence the lower limb, will assume a position of marked adduction, external rotation, and hyperextension. In order to walk the limb must be brought parallel to its fellow. This is done by abduction, flexion, and internal rotation of the thigh. In extreme cases the whole range of abduction and internal rotation is taken up in order merely to attain the normal position of the limb. Hence in coxa vara these movements are restricted whilst all other movements are perfectly free. Owing to the upward lift of the trochanter there will be a corresponding shortening of the limb. The gait will be as in a case of painless limp.

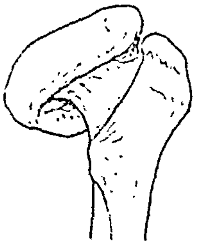
Coxa vara may be mistaken for early hip disease; like flat-foot it has a painful stage, so much so that even fixity of the joint may occur for a time. Careful examination will prevent this error in diagnosis. Coxa vara is not a disease in itself, but a deformity of the neck of the femur resulting from any condition which renders the bone unable to withstand the strains thrown upon it. Such conditions are: Early rickets, habitual carrying of heavy weights *during adolescence, adolescent arthritis deformans,* late rickets or rachitis adolescentium (which condition is for the most part confined to the ossifying junctions of the bones), and, in later life, mollities ossium, osteitis deformans, arthritis deformans, and fibrocystic disease of bone. The deformity may also result from osteomyelitis, tubercle, or fractures, or it may even be congenital.

4. *Coxa adducta.*—In this deformity the normal obtuse angle of the neck of the femur is diminished, sometimes to a right angle, and in severe cases even to an acute angle. The curvature of the neck of the femur is only in one plane, thus differing from that of coxa vara. If the head of the femur retains its normal relation to the acetabulum the

thigh would assume a position of extreme adduction, which would take up the whole range of abduction in order to attain the normal position in standing. Hence abduction is the only movement affected in this condition, again distinguishing it from coxa vara, in which both abduction and internal rotation are restricted. The conditions which produce this deformity are similar to those which lead to coxa vara. I would especially mention separation and slipping down of the epiphysis of the head, due either to trauma or late rickets.

Legg's or Perthes's Disease.

There is yet another affection of the hip to which attention should be drawn, a condition which appears to have been first described by Legg, of Boston, as early as 1909. He described it under the title "an obscure affection of the hip-joint." In 1910, Perthes, of Tübingen, apparently unaware of Legg's paper, published reports on cases of "Arthritis Deformans Juvenilis." Later on, in 1913, having excised a piece of synovial membrane, and a piece of the head of the femur from one of his cases, and finding no evidence of inflammation, he concluded that it was not an arthritis, nor did it bear much resemblance to what the Germans called arthritis deformans. But he renamed the condition "Osteochondritis Deformans Juvenilis." About the same time (1910) Calvé described a disease, which appears to be identical, and called it by the non-committal name of "pseudo-coxalgie"—a wise precaution, in that the pathology of the disease is still obscure. The condition is generally described as "Perthes's disease," although in justice to Legg's undoubted priority it should be called "Legg's disease."



Legg's disease. Specimen in the Humphry Museum. An adult femur showing flattening and curling over of head of femur like a mushroom. There is no deposit of bone upon the neck or any other part of the femur. Is this the ultimate result of Legg's disease?

This affection of the hip occurs in children between the ages of 3 and 12 years. Of 50 collected cases 40 were in boys and 10 in girls. The subjects are apparently in perfect health, strong and robust. It is not common. Delitala found only 6 cases in 1500 cases of "hip affections of orthopædic nature." In that the first symptom is a limp, with perhaps a certain amount of pain—which, however, is never severe—it may be taken for early hip disease.

Clinical examination.—There may be some prominence and elevation of the trochanter with a little shortening of the limb (½-1 in.). Bryant's triangle will show a correspondingly shortened base-line. On testing the movements, flexion and extension will be found to be perfectly free and painless. Internal rotation may be slightly limited, but abduction will be markedly restricted. The condition is almost always unilateral and the disability slight. It is distinguished from the juvenile type of arthritis deformans in that in the latter there is more pain, loss of movement, and deformity. In Legg's disease there is no crepitation on movement or other sign of involvement of the articular surfaces.

X ray examination.—By this means marked changes are observed. In a typical case the upper border of the bony nucleus of the femoral head, instead of being represented by a segment of a circle, is shown as a flat surface. In photographic prints (positives) light spots may be seen in the head which are supposed to be islets of cartilage, showing irregularity of ossification. The epiphyseal line between the head and the neck is irregular or even segmented. The neck of the femur is more pervious to X rays than its fellow and its contour may be irregular. The acetabulum may be blurred or irregular.

The characteristic feature of the disease is the astounding X ray picture associated with little or no disability.

Ætiology.

A large percentage of recorded cases give a history of injury four to six months previously. It is said to be often seen after reduction of congenital hip dislocation, occasionally on the sound side. It has been suggested that hypothyroidism is to blame, as in some cases a family history of this defect has been elicited. Gauvain, amongst others, suspects the condition to be an infection, and has reason to suppose that the infection is protozoal rather than bacterial. Roberts believes the condition to be a result of congenital syphilis in spite of a negative Wassermann reaction, arguing that subjects with frankly syphilitic bone lesions and with a definite family history of syphilis often give a negative reaction, and also that the pathological findings in Perthes's disease coincide with osteochondritis, one of the most common expressions of bone syphilis in children. Finally, he points out that the course of Perthes's disease is similar to that of many other syphilitic joint conditions in that the destructive process is self-limited and that there is a tendency to more or less complete restoration of function. Whether or no some constitutional condition underlies Legg's disease has not yet been proved. It is certain, however, that the disease must be one of three pathological processes—namely, new growth, inflammation, or degeneration—due to some circulatory disturbance. There is nothing to suggest new growth. As regards inflammation, Ely rightly states that it is not likely that a destructive inflammation could exist in the head of the femur without causing symptoms or an arthritis. No evidence of an arthritis has been adduced. As regards degeneration due to some circulatory disturbance, there are certain points worthy of consideration.

Traumatic Injury.

First, although trauma has been discounted as a causative factor, it should be noted that a large proportion of recorded cases give a definite history of injury some few months previous to the onset of symptoms; secondly, that the disease occurs more frequently in boys, who are proverbially more prone to injury, than in girls, in the proportion of 4 to 1; and thirdly, that the disease has only been observed in the epiphyseal head of the femur, the epiphysis most subjected to strains and contusions. As no theory of infection or constitutional condition can alone explain why Legg's disease only occurs at the hip, let us assume that trauma is a definite causative factor.

Circulatory Disturbance.

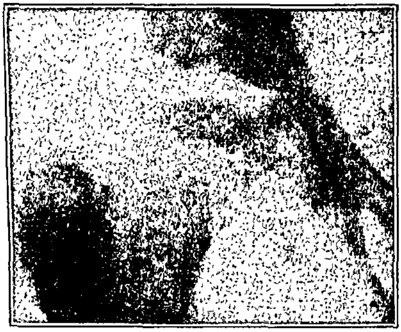
In the absence of positive evidence of inflammation let us also assume that the disease is of the nature of degeneration due to some circulatory disturbance. In support of this assumption there are certain anatomical points of interest in connexion with the upper epiphysis of the femur which may have an important bearing on the incidence of Legg's disease at this epiphysis to the exclusion of all other epiphyses.

With the exception of the head of the radius, the epiphysis of the head of the femur is the only epiphysis whose surface is entirely covered with articular cartilage. Except for a few insignificant vessels which enter the head through the site of the ligamentum teres, the epiphysis is entirely dependent for its blood-supply on the small vessels entering the circumference where the epiphysis joins the neck, thus differing from the lower epiphysis of the femur, for instance, which has large areas covered with periosteum on the mesial and lateral condyles, from which it derives a free supply of blood. True, Kolliker has observed blood-vessels burrowing into the epiphyseal cartilage from the diaphysis, but this supply would be small. The nutrition of cartilage has not been fully worked out yet. Strangeways asserts that articular cartilage is nourished by the synovial fluid, and that the changes found in osteo-arthritis are secondary to defects in the secretion of the synovial membrane. At birth the upper epiphysis of the femur includes the great trochanter, thus resembling at this age the upper epiphysis of the humerus. The neck of the bone is developed as an upward extension of the shaft, which eventually divides the epiphysis into two, one portion forming the head and the other portion the trochanter. This division is completed about the third year, the earliest age at which Legg's disease has been observed. From this age onwards the restricted blood-supply of the head would obtain.

Skiagraphic Evidence.

Any injury causing a separation, or partial separation, of this epiphysis, or severe contusion of the epiphyseal junction might seriously interfere with the blood-supply, which disturbance might lead to degeneration of the cartilaginous head. Skiagraphic evidence would seem to support this theory.

The flattening of the head by the pressure of acetabulum due to the weight of the body suggests a softening of the cartilage forming the head. The irregularities in ossification evidenced by the transparent islets suggest rather circulatory disturbance than infection. And, lastly, the apparent displacement of the epiphysis, often described, is suggestive of trauma. The changes in the acetabulum may very well be secondary to those in the head. The disease, resulting as it does in so little disability and tending to more or less complete restoration of function, the opportunity of obtaining specimens during the active period of the disease, must, of necessity, be rare. Our evidence is, therefore, almost entirely skiagraphic, and until the interpretation of bone lesions, as shown by X ray, is based on a wider experience of comparison of skiagrams of specimens of known conditions with those found in the living, so long will the pathology of many bone diseases remain obscure. There is a wide field for research in this direction. The affection runs its course in two to three years. Its most active period is one year. Even after all symptoms have subsided and a cure evidently has been obtained, the X ray may still show an alarming picture.



Skiagram of Legg's disease of right hip.

Treatment.

As regards treatment, most surgeons seem to have considered that none was called for. Fixing the thigh in an abducted position by means of a plaster-of-Paris splint and allowing the child up on crutches with a patten under the sound foot until the more acute stage has passed would seem the most rational procedure to adopt.

Before concluding I will briefly describe one of my cases, that of a boy, aged 13, but markedly underdeveloped, an only child of healthy parents, with no history of important previous illness.

In January, 1917, he began to limp and complained of shooting pains in left leg, which symptoms increased so that in March, 1917, he was unable to walk; the mother stated he had marked muscular wasting of thigh. He was taken to a hospital where his left leg was put into a Thomas's splint and kept therein for 1 year 4 months, being removed in August, 1918. The boy was necessarily lame for a time, but gradually improved, until in a few weeks he did not limp at all. In October, 1919, he began to limp again with little or no pain, and *in March, 1920, came* to my out-patient's department complaining of limp and pain in right knee, hip, and back. I obtained a history of his having fallen off a baker's cart six to seven years before with no apparent injury. On examination I found over ¾ inch shortening on right side, free movements of flexion and extension, but restricted abduction. Bryant's triangle showed a shortened base line. The X ray picture revealed a condition similar to that described as occurring in Legg's disease. Wassermann reaction was negative.

Summary and Conclusion.

It will be seen that affections at the hip fall into two groups: (1) those in which there is pain and muscular rigidity, restricting movement of the joint in every direction, the most common and important member of this group being tuberculous disease of the hip; (2) those in which there is little or no pain and no muscular rigidity, but rather undue mobility or restricted movements in certain directions only. Under this group fall congenital dislocation of the hip, coxa vara, coxa adducta, and Legg's or Perthes's disease. After a careful and methodical physical examination has been made and an opinion formed as to the nature of the case the patient should be referred to the radiologist for skiagraphic evidence, not, as is so often done, for diagnosis. X ray diagnosis unsupported by clinical evidence is sure, sooner or later, to lead to serious error. The surgeon and the radiologist should work together. This is but another example of the value of "team-work." It is essential that both joints should be photographed. In order to minimise errors of reading which may result from differences in exposure, developing, or the position of the plates in relation to the bones, both hips should be taken on the same plate. The sound joint is our only reliable control. In cases of early hip disease the changes may be so slight that without the sound side to compare with it is almost impossible to be certain as to the normal outline of the bone, or as to whether there is narrowing of the shaft due to atrophy, abnormal transparency of the bone (osteoporosis), or whether the gap, representing the articular cartilages on the head of the femur and acetabulum is of normal thickness, or whether small foci of disease exist.

I must not, however, trespass on the province of the radiologist. I will content myself by re-emphasising my remarks as to the necessity of surgeon and radiologist working together. The clinical picture and the skiagram are often diametrically opposed. In tubercle, for instance, physical examination, on the one hand, finds a subject with pain and fixed hip-joint with consequent grave disability. The X ray, on the other hand, especially in cases of primary synovial infection, may show nothing at all, whereas in Legg's disease the radiologist may be staggered by the alarming picture presented by the skiagram, whilst the surgeon finds a patient with little or no disability. Team-work is the keynote of future medicine and surgery. It is thus, and thus only, that the best results will be obtained.

THE FREQUENCY OF LATENT SYPHILIS IN A MEDICAL DEPARTMENT.

BY TH. E. HESS THAYSEN, M.D.,
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THE great value of the Wassermann test in a medical clinic is a well-known fact, established by numerous investigations both in the New World and in the Old. The question of the frequency of latent syphilis[1] among patients in a medical department has not, however, yet been settled, because as a rule a W. test has been carried out only where the clinical symptoms point to syphilis or where there has at least been cause for suspicion thereof. For the discovery of latent syphilis it is necessary also to perform a W.R. in those cases where neither the history of the case nor the clinical examinations give any reason for considering the patient as a syphilitic, as only in this way are we able to discover the cases where the positive W.R. is the only sign of the luetic infection. Such researches have been made by *Fildes in 1917, Bruhn in 1916, Weill in 1914*, in Denmark by Scheel and Arne Faber in 1917, and by Meulengracht in 1919. Interesting investigations have been performed by Fildes on out-patients at the London Hospital, who did not suffer from any medical disease, while Bruhn examined patients, amongst whom were several soldiers, at the dermatological clinic in Charlottenburg, near Berlin. The results gained by these authors can therefore not be compared with others derived from a medical department. In his treatise, which I only know from a short account in *La Presse Médicale* Weill does not state in how many cases he found latent syphilis.

Between April 1st, 1917, and April 1st, 1918, I have performed the W. test on 738 patients at St. Johanesstiftelsen. All patients over 15 years of age admitted there were examined except those who died at once or a few hours after their admittance; a few were omitted accidentally, but the essential fact is that no selection has taken place among the patients. All the W. tests were performed at the State Serum Institute of Copenhagen with the technique described by Boas in 1910. The cases in the tables have been divided into two groups, in the first of which are collected those patients who gave a positive history of primary infection, and in the second those in whom the case-history was negative in this respect. In each group it has been estimated how many patients could be recognised as syphilitics by clinical examination alone, judging from typical symptoms.[2] I admit that the limits of what we can recognise clinically as syphilis have been rather strictly defined, but for practical reasons I have omitted a group of "probable syphilitics."

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[1] The name latent syphilis was invented by Fournier, for cases only recognised in the tertiary stage. Since the introduction of the W. test we must add those cases in which the positive W.R. is the only sign of the luetic infection.

TABLE I.—*Cases with History of Syphilis.*

Sex.	W.R.	Clinical symptoms.	Total number.	Sex.	W.R.	Clinical symptoms.	Total number.
Men	+	−	15	Women	+	−	8
		+	5			+	4
	−	−	9		−	−	6
		+	7			+	4

TABLE II.—*Cases without History of Syphilis.*

Sex.	W.R.	Clinical symptoms.	Total number.	Sex.	W.R.	Clinical symptoms.	Total number.
Men	+	−	12	Women	+	−	24
		+	5			+	10
	−	−	283		−	−	335
		+	5			+	6

A comparison between Tables I. and II. shows us, that out of 32 patients in Table I. with positive W.R., clinical symptoms were found in 9 cases; and out of 51 in Table II. in 15 cases. All patients in the first table had had previous treatment, but none in Table II. In 655 patients with negative W.R. clinical symptoms of syphilis were found in 22 cases; in half of them there was no evidence of previous infection. In 83 patients with positive W.R. clinical symptoms were found in 24 cases. In 36 of these 83 patients the positive Wassermann was the only sign of possible syphilis, or what led to a decision to consider them as syphilitics.

It is among these 36 patients and 11 cases with negative W.R. and clinical symptoms of syphilis, that we may expect to find the cases of latent syphilis.

The Diagnostic Value of the Wassermann Test.

How many of the former 36 patients we can regard as syphilitics depends upon the value one can ascribe to the W. test as an aid to diagnosis. The point of view which demands that the smallest dose of serum (0·2 c.cm.) must inhibit hæmolysis completely if the reaction is to be regarded as specific, will certainly be justifiable when the rare non-syphilitic diseases giving positive W.R. can be excluded. This standpoint is maintained by Craig, and agrees with the experiences gained in this country. Table III. shows that complete inhibition was found *in 30 patients by* employing 0·2 c.cm. serum; in 18 of the 19 in which the test was repeated the reaction was again positive, and only became negative at a third examination after treatment (Nos. 13, 17, 28). In one case, No. 9, the reaction was negative at a second examination, although the patient had not been treated. This case must be excluded as doubtful. The remaining 29 cases can with fair probability be regarded as syphilitic. In Case 15 a partial inhibition was found at two examinations at about a fortnight's interval; this patient can with fair probability be considered as a syphilitic. In the remaining five cases partial inhibition was followed by a negative reaction. Thus, among 36 cases there are 30 (20 women and 10 men) which we look upon as most probably syphilitics. (Table III.)

TABLE III.

Serial number.	Age.	Sex.	Complaint.	W.R. of blood.	
				Smallest quantity of serum giving no hæmolysis.	Largest quantity giving complete hæmolysis.
1	60	F.	Chronic nephritis, arrhythmia.	0·05 0·1	0·01 0·025
2	57	F.	Broncho-pneumonia.	0·2	0·1
3	53	F.	*Multiple arthritis, ulcus cruris, pyuria.*	*0·2* 0·2*	*0·05* 0·1
4	71	F.	Multiple arthritis, pyuria.	0·05 0·1	0·01 0·025
5	42	F.	Alcoholic polyneuritis.	0·0025 0·05 0·05	0·0005 0·01 0·01
6	80	F.	Ulcus cruris.	Neg. 0·2 Neg.	... 0·1 ...
7	75	F.	Senile dementia.	++ 0·2	... 0·01
8	64	F.	Left hemiplegia.	0·05 *0·02*	0·01 *0.05*
9	73	F.	Uterine cancer.	0·2 Neg.	0·05
10	31	F.	Pulmonary tuberculosis.	0·2	0·05
11	72	F.	Facial and peripheral palsy.	0·001	0·0005
12	41	F.	Nephritis, optic atrophy.	0·05 0·2 0·2	0·01 0·025 0·025
13	52	F.	Mental disease.	0·1 ++ Neg.	0·024 ... ...
14	75	F.	Bronchiectasis.	0·01 0·005 0·1	... 0·001 0·025
15	75	F.	Encephalo-malacia.	0·2* 0·2†	0·1 0·1
16	57	F.	Pulmonary tuberculosis.	0·01 0·025	0·0025 0·005
17	40	F.	Melancholia.	0·2 — Neg.	0·05 0·1 ...
18	49	F.	Miseries.	0·00025 0·00025 0·00025	0·0001 0·0001 0·0001
19	75	F.	Chronic nephritis.	0·025	0·005
20	48	F.	Uterine cancer.	0·05 0·2	0·01 0·05
21	72	F.	Uterine cancer.	0·005	0·001
22	57	F.	Miseries, anæmia.	0·2	0·05
23	37	F.	Right pleurisy.	++	...
24	43	F.	Uterine cancer.	0·2‡	0·1
25	29	M.	Melancholia.	0·2	0·05
26	76	M.	Senile dementia.	0·025	0·005
27	81	M.	Bronchitis.	0·2	0·05
28	64	M.	Right hemiplegia.	0·1 0·2 0·2 Neg.	0·025 0·05§ ... ...
29	59	M.	Ulcus cruris.	0·0001 +++ ++	0·00005 ... ...
30	57	M.	Lobar pneumonia.	0·025 0·01 0·025	... 0·0025 ...
31	50	M.	Ulcus cruris.	0·05 0·05	0·01 0·025
32	38	M.	Pulmonary tuberculosis.	0·2	0·05
33	67	M.	Arterio-sclerosis.	0·2	0·05
34	42	M.	Amputation left femur.	0·05	0·01
35	40	M.	Alcoholic polyneuritis.	Pos.	...
36	69	M.	*Left hemiplegia.*	0·2* Neg.	0·05 ...

* = 20 per cent. hæmolysis. ‡ = 40 per cent. hæmolysis.
† = 10 .. .. § = 80 .. ..

These patients have been examined with special care in order to find signs of syphilis. The history of the cases have been taken in as much detail as possible.

As already mentioned, it is difficult to see in Weill's treatise in how many cases the positive W.R. was the only sign of existing syphilis. Arne Faber, who examined 1233 patients, found 29 positive W.R. without any other sign of syphilis, and all the patients denied previous infection. In 21 of these (13 women and 8 men) complete inhibition was found by employing 0·2 c.cm. serum. Arne Faber does not state in how many cases the reaction was repeated, only that this was done. Meulengracht found, among 504 patients, 10 in whom the positive W.R. was the only sign of syphilis, while quite confident in considering the patients as syphilitics.

The Statistics Examined.

I can throw no light on the great differences in the frequency of latent syphilis found by these workers owing to the deficient history obtainable in the cases in my series. This was only to be expected, as the greater part of my patients are old; Faber in accordance with Meulengracht found that barely half (45 per cent.) of his syphilitic patients gave evidence of previous specific infection. Among 114 syphilitics I found 52 only who gave a clear history of a primary sore.

A glance at the class of patients in the departments which furnished material for this examination gives us, on the other hand, some explanation. Faber performed his investigations at the municipal Bispebjerg Hospital, which admits patients mainly of the middle classes of Copenhagen. Meulengracht investigated the medical clinic of the University, at which the greater number of patients come from the country population. My patients are taken from a hospital which only admits the poorest, of whom no doubt many have been infected at a time when neither the knowledge of syphilis was as widespread as it is now nor the diagnosis as certain. Finally, we must allow for some difference in the interpretation of what clinically can be recognised as syphilis and what not, especially between Faber's and my patients. It seems that Faber means that a pure aortic insufficiency is a sign of syphilis, whereas I, in accordance with the post-mortem examinations of Flojstrup, only do so if the history of the case shows evidence of syphilis or other signs of this disease. Flojstrup found that in 22 cases of pure aortic insufficiency only 13 suffered from syphilis. From Faber's treatise it is impossible to see to how great a degree our notions of what can be recognised as syphilis differ, so that I am unable to interpret his figures quite. His investigations are, however, still the easiest to compare with mine. Doing so we find:—

Faber	1233 patients,	with	21 cases,	1·7	per cent.
Thaysen... ...	738	„	„ 30 „	4·1	„
In all	1971	„	„ 51 „	2·6	„

The approximate frequency of ignored latent syphilis discovered only through the W.R. among patients in a medical department which admits patients of all ages, above 15 years, from a large town is, as we see, about 2·5 per cent. of the whole number.

In Table IV. I have collected syphilitic patients according to their age in groups of 5 years from 20 to 80 years of age. In the cases where I have been able to ascertain at what age the patients in my series have contracted the syphilitic infection it has varied between the ages of 18 to 40, the average age being 26. If we reckon the age of 25 as an average we find the following based on Faber's and my series of cases: 8 patients have had the syphilitic infection for 15 years, 19 from 15 to 30 years, 12 from 30 to 45, 10 from 45 to 60 years, without it having given any symptoms which clinical examination could detect.

TABLE IV.

Age.	No.	Age.	No.	Age.	No.
21-25	2	46-50	4	66-70	2
26-30	2	51-55		71-75	1
31-35	4	56-60		76-80	1
36-40	2	61-65		80	1
41-45	9				

Looking through the diseases for which these patients were admitted, we find nothing characteristic. The cerebro-spinal fluid has been examined in six of my patients; 5 showed negative W.R., whilst one, No. 4, was positive; *this patient was being treated for chronic nephritis and optic atrophy.* The amount of cells in the cerebro-spinal fluid was not increased in the 5 cases examined. A post-mortem examination has taken place on 5 of my patients mentioned here without it having been possible to discover any macroscopic sign of syphilitic disease. Of the 5 cases, one had a syphilitic liver, and in another the post mortem was only partial. In all the other cases all organs, the brain included, have been examined.

The other group of latent syphilis contains 11 patients in whom the W.R. was negative, but where clinical symptoms made it most probable that they had been suffering from syphilis (Table V.). The cases are collected in Table V.; as far as we know, none of the patients had ever been under antisyphilitic treatment. As we see by the table, Argyll Robertson's phenomenon was in four cases the only sign of syphilis. It is well known that this phenomenon is frequently an additional finding in syphilitic patients treated for other diseases; Faber's researches distinctly show this circumstance. Thus the whole group of latent syphilis comprises 41 cases in 738 patients, or 5·6 of them all, 36 per cent. of the syphilitic. Among these we find 30, or 4 per cent., of the whole group where the W.R. is the only sign of the specific infection. Even if this figure is too high, being rather about 2·5 per cent. or less, it is high enough to demand our full attention, and it raises the following two questions, already put forward by Scheel.

Problems Arising.

Firstly, is it necessary to perform a Wassermann on all patients admitted to a medical department?

This question must be answered in the affirmative when the patients are from a large city. The gain is not only that in some doubtful cases the exact therapeutic method which alone can bring about the cure is applied, but also, as Scheel strongly emphasises, the patient undergoes a special examination in order to discover signs of an active process, if possible. There is in these cases special reason to emphasise the great importance of such a thorough examination of the central nervous system as cannot be carried out on all patients admitted to a medical department. Often enough it has been pointed out that one naturally cannot conclude that the disease is due to syphilis because the W.R. is positive, and the frequency of these cases alone shows how much caution is demanded in this respect.

Secondly, should all these cases be treated? This is not as easy to answer as it might seem, because it is often of vital importance to the patient from a social point of view not to be treated as syphilitic. Even if it is usually possible in a hospital to adopt therapeutic methods without awakening suspicion in those around the patient, this is not always possible in daily life, and a look at Table IV. shows that the syphilitic virus in these cases has been a particularly inactive one, in spite of the great strength of the W.R. in several of them (Table III.). It seems to me that the only way to decide this difficult question lies in a consideration of the ages of the patients. Even if a careful clinical examination of all organs can detect no symptoms of syphilis whatever the patient must be treated as thoroughly as possible if he is less than 50 years of age,

TABLE V.

No.	Age.	Sex.	Clinical symptoms of syphilis.
1	64	Man.	Saddle-nose.
2	73	„	Argyll Robertson pupil.
3	57	„	„ „ „
4	72	„	„ „ „
5	69	„	Aortic aneurysm.
6	86	Woman.	Cicatrices palati duri et mollis.
7	78	„	„ „ „ „
8	66	„	Tabes dorsalis.
9	74	„	„ „
10	64	„	Argyll Robertson pupil.
11	41	„	Saddle-nose.

while I should prefer to wait for clinical symptoms if he is older. An essential thing in these cases is that the patient's private doctor is informed.

The generally accepted opinion that a positive W.R. means that the syphilitic infection is still active is based, so far as I can see, mainly upon the following two observations: (1) that the W.R. generally becomes negative during the treatment that cures the manifest syphilitic symptoms; (2) that a formerly negative W.R. can be changed into a positive one, when the old disease breaks out again or new symptoms occur.

From the first observation no other conclusion may be drawn at the moment than that the positive W.R. is influenced by the treatment; it does not justify the assumption that because the W.R. has become negative the patient's syphilitic infection has been cured. The second observation will have no value in this connexion until it has been proved that the change from a negative into a positive reaction is almost always followed by clinical symptoms, or that these arise much more frequently in the presence of a positive than of a negative W.R. We are, so far as I know, still waiting for the answer to these questions—an answer which only can be given by examinations made on a great number of syphilitic patients through several years, watching for new syphilitic symptoms or changes in those already existing and comparing them with the results of the Wassermann test.

When among 114 cases of syphilis we are able to discover no less than 30 in whom the syphilitic infection can only be discovered by the examination of the blood, in spite of the fact that the infection in many of the cases dates from several years back, this striking observation throws a different light on the prognostic value of the positive W.R. than that mentioned above, and the question arises, Where in the body are the substances formed which produce the positive W.R.? To the five post-mortem examinations mentioned above I am able to add two more. One of the patients (No. 7 in Table III.) died later; a careful examination of all organs, including the brain, could detect no syphilitic changes whatever. In the case of another patient, a woman, 72 years of age, who had been a prostitute for several years and had contracted syphilis when 20 years old, I could detect only an Argyll Robertson pupil as a clinical sign of syphilis; cerebro-spinal fluid was normal in all respects; the blood showed a positive W.R. (0-60-100) on three separate occasions. She died from carcinoma of the stomach; at the post-mortem examination I could not find any sign of a syphilitic change in the brain or any other organ. A careful microscopical examination of brain, liver, aorta, kidneys, adrenals, pancreas, and spleen showed only senile changes and a slight chronic nephritis due to arterio-sclerosis.

It is difficult to bring these findings into accordance with the generally accepted opinion that the positive W.R. indicates a still active syphilis, and that the antibodies that produce the W.R. are formed in the organs where the syphilitic inflammation has taken root. Does the positive W.R. in these cases indicate that somewhere in the body, perhaps in the bone marrow, there still is a depôt of spirochætes from where the antibodies come, or does the positive W.R. mean that the syphilitic infection is dead, while the antibodies are still present in the blood? If the first supposition is right we find an analogy in the Widal reaction, which sometimes persists for years in patients treated for typhoid fever; if the second comes nearer to the truth, the analogy lies in the Pirquet reaction in tuberculosis, which is still present even if the specific lesions are calcified.

THE ACTION OF QUININE ON PREGNANT UTERUS.

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THE physician in the tropics is frequently called upon to treat an attack of malarial fever in a pregnant patient, and is invariably asked his opinion on the effect that quinine will have in precipitating labour. Our knowledge on the action of this alkaloid on pregnant uterus has, up till now, been based mainly on clinical experiences. We know that quinine can induce labour, yet if given as an ecbolic agent it often as not completely fails. H. P. Dimmock (1893) considered, as the result of a large practical experience gained at Bombay, that quinine in the ordinary therapeutic doses of 5 to 10 gr., three times a day, could be given with safety during pregnancy. W. C. Swayne and E. Russell (1919) discussed in 1919 the trial of a herbalist who was tried before the Recorder at Bristol on a charge of procuring an abortion by quinine. The Recorder, in his summary, asked the jury to decide whether quinine was a noxious drug: (1) in ordinary doses, (2) in large doses. The jury replied to (1) No; to (2) Yes, and these answers express the popular and current opinion held on the ecbolic action of quinine. J. E. Atkinson (1890) in an able summary of the clinical evidence considered that the ecbolic action of quinine was largely due to an idiosyncrasy of the patient. His conclusions were as follows:—

(1) The cinchona alkaloids have not a fixed and definite influence in causing contractions of the uterus.

(2) An oxytocic action is occasionally produced by these remedies. Their action depends on idiosyncrasy, as in the other idiosyncratic reactions to cinchona, it is impossible to tell in any given subject its manifestations.

(3) There is some evidence that the action is only excited under large doses, and in debilitated subjects.

(4) Cinchona and its derivatives should be employed during pregnancy with great circumspection, and should be at once withheld upon the supervention of symptoms indicating a uterine motor influence.

The majority of the writers on this subject have failed to consider a very important additional factor that occurs during the course of a malarial attack—viz., death of the fœtus from the effects of high temperature. The action of quinine in controlling the malarial fever, and so preventing inter-uterine death of the fœtus, far outweighs any effect this drug may have in precipitating labour. The ecbolic effect, as I will now proceed to show, only occurs under certain conditions.

Technique.

The test animal was killed, and the uterus was excised as rapidly as possible and placed in a bath of Ringer's solution containing traces of magnesium chloride at 37° C. After opening the abdomen an incision was made through the centre of the vagina, the cut vaginal end was lifted up with forceps, and the broad ligament divided throughout its length so as to free the left horn of the uterus and ovary on this side. The right horn of the uterus was divided from the left by cutting through the upper end of the cervix. The left horn and its fœtal contents (moderately advanced in gestation) were removed to the bath. The vaginal end was fixed to a glass tube bearing a platinum needle, and the ovarian end by a platinum needle which was attached by a hair to a writing lever. The recording of the contractions was done on the drum by a glass frontal writer, described by Lovatt Evans (1919). The bath was kept at a constant temperature of 37° C., and a continuous supply of oxygen was maintained by means of a fine spray of this gas delivered from the bottom of the glass holder fixing the vaginal end. Except in one experiment the lever at the writing end was counterbalanced by a heavy weight. The bath, apparatus, &c., was of a general type described by H. H. Dale and Laidlaw.

The standard base solution was prepared as follows:—

One g. of anhydrous base was dissolved in 27 c.cm. N/HCl to form the soluble bihydrochloride, and about 120 c.cm. of distilled water were added to make the volume up to 150 c.cm.; 27 c.cm. of N/NaOH were slowly added, constantly shaking in order exactly to neutralise the whole of the hydrochloric acid. The volume was then made up with distilled water to exactly 200 c.cm. in a measuring flask. The standard solution was a 1-2000 solution of anhydrous base in normal saline—i.e., 1 c.cm. contained 0·5 mg. of anhydrous base. The requisite amount of NaCl was formed by the action of the HCl and NaOH. This solution was warmed over a water-bath and added to the uterine bath in the required doses. Quinine and the other cinchona alkaloids can only circulate in the blood in the form of a base, which acts as an alkali; for this reason the base was chosen instead of acid salts.

The Effect of Quinine Base on the Pregnant Uterus.

In a paper read before the Therapeutic Section of the Royal Society of Medicine I pointed out that the dextrorotatory cinchona alkaloids—i.e., cinchonine and quinidine—had a greater action than the lævorotatory isomerides—i.e., cinchonidine and quinine—in increasing the amplitude and rhythm of uterine contractions in non-pregnant guinea-pigs. This finding probably holds good for pregnant muscle as well, but I should have required much more material conclusively to prove the point, as the variations in response to different stimuli are considerable when one is testing pregnant uterus. As the object in this research was to explain the action of quinine on the pregnant uterus, my tests were mainly carried out with this alkaloid. One can safely say with regard to the action of these cinchona alkaloids, that whatever effect quinine has on pregnant uterus, the others will only differ from each other in degree of action.

TEST 1.—*Guinea-pig's uterus.*—4 mg. of quinine base was allowed five minutes' contact and was then thoroughly washed away with three changes of Ringer's solution at 37° C. The capacity of the bath was 175 c.cm., this corresponds roughly to a concentration of 1-44,000. After the uterus has settled down to its normal rhythmic contractions 4 mg. of quinidine base was next allowed five minutes' contact. After washing the uterus free from quinidine cinchonine was tested, but owing to the insolubility of the base the same dose of alkaloid was tested, dissolved as a hydrochloride. All three alkaloids caused a marked increase of tonus in concentrations of 1-44,000. As a result the uterus is contracted rigidly round the fœtus. The membranes remained intact in spite of the contractions, as the rigidly contracted os gave sufficient support to prevent their rupture.

TEST 2.—*Rat's uterus.*—Guggenheim (1912) showed that histamine, which caused a marked contraction of the uterine muscle in all other species of animals, when tested on rat's uterus caused relaxation instead of contraction. In this test the pregnant uterus of a white rat was used, and the four alkaloids quinine, hydroquinine, quinidine, and hydroquinidine were tested alternately. The alkaloids were made up as a 1 per cent. solution of anhydrous base dissolved in the requisite amount of N/HCl to form bihydrochlorides. 2 mg. of each alkaloid were placed in a 150 c.cm. bath for five minutes, and then thoroughly washed away with Ringer's solution. The uterus was allowed to settle down to the rhythmic contraction of the excised pregnant uterus. This test shows that quinidine and hydroquinidine are slightly stronger in their action on rat's uterus than quinine and hydroquinine. With none of the four alkaloids is the amplitude of the normal rhythm increased; the rhythm is accelerated and the relaxation diminished, so that the main effect is some increase of tonus. There was no dilatation of the os uteri.

Effects of Different Concentrations of Quinine Base on the Pregnant Uterus.

In a recent paper King and the present writer showed that when a single dose of quinine was taken on an empty stomach by one of us, the concentration of quinine in 5 c.cm. of blood varied with the size of the dose ingested, thus:—

(*a*) After 1 g. of anhydrous quinine base dissolved as bisulphates (approximately 20 gr. of sulphate). The concentrations found in the blood were: at the first hour, 1-150,000; second hour, 1-187,000; third hour, 1-225,000.

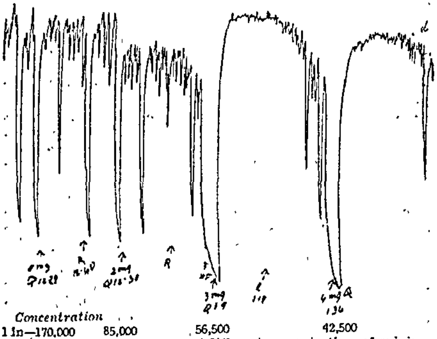
(*b*) After 0·5 g. of anhydrous quinine base (approximately 10 gr. of sulphate): at the first hour, 1-250,000; second hour, 1-280,000.

(*c*) After 0·25 g. of anhydrous quinine base (approximately 5 gr. of sulphate): at the first hour, 1-378,000; second hour, 1-750,000.

These results indicated the necessity of testing the effect of different concentrations of quinine on the pregnant uterus.

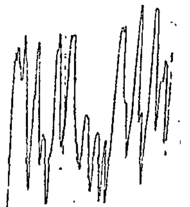
TEST 3.—*Guinea-pig's uterus.*—In this test increasing doses of anhydrous quinine base commencing with 0·5 mg. were added at intervals of two minutes without washing out; the amount was gradually increased until a total of 4 mg. had accumulated in the 150 c.cm. bath. This concentration of 1-37,500 produced a state of persistent tonus previously described, and to show its sustained character it was recorded for 30 minutes. This test shows that with a 0·5 mg. dose—i.e., 1-300,000 concentration, there was no effect seen. With 1 mg.—i.e., at 1-150,000, the amplitude was increased and somewhat sustained. It was not until a concentration of 1-37,500 was attained that the uterus was maintained for a space of 30 minutes in a state of high tonus.

TEST 4.—*Guinea-pig's uterus.*—In this test the whole dose—i.e., 1, 2, or 4 mg.—was put into the bath. After each test the uterus was well washed with Ringer's solution and allowed to relax before the next dose was tested.



GRAPH 1.—Showing the effect of different concentrations of quinine base on pregnant guinea-pig's uterus. (The mark R indicates the washing out with Ringer's solution.)

1 and 2 mg. of quinine base in a 170 c.cm. bath—i.e., a concentration of 1 in 170,000 and 1 in 85,000 respectively—produced little effect on the contractions of this pregnant uterus. The 3 and 4 mg. doses (1-56,500 and 1-42,500) produced a tonus effect. On this uterus a small hole was now cut over the fœtal sac, and a 4 mg. dose was again given. The contraction induced by this dose of quinine forced the membranes through the rent and they ruptured. It was difficult to see what was happening through this depth of Ringer's fluid. After rupture of the membranes one saw that the hole was too small to allow the fœtus through. Washing with Ringer's solution caused relaxation of the tonus, which was renewed on adding a further dose of 2 mg., producing a concentration of 1-85,000.



GRAPH 2.—Showing the effect of 1 mg. (1-170,000) of quinine base on the pregnant uterus of a guinea-pig which was accidentally wounded. After the quinine was introduced definite labour pains set in and the fœtus was driven through the accidental tear in the uterus. (The time record indicates intervals of 10 seconds.)

Action of Quinine on the Uterine Muscle.

We know that during labour the longitudinal muscles of the upper uterine segment act as the driving force in expelling the fœtus from the uterus; synchronously with this contraction the circular muscles of the lower uterine segment relax to allow the head to pass through this narrow segment of the uterus. In all these experiments with quinine on the pregnant uterus, one saw that the contractions equally affected both the longitudinal and circular fibres. In spite of the violent contractions produced by stimulation of the longitudinal fibres, the os remained tightly closed, so that the fœtus still remained in the uterus. On one occasion when a hole was made through the uterine wall the membranes ruptured, but the fœtus was still retained.

TEST 5.—*The left horn of the uterus, in being cut away from the right horn, was accidentally incised by the point of the scissors.* This was not noticed at the time and the uterus was placed in the bath for testing. In this experiment the weight on the lever was small. 1 mg. of quinine was placed in the 170 c.cm. bath, marked Q 1 in the graph. A violent contraction of the uterus occurred and labour pains set in, and the whole of the uterine contents were driven through this artificial hole in the side of the uterus. The record is shown in Graph 2.

Summary of the Experiments.

The action of quinine in certain concentrations causes contraction of both the longitudinal and circular fibres of the uterus. The effect produced depends on the concentration of quinine present—weak concentrations 1–300,000 have no effect; concentrations of 1–150,000 produce contractions under certain conditions, whilst a concentration of 1–44,000 produces a tonic spasm, which, if sustained, would cause asphyxia of the fœtus from constriction of the placental sinuses. This concentration could only be attained if the patient was nearly poisoned by a large dose of quinine. The degree of concentration in the blood varies with the dose taken and on individual susceptibility depending on the rate of absorption. Cinchonism is correlated with the concentration of quinine present in the blood and varies with different individuals, and is more frequently seen with weak and anæmic persons. Concentrations of 1–150,000, such as occur with large doses, increase the strength of the intermittent uterine contractions, and if some exciting cause was present—e.g., weak membranes or a patulous or dilated os—the pressure produced by the increased contractions might be sufficient to cause rupture of the membranes or dilatation of the os, and so bring on labour.

Therapeutic Recommendations.

1. The controlling of the fever by quinine or other cinchona alkaloids must be the first objective in the treatment of these cases. We know that high temperatures soon cause death of the fœtus, and this factor is sufficient to induce premature labour. The mother's temperature should be carefully watched and prevented from exceeding 103° F. by sponging, &c.

2. The avoidance of large doses of these alkaloids. As soon as the diagnosis of malaria is made, which is an urgent matter in pregnancy, quinine or quinidine should be given at once as the case requires. It is better to divide the doses into 2½ or 5 gr. doses given every two or four hours. 20 gr. a day is sufficient, and ample to control any attack of malarial fever.

3. The employment of general methods for the prevention of miscarriage—viz., complete rest in bed and the judicious use of opium in allaying any mental excitement. When the child is dead or the miscarriage inevitable quinine should be given in ordinary doses and the case treated on general obstetrical lines.

I must finally express my gratitude to Dr. H. H. Dale, F.R.S., for permitting me to work in his laboratory, and for the help and advice he gave me during the course of these experiments.

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ROYAL UNITED HOSPITAL, BATH.—At the close of 1920 there was an adverse balance of £15,000 against this hospital. The National Relief Fund has granted the institution £12,500 from the £700,000 set apart to help out the war deficits of voluntary hospitals.

AN UNUSUAL FATAL CASE OF INFECTION WITH B. ENTERITIDIS OF GAERTNER.

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IN a recent issue of THE LANCET, A. B. Rosher and G. Selby Wilson[1] describe a case having many similarities to enteric fever, but due in all probability to infection with the *Bacillus enteritidis* of Gaertner. Their report has recalled an unusual fatal case of infection with the same organism, seen by me during the war, which amplifies many of their findings. The notes of the case are briefly as follows:—

Pte. J., aged 25 years, became ill on Nov. 20th, 1917, with shivering and pains in the head and limbs. High fever was present, without pulmonary or intestinal symptoms, and a provisional diagnosis of trench fever was made. Eight days later the patient suddenly had a "fit," and bit his tongue during the convulsion. Next day he appeared better and was transferred from the field ambulance to a corps rest station. Almost immediately another convulsion took place, and he was sent on to a casualty clearing station, where he was first seen by the writer. After admission, 12 convulsions occurred within a few hours, and he became semi-comatose. A specimen of urine was obtained, but contained only a trace of albumin. On the suspicion that the case might be cerebro-spinal meningitis, lumbar puncture was carried out on Dec. 2nd, but the fluid was quite clear and contained no excess of cells. Signs of pulmonary involvement now developed, and within three days the base of each lung was found to be consolidated. A specimen of urine, examined on the 7th, was decidedly smoky, and contained red blood corpuscles and a large amount of albumin. He died during the afternoon of the 7th, 17 days after the onset of his illness. From Nov. 29th, until death occurred, he remained in a semi-comatose state. Vomiting occurred frequently during the illness, but there was never diarrhœa at any time.

Since the man was in various hospitals no complete temperature chart is available. He is known, however, to have had high fever for over a week after the onset of the illness. On admission to the casualty clearing station the temperature was subnormal, and remained so until three days before death, when it rose to 102° F. at the time when signs of pulmonary involvement became manifest.

Post-mortem.

A post-mortem examination was made 16 hours after death. There was no œdema of the face or limbs. Herpes was present on the lower lip. On removing the calvarium very striking œdema of the cerebral meninges was found. In section the brain substance showed many "puncta cruenta," but no actual hæmorrhages. An excess of fluid was present in each lateral ventricle. The pericardial sac was normal and the heart healthy. The air-passages, from the pharynx down, were removed intact along with the lungs. The trachea was seen to be half-filled with yellowish pus, often in the form of small, worm-like masses. The mucous membrane, when the pus was removed, was found intensely congested and ulcerated in places.

The lungs were voluminous, and showed many petechial hæmorrhages beneath the pleuræ. The upper halves of each organ were somewhat emphysematous, and the finer bronchi in this situation did not contain any pus. The lower parts of each lung were irregularly consolidated, some areas being much firmer than others. In section the appearance was extraordinary. Each small bronchiole stood out as a bright lemon-yellow spot from which, on pressure, a small worm-like purulent cast could be squeezed out. Each of the bronchioles was surrounded by a wide zone of hæmorrhage, forming a ring about the size of a shilling. Further away from the bronchioles the general appearance of the lung tissue was an almost uniform deep purple colour. The results of examination of the pus from the bronchi will be referred to later on.

The peritoneum was normal, and on careful examination of the stomach and intestines no trace of ulceration or of any inflammatory change was found anywhere. The fæcal material in the colon was of normal type, and contained neither mucus nor blood. The liver was somewhat fatty, but not otherwise unhealthy. The spleen was distinctly enlarged, and the pulp very soft. The kidneys presented many changes of interest. Both were large, and weighed together 402 g. They were very firm to the touch, and the capsules were tensely stretched. The capsules were definitely adherent, but could be removed with a little difficulty so as to cause only small tears of the cortical tissue. In section the cortex was of a deep purple colour, and the normal markings were obliterated. The medulla also shared in the intense congestion. The whole appearance corresponded to an acute hæmorrhagic nephritis, and this was confirmed by histological examination.

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[1] A. B. Rosher and G. Selby Wilson: A Case of Enteric Fever due to the *B. enteritidis* of Gaertner, THE LANCET, Jan. 1st, 1921, p. 16.

One eyeball was removed for examination. A condition of early "choke-disc" was found, but there were neither white spots nor hæmorrhages in the retina.

Since this case occurred at a time when influenzal broncho-pneumonia was just beginning to be prevalent, associated at times with nephritis, a diagnosis of influenza at once suggested itself in this case also. At the autopsy, moreover, the macroscopic lesions in the lungs appeared typical of influenzal broncho-pneumonia. A film of the bronchial pus, stained by Gram's method, showed the presence of numerous small Gram-negative bacilli, which at first sight seemed entirely confirmatory of the influenza hypothesis. The organism appeared to be present in almost pure culture. Later, an examination of films from the spleen-pulp showed an abundance of similar small bacilli. Careful cultivations were made on plates of agar, smeared with rabbit's blood, as was in use at the time in the laboratory for the cultivation of Pfeiffer's bacillus. After 24 hours an abundant growth was obtained on all the plates, both from the bronchial pus and from the spleen-pulp. The colonies were, however, larger and more opaque than those of Pfeiffer's bacillus on the same medium, and their abundance caused doubts to arise of their nature. Subcultures were therefore made on ordinary agar and in peptone broth, with the result that the organism was found to be a motile bacillus, with a growth on agar resembling one of the typhoid-coli group. On testing the sugar reactions of the bacillus, glucose, mannite, and dulcite were fermented with the production of acid and gas, while lactose remained unchanged. Litmus milk was made acid, but was not coagulated. An agglutination test was thereupon carried out, using paratyphoid A and paratyphoid B antisera. Agglutination resulted with the paratyphoid B serum, but was only complete up to one-quarter of the full titre of the serum. The test with antiparatyphoid A serum was quite negative. A subculture was sent to the Lister Institute, and a report from there stated the organism to be a true *B. enteritidis* of Gaertner, the differentiation being confirmed by the requisite absorption tests.

Discussion and Summary.

The case described by Rosher and Wilson affords an instructive comparison with my own. My patient was only seen late in the illness, at first during an apyrexial period, and no suspicion of infection with an organism of the typhoid group ever entered my mind. Their case was observed from the outset, and the symptoms were such as to suggest a possible diagnosis of enteric fever. Their case fortunately recovered, and their diagnosis was made by agglutination reactions only. In my case the diagnosis was made by the more absolute method of isolating the organism in abundance from two situations after death. In both cases a suspicion of influenzal infection arose, dependent on the presence of broncho-pneumonic signs in the chest during life in one case and at autopsy in the other. It seems possible, from analogy with my own case, that the causal organism might have been isolated from the sputum in the other case also.

The chief points of interest which emerge from a consideration of the two cases appear to be: 1. Anomalous cases of infection with the *B. enteritidis* of Gaertner can occur, without any of the acute diarrhœal symptoms commonly associated with the "food-poisoning" group of organisms. 2. The possibility of obtaining the causal organism from the sputum in cases of infection with organisms of the typhoid and food-poisoning groups, accompanied by bronchitis, should not be forgotten. During the war I have on various occasions readily isolated either *B. typhosus* or *B. paratyphosus B* from the sputum in these infections where bronchitis (quite apart from actual broncho-pneumonia) existed. Bronchitis accompanied by expectoration is such a well-known complication of these fevers that this occasional added source of examination for the organism should not be lost sight of in cases where the ordinary routes (blood, fæces, and urine) fail. The isolation of a known pathogenic organism must always make the diagnosis more satisfactory than agglutination tests alone, and this is, of course, especially true where inoculated individuals are under investigation.

A SIMPLE PROCEDURE FOR THE

ACCURATE ENUMERATION OF BLOOD CELLS AND BACTERIA

WITHOUT THE USE OF A COUNTING CHAMBER.

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Wright was the first to elaborate a method for determining the number of bacteria per unit volume of a given suspension without the use of a counting chamber. His method[1] consists in mixing equal volumes of human blood and the suspension to be counted, and preparing films from the mixture. The films are dried, fixed in perchloride of mercury, suitably stained, and the relative number of human red cells and of bacteria present in each field are counted. Taking the number of red cells per cubic millimetre of human blood to be 5,000,000, the actual number of microbes per unit volume is readily calculated. The introduction of this technique marked a great advance along the lines of simplicity and speed. However, it is apparent that the accuracy of the final results is dependent upon the knowledge of the exact number of red cells per cubic millimetre of the blood employed. We know, indeed, that not only does the number of red cells per unit volume of blood vary considerably in different persons, but also that the number of cells varies definitely in the same individual at different hours of the day. For this reason Wright's method does not claim to yield more than approximately accurate results, unless the number of human red cells in the blood employed be enumerated each time by careful counting in an accurate chamber. Futhermore, the less skilful technician may experience some difficulty in making films which give a fairly even distribution of microbes and red cells, owing to their difference in size. It is evident, also, that the method cannot be employed for counting human red cells, as there is no means of differentiating between the standard cells and the red cells to be counted.

The procedure hereunder described, although based upon the same general principles as Wright's method—namely, the easily recognisable differences between the cells to be counted and those taken as a standard, differs in that it can be used to count not only bacteria but also human blood cells, and that the standard consists of a permanent suspension containing an exactly determined number of corpuscular elements per unit volume.

The corpuscular elements selected for the preparation of the standard emulsion are the red corpuscles of the blood of a hen. The fowl should be young and in good health. The reasons for the selection of the red cells of the hen are the following:—

1. The cells are of uniform size.
2. They are of approximately the same specific gravity as mammalian red cells.
3. The cells are slightly larger than the human red cell or average mammalian red cell.
4. They are readily distinguished from mammalian red cells by their elliptical shape and the presence of nuclei,

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[1] Wright, A. E.: Technique of the Teat and Capillary Glass Tube. London: Constable and Co. 1912.

which make it impossible to confuse them with mammalian red cells in a mixture of the two.

Preparation of the Standard Suspension.

Prepare a solution containing approximately 1·3 per cent. perchloride of mercury in sterile normal (0·85 per cent.) saline solution. Bleed the fowl directly into this solution, allowing approximately 1 c.cm. of blood to each 100 c.cm. of the solution. Agitate the recipient fluid gently while the blood is being added, so as to ensure a thorough mixture. Leave for one hour, shaking from time to time to prevent sedimentation of the blood. At the end of the hour centrifugalise *just enough* to deposit the red cells, pour off the supernatant fluid, and fill up to the original volume with a solution of 4 per cent. perchloride of mercury in normal saline solution. Allow the mixture to stand for six hours, occasionally shaking the flask or bottle. At the end of this time agitate the flask to emulsify the cells and then centrifugalise. Wash the cells twice with normal saline solution, each time emulsifying them before centrifugalising. Pour off the supernatant fluid, and fill up to the original volume with normal saline solution to which has been added a minute amount of perchloride of mercury—i.e., just enough to prevent bacterial infection.

The suspension is now ready for standardisation. As the result of a large number of experiments, I have arrived at the conclusion that a convenient suspension to work with is one which contains about 20,000 cells per cubic millimetre. Therefore, the suspension should be brought to this standard in the usual manner, using normal saline solution as the diluting fluid, and counting at least 1000 cells in each of 10 successive drops, or about 10,000 cells in all.

Standard suspensions thus made have been kept for eight months at ordinary temperatures without showing any change in the number or appearance of the corpuscles.

Determination of the Number of Red Cells in a Given Blood by Means of the Standard Suspension.

The blood, taken in the usual manner, is diluted 1 : 200, with a solution of 1·3 per cent. perchloride of mercury in normal saline solution. For example, one adds 0·1 c.cm. of the blood to 19·9 c.cm. of the mercury saline solution, previously measured into a test-tube, carefully washing out the blood pipette and thoroughly mixing the resulting dilution. The tube containing the blood dilution is shaken to secure an even distribution of the cells in the suspension and immediately 1 volume—e.g., 0·1 c.cm.—of the fluid is transferred to a dwarf test-tube. In the same manner the tube or bottle of standard suspension is shaken and an equal volume of this fluid is measured into the dwarf test-tube, which is agitated so as to mix the fluids thoroughly. A drop of the mixture is placed immediately upon a clean slide and covered with a coverslip, care being taken to avoid air bubbles. The drop should be only large enough to form a thin film between the coverslip and the slide, and not so large that the coverslip floats. A coverslip of convenient size is 22 mm. × 22 mm.

For counting, a magnification of about 350 is convenient; for example—one can use a Zeiss D achromatic objective, and a Zeiss No. 3 Huyghenian eye-piece. Into the eye-piece place a small diaphragm of black paper, in the centre of which is an aperture 4 mm. × 4 mm., which gives a field of convenient size. In counting one should avoid the extreme periphery of the area covered by the coverslip. The number of nucleated red cells and the number of non-nucleated cells in each field are enumerated. It is advisable to count two drops from the same mixture, and not less than 500 cells in each drop.

Calculation of the Number of Red Cells Contained in Each Cubic Millimetre of the Blood Examined.

Take the sum of all the nucleated cells counted, and the sum of all the non-nucleated cells. Divide the number of nucleated cells into the number of non-nucleated cells. Multiply this factor by the number of cells in each cubic millimetre of the standard suspension (20,000) and then by the dilution of the blood (200). The product is the number of red cells per cubic millimetre of the blood examined. It is clear that the method can equally well be applied to the counts of nucleated erythrocytes. In such a case the standard suspension must be made with non-nucleated red cells.

Example.—Suppose the standard suspension contains 21,000 nucleated red cells per cubic millimetre. The blood sample is diluted 1 in 200. A drop of a mixture of equal volumes of these two solutions is prepared for the microscope and about 50 fields are counted. The sum of the nucleated red cells in the 50 fields is 319; the sum of the human red cells in the 50 fields is 405.

$$\frac{405}{319} \times 21{,}000 \times 200 = 5{,}294{,}000.$$

Therefore the blood examined contains 5,294,000 red cells per cubic millimetre.

Leucocytic Count.

To determine the number of leucocytes in a given blood sample by this method the procedure is as follows:—

Into a dwarf test-tube measure 3 volumes of a 0·3 per cent. solution of acetic acid in distilled water, to which has been added 0·6 per cent. of a 1 per cent. solution of methyl-violet (6 B). Add 1 volume of the blood to be examined, mix carefully, and allow to stand for a short time until the human red cells are hæmolysed. Then add 1 volume of the standard suspension of nucleated red cells and mix carefully. Place a drop of the mixture on a clean slide and cover with a coverslip, observing the same precautions as in the case of the red-cell count previously described. For counting use the same objective and ocular as for the counting of red cells, but the paper diaphragm previously used in the ocular should be left out, and the nucleated red cells and leucocytes present in the whole field should be counted. The same total number of cells—i.e., about 500—should be counted as in the case of the red-cell determination.

The calculation of the number of leucocytes per cubic millimetre of blood is performed in the manner already indicated above—namely, by dividing the number of nucleated red cells into the number of the leucocytes, and multiplying this factor by the number of cells in 1 c.mm. of the standard suspension. If dilutions other than those here indicated are used the calculation will naturally have to be modified accordingly.

Example.—Suppose the standard emulsion contains 21,000 nucleated red cells per cubic millimetre. One volume of the blood to be examined is added to 3 volumes of the acetic-acid-methyl-violet solution, and mixed. To this mixture is added 1 volume of the standard suspension. Seventy fields are counted, giving a total number of 409 nucleated red cells and 145 leucocytes.

$$\frac{145}{409} \times 21{,}000 = 7445.$$

Therefore the blood examined contains 7445 leucocytes per cubic millimetre.

Enumeration of Bacteria.

For counting bacteria in a suspension the following technique has been adopted:—

A special standard suspension for this purpose is prepared as follows: The perchloride-fixed nucleated cells are washed several times with normal saline solution to remove the free perchloride, and then made up with sterile normal saline solution to a standard of about 30,000 per cubic millimetre. To secure sterility a minute amount of formalin is added. For the purpose of counting a mixture of 1 volume of the standard suspension, 1 volume of the bacterial suspension suitably diluted, and 1 volume of 0·5 per cent. methylene-blue solution is prepared and counted, as in the case of the blood count, enumerating the nucleated cells and the bacteria in each field.

Example.—Suppose the standard suspension contains 30,000 cells. The bacterial suspension is diluted 1 in 200. Into a dwarf test-tube is measured: 1 volume of the standard suspension, 1 volume of the diluted bacterial suspension, 1 volume of 0·5 per cent. methylene-blue solution, and the test-tube shaken to thoroughly mix the contents. A drop of this mixture is immediately transferred to a slide, covered with a coverslip, and counted as in the case of the white-cell count, except that an oil immersion lens is used. Eighty fields are counted, giving a total number of 500 nucleated red cells and 400 bacteria.

$$\frac{400}{500} \times 30{,}000 \times 200 = 4{,}800{,}000.$$

Therefore the bacterial emulsion contains 4,800,000 bacteria per cubic millimetre.

To compare the relative merits of this method with those of the counting chamber extensive series of comparative counts have been made. The accurate Bürker chamber made by Zeiss was used. As an illustration the following example may be given:—

To eliminate errors of sampling all of the test suspensions were prepared from a single sample of blood, made up with normal saline solution to a dilution of 1 : 100. Into each of five test-tubes was measured 5 c.cm. of this suspension, care being taken to secure an even distribution of the blood cells. To the tubes marked A, B, C, D, and E were then added respectively 6 c.cm., 3 c.cm., 7 c.cm., 5 c.cm., and 4 c.cm. of the mercury perchloride normal saline solution previously mentioned, giving final dilutions of the blood as follows:—

A, 1 : 220; B, 1 : 160; C, 1 : 240; D, 1 : 200; and E, 1 : 180.

The extent of dilution of the samples in the different tubes was unknown to me until after the actual counting of the cells was finished. At least two separate drops of each dilution were counted, both in the case of the differential method and in that of the Bürker counting chamber. The details of the experiment are given in the following table:—

Test-tube.	Final dilution of same original sample of human red cells.	No. of human red cells per c.mm. (Average count of *two* drops.)	
		Differential method.	Bürker counting chamber.
A	1/220	5,509,000	5,456,000
B	1/160	5,366,000	5,326,500
C	1/240	5,419,000	5,270,500
D	1/200	5,238,750	5,387,000
E	1/180	5,401,000	5,546,000
	Average ...	5,386,750	5,397,200

In the case of the differential method, an average of 360 nucleated cells and an average of 550 human red cells were counted in each drop, making a total of 910 cells per drop. In the case of the counting chamber method, on an average 1030 cells per drop were counted. The average count for the two drops of the same suspension was in both cases taken as the figure representing the number of human red cells per cubic millimetre. Obviously, if it were possible to eliminate all errors of dilution, distribution, and enumeration, the final figures arrived at for each of the five dilutions would be identical. In an actual experiment, however, identical results are not attained, and for this reason the average of the five is in both cases taken as the figure representing the actual number of red cells per cubic millimetre of the blood examined.

The close correspondence between the results obtained by the two methods is striking. By the differential method it is found that the blood examined contains 5,386,750 red cells per cubic millimetre, while by means of the Bürker chamber it is found to contain 5,397,200 red cells, which gives a difference between the results obtained by the two methods of 10,450—i.e., 0·19 per cent. If we examine the percentage deviation of each count from the average this is found to be 1·25 per cent. in the case of the differential method, while it is 1·46 per cent. in the case of the counting chamber method, although in the latter case a larger number of cells is counted. Furthermore, if we calculate the percentage deviation for the figures obtained from the counting of each individual drop by both methods, it is found to be 2·29 per cent. by the differential method and 2·46 per cent. by the counting chamber method.

Conclusions.

By careful procedure, and by counting the numbers of cells indicated above, it is evident that the method discussed in this paper yields extremely accurate results, which compare more than favourably with the results obtained by the use of a counting chamber. It furthermore possesses the following distinct advantages: (1) It can be used with equal facility for counting erythrocytes, leucocytes, and bacteria; (2) it does away with the use of a costly counting chamber; (3) it is quicker and less fatiguing to the eye.

CENTRAL MIDWIVES BOARD FOR SCOTLAND.—At a meeting of the Board held in Edinburgh, Sir J. Halliday Croom in the chair, the Viscountess Novar took her seat as a member of the Board. Sir Halliday Croom, in a valedictory address on his retirement from the Board, thanked the members for the loyal support he had received as Chairman, and referred to the pleasant and harmonious way in which the work had been carried out. On the motion of Dr. A. Campbell Munro, seconded by Sir Archibald Buchan-Hepburn, a hearty vote of thanks was accorded to Sir Halliday Croom for the efficient manner in which he had discharged the duties as Chairman of the Board since its formation five years ago. The Board also expressed its appreciation of the able and valuable services rendered by Mr. D. L. Eadie, the secretary. It was intimated that the new Board would be constituted early next month.

FURTHER RESEARCHES UPON
ANTIMONY IN THE TREATMENT OF FILARIASIS.

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IN THE LANCET of Sept. 11th, 1920, one of us (G.C.L.), in conjunction with Dr. A. L. Gregg, published the details of a case of *Filaria bancrofti* infection treated by intravenous injections of antimonium tartaratum (tartar emetic). In this individual case no beneficial results were obtained, the infection persisting, even though 17½ gr. of the drug in all had been administered. We pointed out in that paper the great importance of doing prolonged examinations—both before, during, and after treatment—of measured quantities of blood, and indicated that that was the only way one could determine the efficacy or otherwise of the drug used. Since that time we have had the opportunity of studying two further cases of *Filaria bancrofti* infection; one in minute detail, the other not quite so fully, but still sufficiently so to draw conclusions as to the efficacy of antimony as a drug in the treatment of filariasis. The details of the two cases are as follows:—

CASE 1.—History: A. H., 30, an Indian native, was born and lived in Calcutta till he went to sea as a ship's steward at the age of 18. In this capacity he visited many parts of the world—East Africa, Bombay, &c.

Previous illnesses: No malaria; has had dysentery; no history of syphilis.

Present illness: For the last few years has been complaining of indefinite pains in the region of the stomach and liver; these at times have been acute, and vomiting has been associated with them. Lately the pain has been radiating to the right shoulder, and has been specially severe at nights. He came to hospital—to out-patients—to see if anything could be done for it. Admitted into hospital, his stools were found to contain *E. histolytica* cysts, and his night blood many filarial embryos. Examination: Heart and lungs normal. Urine: No albumin, blood, or sugar. Abdomen: Liver not enlarged; slight tenderness on deep pressure; no evidence of gall-stones or duodenal ulcer; spleen not enlarged; colon, no thickening.

Blood: R., 3,840,000; W., 5,200; Hb, 80 per cent. Night blood, many embryos of *F. bancrofti* present; 40 in 20 cubic millimetres of blood.

Fæces: *E. histolytica* cysts present.

Filarial condition: No evidence of any clinical signs of the infection present.

As the case presented such a good filarial infection, as evidenced by the embryos in the blood, it was resolved to do a very careful and accurate analysis of these before, during, and after treatment with antimonium tartaratum. Table I. gives these details. A study of this table brings out several important facts, and not the least interesting of these is the almost complete disappearance of the embryos from the blood when no treatment was being given between Oct. 20th and 26th. Why this took place is not clear, but it illustrates, if that is necessary, the importance of many examinations in such cases, and also the danger of concluding that a disappearance of embryos is necessarily associated with any individual drug one happens to be giving at the time. It is well known, of course, that when a severe attack of lymphangitis appears the embryos may disappear at once from the peripheral blood and not return again, but this explanation will not apply here, as there was no lymphangitis and the embryos reappeared in numbers again. After the ratio became more or less constant the injections of antimony were begun, and a glance at the table at once shows, just as in the case reported before,[1] that the drug had no effect whatsoever on the number of embryos circulating in the blood—that is, was not affecting the adult worms producing them.

Incidentally another drug, emetine, was tried at the same time as the antimony, this being given for the

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[1] THE LANCET, Sept. 11th, 1920.

c infection and in the hopes that it might influ-
he hepatic pain. It did so very effectually, as,
n few doses, the pains disappeared and did not
. Here, again, there was not the slightest effect
filarial embryos. We have not put the record of

TABLE I.

umber of filarial embryos in 20 c.mm. of blood.
umber of grains of tartar emetic injected, these being given
fternoons between 4 and 5 P.M.
xaminations were made at 11.55 P.M. on every occasion.

A.	B.	Date in 1920.	A.	B.	Date in 1920-21.	A.	B.
		Nov.			Dec.		
42	—	16	30	—	16	25	2½
36	—	17	22	—	17	20	—
46	—	18	15	1	18	15	—
2	—	19	12	—	19	20	—
0	—	20	21	—	20	20	2½
3	—	22	16	1	21	24	—
5	—	23	28	—	22	15	—
10	—	24	25	—	23	19	2½
9	—	25	26	1½	24	19	—
51	—	26	18	—	25	11	—
20	—	27	10	—	26	19	—
32	—	28	12	—	27	13	2½
33	—	29	26	1½	28	24	—
44	—	30	27	—	29	13	—
					30	18	2½
		Dec.			31	10	—
20	—	1	23	—	Jan.		
32	—	2	17	2	1	20	—
27	—	3	20	—	2	22	—
47	—	4	16	—	3	15	2½
25	—	5	29	—	4	10	—
45	—	6	15	2	5	20	—
29	—	7	30	—	6	12	—
21	½	8	40	—	7	20	—
37	—	9	30	2½	8	12	—
32	—	10	30	—	9	15	—
22	—	11	29	—	10	—	—
51	1	12	20	—	11	—	—
44	—	13	17	2½	12	—	—
26	—	14	22	—			
25	½	15	20	—			31 gr.

doses upon the chart so as not to complicate it,
for those who are interested it may be stated that
ine hydrochloride injections were begun on
19th, and continued nightly—with the exception of
days when antimony was given—until Dec. 4th,
oses of 1 gr. each being administered in all.

: 2.—History: A. T., a native of India, was born near Madras
ived in that neighbourhood all his life till he came to England
udy in July, 1920.
vious illnesses: Enteric, no malaria, dysentery as a boy;
two years ago; cured by emetine injections.
sent illness: A month ago (November, 1920) pain developed in
of the internal malleolus of left leg. This was worse on
ing. A Scott's dressing was applied and the pain disappeared.
t the same time some slight œdema was noticed over the left
. Patient, a doctor, suspected filarial infection and examined
ight blood. Embryos of *F. bancrofti* were found.
amination: Systems nothing abnormal. Legs: left calf (14")
r than right (13"); slight œdema along tibia. No enlargement of
glands in femoral or inguinal regions. Never had any inflam-
ry trouble in either leg, is definitely certain of this. No other
s of filarial infection.
ine: No albumin, blood, or sugar.
od: R., 5,000,000; W., 6600; Hb. 100 per cent. Differential:
N., 65 per cent.; L.M., 3 per cent.; L., 27 per cent.; E., 2 per
.; T., 2·2 per cent.; M., 8 per cent. No malarial parasites.
d looks quite normal. No eosinophilia. Sample of night blood
t measured—15 *F. bancrofti* embryos in a small film.
agnosis: Commencing elephantiasis without precedent inflam-
ion. A rare condition: vide description by one of us (G.C.L.)
rn. of Trop. Med. and Hyg., March 15th, 1911).

t was resolved to try antimony injections (tartar
etic) in this case also, but owing to the impossibility
the patient lying up completely extensive counts and
minations of the blood were not available. What

TABLE II.

Descriptions of A and B. as Table I.
Examinations at 11.55 P.M. on every occasion.

te in 20.	A.	B.	Date in 1920.	A.	B.	Date in 1921.	A.	B.
ec.			Dec.			Jan.		
9	55	½	23	20	2	3	38	2½
13	41	1	27	31	2½	6	35	2½
16	43	1	30	60	2½	10	60	2½
20	45	1½						
								18½ gr.

s done was as follows. The patient came into
ital about 4 P.M., had his injection, stayed in the
t—so allowing of his midnight blood being taken— and then went out to his work next morning. Table II. gives the result of the blood counts (measured quantities) and the dosage of antimony employed.

It will thus be seen that in this case also there was no beneficial effect from the antimony injections, and after the careful study of these two cases it is difficult to see how the drug can be of any use at all in such infections.

It is, however, by the intravenous route, that we must hope for future success, and we are now considering the possibility of trying other drugs in a similar manner. The arsenical group also appears to be useless, so unless some of the other metals prove efficacious little remains to be done and the treatment of filariasis will remain in its present unsatisfactory condition. Emetine, as we have shown in Case 1, also had no effect upon the infection.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF ACUTE ASCENDING PARALYSIS

OCCURRING AS A COMPLICATION OF MEASLES AND TERMINATING IN RECOVERY.

BY C. R. BOX, M.D., B.SC. LOND., F.R.C.P.

THE following case seems worthy of record on account of its rarity. The cord inflammation present was evidently either toxæmic or infective in character, ascending in type, and, from the dissociated character of the accompanying anæsthesia, presumably situate in the central grey matter. The case was under the care of Dr. R. W. Rix, of Sudbury, who made the notes.

A girl of 14 was taken ill on April 20th, 1920, and was kept in bed. On the 24th measles declared itself. The temperature was 103° F., the rash of average intensity, and the child was not more ill than is usual with measles. Two days later the temperature had fallen to 99°, and the patient appeared well on the way to recovery, but next day the temperature rose again to 103°, although no pulmonary complication could be detected.

During the night the child attempted to get out of bed and found that she could not stand. After this she had a constant desire to micturate but could not pass water properly, a few drops only coming away at each attempt. The next day when examined there was paralysis of all the muscles of both legs except the hamstrings and the flexors and extensors of the great toes; these muscles were extremely weak. The muscles of the abdominal wall were acting, although feebly. Tactile sensation seemed intact, but loss of appreciation of heat and cold came to light in a curious manner; the abdomen was painlessly burned by a hot-water bottle during an attempt to stimulate the bladder. The knee-jerks and abdominal reflexes were absent. The bladder was obviously distended and overflow incontinence occurred on coughing. The temperature was 102° and moist sounds were audible in the lungs. Later in the evening 20 ounces of urine were withdrawn by catheter, and the administration of urotropine in 10 gr. doses every four hours was commenced. The next day the recti abdominis were paralysed and the cough ineffective, although the intercostals were still working. The legs were quite helpless.

On the 30th—six days after the appearance of the measles rash and the fourth day of paralysis—I saw the patient. With the *exception of very slight power of extension of the left foot the legs* were completely paralysed; so also were the recti abdominis. The intercostals appeared weak and cough was ineffective. The patient also complained of slight loss of power in the left arm, which she discovered on attempting to use a small nail-file. Up to the level of the sixth dorsal segment appreciation of pain and of heat or cold was absent, although tactile sensation appeared to be intact. Sense of position was present; there was no limiting zone of hyperæsthesia. No definite loss of power and no defect of sensation could be found in the arms. The ocular fundi were quite healthy and there was no cranial nerve paralysis. The right knee-jerk was absent, the left very sluggish. The abdominal reflexes were in abeyance. During the period from the 27th to the 30th the temperature varied between 101° and 102.°

On May 1st there was evidence of commencing recovery, the cough becoming much stronger and the temperature lower. The next day the temperature became normal and voluntary movement of the toes appeared, followed later by movements of the ankles. From this time improvement was continuous. Recovery took place in the following order: Rotators of hip-joint and sensation of slight discomfort when pricked on the 4th. Abduction and adduction of both thighs with slight power of extension of knees, flexion of right knee and return of left knee-jerk on the 5th. On the same day the patient for the first time complained of the discomfort of the burn on the abdomen and the sense of heat and cold returned to the front of both legs. All movements of the legs were present on the 6th, and heat and cold sense had returned everywhere. On this day the patient passed water naturally for the first time since April 28th

The abdominal muscles contracted voluntarily two days later and the feet could be lifted off the bed. The knee-jerks returned and the plantar reflexes, the latter being doubtfully extensor. By June 8th the patient walked well with the exception of slight foot-drop on the left side. The knee-jerks gradually became exaggerated and the plantar response was extensor in type. For some time the bladder remained irritable, possibly on account of the urotropine. It was discontinued on the 13th. During the whole period of paralysis the patient was aware when the bowel was going to act, but at first could not control it; after May 29th, however, control was gradually re-established.

At the time of sending this report, seven months after the commencement of her illness, the only evidences of what the patient passed through are visible exaggeration of the tendon-jerks in legs and arms, absence of the superficial abdominal reflexes, and a very doubtful extensor response in one foot. Over a small area of skin at the back of the left knee she experiences a sensation of what she terms numbness where there is slight impairment of appreciation of heat and pain. Micturition is at times somewhat imperative and her legs easily become tired.

Reference to similar cases will be found in Sir Dawson Williams's article on measles in Sir Clifford Allbutt's "System of Medicine," and recovery appears to be the rule rather than the exception. Sir Thomas Barlow has recorded a case in which disseminated myelitis was found in a case of measles which proved fatal.

Devonshire-place, W.

PERCENTAGE AND FRACTIONAL DILUTIONS.

BY WILLIAM FLETCHER, M.D. CANTAB.,

BACTERIOLOGIST, INSTITUTE FOR MEDICAL RESEARCH, KUALA LUMPUR, FEDERATED MALAY STATES.

MY excuse for writing this note, which may appear puerile and unnecessary to those who have had a mathematical training, is that most medical men have but little knowledge of figures, and I have seen them toiling, with knitted brows and well-sucked pencils, in their efforts to discover how to prepare, for instance, a 33 per cent. from a 50 per cent. solution; while well-known text-books devote several pages to tables for the purpose of making higher from lower dilutions.

The average civilised man can count two quite easily; for instance, he knows how to prepare a 40 per cent. solution from one of 80 per cent. by taking one part of the latter and making it up to two parts by adding an equal quantity of the diluent. This is the same thing as taking 40 parts and adding sufficient diluent to make 80. What is not generally realised is that all other dilutions can be *prepared on the* same principle; for example, a 30 per cent. solution can be made from one of 50 per cent. strength, by taking 30 parts of the latter and making it up to 50; or a 40¼ per cent. solution can be prepared from one of 79½ per cent. by taking 40·25 c.cm. of the latter and adding sufficient diluent to make 79·5 c.cm. That is to say, an x per cent. solution can be prepared from a y per cent. solution by taking x c.cm. of the latter and diluting it sufficiently to make y c.cm.

The preparation of other fractional dilutions is equally simple. As everyone knows, a 1 in 10 (written 1/10) solution can be made from a 1 in 5 (1/5) solution by taking 5 parts of the latter and diluting it up to 10 parts, but it is not generally known that all dilutions can be prepared in the same way; that, for instance, a 1/97 dilution can be made from a 1/8 dilution by taking 8 parts of the latter and making it up to 97. In short, a $1/x$ solution can be prepared from a $1/y$ solution by taking y c.cm. of the latter and adding sufficient diluent to produce x c.cm.

By this method the medical man can not only calculate quickly but do it "in his head."

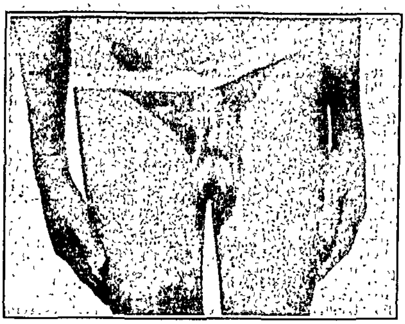
A TRI-ORCHID.

BY V. R. SUNDARESA AYYER,

CAPTAIN, I.M.S.; COMMANDING NO. 15 SANITARY SECTION, KARACHI.

THE following note may be of interest, since I can find no record of a similar case in the medical literature at my disposal.

The patient, R., was an enrolled follower, aged 19, a native of the Trichinopoly District, in South India. He arrived at the Followers' Central Depôt, Kirkee, in August, 1918, and was medically examined when about to proceed in a draft for overseas service in October, 1913. A third testis was found above the left normal one, with a separate globus major and minor and a separate cord, distinctly traceable alongside the normal left cord up to the left internal abdominal ring. It was moored to the left wall of the left sac of the scrotum above the normal left testis. The component parts of the third cord were easily felt, and the "testicular feel" on pressure over this gland was the same in every way as that over the other two normal glands.



The after-history of the patient is not recorded, as his present whereabouts cannot be traced.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

CLINICAL SECTION.

EXHIBITION OF CLINICAL CASES.

A MEETING of this section of the Royal Society of Medicine was held on Jan. 14th, Sir ANTHONY BOWLBY, the President, being in the chair.

Several interesting cases were shown, among which the following were included.

After-results of Ligature of Left Subclavian Artery for Aneurysm.

Mr. W. G. SPENCER showed a patient in whom the first part of the left subclavian artery was ligatured for aneurysm in 1899. When admitted to hospital at the age of 43 there was an aneurysm of the second and third part of the left subclavian artery the size of a duck's egg. He had had syphilis 14 years previously, and three years before admission he had been in a hospital for ten months suffering from (? syphilitic) bronchitis with profuse hæmoptysis, which was, however, diagnosed as incurable phthisis. He had a gumma on the left leg and another on the left thigh. In April, 1899, the first part of the left subclavian artery was ligatured, but pulsation in the aneurysm recurred and in the following June the vertebral and inferior thyroid arteries were tied by reopening the previous wound upwards, and the third part of the subclavian was tied through the axilla. The patient had now been readmitted complaining of pain along the course of the sixth to ninth left intercostal nerves. He was now 65, and he had a markedly emphysematous, rigid chest. There was no sign of the former aneurysm except the scars. A skiagram of the chest and also auscultation had failed to find positive evidence of a thoracic aneurysm.

The PRESIDENT remarked upon the successful issue of the operation, and said that the usual happening after ligature of the larger vessels for aneurysm was the subsequent development of intrathoracic aneurysm beyond the reach of further operative treatment.—Dr. F. PARKES WEBER said that he was interested in the fact that this patient must have had syphilitic disease of the lung at a time when its existence was denied.

Mr. SPENCER also showed a case of

Epithelioma Supervening in the Scar

eight years after the destruction of a hairy mole by X rays. The patient was a woman, aged 28, who had had a hairy mole on the left temple. Monthly exposures to X rays had been continued for two years. After the final exposure the scar had remained sound until three months ago. There was now an epitheliomatous ulcer at the outer angle of the left eye infiltrating the eyelids. Keratosis was present in patches over the scar area. He spoke of the danger of a treatment which left a burn-like scar for a condition not in itself serious, and which could be removed by incision.

Dr. J. A. BIRRELL showed a case of

Extreme Dislocation of the Heart into the Right Axilla.

The patient, a man aged 39, was passed fit for military service in 1915. Previous to that he had worked for 17 years in a pill factory and had apparently been free from any disease. In the winter of 1915-16 he developed a cough but was kept on duty, and in the following summer he collapsed from shortness of breath whilst "doubling" with a gas mask on. After another medical examination he was at once returned to duty. In 1917 he received a shrapnel wound in the right calf and popliteal region, but did not remember being struck on the chest. The wound was treated surgically under a general anæsthetic a few days later, and shortly after he developed fever which lasted three weeks, and he said that he wore a "pneumonia jacket." The temperature subsiding, he was transferred to England, where in 1918 he was told that his heart was beating in the wrong side of his chest, and he began to notice a sensation of thumping in the same position after exertion. He was discharged unfit for further service on account of gunshot wound and pulmonary tuberculosis. He now had a cough, the expectoration was yellowish-green, and repeated examinations failed to show the presence of tubercle bacilli or of elastic tissue. Pneumococci, streptococci, and micrococci catarrhalis were present, the temperature and pulse were normal, and he was short of breath on exertion.

On physical examination the heart was found to be dislocated so far to the right that the impulse could be felt in the fifth intercostal space in the right axillary line. Percussion showed corresponding dislocation to the right, so that the left border of the heart was in the fifth right space, three inches from the middle line of the body. There were no murmurs, but the aortic second sound was very accentuated and was best heard in the dome of the axilla. On X ray examination the heart was seen to lie close against the outer wall of the right chest, and the diaphragm was one inch higher than normal. The outlines of the aorta could not be defined. The trachea could be seen at the right border of the sternum, and when the patient swallowed barium sulphate the shadow could be followed down the right border of the vertebral column until it crossed the spine to reach the stomach.

Clinical examination showed that there was considerable contraction of the right lung. The whole of the right side of the chest was dull to percussion and very dull from the level of the sixth dorsal spine to the lower costal margin. Cavernous breathing and whispering pectoriloquy were audible in the right interscapular and infraspinous areas, and at the inferior scapular angle râles were occasionally to be heard, especially after a cough. There was no clubbing of the fingers, the dorsal spine was concave to the right, and the trachea was seen to be dislocated to the right of the middle line. No foreign body could be demonstrated in the air passages. There were signs in the right lung indicative of collapse of the right lower lobe. The Wassermann test of the blood was negative.

The case was shown: (1) because of the extreme dislocation of the heart: (2) because of the difficulty in explaining the condition of the right lung, which did not appear to be due to bronchiectasis or to tuberculosis, but was suggestive of the pleurogenous pneumonia of Sir Andrew Clark. Were it not a fact that the patient had had a history suggesting pulmonary disorder *before* the shrapnel wound an explanation could be found for the state of the right lung: that its present condition was the result of (*a*) pneumonia developing at the time of the shrapnel wound of the leg or just subsequently; (*b*) that it was the result of massive collapse of the lung—though there was no evidence to support the view that massive collapse of the lung could persist and lead to such disorganisation of the right lung as was shown in this case.

Dr. F. S. LANGMEAD suggested that the case was one of congenital dextrocardia, and that further displacement to the right side had been caused by fibrosis of the lung following pneumonia.—Dr. WEBER also said that dextrocardia was the probable explanation, and agreed with Dr. Birrell that displacement of the heart had occurred as the result of collapse of the lung at the time of the injury and pleurogenic pneumonia.

Dr. V. WILKINSON showed a case of

Mycotic Aneurysm of the Right Calf.

The patient, aged 37, formerly a pianoforte-maker and now a discharged soldier, was recently admitted to hospital because a few weeks previously he developed severe pain and swelling of the right calf. These symptoms abated somewhat, and it was then discovered that the swollen calf pulsated. In the past he had suffered from "rheumatic pains" up to the age of 14 years, and four years ago he contracted syphilis. He entered the army in 1916 and was discharged with valvular disease of the heart in February, 1919. Since leaving the army he had become shorter of breath, had begun to sweat rather profusely at night, and pain had developed over the heart. He was first admitted to hospital in June, 1920, when double mitral disease was found; the spleen was enlarged, the fingers were clubbed, there was occasional evening temperature, and the Wassermann test was found to be positive. The heart was not enlarged. He was readmitted to hospital early in the present month. He said that 14 weeks previously he noticed pain in the right leg just above the ankle on the inner side. Fomentations gave relief and nothing further was noticed until four weeks ago, when the calf of the right leg became swollen and painful.

At the present time the right calf was obviously enlarged, was tender to the touch, and pulsated. The pulsation ceased and the swelling diminished in size when the right femoral artery was compressed. The heart was now found to be enlarged to the right and to the left, and a loud, early diastolic murmur indicating aortic regurgitation had developed since he was admitted to hospital last year. In addition to the other signs then found the patient had begun to look ill, there were blood and albumin in the urine, and a constant rise of temperature, loss of weight, and progressive secondary anæmia, the leucocytic count now amounting to 6000 per c.cm.

The case was shown as a rather unusual example of mycotic aneurysm occurring in malignant endocarditis.

The PRESIDENT said that aneurysms due to septic infarction were of two kinds. In the first blood was extravasated into the soft tissues from a hole in the vessel at the site of the embolus and thus produced a false aneurysm, and in the other a true aneurysm was produced by dilatation of the vessel itself. He thought that this was a case of false aneurysm. It had to be remembered that septic embolism of the brain was a likely event in such cases, and he did not favour any more active procedure than firm bandaging of the calf.—Dr. WEBER said that the case was an example of a variety of malignant endocarditis which was invariably fatal, a matter to be considered in local treatment. —Mr. C. H. FAGGE asked whether it was agreed that the aneurysm was in connexion with the posterior tibial artery. He favoured the opinion that the embolism was in one of its muscular branches.

Mr. PHILIP TURNER and Dr. L. MANDEL showed a case of

Submammary Tumour of the Chest Wall.

The patient was a widow, aged 46, with one daughter, aged 18 years. She complained of a tumour in the region of the right breast, which had developed in the course of the past few months. About eight or nine years ago she received a severe blow on the right side of the chest from the open door of a moving railway-carriage. A swelling was noticed two or three weeks afterwards, and the doctor who was attending her told her that she had broken three ribs. This swelling never disappeared completely; some irregularity could be felt beneath the right breast, but she said that in appearance it was not different from the other side. About two or three months ago she noticed that the right breast was getting more prominent, and that there was a hard lump to be felt. She said that the present tumour occupied much the same position as the "irregularity" which persisted after the injury to the ribs. There had been little pain; her general health had not been affected, though she thought that she had lost weight to a slight extent, but the lump had steadily increased in size.

On examination the right breast was seen to be unusually prominent, and on palpation this was found to be due to a hard swelling about the size of a fist, which was adherent to the chest wall by a broad attachment. Its surface was lobulated and, especially on the outer side, it had an over-hanging edge. The skin was freely movable over the tumour and there was a good thickness, probably breast, between them. The nipple was normal and similar in appearance to that of the other side. The patient had had no cough, and examination of the lungs showed no abnormal physical signs. The tumour was considerably opaque to X rays, so that it was difficult to get a satisfactory view of the underlying ribs. There did not appear to be any destruction of bone, but the upper border of the fourth rib showed a clearly defined defect near the costo-chondral junction. Seen in profile the tumour showed some irregular ossification, not directly continuous with the ribs. It did not appear to extend into the cavity of the chest, and no intrathoracic abnormality could be seen. The X ray appearances suggested that the tumour was an ossifying chondroma connected with the fourth rib. The rapid increase in size favoured the probability of the growth being a sarcoma with secondary calcification and ossification, though the X ray examination, in the absence of any erosion of the ribs, seemed to be against this view.

Since the growth had not extended inwards, and as there was no indication of secondary growth or direct invasion of the lung, its removal was called for.

SECTION OF OPHTHALMOLOGY.

EXHIBITION OF CASES AND SPECIMENS.

A MEETING of this section of the Royal Society of Medicine was held on Jan. 14th, Dr. JAMES TAYLOR, the President, occupying the chair.

Foreign Body in the Eye.

Mr. G. WINFIELD ROLL showed a man who had had a Steel Fragment in the Eye 18 years. When seen by the exhibitor some weeks after the accident the vision was 6/6 and the media were clear. There was now a very small nebulous area near the limbus. As the foreign body was encysted, the vision good, and the eye quiet, he did not think there was any need for interference. Latterly vision was 6/18, but the eye gave no trouble, though an area of atrophy had appeared below the foreign body. Provided a foreign body in the eye was aseptic, he did not think there was any limit to the time it might remain in the eye.

Mr. W. T. HOLMES SPICER thought the slight changes seen in the choroid region might be due to the presence of the fragment, a local siderosis.

Large Inter-marginal Cups without Glaucoma.

Dr. A. HUGH THOMPSON showed a patient whose discs presented Large Inter-marginal Cups with, as yet, no signs of glaucoma. The patient, a woman aged 52, came for glasses; her vision was 6/12, she had lens opacities and hypermetropia. The eye tension was normal, and she never saw rainbow colours. The disc cups were now at a doubtful stage; some would regard them as glaucomatous, others would be uncertain whether they were physiological or glaucomatous.

Cases of Coloboma.

Mr. J. H. PARSONS showed a patient with Coloboma confined to the optic discs.—Mr. MALCOLM HEPBURN demonstrated a case of Coloboma of the Macula Region. There was a pearly-white centre, with a definite ectasia on the temporal side of the patch, and a border of pigment ran around the edge. Had it been an inflammatory patch there would have been more pigment proliferation. True coloboma of the choroid was very rare.

Photographing and Demonstrating the Interior of the Eye.

Professor SALOMONSEN, of Amsterdam, exhibited a series of ingenious instruments used by him for the purpose of demonstrating the interior of the eye to students, and also for obtaining photographs of the same.—Mr. A. C. HUDSON exhibited a new Perimeter.

The Bearing on Glaucoma of Deep Tension in the Eye.

Dr. RAYNER D. BATTEN gave a demonstration with two inflated rubber balls or balloons, one of which was covered with muslin, to show the importance of what he termed "deep tension" in the eye as indicating the onset of glaucoma. The deep tension in the eye was represented by the amount of dimpling which ensued with a definite fixed pressure. This deep tension, associated with a fairly deep excavated disc, was likely to merge into glaucoma.—Mr. M. H. WHITING and Mr. GRAY CLEGG (Manchester) discussed the question.

Mr. RANSOM PICKARD (Exeter) read a paper entitled

VARIATIONS IN THE SIZE OF THE PHYSIOLOGICAL CUP AND THEIR RELATION TO GLAUCOMA.

The cases he dealt with for the purposes of his thesis were a consecutive series, the only elimination being all possible cases of glaucoma and other diseases affecting the disc. He anticipated the objection that the subjects came because they had some affection of the eyes and were not simply part of the general population; still, the total numbers dealt with in the later age-groups corresponded very closely with the general population age-groups in Devon. Glaucoma was so rare under 40 years of age that cases might be taken, from this standpoint, as normal. The older the patient the greater the assumption that pathological changes had occurred, glaucoma accounting for a large proportion. Where necessary, the tonometer for pressure and the screen for the field of vision were employed. The disc and cup were carefully drawn in each case and transferred by means of carbon to graph paper. The area of each disc was then measured, and the results reduced to a percentage, 100 being taken as the area of the disc. The cases were grouped in ten-year periods. The myopic cases had large cups, though there were only two groups (16–25 and 26–35 years) in which the largest myopic cup was not exceeded by a hypermetropic cup.

Explanation of the alterations in normal disc cups involved, he said, many difficulties. An alteration in the size of a cavity, situated in a solid like the sclerotic and filled with a viscous fluid, might conceivably occur under three conditions: First, no alteration in pressure. Second, tension from without, as in the contraction or disappearance of nerve fibres or fibrous tissue. In this series cases of this kind were ruled out. Third, there might be pressure from within—i.e., pressure exerted by the vitreous, as in glaucoma. He submitted a twofold suggestion—that the tissues of all discs were not equally strong, and that small increases of pressure acting on the weaker discs over long periods might cause an enlargement of the cups in these cases, but not to the extent of interfering with vision.

Mr. Pickard proceeded to show, by means of the epidiascope, a comparison of the shapes of the glaucomatous and physiological cups. In the former there was certainly pressure from within. The glaucoma cup was usually a simple and symmetrical enlargement of the physiological cup; in a smaller number the conical enlargement was added on to the usual cylindrical form. If most of the glaucomatous cups were enlargements of the physiological cups caused by internal pressure, then presumably smaller degrees of pressure, acting on cups in which the tissues were weak, would cause smaller degrees of enlargement, and without, necessarily, deterioration in vision. Very varying degrees of tension came on in middle life without symptoms arising from it. Pressure was not the only factor, the resistance of the disc must be taken into account. Under the term glaucoma should be included only those cases in which there was sufficient pressure to interfere with the function of the organ; in the cases of high pressure without such interference the pressure must be regarded as a danger-signal. In these latter cases an accurate and thorough investigation should be periodically carried out and all predisposing causes as far as possible eliminated.

The author admitted that the main contention of this contribution, that there was a tendency for the physiological cup to enlarge with increase in age, was not proved but only inferred, but much might be done by a few cases being systematically followed through over a course of years, with accurate diagrams taken at regular intervals.

Discussion.

Mr. THOMPSON said this contribution supported the view that there was a distinct relation between a large physiological cup and a glaucomatous cup. In more than one case he had seen there was undoubted glaucoma in one eye and a large overlapping physiological cup in the other. Also, when ordinary glaucoma had occurred in one eye there was a considerable likelihood of the same condition developing in its fellow. The suggestion of the author that physiological cups were changed into glaucomatous ones owing to unequal resistance of the lamina cribrosa coincided with his own view. But he did not think that was the mode of causation in most cases. The ordinary glaucoma was that of the text-books, in which it began at the margin of the disc. He did not think the author had sufficiently emphasised the distinction between the ordinary shallow cup, which most discs showed, and the perpendicular cup, which latter often overlapped, so that the vessels came to the edge of the cup and disappeared from view, again being seen in the lamina cribrosa.

Dr. BATTEN thought what was required was some method of recording the cases of central cupping. The actual central cup he looked upon as comparatively innocent; it was when it got to the margin of the disc that it became dangerous. A combination of a large physiological cup and the existence of deep tension justified a fear of the supervention of glaucoma.

Mr. M. S. MAYOU pointed out the great difference between the physiological and the glaucomatous forms of cupping; in the latter there was an actual pushing back of the whole lamina cribrosa. Cupping was dependent not only on the intra-ocular tension, but also on the condition of the nerve fibres as they passed through the lamina cribrosa. He agreed that the danger was when the cupping passed to the margin of the disc.

Mr. N. BISHOP HARMAN continued the discussion, and the opener replied.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

AN ordinary meeting of this society was held on Jan. 21st at 1, Upper Montague-street, W.C., Dr. C. SANDERS (M.O.H., West Ham) being in the chair in the absence of the President.

Dr. G. E. OATES (M.O.H., Bethnal Green) read a paper on

Slum Areas in Central London.

He said that health officers, while approaching housing problems in a scientific spirit, must rely upon public opinion. The average London resident took little interest in the government of his borough. Great credit must be given to the press for the space devoted to housing questions of late, but the building of new houses appealed most to their readers. The slum dweller was not inclined to move to a cottage in the suburbs. Ex-Service men were now not so much concerned to get good surroundings as to get houses at all. The speaker referred to the distinction in size between London County Council schemes under Part I. of the 1890 Act and borough council schemes under Part II. The maximum number of houses for a Part II. scheme was now, he understood, held to be 150. He proceeded to indicate a few special types of slum areas, and mentioned that the only type which could readily be dealt with at the present time was the area containing vacant land which could be built on before any of the slum property was demolished. In regard to compensation, he was of opinion that Section 13 of the 1919 Act would have only a very limited application. Could we expect the Ministry of Health to agree to any compensation greater than laid down by Section 9? It was where the repair and renewal of old buildings went hand in hand with new building that the question of compensation became important. If the owner received nothing but the value of the land without buildings as a housing site or for an open space he would have a clear grievance if the houses were not all demolished. Owners might possibly put forward their present inability to demolish a dwelling house or dispossess their tenants as reasons for not making the houses fit. The economic questions involved in compensation were of great difficulty.

Dr. Oates then referred to the great difficulty of demolishing any area unless there was already accommodation to rehouse the displaced. Temporary accommodation or the conversion of large houses for the purpose was impossible owing to the incredibly high cost. It was undesirable to encroach on the public parks. The people could only be rehoused in high blocks of dwellings, which were undesirable. If slum areas could not be rebuilt at once, local authorities ought to decide and indicate their policy for the future. Owners might be willing to coöperate if they were assured there would be no demolition for a definite number of years. The speaker suggested that the L.C.C. and borough councils should collaborate with the Ministry of Health in a plan for dealing with unhealthy areas as a whole and from a national point of view. Closing orders at the present time were impossible. In most London boroughs little or nothing had been done under Section 28 of the 1919 Act and the Nuisance sections of the Public Health Acts remained the chief instrument for effecting improvements. The penal clauses in the latter were very effective.

Discussion.

Professor H. R. KENWOOD (M.O.H., Bedfordshire and Stoke Newington), in congratulating the reader of the paper, said that two factors which greatly hampered housing work at the present time were the impossibility of dealing with overcrowding, and the difficulty of remedial measures. Properties were deteriorating and also the people within them. The time was ripe for a conference of authorities on the subject. It was easy to exaggerate the importance of environment, and we should aim at helping, and, if possible, compelling people to make the best use of the accommodation provided. There had been in provincial towns a great exodus to the suburbs, but not in the case of the very poorest.

Dr. W. J. HOWARTH (M.O.H., City of London) referred to the results of the deliberations of the Slum Areas Committee, of which he is a member.

Dr. F. J. ALLAN (M.O.H., Westminster) remarked that new views on an old subject were always interesting. The new Housing Act added to the difficulties of M.O.H.'s. There was need of one authority for housing purposes for London and the surrounding country. The demolition of one slum commonly led to the creation of another. He hoped that good results might come from the formation of satellite towns around our big cities, comprising factories, &c., as well as houses, which would lead in the future to the emptying of the slums. Working-class people would not travel more than a limited distance to their work, and the Rent Restriction Act greatly restricted the freedom of those who did desire to move.

Dr. T. SHADICK HIGGINS (M.O.H., St. Pancras) referred to the present impossibility of preventing the overcrowding of houses, and the use as tenements of unwholesome underground rooms. It was a time for long views rather than immediate drastic action. It was most important that existing houses should not be swept away to make room for commercial premises, and for the growth of industry the creation of something like satellite towns was a necessity. He agreed with Dr. Howarth as to the injustice of allowing no compensation for all houses on an insanitary area. There was a gradation even in insanitary property, and there could not logically be drawn a definite line dividing off sanitary houses carrying a full economic value from insanitary houses having no value at all. While he agreed with Professor Kenwood that people of moral worth could make the most of even wretched houses, he was of opinion that the importance to the nation of good houses and other amenities could hardly be exaggerated.

Dr. T. S. MCINTOSH (M.O.H., Hendon U.D.) contended that the idea of effecting much improvement in housing at present was practically hopeless. Improvement schemes would reduce the number of houses available, and would replace cheap houses by dear ones.

The CHAIRMAN, in thanking Dr. Oates for his paper, remarked that a good deal of nonsense was being talked about housing. The danger lay in the overcrowding rather than in the structural condition of the houses. The new houses would become unwholesome if they were sublet so as to become overcrowded. Large slum areas had been formed in this way in the eastern suburbs of London in recent years.

Dr. OATES briefly replied.

Seventeen new members were elected at the meeting.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

A SPECIAL general meeting of this society was held at the West London Hospital on Jan. 14th, at which a discussion on

The Interim Report of the Consultative Committee of the Ministry of Health

took place. Dr. F. J. McCANN, the President, occupied the chair. Lord Dawson of Penn, who had intended to be present, was unavoidably absent.

Dr. F. G. LLOYD opened the discussion. He pointed out the importance to the whole profession of the subjects dealt with in the Report. He reminded the meeting that Lord Dawson had honoured the society by delivering the Cavendish lecture in 1918 on The Future of the Medical Profession. The present Report was largely the development of the framework contained in that lecture. Owing to increased expenditure many of the voluntary hospitals which previously on account of their endowments had not appealed to the public were now doing so. Their entry into the field had made it much more difficult for those which had hitherto depended entirely on the charitable public. Dr. Lloyd referred to the benefits that "team-work" would give to the public and the help that the general practitioner would receive from it. He urged the profession to concentrate their efforts to procuring by this means all the help that modern research could give. He pointed out that in this respect we were not as up to date as such countries as Switzerland, America, and France. He was strongly in favour of the retention of the voluntary system as opposed to State control. He suggested that the retention of the voluntary system would constitute the best possible "war memorial" to those that had fallen. It would require the united and concentrated effort of the medical profession and public to ensure the salvation of the voluntary system.

Dr. C. W. HUTT (M.O.H., Richmond, Surrey) wished to emphasise the help that bacteriology affords in the diagnosis and treatment of disease, and urged that it should be brought to the door of the practitioner. He thought that Lord Dawson's scheme was an excellent attempt at constructive work, and that by affording the practitioner bacteriological help both the general public and the practitioners would materially benefit by it.

Lieutenant-Colonel E. M. WILSON was opposed to State control of the hospitals, and considered that a great deal might be done to relieve the financial position of the hospitals by instituting some system of voluntary contributions from the patients. This was already at work in some of the hospitals and had proved very satisfactory. He thought that contributions according to the financial position of the patient were better than a "flat-rate" system, and he hoped that if some such scheme was adopted the hospitals might thus avoid the necessity of State aid, which must necessarily involve some amount of control in the management.

Dr. T. ORR (M.O.H., Ealing) said that we had first of all to consider whether the medical treatment provided for the people of this country was sufficient. The examination of recruits during the war showed the great amount of preventable disability that existed, and it was largely on account of this finding that the Ministry of Health was established. The Consultative Committee had the duty of advising the Ministry as to the best methods for preventing the continuance of this serious state of affairs. The Dawson Report was the result. He thought that the scheme proposed would cost an enormous sum of money, and it was our duty to consider whether it should be adopted in whole or part.

Dr. RICKARD LLOYD referred to the question of remuneration for the members of the profession engaged in the Ministry's scheme, and questioned what would be the future field of general practice. If the time of the general practitioner was largely taken up by Ministry of Health work it would be interesting to know what time would be available for private practice.

The PRESIDENT said there appeared to be a general desire to see the voluntary system of hospital administration continued in this country. He thought that State control should be strenuously opposed, as it would not make for the advancement of science. In his opinion "team-work" was essential if the patients were to obtain the maximum benefit from scientific medicine. He thought that the scheme set out by the Ministry of Health would be very costly, and that the tax-payers would refuse to contribute the money. He pleaded for the establishment of maternity hospitals and centres without delay, and pointed out the grave necessity for these in the country. The future of the nation depended on the birth-rate, and money could not be better spent than providing a thoroughly efficient maternity service. This, he thought, should be State-aided.

SOCIÉTÉ DE THÉRAPEUTIQUE DE PARIS.

AT a recent meeting of this society Dr. ARTAULT DE VEVEY read a paper on

Lymphotherapy in Puerperal Fever.

The method consists in injecting the patient's own serum obtained from a blister. He stated that he had employed the method in nearly a thousand cases of infectious disease, especially influenza, as well as in other conditions, probably of an infectious character, such as rheumatism, herpes zoster, chorea, facial neuralgia, appendicitis, and metritis. The method had proved to be most successful in definitely infectious diseases, especially of a febrile character, and had never produced any unfavourable results.

Treatment of Broncho-pneumonia by Formation of a Tracheal Fistula.

In his paper Dr. G. ROSENTHAL stated that this method should be employed early and energetically so as to prevent secondary localisation, as it was ineffective in septicæmia accompanying a pulmonary localisation. On the other hand, as long as the disease remained local it was capable of effecting a cure. Injection of gomenol oil was the usual procedure, to which should be added taurocholate of soda, which had a liquefying action on the pneumococcus. In desperate cases oil of turpentine, in doses of 1–2 c.cm., could be used.

Dr. M. TIFFENEAU and Dr. BOUCHEREAU communicated a paper on the

Combination of Phenols with Hexamethylenetetramine.

The most important preparation according to them was the diphenate, which possessed in a modified form all the properties of its principal constituent, phenol. On the other hand, it had no caustic action and was slightly less toxic, while its antiseptic power was slightly but definitely superior to that of phenol.

Opotherapy in Dementia Præcox.

Dr. A. MARIE (de Villejuif) in his paper reported seven cases of dementia præcox in women and girls, accompanied by disturbance of the ovarian functions, whom he had treated with ovarian extract, combined at a later stage with thyroid extract. In four recovery took place, and had lasted for one, two, three, and five years respectively. In two other cases improvement had taken place, but it was too early to say if recovery would be permanent.

Treatment of Erysipelas in the Newborn.

In this paper Dr. R. LABBE and Mme. M. DE LARMINAT recommended swabbing the affected areas four-hourly, however great their extent, with a 1 in 400 watery solution of silver nitrate. The skin should then be allowed to dry, and be sprinkled with an aseptic powder, such as salicylated talc. The treatment should be continued until recovery, in spite of the brown pigmentation of the skin. No bad effects had been observed.

Dr. L. CLAP read a paper on the

Treatment of Chilblains,

in which he stated that during the war he had several times relieved the pain caused by this affection in soldiers with an elastic bandage applied either directly over the chilblains or just above them. The results were equally good in both cases. Local compression acted more rapidly, but was more painful, while the effects of compression at some distance from the chilblains were more lasting. The former was indicated when there were only a few lesions on the fingers or sides of the feet, while the latter should be reserved for multiple lesions, chilblains on the toes, or ulcerated lesions.

Reviews and Notices of Books.

SURGICAL ASPECTS OF DYSENTERY.

By ZACHARY COPE. London: Frowde, Hodder and Stoughton. With 2 coloured plates and 19 illustrations. Pp. 147. 12*s.* 6*d.*

WITH the termination of the war an increasing number of men who have been exposed to the infection of dysentery are returning to England, so that it is probable that the late stages and complications of this disease will be seen not uncommonly. The majority of English physicians and surgeons have had but little experience of this disease, and will probably find considerable difficulty in its diagnosis and treatment. This monograph will come as a real help to them. It is small, clearly written, easy to read, and yet contains an astonishing amount of information. So helpful is it from the surgical point of view that the only feeling that is left after reading it is one of disappointment that the medical aspects of the disease have not been dealt with in the same or a similar volume; for they also will present difficult problems in the near future. Especially would we have liked to have seen a wider discussion of the relative frequency of amœbæ and the various bacilli as causative factors. The surgeon's need of some medical knowledge of the disease is emphasised in the first chapter, which discusses the frequency with which dysentery occurs as a complication of, or simulates, some surgical lesion. The description of the surgical complications occurring in the early stages of dysentery is very useful, and stress is laid upon the difficulty in distinguishing between true appendicitis and dysenteric typhlitis—a distinction which is of very considerable importance in the question of treatment and progress. It is interesting to note that more active surgical steps are advocated in cases of chronic infection when, as the author points out, the whole colon may be converted into a pus sac. Up to the present these cases have been so rare that the treatment has not been clearly defined, but many of them could doubtless have been saved by more active surgical measures than those usually adopted. Mr. Cope's experience certainly supports this view.

A large section is given over to the consideration of amœbic hepatitis and liver abscess, and the only criticism we would offer on this section is that the division into chapters is artificial and somewhat confusing. Stress is laid upon the importance of early treatment with emetine, but although it is pointed out that the use of this drug may rapidly cure hepatitis, and that it should always be administered after the abscess has been drained, its value as a method of treatment alternative to operation is not discussed. Yet there is a certain amount of evidence that even when a definite abscess has formed it may be cured by emetine alone, and it would have been interesting to read Mr. Cope's view on this point. The relative value of the different forms of treatment is ably dealt with. Mr. Cope does not favour washing out the abscess cavity with quinine, as he has found that emetine by mouth is as efficacious in destroying the amœbæ. The last chapters of the book are devoted to a description of the rarer complications, many of which are rather more medical than surgical. To all those who may have to diagnose and treat these cases—and who, indeed, may not have to do so to-day?—the book will be of great value.

DIE CHIRURGIE DER BRUSTORGANE.

By FERDINAND SAUERBRUCH. Berlin: Julius Springer. 1920. With 637 illustrations. Pp. 931. M.240.

IT is well known that Sauerbruch has been interested in thoracic surgery for many years. Many surgeons will remember his earlier work, published in 1911, which did much to stimulate interest in a field of surgery which at [illegible] time was hardly touched. He has now produced a large volume, in association with several others, in which he presents with great detail the anatomy, physiology, pathology of chest complaints, together with the surgical treatment as far as it can be carried out. The book is by no means intended for the use of surgeons only, for its survey includes all methods of treatment, and Sauerbruch expresses the hope that physicians as well as surgeons will read it. That the book is a large one and a monument of industry may be judged from the fact that the bibliography alone runs into 47 large closely-printed pages.

The plan of the book is as follows: A long chapter on the anatomy of the thorax; then is given the physiology of respiration and a chapter on the general pathology of diseases of the thoracic viscera; after this comes what is perhaps the most important part of the book—namely, a long and well-illustrated chapter on diagnosis by means of X rays and clinical methods. Then come shorter chapters on anæsthesia, the use of pressure chambers for obviating pneumothorax, the methods of opening the thorax, and the general technique of thoracic surgery. The second part of the book deals with special forms of injury or disease, each group being dealt with separately; considerable attention is paid to deformities of the chest, and wounds of the lung, abscess, bronchiectasis, and tuberculosis are examples of the subjects considered.

The book is an extraordinarily good one, its merit lying in the breadth of its outlook as well as in its attention to detail. Its outlook includes the history of chest surgery and the fundamental sciences of anatomy, physiology, and pathology, whose handmaid surgery must always be. Some 200 pages (nearly a quarter of the book) are devoted to "diagnosis." It is a truism to insist on the need of a correct diagnosis as a prelude to any form of treatment: in thoracic work the difficulty of obtaining this has been one of the great obstacles to advance. It is only recently that we have been able to make a little progress with the help of X rays, and even now the correct interpretation of the pictures obtained is by no means easy. The diagnosis of abdominal complaints is far more advanced, for the reason that opinions have been checked and corrected by observations made after opening the abdomen; if the hopes and aspirations of thoracic surgeons are realised, and when an exploratory thoracotomy becomes as usual and safe an operation as exploratory laparotomy, then, and not till then, will our diagnosis become more sure. Physicians should be interested in the chapter on the treatment of tuberculosis, and especially to that part referring to the formation of artificial pneumothorax—this is a point which has been, perhaps, too much neglected by English surgeons; it merits their attention. Sauerbruch is a believer in the use of a pressure chamber in all cases in which the chest has to be opened. He holds that the risk of serious interference with the respiratory mechanism is diminished in that the operation can be performed with greater ease and comfort, and that on completion of the operation the lung can be inflated and the chest closed without leaving a pneumothorax. In this country surgeons have not been advocates of the pressure chamber, they believe it unnecessary and rely on gas and oxygen anæsthesia or intratracheal insufflation. At any rate, English surgeons have demonstrated that chests can be opened and operations safely and satisfactorily performed in this manner, and during the war, both in the French and English medical services, hundreds of chests were opened under general anæsthesia without any special form of pressure chamber or insufflator. Not the least interesting part of Sauerbruch's book is the article on gunshot wounds of the chest. He is a conservative surgeon whenever possible, emphasising the importance of rest for all lung wounds. He is insistent, however, on early and free operation for severe bleeding or increasing pneumothorax. It would be interesting to learn what was the practice of the German medical service as a whole on this subject.

This book is the best at present existing on thoracic surgery and the most important contribution to this line of work that has been made for several years.

THE NEW EDUCATION.

A Critical Presentation of the New Education Scheme of the London Education Authority. By L. HADEN GUEST, *M.C.*, M.R.C.S., L.R.C.P. London: Hodder and Stoughton. 1920. Pp. 118. 2*s*.

IN this concise little book Dr. Haden Guest gives an analysis of the main points in the London County Council's new scheme of education from the nursery school to the university, although there is very little in the book about the latter or the training of teachers. The public as a whole will be glad to know that no more school buildings of the heavy three-decker type, costing so much to build and so much to alter, are to be erected. The new schools are to be of the open-air type and of lighter and cheaper construction. School journeys, which do so much to improve the health of the children, taking them to the country or the seaside for a week or more, are to be encouraged, and will become a more outstanding feature in the elementary school curriculum.

Dr. Guest regrets that the Council have not yet seen their way to include spray or shower baths in the plans for the newer schools or to establish them in the older ones. He maintains that the provision of baths would effect an improvement in health, and consequently in attendance, in addition to greatly reducing the vermin infection which still attacks a very large proportion of children. In this way, he asserts, we could dispense with the expensive cleansing stations "which 'keep down' vermin infection but do not prevent it as a training in cleanliness would." Medical inspection is to follow the child into the continuation school, as it does at present into the secondary school and training college, and facilities for treatment are to be available. A special medical examination of children between 12 and 14 employed out of school is to be made. Dr. Guest considers that while provision for the mentally and physically defective child is on the right lines, the Council has not seized the opportunity of dealing with the problem of the industrial and reformatory schools. He states that in spite of the improvements made in these schools in the last few years, the whole provision is at present unsatisfactory and will not really improve until the system as a whole is lifted out of the "criminal" atmosphere into that of the purely medical and educational. Nursery schools are dealt with sympathetically by Miss Margaret McMillan, who deplores the timidity of the Council in this direction.

The book is a critical survey carefully written and deliberately constructive in tone.

THE PRINCIPLES OF PREVENTIVE MEDICINE.

By R. TANNER HEWLETT, M.D., F.R.C.P., D.P.H., and A. T. NANKIVELL, M.D. Lond., D.P.H. Camb. London: J. and A. Churchill. 1921. Pp. 536. 21*s*.

THE general practitioner has always been and must always be the most powerful agent for promoting the health of the community. His advice is constantly being sought not only as to the treatment of disease, but as to the maintenance of health. The present trend of the public health service, which is to develop more and more the personal side of its work through centres for maternity and infant welfare, school clinics, and the like, make it a matter of pressing importance that the busy practitioner should have available information as to these developments and their relation to his daily work. Medical students receive but imperfect instruction on these matters, while those already in practice find difficulty in keeping themselves acquainted with modern advances. A book intended to provide the necessary information has just been published. There can be little doubt that such a book is needed, and fortunately this book is well written, presents no extreme views, and, when the authors are dealing with subjects particularly their own, provides attractive reading. On the other hand, certain subject-matter appears to have been got up for the occasion, such, for instance, as that on industrial hygiene and vital statistics. Neither is dealt with adequately, and both might advantageously have been omitted.

The authors aim at stating clearly great principles and avoid overwhelming their readers with detail. Housing is deservingly dealt with somewhat fully, and the fundamentals for healthy dwellings are admirably given without being obscured with constructional items of interest only to a builder. Vivid word-pictures are used freely and with some advantage. Of the old system by which human excrement is "conserved" in pails and tubs, they say: "The most loathsome and bestial conditions of life exist among these 'conservancy system' houses. ...... These deadly places beggar description, since it is not possible for the pen even to adumbrate the horror of the smell in all its sickly sweetness of putrescence." We should to-day build for future generations. "When we look upon our towns and slums we can only deplore the meanness of the minds that designed them, and let us hope that our descendants will not be able to say this of us." The suggestion that the ideal city should be one of 50,000 inhabitants spread over about 3½ square miles of country recalls the recommendations in Aristotle's republic. The sections dealing with infection and infectious diseases give an admirable summary of present knowledge plainly expressed with the introduction of a minimum of abstruse nomenclature; even immunity is discussed without reference to "complements" and "amboceptors." Similarly a broad and interesting sketch is given of infant and school life, of infantile mortality and juvenile disease; the aim throughout being to lay stress on prevention of those disturbances of health which become the beginnings of disease. We cannot refrain from quoting, in relation to the condemnation of barley-water and pap as nourishment for infants, the remark that "if Nature had intended them to be a baby's diet, she would, no doubt, have provided the mother with barley-water in one breast and rusks at the other," and also "there is death in the pot, and the platter kills more than the sword."

One criticism must be made with reference to death-rates, a criticism which also applies to other writers. The student unaccustomed to statistics should be presented with rates having a common denominator, and the usual one of 1000 population should be strictly adhered to; but while the general death-rate is so given, we find the death-rate from diphtheria stated per 100,000 population, and that from tuberculosis, influenza, cancer, and other causes of death, per million. Confusion is bound to arise from thus altering the denominator, and no advantage is gained by moving the decimal point this way or that. The book is well printed and possesses an adequate index, and we have no hesitation in recommending it to the attention of the profession.

WOCHENBETT-UND SÄUGLINGSPFLEGE.

Von Prof. Dr. EDUARD MARTIN. Berlin: S. Karger. 1920. Pp. 96.

THIS little manual for mothers and midwives was designed to meet the need for a simple text-book dealing primarily with the puerperium and the care of the new-born infant, which, without being overloaded with detail, should yet give all the information necessary for the intelligent treatment of mother and child. The author appears admirably to have succeeded in this attempt, the essential points connected with the normal puerperium being given in the simplest possible language. The teaching is eminently practical throughout, and the 47 woodcuts, though somewhat crude, add value to the book. The question of the feeding of the infant is carefully gone into, and some of the difficulties connected with breast feeding are discussed. Although not much space is devoted to pathological considerations, the author explains clearly the danger-signals of many of the puerperal diseases, pointing out that none of them falls suddenly like a bolt from the sky.

Altogether this small volume, which has an adequate index, should prove of real service to mothers and midwives.

NURSING OF CHRONIC PATIENTS.

By ELEANOR C. BARTON, R.R.C. London: The Scientific Press. 1920. Pp. 126. 1s. 3d.

THERE are few branches of nursing which test the skill, character, and mentality of the trained nurse more exhaustively than does the nursing of chronic cases. Miss Barton in this small handbook gives many valuable hints which should be helpful to young private and district nurses whose past experience has been with hospital patients suffering from acute diseases. Although the book, as a contribution to nursing literature, is slight, it has obviously been written by one with a broad knowledge of the nursing of chronic patients and of the true value such nursing can prove if undertaken with enthusiasm and the determination to alleviate the irksome discomforts so often accompanying protracted illness. The nursing points suggested in cases of hemiplegia and paraplegia are specially valuable and cannot be over-emphasised, and if the nursing of chronic patients is carried out in the spirit of helpfulness which pervades this book such work should prove of considerable interest and its tedium be greatly alleviated.

JOURNALS.

Quarterly Journal of Medicine. Edited by J. ROSE BRADFORD, A. E. GARROD, W. HALE-WHITE, R. HUTCHISON, H. D. ROLLESTON. October, 1920. Vol. XIV. No. 53. Oxford: At the Clarendon Press. Subscription 25s. per annum.—The importance which chemical pathology is playing in present-day medicine is well illustrated by the composition of the current number of the *Quarterly Journal of Medicine*. There are five papers in all and every one is concerned with a question of chemical pathology. The first article by Dr. Reginald Miller and Mr. Herbert Perkins consists of a clinical and analytical study of a case of congenital steatorrhœa. The only case hitherto recorded was reported by Professor Garrod in 1913. The authors are not able to say wherein the error responsible for the fat wastage lies, but there is no evidence in their case of pancreatic disease as adduced by the usual tests. A study of their case appears to confirm Garrod's suggestion of "an inborn error of metabolism probably due to the absence of a normal enzyme, presumably a pancreatic enzyme. It is difficult to believe that there is any real disease of the pancreas."—Dr. George Graham contributes the results of a research into the source of the uric acid excreted after the exhibition of atophan. He concludes that the "extra" uric acid excreted in the urine cannot come solely from the blood, but is probably also derived from uric acid in solution in the tissue fluids of the body. As drugs like atophan, aspirin, sodium salicylate, and sodium benzoate only cause an increased output of uric acid for two or three days, it is useless to give them for this purpose for long periods. If given to gouty people two or three days each week or fortnight it would seem possible to prevent any great accumulation of uric acid in the body, and in this way to ward off attacks of gout.—Dr. Dennison V. Pickering publishes the results of many observations on the blood-sugar in diabetes. From his conclusions it appears that a case with a high blood-sugar content which can be reduced by restricting carbohydrate will probably show greater carbohydrate tolerance, and therefore will do better than a case with a lower blood-sugar content not affected by diet.—Dr. Mackenzie Wallis writes on the "Diagnosis of Diseases of the Pancreas, with Special Reference to Diastase in the Urine." He concludes that an increase of diastase in the urine, together with the presence of glycosuria and a positive result from Loewi's adrenalin mydriasis tests, affords strong evidence of pancreatic disease and that this is still further strengthened if creatorrhœa and steatorrhœa be present.—Dr. E. Wordley discusses the effect of high protein diet on albuminuria and blood urea in cases of chronic nephritis. His results are full of interest. In chronic cases it appears that variations in the amount of protein in the diet have no effect on the amount of protein excreted in the urine. In fact, such increases in the diet do not increase albuminuria; if only percentage figures are taken they may decrease it owing to the diuresis produced by a rich protein diet. It is shown that the blood urea varies very considerably with the diet, and that an estimation of the blood urea is of much less value in appraising the impairment of renal function than Maclean's new urea test. Further, the blood urea may be within normal limit and yet all the manifestations of uræmia be present.

The Military Surgeon for December, 1920, opens with a very readable paper by Captain Wesley C. Cox and Major H. Wood on the hydrogen-ion concentration of media and on buffered solutions whose reaction changes but slowly. There is a chart of the colour reactions of indicators and an account of a simple and convenient colorimeter. The U.S. Army Medical School, anxious that the media used in its associated laboratories shall all have identical reactions, sends out standard phenol-red tubes as controls, and these, if sealed in best quality glass-tubes and kept in the dark, are permanent for some months.—Mr. E. V. Cowdry begs that the nations, for Christian charity's sake, shall seek to arouse in China a zeal for preventive medicine, and details what is being done for medical education in that great empire by China herself, by foreign powers who are supporting medical schools, and especially by the Rockefeller Foundation, which has spent a million and a quarter pounds on the Union Medical College in Pekin. But there are only 600 first-year medical students in all China.—Dr. C. H. Moore and Dr. A. de F. Smith, who were working with the U.S. Army at Coblentz after the armistice, urge that in large centres fractures should be treated by specialists, that in any case they should be treated immediately in spite of swelling, that X ray control is necessary, and that every hospital should have a portable X ray outfit. The splints required are few, combined traction and suspension are the methods of choice, after-care is most important, and their message is that massage, electrical treatment, and occupational therapy must be available in hospital.—Dr. Martin B. Tinker also insists on the value of war surgery in civil practice, advocating wound excision (which he recommended in 1909) in industrial surgery. He stains the wound with iodine and carbolic acid, removes damaged tissue ("nearly always more tissue lives than we expect"), at the same time does any plastic repair that is necessary, transplanting fat to avoid adhesions, and using Carrel tubes and solution to avoid sepsis.—Major F. Kramer tells how the U.S. Army Medical Corps demobilised its patients last year, reducing its hospitals from 55 to 8, its beds from 64,000 to 7000, and its sick from 40,000 to 5000, working from a state of specialism and subdivision to one of general utility and consolidation. Of 18,000 fresh cases diagnosed as tuberculous 4305 were unconfirmed, and of these many were residual pulmonary infections, sequelæ of influenza.—Lieutenant-Colonel Louis C. Duncan relates the history of the preparation of the great "Medical and Surgical History of the War of the Rebellion," 1860-64, which was not completed until 1888, by which date many of its contributors had died. We rarely hear any whole-hearted admiration expressed for service life and methods. That makes the more interesting an article by Captain E. Colby, who appears to be on the teaching staff of the University of Minnesota. In the army he was for a time commanding a company, and for another period on the staff. He learnt the importance of attention to administrative detail and the uses of red tape; he learned that rules are not made to be broken, and he realised that the teacher was responsible for the success or failure of the taught. He was responsible for the pay of his men, and had to keep their accounts accurately. He had to render reports, and these punctually and without mistakes. On the staff he learned the value of reports. He found that rules are made to save time, to facilitate simultaneous coördinated action from a team, and so to increase output. He observed that instruction in drill must be clear, simple, brief, and graduated—every man must be sure of the foundations before going further. An officer is judged by his results. "Awkward" men must not be allowed to remain "awkward," they may disgrace the whole regiment. He concludes: "Like the company commander, the teacher should be judged by his results. This belief I acquired in the army." "Howlers," being a proof of misunderstood teaching, are, he thinks, a disgrace to the teacher rather than to the taught.

Maternity and Child Welfare. Vol. V. No. 1. January, 1921. —This journal is now the official organ of the Central Council for Infant and Child Welfare. In the January number Miss Hilda Cashmore writes on the Community and the New Social Worker. She points out that a serious confusion of thought has given rise to a new label of "social worker," which includes an almoner, a health visitor, and a secretary of the C.O.S., but excludes a doctor or a district nurse. Dr. Leonard Findlay pleads for a pure milk-supply, the notification of venereal disease, and the education of the parents of to-morrow as necessary parts of an intelligent campaign to reduce infant mortality. Suggestions for infant welfare work in Czecho-Slovakia, by Miss M. Payne, are quoted elsewhere in this number, also notes on recent developments in Finland, France, and Serbia. The methods adopted by the Child Health Organisation, U.S.A., in teaching children under 10 years of age are discussed; the staff includes a "health clown," combining entertainment with instruction, a cartoonist, and a "health fairy"—a trained nurse in disguise. The terms of reference of the Executive Committee appointed in March, 1920, and the report recently submitted by this committee to and adopted by the Central Council for Infant and Child Welfare are given in full in this number.

THE LANCET.

LONDON: SATURDAY, JANUARY 29, 1921.

Foot-and-Mouth Disease.

Foot-and-mouth disease has assumed considerable importance in this country lately on account of the severe outbreaks that have occurred in Kent, in Gloucestershire, and then in the Midlands, where great inconvenience was caused to business during the Christmas weeks by reason of restrictions imposed by the Ministry of Agriculture, and later in the West Riding of Yorkshire. Thanks, however, to the measures promptly undertaken by the Ministry's officials the disease seems now to have abated, although five more outbreaks occurred the week-end before last, and one was reported this last week in Herefordshire. In the Midlands the outbreak became the gravest that had been known for 30 years, and its wide and rapid spread aroused a very impatient mood among stock-owners. It would appear that the disease, after making its appearance in the West of England, became transported to the Midlands on account of movements of animals to supply the Christmas markets, especially that of Birmingham. In their anxiety to make adequate arrangements for meeting the Christmas trade stock-owners and dealers were not sufficiently careful to observe the condition of health of the cattle in their charge, with the result that animals affected with the disease were mixed with healthy stock, exposed at public markets, and redistributed over wide areas, thus rendering the whole country liable to the risk of infection. Last week an outbreak was reported in Ireland, which had been free since 1914.

Foot-and-mouth disease, as the name implies, is a condition in which lesions are produced about the feet and in the mouths of ruminants—cattle, sheep, and pigs in the respective order of importance. Other animals may also become infected, but the lesions produced are usually not such as to cause serious inconvenience. The lesions take the form of vesicular eruptions within the epidermis, these starting in the form of small congested points, which soon become converted into vesicles by exudation of serous fluid. By confluence vesicles of considerable size may be formed, especially on the tongue, and when these burst, as they quickly do, large patches of epidermis may be denuded. In the mouth the lesions are found on the tongue and buccal mucous membrane, gums, and sometimes in the pharynx. The irritation caused by their presence produces intense salivation, and the saliva discharged by the affected animals is very markedly infective. The lesions about the feet are of the same nature and occur in the skin just above the hoof or behind the claws, and cause great lameness. Sometimes secondary necrotic changes set in, and sloughing of parts of the tissues or even of the whole hoof may take place. Vesicular lesions sometimes appear on the udder and teats of milch cows, and cases of, or even outbreaks of, the disease have been recorded in man through the *drinking of milk* from cows so affected or through the operation of milking. The period of incubation is usually 2–7 days, but may extend to 11 days. As a rule, the animal recovers fairly quickly; the lesions heal in 5–6 days, so that an animal recovers in two or three weeks. The average mortality in an outbreak does not exceed about 5 per cent. In young animals, however, calves and lambs and young pigs, a rapidly fatal type of the disease is often seen in which the animal succumbs *after an acute febrile attack without the development of local lesions.* Post-mortem, petechiæ on the heart muscle form the most marked lesion. Sometimes animals may become affected with an intense gastro-enteritis. The local lesions, especially the foot lesions, may sometimes lead secondarily to marked necrosis of the surrounding tissues, which may ultimately involve destruction of the animal. The cause of the disease is an ultra-visible or filtrable virus, found in the serous exudate of the typical lesions and in the saliva. It is also said to be present in the blood during the febrile stage preceding the development of the local lesions. The disease can be set up by means of infinitesimal quantities of the virus, so that this disease is perhaps about the most contagious one known. The virus is not highly resistant towards external influences, and at ordinary temperatures, when exposed to daylight and allowed to dry, it loses its virulence in about 24 hours. On the other hand it has been kept alive for as long as three or four months in sealed tubes in the dark. It is quite sensitive to the action of heat and disinfectants. In countries where the disease is allowed to spread unchecked it remains enzoötic, and after suffering from the disease once the animals usually remain free for a year or two. The immunity, however, set up by one attack is short-lived, and cases are on record where the disease has been known to affect animals a second time within about two months after the first attack. In these backward countries the disease is conveyed by the ordinary means of contagion, principally by contact with affected animals or with food or other materials soiled with the infective discharges. On the Continent restrictions are placed in most countries upon the movement of stock out of or into the infected premises, but on account of the high contagiousness such precautions are only partially successful. In this country, thanks to the measures carried out by the Ministry of Agriculture, which has powers to make orders to deal with the disease under the Diseases of Animals Acts, and thanks also to the prohibition of importation of animals except for slaughter at the port of entry, we have been comparatively free for about 35 years, only local outbreaks having been recorded. Prior to the adoption of these measures extensive epizoötics used to occur from time to time, such as in 1869–1872 and 1881–1884, when hundreds of thousands of animals were attacked; in the year 1883–1884 there were 18,732 separate outbreaks in Great Britain, spread over 75 counties, and affecting nearly half a million animals. The disease first made its appearance in this country in 1836, although the flocks of Europe had previously suffered. Since the time when the late Sir GEORGE BROWN and the Veterinary Department of the Privy Council rid the country of the disease in 1885, the 95 outbreaks in 1892 are the only ones comparable to those that have occurred in the past two years.

The success of the policy adopted by the authorities depends upon prompt reporting of suspected cases; the police are informed and communication is established at once with the veterinary staff of the Ministry, and an official is immediately despatched to the spot to investigate the condition. If the outbreak should turn out to be one of foot-and-mouth disease all affected animals are slaughtered immediately and buried or burnt, and all in-contacts or suspected in-contacts are likewise slaughtered. An area with a radius of about 15 miles from the affected centre is then declared, and movements of animals are prohibited strictly into or out of this area, and even within the area, except for immediate slaughter. This policy at first sight appears drastic and costly, especially in view of the fact that the disease is seldom fatal. However, this policy resolutely carried out by the Ministry, with the active coöperation of stock owners and other interested parties, should have as its effect the obliteration of an initial outbreak and the prevention of the establishment of secondary centres. The loss entailed by wasting in condition of animals during an attack, and by the total cessation of the milk-yield in milch cows would undeniably exceed to a tremendous extent the monetary losses now involved in carrying out the policy and in giving compensation to owners. In countries where this disease is enzoötic, treatment of the lesions is adopted and various remedies have been boomed as specifics. At the most these can only be regarded as palliatives, and upon careful investigation they have been all found to have no specific action. A serum can be produced, which has some value as a preventive, by hyperimmunising cattle with material from the lesions or with blood of affected animals during the febrile stage. In France and in Argentina the serum has been shown to have some economic value, but it is costly to produce and the immunity is a short-lived one; and in any case it does not meet the need for stamping out the disease.

Now comes a most important question. How can we explain the periodic appearance of the disease in this country? The reason for most of the recent outbreaks can be seen; they are secondary outbreaks due to the movement of infected cattle. But we are at a loss to account for the epidemics which occur from time to time when the country has been free from the disease for some considerable time or when they happen at distances far apart or in circumstances which seem to exclude all chances of mediate contagion. We know that such initial outbreaks do occur on farms where there has been no movement of animals into or out of them for some time. In making a survey of the position as regards this country during the 20 years prior to Sept. 20th, 1920, the Chief Veterinary Officer of the Ministry of Agriculture, Sir STEWART STOCKMAN, computed that there had been no fewer than 63 such initial outbreaks. Examination of the facts revealed that none of the mediate means of contagion such as would account for the *importation of other* infectious diseases—for example, anthrax—could be held responsible for the sudden appearance of the disease. Anthrax is known to be imported in most cases with infected material. But the importation of feeding stuffs, manures, or packing stuffs from the Continent could not be responsible for the foot-and-mouth epidemics, neither could the movements of human beings to and from the Continent. Two theories remain—viz., that the disease is r-borne, either by the winds or by birds. We ow that the disease is carried considerable distances in the direction of a strong prevailing wind, and that these initial outbreaks occur when the disease is propagating to a serious extent in neighbouring parts of the Continent. If the incidence of this disease is examined by counties or groups of counties we see that certain groups are particularly liable to be "hit," while others remain free. It is suggested as possible that there may be some atmospheric condition in the nature of air pockets which prevails over the areas predisposed to attack. The bird theory is not favourably countenanced inasmuch as the incidence of attack does not correspond with the migratory periods of birds. Recently a Departmental Committee was formed to suggest measures for investigating the causes which give rise to outbreaks of the disease, and we understand that upon the recommendations of this Committee experiments are now being carried out in mid-ocean upon ironclads under the supervision of the renowned bacteriologist NOGUCHI. We are awaiting with great interest the results of his investigations.

The Census.

UPON the eve of a Census we must expect the time-honoured jests regarding statements of age by maiden aunts and the difficulties of an uneducated householder faced by the lengthy schedule. These weary witticisms are again in the newspapers, but phrased more bitterly than ten years ago; one journal has already hinted a doubt whether the employment of hundreds of clerks and the expenditure of hundreds of thousands of pounds upon a Census is worth while. "Where are thy Batches?" howled the people. "Hungry *canaille*," asked FOUQUIER, "is thy bread cheaper, wanting them?" One gathers that the official statistician, the "bureaucrat," or "*squandermaniac*," is hardly more popular than was FOUQUIER, and it may be worth considering whether he could provide a better answer to a similar question regarding batches of abstract, or arithmetical, heads. Perhaps the best answer is to recall events of 100 years ago, of a period of transition bearing some resemblance to that of to-day.

Following the last great European war there was a social and economic upheaval. Then, as now, there were heavy taxation, much distress, and the future was uncertain. At that period came the first collective attempt to appraise the results of the industrial revolution which had changed England from an agricultural to a manufacturing country. The relation between industrial employment, the housing and the feeding of the labouring population, and the national health were prominently discussed. Did work in factories injure the health of the employees? What was the relation between insanitary surroundings and longevity? Were towns more unhealthy than the country, if so, how much more unhealthy? All these questions then, as now, were eagerly canvassed, and the evidence submitted to Royal Commissions and Parliamentary Committees between 1820 and 1840 covers thousands of pages. What impresses the modern reader most is the logical inadequacy of the evidence. Hundreds of statistical tables were printed comparing, *for instance*, the mean ages at death in different localities and *different occupations*; from such tables sweeping conclusions were drawn. Dr. FARR'S witty comment that "if the inquiries had been extended to boarding schools or to the boys at Christ's Hospital the mean age at death would have been found still lower"; seems to modern readers to indicate an extremely low average level of statistical logic amongst his contemporaries. But, in fact, the users of these fallacious arguments were not fools; they used bad statistics because they could get no better statistics. At the Census of 1831 the age-distribution of the population was not obtained, and it was not until after 1841 that deaths at ages could be properly related to local populations at risk in different areas. It is not too much to say that the defective statistical machinery, the absence of batches of figures, was directly responsible for much preventable death and still more preventable misery throughout a whole generation. "What is most evident," *wrote an acute observer of social institutions*, "is not the difficulty of getting a fixed law, but of getting out of a fixed law; not of cementing (as upon a former occasion I phrased it) a cake of custom, but of breaking that cake of custom; not of making the first preservative habit, but of breaking through it, and reaching something better." The history of preventive medicine is a good comment upon that text. The bad statistics of the earliest apostles of sanitary and industrial reform injured their cause; the cake of customary indifference was not so easily broken. The good statistics of FARR and GREENHOW were the most powerful weapons in the hands of SIMON. When, full of years and honours, SIMON wrote his history of English sanitary institutions, the Nestor of preventive medical science did not forget what he owed to the labours of the statistician. FARR he happily characterised as "the man to bring into statistical relief, and to make intelligible and instructive to the common mind, whatever broad lessons were latent in the life-and-death ledgers of that great counting house." It was the General Register Office which "was rendering immense service to sanitary science by enabling it to use exact numerical standards in place of the former vague adjectives." The reforms needed in the "hungry *forties*" were great, the industrial transition of the early nineteenth century was painful. Had official vital statistics come into their own a generation sooner that history would have been different. Ignorance in a community, as in an individual, is far more cruel than malevolence. But the perils of our own time are still greater. One of these perils is the failure to realise the importance of a physical stock-taking, of learning the best and the worst about our nation. The machinery of a Census furnishes one item of this great account, an item which is essential to the interpretation of all others.

In combination with the returns of births, deaths, and marriages, the Census enumeration suffices for a reasonably complete evaluation of birth-, marriage-, and death-rates in all administrative areas and the chief occupational groups. Some difficulty has arisen in certain areas owing to the fact that the de jure population of a district may differ from the de facto population enumerated on Census day. This, it is believed, will be overcome on the present occasion. Again, satisfactory presentation of occupational mortality is very difficult to secure, and probably some of the difficulties are insuperable. But the arrangements made for this year's Census are the result of very careful consideration, and profit has been drawn from past and foreign experience; we have no doubt that the final analysis of industrial mortality will be even more illuminating than its famous predecessors. The Census machinery and the Registrar-General's returns cannot, however, provide two other items of the physical balance-sheet which are needed to complete the account. One is an appraisement of average physical fitness, the other a knowledge of morbidity-rates. The former is a subject to which the State has paid little heed save in times of war. It could only be dealt with by sampling, a method which is, statistically, quite satisfactory, provided the sample examined be a really random sample of the occupational or other class it is desired to study, and the limits of accuracy required have determined the size of samples. The method of physical examination appropriate to the case is still a matter of opinion; it must be simple yet accurate. *Professor* G. DREYER[1] *has brought forward evidence* to show that determination of the "vital capacity," advocated nearly 80 years ago by JOHN HUTCHINSON,[2] combined with two easily made measurements and the weight, suffice to characterise physical development. Professor DREYER'S plan is worthy of an extended trial. The incidence of sickness, not necessarily fatal sickness, is also a matter which can be more conveniently dealt with by the method of sampling than by any attempt at exhaustive enumeration. The possibility of such sampling furnished by the new system of medical records is one of the merits of a plan which has been the object of so much invective. Clearly of all these undertakings the Census enumeration is the most important. Given a Census, from data provided by the death returns alone, we can learn much; without a Census we can learn little indeed from mortality or morbidity records. There are very few duties of a citizen in time of peace which can be of *more importance than doing as much as in him* lies to make the enumeration complete and accurate.

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Alimentary Delay.

CURRENT usage has agreed upon time standards in regard to certain functions of the body. It is usual to retire to sleep at a particular hour and rise seven or eight hours later, to take our meals at intervals of five or six hours during the day, and to solicit an action of the bowels once or twice within 24 hours. Unfortunately, we have little to remind us of the time relation between the two latter events; generally speaking, the more quickly the food residues traverse the alimentary canal the more fluid and less formed are the excretions. But there may be a high degree of delay without our attention being called to it; residues arrive at the winning-post without word as to when they made the start. And at first no inconvenience may arise. As Sir W. ARBUTHNOT LANE reiterates in his Hunterian lecture, stasis which makes itself felt in adult life may have commenced early in the history of the individual; he suggests that it may even date from the epoch at which the napkin was discarded and the infant became habituated to a single daily action. As the skilled monthly nurse may achieve voluntary control for her charge before she leaves, this puts back the initiation of the sluggish habit to a very early date. LANE draws a picture of the later effects of this stasis so terrible that if even a tithe of it were realised we should adopt means of prevention rather than await the need for treatment. Dr. H. A. DES VŒUX, in our correspondence columns this week, reminds us with what mischievous carefulness all the laxative properties of a natural diet are kept away from the well-to-do child. Potato parings, apple peel, and cabbage stalk are eliminated and *enough milk often given to supply in itself* all nutritive requirements, leaving little or no stimulus to peristalsis. Close rooms and confined limbs often enough still further limit the healthy metabolism. And soon a slippery insoluble liquid has to be added to the diet from which the natural residue has been removed. Last and worst, recourse is had to castor oil, that toothsome dainty which was so providentially diverted to munitions a while ago. The diet of slugs and snails and puppy dogs' tails, suggested by the nursery rhymester for little boys, was harshly expressed, but physiologically it was righteous compared with the complementary diet of sugar and spice and all that's nice, and far less calculated to give rise to stasis. The correct principles of alimentary training in young children are simple enough, and are only difficult because they encounter ignorance and prejudice.

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[1] THE LANCET, vol. ii., 1919, p. 227.
[2] THE LANCET, vol. i., 1846, p. 630.

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FEES FOR PUBLIC VACCINATION.

THE Association of Public Vaccinators of England and Wales has approached by circular members of boards of guardians throughout England and Wales in the matter of the fees payable for public vaccination, pointing out that the minimum fees for domiciliary vaccination are at present precisely the same as they were from 1899 to 1907. The Association appeals to the guardians for an increase in the remuneration of the public vaccinator, both in view of the general increase in cost of living and diminished value of money, and more particularly because of the largely increased expense in every department of medical practice, particularly in the important matters of travelling and dressings. The Association states that from 1907 to 1919 there was a reduction in the minimum fees; this change was made in face of the strongest protest and, it considers, left a deep sense of injustice on the mind of the public vaccinator. Certainly it was at variance with the recommendation of the Departmental Committee appointed by the Local Government Board, which, after a most exhaustive and searching inquiry, expressed the opinion that there should be no change in the minimum unless and until the public vaccinator should be given the status of an officer of the guardians, eligible for superannuation and with fixity of tenure. This recommendation was not adopted. The public vaccinators feel that the Ministry of Health, in the Order of last year, while removing a grievance for which the Association had been attempting to obtain redress for many years before the war, left to the boards of guardians themselves the opportunity of making such increases upon the minimum as would be justified by reasonable consideration of the altered circumstances created by the war. The Association is confident that boards of guardians only need this matter to be brought before them to recognise the necessity for such an increase of the existing fees, either by revision of contract or by percentage bonus additions to fees, as may meet the increasing difficulties *of the public vaccinator, and assimilate* his position to that of other branches of the public service. We need hardly say that the views of the Association will be endorsed by the medical profession. Should a recent testimonial be required to the work of the public vaccinator, it is given by the Chicago Department of Health, always to the fore in sanitary instruction, which prints in its last bulletin a "vaccination creed" based upon many years of practical experience in public vaccination. From 1899 to 1920 inclusive 5565 cases of small-pox occurred in Chicago with 577 deaths. Of the 448 vaccinated persons who took small-pox none died. No revaccinated person took small-pox.

Annotations.

"Ne quid nimis."

VITAL STATISTICS FOR 1920.

WE have received from the Registrar-General the following provisional figures for the birth-rate, death-rate, and infant mortality in England and Wales during the year 1920:—

—	Birth-rate per 1000 total population.	Death-rate per 1000 population.	Deaths under 1 year per 1000 births.
England and Wales	25·4	12·4	80
96 great towns, including London	26·2	12·5	85
148 smaller towns	24·9	11·3	80
London	26·3	12·4	75

In the great towns are included all those with a population exceeding 50,000 at the Census of 1911; the smaller towns are those with 20,000 to 50,000 inhabitants. The death-rate for England and Wales relates to the whole population, but that for London and the groups of towns to the civilian population only.

Although the rates here shown are provisional, no subsequent adjustment will affect the following important conclusions—namely: (1) that the birth-rate for 1920 is the highest of the decade; (2) that the death-rate is the lowest ever recorded; (3) that the infant mortality is the lowest ever recorded; (4) that the number of births is the highest ever recorded; (5) that the number of deaths is the lowest recorded since 1862, when the population was only 20 millions.

A NEW SPIROCHÆTAL DISEASE IN JAPAN.

SOME of the same Japanese investigators who, early in 1915, discovered the virus of spirochætal jaundice (Weil's disease, Spirochætosis ictero-hæmorrhagica), now give[1] the successful results of an inquiry into the ætiology of a somewhat similar disease, prevalent in various country districts of Japan, but not found in the towns. This disease is known in the province of Fukuoka, where the work was carried out, as nanukayami (seven-day fever). It has, however, been fully identified as occurring in at least eight other provinces under a variety of local names. The disease is confined absolutely to country districts, which made its laboratory investigation extremely difficult. Clinically, it is described as a fever setting in suddenly, with great depression, pains in the muscles, injection of the conjunctivæ, intestinal disturbances, and swelling of lymphatic glands. In the early stage there is albuminuria, and leucocytosis is also a feature. The course is comparatively short—round about seven days—and the mortality is fortunately nil. Neither jaundice nor hæmorrhages from mucous membranes are met with. It is interesting to note that as far back as 1889, in Japan, atypical cases of Weil's disease were recognised during epidemic periods, in which jaundice did not occur. This observation was fully confirmed on the Western Front during the war. For a long time *nanukayami* was believed to be simply atypical Weil's disease, without jaundice, and it was only in 1910 that Inada, after a careful epidemiological and clinical study, suggested strongly that seven-day fever was a separate clinical entity. The brilliant results of the investigation of Weil's disease, resulting in the discovery of the causal spirochæte, suggested at once a similar line of experiment in connexion with nanukayami. The cause of this fever has now also been found to be a spirochæte, to which the name *Spirochæta hebdomadis* has been given. The writers state that it is identical morphologically with the *Spirochæta ictero-hæmorrhagiæ*, but is clearly differentiated from it by immunity reactions. The experiments bearing on this latter point are given in complete detail, and appear quite sound. The *Spirochæta hebdomadis* is found by inoculating guinea-pigs intraperitoneally with blood from cases of the acute disease. It brings about death in 60 per cent. of the animals, while the remainder gradually recover from the infection. An unbiassed reader of the work cannot help being struck with the exact similarity of the temperature charts of guinea-pigs fatally infected with nanukayami, and those inoculated with blood from a case of Weil's disease. There is high fever lasting for four to five days, followed by sudden collapse before death. Moreover, the authors state that, in 17 per cent. of the animals infected with nanukayami, jaundice occurs. Spirochætes are found abundantly in the liver of the infected animal. Thus, apart from the serological distinctions, the *Spirochæta hebdomadis* and *Spirochæta ictero-hæmorrhagiæ* would appear from their main effects to be very closely allied species.

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[1] Ido, Y., Ito, H., Wani, H., Okuda, K., and Hoki, R.: Mitteilung ueber die Aetiologie, Epidemiologie, und Pathologie der "Nanukayami" (Siebentagefieber). Ido, Y., Ito, H., and Wani, H.: Die zweite Mitteilung ueber die Aetiologie der Nanukayami (Siebentagefieber). (Mitteilungen aus der Mediz. Facultät der Kaiserlich. Universität Kyushu, Fukuoka, Japan, Band. v., Heft. iii., 1920, ss. 81-130.)

The main point of interest really centres round the carriers of the two spirochætes. The brown rat, *Mus decumanus*, has been clearly proved to be the chief carrier of *Sp. ictero-hæmorrhagiæ*, and spirochætal jaundice is a disease found in towns and in places where men are congregated together. On the other hand, nanukayami is a disease of country districts only, and its carrier has been clearly identified by the present investigators as the Japanese field-mouse (*Microtus montebelli*). The urine of this animal, just as in the case of the rat, appears to be the main source of infection. It seems possible that the two spirochætes of nanukayami and Weil's disease are really the same, modified by their development in the different animals which act as their intermediate host. It is quite obvious that, at any rate, they are closely related to one another.

The Japanese writers are to be congratulated both on discovering the cause of a fever of hitherto unknown origin, and on pointing out the field-mouse as a carrier of disease. Their work suggests that many of the short fevers, prevalent locally in different parts of the tropics, might well be elucidated on similar lines. Although the Japanese authors, who write in the German language, refer to the disease under the name Siebentagefieber (seven-day fever), the condition must, of course, not be confused with the fever known to us as trench fever, and in German literature often named Fünftagefieber (five-day fever).

HEALTH REFORM IN IRELAND.

A Dublin correspondent writes:—The Chief Secretary has notified the Irish Public Health Council that it is not the intention of the Government to undertake legislation along the lines of the Council's report, because of the expense that would be involved. At his interview with the Council in September, Sir Hamar Greenwood had declared that on the ground of expenditure nothing would stand in the way of the Government undertaking legislation, but that the moment was inopportune from a political point of view. Those interested in medical reform will make their interpretation of the Chief Secretary's statements. The net result of health legislation in the United Kingdom of Great Britain and Ireland in the past two years is that England and Scotland are each provided with a full working Ministry of Health, while Ireland—where health reform is even more pressing—is left with an Advisory Council whose advice is treated with contempt by the Government. The late Chief Secretary, Mr. MacPherson, had pledged himself to legislate on lines the Council would propose, and at his request, and in reliance on this pledge, the Council drafted a thorough-going and careful scheme of reform. But Mr. MacPherson did not stay long enough in Ireland to redeem his pledge, and apparently it bound no one else.

THE UNCINARIASIS COMMISSION OF THE ORIENT.

AMONG the many large and praiseworthy activities of the Rockefeller Foundation International Health Board is its world-wide campaign against hookworm infection. In 1914 the General Director of the International Board visited a number of countries in the Near and Far East, including Egypt, Ceylon, the Philippine Islands, and the Federated Malay States, making preliminary surveys and collecting information to facilitate the studies of the experts who might eventually make detailed investigations in these countries. In 1915 a Commission was appointed the expenses of which were defrayed by the Rockefeller Foundation; it comprised three members, Drs. S. T. Darling, M. A. Barber, and H. P. Hacker, all of whose names are already well known to students of tropical medicine in connexion with scientific work in the Panama Canal Zone and elsewhere. The Commission became known later as "The Uncinariasis Commission of the Orient," and its labours were mostly carried out in the Federated Malay States, Java, and the Fiji Islands. The terms of reference were "to determine to what degree uncinaria infection is a menace to the health and working efficiency of the people of a country," and plenty of evidence was found that ankylostomiasis caused much ill-health and that it led to considerable inability to work. The intimate relation that was discovered to exist between malaria and hookworm disease as disabling factors rendered it necessary that the Commission should devote almost as much time to the local study of malaria as to hookworm disease, in order to determine the relative importance of the two infections as causes of anæmia.

In the abridged edition of the Commission's report[1] now published, it is stated that on the whole in Malaya, where malaria and ankylostomiasis are common, severe anæmia due to the latter is less frequent than severe anæmia due to the former. As regards the relation between the species of worm and the degree of anæmia, the Commission observed that in cases of infection the same number of worms caused a greater degree of anæmia among Chinese subjects than among Tamils. As the Chinese harbour much larger numbers of *Ankylostoma duodenale* than do the native Indians, the fact was taken to indicate that the latter species of worm is probably a more powerful agent in the causation of anæmia than *Necator americanus*. Considerable attention was given by the Commission to the investigation of the value of various drugs in the treatment of hookworm disease. Native patients, however, were found sometimes to be difficult of control, and valuable observations were rendered useless by the patients absconding during the period in which the effects of remedies were being watched. Some of the experiments, however, were made in jails and hospitals where better control was possible. Various vermifuges were tried and attempts were made to reach a scientific conclusion as to the relative merits and efficacy of differently graduated doses of chenopodium and thymol for the routine treatment of uncinariasis. Ultimately it was proved that chenopodium in small doses was more efficacious than similar doses of thymol; chenopodium also showed a satisfactory efficacy in a greater range of doses. While, dose for dose, both drugs exhibited about equal efficacy in removing *Necator americanus*, chenopodium was superior to thymol in removing ankylostomes, the more resistant species of hookworm. It appears also that chenopodium is more effective in removing other parasitic worms such as ascaris and trichuris. The valuable work done by the International Health Board of the Rockefeller Foundation, in its campaign against hookworm disease, deserves the warmest recognition of all who are interested in the economic development of those countries in Asia and elsewhere that have been kept back by this disabling disease.

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[1] Report of the Uncinariasis Commission of the Orient, 1915-1917. The Rockefeller Foundation International Health Board, New York City. 1920. Pp. 191, with numerous illustrations (not on sale).

THE GROWTH AND SHEDDING OF THE ANTLER.

A DISTINGUISHED surgeon has followed up his work on growth of bone by a study of the growth and shedding of the antler,[1] of the histological phenomena observed during these processes and their relation to the growth of bone. On the authority of Sir William Flower the statement is made that in the larger species (such as the Irish elk) the weight of the antlers is more than that of all the bones of the skeleton put together. This is not the most remarkable fact about the deciduous antlers of the deer. Not only does enormous growth, "according to plan," of these weighty defensive organs occur within three or four months, but the skin or velvet which covers these often palmate outgrowths, grows pari passu with the bone itself, so that there is complete reproduction of the whole of the cutaneous tissues, epithelium, cutis, gland and hairs, blood-vessels, lymphatics, and nerves with each renewal of the antlers. Obviously to do this the vessels of the velvet must grow with great rapidity to supply the abundant pabulum necessary for the skin growth, for these vessels have but few connexions with the special set of blood-vessels which supply the rapidly growing bone. The nerves to protect the sensitive growing antlers are outgrowths from the trigeminal nerve. The bony part of the antler is derived from a pedicle projecting from the frontal bone. The rapidity of growth is so great that all phases of bone development by osteoblasts can be found occurring simultaneously in one part or other of a half-grown antler, and the phenomena are, in the main, analogous to those of the growth of bone in other parts of the mammalian skeleton. Even from its earliest growth arrangements are made for the rapid shedding of the antler after it has performed its evanescent purpose. Osteoblasts form ossein which ultimately constricts the internal blood-vessels supplying the growing bone, leading to ischæmic necrosis, and the antler is ultimately shed from the action of the living tissue on the proximal side in the pedicle. Similar arrangements are also made for the shedding of the velvet. At first the larger cutaneous blood-vessels lie in grooves in the antler, but ultimately the excessive growth of bone forming the corona encroaches on them and subsequently obliterates them. The osteoblasts are evolved from pre-existing bone cells or osteoblasts in the pedicle, and Sir William Macewen thinks that the mass production of bone depends not only on normal cell division of the osteoblasts, but is aided by nuclear budding which he has studied and figured. A new and larger antler grows yearly from a single small centre of ossification in the frontal bone, forming a pedicle identical in structure with frontal bone and covered at the beginning of the growing period with cartilage which ossifies from the base upwards. The cartilage grows in advance until the full size of the antler is reached, when its ossification becomes complete. The pedicle once formed is a permanent structure, growing in circumference during subsequent years. The antler first appears during the second year of the animal's life, when it presents only a single stem. Injury or disease of the pedicle or skull makes corresponding modifications in the growth of the antler. The separation of the antler is primarily due to the withdrawal of its blood-supply, both of the bone and velvet. Obliteration of the superficial vessels in the cutis-velvet takes place at the corona, the edge of the corona presses on and through the cutis, and, as there is no collateral supply from the bone vessels, the whole velvet covering becomes avascular, dries, shrivels, and peels off in shreds, although the growth in the interior of the antler is still active. The separation of the antler from the pedicle is effected also at the level of the corona, the bone gradually becoming avascular, very dense, with complete obliteration of the relatively thin-walled vessels. At the line of separation or shedding the pedicle becomes very vascular and a "granulation tissue" forms and gradually loosens the organic connexions between the pedicle and the dead antler, while at the same time the deeper bone cells of the skull and pedicle proliferate, assume the rôle of osteoblasts, and are ready for fresh effort in producing a new antler. The whole process of shedding of the antler takes place in the open air and aseptically. No mention is made of osteoclasts as agents in the process. Sir William Macewen refers only briefly to the effects of castration on antler growth, and suggests further inquiry in this direction. Nature's methods of self-amputation, be it by way of autotomy, shedding of an antler, or fall of a leaf, are scientifically perfect and are prototypes of aseptic surgery in its most complete and successful application.

THE INSTITUTE OF PHYSICS.

THE first move towards a closer relation between workers in physical science dates from March, 1918, when, under the presidency of Professor C. H. Lees, representatives of four societies met to define the lines of future coöperation. These were the Faraday Society, the Optical Society, the Physical Society of London, and the Rontgen Society. Their decision to form an Institute of Physics analogous to the existing Institute of Chemistry took effect, and the Institute was duly incorporated last November. The Royal Microscopical Society has now joined the Institute, and it is anticipated that other societies will follow. A circular has been issued reciting the objects of the Institute and the regulations proposed for the admission of Members, Students, Associates, and Fellows. The two latter groups will use the title A.Inst.P. and F.Inst.P. respectively. The regulations for admission and for professional conduct are based upon those ruling in the sister Institute, and they will doubtless aid in raising the status of the physicist in the public mind alongside of the chemist. All branches of physics are in reality closely inter-related, and nothing but good can come of the amalgamation.

TUBERCULOSIS OF THE LIP

Dr. Erwin P. Zeisler,[1] dermatologist to the Cook County Hospital, Chicago, records an example of this rare condition in a man, aged 56, who sought advice for a painful swelling of the lower lip, which had appeared ten months previously. The entire lower lip was uniformly enlarged and indurated with several small areas of denuded epidermis. The inner aspect of the lower lip down to the gingival border showed a superficially ulcerated area, about 2 cm. broad, surrounded by œdematous mucous membrane. On palpation the ulcer felt moderately indurated. An ulcer was also found on the inner aspect of the upper lip and a third ulcer opposite the last lower right molar. In view of the patient's age, the induration, and the presence of a hard mass of glands in the submental region, most of the members of the Chicago Dermatological Society, where he was exhibited, expressed the opinion that the lesion on the lower lip was an epithelioma. The presence of the other ulcers, however, was not consistent with this view, and the diagnosis of tuberculosis of the lip was established by finding large numbers of acid-fast bacilli, morphologically identical with tubercle bacilli, in smears and scrapings from the mouth, as well as by the results of a biopsy which showed isolated and conglomerate tubercles with characteristic arrangement of giant cells, epithelioid cells, and small round cells. A few tubercle bacilli were found in the corium. Examination of the chest showed chronic pulmonary tuberculosis of the fibroid type. A general tuberculosis regimen was instituted, cocaine was applied to the lip to relieve the pain, the ulcers in the mouth were swabbed daily with diluted hydrogen peroxide, and filtered Coolidge treatment was administered over the lip and submental region, with the result that considerable improvement took place before the patient disappeared from observation.

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[1] The Growth and Shedding of the Antler of the Deer, by William Macewen, F.R.S. Glasgow: Maclehose, Jackson, and Co. 1920. Pp. 129. 12s. 6d.

[1] Archives of Dermatology and Syphilology, January, 1921.

THE CENTRAL MIDWIVES BOARD.

FROM the recent report on the work of the Board for the year ended March 31st, 1920, we learn that on that date the Midwives Roll contained the names of 45,960 women, a net increase for the year of 1794. Of these, the trained midwives number 37,056 and the untrained 8904, the proportions being 80·6 and 19·4 per cent. But, as we have frequently pointed out, the percentage of trained midwives who practise as such is relatively small, amounting only to 21·5 of the trained women on the Roll. Of the untrained, approximately 40·7 per cent. are in practice, though frequently to a small extent only. The actual total number of practising midwives has been ascertained to be about 11,500. There are 159 institutions and homes in England and Wales at which midwives may be trained, of which 63 are Poor-law institutions. 104 registered medical practitioners are approved by the Board as lecturers, and 49 practising midwives as teachers, responsible for the practical training. Private training accounts for the entry on the Roll of 1107 midwives practising in 1919, or 9·6 per cent. of all practising midwives. Of 2344 candidates who completed their examination 1904 passed, the percentage of failure being 18·8 and varying widely over the country. Manchester's failures amounted to 34 per cent., Leeds's but to 13 per cent. Of the 1904 successful candidates 1238, or 65 per cent., declared their intention of practising as midwives, and of this number 642, or 51·9 per cent. intended to practise in rural districts, where at the present time the shortage is most keenly felt. During the year 54 midwives were dealt with by the Board under its penal powers. They had to answer charges of malpractice, negligence, or misconduct, resulting in the immediate removal from the Roll of 35 names. Two other women were censured and two cautioned, while in four cases no action was taken. 105 women surrendered their certificates on the ground of old age, ill-health, or inability to comply with the rules. During the year the Board discussed the possibility of limiting the number of cases to be taken by midwives. A local supervising authority had represented that in many cases omissions and failures on the part of midwives to observe the rules were attributable to the fact that they had undertaken more confinement cases than could be coped with. The Board decided that it was impossible to rule that a midwife should not take more than a certain number of cases in the course of a year, as the number of cases which could be taken without affecting the proper conduct thereof depended on factors of a varying nature, such as concentration and dispersal of cases, the normality or otherwise of the cases, the powers of endurance of the midwife, and the like. Compliance with the rules as they stand should prevent scamping of work.

RECENT WORK IN HOLLAND ON REFLEXES.

THE efforts of the Anglo-Batavian Society have been successful in ensuring interchange of medical thought between this country and Holland, a matter of importance in view of the serious barrier set up on each side of the short sea passage by unfamiliarity with the language. Very few Dutch monographs are accessible to English readers, therefore we welcome with particular pleasure Professor Murk Jansen's study of dysostosis, as it appears in his book on "Feebleness of Growth and Congenital Dwarfism."[1] The first lecture of a series by distinguished Dutch medical men was delivered before the Royal Society of Medicine on Jan. 17th, by Dr. J. K. A. Wertheim Salomonson, professor of neurology in the University of Amsterdam, who took for his subject "Tonus and Reflex." Research into the electrical response of muscle tissue has been especially brisk in Holland, probably owing to the fact that it was another Leyden professor, Dr. W. Einthoven, who invented the string galvanometer which widened so greatly the field of this research. Professor Salomonson began his lecture by classifying muscle contractions into groups according as they are or are not accompanied by demonstrable electric currents of action. Simple muscle twitches, always preceded by a double-phased action current, are typically found in deep reflexes, whether tendon or periosteal, and in the muscle clonus resulting from lesion of the lateral tracts in the spinal cord. Irregular alternating current with some 50 periods a second is characteristic of tetanic contraction, and is met with in every voluntary movement. Passive movement of a limb causes no oscillation of the galvanometer, and in myelitis with complete paralysis of the lower limbs enormous involuntary muscle spasms may occur without any action current being produced. Professor Salomonson went through a whole series of maladies affecting muscular tone, showing the changes in the electrical reactions and the lessons to be drawn from these changes. The lecture, with many explanatory diagrams, is to appear in an early issue of *Brain;* we are content merely to cite here one deduction of great interest which has resulted from these investigations. It is common knowledge that in lateral sclerosis the Babinski reflex reverts to the extensor type, which is normal in young children. The centrifugal impulses for the plantar reflex passing down the pyramidal tract being cut off, and the cerebral centrum thus put out of action, the spinal centrum for the extension of the hallux, which was an important one in the history of the race, reasserts itself, and is further heightened by the increased secondary tonus reflex of the cord, now no longer controlled by a higher centre. We felicitate Professor Salomonson on his contribution to exact medicine, and the Anglo-Batavian Society on its enterprise.

THE HOUSING PROBLEM IN PARIS.

AT its last sitting, before the New Year adjournment, the Paris Municipal Council adopted a housing scheme. Mons. Etevenon, municipal inspector of houses, described the project, for which 14,000 metres of land have been secured in the Picpus quarter. There will be three streets with houses six storeys high, but the houses will be so placed and the space around so spacious that all the walls will be exposed daily to direct rays of sunlight. They will contain 628 tenements and there will be a large central square or playground. Of these 300 will consist of a kitchen and three or four rooms and 200 of a kitchen and two rooms. Each room will measure from 11 to 13 square metres. Then there will be 100 cabinets where the tenants can take douches and a steam laundry will be put at their disposition large enough for 80 tenants to do their washing at one and the same time. They will save much time and trouble by using the machinery available; and, though a small charge will be made, this will cost much less than if each tenant had to warm his own boiler and work his own mangle. The sum paid will help to defray the general cost. In the same way also shops and trading premises on a level with the streets will be let at commercial rents, to reduce the deficit which may result if, as proposed, the tenements are let at a low rental. The capital expenditure voted for this enterprise is 27 million francs, or at the normal rate of change £1,080,000; but as it will take three years to build these three new streets it is calculated that the cost will be much less towards the end than at the beginning of this period. In any case, the municipality feel they must strive to solve the housing problem, even if this involve financial loss. Besides, 628 good tenements, though involving a loss at first, will prove in the long run a profitable property. This is all the more probable as few tenements will offer such advantages. Nor is this the only enterprise of the sort the city of Paris has in hand, though it is the newest venture. Eleven groups of cheap buildings commenced before, and interrupted by, the war are now being completed. Buildings commenced by private enterprise, but abandoned, have been bought up by the municipality, and thus in a few months' time the city will be able to offer at cheap rentals some 8000 tenements to the distressed population. A great deal also has been done within a radius of 30 miles outside the capital to meet the lack of housing accommodation.

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[1] Oxford Medical Publications, 1921.

THE U.S. ARMY MEDICAL SERVICE.

PROBLEMS of reconstruction have had much attention in the United States during this year, perhaps in part because she has had fewer immediate anxieties than other nations; certainly they have been approached with great breadth of view. The latest evidence to come before us concerns the Army Medical Service, dealt with in a paper by Major F. Kramer, Medical Corps, U.S. Army, in the *Military Surgeon* for December. It has been decided that there shall be established at Washington, D.C., the Army Medical Centre. For it there has been reserved a site of great natural beauty, a well-situated large natural amphitheatre. Here will be built the large single building of the Army Medical School, where will be centred post-graduate instruction for all divisions of the Medical Department, including, be it observed, the Dental and Veterinary Corps, with complete laboratories for research work. Associated with this will be built a new hospital, the Walter Reed General Hospital of 750 beds. There will be houses for officers and men, and recreation grounds. The Surgeon-General's library and museum will be here, and the whole is expected to become an important unit in the post-graduate instruction of the country generally, and a common meeting place for all in the medical profession within and without the service. Meanwhile the education of officers is not being neglected, and 20 medical officers are at present seconded and undergoing special courses in civil medical schools. A new portal of entry has been opened to the service from the civil profession, for the best schools may recommend honour students, who are physically fit, to be house surgeons or house physicians in military hospitals for a year, after which, if approved, they are commissioned as first lieutenants. Orderlies, too, are being better trained, especially in work in laboratories and operating theatres, extra pay being given when qualification is shown. The pay of the Nurses has been raised 20 per cent., and they have been given relative rank. A new Army Medical Nursing School and Nurses Home will be part of the centre. Here army nurses will get a three years' training. This aims to be an ideal nursing school, to turn out a better trained body of nurses, and to maintain full and cordial relations with the profession at large.

PROFESSIONAL CONDUCT AND ERASURE FROM THE REGISTER.

THE periodical statement from the General Medical Council summarising the resolutions and decisions of the Council upon forms of professional misconduct which have from time to time been brought before them, in the exercise of their disciplinary jurisdiction over the members of the medical and dental professions, has just been issued. This jurisdiction was conferred upon the Council by the 29th Section of the Medical Act, 1858, and by the 13th Section of the Dentists Act, 1878. A few instances of professional misconduct are set forth, not as constituting a complete list of offences which may be punished by erasure from the Register, but as broad examples. The instances thus brought to the notice of registered medical and dental practitioners may briefly be described as follows:—

(1) *Certificates, notices, reports, &c.*—The signing and giving in a professional capacity of any certificate or document of a kindred character, for subsequent use in courts of justice or for administrative purposes, which is untrue, misleading, or improper. Such documents include certificates, notifications, reports, &c., under the statutes and Acts relating to births, deaths, and disposal of the dead; lunacy and mental deficiency; vaccination; factories; education; public health; workmen's compensation; notification of infectious diseases; national insurance; old-age pensions; merchant shipping; sick benefit, insurance, and Friendly Societies; the procuring of Foreign Office passports; the excusing of attendance in courts of law, in the public services, in public offices, or in ordinary employment; and in connexion with naval and military matters.

(2) *Unqualified assistants and covering.*—The employment in connexion with professional practice of an assistant who is not duly qualified and registered, or the enabling of any person, known to be unqualified and unregistered, to attend or treat a patient in respect of a matter requiring professional discretion or skill. (These rulings do not apply so as to restrict the proper training and instruction of bona fide students, or the legitimate employment of dressers, midwives, dispensers, surgery attendants, and skilled mechanics under the immediate personal supervision of a registered practitioner.)

(3) *Sale of poisons.*—The employment for his own profit and under cover of his own qualifications, by any registered practitioner who keeps a shop or other place in which scheduled poisons or preparations containing scheduled poisons are sold to the public, of assistants who are left in charge, but are not legally qualified to sell scheduled poisons.

(4) *Association with unqualified persons.*—Any assistance given, either by administration of anæsthetics or otherwise, to an unqualified person attending or treating any other person in respect of matters requiring professional discretion or skill.

(5) *Advertising and canvassing.*—The practices of (*a*) advertising by a registered medical practitioner with a view to his own gain, particularly if depreciatory of other practitioners, or of sanctioning such advertising; (*b*) employing or sanctioning employment of agents or canvassers for the purpose of procuring patients; and (*c*) associating with or accepting employment under any association which practises canvassing or advertising for the purpose of procuring patients.

(6) *Association with uncertified women practising as midwives.*—Knowingly enabling uncertified women, on pretence that such women are acting under direction, to attend women in childbirth, contrary to law. It is provided in the Midwives Act, 1902, and in the Midwives (Scotland) Act, 1915, that "no woman shall habitually and for gain attend women in childbirth otherwise than under the direction of a qualified medical practitioner, unless she be certified under this Act."

A registered practitioner who is proved to have committed any of the offences detailed above is liable to have his name erased from the Medical Register, and it is well that categorical warning should come periodically from the Council. It is clear that under several of the headings a practitioner through ignorance, coupled with carelessness, may be placed in a seriously unethical position.

THE REPORTING OF FOOD POISONING.

UNDER existing regulations neither medical practitioners nor the general public are obliged to report cases of food poisoning to the medical officer of health, but there is every hygienic and social obligation for doing so. A statutory duty rests upon medical officers of health to report to the Ministry of Health any outbreak of serious epidemic disease, and in a recent circular (Memo. 39, Foods) the Ministry requests medical officers, whenever they have reason to suspect that any death or outbreak of illness in their districts is due to food poisoning, promptly to notify the Ministry, which may be in a position to offer useful assistance in regard to the immediate measures to be taken, and to elucidate points at present obscure in the causation of food poisoning. Early notification may show that other cases are occurring elsewhere from similar causes—e.g., where one or two members of a household are suffering in consequence of the consumption of canned food from a particular tin other canned foods of similar origin may be causing illness elsewhere. In any outbreak where the implicated food has been prepared in the district the medical officer is advised to proceed at once with detailed investigations into the conditions of its preparation, and to obtain material for bacteriological or chemical examination, steps being taken the while to prevent further consumption of the suspected food by stopping its sale and recovering unconsumed portions of what has already been sold. Suggestions are made in the circular for the collection and examination of material for chemical and bacteriological examination, and the reminder is added that the serological reaction of the blood of persons attacked should always be bacteriologically investigated. An appendix to the memorandum contains the headings of inquiries appropriate for outbreaks of poisoning by meat foods and when contamination with inorganic poison is suspected.

THE PRESCRIBING AND DISPENSING OF IODINE IN LARGE DOSES.

WRITING in THE LANCET last year Mr. Tom Bird[1] drew attention to the success which Dr. Louis Bourdreau has met with for many years in the treatment of cases of tuberculosis with large doses of iodine. Mr. Bird, using iodine in similar dosage, has obtained very good results in many cases of arthritis. Commencing with 1 gr., the dose is increased to about 3 gr. thrice daily, the latter amount being equivalent to 36 minims of the tincture of iodine of the French Codex. No inconvenience was caused beyond slight nasal catarrh, and it is apparently suggested that the absence of potassium iodide in the French tincture may have contributed to this freedom from iodism. In this connexion we may remark that symptoms of iodism following the repeated administration of iodine are not unknown; iodism from this cause is undoubtedly rarer than from the ingestion of iodides, but, of course, the latter are much more frequently used. In a paper recently read before the North British Branch of the Pharmaceutical Society[2] it is stated that since the appearance of Mr. Bird's article these large doses of iodine have been frequently ordered, and some prescribing and dispensing difficulties have arisen in this connexion, partly through unfamiliarity with the solubilities of iodine on the part of prescribers. The French tincture may be ordered, but this is not convenient for dispensers, particularly as the preparation is made up with 95 per cent. alcohol, which is not official in this country and must be prepared by adding absolute alcohol to rectified spirit. It is suggested that each grain of iodine may be suitably dissolved in a mixture of 3 minims of ether and 9 of rectified spirit, or in 12 minims of rectified spirit if ¼ gr. of potassium iodide be added, a quantity which can hardly be considered objectionable. The strong tincture of iodine of the B.P. contains 1 gr. of iodine and ⅗ gr. of potassium iodide in 11 minims. According to the solubilities given, another convenient method would be to order each grain of iodine to be dissolved in 16 minims of rectified spirit. It seems that in Scotland, at any rate, a given number of drops of tincture is usually directed to be taken in water. The drop is, of course, a variable quantity; it is stated that 15 drops of the French tincture measure 10 minims, and that if this amount is added to less than about 5 ounces of water free iodine separates as a film on the surface. Such papers as the one quoted are to be welcomed as likely to clear up misunderstanding between prescriber and dispenser.

PUERPERAL AUTO-INFECTION.

ATTENTION has been drawn to the dangers of meddlesome midwifery more than once in the columns of THE LANCET. This danger is not to be considered less, but rather it is emphasised, by the discovery that pathogenic streptococci exist in the cervix and posterior cul-de-sac of the vagina before, during, and after parturition in women who have not been examined. At the same time, the results of bacteriological findings by Dr. G. Rustra, reported in the *Philippine Journal of Science* (1920, xvii., 119), seem to prove definitely that cases of auto-infection do occur in the puerperium. Eighty women were examined bacteriologically both ante-partum and post-partum, and the results classified according to the site at which bacteria were found, and whether these were hæmolytic streptococci, non-hæmolytic streptococci, or other bacteria. Only 9 of the 80 cases were sterile ante-partum and only 3 were sterile post-partum. *Streptococcus pyogenes* was found in 11 ante-partum cases; these caused infection in 4 cases, the streptococcus being twice recovered in pure culture and twice in association with *Staphylococcus aureus*. Of 3 cases with non-hæmolytic streptococci ante-partum, 1 suffered from fever in the puerperium. The author does not describe what precautions were taken to avoid contamination during the bacterial examinations, and in view of the varying results obtained by investigators using different methods this is a serious omission. The question is one upon which there is even now a great deal of difference of opinion. The majority of obstetricians believe, and clinical evidence appears to support their belief, that the vagina of a healthy woman does not contain pathogenic organisms and that auto-infection is very rare, if, indeed, it occurs at all. On the other hand, in a number of cases organisms have been found in the vagina of the pregnant woman, and these have been described as being of a pathogenic character and capable of causing puerperal septicæmia. If Dr. Rustra's observations are confirmed, and if his methods are such as to preclude all possibility of contamination, these results will tend to support the view that auto-infection is possible and probably not infrequent. At the present time, however, the available evidence, both clinical and bacteriological, points the other way.

MATERNITY AND CHILD WELFARE IN INDIA.

THE valiant struggle of the Women's Medical Service of India against prejudice, dirt, and ignorance does not cease, and new methods are constantly being devised to popularise the health movement among Indian families. The annual report for 1919 of the National Association for Supplying Female Medical Aid to the Women of India records an increased Government subsidy of 2¼ lakhs (over £20,000). It is also recorded that all hospitals under members of the Women's Medical Service now have qualified matrons and are engaged in the training of Indian and Anglo-Indian nurses and midwives. The Council note the revival of activity in the attempt to improve conditions of childbirth, and emphasise *the need for the training, followed by constant* supervision, of the indigenous dai (hereditary midwife). The women of the poorer classes turn to the dai, even as in England they used to cling to the handy woman, and experience has shown that more useful work can be done at present by educating the dai than by attempting to supplant her. The Victoria Memorial Scholarships Fund has decided to assist only indigenous dais to become trained midwives, since the few better-educated women who desire training have other opportunities for obtaining assistance. Unfortunately the trained dai who works among those sections of the community tenacious of old customs tends to revert to former practices unless constantly supervised. An Association for the Provision of Health and Maternity Supervisors has been formed, but the difficulty of selecting candidates suitable to be trained for these higher posts is great. The standard of obstetrical knowledge required even of doctors, men and women, trained in India will also have to be raised if maternity conditions are to be improved. At present the universities require the candidate for a degree in midwifery to have conducted no more than six cases. On the other hand, Dr. D. Curjel, recently appointed medical secretary to the Victoria Memorial Scholarships Fund, records that interest and enthusiasm for child welfare schemes is becoming noticeable throughout the country. A further indication of this interest is the success of the Maternity and Child Welfare Exhibition held at Delhi in February last. A sumptuous volume,[1] excellently printed and illustrated, describes the various sections of this exhibition, and not only includes the leaflets and pamphlets issued, but reprints the lectures delivered. Among the medical lecturers were Dr. A. Lankester, Dr. Ruth Young, Lieutenant-Colonel A. Frost, R.A.M.C., Major F. Cragg, I.M.S., and Dr. Yamini Sen. The need for attention to child welfare in India could not be emphasised more strongly than in the results of two inquiries quoted by Dr. Lankester. The total number of pregnancies in a series of 50 married women who presented themselves at the Lady Dufferin Hospital at Karachi was 241. The number of children surviving was 20. In Delhi, of 1000 consecutive multiparæ attended in labour, 657 had lost their first-born.

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[1] Intensive Iodine Treatment, THE LANCET, 1920, i., 546.

[2] George Walker: Note on Tinctura Iodi (French Codex), Pharmaceutical Journal, Jan. 1st, 1921, p. 4.

[1] This report may be obtained on application (accompanied by 4 annas) to the honorary secretary, the Lady Chelmsford All India League for Maternity and Child Welfare, Viceregal Lodge, Delhi. This and the other reports referred to are published by the Superintendent, Government Printing, 8, Hastings-street, Calcutta, India.

A POST-GRADUATE SCHEME FOR LONDON.

THE Minister of Health, with the concurrence of the University Grants Committee, has appointed a Committee with the following terms of reference:—

> "To investigate the needs of medical practitioners and other graduates for further education in medicine in London, and to submit proposals for a practicable scheme for meeting them."

The Earl of Athlone (chairman of the Governors of Middlesex Hospital) will act as chairman, and the following constitute the committee: Dr. H. J. Cardale; Sir Wilmot Herringham, M.D.; Sir George Makins, F.R.C.S.; Sir George Newman, M.D.; Sir Robert Newman, M.P.; Sir Edward Penton; Sir E. Cooper Perry, M.D.; Mr. J. Dill Russell, F.R.C.S.; and Dr. T. W. Shore. Mr. A. L. Hetherington will act as secretary of the Committee, and all communications on the subject should be addressed to him at the Ministry of Health, Whitehall. London, S.W.

PULMONARY AND INTESTINAL EMBOLISM SECONDARY TO PHLEBITIS OF THE LEG.

AT a meeting of the Société Médicale des Hôpitaux of Paris on Nov. 12th, 1920, M. Jules Amaudrut reported the following case, which is of interest from the standpoints of both pathology and therapeutics. A woman, aged 36 years, was admitted into hospital on July 26th, 1920, for phlebitis of one of the branches of the right external saphenous vein. On the postero-external surface of the calf was a little indurated sinuous cord, tender on pressure, with slight swelling of the surrounding tissues. The temperature ranged from 100·4° to 102·2° F. The limb was immobilised on a splint. The patient's condition remained stationary for a week. Then suddenly, on August 1st, an abundant bloody stool was passed. It consisted of red and blackish blood and black clots. There was no abdominal pain or tenderness. The general condition became worse, the face was slightly drawn, the pulse 130 and small, the respiration rapid. Ice was applied to the abdomen. During the day two other stools, less abundant but blackish, were passed. In the evening the patient's condition was better, the abdomen was slightly distended, but only slightly painful. On August 2nd there was another abundant hæmorrhagic stool followed by the same general symptoms. This general condition improved, but on the afternoon of August 4th the patient was seized with violent pain at the base of the chest on the right side, accompanied by intense dyspnœa, incessant fits of coughing, and expectoration of red and blackish blood. Examination of the right base showed slight dullness and crepitant râles of different sizes. The general symptoms were grave; the face was drawn, the pulse small and almost uncountable, and there were cold sweats. Morphine was injected at the site of pain and stimulants were given. In the evening the temperature was 103°. On the 5th the general condition was better, the pulse was 140, and the dyspnœa less. The pain in the side was still violent and the expectoration continued. On the 6th the symptoms of the 4th were repeated, but the pain was localised at the right shoulder, and the hæmoptysis was increased. Crepitant râles were heard all over the summit of the lung. This fresh embolism much aggravated the condition of the patient. On the following days improvement took place and the temperature fell to 100·4°. The expectoration gradually changed until it became like liquorice-juice, and then it became purulent. Auscultation always showed two foci of râles—at the base and apex—where there was also dullness with increased vocal fremitus. From the 10th signs of a cavity in each of these situations, but especially at the apex, developed. The expectoration became abundant and fœtid and the temperature hectic. A bedsore formed over the sacrum. On the 16th artificial pneumothorax was induced by injecting first 200 c.cm. of oxygen and then 800 c.cm. of nitrogen. On the following day the purulent expectoration was a little less abundant. On the 17th 1000 c.cm. of nitrogen were injected. On the 18th the expectoration had considerably diminished and 1500 c.cm. of nitrogen were injected. After this improvement was rapid; the temperature became normal in 24 hours and the expectoration was reduced to a few muco-purulent *crachats*.

PLAGUE IN PARIS.

IT has been known for some time that sporadic cases of plague have been occurring in Paris, and the fact that the diagnosis and treatment of plague formed the subjects of articles in the lay as well as the medical press made a question in the French Chamber pertinent. No figures of plague mortality have appeared in the official reports, but the censorship seems to be relaxing somewhat if we may judge from a series of six articles which appeared recently in *Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris* for Jan. 6th, 1921. The existence of an epidemic lasting from May to October is frankly admitted in a paper by Dr. E. Dujardin-Beaumetz and Dr. Edouard Joltrain, though they add that it is now nearly ended. The Paris authorities would be well-advised to take the public more fully into their confidence, for plague has to be fought with public coöperation.

THE Anniversary Dinner of the Medical Society of London takes place at the Wharncliffe Rooms, Hotel Great Central, on Tuesday, March 8th, at 7.30 P.M.

THE Hunterian Oration will be delivered at the Royal College of Surgeons of England, by Sir Charters Symonds, at 4 P.M., on Monday, Feb. 14th. On that evening H.R.H. the Prince of Wales will dine at the College with the President and Council. During the dinner the Prince will be admitted to the Fellowship; his diploma will be handed to him after his health has been proposed, and he will sign the roll.

AT a special meeting of King Edward's Hospital Fund for London, held at St. James's Palace on Jan. 26th, a report was presented containing specific resolutions for the preservation of hospital management and control. These were adopted and ordered to be forwarded to the Prime Minister, the Minister of Health, and the members of the Government Committee of Inquiry.

THE Milroy lectures of the Royal College of Physicians of London will be delivered by Dr. Martin Flack on Feb. 17th, 22nd, and 24th, his subject being Respiratory Efficiency in Relation to Health and Disease. For his Goulstonian lectures on March 1st, 3rd, and 8th Dr. George Graham has chosen Glycæmia and Glycosuria. The Lumleian lectures by Dr. A. Whitfield on March 10th, 15th, and 17th will deal with Some Points in the Ætiology of Skin Diseases.

THE Marquess of Linlithgow, on the nomination of the Secretary for Scotland, and Sir W. B. Peat, of the firm of W. B. Peat and Co., chartered accountants, have been appointed to the Committee which is inquiring into the financial position of the voluntary hospitals. The first full meeting of the Committee took place at the Ministry of Health on Wednesday, when evidence was given by Sir Arthur Stanley, Sir Napier Burnett, Lord Knutsford, and Mr. E. W. Morris.

DONATIONS AND BEQUESTS.—Miss Christina Christie, Rose Cottage, Oyne, now residing at Colorado, U.S.A., has sent a donation of £600 for the purpose of endowing a bed for the parish of Oyne in the War Memorial Cottage Hospital for Insch and district, and also £50 for the Oyne parish bed.—The proceeds, amounting to £146, from two successful fancy-dress balls recently held in the town hall, Banchory, were handed to Sir James Taggart's Fund for the Aberdeen Sick Children's Hospital.—The Great Northern Central Hospital, London, has recently received £22 from Miss L. McDonald (proceeds of entertainment at Camden House School) and £10 10s. from National Union of Teachers.

A COMPARISON OF THE USE OF BROWN AND WHITE SUGARS FOR PLAIN COOKING.

BY MARION C. SOAR, B.SC., F.C.S.,
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DURING the rationing and shortage of white sugar, and when brown sugars were relatively easy and less expensive to obtain, many institutions, such as schools and hostels of various kinds, used brown sugars in cooking to a large extent, and discussions subsequently arose comparing brown and white sugars for plain cooking. Of course, where the colour of the cooked food is a matter of importance it is impossible to obtain good results with a coloured sugar, but experience of brown sugars in cooking seems to prove that the colour is the only serious disadvantage apparent in their use for ordinary cooking purposes.

Results of Analyses.

In order further to compare brown sugars with white an examination was carried out of some brown sugars collected from various sources. Each sample was obtained from a different shop and a different locality.

The determinations made were as follows:—

Percentage of (*a*) water; (*b*) ash; (*c*) cane sugar; (*d*) reducing sugars calculated as invert sugar. White granulated rationed sugar was used for comparison.

Sugar content.—The rationed sugar contained over 99 per cent. of cane sugar, only 0·5 per cent. of invert sugar, and a negligible quantity of water and ash. Of six samples of brown sugar examined—varying in colour from yellow to a dark brown—only two contained less than 90 per cent. of cane sugar, and in these two cases the deficiency of cane sugar was made up by a higher percentage of invert sugar. Two others contained approximately 92 per cent. of cane sugar, and the remaining two examined 95 per cent. The percentage of invert sugar ranged between 1 and 5, so that the percentage of total sugar (cane and invert) varied between 90 and 98, the average content being approximately 93 per cent.

Sweetening power.—The results of the total sugar content of the samples show that in sweetening power the average brown sugar compares unfavourably with a white sugar because it contains less sugar. The fact that part of its sugar is invert sugar is immaterial, as it is generally recognised that, though cane sugar has a greater initial sweetening effect upon the palate, the effect of invert sugar is more lasting, and in its total effect seems to be the sweeter of the two. In sweetening acid-containing substances the quicker sweetening effect of cane sugar is an advantage, as the acid effect upon the palate is immediate; but for most purposes the presence of a small percentage of invert sugar with the cane sugar is not a disadvantage.

Contents not sugar.—None of the sugars contained any albuminoid matter, and the ash content in every case was below 1 per cent., so that the sugars could not have been adulterated by any coarse adulteration, such as a fine sand. Though this kind of adulteration is not often met with nowadays, the difficulty of obtaining white sugar and the consequent increase in the sale of the brown might have been an incentive to the use of adulterants.

Two yellow sugars were examined for the presence of aniline dyes, but, as expected, none was found.

The water content of the sugars was also not high enough to indicate adulteration, the highest content of water being 4 per cent. and the average 2 per cent.

The impurities met with in the sugars were therefore evidently only those usual to raw sugars and due to incomplete refinement. In all cases the sugars dissolved readily to give a fairly clear solution, though, of course, coloured. There was only one sample which showed insoluble matter, which consisted of small wood shavings, which certainly would be objectionable in cooking, but were probably due to either lack of refinement or imperfect packing and storage.

Conclusions.

It is of very little value just now with fluctuating prices to make a comparison of the relative cost of brown and white sugars, but in buying brown sugar merely because of the lower cost the probable lower sugar content should be taken into consideration. From the analyses made there seems to be no objection to substituting brown for white sugar in plain cooking, except in the result upon the colour of the food when cooked. The colour of a brown sugar can be readily and simply removed by filtering a solution of the sugar through animal charcoal, but this would be impracticable for most households.

The adulterations found were merely such accidental impurities as would be removed upon further refinement of the sugar.

TUBERCULOSIS.

Sanatorium Mismanagement.

"You will not get results, gentlemen, until you reform the management of your public sanatoria for your poorer classes."

IN the bulky volume[1] in which the *Transactions of the National Association for the Prevention of Tuberculosis* (Eighth Annual Conference) have just been published there is the inevitable mixture of platitudinous and inspiring papers. Two of the latter type deserve special prominence, as their authors show that candour which is seldom aired at congresses except when only two or three are gathered together in the intervals between the official speeches. Speaking about sanatorium treatment, Dr. Charles L. Minor, of North Carolina, contrasted the achievements of private and public sanatoriums, pointing out that the successes of the former are traceable to that skilled, individualising, and interested treatment which is seldom obtainable in public institutions. These, he thinks, are apt to be exploited by medical officers of the come-and-go stamp as a stepping-stone to something better.

"The close personal relation of patient and doctor is usually lacking, yet in this disease such a relation is essential, and then you expect to get results. You will not get results, gentlemen, until you reform the management of your public sanatoria for your poorer classes."

Another point on which Dr. Minor was emphatic was the necessity for keeping early and late cases apart.

"...... if you expect to mix together your advanced hopeless cases and your incipient cases you will get few good results."

Speaking as the superintendent of a private sanatorium, he argued that the best arrangement provided separate quarters for advanced, moderately advanced, and incipient cases, so that patients in the last class should not hear the coughs nor see the coffins of patients in the first class.

"I get excellent results in people of modest means, and when you get proper conditions for those poor people, men put over them who will put their whole heart and soul and mind into their work and into each individual patient, you will see a wonderful change."

In short, according to this critic, sanatorium treatment for the working classes has failed because it is not sanatorium treatment, but a dismal parody; and medical officers who have worked in both private and public sanatoriums in this country will surely admit there is some truth in this unpalatable diagnosis. More cautious in his wording, but equally conscious of the need for reforms, Sir Henry Gauvain deplored the medical education that taught the student more about the internal economy of the frog than about tuberculosis. Both from what he said and what he implied it was evident that his criticism was directed rather against the educational system than the medical officer it evolved, but he also made the valuable suggestion that, as a check on the individual, candidates for the tuberculosis service might be first appointed, with adequate remuneration, as probationary tuberculosis officers, and that only after they have shown complete evidence of their fitness for their duties should they be transferred to the permanent staff.

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[1] Adlard and Son and West Newman, Ltd. Post free 12s. 6d.

The Ætiology of Post-influenzal Pulmonary Tuberculosis.

Among the many recent papers on the relation of influenza to pulmonary tuberculosis two are of special interest because they throw light on the origin of post-influenzal pulmonary tuberculosis and show clearly the salient differences between this condition and non-influenzal tuberculosis. Dr. O. Kieffer,[2] of the Municipal Chest Hospital in Mannheim, has found that 55 of his patients, or 20 per cent. of all the admissions to his hospital between Dec. 1st, 1918, and June 1st, 1919, had developed the first signs of pulmonary tuberculosis in connexion with an attack of influenza. As a class, these patients were characterised by comparatively good physique, absence of a personal or family history of tuberculosis, and by the rapidly progressive nature of the tuberculosis, which often proved fatal in a few months. These patients, mostly young adults, failed to react to v. Pirquet's test, betraying in this respect a sinister resemblance to patients with measles. But the most instructive and distinctive feature of these cases was the X ray evidence. Skiagrams taken sufficiently early in the disease were curiously uniform, showing massive tumour-like shadows in the hilus region, on one or both sides. In early cases the lungs themselves threw no abnormal shadows, and the X ray picture was exactly identical with that of hilus tuberculosis in childhood. Between this early stage and the advanced stage, with only the apices of the lungs intact, there were intermediate stages, showing the radiating spread of the disease from the hilus. In a study of post-influenzal tuberculosis, as observed at Nakkebölleſjord Sanatorium in Denmark, Dr. S. M. Saxtorph[3] confirms Dr. Kieffer's findings in almost every respect. He notes that there seemed to be little or no connexion between the severity of the influenza and that of the subsequent tuberculosis. As illustrating the origin of the pulmonary disease in the hilus he records the case of a woman, aged 33, with no family or personal history of tuberculosis. In November, 1918, she contracted influenza, and was confined to bed almost for a month. No tubercle bacilli could be found in her scanty sputum, but she continued to cough and lose weight and to complain of lassitude, anorexia, and night sweats. There were doubtful signs over the front of the right lung, and the evidence of the fluorescent screen was indefinite, but a skiagram clearly showed abnormal hilus shadows on both sides, and beaded, radiating shadows, passing from the hilus to both the lungs, the apices of which were perfectly clear. Dr. Saxtorph suggests that in the many cases of post-influenzal lassitude and debility, with cough, night sweats, and subfebrile temperatures, reactivation of an old hilus tuberculosis is to blame. Truly, as Dr. A. K. Krause has said, "the patient is as resistant as the shell of his tubercle"; and when influenza is prevalent the resistance of this shell, as evolved by a dense, fibrotic reaction to repeated stimuli, often determines the patient's fate.

The International Artificial Pneumothorax Society.

This society was originally established as a bond of union between medical men interested in artificial pneumothorax all over the world. Now that this treatment has received general recognition the society has modified its programme, limiting its functions to that of a central exchange, so as to enable its members to direct their patients, when travelling abroad, to fellow members and experts in this highly technical treatment. In the past patients, who travelled afar and who required refills without the inconveniences of returning home for this purpose, have often experienced difficulties in finding practitioners expert in this treatment. The cost of membership is Fr.5, which should be sent to Professor Carpi, Lugano, Switzerland.

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[2] Beitr. z. Klin. d. Tuberkulose, 1920, vol. xliii, p. 204.

[3] Hospitalstidende, 1920, vol. lxiii., p. 1.

SELBORNE SOCIETY.—The Ramble Section of this society is paying a visit to Middlesex Hospital and Medical School on Saturday, Feb. 5th, meeting outside the hospital at 2.30 P.M.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

Ten Years of Public Health in Ontario.

ACCORDING to Dr. J. W. S. McCullough, chief officer of health for the province of Ontario, considerable advance has been made in public health matters in spite of the fact that during half of the decade the war was in progress. At the beginning of the period the Board of Health had undertaken to consolidate the Public Health Laws, to assist the antituberculosis campaign, to further education concerning prevention of disease, and to improve the methods of administration. The Ontario Health Act was consolidated in 1912, with a view to assisting local authorities and medical officers of health. A number of district medical officers were appointed, but county officers under the Provincial Board of Health have not yet been installed. Local appointments of medical officers of health now imply some degree of permanency; previously the office changed hands every year. Moreover, the medical officer, who was formerly grossly underpaid, can now secure a proper adjustment of his salary on application to the county judge. Many full-time men in the larger cities are receiving a fair remuneration, and each year sees fewer salary disputes and fewer efforts to secure the dismissal of medical officers of health.

The number of sanatoriums in Ontario has grown from 10 in 1910 to 25 in 1920. The provincial Government now provides an amount up to $4000 towards the cost of building a sanatorium, and grants the sum of $3.50 weekly towards the cost of maintenance of each patient. As the results of this policy the annual grants for maintenance have increased year by year from $26,000 in 1910 to $279,000 in 1919. The accommodation for patients in sanatoriums, amongst which are included several preventoriums, is about 2000, as compared with 615 ten years ago. Practically the whole cost of the antituberculosis work in Canada, with the exception of the Federal Government's annual grant of $10,000 to the Canadian Association for the Prevention of Tuberculosis, has been borne by the provinces. During the present year, for exhibition purposes and educational campaigns, the Ontario Board of Health has at its disposal $9000. In 1914 the Provincial Board began to supply county boards with antitoxin at about one-third its commercial price. Two years ago tetanus antitoxin, typhoid, pertussis and small-pox vaccines, anti-meningitis serum, preventive treatment of rabies, and gonorrhœal ophthalmia were first supplied entirely free to physicians, boards of health, and the public generally. During the war the Board's laboratory in Toronto supplied almost all the typhoid and paratyphoid vaccine used by the Canadian Army; these were furnished free of cost—which would have been approximately a quarter of a million dollars—to the Department of the Canadian Militia.

Some years ago the Board began to establish laboratories. There were two of these in 1910, and their number will shortly be increased to seven. The Toronto laboratory, whose main work is the manufacture of pertussis, typhoid, and paratyphoid vaccines, has recently added that of phenarsenamine, which will be supplied free to clinics, to hospitals, and to boards of health.

The Canadian Medical Association Journal.

This journal is shortly to be enlarged; in a year or two a change from monthly to semi-monthly publication is contemplated, and later a weekly issue will be attempted. The Ontario Medical Association, which recently negotiated for an official journal of its own, has thrown in its lot with the national medical journal; the latter will contain news and editorial matter which will be of interest to the medical profession throughout Canada.

Medical Students at the University of Toronto.

The official figures given by the registrar of the University of Toronto show an attendance of 4566 students in all branches. In the Department of Medicine in 1914-15 there were 660 medical students: in

1919-20 there were 1284 registered; in 1920-21, 1009. The medical staff was increased from 145 in 1914-15 to 189 in 1920-21. The proposal has recently been made to limit to 90 the number of students admitted to the faculty of medicine each year. Some objection has been raised to this; the University of Toronto is a State-aided institution largely financed by the Ontario Government, and it is felt to be unfair to exclude anyone desirous of pursuing medical studies in the provincial university. It is doubtful if the Ontario Legislature—now composed largely of farmers and labour members—would support any limitation of the number of medical students in that province.

Deaths from Diphtheria in Ontario.

Dr. J. G. Fitzgerald, professor of hygiene in the University of Toronto, and director of the Connaught Laboratories of the Ontario Board of Health, has recently made an analysis of the deaths from diphtheria in Ontario for the years 1880 to 1918 inclusive. The fall in the death-rate is particularly noticeable from 1906 to 1918. Despite a steady increase of population from 1,884,000 in 1880 to 2,800,000 in 1918, the total number of diphtheria deaths fell from 1251 to 335 in the years named. An interesting comparison is made of deaths from diphtheria in and out of hospital. In seven consecutive years the percentages are as follows:—

	1912.	*1913.*	*1914.*	*1915.*	*1916.*	*1917.*	*1918.*
In hospital	8·0	6·15	7·82	6·51	7·00	4·18	6·40
Out of hospital ...	12·63	10·10	10·29	12·91	13·14	10·90	19·62

A considerable number of patients were admitted to hospital in a moribund condition, dying within 24 hours of admission.

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

Illness of the Governor-General.

SHORTLY after fulfilling social engagements during "Race Week" (first week in November) in Melbourne it was announced that Lord Forster was suffering from a severe attack of tonsillitis. A day or two later a further announcement was made that the illness was diphtheria. The disease ran a favourable course, and His Excellency was able to leave for Sydney on Dec. 1st, where he will continue in residence for some weeks. No other cases were reported among the staff at Federal Government House. Diphtheria has continued to prevail almost in epidemic form in Victoria for the past seven or eight years, and although the death-rate has been comparatively low, upwards of 2000 deaths have occurred during the period.

University Finances.

The special appeal to the public for a sum of £100,000 by the Melbourne University has not so far resulted in any notable response. Upwards of £30,000 has been subscribed in small sums, and it is possible another £20,000 will be reached apart from any large gift. The Sydney University has decided to raise the fees in all schools next year, in some instances as much as 50 per cent. The high cost of materials is given as a reason for the step.

Lumbar Puncture and Meningitis.

At the October meeting of the Victorian branch of the British Medical Association Dr. R. Webster, pathologist to the Children's Hospital, Melbourne, read the results of experimental work undertaken to test the possibility of setting up a meningitis by lumbar puncture. Dr. Webster stated that when he undertook the investigation he was unaware that some American observers had published conclusions based on similar work, and he purposely avoided consulting their paper until his own results were complete. Dr. Webster said: "I feel warranted in urging that the lumbar puncture needle should not be employed except in the presence of definite clinical signs of meningitis, and in deprecating its use as a possible royal road to the diagnosis of an obscure condition." Dr. Webster concluded there was definite risk of infecting the spinal meninges by lumbar puncture in the presence of a severe septicæmia. Once decided upon, as small an amount of fluid should be removed as is consistent with diagnostic requirement. His experiments were performed upon monkeys and employing the pneumococcus as the infecting organism.

Prohibition.

The polls on the liquor question recently taken in Victoria and Queensland have resulted in a general defeat of the prohibitionists. In Victoria only two small licensing districts voted "No licence." The figures generally disclose the fact that public opinion is somewhat evenly divided, and that results might swing either way if a simple majority of votes determined the result. It is possible that in Victoria local option polls will be abolished in favour of the Licence Reduction Board, a semi-judicial body which has been in successful operation for over 12 years and has closed more than 1300 hotels in that time. In New South Wales this legislation has been copied owing to the failure of local option polls in that State. In Queensland the local branch of the B.M.A. carried a motion favouring prohibition.

Dec. 8th, 1920.

Public Health.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

CITY OF EDINBURGH.

IN his annual report for the year 1919 Dr. A. Maxwell Williamson points out that there are certain wards within the city which, with unvarying regularity, occupy the unenviable position of having excessive mortality from nearly all causes. In Edinburgh, as in nearly all large centres of population, there are wards where death-rates are so much in excess of the average as to render the conditions prevalent in them subject-matter for serious consideration. These conditions are, of course, intimately associated with defective housing. In insanitary overcrowded districts the sickness and death-rates are generally in excess of the mean average. During the year there were 5583 deaths within the city boundaries, giving a death-rate of 16·5 per 1000. This relatively high rate is, in part at least, attributable to the outbreak of influenza which visited the city in the early part of 1919 and increased the rate in round figures by 2 per 1000.

Treatment of tuberculosis.—Tuberculous disease yields slowly to the efforts which are being made in Edinburgh towards effectively dealing with it. The number of cases notified was slightly below that for the previous year and constitutes the lowest figure yet attained. There were, however, 602 cases of pulmonary tuberculosis notified in addition to a considerable number of notifications of tuberculous disease affecting organs other than the lungs. Of the 602 notified cases, 359 received institutional treatment. Many of the patients in the early stage of the disease improved markedly in health or were cured, while the advanced cases, which eventually proved fatal while under treatment in hospital, experienced the advantages of a well-appointed sanatorium, and their friends were relieved of the anxieties and risks inseparable from attendance on a sufferer in an advanced state of the disease. At the Royal Victoria Dispensary every effort was made to detect cases of phthisis in the early stages of the disease with a view to immediate treatment, and, in Dr. Williamson's opinion, the tuberculosis dispensary may possibly hold out more hope in connexion with the general crusade against tuberculosis than is contributed by other branches of the work. In this connexion, however, he repeats what he has often said before—namely, that the real hope of ultimate success in overcoming the disease rests not in the multiplying of sanatoriums, or even tuberculosis dispensaries, but is centred in the accession of a supply of suitable and sanitary housing accommodation. Much of the expense at present incurred on the provision of institutions for the cure of phthisis might well be diverted toward the object of prevention rather than by lavishing expenditure on efforts to cure, which, it is submitted, yield returns not commensurate with the financial outlay involved.

Isolation of measles.—For many years Dr. Williamson has wished to have more beds available for the isolation and treatment of measles. The Scottish Board of Health are now directing attention to its importance, and it is hoped that amalgamation and reorganisation may set free beds for the treatment of this disease. The existing somewhat restricted accommodation in Edinburgh has, however, been utilised to the fullest extent. The most serious cases and those most urgently requiring removal on account of their surroundings were regarded as having the first claim upon the available accommodation. It was found possible during the year to remove 500 cases of the malady to hospital. The total mortality-rate of this disease amongst those treated in hospital amounted to 10·1 per cent., as contrasted with a similar rate of 2·4 per cent. in the case of scarlet fever. This serves to emphasise the fact that measles, more particularly in young children, is more to be feared than many other forms of infectious disease, though it is popularly regarded as of relatively small importance.

METROPOLITAN BOROUGH OF ST. PANCRAS.

Dr. T. Shadick Higgins, in his annual report for 1919, has the satisfaction of recording the fact that the mortality in the borough during the year under report was the lowest on record, in spite of the fact that the ravages of the influenza epidemic continued during the earlier months. For the first time the net St. Pancras deaths for the year were less than 3000, and the annual death-rate was down to 13·4 per 1000 civil population. The deaths of infants under one year of age also were less in number than in any previous year, the rate being 88 per 1000 births. In Dr. Higgins's opinion, however, the deaths of infants remain more numerous than they need be, and much patient effort to reduce their number is still required. In regard to births, the continuous decline which had been observed during the war reached its greatest depth in the middle of 1919, but during the last two quarters there was a marked increase and the birth-rate for the year as a whole amounted to 16·7 per 1000 of the total population. As a result of the favourable variation in the births and deaths there was an excess of births over deaths of 891 for the year, as compared with an excess of deaths over births of 596 which was recorded in 1918. In reference to infectious diseases, the outstanding feature of the year was the cessation of the outbreak of influenza. This raged during part of the summer and autumn of 1918, and was still grave in the spring of 1919, but had almost spent itself by the end of the first quarter, since which time there has been no serious recrudescence. The total St. Pancras deaths certified during 1919 as being caused by this disease numbered 260, as compared with 700 in the previous year, but the number of deaths actually due to the epidemic was no doubt even greater than these figures indicate. The mortality from tuberculosis, amounting to 341 deaths, was lower than usual, and from both measles and whooping-cough much lower than for many years. Scarlet fever was more prevalent than in the previous three years, though the deaths were few, the cases being of a mild character. There was no increase in the prevalence of diphtheria. Typhoid fever reached a lower point than ever before, only seven cases being notified, and it is satisfactory to note that the decline in cerebro-spinal fever, which has taken place since the outbreak of 1915, was continued. A considerable number of men suffering from malaria and dysentery acquired abroad on active service have returned to civil life, but there appears to be no tendency for the disease to spread, not one case acquired in England having been reported in St. Pancras.

SCHOOL MEDICAL SERVICE.

HEALTH OF SCHOOL CHILDREN IN BELFAST.

A discussion has been going on in the Belfast press upon the condition of the primary schools of the city and its relation to the health of the children in attendance upon them. There are over 300 primary schools in Belfast under the direction of the Board of National Education. In a certain proportion of cases two schools are lodged in the same building. Most of the newer schools are good and many of them are excellent. But there are about 80 old schools whose condition has long been recognised as a source of danger to the children, and a serious reproach to a wealthy and progressive community. Many of these schools were constructed as appanages to various churches and are totally unsuitable for educational purposes. Some of them consist of a single large apartment, with, perhaps, one small adjoining class-room. As a result several classes are conducted in the same room, involving noise, slackness of discipline, and a heavy tax upon the nerves of both teachers and scholars. Many of them abut upon noisy and crowded thoroughfares, and ventilation is sacrificed to the necessity of comparative quiet. The sanitary arrangements are in many cases deplorably defective, and cleanliness leaves much to be desired. A large percentage of the older schools are destitute of playgrounds, and at the interval the children have the alternative of either turning out into the streets or taking their relaxation and their lunch in a stuffy apartment of which the air has been fouled by several hours of continual school. There is no medical inspection, and the way to the dissemination of infectious disease is left open. Further, the increase of school accommodation has not kept pace with the increase of population of the city. There are in round numbers 70,000 children of school age in Belfast. If overcrowding were strictly prohibited and the necessary amount of air- and floor-space secured for each scholar the present accommodation would suffice for only some 55,000 scholars. It is impossible to say precisely how many children are deprived of all education, but it is clear that in the present deficiency of accommodation it is not easy to enforce the law of compulsory attendance.

It cannot be said that the city has been indifferent to the above deplorable state of affairs. It is more than a generation ago since the late Dr. W. A. MacKeown pointed out the defects which existed at that period and the resulting dangers to the health of the children. These matters have been repeatedly ventilated in the press and at public meetings. Several occupants of the Lord Mayoral chair, notably Lord Shaftesbury and the late Alderman R. J. McMordie, interested themselves in this question, but found their efforts frustrated by legal difficulties. Under the National Board system there is no power on the part of local authorities to provide schools adequate to the needs of the population. There is no local education rate. When a new school is needed some individual, often a clergyman, has to raise one-third of the prospective outlay upon buildings before any help is available from the National Board. That such a system should have lasted for nearly a century shows with how little wisdom the world is governed. When Mr. Long was Chief Secretary for Ireland a deputation waited upon him in Belfast and pressed these matters upon his attention. He heard the deputation courteously and did not dispute their facts, but his reply amounted to this: "Help yourselves; *provide the requisite funds* for the proposed reforms." Unhappily, it required legislation to carry out this admirable advice, and politicians were shy of the difficulties surrounding Irish primary education. There was a deadlock, and that deadlock still continues. Mr. MacPherson tried his hand at the question, with what success all the world knows. The religious difficulty is, unhappily, acute in Ireland, and tends to stop the wheels of educational progress.

The new political regime in Ireland may open a new era in education. There can be little doubt that one of the first tasks of the Ulster Parliament will be to deal with the question of primary education. Many of the old schools must be swept away. New schools must be constructed to meet the present clamant needs, and they must be up to the full modern standard, both from the point of view of education and of health. Medical inspection must be enforced and treatment centres for children instituted. The cost need not be large. Experience in England and Wales shows that it averages about 2*d.* per child. A proper standard for teachers must be set up and remuneration must be adequate. To what extent tuberculous infection occurs in childhood and remains latent until adolescence or early adult life is a question to which no final answer can yet be given, but the possibility cannot be denied, and many would probably go further and affirm that this mode of infection is common. If this view is sound, the hygiene of schools becomes a matter of urgent importance, apart from its importance from other points of view. That infectious disease—measles, scarlet fever, diphtheria, &c.—is often contracted at school admits of no doubt. England was late in adopting the principle of the medical inspection of schools and school children, and the Act applying to Ireland is so hedged in by restrictions as to be practically inoperative. It is a matter urgently calling for attention.

REPORT OF SCHOOL MEDICAL OFFICER FOR SHEFFIELD.

IT was not found possible to resume the routine inspection of school children at Sheffield until April, 1919, when a commencement was made with the group of leavers, followed in October by that of entrants. The total number so examined was 12,931, but, in addition to these, 23,379 special cases were seen at the schools. The defects requiring treatment most frequently found in the routine inspections were those of vision (1443) and of the nose and throat (1112); and, in addition to these numbers, amongst the children specially examined there were found to be 2215 and 1545 respectively needing treatment for these two conditions. Organic heart disease was diagnosed in 103 cases in the code groups (0·8 per cent.), 73 being recommended for treatment and 30 being kept under observation. There was no defective nutrition of any importance among the Sheffield children, only 8 being found to need treatment in the code groups and 27 among those specially brought forward. Not a single case of definite pulmonary tuberculosis from among the 13,000 children examined in the code groups was referred for treatment, and only 3 children were recommended to be kept under observation for this disease. This is a noteworthy fact in a large industrial city such as Sheffield. The existence of the disease was suspected in 35 children (in the code groups), and in 39 others specially examined (of whom 24 and 37 were respectively recommended for treatment). In the section of the report dealing with physically defective children, it is stated (p. 43) that 312 children "liable to school attendance" are suffering from "crippling due to tuberculosis," of whom 44 are attending public elementary schools. Out of the 12,931 children systematically examined only 8, and among the 23,379 special cases only 27, were found to be suffering from malnutrition. Infectious skin diseases (ringworm, scabies, impetigo, &c.) were not especially prevalent in the code group children (257 cases in all); but, in his report on the work of the X Ray and Skin Department, Dr. E. F. Skinner tabulates 8745 cases including 1158 ringworm, 4159 impetigo and sore head, and 1634 scabies. The increase in scabies, due to infection from "the front," is shown by comparison of the average weekly number admitted to the school clinic (3.45) in 1912 with that in 1918, which was 54·63. Under the treatment formerly used there had been an average of 56 days exclusion from school; by the adoption of bath treatment the exclusion was reduced to an average of 12 days. The cost was practically the same, and whereas under the old system of home treatment 5·46 per cent. became re-infected, with the bathed cases the percentage was only 1·03. The efficiency is entirely due to adequate supervision by the nurses in charge. With regard to defective vision, 1443 children were referred for treatment out of the total 11,917 examined, or 12·11 per cent. Details are furnished as to the cases treated, numbering 3473 in all, of whom 1755 were boys and 1718 girls. Among boys there were 648 cases of hypermetropia and hypermetropic astigmatism, and 106 of myopia and myopic astigmatism; also 63 cases of mixed astigmatism. Among girls the respective numbers were 674, 125, and 118; 576 boys and 458 girls were treated for squint. One of the most difficult conditions to treat satisfactorily in school children is that of chronic ear discharge; of 450 such cases, 96 only were returned as cured or improved. Of 377 cases of deafness without discharge, 166 were cured or improved. It is noted, however, that attendance is becoming more regular now that the war is over. Dr. Thomas Chetwood, who presents this report as school medical officer, regrets the recent decision of the School Management Sub-committee that playgrounds and public parks cannot usually be regarded as satisfactory class-rooms. At Whiteley Wood Open-air School, which was open from March to December, there were 119 children in average attendance; 93 were found fit to return to ordinary school attendance at the end of the year. Physical training and organised games are carried out with excellent results on the health of the children, accompanied by "a marked increase in alertness." Mr. Henry Cole, however, the training superintendent, points out that a cinder surface for the recreation ground is unsuitable.

URBAN VITAL STATISTICS.

(Week ended Jan. 22nd, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18½ million persons, the annual rate of mortality, which had been 16·6, 14·0, and 12·8 in the three preceding weeks, rose to 13·3 per 1000. In London, with a population of 4½ million persons, the death-rate was 12·9, or 0·3 per 1000 above that recorded in the previous week, while among the remaining towns the ratio ranged from 4·5 in Ipswich, 6·2 in Ealing, and 6·4 in Edmonton to 20·7 in Tynemouth, 21·8 in Preston, and 22·5 in Middlesbrough. The principal epidemic diseases caused 223 deaths, which corresponded to an annual rate of 0·6 per 1000, and comprised 72 from diphtheria, 71 from infantile diarrhœa, 35 from whooping-cough, 29 from measles, 12 from scarlet fever, and 4 from enteric fever. Measles caused a death-rate of 3·2 in Middlesbrough, whooping-cough of 1·7 in Newport (Mon.), and diphtheria of 1·0 in East Ham. There were 4350 cases of scarlet fever, 2618 of diphtheria, and 1 of small-pox under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 4413, 2597, and 1 respectively at the end of the previous week. The causes of 40 of the 4746 deaths in the 96 towns were uncertified, of which 9 were registered in Birmingham, 5 in Gateshead, 4 in Hull, and 3 in Liverpool.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 18·4, 18·4, and 15·9 in the three preceding weeks, was 15·8 per 1000. The 329 deaths in Glasgow corresponded to an annual rate of 15·6 per 1000, and included 8 from whooping-cough, 4 from diphtheria, 3 from infantile diarrhœa, 2 each from small-pox and measles, and 1 each from enteric fever and scarlet fever. The 150 deaths in Edinburgh were equal to a rate of 17·5 per 1000, and included 4 from influenza, 3 from measles, and 2 each from diphtheria and infantile diarrhœa.

Irish Towns.—The 135 deaths in Dublin corresponded to an annual rate of 16·6, or 1·3 per 1000 below that recorded in the previous week, and included 2 each from whooping-cough, diphtheria, and infantile diarrhœa. The 148 deaths in Belfast were equal to a rate of 18·5 per 1000, and included 6 from whooping-cough, 3 from infantile diarrhœa, and 2 from measles.

LITERARY INTELLIGENCE.—Mr. Henry Kimpton will publish shortly the following new books and new editions:—"Psychopathology," by Edward J. Kempf, M.D.; "Block Anæsthesia and Allied Subjects, with Special Chapters on the Maxillary Sinus, the Tonsils, and Neuralgias of the Nervus Trigeminus," by Arthur E. Smith, D.D.S., M.D.; "Hygiene, Dental and General, by Clair Elsmere Turner, with chapters on Dental Hygiene and Oral Prophylaxis by William Rice; "Dental Pathology and Therapeutics," by Henry H. Burchard, M.D., D.D.S., sixth edition. Rewritten by Otto E. Inglis, D.D.S.

Correspondence.

"Audi alteram partem."

PROGNOSIS IN ENCEPHALITIS LETHARGICA.

To the Editor of THE LANCET.

SIR,—In view of the notice which this disease is now receiving I am authorised by Sir George Newman to send a brief note on its prognosis so far as it appears from the collection of case reports made by me at the Ministry of Health.

A study of these reports, together with an examination of several old cases, shows that in many instances the later stages of the disease may be very prolonged and the source of much anxiety both to the patient and to his medical attendant. Facial and ocular palsies, marked paresis, and sometimes paralysis, of a limb or limbs, and tremors in the parts so affected are constantly mentioned as existing after the patient has resumed, or partially resumed, his normal occupation. In addition, the higher faculties are apt to remain for some time distinctly impaired, so that loss of memory, defects of speech, mental lethargy, and a general loss of intellectual tone result. The character, too, not uncommonly becomes changed, and often for the worse, especially in children. It may be noted in passing that MM. Harvier and Levaditi in a recent paper[1] support the conclusion reached by Marary—viz., that the sequelæ of epidemic encephalitis are often no more than the symptoms of a form of the disease with a prolonged evolution.

It will be recalled that soon after the disease appeared in this country and prior to Jan. 1st, 1919, when encephalitis lethargica became a notifiable disease under the Public Health (Acute Encephalitis Lethargica and Acute Polio-encephalitis) Regulations 1918, a special inquiry was initiated by the Ministry with the object of gaining information concerning the epidemiology and clinical characters of the disease. The material for investigation and the knowledge then available were both limited, but a full and carefully compiled report on the subject was issued by the Local Government Board in 1918.[2] At the time this report was issued the conclusions reached concerning the full course of the disease in individual cases and the ultimate fate of its victims were necessarily guarded and provisional in character. The mortality-rate, for instance, in Dr. MacNalty's series of 168 cases worked out at approximately 22 per cent. Of the 541 cases of encephalitis lethargica notified during 1919 from England and Wales, no less than 286 proved fatal—a mortality of 54·6 per cent. A later review of this series resulted in the elimination of a certain number of fatal cases by reason of mistaken diagnoses, but even so the death-rate figure remained at 50 per cent.—a mortality which is probably much higher than is generally supposed. The fatality is greatest in those over the age of 30.

I may add that the Ministry of Health, in conjunction with the Medical Research Council, are actively continuing the investigation of this disease in its epidemiological, clinical, and pathological aspects. This coördination has already resulted in the successful transmission of the virus of encephalitis lethargica to monkeys in the Derby case, which was reported in the annual report of the Chief Medical Officer of the Ministry for 1919-20. The detailed information regarding notified cases which we are receiving from the medical staffs of institutions, medical practitioners, and medical officers of health is proving of great value, not only as material for ultimate tabulation, but as a guide to the selection of cases for special investigation.

Possibly some of your readers can supply information on the after-history of cases notified during 1919, supplementary to that which they have already sent in reply to schedules of inquiry. Any such information would be specially welcome.—I am, Sir, yours faithfully,

ALLAN C. PARSONS,

Ministry of Health, Jan. 25th, 1921. Medical Officer.

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[1] Bull. et Mém. Soc. Méd. d. Hôp. de Paris, Dec. 9th, 1920.

[2] Report of an Inquiry into an Obscure Disease, Encephalitis Lethargica, New Series, No. 121.

MENTAL DEFECT AND CRIMINAL CONDUCT.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Nov. 13th, 1920, there were published two interesting addresses by Sir Bryan Donkin on the mental condition of criminals and delinquents. I do not know whether he has heard of the advances in the treatment of delinquents which we have worked out in connexion with several of the criminal courts in various cities of the United States. I am myself at the head of the medical service attached to the Supreme Bench of Baltimore City, which was established by me, with the aid of the judges of the bench some five years ago. Every accused person who shows any signs of mental abnormality or who has a record as an habitual offender is examined mentally, and a report is made on his condition to the court before his trial.

Our medical service also deals with all questions of legal medicine that come up in connexion with our courts. In all cases of possible homicide the autopsy is either made by me or in my presence, and I report direct to the chief prosecuting officer. My office also takes care of other matters for the police, such as the investigation of blood stains, foot prints, and the like. I am also called into the Civil Courts as the court's expert on various questions, such as the credibility of a witness, the possible limits of pregnancy in bastardy cases, the wage-earning ability of men involved in non-support cases, &c. About half of my work is that of a psychiatrist; the other half includes all medico-legal questions. Our idea for our medical service is that it should be as it were the watcher at the gate of the Criminal Court, which examines all those who come to the gate, and turns aside into the proper institutions those cases that are mentally deficient or mentally diseased, or who show any symptoms that may make them unfit for confinement in a penal institution. In this way we attempt to keep out of our prisons the mentally deficient and the extreme physical cases, as well as those who are actively mentally disturbed. In short, we attempt to meet the very difficulty which was brought out in Sir Bryan Donkin's article, so that each case can be treated by the court, rather as an individual problem of badly adjusted personality than as a mere infraction of certain laws or regulations. In Chicago and in Boston there are these medical services attached to the courts, but they are more intimately connected with the purely mental side of the entire question.

I should be very glad to send you any further information about our medical service, if your readers are interested in the matter.

I am, Sir, yours faithfully,

JOHN R. OLIVER,

Medical Officer, Supreme Bench of Baltimore.

Baltimore, U.S.A., Jan. 12th, 1921.

THE DIET OF WELL-TO-DO CHILDREN.

To the Editor of THE LANCET.

Scene: O.P. Department of General Hospital, A.D. 1884.
Personæ: Mother with infant in arms (the latter crying and eating a piece of cake). Hospital House Physician.
H.P.: Well, what is the matter?
Mother: Baby has diarrhœa and vomiting.
H.P.: What do you feed your baby on?
Mother: A bit of what we have ourselves.
A severe lecture from H.P. to the mother on the iniquities of her treatment of a baby of 8 months old. Indignant mother leaves the hospital, saying that she, the mother of six healthy children, is not there to be lectured by a young boy!

SIR,—Was the mother right or was I right? The work of Sir Arbuthnot Lane during the last 20 years has brought forcibly before the profession a problem that it has to answer one way or the other. Is he right or not? If he is right then we have to accept that many chronic diseases, of the causes of which we have been in ignorance, are now proved by him to be in part, at least, if not entirely, due to intestinal stasis. There can be no doubt about the mechanical changes found in the bowel, for they can be seen frequently at operations by those who have eyes to see, and what is of almost equal importance, they have been shown to be present in cases, where no operation has been performed, in the truly wonderful X ray work of Dr. A. C. Jordan. As these changes are present there can be little doubt that some results must accrue from them, and those of us who are in general practice are quite familiar with the two types of cases described: the chronic invalid with general proptosis and continual abdominal discomfort, indigestion, and constipation; and the other type, who only suffers from a "difficulty with his bowels" or "his liver," as he prefers to call it, and who eventually develops cancer. These two types being familiar to us, are we to accept the conclusions which the author draws? That is to say, are we to prognose that the first type will develop cancer or rheumatoid arthritis in some distant organ or joint, and that the second type will get cancer locally? Or, in other words, that the person who has these changes well marked is doomed to disease sooner or later. It seems to me that this is very nearly a proved case, and that we are bound to accept the theory as a basis (for our conception) at any rate for the present, or until it can be proved by further research to be untrue. This, then, is a very serious position; certain well-known diseases of mortal importance to the sufferers, a definite anatomical cause accepted for the diseases, but no theory for the abdominal changes which are proved to exist. If these anatomical conditions of the contents of abdomen are not congenital they must be produced by some error or errors of management in childhood.

I revert now to the good lady who was so indignant with me in the out-patient department of the hospital. She insisted that the proper diet for a child was "a bit of what we have ourselves." I, in my superior wisdom, told her that the only diet for a child of 8 months was milk, which was to be continued until the child was 9 months old, and that after that time farinaceous food was to be gradually added to the milk, which was not to be decreased in quantity. Hence her contempt for me! Now in watching children grow and develop during the many years I have been in practice I have been struck with the little importance that seems to be placed on diet, so long as it is "digestible and nourishing"; these are the only two epithets ever applied to food, and what is meant by "digestible" is that there must be no overt act of indigestion, such as pain or wind. The more the child can eat of this kind of diet and the fatter it grows the more pleasure is given to the parents. The child may, and often does, require a "dose," but that is "only what all children want," and nothing is ever thought of it. An ordinary child starts the day with a breakfast consisting of bread and butter, an egg or some fish, and half pint of milk; in the middle of the morning it is given half pint of milk and some food of some sort—biscuits, rusk or bread; at from 1 to 1.30 it has a full meal of meat or fish, vegetables, and a pudding, generally a milky one; at 4.30 it has a good tea meal with jam to stimulate its jaded appetite, and half pint of milk; and at bed time it has another small meal. Altogether the child takes five meals daily, and no mother is satisfied unless it drinks at least two pints of milk in addition, and very often sweets are given as extras—I mean sweets of which sugar is the principal ingredient. All this food is of the digestible sort—i.e., all elements of it which are considered to be indigestible are carefully eliminated either by the nurse or mother. Now it must be confessed that the great majority of children pass through this period of their lives successfully, and no matter what they eat, or how much, they seem to keep well and remain free from disease. But certain of them fall by the way, and of these a good many are sufferers from dyspeptic troubles, loss of appetite, pain in the stomach, and flatulence. In many of these cases it is very easy to follow cause and effect, and if the diet, and especially the number of meals, is reduced improvement rapidly follows. A typical case is the following:—

P. A., aged 4½, was brought to me in October of last year. He had never been satisfactory; his appetite was bad, he suffered from abdominal pains, he was "anæmic," he slept badly, and was very easily tired. His bowels acted daily, but his motions were small, and sometimes there was a little "mucus" in them. *He had been to many doctors*, who could find nothing physically wrong, had ordered him tonics, and told his mother to feed him up. He was a bright, intelligent little fellow, very pale but not anæmic, and I could find no physical change except a distended tumid abdomen. *I told his mother to stop two of his meals daily*, and to substitute fruit and vegetables for most of his farinaceous food, and only to give milk as a condiment. The improvement was miraculous, and he lost all his symptoms for two months, when he suffered a slight relapse owing to constipation returning in the very cold spell of weather which we experienced in December.

Now I believe that this lad is in the early stage of abdominal change, and that he will be easily cured by the recognition of his condition. He was suffering from overfeeding and unsuitable feeding, which I believe to be the case with the majority of present-day children, and that, furthermore, it is the cause of the changes that are described.

In order to avoid the results it will be necessary to make considerable changes in the method of feeding children for the future. First of all, there must be a diminution in the number of meals, the most that may be allowed being three in the day. This allows time for one meal to be digested before another is poured into the stomach. The latter organ is thus not overfilled, and does not tend to become distended, the food is properly digested and passed on to the intestine in a fit condition for the further processes of digestion, and no overloading will take place. Then there must be great alterations of the food itself. As I have said before, all the mother asks of food at the present time is that it shall have three qualities—digestibility, nutritiousness, and *quantity*. *No thought* is taken as to the time that this diet will take in its passage through the digestive canal, and constipation is not looked upon as indigestion. It is as a rule easily corrected by a dose of medicine, and therefore of little importance. Now what is the most important acquisite of food? I unhesitatingly say its power of rapidly passing through the intestinal canal. *If food passes in* the proper time through these organs well and good. No matter what its quality or what its quantity no harm accrues, but if from any reason it lags by the way trouble begins. This is true stasis. Now this happens in our modern dietary, because all the laxative properties of food are carefully kept away from the child, as they are contained in that part of it which is usually called indigestible. The peels of potatoes, of apples, and other fruits, the stalks of cabbage and cauliflowers, the husks of all grain, are the necessary ingredients for stimulating the bowel to act, and they are carefully withheld from children, as they contain no nourishment and are "indigestible." Few children are allowed to eat raw fruit for the same reason, and consequently we see the results—stasis and its after-effects. Too much milk, too much straining after "nourishment," too many patent "pap" foods, are the reigning desiderata at the present time, whereas nature is quite able to pick out from even a scanty diet sufficient nourishment for the development of most children, if it is allowed to go its own way, undisturbed by tonics, digestives, and "doses."—I am, Sir, yours faithfully,

Buckingham-gate, S.W., Jan. 16th, 1921. H. A. DES VŒUX.

ORAL SEPSIS,

WITH SPECIAL REFERENCE TO CHRONIC DENTAL APICAL INFECTION.

To the Editor of THE LANCET.

SIR,—The interesting paper by Dr. W. Bertram Watson on this subject in your issue of Jan. 1st drew attention to a special feature of oral sepsis which is, in my experience, too often overlooked by dental surgeons and medical practitioners. I refer to a chronic dental infection, often round the apex of the root, where the gums and teeth are, as far as can be judged from careful macroscopical examination, perfectly healthy, and where no tenderness or pain are experienced by the patient. Too often in these cases the healthy appearance of the teeth has caused them, or rather the bony cavities containing them, to be disregarded as possible foci of serious infection without further examination. *It cannot be too strongly urged* that in all cases where the symptoms may be due to a chronic septic infection of unknown origin the jaw can only be excluded as a causal factor after a careful X ray examination has been made, and this should be *done however healthy the appearance of the gums* and teeth. It is remarkable how frequently cases of fibrositis, arthritis, and similar chronic conditions are met with in which, though the gums and teeth appear *perfectly healthy*, an X ray examination discloses definite septic foci round the apices of the teeth.

At the recent pathological meeting of the Medical Society of London on Jan. 10th, Sir William Hale-White and myself referred to a case of malignant endocarditis where the source of the infection was directly traceable to a septic focus round the apex of the left lower central incisor tooth. In this case an X ray examination by Mr. C. A. Clark revealed a small abscess, though to ocular examination the gums and teeth appeared perfectly healthy. I am strongly of opinion that oral sepsis is one of the most important causes of gastric and duodenal ulcer and that the septic absorption of pathogenic streptococci often takes place through the blood stream, the gums and teeth appearing externally healthy. There is considerable experimental evidence by Rosenow and others to confirm this view. Certainly, however healthy may be the appearance of the gums, an X ray examination of the teeth should be made in every suspected case of peptic ulcer.

I am, Sir, yours faithfully,

W. H. WILLCOX.

Welbeck-street, Cavendish-square, W., Jan. 24th, 1921.

MALARIA IN THE EAST AFRICAN CAMPAIGN.

To the Editor of THE LANCET.

SIR,—Little has been published respecting the medical aspects of the campaign in East Africa, and the papers of Majors J. P. Johnson and K. Gilchrist[1] and of Majors Johnson and Gilchrist and E. Hay-Michel[2] are a welcome contribution of the greatest interest and importance. After clinical and laboratory experience in various hospitals in G.E.A. during 1916–1919 I should like to endorse many of their findings. In 1000 blood smears, most of them thick drops, I had 40 per cent. positive, of which 71 per cent., B. tertian; 26 per cent., subtertian; 3 per cent., mixed B.T. and S.T.; under 1 per cent., quartan. They made no mention of quartan infections; at Morogoro I saw two cases in natives and only one case in a white man, so that possibly none were invalided to South Africa. Their figures naturally show a higher proportion of mixed infections, as these were more refractory to treatment and were therefore more liable to be invalided to South Africa. Higher dosage of quinine became the rule in the last one and a half years of the campaign, though medical officers new to the country often began with small "tonic" doses. In some hospitals a dosage of 60 gr. per diem was not uncommon. In my own cases I obtained better results with three-hourly doses of 10 gr. given as early in an attack as possible to a maximum of 30–40 gr. When an attack had been missed we endeavoured to produce mild tinnitus before the next rigor was due. In fact, the presence of tinnitus aurium was taken as a rough test of the absorption of quinine into the system.[3] In the subtertian type of infection with continued fever it is important that repeated small doses should be given throughout the night as well as the day to a maximum of 45 gr. in 24 hours. I often thought that the omission of quinine between 6 P.M. and 8 A.M. accounted for the fact that medical officers could not control these cases with oral quinine. Majors Johnson and Gilchrist rightly lay great stress on the presence of parasitological as well as of clinical relapses. Unfortunately, "bed-space" was the deciding factor in hospitals in G.E.A., and it was late in the campaign before convalescent camps (Dodoma and Nakuru) had the benefit of a laboratory. The paper is a striking demonstration of the fact that only by repeated blood examination can one judge of the effects of our treatment, a matter which has been too often disregarded in weighing the merits of different drugs and modes of administration. The relapse of 14 per cent. of previous "negatives" is not higher than one would expect. The promotion of the general powers of resistance of the body is duly appreciated by Majors Johnson and Gilchrist. During the years 1917–1918 how futile were our drugs against the effects of climate and the debility of our patients, and how striking the difference made by evacuation to Nairobi, Kijabe, and Nakuru (4000 feet).

As regards treatment with "606" I can testify to the beneficial effect in malarial cachexia and in the convalescent stage of blackwater fever. Captain D. S. Harvey, of the 15th Stationary Hospital, and later myself, used it (intramuscularly) in several cases, and Dr. R. W. Burkitt, of Nairobi, B.E.A., has elsewhere published his good results in civil cases. The action of arsenic as a stimulant to the hæmopoietic system is to cause a better type of red cell to be passed into currency, the spleen has thus less destructive work to do, gets rid of its débris and hence becomes smaller. I believe that the shrinking of the spleen is as much due to this as to any diminished activity of malarial parasites. I cannot help thinking that the effects on the liver which they ascribe to arsenic are chiefly due to the catharsis and light diet. In our V.D. section it was not unusual for an attack of malaria to occur within 48 hours after injection of "606," and in the few cases of malaria in which I tried "606" alone had eventually to be given quinine. I am, therefore, most sceptical about the parasiticidal action of arsenic in malaria. The great lesson of their paper is that chronic malaria in debilitated subjects can be overcome only by adequate quininisation, combined with general tonic measures and that constant blood examination is necessary to control the treatment.

I am, Sir, yours faithfully,

W. S. DAWSON, M.B., M.R.C.P.,

Late 15th Stationary Hospital, G.E.A.

Hanwell, Jan. 16th, 1920.

INSURANCE MEDICAL RECORDS.

To the Editor of THE LANCET.

SIR,—At this juncture the leading article in your issue of Jan. 8th serves a very useful purpose. Just such a reasoned and sane pronouncement is much needed, for the numerous meetings held to discuss the record cards have been marked by much unwisdom in speech and resolution. Had these proceedings taken place in camera it would have been deplorable enough, but, unfortunately, in most instances the presence of pressmen has been courted, and their reports, as presented in the various papers, partake either of the nature of political propaganda or light comedy, and do little to uphold the dignity or intelligence of the medical profession.

At the very outset of the insurance agitation years ago Mr. Lloyd George was reported to have said: "Remember, National Insurance is not merely a doctor's endowment society," and we should do well to keep this pronouncement in mind. We may take what is called "panel practice" to be the germ, or foundation, of what it is hoped will one day grow into an efficient State Medical Service. Even now panel doctors are State servants holding a Government contract with definite conditions, of which record keeping is one. As State servants we have no concern with political or other like considerations. Our duty is to loyally carry out the terms of the contract we have accepted. Undoubtedly the record cards present features open to discussion, but they are sound in principle, a step in the right direction, and a great advance on the previous card system. If we approach the health authorities in a reasonable spirit, in time improvements will doubtless be made, but there is little in the present agitation to encourage the Department to give us a patient hearing. Is it reasonable to claim that the medical any more than any other profession is entirely faultless? There are doctors who *do*, and doctors who *do not*, take their panel practice seriously, and probably for *all* of us, and certainly for the latter, it is a good thing that we should have, in the record cards, to give an account of our stewardship.

I am, Sir, yours faithfully,

Havant, Jan. 22nd, 1921. ARTHUR J. GEDGE.

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[1] THE LANCET, Jan. 15th, 1921.

[2] Brit. Med. Jour., January, 1921.

[3] Dawson: Brit. Med. Jour., May, 1920.

PART-TIME OR WHOLE-TIME FOR THE M.O.H. AND S.M.O.

To the Editor of THE LANCET.

SIR,—The pros and cons of part- and whole-time service for the medical officer of health and the school medical officer, though much discussed, are still under discussion.

Special arguments may be put forward upon the subject. It appears that the whole-time appointments are often sought after by members of the profession who shrink from the responsibilities and competition of general and special medical and surgical practice, because of its hard work and the ever-increasing knowledge and skill required in order to be efficient. The whole-time medical officer cannot be said to be a man of the most enterprising and energetic ideals in the practice of his profession. The late Local Government Board and the present Ministry of Health argue that the whole-time medical officer of health can more efficiently perform his duties as he is not directly interested in individuals and has in consequence an open and free hand to work with, and so it has become the custom to form combinations of sanitary authorities in rural districts for the purpose of appointing a whole-time medical officer of health, and in large towns the medical officer is also appointed upon the same terms and for the same reasons. This, then, is the chief argument for these appointments, but may it not be equally argued that the medical officer, who is a part-time officer, has a greater influence upon the residents of his district, and therefore can get more reforms carried out upon an intimation notice? This is my experience after nine years as a part-time medical officer of health.

Unfortunately the whole-time medical officer in many rural districts is much handicapped by distance and, I know, cannot carry out his duties as they should be; and, again, he is much more under the thumb of his council than the part-time medical officer. He has no sound security of tenure, whereas the part-time medical officer has not got all his eggs in one basket; he, therefore, for this reason has a much freer hand for action. Alike may be said in some degree of the whole-time school medical officer. It is a matter of regret to see the young medical men only recently qualified taking up these appointments, as it shows a want of enterprise and desire to maintain an up-to-date knowledge of their profession. It appears the young medico of to-day in many cases desires to obtain a job with as little work as possible; these appointments present themselves admirably in this respect.

The school medical officer himself, though usually the medical officer of health to the county council or county borough council, does not appear to do much medical inspection himself, but hands it over to a whole string of young assistants, who may be described as "birds of passage," and in many instances he does not even know the location of the schools in his area except on paper; much less does he visit them and take his share in medical inspection. Is he above this?

Now, the assistant school medical officer cannot do a reasonable 12 months' work in the year, as he can only work about 38 weeks in the year on account of the holidays. Nor can he work more than five days a week, as Saturday is a non-school day, and he can only work four hours a day or at the most four and a half hours. He cannot start before 10 A.M. on account of "call-over" and religious instruction, and he ceases at 12 noon, two hours dinner, and commences again at 2 P.M. and ends up at 4 P.M. Much of this work is very shoddily done, and appears but to consist of examination, as is the custom in an out-patients' department of a hospital, and often is completed by the scientific diagnosis of enlarged tonsils and adenoids or of defective sight. It might be asked whether a teacher or nurse could not discover a mouth-breather and carry out "Snellen's eye test" as well as a doctor. The thousands of pounds that are to-day paid in these school medical officers' salaries out of the county and borough rates mainly, in my opinion, are not justified unless the results of the work for which they are paid are more satisfactory than appear to be generally the case.

In support of these statements, which may appear pessimistic at first sight, one has only to read the general text of the Interim Report of the Consultative Council of Medical and Allied Services of May, 1920; and it is gathered that these remarks of mine were foreseen by the members of this most excellent Council to a great extent, inasmuch as the general medical practitioner is recognised as the backbone of the profession and of the health and welfare of the country, as is especially mentioned on pages 8 and 10 of the Report:—

> §24. The general practitioner, if adequately trained, should play a valuable part in the work of the communal services—e.g., antenatal supervision, child welfare, both before and during school age, physical culture, tuberculosis, venereal disease. He will be the first link in any chain of services to improve the conditions of industry, and to prevent any unfavourable or injurious influence upon the health of the workers.

> §39. *Communal services.*—There would be accommodation for communal services such as those for pre-natal care, child welfare, medical inspection and treatment of school children, physical culture, examination of suspected cases of tuberculosis and occupational diseases, &c. These services should, where possible, be aggregated at the primary centre.

It may be gathered from this report that the death day of the whole-time medical officer is not far ahead and most of the work they have been doing for the past ten years or so will pass into the hands of the general practitioner.—I am, Sir, yours faithfully,

A. M. BARFORD, M.D., F.R.C.S., D.P.H.

Chichester, Jan. 24th, 1921.

SUBNORMAL WORKERS AND INDUSTRIAL FATIGUE.

To the Editor of THE LANCET.

SIR,—Among many implications of Dr. C. S. Myers's interesting lecture on Industrial Fatigue, summarised in your last issue, are those that belong to the vocations and conditions of work of men, physically or mentally injured in the war. There is a large class of these men in the country, to which for want of a better word I have applied the term "reduced" or "subnormal" workers—in the sense that they are unfit for ordinary conditions of industry. It is surely time that the guiding principles which emerge from the researches described by Dr. Myers were applied in the daily work not only of "normal" (soi-disant) but "subnormal" men. After some little study of this special category of workers, suffering from many different kinds of more or less permanent disablement, I should like to suggest three points, in confirmation or modification of Dr. Myers's conclusion.

1. Many subnormal become not simply fatigued but exhausted by work, which must, especially at first, be carefully graded to the abnormal fatigability of each individual. This is especially true after nervous shock, in which the will to work often exceeds the power, and, as Dr. Myers says, the inhibition of nervous expenditure is itself inhibited. It is very necessary to go slow with these people, and "ca' canny" not in production but in effort.

2. The importance of *variety* in work is illustrated continually. It is, for example, essential that the subnormal worker on the land must have "supplementary industries," and divide his time between the field and home work. The case of girl operatives in the boot and shoe industry is cited, where 20 minutes' rest in each hour largely increased the output. For many others a change of occupation is equally refreshing and beneficial.

3. We are told that "willingness to become an automaton" is getting rarer. Among my subnormal friends it is, I think, happily extinct. Work for them must be interesting. I asked a nerve-shocked man if he thought men like himself could and would work four hours a day. His answer was: "Certainly, provided they could look upon it as a hobby."

I am, Sir, yours faithfully,

Devonshire-place, W., Jan. 25th, 1921. R. FORTESCUE FOX.

COLITIS IN PNEUMONIA.

To the Editor of THE LANCET.

SIR,—I venture to support Sir W. Hale-White's opinion (THE LANCET, Jan. 22nd, p. 200) that acute colitis is very rare in lobar pneumonia by my own experience of one example only in 558 consecutive cases. I regret that I have no details now to hand of the intestinal symptoms beyond the facts that they appeared during the patient's treatment in hospital and that recovery took place. In three of my cases gastro-intestinal disturbance of some kind or other was the presenting symptom, and with Sir W. Hale-White's letter before me I am vividly reminded of one of these, a man aged 38, who upon the usual interrogation at his admission into the ward said: "For two days I have been suffering with the bloody flux." (He was, I think, a student of old English literature.) This patient had a temperature of 103·6° F. without physical signs of any description beyond the passage of comparatively fresh blood by the bowel. I confess that the possibility of pneumonia did not occur to me, but, exactly as in Sir W. Hale-White's case, within a short time unequivocal signs of consolidation with rusty sputum developed.

Sir W. Hale-White's letter was prompted by an article in your issue of Jan. 15th by Dr. E. Cronin Lowe upon three cases of influenzal pneumonia. In this Dr. Lowe refers to a publication by my colleagues, Dr. Herbert French and Dr. N. F. Hallows, and myself, and says that although we mention the normality of the appendix and bowel generally in our autopsies we do not definitely state whether the bowel was examined in detail throughout. We mentioned the appendix specifically in view of the statements that had appeared that there was a tendency for influenzo-pneumonic patients to develop acute appendicitis and so to emphasise that such was not the case in our experience. As for the alimentary canal as a whole we were satisfied to state that it exhibited no particular change, and I may now add that the whole length was examined critically by Dr. French, which is a guarantee of thorough investigation and of accurate pathological interpretation, in a large proportion of our earlier autopsies, a procedure subsequently neglected in view of the persistently negative findings. This, of course, does not eliminate the possibility of cases with ulceration or necrosis of the bowel having actually occurred and which would have been detected if systematically investigated for, as Dr. Lowe says, the peritoneum gives no evidence of such inflammatory change in the bowel itself. But when one recalls the remarkable seasonal and local peculiarities exhibited by crops of influenzo-septicæmic cases I think it more likely that Dr. Lowe's cases were of a special type.—I am, Sir, yours faithfully,

ADOLPHE ABRAHAMS.

Park-crescent, Portland-place, W., Jan. 25th, 1921.

BILHARZIA-INFESTED SNAILS AND THEIR EMPLOYMENT AS ANTIGEN.

To the Editor of THE LANCET.

SIR,—Although the dams along the course of the rivers of Natal and the many stagnant pools that are produced by the floods swarm with fresh-water snails and other evidences of stream-pollution, the collecting of sufficient numbers of the various species which harbour parasites requires much patient search, and a great deal of success depends upon the state of the weather and wind. At this season of the year about 1 in 6 *Physopsis africana* are infested with schistosomes. Only a small proportion of infested specimens harbour the parasite which causes bilharzia disease in man, a greater number being infested with cercariæ which develop into *Schistosoma bovis*. I have found schistosomes developing in *Isidora tropica*, *Isidora forskali*, *Isidora schackoi jickeli*, *Physopsis africana*, *Limnæa natalensis*, and *Planorbis pfeifferi*, but have not yet secured the adult forms of any besides *S. hæmatobium* and *S. bovis*.

Dr. W. A. Murray has prepared a very efficient antigen from the livers of *Physopsis africana*, which harbour these schistosomes. This has involved the dissection of a large number of specimens; for at least 15 gr. of infested liver-substance is needed in the preparation of the antigen for the complement-fixation test. But livers harbouring the cercariæ of *S. bovis* appear to be just as useful as those infested with the cercariæ of *S. hæmatobium*. Besides giving a positive reaction in patients who harbour the more common bilharzia parasites, the test has given a positive reaction in a patient from China, whose fæces contain the typical unspined eggs of *S. japonicum*. This blood-test, introduced by Dr. Hamilton Fairley, promises to be of even greater value in the diagnosis of *Schistosomum bovis*. The spindle-shaped eggs that I have seen in guinea-pigs experimentally infested with this parasite are on an average 0·175 by 0·04375 mm. in diameter. These parasites do not appear to cause as much bleeding as is common in persons infested with *S. hæmatobium*, and the diagnosis of their presence in cattle and the effect of appropriate treatment will be decided very largely by the reaction of the serums to the antigen test.

On Oct. 19th I asked Dr. Murray to apply the test to the serums of seven sheep that are known to harbour liver-flukes and are now undergoing a course of injections for this complaint; a positive reaction was obtained in each case. An antigen prepared from fresh-water snails infested with schistosomes may, therefore, be used in the diagnosis of bilharzia and fasciola disease in man and beast.

I am, Sir, yours faithfully,

F. G. CAWSTON, M.D. Cantab.,
First Streatfeild Research Scholar.

Durban, S. Africa, Nov. 15th, 1920.

A SIMPLE METHOD OF GROWING THE ACNE BACILLUS.

To the Editor of THE LANCET.

SIR,—Having experienced some difficulty in separating the acne bacillus from the staphylococci which usually accompany it in comedoes and acne lesions by such methods as are known to me, the following procedure has been found to afford an easy means of effecting the separation and of growing the bacillus without trouble.

The medium consists of ordinary peptone broth to which is added 1 per cent. of oleic acid and 1 per cent. of glucose. About 10 c.cm. of the medium is distributed in each tube, and a layer of melted vaseline is run on the surface of the broth. The tubes are then sterilised. A suspension of a comedo crushed in a little normal salt is introduced with a pipette into the medium. The opening thus made in the vaseline is sealed by the application of heat so as to render the cultures anaerobic. After incubating the inoculated tube at 37° C. for four days large numbers of acne bacilli will be found to be present. At this date, in such an environment, the acne bacilli usually outnumber the staphylococci, the growth of which appears to be restrained, and a pure culture is readily obtainable in the usual manner. By concentration of the growth by centrifugalisation from a number of such anaerobic cultures acne bacilli can be obtained in considerable quantities.

I am, Sir, yours faithfully,

W. E. DE KORTE, M.B. Lond.

Cape Town, Nov. 17th, 1920.

MITES AS INTERNAL PARASITES IN MAN.

To the Editor of THE LANCET.

SIR,—*Re* the occurrence of mites as internal parasites in man, discussed at the last meeting of the Medical Society of London and reported in THE LANCET of Jan. 22nd (p. 175), it is interesting to note an article by Mr. R. J. Pye-Smith[1] in which it is stated that he drew off in July, 1899, fluid from a testicular cyst of a patient who some years previously had spent a short time in India, and whilst there had been catheterised for retention of urine in an attack of fever. This fluid was examined by Dr. C. Munro Hector, who found numerous living acari, shed skins, and ova. Unable to identify them, Dr. Hector consulted Mr. A. Denny, F.L.S., who advised him to send the specimen to Mr. A. D. Michael, F.Z.S., then the foremost British authority on acari. Mr. Michael was too busy to undertake this investigation, which he passed on to Dr. E. Trouessart, of Paris, who published the result.[2] Dr. Trouessart wrote:—

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[1] Quarterly Medical Journal, August, 1902, p. 323.

> "I was convinced that it was a sarcoptide, of the sub-family Tyroglyphinæ (*Sarcoptides détriticoles*), nearly related to the *Histiogaster carpio*, Kramer, but a new variety, which I propose to call *Histiogaster spermaticus*, to recall the exceptional circumstances under which this species has been discovered."

Trouessart was surprised to find a species new to him, and concluded that it belonged to the fauna of India and had been introduced at the catheterisation mentioned above. The male and female are both illustrated in Trouessart's account, and this illustration is copied in Pye-Smith's account.

I am, Sir, yours faithfully,
Buxton, Derbyshire, Jan. 21st, 1921. C. SUFFERN.

TABES: ITS EARLY RECOGNITION.

To the Editor of THE LANCET.

SIR,—The letters of Dr. E. F. Buzzard and Dr. E. T. Burke show that I have failed to make the first premise of my argument clear. That argument amounts to: A syphilitic starts treatment while the blood is still negative; he receives 2·6 gr. of "606" and 8 g. of mercury; the disease is eradicated. I have asked for any rare exceptions to the rule to be accurately defined, where the above propositions have been indubitably fulfilled. The first of these two conditions upon which I base my conclusion does not include all cases of primary syphilis, as we know it clinically—far from it. Let us call them Class A. In July, 1919, I checked the case cards of 400 consecutive cases. Actually less than one-third could be placed in Class A. The other much larger class amply accounts for the sad sequence of events emphasised by Dr. Buzzard and Dr. Burke, and as far as that unfortunate class is concerned I naturally agree with all that they have said.

I am, Sir, yours faithfully,
Leicester, Jan. 23rd, 1921. JOHN DONALD.

THE TREATMENT OF PAUPER LUNATICS.

To the Editor of THE LANCET.

SIR,—In this week's issue of the *Medical Press and Circular* appears the first of three articles headed Asylum and Lunacy Law Reform. It is with regret one reads the statements made, in a paper presumably edited by a medical man—e.g., "In these wards (asylum) and airing courts one sees a motley group of lunatics ...... indiscriminately herded together without any attempt at classification and segregation ...... living together in the closest contact and intimacy under the care of male and female attendants, themselves ill-trained, underpaid, and underfed, and for the most part callous and indifferent to the welfare of those of whom they are in charge." Again, "the patients are deprived of their own clothes, clad in a distinctive and humiliating garb, ill-shod, unkempt, often insufficiently protected against the weather, fed on monotonous, innutritious, badly cooked, and repulsively served food," and so on in the same strain.

The writer evidently has not read the reports of the Commissioners of the Board of Control, nor is he aware of the careful and advanced training undergone by male and female mental nurses, necessary to obtain the nursing certificate of the Medico-Psychological Association. These statements may be copied by the lay press and obtain a certain amount of credence by persons as ignorant as the writer of the actual conditions which exist in county mental hospitals, both as regards the treatment of mental cases and the administration of such institutions.

I am, Sir, yours faithfully,
J. B. TIGHE,
Medical Superintendent, Gateshead County Borough
Mental Hospital, Stannington, Northumberland.
Jan. 21st, 1921.

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[2] Archives de Parasitologie, vol. iii., pp. 449-459.

TUBERCULOUS MILK.

To the Editor of THE LANCET.

SIR,—Recent correspondence in the professional journals has revealed considerable diversity of opinion regarding the infectivity of bovine tuberculosis to man. At the last meeting of the council of the Society of Medical Officers of Health representations on the subject were received from the Tuberculosis Group and individual members of the society, and the following resolutions were adopted unanimously:—

> (*a*) That in the opinion of this society it has been conclusively proved that bovine tuberculosis is transmissible to children through the ingestion of infected milk.
> (*b*) That this society regards the evidence of immunisation by the ingestion of living tubercle bacilli in milk as entirely unproved.

I was directed to forward you a copy of these resolutions for the information of your readers.

I am, Sir, yours faithfully,
G. S. ELLISTON,
Executive Secretary, Society of Medical Officers of Health.
1, Upper Montague-street, W.C., Jan. 22nd 1921.

THE CRIPPLING DISABILITIES OF CHILDREN.

To the Editor of THE LANCET.

SIR,—In Mr. G. R. Girdlestone's scheme (THE LANCET, Jan. 8th, p. 74) for thorough treatment of crippled children there is an additional advantage which he leaves unmentioned. A nation-wide series of orthopædic hospitals, with staffs experienced in the best treatment of all sorts of deformities, with methods and appliances constantly improving, will provide from the beginning of the next war many surgeons and many asylums to care for disabled soldiers to the very best advantage, so that the largest proportion possible may come back to industrial efficiency. We have been able to get much done in this war, more than we could have believed, but it took time before this work was given to the orthopædic surgeons, before they had shown us how useful to the wounded their specialty could be. That time will be saved to the wounded in the next war if Mr. Girdlestone's proposals become effective.

I am, Sir, yours faithfully,
Jan. 22nd, 1921. MILES.

Obituary.

RUPERT FARRANT, *M.C.*, F.R.C.S.ENG.

THE tragic death, at the early age of 37, of Mr. Rupert Farrant, until recently assistant surgeon and lecturer in practical surgery and endocrinology at Westminster Hospital, has been widely reported in the press. The youngest son of the late Mr. Samuel Farrant, of Taunton, Somerset, Rupert Farrant had a distinguished career as a student at Westminster and St. Bartholomew's Medical Schools. He qualified M.R.C.S.Eng., L.R.C.P. Lond., in 1906, becoming F.R.C.S. in 1909. Mr. Farrant made a special study of the influence of the thyroid gland on general metabolism, and it was on this subject that he delivered lectures at the Royal College of Surgeons of England as Hunterian Professor on two occasions. The name of Rupert Farrant must be added to the not inconsiderable list of distinguished officers who broke down after the strain of arduous war service, often, as in his case, after having received a decoration testifying to especial gallantry.

ROYAL CORNWALL INFIRMARY, TRURO. — The annual meeting of the subscribers of the Royal Cornwall Infirmary was held recently. The accounts showed a considerable deficiency, and it was resolved that every patient who could do so should make a contribution towards the cost of maintenance. £15,000 are required for the building and renovation of the institution, and towards this sum £10,000 have already been raised.

Medical News.

UNIVERSITY OF OXFORD: LECTURES IN CLINICAL MEDICINE AND SURGERY.—Sir Archibald Garrod, the Regius professor of medicine, is conducting a course of clinical lectures on Tuesdays, at 2.30 P.M., at the Radcliffe Infirmary. Clinical lectures are also being given by Dr. W. Collier, the Litchfield lecturer in medicine, and by Mr. A. P. Dodds-Parker, the Litchfield lecturer in surgery.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The following Hunterian lectures will be delivered in the theatre of the College at 5 P.M. On Monday, Jan. 31st, Professor W. Sampson Handley will lecture on the Pathology and Surgery of Lupus. On Wednesday, Feb. 2nd, Professor Walter G. Howarth will lecture on Mucocele and Pyocele of the Nasal Accessory Sinuses. On Friday, Feb. 4th, Professor C. W. Gordon Bryan will lecture on Injuries of the Diaphragm, with Special Reference to Wounds Jointly Involving Thoracic and Abdominal Viscera.

FEDERATION OF MEDICAL AND ALLIED SOCIETIES.—At a meeting of the Executive Council, held at 11, Chandos-street, London, W., on Jan. 25th, the following societies were elected to membership of the Federation: The Harrogate Medical Society, the Infirmary Medical Superintendents' Society, and the Chartered Society of Massage and Medical Gymnastics.

ROYAL SANITARY INSTITUTE.—An introductory lecture to students attending the several courses of instruction at this institute, 90, Buckingham Palace-road, London, S.W., will be given by Professor H. R. Kenwood on Jan. 31st at 5.30 P.M.

A DINNER "to celebrate the admission of women to the Chemical Society" will be held at the Lyceum Club under the auspices of its University Board on Monday, Jan. 31st, at 8 P.M. Dr. Smedley Maclean will preside.

ROYAL LONDON OPHTHALMIC HOSPITAL.—The annual dinner of past and present students will be held at the Café Royal, Regent-street, on Thursday, Feb. 10th, at 7 for 7.30 o'clock. The chairman will be Mr. J. B. Lawford, consulting surgeon to the hospital. Tickets, at 15*s.* (excluding wine), should be obtained as soon as possible from Mr. Charles Goulden, 42, Welbeck-street, London, W. 1.

ONODI COLLECTION OF NASAL ANATOMY.—As has been announced in THE LANCET the gift of the Onodi Committee of the valuable collection of nasal anatomy has been accepted by the Royal College of Surgeons of England. The College have undertaken to mount and catalogue the specimens, and when completed will present a copy of the catalogue to each subscriber. The following is the list of subscribers up to date:—

	£	*s.*	*d.*
Hon. Staff, Central London Ear, Nose, and Throat Hospital	52	10	0
Hon. Staff, Throat Hospital, Golden-square	25	5	0
Sir William Milligan	20	0	0
Sir James Dundas-Grant, Sir StClair Thomson ... each	10	10	0
Mr. T. Mark Hovell, Mr. A. Logan Turner ... each	10	0	0
Sir John Bland-Sutton, Mr. H. Tyrrell Gray, Mr. W. Douglas Harmer, Mr. Somerville Hastings, Mr. W. G. Howarth, Dr. A. Brown Kelly, Sir H. Bell Longhurst, Mr. W. M. Mollison, Mr. Norman Patterson, Mr. F. A. Rose each	5	5	0
Mr. A. J. Hutchison, Dr. H. Lambert Lack, Dr. D. R. Paterson, Mr. W. Thelwall Thomas, Mr. Herbert Tilley ... each	5	0	0
Sir Charles Ballance, Mr. E. D. Davis, Dr. G. William Hill, Dr. W. Jobson Horne, Dr. A. L. Macleod, Mr. Herbert J. Marriage, Mr. J. F. O'Malley, Mr. C. A. Parker, Sir Charles Ryall, Mr. W. G. Spencer, Mr. G. Wilkinson ... each	3	3	0
Mr Charles J. Heath, Mr. E. A. Peters ... each	3	0	0
Dr. George Cathcart, Mr. Ernest Clarke, Mr. E. Treacher Collins, Sir Frank Colyer, Sir Anderson Critchett, Mr W. H. Dolamore, Dr. John Eyre, Mr. Philip Franklin, Dr. Albert A. Gray, Mr. T. Guthrie, Sir William Arbuthnot Lane, Mr. W. H. MacMullen, Dr. Robert P. Mathers, Dr. Morgan, Mr. Ransom Pickard, Sir Harold Stiles, Dr. W. S. Syme, Dr. James Taylor, Mr. H. Watson Turner, Mr. H. J. Waring, Dr. P. Watson-Williams, Mr. C. Ernest West, Sir G. Sims Woodhead ... each	2	2	0
Mr. William Appleyard, Mr. J. H. Badcock, Mr. Russell Barrett, Dr H. O. Dickin, Dr. Wilfred Glegg, Dr. W. Ainslie Hollis, Dr. Peter Macdonald, Dr. Henry Peterkin, Sir D'Arcy Power, Mr. R. P. Rowlands, Dr. V. R. Sancart, Dr Henry Smurthwaite, Mr. George E. Waugh ... each	1	1	0
Mr. Thomas Rogers, Mr. William Rushton ... each	1	0	0
Mr. Andrew Ellis Wyeter	0	10	0
Dr. George Jones	0	5	0

Mr. Philip Franklin, 27, Wimpole-street, is acting as honorary secretary and treasurer of the movement.

ROYAL INSTITUTION OF GREAT BRITAIN.—The Friday Evening Discourse on Feb. 4th will be delivered at 9 o'clock by Professor A. D. Waller, F.R.S., on the Electrical Expression of Human Emotion.

UNIVERSITY OF VIENNA.—The Dean of the Medical Faculty announces a concentrated post-graduate course to be held from Feb. 7th to 19th. Lectures and demonstrations will be given from 9 to 12 and from 2 to 6 daily. Cardiac Conditions will form the subject dealt with on Feb. 7th and 8th, and will be discussed by Professor K. F. Wenckebach, Professor H. Winterberg, Professor H. Eppinger, Hofrat Professor Jakob Pal, Regierungsrat Professor M. Sternberg, Professor O. Stoerk, and Professor H. H. Meyer. Foreign medical men are invited to apply to the Publisher of the *Wiener Medizinischen Wochenschrift*, 22, Porzellangasse, Vienna IX., for further information. The fee for the course is 1000 kronen for foreigners. Further courses will be held in June, September, and December, 1921.

THE COLLEGE OF NURSING.—A few months ago it was announced that Viscount and Viscountess Cowdray had purchased 20, Cavendish-square, W., and presented it to the College of Nursing for its headquarters, and for a residential club for College members. A 999 years' lease has since been acquired from the Howard de Walden Estate. The Council of the College now recommends that the house shall be exclusively used as a club, and that the garden, having a frontage to Henrietta-street, shall be utilised as a site for the College. To give effect to this recommendation, Viscountess Cowdray has advised the Council that the gift will be increased to a total of £100,000. The conversion of the mansion into the club house will be taken in hand forthwith, and should be completed by midsummer. It is proposed to delay the erection of the College until building operations become cheaper. The College will contain offices, class-rooms, laboratories, lecture halls, &c., while the upper floors will provide over 50 bedrooms, having direct access to the club, which will be named the Cowdray Club.

STUDENTS' MEDICAL SOCIETIES.—We have received the following announcements of forthcoming meetings of medical societies attached to certain metropolitan medical schools:—

Charing Cross Hospital Medical Society.—At the meeting on Feb. 1st Mr. S. Fenwick will speak on Shooting. On Feb. 15th a paper on the Evolution of Some Descriptive Terms will be read by Professor E. Barclay-Smith. On March 1st Sir Frank Colyer will speak on the Comparative Anatomy of the Teeth. The meetings are held at 5 P.M.

King's College Hospital, Listerian Society.—The next meeting will be held on Feb. 2nd, when Dr. G. A. Harrison will read a paper on Functional Albuminuria. On Feb. 16th the Rev. K. E. D. Dauncey will speak on God and Disease, and on March 2nd Mr. G. de M. Rudolf on Animal Mythology of the Middle Ages. On March 16th a clinical evening will end this session's meetings, which are held at 8.15 P.M.

London Hospital Medical Society.—On Feb. 10th Dr. W. J. O'Donovan will speak on Alopecia. On Feb. 24th Dr. G. E. Vilvandré will read a paper on the X Ray Diagnosis of Some Gastric Diseases, and on March 10th Mr. Eardley Holland will speak. On March 17th Mr. W. S. Perrin will read a paper on Intussusception. The meetings begin at 8 P.M.

Middlesex Hospital Medical Society.—The next meeting will be held on Feb. 10th, when Mr. C. H. S. Webb will describe four cases. On Feb. 24th Dr. E. A. Cockayne will speak on Hermaphrodites and Intersexes in Insects, and Mr. W. N. Kingsbury will read a paper. On March 10th Dr. Tuck, D.Sc., will speak on "The Relationship between Chemical Constitution and Physiological Action," and Mr. C. P. Wilson will read a paper. Cases of clinical interest or pathological specimens are demonstrated at all meetings, which are held at 5.15 P.M.

St. Mary's Hospital Medical Society.—The next meeting will be held on Feb. 9th, when Sir Thomas Horder will speak on Doctors in the Making. On Feb. 23rd Sir Humphry Rolleston will speak on Diseases Described by their Medical Victims. On March 9th Professor Parsons will read a paper on the Skull of Modern Englishmen; and on March 16th Mr. W. Clayton-Greene will read a paper. The meetings are held at 8 P.M.

University College Hospital Medical Society.—The annual dance will be held on Feb. 7th (tickets at 15*s.* obtainable from Mr. W. G. Spencer-Cox, honorary secretary). On Feb. 9th Mr. Herbert Tilley will read a paper on Some Experiences. On March 9th Dr. C. Price-Jones will speak on Blood Pictures. On May 11th Dr. T. R. Elliott will read a paper on Gas Poisoning, and on June 8th Mr. Wilfrid Trotter will speak on Minor Injuries of the Brain. Clinical evenings will be held on Feb. 25th, March 21st, and May 23rd, at 8 P.M. Ordinary meetings are held at 8.15 P.M.

UNIVERSITY OF ABERDEEN.—At a special meeting of the University Court, held on Jan. 18th, it was agreed to be desirable that so far as possible the increase of fees in the Scottish universities should be uniform, and it was resolved to increase the inclusive fees in all the faculties. The scales of increase to be adopted were referred to a committee for consideration. The Court resolved that any increase of fees should not apply to students who had already commenced university courses prior to intimation being made by the University Court of the increase of fees.

PUBLIC HEALTH CONFERENCE IN ABERDEEN.—The Scottish Board of Health having asked various bodies to meet with Dr. J. C. McVail, one of the Board of Health officials, and Mr. Fraser, the secretary, a conference was held in the Aberdeen Town House on Jan. 19th. Councillor Doig, convener of the Public Health Committee of the Town Council, presided, and there were also present: Principal Sir George Adam Smith, Dr. J. Crombie, of Parkhill, and Major H. J. Butchart, D.S.O., secretary of the University, representing the University; Mr. D. M. M. Milligan, advocate, representing the Sick Children's Hospital; Mr. John Ellis and Mr. A. Scott Finnie, clerk and treasurer, representing the Aberdeen Royal Infirmary; and Professor Ashley W. Mackintosh and Dr. Lawson, representing the joint hospital scheme. Dr. J. Parlane Kinloch, deputy M.O.H., and Dr. George S. Banks, assistant medical officer for the city of Aberdeen, were also present. A general discussion took place on questions such as sanatorium benefit, the need for economy, and proposals in connexion with the proposed joint hospital scheme for Aberdeen. The views expressed will be reported to the various bodies by their representatives.

SCHEME OF MEDICAL SERVICE FOR SCOTLAND: A PROTEST.—The Medical Guild has issued a memorandum protesting against the scheme of medical service for Scotland put forward in the interim report of the Consultative Council on Medical and Allied Services, and especially to the proposal to extend National Health Insurance to dependents. In a circular letter addressed to members of the profession in Scotland signed by the President of the Medical Guild, Emeritus Professor F. M. Caird, and its honorary secretary, Dr. Frederick Porter, the recommendations in the interim report are summarised, and the report is described as an audacious attempt to foist upon the people an aggressively inquisitorial system. The letter continues: "The profession and the public can now see clearly what certain politicians have been aiming at ever since the passing of the Insurance Act—namely, the subordination of individual members of the profession to the will of an autocratic body, and the invasion of the privacy of family life by State officials." Recipients of the letter and memorandum are asked to state on a post-card whether they approve of the views expressed, or whether they approve of the proposed extension of National Health Insurance. It is added that their replies will be treated as confidential.

SURGICAL AID SOCIETY: PORTSMOUTH BRANCH.—The annual report, which was presented at a meeting held in the town hall on Jan. 20th, stated that 1069 surgical appliances had been supplied during the year. The subscriptions, with interest, amounted to £1269 8*s.* 11*d.*, as compared with £945 1*s.* 4*d.* in the preceding year. There was an excess of £331 13*s.* 10*d.* in expenditure over income which had been paid by the parent society. The Portsmouth branch is the second largest branch in the country.

UNIVERSITY OF MANCHESTER.—At the last meeting by the Council and Senate a resolution was passed expressing the deep regret of the Council and Senate at the resignation by Sir William Thorburn of his position as senior honorary surgeon to the Manchester Royal Infirmary, which involves also his resignation of the Chair of Clinical Surgery in the University. The Council and Senate expressed their high appreciation of his great services to the University, of his contributions to the advancement of surgery, and of his distinguished record and skill in the practice of his profession. The resolution further called attention to the devotion which he had brought to the administrative side of his University work, and the geniality and consideration with which he had treated his colleagues.

The total number of students attending the University during 1920–21 is 2788, as compared with 2549 in 1919–20, 1036 in 1918–19, and 871 in 1917–18. The numbers of new students admitted this session are 548 men and 201 women; last session the corresponding numbers were 941 and 188. 154 of these students come from countries other than England—21 from Egypt, 18 from India, and 10 from South Africa. Serbia has sent 5 students, Australia, Bulgaria, Palestine, Siam, U.S.A., and Switzerland 2 each.

The University prize in medicine has been awarded to Mr. L. J. Witts.

THE INCREASED COST OF DRUGS.—At the last meeting of the Truro (Cornwall) Board of Guardians a district medical officer applied for an increase of salary, and owing to the increased cost of drugs he asked the guardians in future to defray the cost of the drug bill. The guardians agreed to this proposition.

SANATORIUM FOR TUBERCULOSIS IN SOMERSET.—The Somerset County Council has purchased Quantock Lodge, which is to be adapted for the treatment of tuberculosis. The cost of the scheme will be £55,600. The more expensive scheme of erecting an institution at Lyncombe Hill has been abandoned.

BRITISH COMMITTEE FOR AIDING MEN OF LETTERS AND SCIENCE IN RUSSIA.—At the beginning of this year an appeal was published in THE LANCET (Jan. 8th), for funds to enable a certain number of scientific and literary publications to be sent to the House of Science and House of Literature in Petrograd, where the remnant of the intellectual life of Russia is mostly congregated. The British Committee for Aiding Men of Letters and Science in that country has assured itself that such publications will reach their destination, and has made arrangements for their transmission. There are probably many authors who would be willing to send copies of their works in the form of excerpts or otherwise to Russian workers who have been cut off from the outside world since the revolution. The British Committee will be glad to receive any such books or papers of a non-political type, and to send them to Petrograd. It cannot guarantee delivery to individuals, but it can ensure that publications will reach the Houses of Literature and Science. Parcels for transmission should be addressed to the Committee, care of Wm. Dawson and Sons, Ltd., Continental Dept., Rolls Building, Fetter-lane, E.C. Mr. L. F. Schuster is acting as secretary to the movement, and he may be addressed at the British Science Guild Offices, 6, John-street, Adelphi, London, W.C. 2.

ST. BRENDA'S PRIVATE HOSPITAL, BRISTOL.—This new hospital has recently been opened. It is situated in a pleasant and accessible neighbourhood near Clifton Down, and consists of two houses, which have been turned into one and adapted so as to furnish a hospital of about 40 beds, with small wards. The objects of the hospital are (*a*) to provide a private hospital where scientific investigation and treatment of disease may be obtained by those whose circumstances render this impossible save by admission to a charitable institution; and (*b*) to coöperate closely with the patient's own medical attendant. Under no circumstances will patients be admitted without letters of recommendation from their own medical attendants, who will be invited to assist in various ways in the care of the cases. The staff consists of two physicians, two surgeons, one gynæcologist, one ophthalmic surgeon, one rhinologist, one dermatologist, two anæsthetists, one skiagraphist, and one pathologist. All are members of the assistant staffs of the Royal Infirmary and General Hospital. The tariff of fees includes ordinary charges for maintenance and for medical attendance, and special charges for operations, for special investigations, and for confinements, and lie between the small sums now being collected by some of the voluntary hospitals and the larger fees paid by patients in the average nursing home.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.—At a meeting held on Jan. 6th Dr. Donald Hall showed a woman of 38 years, the subject of Left-sided Artificial Pneumothorax induced 12 months before for advanced pulmonary tuberculosis. She was doing well. Mr. H. F. Seymour read notes of a case of Wrist-drop treated by tendon transplantation. The patient, a woman of 45, had cut her left arm with glass, severing the posterior interosseous nerve, and when seen by him six months after the injury had complete paralysis and wasting of the corresponding muscles. He decided against nerve suture on account of the density of the scar tissue and the smallness of the posterior interosseous nerve, and transplanted the flexor carpi radialis obliquely into the extensor communis digitorum. The result had been excellent, within six weeks movements being very nearly normal except for highly skilled tasks such as piano playing. Mr. C. H. Bryant read a paper on the Effects of Errors of Refraction. He spoke of the three types of eye-fatigue: retinal, muscular, and mental. The sensitiveness of the individual was the chief determining factor in the production of symptoms rather than the amount of the defect. Mr. Bryant then discussed in some detail the pathology and symptoms of myopia, hypermetropia, and astigmatism. In astigmatics he considered that when symptoms supervened they were usually attributable to the mental strain of interpreting an indistinct picture. Dr. J. F. Gordon Dill addressed the meeting on the scheme of voluntary hospital insurance inaugurated by him.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lieuts. J. D. Bangay and L. F. Strugnell to be Surgeon Lieutenant-Commanders.

ARMY MEDICAL SERVICE.

Col. J. R. McMunn vacates the temporary appointment of Assistant Director-General.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. J. Hennessy is placed on the half-pay list on account of ill-health.

Majors J. B. Meldon and R. B. Hole, and Capt. R. C. Robertson retire, receiving a gratuity.

Capt. J. E. Dunbar is restored to the establishment.

Temp. Capt. H. N. Webber relinquishes the acting rank of Major.

W. A. Byrn to be temporary Lieutenant.

Officers relinquishing their commissions:—Capt. H. C. Gilmore (retains the rank of Captain). Temporary Captains retaining the rank of Captain: J. N. Deacon and P. Templeton. Temp. Lieut. T. B. Bokenham (retains the rank of Lieutenant).

SPECIAL RESERVE OF OFFICERS.

Capt. C. H. Carlton relinquishes his commission on appointment to the R.A.M.C. (T.F.).

TERRITORIAL FORCE.

Lieut.-Col. C. S. Brebner resigns his commission and retains the rank of Lieutenant-Colonel.

Major J. B. Scott (late R.A.M.C., S.R.) to be Captain and to relinquish the rank of Major.

Capt. L. Ball to be Major.

Capt. E. F. Skinner (late R.A.M.C., T.F.) to be Captain.

Capt. J. Dale resigns his commission and is granted the rank of Major.

ROYAL AIR FORCE.

Capts. J. Fanning and J. P. Hosford are transferred to the Unemployed List.

INDIAN MEDICAL SERVICE.

The King has approved of the retirement of Col. T. Stodart.

DEATHS IN THE SERVICES.

Lieut.-Col. Henry Peers Dimmock, I.M.S. (retired), on Jan. 23rd, at his residence at Sydenham. He joined the Service in 1880 and was attached to the 2nd Baluch Regiment. While civil surgeon at Shikarpur he observed that the excessive gaol mortality in the prisons of Northern India was due to epidemic cerebrospinal fever. The complaint was then more closely investigated and there was substantial reduction of prison mortality. In 1891 he was appointed obstetric physician at the Jamsetjee Jeejeebhoy Hospital and professor of midwifery at Grant Medical College, subsequently principal of the college, and senior medical officer of the hospital. In 1897-98 he was appointed medical member of the Executive Plague Committee.

Appointments.

CATES, J., M.D. Lond., D.P.H. Camb., has been appointed County Medical Officer of Health for Surrey.

DAVIDSON, M., M.A., M.D. Oxon., Assistant Physician to the Brompton Hospital for Consumption and Diseases of the Chest.

EAST, A. G., M.B., B.Ch. Oxf., Honorary Ophthalmic Surgeon to the Royal Cornwall Infirmary, Truro.

REES, H. W. M., M.R.C.S., L.R.C.P., Medical Superintendent of the Training Centre for Out-door Occupations for Tuberculous ex-Service Men, Maidstone.

WALFORD, H. R. S., M.R.C.S., L.R.C.P., Senior Assistant Physician to Union of South Africa Mental Hospital Service.

WHITEWAY-WILKINSON, A. C. S., L.R.C.P., M.R.C.S., District Medical Officer and Public Vaccinator for Kingsteignton.

WILLWAY, C. V. D., M.B., Ch.B. Edin., Surgeon to Stroud Hospital.

Surgeons under the Factory and Workshop Acts: MACAULAY, J. G. M., L.R.C.P. & S. Edin., L.F.P.S. Glasg. (Inverary); RYAN, R. A., L.R.C.P. & S. Irel. (Ripley); DAVEY, S., L.R.C.P., M.R.C.S. Eng. (Caterham); EVANS, R. D., L.R.C.P. & S. Edin., L.F.P.S. Glasg. (Festiniog); PATERSON, W. L., L.R.C.P. & S. Edin., L.F.P.S. Glasg. (Kirkwall); TAYLOR, J. (Keith).

Vacancies.

For further information refer to the advertisement columns.

Altrincham General Hospital, Cheshire.—H.S. £175.

Birkenhead and Wirral Children's Hospital, Woodchurch-road.—H.S. £150.

Birmingham General Hospital.—Res. Anæsth., Two H.P.'s, H.S.'s. £100. Also H.S. to Special Depts. £125.

Birmingham Municipal Anti-tuberculosis Centre.—Asst. Tuberc. O. £500.

Birmingham Orthopædic Centre, Highbury, Uffculme, Sorrento Hospitals.—Medical Superintendent. £800.

Brighton Borough Sanatorium.—Res. M.O. £350.

Bristol General Hospital.—Sen. Res. M.O. £500.

Bristol Royal Infirmary.—Locum Sen. Res. O. £5 5s. per wk.

Bury St. Edmunds, West Suffolk General Hospital.—Res. H.S. £200.

Cambridgeshire County Council.—Tuberc. O. £650.

Canning Town Women's Settlement Hospital, Balaam-street, Plaistow, E.—Female Hon. Ophth. S.

Canterbury, Kent and Canterbury Hospital.—Res. M.O. £175.

Central London Ophthalmic Hospital, Judd-street, W.C.—Hon. P.

Chelmsford, Brentwood Mental Hospital.—Med. Supt. £1000.

Chelsea Hospital for Women, Arthur-street, Chelsea, S.W.—Path. £40.

Croydon County Borough.—Asst. Tuberc. M.O.H. £650. Also Med. Res. Supt., Sanatorium, North Cheam. £500.

Dorchester, Dorset Mental Hospital, Herrison.—Sec. Asst. M.O. £400.

Dreadnought Hospital, Greenwich.—H.P. and H.S. £150.

Federated Malay States Colonial Service.—Pathologist to the Medical Research Institute. £1050.

Great Yarmouth Hospital.—H.S. £250.

Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—Hon. Dent. S.

Hôpital and Dispensaire Français, 171, Shaftesbury-avenue, W.C.—P. to Out-patients.

Hospital for Sick Children, Great Ormond-street, W.C.—Ophth. S.

Hull Royal Infirmary.—Asst. H.S. £150.

Italian Hospital, Queen-square, W.C.—Officer-in-Charge of the X Ray Department

Kent, Borough of Bromley.—M.O.H. £750.

Kirkburton, Storthes Hall Asylum, near Huddersfield.—Asst. M.O £400.

Leeds General Infirmary.—M.O. £100.

Loughborough and District General Hospital and Dispensary.—Res. H.S. £200.

Macclesfield, Cheshire County Asylum, Parkside.—Asst. M.O. £350.

Manchester Children's Hospital, Pendlebury, near Manchester.—Res. M.O. £150. Also Asst. S. £50.

Manchester Royal Infirmary.—H.S. to Special Departments. £50. Also Jun. Asst. £100.

Metropolitan Hospital, Kingsland-road, E.—Asst. P.

Newark Hospital and Dispensary.—Res. H.S. £200.

Newcastle-upon-Tyne, Hospital for Sick Children.—Hon. Asst. P.

Nottingham General Hospital.—H.P. £200.

Paddington Green Children's Hospital, London, W.—P. to Skin Dept. and P. to Out-patients.

Plymouth, South Devon and East Cornwall Hospital.—H.P. £150.

Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Obst. S.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Res. M.O. £200. H.S. £100. Also Ophth. S.

Queen Mary's Hospital for the East End, Stratford, E.—H.S. Also Hon. Ophth. S.

Reading, Royal Berkshire Hospital.—Second H.S. £200.

Royal Dental Hospital of London.—Asst. Dental S. Also Asst. Hon. Radiographer.

St. Mary's Hospital, Paddington, W.—Electro-therapeutic O.

Sheffield Royal Infirmary.—Asst. Cas. O. £150.

Singapore, Straits Settlements.—Asst. Principal of Medical School. $600 per month.

Stannington (Northumberland) Children's Sanatorium.—Female Res. M.O. £250.

Stoke-on-Trent and Stoke Rural Joint Hospital Board.—Res. M.O. £500.

Swansea General and Eye Hospital.—H.S. £200.

University of London.—External Examiners.

West Bromwich and District Hospital.—Res. Asst. H.S. £200.

West Riding County Council.—Dist. Tuberc. O.'s. £600. Asst. M.O. (Res.). £325. Sch. Oculist. £600. Sch. Med. Inspectors. £500.

THE Secretary of State for the Home Department gives notice of a vacancy for an Ophthalmic Specialist Medical Referee under the Workmen's Compensation Act, 1906, for County Court Circuit No. 4, which comprises the Bacup and Rawtenstall, Blackburn and Darwen, Blackpool and Fleetwood, Clitheroe, Garstang, Haslingden and Accrington, Kirkham, Preston and Chorley, and Lancaster County Courts. Applications for the post should be addressed to the Private Secretary, Home Office, and should reach him not later than Feb. 16th, 1921.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Portadown, Strichen, Bridge of Weir, and Kilmacolm.

Births, Marriages, and Deaths.

BIRTHS.

ATTLEE.—On Jan. 24th, at High-street, Eton, the wife of Dr. W. Attlee, of a daughter.

BURNFORD.—On Jan. 18th, at Devonshire-place, W., the wife of Dr. Julius Burnford, of a son.

CRAW.—On Jan. 19th, at Northwich, the wife of J. W. Craw, M.B., Ch.B., of a daughter.

GASKELL.—On Jan. 19th, at Nottingham-place, W., the wife of H. S. Gaskell, M.B., Ch.B., of a son.

WATSON.—On Jan. 18th, at High-street, Sheerness, the wife of Dr. F. H. Watson, of a son.

MARRIAGES.

BAIRD—CLARKE.—*On Jan. 17th, Lieutenant-Colonel R. F. Baird,* I.M.S., to Gladys, youngest daughter of the late Richard Clarke and of Mrs. Clarke, of Bexhill.

MYATT—DOHERTY.—*On the 25th January, at St. James's,* Spanish-place, London, W. J. Myatt, of Barnt Green, Worcestershire, and London, to Dr. Agatha Doherty, of 27, Nottingham-place, London, W. 1, and formerly of Toronto, Canada.

DEATHS.

COONEY.—On Jan. 24th, at The Gables, Kingfield, Woking, John Edwin Cooney, L.R.C.P., L.R.F.P.S., L.S.A., D.P.H. Camb., aged 65.

DIMMOCK.—On Jan. 23rd, Lieutenant-Colonel Henry Peers Dimmock, O.B.E., I.M.S. (ret.).

YELLOWLEES.—On Jan. 19th, at Grangeneuk, Fountainhall-road, Edinburgh, David Yellowlees, M.D., LL.D., in his 85th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Thursday, Feb. 3rd.

OCCASIONAL LECTURE: at 5 30 P.M.
Professor Frederick Hobday: Some Remarks on the Diseases of Animals Contagious to Man (with epidiascope).

MEETINGS OF SECTIONS.

Tuesday, Feb. 1st.

SECTION OF SURGERY: SUBSECTION OF ORTHOPÆDICS: at 5.30 P.M. (Cases at 5 P.M.)

Cases:
Mr. P. B. Roth: Case of G.S.W. of the Elbow.
Mr. Whitchurch Howell: Case of Dislocation of the Hip and Other Deformities.

Other cases will be shown.

At 6 P.M., Dr. G. Murray Levick will give a demonstration on the Reactions and Electrical Treatment of the Intrinsic Muscles of the Foot.

ELECTRO-THERAPEUTICS.—Members of this Section are cordially invited.

SECTION OF PATHOLOGY: at 8.30 P.M., in the Pathological Laboratory of University College Hospital Medical School.
Dr. Penfield: The Golgi Apparatus in Nerve Cells with Special Reference to the Change in Chromatolysis.
Mr. Barrington: Fungus Parasite in Kidney of Rabbit.
Dr. Walshe: A Case of Encephalitis Lethargica.
Dr. Lewis: Laboratory Demonstrations.
Mr. T. W. P. Lawrence: Pathological Specimen.
Professor Boycott: Hypertrophy of Hæmoglobin.

Wednesday, Feb. 2nd.

SECTION OF SURGERY: at 5.30 P.M. (Cases at 5 P.M.)

Cases and Radiographs:
Mr. Gilbert Chubb: Cases and Radiographs illustrating the Technique Employed, and Results Obtained, in the Repair of Fractured Mandible by means of the Free Autogenous Bone-graft.

Paper:
Mr. G. L. Edington: Meckel's Diverticulum as a cause of Intestinal Obstruction.

Thursday, Feb. 3rd.

SECTION OF OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.

A SPECIAL GENERAL MEETING will be held immediately before the ordinary monthly meeting of the Section to consider, and, if approved, confirm, the following alteration in the laws of the Section—viz., that Paragraph 2, Chapter VI. of the laws be amended to read:—

> That the President shall hold office for one year only, and, except by special resolution of the Section, shall be ineligible for re-election.

Short Communication:
Mr. F. C. Pybus: An Unusual Type of a Tuberculous Peritubal Cyst.

Paper:
Dr. T. Watts Eden and Mr. F. Lionel Provis: X Ray Treatment of Uterine Fibroids and Chronic Metritis, with a Record of 76 Cases.

The following have promised to take part in the discussion:—
Dr. Louisa Martindale, Dr. Finzi, and Dr. Gilbert Scott.

Friday, Feb. 4th.

SECTION OF LARYNGOLOGY: at 4 P.M.

Epidiascope Demonstrations will be given by—
The President (Dr. Jobson Horne) and Dr. Irwin Moore.

Cases will be shown by—
Dr. Norman Patterson (two), Dr. Dan McKenzie, and others.

A Report on Two Fatal Cases of Tonsillectomy will be given by Dr. McLeod.

SECTION OF ANÆSTHETICS: at 8.30 P.M.

Paper:
Dr. Rowbotham and Dr. Ivan Magill: Anæsthesia in the Plastic Surgery of the Face and Jaws.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

MONDAY, Jan. 31st.—5 P.M., Hunterian Lecture:—Prof. W. S. Handley: The Pathology and Surgery of Lupus.

WEDNESDAY.—5 P.M., Hunterian Lecture:—Prof. W. G. Howarth: Mucocele and Pyocele of the Nasal Accessory Sinuses.

FRIDAY.—5 P.M., Hunterian Lecture:—Prof. C. W. G. Bryan: Injuries of the Diaphragm, with Special Reference to Wounds jointly involving Thoracic and Abdominal Viscera.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, Jan. 31st.—12.15 P.M., Dr. Burnford: Pathological Demonstration. 2 P.M., Dr. Simson: Diseases of Women. Dr. Morton: X Ray Department. 5 P.M., Lecture:—Dr. A. Saunders: The Digestive Disturbances of Adults.

TUESDAY.—12 noon, Mr. T. Gray: Demonstration of Fractures. 2 P.M., Dr. Pernet: Skin Department. 2.30 P.M., Mr. Addison: Visit to Medical Wards. 5 P.M., Lecture:—Dr. Burnford: Morbid Anatomy of the Digestive Tract.

WEDNESDAY.—11 A.M., Mr. MacDonald: Demonstration of Cystoscopy. 2 P.M., Mr. Addison: Operations. Mr. Gibb: Eye Department. 5 P.M., Lecture:—Mr. D. Armour: Physical Signs and Diagnosis of Abdominal Tumours.

THURSDAY.—2 P.M., Mr. Baldwin: Orthopædic Department. Mr. B. Harman: Eye Department. Dr. Grainger Stewart: Medical Out-patients. 5 P.M., Special Lecture:—Dr. T. S. P. Strangeways: Rheumatoid Arthritis (open to all medical practitioners).

FRIDAY.—9.30 A.M., Dr. Grainger Stewart: Neurological Demonstration. 10 A.M., Dr. McDougal: Electrical Department. 2 P.M., Mr. Banks Davis: Disorders of the Throat, Nose, and Ear. 5 P.M., Lecture:—Mr. Baldwin: Appendicitis. (II.)

SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Dr. Owen: Medical Out-patients.

Daily:—10 A.M. Ward Visits. 2 P.M., In-patient, Out-patient Clinics and Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Jan. 31st.—10 A.M., Mr. W. E. Tanner: Surgical Out-patients. 2 P.M., Dr. A. J. Whiting: Medical Wards. 2.30 P.M., Mr. E. Gillespie: Surgical Operations. Mr. J. B. Bannister: Gynæcological Out-patients. Dr. J. B. Alexander: Medical Out-patients. 4.30 P.M., Clinical Demonstration:—Mr. W. E. Tanner: Selected Surgical Cases. 6 P.M., Dr. F. L. Provis and Mr. T. H. C. Benians: Venereal Department.

TUESDAY.—9.45 A.M., Lieut.-Col. R. H. Elliot and Mr. N. Fleming: Eye Operations. 2.30 P.M., Mr. H. W. Carson: Surgical Operations. Mr. C. H. Hayton: Diseases of the Throat, Nose, and Ear. Dr. Metcalfe: X Ray Department. 3 P.M., Clinical Demonstration:—Mr. C. H. Hayton: Cases of Vincent's Angina. 5.30 P.M., Dr. C. E. Sundell: Children In-patients.

WEDNESDAY.—2 P.M., Mr. C. H. Hayton: Throat Operations. 2.30 P.M., Dr. W. J. Oliver: Skin Department. Dr. J. B. Alexander: Medical Out-patients. Clinical Demonstration:—4.30 P.M., Dr. J. B. Alexander: Cases Illustrating Thyroid Insufficiency. 5 P.M., Dr. Provis and Mr. Benians: Venereal Department.

THURSDAY.—2.30 P.M., Mr. N. Fleming: Eye Out-patients. Dr. A. J. Whiting: Medical Out-patients. Mr. H. W. Carson: Surgical Out-patients. Mr. J. B. Bannister: Gynæcological Operations. Dr. J. Metcalfe: X Ray Department. 3 P.M., Clinical Demonstration:—Mr. H. W. Carson: Selected Surgical Cases.

FRIDAY.—2 P.M., Mr. Howell Evans: Surgical Operations. 2.30 P.M., Dr. C. E. Sundell: Children Out-patients. Mr. E. Gillespie: Surgical Out-patients. 3 P.M., Clinical Demonstration:—Mr. E. Gillespie: Cases of Surgical Interest. 5 P.M., Dr. Provis and Mr. Benians: Venereal Department.

SATURDAY.—3 P.M., Mr. H. W. Carson: Surgical Wards.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Feb. 3rd.—4 P.M., Lecture:—Dr. W. J. Pearson: The Premature Child.

MIDDLESEX HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON).

TUESDAY, Feb. 1st.—3 P.M., Emeritus Lecture:—Surg.-Rear-Admiral Bassett-Smith: Mediterranean Fever.

THURSDAY.—3 P.M., Emeritus Lecture:—Surg.-Rear-Admiral Bassett-Smith: Malaria.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W.

MONDAY, Jan. 31st.—5.30 P.M., Post-Graduate Lecture:—Dr. S. Goodall: Cardio-analysis.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.

Post-Graduate Course on Infant and Child Welfare.

TUESDAY, Feb. 1st.—10.30 A.M., Dr. E. Pritchard: Practical Demonstrations on the Management and Feeding of Infants and Young Children—Demonstration V., The Artificial Feeding of Infants.

THURSDAY.—3 P.M., Demonstration VI., The Modification of Milk.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

THURSDAY, Feb. 3rd.—6 P.M., Chesterfield Lecture:—Dr. W. Griffith: Parasitic Diseases of the Skin.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

FRIDAY, Feb. 4th.—9 P.M., Lecture:—Prof. A. D. Waller: The Electrical Expression of Human Emotion.

ROYAL SANITARY INSTITUTE, 90, Buckingham Palace-road, S.W.

MONDAY, Jan. 31st.—5.30 P.M., Prof. H. R. Kenwood: Introductory Lecture to Students attending the Several Courses of Instruction at this Institute.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

TUESDAY, Feb. 1st.—4.30 P.M., Lecture:—Mr. C. Roberts: Treatment of Hernias.

SALFORD ROYAL HOSPITAL AND ANCOATS HOSPITAL POST-GRADUATE DEMONSTRATIONS, at the two Hospitals alternately.

THURSDAY, Feb. 3rd.—4.30 P.M., Mr. Jefferson: Gall-stones. (At Salford Royal Hospital.)

ST. MARY'S HOSPITALS, MANCHESTER, POST-GRADUATE LECTURE, at Whitworth-street West Branch.

FRIDAY, Feb. 4th.—4.30 P.M., Dr. Fothergill: The Interpretation of Physical Signs in Abdominopelvic Surgery.

MANCHESTER BABIES' HOSPITAL.

Post-Graduate Lectures and Demonstrations in the Onward Buildings, Deansgate, or at the Hospital, Slade-lane.

SATURDAY, Feb. 5th.—3.30 P.M., Dr. Chisholm: The Treatment of the Premature Child. (At Onward Buildings.)

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Notes, Short Comments, and Answers to Correspondents.

THE DISPENSARY, THE SANATORIUM, AND THE TUBERCULOSIS OFFICER.

THE WEAK LINKS IN A CHAIN.

BY P. C. VARRIER-JONES, M.A., M.R.C.S., L.R.C.P. LOND.,
AND
SIR G. SIMS WOODHEAD, K.B.E., M.D., LL.D.

IN our notes on experiences of colony treatment and "after-care" of tuberculous patients we have, through the courtesy of the Editor of THE LANCET, been able to bring to the notice of our fellow workers our views concerning the solution of the tuberculosis problem as it now presents itself. After close and prolonged study of the position, with due attention to the experience of our predecessors, we definitely conclude that it is impossible to keep different types of tuberculosis in different institutions, and that in the attempt to do so a fundamental error has been committed. In the medical text-book there usually occurs some bald and emphatic statement to the effect that "sanatoriums are institutions for the treatment of early cases of consumption"; upon this basis is founded the whole "sanatorium benefit" of the National Insurance Act; but we are glad to see it is no longer the text and argument on which the most recent report of the principal medical officer of the Ministry of Health is based.

Sanatoriums Intended for Early Cases.

The patient with arrested tuberculosis is able to work at a suitable occupation, and is better mentally, morally, and physically for so doing, but to prevent recurrence of his disease strict limits must be set upon both his work and his play. It is difficult to believe that the contention now generally accepted should have as its basis mere suggestion or hypothesis; but can we find any evidence that it has or ever had any sure basis of observation, experience, or statistics? The understanding that sanatoriums are for the reception of early cases has been firmly impressed on the lay public, and even now it receives lip service, not only from most medical officers of health with whom we have come in contact, but from many tuberculosis officers and superintendents of sanatoriums. But in conversation these men—those abroad as well as those at home—generally make some such further statement as "sanatoriums are *meant* for early cases, but we do not get them; we must therefore do the best we can with the patients that come to hand. We are playing a losing game, but after all, our work is to look after the institution." In other words, it is sought to bend the patient to the system, and not to devise a system that will benefit the patient.

Sanatoriums as Hospitals.

At the dispensaries some attempt may be made to sort out so-called early cases, but very few come under the observation of the tuberculosis officer, and so many middle cases are in such urgent need of treatment that sanatoriums receive very few early cases. The various "public" and "municipal" sanatoriums are practically monopolised by middle and advanced cases, many of which latter are only sent to hospital or home to die. The misreading of the very unsatisfactory statistics published is due to the presence of these cases in sanatoriums; which fact also affords some explanation of the little provision made for the reception and treatment of these more advanced cases. In sanatoriums where high fees are paid some attempt has been made to return to hospital those who are not in an early stage of the disease, but even here the desire to help those in a more advanced stage usually overcomes the discretion of the medical officer. Conditions under which early cases were to be treated have gradually been adapted to treatment of more advanced cases, and the sanatorium has become a hospital for incurables. Indeed, one medical officer of a sanatorium recently declared that he had to run it as a hospital. This state of affairs probably holds in "public" and "municipal" sanatoriums rather than in private institutions, where numerous patients can afford to live for years, and if a breakdown occurs sometimes to return for a further stay. The working man, however, is sent to a sanatorium only when he can work no longer, and then for a period of from three to six months, during which time he undoubtedly improves; only too frequently to break down again later.

False Value of Statistics.

The statement is often made that unless the sanatorium be filled with early cases statistics must suffer. But statistics are already practically valueless with reference to early cases. The patients must not suffer because of the desire of some enthusiasts to obtain apparently good results. Dispensaries and after-care committees should at present take charge of really early cases, but a short term in a sanatorium is an admirable provision to ensure the rest and sanitary or hygienic education which many of them most require. They are neither open cases nor infective, nor a danger to the community; with a short term of sanatorium treatment, with improved home surroundings, regulated work, play, and rest, many of them will do well. Some are sure to require colony treatment at a later period; they must therefore remain in touch with the dispensary, which is the best clearing-house. Dr. James Niven, medical officer of health for Manchester, has thrown the whole matter into a true perspective:—

> "Much dissatisfaction is expressed with the results arrived at from sanatorium treatment, having regard to the heavy expenditure which such treatment entails. This poverty of results was anticipated in Manchester when the sanatorium movement threatened to overshadow the public health preventive aspects of the question, though it was clearly realised by those who had done practical administrative work that the success of other public health measures was dependent on the provision of a certain amount of sanatorium treatment. From the public health point of view—and the successful tuberculosis officer must be essentially a preventive man, even if he is very skilful clinically—what want of success attends sanatorium treatment is largely due to the tendency to regard sanatorium treatment as merely a field for clinical and administrative skill."

Sanatoriums are designed for the reception of early cases only, but they are seldom or never put to their proper use. We must recognise that a comparatively small number of early cases find their way into the beds provided for them; at the same time no adequate provision is made for the treatment of the more advanced cases, probably simply because we ignore the fact that although by far the greater proportion of cases of pulmonary tuberculosis are not early cases they still need special care and treatment. In this connexion a series of definite problems come up for solution.

First, we must realise that all effort will prove fruitless unless treatment and prevention advance together. This brings us to the root of the question. It is sometimes stated that the general practitioner could diagnose all early cases and bring them at once to the notice of the tuberculosis officer, and that this is the only remedy for the present unsatisfactory state of affairs; we have already pointed out[1] that the fault does not lie with the general practitioner; it is the outcome of a desire to accumulate statistics of early cases only, and of our failure to deal satisfactorily with all cases as they come before us.

Professor E. W. Hope indicates this weak spot when he asks:—

> "What, for example, could be said in support of a municipal hospital intended for typhoid fever or small-pox which refused to accept any but those cases which were slight, and were unlikely to add to the mortality statistics of the hospital? After all the sanatorium must be regarded as a link in the chain of sanitation. Its usefulness must not be cramped by exclusion of the very patients who most needed care and attention. In the term "sanatorium benefit," as employed in the Insurance Acts, there were included dispensary treatment and domiciliary treatment, and grants of extra nourishment. All of those measures, however, failed in much the same way that they would fail if applied to any other form of communicable disease which fell short of dealing effectively with the centre of infection."

There now remains no excuse for ignoring the really important middle cases for whose care and treatment so little proper provision has as yet been made.

Professor Hope continues:—

> "It may be asserted with absolute confidence that institutions for the reception of tuberculous patients at all stages of illness are essential for the prevention of tuberculosis, just as in the past hospitals for typhus were essential for the extinction of that disease ...... the exclusive selection of cases with a view to good sanatorium statistics and the limitation of institutional care to those is, from the preventive point of view, preposterous. The point would be made clear by a comparison with the segregation of ordinary infectious sickness."

Mr. White, a member of the Liverpool Public Health Committee, following Professor Hope, and protesting against further classification and segregation, pointed out—

> "that some time ago Dr. Hope appropriated a particular hospital for advanced tubercular cases, and within six weeks the poor people of the city declined to have anything to do with it. Segregation in one ward in the institution was then tried, but the sequel was the same."

Lack of Medical Training in Treatment of Tuberculosis.

One patent reason for this want of understanding and lack of action—we speak plainly on this essential point—is that tuberculosis officers are compelled to treat what they cannot find, sometimes because they are incapable of finding it and sometimes because it is no longer there to be found. During their medical course they have neither been taught to seek nor recognise the really early signs and symptoms of consumption, nor have they had their attention called to the proper treatment of the "middle" cases which in our large towns and cities swarm to tuberculosis dispensaries. There examination of each patient is made perhaps once a week, but the numbers prevent the possibility of more than cursory examination and palliative treatment. Under these conditions little can be done to cure a case or to isolate it and so prevent the spread of the disease. A newly appointed clinical officer, unable perhaps because of his youth to gain the confidence of the general practitioner, finds himself in an ill-defined and insecure position, faced with an extremely complex problem, compelled to work in a groove, with little experience or knowledge of prevention, or if possessing such knowledge, not allowed to use it. He often recognises that the routine work of the dispensary is bearing little or no fruit, but he is kept in a subordinate position and loses heart; his initiative is crabbed and his usefulness crippled. And so often lately has the same story been repeated to us that we do not hesitate to bring the matter under the notice of those interested.

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[1] Industrial Colonies and Village Settlements for the Consumptive, p. 85.

Not only are costly sanatoriums provided for the reception of cases which do not exist, but a system of dispensary *organisation has sprung up alien to the problem and* therefore inadequate for its solution.

We recognise, of course, that we are again putting forward an unacceptable thesis, as when we formulated the idea of the industrial colony—as opposed to the farm colony—and its natural corollary, the village settlement. Our views upon that subject, however, have now been accepted by many as containing some germ of truth and by a few as sound and completely vindicated, whilst by those who have taken the trouble to study them they have been fairly widely adopted. Dr. W. E. Stewart, the head of the Mountain Sanatorium, Hamilton, Ontario, Canada, has written that whilst good food and fresh air are no doubt essential agents in the treatment of tuberculosis, so also are regulation of exercise and rest, freedom from anxiety, mental occupation, and content.

> "Each case presents new features for consideration, and only the *skilled and trained man is capable of applying* the new general principles on which treatment may be successful. ...... An outdoor occupation may be preferable to an indoor one, other things being equal, but the trouble is that other things cannot and never will be made equal. If weather were always good and jobs as varied, suitable, light, and remunerative outside jobs would be chosen, but suitable indoor jobs are much more numerous."

Work for Consumptives.

The tuberculous man must learn to live the life of a consumptive, and he must be provided with permanent work. Blind-alley occupations are not for him; he must be capable of earning as much as possible to the end, for at the end he will require it most. Dr. Stewart puts the matter both tersely and forcibly thus:—

> "A workman's trade is his capital, slowly acquired like a merchant's business, and to ask him to give it up is like asking the merchant to burn down his warehouse, destroy all his records, cancel all his contracts and commissions, and begin, without resources, to build up another and a different business." Further, "when a workman trained in a trade gives up that trade and begins to learn a different one the loss to the individual and the State is the same kind of loss as the burning of a factory. It is a destruction of an asset, personal and national. Teach a clerk to become a secretary, a machinist to develop into a draughtsman, make a carpenter a supervisor of work, and you are on the right lines."

The sanatorium idea was an application to the working man of the treatment of the well-to-do, without any careful study of the principles involved; similarly, the format of the dispensary was that of the physician's consulting-room. In the one case the patient can afford to take the proffered advice, but in the other no advice or persuasion will induce the working man, if he is an early case, to accept the label "consumptive," to be harassed by health visitors and sanitary inspectors, and to give up a remunerative occupation for the "open-air job" offered in exchange. At this stage, when the man is not yet dangerous to the community, *sound advice* as to home conditions and social life coupled with a term of rational sanatorium treatment (if he can be persuaded to accept it, and if the sanatorium is not filled with middle and advanced cases) is the most satisfactory line of procedure. So long as we adhere to the accepted inexact classification and irregular system of case grouping we can expect no larger return in the matter of prevention. We know that had we no centres of infection we should have no early cases of consumption to deal with, but our efforts to remove these centres are half-hearted. It would be impossible at once to remove all centres of infection, but we should not on that account relax our endeavours. Every tuberculosis officer and every medical superintendent of a sanatorium, now often engaged on mere routine work, should be asked to concern himself with some really constructive policy into which he can throw both mind and heart.

Difficulties of the Tuberculosis Service.

The young tuberculosis officer takes his place under an able administrative chief, in whose person are combined the function of medical officer of health, school medical officer, and chief tuberculosis officer, but who, in the very nature of things, can have little special knowledge of tuberculosis. We are told that tuberculosis touches many sides of administration, housing, sanitary questions, and the like; that these *are essentially the concern of the medical officer of health*, and that no alteration or variation of the scope of the latter's powers can be made with impunity. We admit that the problem is full of complexities. Medicine, sociology, economics, psychology are woven into the web of the tuberculosis question as they are into that of no other disease afflicting civilised man. As Sir Arthur Newsholme has written: "The greater part of a consumptive's life is spent at home, often under unsatisfactory conditions both for the patient and for his family, and the supervision of his home life by the tuberculosis officer and the health visitor, even when this is frequent and sympathetic, does not meet his needs. If the patient is to have the best possible prospect of recovering, and if his family are to be safeguarded against infection, he will in many cases need (*a*) improved housing, (*b*) occupation adapted to his physical capacity, &c., &c., (*c*) the family income will need to be supplemented. These requirements have not hitherto been met."

We would ask what chance is there of these conditions being met under our present dispensary system? The dispensary medical officer—probably well trained in ordinary clinical diagnosis and treatment, but with little knowledge of consumption and the consumptive, bound by the rules of an inelastic service, subservient to a chief whose duties prevent any practical contact with him—is discouraged and hampered on all hands. We say the system is wrong, and except in rare and notable instances a complete failure.

Dr. F. J. H. Coutts, commenting on Dr. J. E. Chapman's report,[2] corroborates Dr. Niven's contention that the tuberculosis officer too frequently approaches the tuberculosis problem from a purely clinical point of view, ignoring the wider outlook of preventive medicine; and so long as he is regarded as being in charge of a tuberculosis dispensary or of a sanatorium; so long as his duties consist merely in making so many visits, attending so many hours, and providing such-and-such statistics; so long as he is not expected to show any initiative or devise plans and methods of general treatment; so long must he be simply an appanage to the public health department. Moreover, it must be recognised that some tuberculosis officers never had any opportunity of acquiring either the necessary administrative experience or the requisite special knowledge or technical skill before they were called upon to take up their special work.

Tuberculous patients cannot be classified and labelled "Stage 1," "Stage 2," or "Stage 3," and so left. Little progress can be made until the system, or lack of system, now in vogue is altered, and the hand of officialdom is removed. The motive power at present must be applied from below by personal endeavour and original research, for in many areas rules and regulations are alone considered necessary. We are glad to see that in the most recent report of the principal medical officer of the Ministry of Health this outlook is disavowed and discouraged.

Improvements Necessary for Advancement.

Writing from time to time on the colony system for the treatment and prevention of pulmonary tuberculosis, we have always insisted that it can be but part of a larger whole. Speaking generally, we have been astounded to find how stereotyped and even discredited methods have been allowed to assume sway even in a new medical service. Sir Henry Gauvain's message quoted in the *Times* report of the Liverpool Conference of the National Association for the Prevention of Tuberculosis should give us pause: "Our army is ill-trained, ill-equipped, ill-organised, lacking in leaders with full powers to act." The head of the tuberculosis department should not be hampered by too varied duties or enmeshed in red tape; he should possess more than knowledge which at the worst is *incomplete and at the best can* be obtained only secondhand; and he should have ample time and facilities to study experiments, observations, or publications bearing on his own work. He should also be able to advise, direct, and superintend a really virile attack against the disease. Nothing effective can be done when, as in many instances, the elements of knowledge and experience are lacking. The tuberculosis officer cannot perform his duties even passably well unless he possesses a real working knowledge of (1) the extent to which treatment of patients in their own homes is beneficial; (2) how far work (which is a therapeutic measure) can be arranged for, either in a borough or county area; (3) the economics of the problem; (4) the home conditions of the people and the relation of these to questions of infection; (5) workshop and factory conditions; (6) hours of toil and industrial fatigue—in short, a knowledge of the whole complex of conditions involved in the medical, social, and psychological study of the disease.

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[2] Annual Report of the Chief Medical Officer to the Ministry of Health for 1919–20, p. 149.

Few tuberculosis officers have been encouraged to apply themselves to these various studies, and few are able to supply information, even on the most important matters concerning their patients. These are faults of the system under which they work, coupled with the lack (except in one or two specially favoured schools) of training of medical men in the diagnosis and treatment of tuberculosis. The tuberculosis officer struggles on with mere routine examination of chests, seeking early cases, missing some, labelling others; the latter, whatever their stage, are passed through the same routine treatment of a few months' residence at a so-called sanatorium, which is very often an annexe of an infectious diseases hospital or some similar makeshift. His work is judged almost entirely by the number of examinations he makes, for the figures he provides help to make impressive the annual report.

Weaknesses of the Dispensary System.

Work is being done, but that this work is productive of little good seems beside the question. The Ministry of Health has laid it down that patients must be seen and treated at a dispensary. The tuberculosis officer must continue to examine and report. How greatly would it benefit the patient and the community if the tuberculosis officer were encouraged to deal with a case thoroughly, and to offer the consumptive an opportunity to lead a reasonable life, doing his 30 per cent. or 50 per cent. of work under conditions in which the danger of infection to others had been eliminated or reduced to a minimum.

The expert knowledge which the tuberculosis physician should possess might then be utilised to its fullest extent; constructive work would occupy his thoughts and energies. The value and results of medical examination of patients and contacts would be increased a hundredfold. The full return for medical advice would be obtained, for the patient would have the opportunity to benefit by it. What action is possible in the case when patients are passed through the dispensary at the speeds of which we constantly hear? Can we wonder that the dispensary system runs a danger of being set down as a gigantic failure?

A mere examination, a mere visit of the tuberculosis officer to a patient's home, can neither ensure treatment nor prevent the spread of disease. Not only in counties but in county boroughs the death-rate from tuberculosis and the number of notifications have failed of late to decrease as they should despite the recent advances of medical science; yet the old routine is adopted or still followed. The tuberculosis dispensary is apt to become a field for little more that a poor-class panel practice devoted entirely to tuberculosis—an out-patient department, stocked with drugs which are mostly placebos, or an annexe of an office for the compilation of statistics. Such was not, as we read it, Sir Robert Philip's idea and plan of the dispensary system, which appears to have degenerated into its present hidebound condition, with a personnel isolated and of no importance in a scheme in which it should form a central pivot. The dispensary officer, the sanatorium physician, and in some localities the colony superintendent, are kept in their little compartments; there is no expert head, for the medical officer of health of any large area has obviously neither the time nor the special training to enable him to assume the control of a complete tuberculosis scheme.

Conclusion.

When we see the immediate and satisfactory results obtained in the industrial colony and by the after-care system, and have practical demonstration of their smooth working and adaptability to the existing problem: when we recognise the widespread desire to copy the system and put it into practice in areas other than Cambridge, we are compelled to conclude that there is still much to be done before the treatment of the tuberculous patient is satisfactory. It was anticipated that sanatorium benefit was about to be handed over by the Insurance Committee to the public health authorities, and that a thorough transformation might be possible; but the opportunity has been allowed to go by, for the present at any rate, but let us hope that we may not be compelled to pass through a further period of inaction and of abject failure to stem the progress of tuberculosis.

LIFT ACCIDENTS IN PARIS.

THE large and increasing number of accidents in Paris lifts was the subject of a report recently by M. Walckenaer, the Inspector-General of Mines.[1] The report covers the period 1905-1919 in which there occurred no less than 94 accidents, of which 37 were fatal. The numbers of accidents in 5-year periods were 22, 32, and 40. More than half the accidents were due to crushing between the framework of the lift and one of the floors or ceilings of the building. It is recommended that automatic stoppage should be enforced, so that whenever the lift door is open no movement is possible. This device would have prevented the greater number of the accidents, but in order to enforce its adoption it will be necessary to exclude all lifts not worked by electricity.

EARLY CARCINOMA OF THE BREAST: A QUERY.

F.R.C.S. writes: In works on surgery written about 1850 and also since, references are given to a case of very early carcinoma of the breast in a child, and in every case the reference is the same: "Lyford, LANCET, vol. xii., p. 332." Unfortunately, no account of this can be found in the place indicated. Also another reference is made to a case of early carcinoma reported by "R. Carmichael": in this case no book is mentioned. I shall be greatly obliged if any of your readers can give me the correct references to these two cases.

A. A. D.—We have not before us the circumstance which has led to the indignant communication. The Registrar keeps the official Register of qualified medical practitioners. The purpose of the Register is to enable the public to discriminate between those who are and those who are not qualified. If the Registrar is not informed of the address of a member of the medical profession, after due preliminaries the name must be removed. For, obviously, if the Council are not aware of the continued existence of the practitioner, to allow his name to remain on the official list is to invite impersonation, by which the public would be swindled.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. D. K. Adams, Glasgow; Assistant Registrar-General, Lond.; Dr. A. Abrahams, Lond.

B.—Barduff, Ltd., Lond.; Dr. A. M. Barford, Chichester; Mr. W. G. Ball, Lond.; Dr. G. Blacker, Lond.; Dr. D. S. Brachman, Lond.; Dr. J. W. Bigger, Dublin; Dr. W. L. Burrage, Boston; Brighton and Sussex Medico-Chirurgical Society, Sub-Librarian of.

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H.—Hospital Library and Service Bureau, Chicago, Director of; Dr. H. Head, Lond.; Mr. G. Hugh-Jones, Lond.; Dr. L. Hess, Vienna; Mr. W. F. Havard, New York; Harveian Society, Lond.; Dr. M. E. Harding, Lond.; Mr. C. J. Heath, Lond.; Maj.-Gen. Sir P. Hehir, I.M.S. (retd.); Home Office, Lond.

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Z.—Dr. S. S. Zilva, Lond.

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[1] Compt. Rend. des Séances du Conseil d'Hyg. Pub. et de Salub. du Dept. de la Seine, 1920, No. [illegible], p. [illegible].

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Two Addresses

FUTURE OF THE POOR-LAW INFIRMARIES.

Delivered at the Resumed Discussion before the Harveian Society of London on Jan. 27th, 1921.

I.

By A. G. STEWART, M.A., M.D. F.R.C.S. EDIN.,
MEDICAL SUPERINTENDENT, PADDINGTON INFIRMARY.

IN considering the future of the Poor-law infirmaries it is essential to understand the present position of affairs, and I beg to thank you for allowing me to try to explain some matters which, judging from some of the remarks of previous speakers, are not understood. Too frequently criticism consists of vague general abuse. Definite charges can be met, and they at any rate serve a useful purpose, inasmuch as they form a basis on which to discuss improvements. The problem of the Poor-law infirmary as regards London and the larger towns is somewhat different from that in country districts. In the former the infirmaries are under separate administration, and are naturally better equipped than in the latter, where there are special wards in the workhouse for the sick. I think it fair to make this point, just as previous speakers in referring to voluntary hospitals were obviously thinking of large teaching general hospitals and not of cottage hospitals.

THE MYTH OF THE CHRONIC AGED PAUPER.

About 40 years ago the general voluntary hospitals treated all acute cases. The function of the infirmary was to provide for the chronic and incurable sick, and they were staffed and equipped on this assumption. During the past 30 years there have been great strides in medical treatment and naturally a much bigger run on the beds of the hospitals. It is now admitted that the voluntary hospitals can no longer cope with all the acute work of the country. At any rate, those cognisant of the position know that for many years the infirmaries have had to treat many cases of fracture and other accidents, and of broncho-pneumonia, as well as miscarriages, and such emergency surgical work as "acute abdomens." The medical profession generally would be surprised if it knew the extent of this work. May I be allowed to give a few figures to contradict a prevalent idea that infirmaries only treat chronic cases? I am purposely quoting pre-war figures so that it may not be thought that the war has produced these changes. For the year 1914 50 per cent. of our total cases admitted made a stay of less than one month, and 75 per cent. less than two months. As the average duration of stay in such hospitals as University College, Westminster, &c., is 37 days (for all figures referring to voluntary hospitals I might say my authority is the last edition of "Burdett's Hospitals and Charities"), it will be obvious that some 60 per cent. at least of our beds catered for the same class of case as the voluntary hospitals. I only refer here to the question of duration of stay. Applying this to Mr. E. W. Morris's own figures for the whole of London we find 12,000 infirmary beds dealing with acute cases, whereas the total hospital beds in London number 14,000. Yet it is actually stated that we treat "only chronic and incurable cases." This is the kind of criticism to which I maintain we have a right to object. Again, to contradict a common opinion that we deal only with the aged, I might add that 18 per cent. of our admissions were under 8 years of age, 30 per cent. under 10 years, and only 20 per cent. over 60.

Another prevalent opinion is that the infirmaries deal with the sick of the workhouses, or, in other words, with paupers. It is constantly being said that they are so unpopular that people are unwilling to enter them. Even such a great authority on hospital matters as Mr. Morris, of the London Hospital, stated at the last meeting that the Poor-law infirmaries should not be confined to paupers. I was told only the other day by the medical superintendent of a large South London infirmary that for the past year only 8 per cent. of his cases came from the workhouse; and in the year 1914 only about 20 per cent. of our admissions were workhouse patients. The great majority of our patients are hardworking people whose only need of relief is due to their sickness. The infirmaries were originally provided for the "destitute," but it is not perhaps generally known that the Local Government Board's definition of destitution has for many years been very elastic, and really means inability to provide for oneself the particular form of medical attendance or treatment of which there is urgent need. The other day I asked the clerk to the guardians if he would kindly work out the numbers of patients in the infirmary who paid towards their maintenance, and I was surprised to find that over 60 per cent. did so.

OUR EQUIPMENT.

We are told that there is a prejudice against Poor-law infirmaries. This is a trite saying. Old members of our lay staff apply for treatment, and I have been told by several general practitioners in this district that their patients prefer the infirmary to the hospital. I venture to prophesy that some of the squeamish objectors will find their prejudices diminish when the voluntary hospitals begin to charge, as we have done. It would be better if instead of talking of stigma someone would give a little attention to the mediæval and complicated law of settlement, which is responsible for much of the prejudice against the Poor-law. It is this antiquated law which is responsible for the apparent reluctance to make the infirmaries as accessible as they might be to anyone seeking admission there. Some boards of guardians have actually anticipated Parliament in trying (partially, at any rate) to adopt commonsense measures to unravel this bundle of red tape. The character of the work has thus immensely changed. While I freely admit that we were not equipped or staffed to meet this demand as we should have liked, I resent the remarks that we provided little more than food and shelter.

When war broke out many infirmaries all over the country were taken over as military hospitals—not as auxiliary, but as first-class hospitals. The staff and equipment were taken over, and according to the Army Council carried out the work satisfactorily. For years we have been doing such work as bone-plating and grafting, using spinal anæsthesia and local anæsthesia for serious operations, and doing hundreds of acute abdominal operations yearly. The Harveian Society has seen such cases as successful resections of carcinoma of the bladder and stomach, and of brain abscess and gangrenous intussusception done at a Poor-law infirmary, which in some ways is much inferior to many others. The statement that there was no provision of X rays or pathological facilities is quite incorrect.

OUR NURSES.

As regards our nursing, I maintain that our nurses in the separate infirmaries are as well trained, at any rate as regards private nursing, as the general hospital nurse. The more up-to-date infirmaries have appointed special sister tutors; have all hospitals done so? Training is given in special subjects, and several of us prescribe a four years' course of training, whereas the usual hospital period is three years. Examinations are held by outside examiners, of whom I see some here to-night. I have recently got some of our consulting staff to give lectures in their special subjects. Again, owing to the much greater variety of cases seen and the absence of students, the infirmary nurse has had certain advantages, and the very fact of our limitations has made the work more akin to what she has afterwards to do in private nursing.

The numbers of nurses in proportion to patients have greatly improved in recent years and are still improving. In this connexion one might fairly ask why there is such a tremendous disproportion between even the great teaching hospitals as regards numbers of nurses, and to suggest that if there were anything like agreement we would then have a standard to which we might refer. In admitting that our equipment and staffing were not all we should have liked I do not think it fair to blame the guardians altogether, as is usually done. If there was in some quarters the tendency to adopt the attitude suggested by Mr. Morris—"Why should we provide costly equipment when we can get the work done for nothing?"—it should be ascribed to public opinion, which was not alive to the actual situation, or, in other words, would not sanction the necessary money, and we cannot expect an A1 hospital on C3 expenditure. The change of feeling in such matters caused by the war, and the appreciation of the inadequacy of accommodation for the sick, has stirred public opinion, and the guardians have responded to this feeling, as they would have done years ago had the feeling existed. Many of these boards take a surprisingly broad point of view, devote a great deal more time to their duties and have a much more intimate knowledge of the work than have the directors of general hospitals. You would be surprised if you knew the amount of work supposed to be carried out by other authorities which in practice is referred to and done by the guardians, who merit the credit for the same. At any rate, whatever our view as doctors may be as to the governors of hospitals, we must awake from dreams and remember that we are living in the democratic twentieth century and not in the feudal age. We ought to be represented on the governing bodies of hospitals, but to expect a 50 per cent. representation, as Mr. Morris suggested, is only to invite disappointment.

I feel bound to say that in the past we had very little help from the profession generally in backing up our requests for improvements, although I feel it only fair to mention the exception of the Harveian Society for what I believe to have been its pioneer action in pre-war years of holding some of its clinical meetings at our infirmary, and thereby giving us a little encouragement.

Another complaint is the lack of classification. This has always been a difficulty. We are not like the voluntary hospitals which set aside wards for certain classes of cases and largely fill up their vacancies from waiting lists, nor like the fever hospitals or asylums which refuse more cases when their beds are full. We are the only institutions whose beds are supposed to be inexhaustible, and who are compelled to take in all medically deserving cases, however full we may be. We treat most infectious diseases, apart from scarlet fever and diphtheria, and in short, all the numerous cases which the hospitals send to us, often for the very reason that they are difficult to classify. It was one of the great merits of Dr. Addison's Bill that classification would be greatly improved.

THE FUTURE OUTLOOK.

May I now turn to the future? I think that the problems are too often approached from the purely medical point of view, and it is apt to be forgotten that the prime function of the hospital is to treat the sick and to render the patient a useful member of the community. If this were properly appreciated it would be evident that there need be no rivalry between the infirmary and the general hospital. Each of them has a future and I beg to differ from Dr. Wilson and to submit that each has a great future, and that the futures are not the same.

I believe that the voluntary hospitals will have to consider the problems more from the scientific, research, and teaching sides, and to approach them essentially as specialists, whereas we have to tackle mainly the economic aspect of the cases and approach them from the point of view of the general practitioner. If this were done, and especially if there were some central authority to coördinate our efforts, great improvements could be effected and much money saved.

We are accused of lacking the most advanced scientific and research apparatus. I retaliate that this is not essential, especially in these days when economy must be considered, and say that the hospitals, in their excess of scientific zeal, have sometimes not seen the wood for trees. For instance, I know it requires much more skill and brains, and brings more kudos, to treat a case of spina bifida than to treat a broncho-pneumonia, but, assuming that each survives, perhaps the broncho-pneumonia will turn out the more useful member of the community. After all, is it right that cases of acute enteritis and burns should be turned away from hospital when the beds are occupied by cases of infantile diplegia or new growths of the kidney? I say it is *only* right if you provide the former with places to go to, and this is where the infirmary comes in. If our work were coördinated, beds for certain rarer types of disease, such as goitre, cleft palate, and cerebral tumours, could be set aside in hospitals where there were surgeons especially experienced in such work. As a matter of fact this is done in practice to-day, but it should be regularised, so that there can be no question of the general practitioner being unable to get less dramatic but equally deserving cases admitted. Now, if this principle were admitted the work could be better done and economies effected—e.g., in the way of unnecessary reduplication of equipment.

If the infirmary is to do the routine but not less useful work, it follows that the methods of staffing and administration which are best for the hospital are not necessarily the best for the infirmary. I think there is much in the suggestions of Dr. Charles Buttar and Mr. Basil Hall, of Leeds, that the infirmary posts should be paid and allocated to junior men. In the past it has been extremely hard for young men without money to specialise, and in the future the way must be made easier and brilliant men must not be lost for this reason. I think there is no necessity whatsoever for all cases in the future infirmary to be under specialists, as they are in voluntary hospitals. In fact, there might be a danger of the old complaint of admitting from the point of medical interest and not from that of the patient and of the State.

In this discussion every speaker—specialist, layman, and general practitioner, and, I confess, myself—has rather had the tendency to consider the poor chronic incurable as something undesirable. In fact, some speakers actually referred to him as rubbish. I have heard this type of case referred to also as the gold-bearing goose, but perhaps the nomenclature varies in the Harrow-road and Bayswater. I think I can fairly claim that I am not biased against the specialist; at any rate, I have made every endeavour to welcome him to my own infirmary. But I do say that a large part of our work can be done equally well by the general practitioner. I submit that the definition of a general practitioner is not one who puts up his plate and is paid by fees, but one who treats the average ordinary case of sickness. I do not in the least see why we should not have part-time general practitioners on our infirmary staffs, provided, but only provided, they demand sufficient remuneration to justify their giving the necessary time to the work.

The Training of General Practitioners.

Again, we can do a useful work—as, I submit, we have done in the past—in training our residents (for we must have some whole-time residents) to become useful general practitioners. We have had in the past very many capable young residents who have nearly always come to us after holding resident posts at one and sometimes three or four hospitals. Now such a staff of general practitioners, or young men with two or three years' post-graduate experience, naturally expect more responsibility than do the newly qualified house surgeons of a voluntary hospital. The consultant should correspond to the consultant in general practice and assist and advise, but not displace, the general practitioner. One of the duties of the medical superintendent would consist in linking together the staff, in seeing that the requests of the general practitioner for advice were acceded to, and, in short, in promoting the spirit of team-work. Team-work must include the general practitioner, who has too often in the past lost all contact with his patient when he has entered hospital.

In prophesying that the infirmary of the future will be for the ordinary types of disease, I do not mean to suggest that there is no scope for research work or for students.

On the contrary, the infirmaries would serve a useful purpose, for too often in the past it has been forgotten that the average student is going to be a general practitioner and not a specialist, and he will see in the infirmary cases which will be as useful to him afterwards as the rarer cases to which he now devotes such a large part of his energies. But I do repeat that our main function is treatment. In suggesting that there is a future for both the hospital and infirmary it matters not whether the former remains voluntary or comes under the State, provided that the work is coördinated. In this connexion one comes to what is probably the greatest change made by the voluntary hospital in recent years—namely, the proposal to charge those patients who can afford to pay. In passing I might be allowed to call your attention to the fact that this is what we have been doing in the Poor-law institutions for 30 years. I believe the change is fraught with far greater consequences than the hospitals possibly recognise, and I believe that both the Poor-law and the hospitals are entirely wrong in the principle, as this is opposed to the modern tendency of insuring against all evil.

The Time to Pay.

Surely the time to pay is when a man is well, and not when he is ill and out of work. The State has admitted its liability to treat the working man for minor illness under the panel system, and the principle has been accepted by the medical profession. Is it not logical that the State should assume the responsibility of treating the working man when he develops pneumonia or breaks his leg? And can anyone doubt that the working man is going at some time (sooner or later) to demand this, and demand it not as charity but as a right? Is it not fairer that all should have to pay their share by some such scheme as an extension of insurance contributions rather than by optional weekly voluntary contributions, as is done in the north? The great objection raised against the voluntary hospitals coming under the State (in some form) is the fear of control or, in other words, supervision. But is not some form of supervision or some central controlling influence desirable (I refer not to the medical but to the lay aspects of the case)? Let us turn to the question of expenditure.

THE DESIRABILITY OF ADMINISTRATIVE COÖRDINATION OF VOLUNTARY HOSPITALS.

As regards in-patients, after deducting the cost of rent, rates and taxes, and out-patients, the average cost per occupied bed in the hospitals of England varies tremendously, e.g.:—

In 5 hospitals the cost is over £170
" 14 " " from ... ... £140 to £150
" 18 " " " ... ... £120 " £130
" 22 " " under £90

As regards the cost of out-patients (calculated on hundreds of thousands of cases) if one takes four leading London teaching hospitals the cost per out-patient is 3*s.* 2*d.*, 4*s.* 2*d.*, 7*s.* 4*d.*, and 7*s.* 8*d.*

Perhaps these figures can be explained, but am I wrong in suggesting it is desirable there should be some central authority to investigate such matters, and perhaps suggest the probability of certain economies, just as all our expenditure is subject to the scrutiny of the Ministry of Health? Again, the question of the tremendous variation in the duration of stay in different hospitals should be looked into (17 to 38 days in London teaching hospitals). This should be done not merely from the statistical point of view. It might, for example, be found out what is the percentage recurrence after operation for hernia in the hospitals where the average durations of stay are 17 and 38 days.

Again, I do not think that the administration of hospitals is perfect, in spite of their being held up to us as models to copy. Such questions as dietaries, the question of explaining operations to patients' friends, &c., are left to the house surgeon or to the nurses, and frequently are nobody's business. The young house surgeon—and I speak from wide experience—does not, as a rule, appreciate the importance of such matters, however good his scientific training may be. After all the patient's friends will forgive you if you fail to diagnose the exact form of one of the muscular dystrophies when he will not forgive you if you forget to send out till too late a notice that his mother is dying. In support of my suggestion that a more human point of view is desirable, might one ask if any member here can recollect any of our numerous medical societies discussing, or any papers in our leading medical journals dealing with such subjects as the possibility of improving our gloomy out-patients departments, or cutting down the hours of waiting there by some attention to method? Or, again, with the possibility of tracing the medical history of patients who migrate from one hospital to another?

Can it be denied that if one-hundredth part of the brains and trouble which have been applied to the question of, say, gastric analysis had been applied to such problems the results would have been worthy of that attention. It is no answer to say that these are not questions for the medical staff. They are somebody's business; in the past they have too often been nobody's.

CONCLUSION.

In conclusion, I think it right to explain that any remarks I have made should not be construed as reflecting any disappointment with the arrangements made between St. Mary's Hospital and my infirmary. So far as I am concerned, the scheme has worked smoothly and well, and it might be interesting to add that throughout the past year only one patient has complained of the presence of students.

II.

BY R. DUDFIELD, O.B.E., M.A., M.B., D.P.H. CAMB.,
MEDICAL OFFICER OF HEALTH OF PADDINGTON.

"Salus civium civitatis opes" may be bad Latin, but it expresses what is the guiding principle of my official work. I regard the health of the citizen as the greatest asset of the nation's wealth, and I therefore regard it as an economically unsound policy to leave sick citizens to their own devices.

PROTECTION OF THE PUBLIC HEALTH.

I thus believe it to be to the advantage of the community that the State should assume the care of the sick. In these days few would seriously dispute the State's right to take measures to prevent disease, and I think that it is becoming generally recognised that the care of the sick—which phrase I do not limit to the treatment of those who are acutely and dangerously ill—must be regarded as a national duty. There are, of course, sections of the population well able to take care of themselves. With those sections the State does not need to concern itself directly, though even for the sick among them the State should not fail to have some regard. There remains a larger section of the population, composed mainly of the producers of the nation's more material wealth, whose members are just able to maintain themselves when in full health and efficiency, but when overtaken by disability in any form are faced by poverty and, possibly, more or less permanent inefficiency. If the members of this section be adequately helped in the time of stress and their efficiency restored they can resume their places in the social world as producers. If they be neglected, they tend to become a burden and drag upon the community. Self-protection should stimulate the community to look after the sick citizens and to take all reasonable steps to set them upon their feet again at the earliest possible minute.

Since the great stocktaking of national health which was incidental to the medical survey of recruits for the Services, much emphasis has been laid upon the necessity of searching for and treating the beginnings of disease. At present it is but rare for a failing man—who is not necessarily a sick man—to seek medical advice. Apart from the difficulty of finding money for the doctor's fees, the failing man fears an order to slow down in his activities, and he fears still more the financial stress which would inevitably ensue from such slowing down. We cannot expect to obtain sufficient material for the study of the beginnings of disease until the State steps in and relieves the failing man of some, at least, of his burden.

The State as a Charity Organisation Society.

It may be argued that these views would make the bulk of the population paupers. I admit that I personally am unable to appreciate the difference between State (or municipal) assistance and Poor-law relief—a distinction which is strenuously insisted upon by certain schools of thought. To my mind the only difference lies in the taking of money from the right pocket instead of the left. I would, however, ask you to look at the proposals from a different point of view. Why should not the State be regarded as a National Charity Organisation Society? The designation is not, perhaps, altogether a happy one, but it will serve my present purpose, as it connotes principles which I think should govern the relationship of the State to the failing and sick. I do not want to see the State taking over the whole of any man's responsibilities, but I do think it would be to the advantage of the community if the State came forward and gave so much help as would tide the man and his dependents over the hard times so frequently associated with disability of the breadwinner.

Protection of the Public Wealth.

In any such scheme of State assistance medical treatment would take first place. The home conditions of that section of the population whose sick should be the care of the State are rarely such as to afford the best chances of speedy restoration to health and efficiency. Too often the patient is in need of removal to a more favourable environment. Accommodation is provided in isolation hospitals for the dangerous infectious diseases, the object of such provision being not so much the treatment of the sick man but the protection of public health. My proposals imply the removal of the sick man for the *protection of the public wealth*, to secure his early return to full working capacity and, if humanly possible, to prevent him becoming a permanent burden on the State. I am not proposing that every failing or sick man should be provided with accommodation on the standard of our general hospitals. I should be satisfied with something far less costly which can, I think, be provided by the infirmaries—remodelled and improved as may be found necessary. Incidentally, I may observe that I am thinking of infirmaries as I know them, which means of the standard general in the metropolis. I have had opportunities of watching the improvements in standards and work of those infirmaries during the past 30 odd years. The infirmaries, or new hospitals, which is the term I would use for them, having been transferred from the Poor-law to the municipal authorities, should be managed by the ratepayers. I wish emphatically to dissent from the suggestion put forward by Mr. E. W. Morris that ad hoc authorities should be set up. We have had too many creations of such authorities in the past. At the present time London is seeking a way to get rid of some of them. Ad hoc authorities are too frequently wasteful in personnel and administration, and too often beyond the control of the ratepayers, who have simply to foot the bills presented to them and look as cheerful as they can. The existing authorities—county and municipal—are fully competent to undertake the administration of hospitals, and they will, I am convinced, do it more economically than any ad hoc authority. I suggest that the infirmaries be made into municipal hospitals, when they would fall naturally into place as "primary centres," should the scheme for the provision of medical treatment embodied in the "Dawson Report" ever be brought into operation.

The County Council as Authority.

If the infirmaries be taken from the Poor-law, to which authority should they be transferred? In dealing with this question I speak as a London man, preferring to leave extra-metropolitan policy to be thrashed out by those who are better acquainted with the needs and umstances of extra-metropolitan areas. The Maclean rt (1918) recommended that the infirmaries in don should be transferred to the County Council. recommendation was endorsed by the Conference Representatives of Metropolitan, City, and Borough uncils in June last. Although apparently not in harmony with the general tendency towards decentralisation and strictly local self-government, there is a good deal to be said in favour of the recommendation. There is a growing tendency to make the County Council the authority for providing treatment in residential institutions for residents in the county. In the present instance I think that the transference to that Council will lead to economy, firstly, because it is probable that fewer infirmaries will have to be taken over, and, secondly, because probably fewer beds would thus remain empty.

The Medical Staff.—Linking-up.

There can be no doubt as to the necessity of a resident medical staff, the personnel of which will depend on the number of beds and, possibly, the class of cases for which the hospital is reserved, if any classification of hospitals be introduced. I do not consider that the whole of the visiting staff should be consultants. I should like to see the local practitioners acting as visiting physicians and surgeons. Here I join issue with Dr. Charles Buttar, who appears to have doubts as to the possibility of such proposal. Local practitioners are very successful in working hospitals in the smaller provincial towns, and I cannot see why they should not be equally successful in the new hospitals. I should propose that rotas be formed of those practitioners willing and, might I add, fit to work in the hospitals, and that they take limited periods of duty. It might conceivably be possible to allow an individual practitioner not on the staff of the hospital to continue his treatment of his patient after admission, should the doctor and patient so desire. It should not be beyond the wit of man to frame the rules necessary to meet the special case. The experiment of linking the local infirmary to St. Mary's Hospital has been so successful that there can be no doubt that such linking-up will become general in the future. The staffs of the general hospitals so linked to the new hospitals will become the consulting staffs of the new hospitals; the association of students with the new hospitals will then be taken as a matter of course.

Conditions of Admission.—The Voluntary Principle.

I doubt whether the general hospitals will be able to rely upon voluntary contributions much longer, and it is probable that the establishment of the new hospitals may hasten the time when the general hospitals will be obliged to accept municipal or State help. When that time comes the general hospitals will admit ratepayers on the same conditions as the new hospitals, and transfers between the two classes of hospitals will be regarded as quite usual. Until that time I should like to see some system of priority of admission to the general hospitals accorded to special patients in the new hospitals.

Every ratepayer, subject to conditions to be stated later, should have the right of admission to the new hospitals, if such admission be certified as necessary by the practitioner in charge of the case. I do not mean that a ratepayer to whom a certificate may be issued should be able to go to the hospital with the certificate in his hand and demand, and obtain, a bed. The applications and certificates will have to be sent to an official charged with the regulating of admissions. Control will be necessary to prevent irregularities in admission and will be the more necessary if any allocation of hospitals to groups of disabilities be adopted. A central control will be required to prevent any one hospital being overpressed with cases while another hospital stands half full. Whenever a complete scheme of convalescent homes, &c., becomes operative, central control will be required to regulate the flow of patients from one institution to another.

I have said that every ratepaper should have a right to admission to the new hospitals. Such right should not, I think, mean free treatment in every case. Whether or not the new hospitals afford more than one standard of accommodation—the treatment would be the same for all—the principle of assessment, now enforced by the County Council in connexion with the treatment of the uninsured tuberculous, should be adopted with regard to admission to the new hospitals. If all paid in proportion to their means, the cash received plus the amounts paid by the Insurance Committee on behalf of insured persons would materially lighten the burden of the new hospitals on the rates.

While no one would be compelled to enter hospital, I think that entry into hospital should, in cases for which hospital treatment may be certified necessary or desirable by the medical attendant, be made a condition precedent to the granting of financial help to the sick man's dependents. State help for the dependents is, in my opinion, an essential for the success of the scheme I have outlined, but the State is bound to consider economy. It would be wasteful to make grants when the practitioner certifies (in effect) that the sick man's recovery will be prejudiced or delayed by his remaining at home.

CONCLUSION.

I have endeavoured to show how the infirmaries can be rendered more useful after transfer, which I regard as practically certain. Dr. C. M. Wilson intimated in his opening remarks that there is some risk of the policy with reference to the infirmaries being settled to meet political exigencies. I incline to the opinion that a well-considered scheme prepared by the profession, in consultation with the officials, will be preferred by the public to a scheme prepared by politicians based on theoretical considerations. I think we may claim first that we know the medical necessities of the people, and, secondly, that we still possess their confidence.

AN INVESTIGATION OF THE
CAUSE AND RELIEF OF PAIN IN GASTRIC ULCER.*

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THE object of the present communication is to show that an important element in the pain of gastric ulcer is due to distension of the stomach, and can be abolished by reducing the intragastric pressure. Two methods have been adopted in this investigation: 1. A fine rubber tube similar to that used for withdrawing stomach contents in the fractional test-meal method is passed into the stomach. There is some lead in the lower end of the tube, so that it can be localised by means of X rays. Air or oxygen is passed into the stomach through the tube from a reservoir connected with a water manometer, so that the pressure exerted by the air current can be measured. The patient is asked to describe his sensations, whether of fullness or pain, while his stomach is being distended. 2. The patient is asked to pass a similar tube into the stomach when pain is experienced, and in many cases the pain is relieved within a few minutes by release of pressure. The tube should contain a series of holes extending from its end in the stomach upwards as far as the cardiac orifice. Stomach contents may be regurgitated through the tube. The gastro-duodenal tube is a modification of the gastric tube. It connects the stomach with the duodenum, so that pressure is equalised through the pylorus. It is about 2 feet long, and contains holes about 1½ inches apart throughout its length. Both ends are made opaque to X rays by means of short pieces of thick lead fuse wire placed inside the tube between glass beads (in order to keep the digestive juices away from the lead) and securely fastened with silk. To one end of the tube is attached a piece of silk about 27 inches long. The end of the tube not attached to the silk is passed into the stomach, and it then usually passes quite readily through the pylorus. The upper end of the tube is then anchored in the stomach 22 inches from the lips by means of the silk, which can be fastened round the ear or round a dental plate or pinned on the dress. The position of the tube can easily be determined by skiagraphic examination after the stomach has been outlined with a little barium sulphate suspension. It is important not to pass this tube too quickly into the stomach, as if the proximal end reaches the stomach before the distal end has reached the pylorus the tube may become tied into a knot and fail to get through at all. The ordinary thin rubber tubing gets readily acted on by the digestive juices, and such a tube does not usually last more than two or three weeks if kept in position most of the time. It should be removed and examined at least once a week. The thicker-walled tube, introduced by Dr. J. A. Ryle for fractional test meals, is much more durable.

At the outset it should be pointed out that it is not claimed at this stage that the use of these tubes should become a general method of treatment for peptic ulcer. The usual methods of medical treatment are most satisfactory, and of these methods rest in bed is possibly the most important of all. In these circumstances pain usually disappears completely, and in several instances the writer has obtained radiographic evidence of the ulcer becoming less, and completely disappearing in a few weeks. His thanks are due to Dr. Lindsay Locke for some of this evidence. This treatment by means of the tubes has been brought forward rather as evidence of his main proposition, that the pain in gastric ulcer is often chiefly due to distension from increased intragastric pressure and as a preliminary to further work on the subject. To show that the other factors concerned with the relief of pain were absent in the cases it should be stated that the patients were mostly out-patients, some of them doing their usual work; that they came up complaining of pain, that they were encouraged as far as possible to take ordinary food, and that to begin with, at any rate, no drugs were given. Later on in some cases olive oil and liquid paraffin were ordered.

Effect of Intragastric Pressure on Gastric Pain.

The effect of intragastric pressure on gastric sensation has been described by Dr. A. F. Hurst,[1] in the case of two healthy people. He passed air into the stomach, using the kind of apparatus already described, with the exception that a mercury manometer was used instead of a water manometer. The latter is, of course, more delicate owing to its wider range of movement. The sensation produced by such means was one of fullness. The stomach then accommodated itself by becoming larger, the pressure fell, and the feeling disappeared, only to return again when the pressure was raised by passing more air into the stomach. Dr. Hurst observed that there was no sensation of pain accompanying the fullness, except when the stomach was suddenly distended with a large volume of gas, as in the case when sodium bicarbonate and tartaric acid were swallowed immediately after one another. He suggested that gastric pain was more commonly produced by the distension of a part of the stomach, for instance, at the pyloric end, when the active peristaltic wave is on the point of forcing some of the stomach contents through the pylorus. The present observations point to the general intragastric pressure as being of considerable importance in the production of pain in gastric ulcer. Exactly the same variation in the feeling of fullness as that described by Dr. Hurst has been noticed many times in the present series of observations; and in cases where there was reason to believe that no active ulceration was present a sensation of fullness was described, but no pain.

CASE 1.—G. W., a woman, aged 36. In Guy's in 1918. X ray: Tender lesser curvature projection with constriction of greater curvature. The projection had disappeared by the end of her stay, but the constriction remained. Nov. 22nd, 1920: Patient had been free from symptoms for some months. X ray: Midgastric constriction seen with slight tenderness on lesser curvature. There was probably cicatrisation present. Gastric pressure test: 500 c.cm. passed in at 12 cm. pressure. No effect. Another 500 c.cm. were then passed in the pressure, gradually falling to 8 cm. A sensation of fullness noticed but no pain at all. At the end it was seen that the tube had penetrated into the lower compartment of the stomach. Both compartments were much dilated.

CASE 2.—N. B., a woman, aged 51, under the care of Dr. H. French Indigestion since 30 years old. Attacks of pain in epigastrium and lower down over the umbilicus. Pain is worst if she has wind. When examined she had had no pain at all for six or seven weeks. X ray: Hour-glass stomach with slight tenderness on pressure at the site of the constriction on the lesser curvature. The tube when passed was entirely in the upper compartment of the stomach. Gastric pressure test: 400 c.cm. passed in at 20 cm. pressure. Feeling of distension relieved by eructation, no pain at all. Operation by Mr. C. H. Fagge a few days later. Cicatricial hour-glass stomach found, with thickening at pylorus. On opening stomach for gastroplasty the scar of a healed ulcer was seen on the lesser curvature at the site of the constriction.

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* A paper read before the Medical Section of the Royal Society of Medicine on Jan. 25th, 1921. The expenses of this investigation were defrayed by a grant from the British Medical Association.

CASE 3.—D. R., a woman, aged 30. Since 24 years old she has complained off and on of fullness of stomach and nausea, and difficulty in bringing up wind, with dull pain and tenderness in epigastrium. She is greatly relieved by a belt. X ray: Stomach dropped and atonic; lesser curvature below iliac crest. Stomach empty after 4½ hours. No evidence of ulcer. Gastric pressure test: 110 c.cm., and later 330 c.cm., of air introduced at 6 cm. pressure. Feeling of fullness to the right of the umbilicus, and wind eructated with much relief. No pain experienced at all. She had been resting in bed and her symptoms had greatly improved before the test was carried out.

In another case complaining of hunger pains where there was X ray evidence of duodenal ulcer the introduction of 300 c.cm. at 20 cm. pressure into the stomach caused much distension, but no pain. This is to be expected, since the ulcer would not be affected by the stretching of the stomach wall. Sixteen cases have been examined by this method (Table I.), in all of which there was *good* evidence of active ulceration in the stomach, not only from the description of the symptoms, and often from the presence of occult blood in the fæces, but from skiagraphic examination. The criterion of an ulcer has been taken to be the appearance of a projection from the stomach shadow, usually on the lesser curvature (or sometimes an irregularity in the neighbourhood of the pylorus), which is constant in position and tender on pressure. Occasionally *no* projection was seen, but localised tenderness made the diagnosis probable. When there are cases of this rather doubtful nature in a group their number is indicated by the bracket in the second column. When air was passed into the stomach these patients experienced a feeling of fullness, but in addition their characteristic pain was noticed, and this disappeared on again releasing the pressure. Care was taken in performing the test to ask the patient whether the distension experienced was greater than they had ever felt before. The reply always was that on previous occasions they had experienced much greater distension than was felt at the time of the inflation.

TABLE I.—*Examination of 16 Cases of Active Ulceration in Regard to the Presence or Absence of Pain on Distending the Stomach with Air.*

Position of ulcer.	No. of cases.	Increased pressure in stomach pain = +		Notes on cases with no pain response (−)
Lesser curvature.	8	7 +	2 −	*One case + − on* different occasions.
L. c. acute.	(1)	1 +		—
L. c. and gastro-jejunostomy.	2	2 +	1 −	One case healing.
Stomach, near pylorus.	3 (1)	2 +	1 −	One case showed temporary improvement.
Pylorus.	2	2 +		—
—	16	14 +	4 −	—

(1) X ray; *localised tenderness only present.*

Of the 16 cases examined, 14 described the onset of their characteristic pain in addition to the feeling of fullness, though the pressure at which this occurred was very variable. The following cases show this in detail.

CASE 4.—J. F., a man, aged 40. November, 1919: Pain in epigastrium 30 minutes after a meal. Feeling of distension and vomiting. Symptoms continued off and on till Oct. 1st, the pain between June and October being described as unbearable. X ray: Small tender projection on lesser curvature. Stomach contents contain blood. Occult blood in fæces. Gastric pressure test: On two occasions positive, pain being noticed in middle line above umbilicus; on one occasion negative. About 200 c.cm. of air passed in at 20 cm. pressure. Gastric tube given on Oct. 1st, and a gastro-duodenal tube later. Relief from pain and flatulence. Patient prefers the g.-d. tube, and only uses the g. tube if he gets attack of pain. Jan. 7th, 1921: Has not been so well for three weeks, but has not been up to report: His tubes have been perished and the g.-d. tube broke away 10 days ago. X ray shows small projection still present. Jan. 21st: Has had g.-d. tube for last week, and has had no attack of pain, except on one [illegible]

CASE 5.—M. C., a woman, aged 44. Dyspepsia when 18 and nearly continuously since then. Pain in epigastrium and beneath left costal margin. Perforation of gastric ulcer on April 20th, 1920, and pain and vomiting were specially severe for some weeks before this. Ulcer stitched up and gastro-jejunostomy performed. Has been ill again the last two months. X ray: Gastro-jejunostomy acted well. Tender projection on lesser curvature of stomach. Food does not leave by pylorus. Stomach empty in five hours. Test meal: No free HCl in stomach contents. Dec. 2nd: Gastric pressure test: 150 c.cm. at 10–15 cm. pressure. Pain beneath left costal margin disappearing on releasing pressure. On Dec. 15th 400 c.cm. passed into stomach; a *feeling of distension but no pain.* She is better, but has been lying in bed. Relief from g. and g.-d. tube, the latter seen in position, passing through gastro-jejunostomy opening. Jan. 13th, 1921: Ulcer projection cannot be seen, but the spot is still tender. She has had no pain since Dec. 15th, and has been up all the time on ordinary food.

CASE 6.—P. F., a man, aged 61. Ten years' history of indigestion. 1916: X ray: 2/3 of barium in stomach at end of seven hours. Operation: Gastro-jejunostomy for peptic ulcer. I saw him for return of symptoms November, 1917, till July, 1918. Much ærophagy. I saw him again March, 1920, and he was much worse. June, 1920: Second operation. Ulcer found on lesser curvature adherent to liver. Stomach opened and ulcer cauterised. Operation unsuccessful in relieving symptoms. October: X ray: Tender projection on lesser curvature. Stoma acts quite well. Stomach contents bile-stained, with absence of free HCl. Gastric pressure test: 250 c.cm. at 10 cm. pressure which showed great variations. Characteristic pains observed. G.-d. tube would not pass through the stoma. *He gets some, but not complete relief* from gastric tube. This patient suffers much from aerophagy, taking air into the stomach by repeated attempted eructations. On one occasion when he had pain the stomach was noticed much distended without any air being introduced. The manometer attached to the g. tube registered *big excursions,* the pressure reaching up to 24 cm. on respiration, while it was 10 to 14 cm. when the breath was held. The tube was kept attached to the manometer for a quarter of an hour and no difference in the pain was felt. The pain felt a bit easier three minutes after disconnecting *so as to allow the air to* escape by the tube, and had completely gone in 23 minutes.

CASE 7.—E. C., a woman, aged 31. In Guy's two years ago for gastric ulcer; pain half an hour after meals. September, 1920: Tender mid-gastric projection on lesser curvature. Nov. 19th: Gastric pressure test 500 c.cm. at 10 cm. pressure. Fullness and characteristic pain in epigastrium and in her back. Jan. 14th, 1921: She gets relief from pain and wind from the g. tube. During the last week has used it every morning for half an hour.

CASE 8.—A. J., a man, aged 31. Pain in epigastrium and round umbilicus for five years off and on. Two previous X ray examinations not very definite. *Was previously in Guy's as an* in-patient. X ray: Tenderness definitely marked on the stomach side of pylorus. Fæces: Occult blood present. Stomach empties very rapidly. Gastric pressure test: 200 c.cm. at 10 cm. Typical pain in epigastrium which disappeared on releasing pressure. Relief from g. and g-d. tubes. Sometimes after they are not effective he has pulled them up and found them blocked.

Of course, the pressure of the gas entering the stomach is only a very rough way of gauging the intragastric pressure, and it is intended to carry out further observations by means of a more accurate method. Of the two cases who did not feel any pain one showed temporary improvement in his symptoms at the time of the observations, but relapsed later. Two of the other cases failed to respond, when they were improving. One case (l.c. acute) is of particular interest as he is a medical man. After an attack of diarrhœa he suddenly developed pain beneath the left costal margin, coming on one and a half hours after meals, and made worse if ordinary food were taken. This pain had lasted for three weeks. X rays showed that the lesser curvature of the stomach was tender in one spot, but it was doubtful if a projection was seen. The stomach was normal in position. It was thought that he probably had an acute ulcer. Pain was absent when the tube was passed. 200 c.cm., and later 300 c.cm., of air were passed in at 20 cm. pressure. He noticed the appearance of his characteristic pain as well as a feeling of fullness. After the examination, possibly on account of the large amount of barium sulphate given, his pain was permanently arrested.

It might be thought that the gastric-pressure test would provide a valuable means of *diagnosing active* ulceration of the stomach, but, although a negative result may be of value in excluding such a condition, it does not follow that a positive result means a gastric lesion. Thus, in the case of Mary B., aged 65, under the care of Dr. French, complaining of abdominal pain, the latter was definitely increased on passing 100 c.cm. into the stomach and was lessened again by relieving the tension. *Operation disclosed a carcinoma of the* pancreas, and the post-mortem showed that the stomach was normal, no trace of any acute or chronic ulcer being seen.

With regard to the second method of investigation—viz., the relief of pain on passage of one or other of the tubes—observations have been made on 16 cases. They are summarised in Table II., and certain illustrative cases are described more fully. It is not claimed that complete relief from pain was obtained in all the 18 cases of Column 8. There may be other factors in its causation. But the patients were satisfied that the tubes were beneficial and that they often prevented the onset of pain. Of the three unsuccessful cases one was unreliable, since every two or three days fresh pains appeared in different parts of the body. One was a very advanced case of saddle-shaped ulcer of the lesser curvature found at operation; gastro-jejunostomy was not done. He disliked the gastric tube intensely, and received no benefit from it. The other patient also disliked the tube and has since improved without it.

TABLE II.—*Examination of 16 Cases of Active Ulceration in Regard to the Relief of Pain on Passing a Tube.*

Position of ulcer.	No. of cases.	Relief of pain.	Unsuccessful.
Lesser curvature.	8 (1)	6	Two cases disliked tube; one was very advanced.
L.c. and gastro-jejunostomy.	2	2	—
Stomach, near pylorus.	4 (1)	3	? 1 unreliable.
Pylorus.	2 (1)	2	—
—	16	13	—

(1) X ray; localised tenderness only present.

Effect of Intragastric Pressure on Continuance of Ulceration.

So far it has been shown that pain in gastric ulcer can be produced by only moderately distending the stomach, and can be relieved by releasing the pressure. Is there any evidence that gastric pressure is responsible for the continuance of the ulcer? At present the cause of chronic gastric ulcer is a profound mystery. Clinical evidence is naturally hard to assess, and particularly in the case of gastric ulcer, which so often tends to heal of its own accord, at any rate for the time being. One of the out-patients has now for two months completely lost her gastric pain, which had recurred in July, 1920, after she had been successfully treated for it in hospital by rest in bed. The fæces now contain no occult blood. The other out-patients say they are better. Of 5 cases at present undergoing treatment in hospital 3 seem to have lost their pain completely; the other 2 still get some attacks. It is early to draw conclusions.

It will, however, be worth while to consider other evidence bearing on this point. Bolton[2] found experimentally that if gastro-toxic serum was used it was the HCl of the stomach that was responsible for the formation of the acute ulcer, which could be completely prevented if the stomach contained alkali. It is reasonable to look upon the HCl as an important factor in the causation of human peptic ulcer. But Bolton found it was not at all easy to produce an experimental chronic ulcer. The acute ulcer healed readily whether the stomach contained food soaked with acid or alkali, whether it was infected by bacterial cultures, or whether the animal was rendered anæmic. The only way to hinder the healing was to give meat instead of milk, or to produce artificially some degree of pyloric stenosis. These factors would both tend to cause a retention of food in the stomach; but they would also both lead to increased gastric pressure.

Bolton describes the shape of his experimental ulcers as that of a funnel or some modification of a funnel. Ulcers as seen by X rays often appear as funnel-shaped projections, and at other times present the form of sacs. These shapes can be explained on the intragastric pressure hypothesis; but Bolton's explanation, that they are due to action of the gastric juice, is not very satisfactory, because the latter would act evenly over the whole surface and not eat away more in the middle of the ulcer.

Bolton describes the experimental ulcer which is adherent to the pancreas as having a flat base, and suggests that this is due to some special resisting power on the part of the pancreas. But such a hypothesis is unnecessary if intragastric pressure is the cause, since the pancreas is a firm organ, while in most other positions the ulcer projects out against yielding coils of intestine. Gastric ulcers at post-mortem are usually described as having flat bases; but it does not follow that this is their shape during life inside the body.

The hydrochloric acid of the stomach has been considered to be the cause of chronic gastric ulcer, but while its concentration is usually increased in pyloric and duodenal ulcers, it may be quite low with ulcers in the body of the stomach, as has been pointed out by Bolton. Again, in two cases of ulcer on the lesser curvature, one recurring after gastro-jejunostomy, the test meal showed absence of free HCl, while in these cases a rise of pressure was obtained on passing air into the stomach, showing that the opening did not always remain patent. In both cases, however, food was seen to leave the stomach rapidly (see Cases 5 and 6).

It is possible to explain the beneficial effects of gastro-jejunostomy by the release of pressure, but it is not generally realised with what dramatic suddenness complete relief from pain may be achieved by this operation. In two cases of chronic ulcer of the lesser curvature, one associated with considerable gastric delay, the patients complained of intense pain while at rest in bed, in spite of dieting, and it was only possible to relieve this by morphia. Mr. R. Davies-Colley performed gastro-jejunostomy. Pain was completely relieved at once. It was in reflecting on these cases, and after a conversation with Mr. E. G. Slesinger about his work with Dr. Hurst, that the possible use of gastric and gastro-duodenal tubes suggested itself to the writer.

The perforation of a gastric ulcer may be due to acute distension of the stomach (Case 5). The patient states that for some weeks before perforation occurred she suffered from the most severe pains with wind, culminating in the final excruciating paroxysm when the ulcer perforated.

In 1918 the writer performed a post-mortem examination on a patient who had died of pneumonia about three weeks after an operation for chronic gastric ulcer on the lesser curvature. In this case the ulcer had been excised but no gastro-jejunostomy had been done, and the pylorus had been left intact. At the post-mortem examination it was found that the stitches had given way, and that the ulcer had re-formed in the middle of the incision. This can be explained on the hypothesis that the intragastric pressure had not been relieved.

Lavage has been frequently performed with benefit in the past for gastric ulcer. In a South African patient in whom the presence of gastric ulcer was proved by means of X rays Dr. Fonché prescribed lavage. The patient subsequently informed him that she found it unnecessary to wash out the stomach. The presence of the tube alone was quite enough to abolish the pain.

The writer wishes to express his best thanks to Dr. French and to the authorities of Lambeth Infirmary for facilities for investigating certain of their cases.

Conclusions.

1. An important element in the pain of gastric ulcer is due to distension of the stomach, and can be relieved by means of gastric and gastro-duodenal tubes.

2. Some evidence has been brought forward that chronic gastric ulcer is due to intragastric pressure.

References.—1. Hurst: The Sensibility of the Alimentary Canal Oxford, 1911. 2. Bolton: Ulcer of the Stomach, London, 1913; Proc. Roy. Soc., 1907, B. 79, p. 533; Proc. Roy. Soc., 1910, B. 82, p. 233; Journ. Bact. and Path., xiv., p. 424. 3. Hurst, Cook, and Slesinger: Journ. Physiol., 1908, xxxvii., p. 481.

BRISTOL DISPENSARY.—The annual report of the Bristol Dispensary states that during 1920 the patients treated reached the record number of 10,324. The expenditure unfortunately exceeded the income. Dr. R. Shingleton Smith, honorary consulting physician to the institution, whose active interest has for many years been unstintingly placed at the service of the charity, has resigned from the committee owing to ill-health.

THE INDUCTION OF ABORTION.

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THE induction of abortion, by which may be understood the interruption of pregnancy before the viability of the child has occurred, is a subject which has been widely debated and concerning which many diverse views have been, and still are, held. On the one hand, we have those who consider that the operation should under no circumstances be performed; on the other, there are those who are of opinion that there are a certain number of cases in which the operation, repugnant as it is to the conscientious practitioner, is not only indicated, but is absolutely necessary to save maternal life.

Definition.

As a preliminary, it would be as well to make an accurate definition of the word *abortion*, which is apparently derived from the Latin word *abortus*, the past participle of the verb *aboriri* (to fail to appear or fail to be born).[1] The word *abortion* is generally conceded as including *all* cases where the termination of labour occurs before the twenty-eighth week. This period may be conveniently subdivided into cases occurring before the twelfth week—i.e., just before the complete formation of the placenta, and usually termed "embryonic" abortion, and those that take place from the twelfth to the twenty-eighth week, termed "fœtal" abortion, or miscarriage.[2] In this paper I have preferred to use the word abortion as an inclusive term for both groups.

My own experience of this operation during a period of 35 years of private practice has been limited to 57 cases, a summary of which I append: acute albuminuria, 18; glycosuria, 2; uncompensated cardiac disease, 11; incoercible vomiting, 15; acute salivation, 1; chorea, 1; placenta prævia, 6; cancer of the breast, 3. In all these cases a consultation was held, and complete agreement was reached that artificial abortion was the best, indeed the only, course to pursue to save maternal life. No maternal mortality occurred in this series of operations.

In Dr. W. (later Sir William) Priestley's list of indications for abortion[3] he mentions marked pelvic deformity; this pathological condition is now, of course, better treated by the performance of the improved Cæsarean section at or about term.

Albuminuria.

In all these cases very much the same train of symptoms showed themselves—headache, difficulty of vision, and, later on, puffiness of face, hands, and feet, with an increasing amount of albumin and casts. To these were added, in two cases, signs of mental instability, which somewhat hastened interference. All were treated in the usual way—by rest, diet, and the various drugs employed in these cases, but rapid increase in the disease took place. Fortunately, in none of them did any convulsions occur; the albumin disappeared within 14 days of operation in 12 cases; in the remainder it persisted for some weeks. In three instances commencing molar changes were discovered, and in three others areas of thrombosis were present in the placenta.

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Induction was carried out in these cases for rapid increase in the already existing disease, emaciation and great thirst being the two marked symptoms, with red tongue and sordes round the mouth. Obviously, the pregnancy had a stimulating effect on the formation of the sugar, and although treatment was prolonged in both cases until the end of the fifth month it was clearly unsafe to allow the pregnancy to go on longer.

Uncompensated Cardiac Disease.

The time of selection for induction of abortion in this class of case is very difficult to determine. In all those in which it was performed dyspnœa, œdema of the feet, and slight albuminuria, with duskiness of the face and purplish colour of the lips, were present before the completion of the fourth month. Several of the patients were invalids before the pregnancy began. The pathological conditions necessitating interference were as follows: double aortic disease in four instances, aortic and mitral stenosis in five, and mitral regurgitation in two. In all of them relief of the symptoms followed the operation; in four, however, the natural progress of the disease led to a fatal result after a lapse of about 12 to 15 months.

Incoercible Vomiting.

This complication I have found to be one of the commonest reasons for induction of abortion. All the cases commenced with nausea and sickness before eight weeks of the pregnancy had passed. In all of them the course run was fairly acute, and induction was found necessary before the twelfth week. The symptoms of gravity which led me in each case to recommend the operation were a slightly rising temperature at night, a peculiarly anxious look in the face, rapid wasting, and a dry reddish tongue. In nine cases the sickness ceased within a week of the operation, but in the remaining six it persisted in a mild form until menstruation appeared. In all of them every kind of local and general treatment was tried, including the application of strong tincture of iodine to the cervix and the insertion of cocaine pessaries. I believe that the great danger in the treatment of these cases is delaying interference, and, although I did not have the misfortune to lose a case, three of them would certainly have been the better for induction a week earlier. All these cases were under 30 years of age, and all primigravidæ except two, in which latter the operation had to be performed twice for the same ailment; in five others pregnancy again occurred, but although the sickness was severe it did not call for interference. Slight albuminuria was present in 6 of the 15. In 2 cases some old hæmorrhage was present in the decidua, but in the remainder no pathological condition could be found. In 12 cases the uterus was in normal situation and anteflexed to a greater or less degree; in the remaining 3 retroflexion was present; in 2 of the latter re-position and the insertion of a pessary failed to relieve the symptoms; in the other, anterior suspension of the uterus was carried out after the first pregnancy, but in spite of the operation the sickness was as severe as before.

Acute Salivation.

During the early months of pregnancy and almost synchronous with nausea and vomiting, a more or less amount of salivation is very common. As a rule it ceases with the sickness and does not often incommode the patient to any serious extent, but on rare occasions it leads to such a serious state of health as to necessitate interference. I have only met with one such case. The patient, aged 30, was a IV.-para, and of highly nervous temperament, but otherwise enjoying good health. Her first pregnancy was quite normal. In the second a parovarian cyst was removed in the third month, when salivation commenced and continued throughout the pregnancy. Salivation also complicated the third pregnancy, which resulted in a miscarriage. In the fourth there was profuse salivation throughout, and confinement was rapid and easy. In the fifth salivation was much more profuse than formerly, and a rough measurement on two occasions showed a secretion of over two quarts in 24 hours. Examination of the secretion gave no abnormal reaction, except excess of water; no albumin was present. The uterus, which was retroflexed, was replaced and supported by a pessary, but without benefit. Sleeplessness and rapid loss of flesh were prominent features of the case, and, finally, commencing mental disturbance rendered induction necessary at the tenth week. Salivation went on for 14 days continuously after the abortion and recurred at every menstrual period afterwards for several months.

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Placenta Prævia.

In all six cases profuse hæmorrhage, without warning, was the urgent symptom, and the pathological condition was suspected. In three of the cases the position of the placenta was actually diagnosed from the sixteenth to the eighteenth week, owing to a certain amount of cervical dilatation being present, and induction of abortion (fœtal variety) was at once carried out, a small de Ribes bag being used as the provocative agent.

Cancer of the Breast.

Of late years it has been urged by surgeons that in a woman who has had a breast removed for cancer it is most undesirable to allow the remaining organ to be stimulated by the onset of pregnancy. Although I am not in full accord with this course, I think it is a proper proceeding to induce abortion in the case of a young woman with a rapidly growing form of carcinoma, but it must be done in the earlier stages of pregnancy to be of any efficacy. I have carried this out in three instances, but I think that the pros and cons in every case should be carefully weighed and no general rule followed.

Mental Aberration.

There are two classes of case which require well-balanced consideration as to the best course to pursue—namely, mental aberration and a retroflexed impacted gravid uterus. Mental aberration is even more important to the alienist than to the obstetrician, and when it occurs during the early stages of pregnancy it is chiefly due to the result of exhaustion from emotional shock, anxiety, or physical disease, with consequent insomnia. I have been in the habit of dividing such cases into three groups: 1. "Border-line" before marriage, which, on pregnancy ensuing, very soon develop definite symptoms. 2. Those who, though perfectly healthy in all respects before marriage, have been subjected to severe nerve stress, and on becoming pregnant develop mental symptoms. 3. Those who, though normal mentally and with a good family history, on becoming pregnant develop an exhausting illness, such as chorea, uræmia, obstinate vomiting, or acute salivation, and begin to show signs of impending mental disturbance, of which they themselves are cognisant. I entirely agree with Sir Maurice Craig[5] that if induction of abortion is to be carried out in these cases it should be done early—that is, before the tenth or twelfth week of pregnancy (embryonic abortion). There is no doubt that induction may easily be deferred so long that the patient's prospect of recovery is much diminished. Dr. Craig further advocates the free use of sedatives, opiates excepted, up to the time of abortion or delivery and for some time subsequently. It is difficult to generalise on the treatment of these cases, and each one should be considered on its merits.

Retroflexed Impacted Gravid Uterus.

This particular complication is mentioned by Dr. Priestley in his paper[6] as a reason for abortion; at the same time he adds: "It should, nevertheless, be distinctly understood that the mere existence of this form of displacement and the impossibility of immediately reducing it does not necessarily call for induction of abortion; only when it gives rise to grave symptoms, imperilling the life of the patient, is it permissible." It must be remembered that a large number of cases which apparently are permanently impacted become spontaneously reduced as the pregnancy progresses. Moreover, in Oldham's well-known case labour[7] at full time was terminated successfully with the uterus still in the impacted retroflexed condition. The symptoms accompanying this complication are said to be very grave, but I have never personally met with a case in which interference was necessary, nor can I see how induction of abortion could be carried out with a cervix pressed firmly into an œdematous anterior vaginal wall, preventing the introduction of any instrument into the uterus. Should such a case be encountered I believe the only course is to open the abdomen and lift the pregnant fundus out of the pelvic cavity. I have seen two cases in which, the abdomen having been opened for what was supposed to be an impacted ovarian cyst complicating pregnancy, it was found to be quite easy to raise the pregnant fundus out of the pelvic cavity.

Other Conditions.

There are certain complications of pregnancy which are thought by a limited number of authorities to indicate induction of abortion. I allude to phthisis, general tuberculosis, epilepsy, conditions leading to paraplegia, and, finally, cases in which previous labours have resulted in the birth of congenitally deformed or mentally deficient children.

At a meeting of the Obstetrical Society in 1890 Dr. William Duncan read a paper on "Should Pregnancy be Terminated Prematurely in Cases of Phthisis?"[8] In this he related a case in which he induced abortion by the rapid method in a woman with phthisis who was eight to ten weeks pregnant. In the discussion which followed no less than nine teachers of obstetrics in London hospitals gave their views on the advisability of such a proceeding, and all, without exception, expressed disapproval, the chief argument used being that there was no proof at present forthcoming to show that the onset of pregnancy in any way accelerated the progress of the pulmonary disorder. I think the majority of observers will be in accord with this statement, and I, personally, have never met with a case in which I could see that any benefit could possibly arise by interference with the pregnancy. The same may be said of general tuberculosis.

With regard to epilepsy, I do not think there is any distinct evidence that the fits become more frequent or more severe in character as the result of the onset of pregnancy, and I should therefore consider this variety of case as one in which it would not be desirable to interrupt the course of pregnancy.

Concerning paraplegia, experience is against interference, and this opinion is amply supported by Dr. Amand Routh's paper,[9] in which he describes a case which was under his observation during the latter eight weeks of pregnancy and during the labour and puerperium. There was no diversion from the normal throughout.

Lastly, in regard to congenitally deformed and mentally deficient children, I think a similar opinion may be expressed. The most marked instance which came under my notice was one in which the prospective mother had a peculiar deformity of the fingers, both

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[4] Obst. Trans., vol. xxxi. for 1889, p. 213.

[5] Private communication to author, 1920.

[6] The Induction of Abortion as a Therapeutic Measure, Obstet. Trans., vol. xxii. for 1880, p. 271.

[7] Obstet. Trans., vol. i., 1860.

[8] Ibid., vol. xxxii., p. 7.

[9] Ibid., vol. xxxi., p. 191.

THE INDUCTION OF ABORTION.

BY SIR JOHN PHILLIPS, M.A., M.D. CANTAB., F.R.C.P. LOND.,

HONORARY PHYSICIAN TO H.M. QUEEN MARY; CONSULTING OBSTETRIC PHYSICIAN TO KING'S COLLEGE HOSPITAL; AND EMERITUS PROFESSOR OF OBSTETRICS IN KING'S COLLEGE.

THE induction of abortion, by which may be understood the interruption of pregnancy before the viability of the child has occurred, is a subject which has been widely debated and concerning which many diverse views have been, and still are, held. On the one hand, we have those who consider that the operation should under no circumstances be performed; on the other, there are those who are of opinion that there are a certain number of cases in which the operation, repugnant as it is to the conscientious practitioner, is not only indicated, but is absolutely necessary to save maternal life.

Definition.

As a preliminary, it would be as well to make an accurate definition of the word *abortion*, which is apparently derived from the Latin word *abortus*, the past participle of the verb *aboriri* (to fail to appear or fail to be born).[1] The word *abortion* is generally conceded as including all cases where the termination of labour occurs before the twenty-eighth week. This period may be conveniently subdivided into cases occurring before the twelfth week—i.e., just before the complete formation of the placenta, and usually termed "embryonic" abortion, and those that take place from the twelfth to the twenty-eighth week, termed "fœtal" abortion, or miscarriage.[2] In this paper I have preferred to use the word abortion as an inclusive term for both groups.

My own experience of this operation during a period of 35 years of private practice has been limited to 57 cases, a summary of which I append: acute albuminuria, 16; glycosuria, 2; uncompensated cardiac disease, 11; incoercible vomiting, 15; acute salivation, 1; chorea, 1; placenta prævia, 6; cancer of the breast, 3. In all these cases a consultation was held, and complete agreement was reached that artificial abortion was the best, indeed the only, course to pursue to save maternal life. No maternal mortality occurred in this series of operations.

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In all these cases very much the same train of symptoms showed themselves—headache, difficulty of vision, and, later on, puffiness of face, hands, and feet, with an increasing amount of albumin and casts. To these were added, in two cases, signs of mental instability, which somewhat hastened interference. All were treated in the usual way—by rest, diet, and the various drugs employed in these cases, but rapid increase in the disease took place. Fortunately, in none of them did any convulsions occur; the albumin disappeared within 11 days of operation in 12 cases; in the remainder it persisted for some weeks. In three instances commencing molar changes were discovered, and in three others areas of thrombosis were present in the placenta.

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Induction was carried out in these cases for rapid increase in the already existing disease, emaciation and great thirst being the two marked symptoms, with red tongue and sordes round the mouth. Obviously, the pregnancy had a stimulating effect on the formation of the sugar, and although treatment was prolonged in both cases until the end of the fifth month it was clearly unsafe to allow the pregnancy to go on longer.

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Lastly, in regard to congenitally deformed and mentally deficient children, I think a similar opinion may be expressed. The most marked instance which came under my notice was one in which the prospective mother had a peculiar deformity of the fingers, both her mother and her own children were similarly affected. A distinguished authority, who was consulted as to the question of abortion, very wisely advised against it. I attended the patient in her confinement and the child was born without any deformity.

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[5] Private communication to author, 1920.

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[8] Ibid., vol. xxxii., p. 7.

[9] Ibid., vol. xxxi., p. 191.

Technique.

In spite of antiseptics and modern improvements the induction of abortion must be considered as an operation attended by definite danger. The chief risks are septicæmia, sapræmia, septic peritonitis, deep laceration of the cervix, followed by para- or peri-metritis, perforation of the uterine wall, thrombosis, and embolus (blood or air), and the operation may often be followed by a long period of ill-health but without any definite symptoms. The procedure differs somewhat according to the period of pregnancy at which it is performed, either before the twelfth week (embryonic abortion), or from the twelfth to the twenty-eighth week (fœtal abortion).

There is no doubt that every precaution must be used in the operation, and the former common custom of producing abortion by the introduction of a uterine sound, or by injecting tincture of iodine or other fluids, is attended with the greatest risks and cannot be sufficiently condemned.

Early cases.—The patient should be placed in the lithotomy position, the cervix pulled down with a volsellum, and, according to the operator's choice, one or more laminaria tents inserted into the cervix, or rapid dilatation of the cervix carried out with graduated bougies. A pair of polypus or ovum forceps should then be introduced into the uterine cavity, and the whole mass can then usually be removed in one piece. On examination of the removed abortion, should there be any suspicion of a portion of the ovum being left behind, it is better to pass the finger right into the uterus up to the fundus, to be quite sure that the cavity is empty and that no second ovum is present. The operation may be completed by washing out the uterine cavity with tincture of iodine, one teaspoonful to the pint, or swabbing it out with iodised phenol. I do not think, however, that either of these is absolutely necessary. Packing the uterine cavity with sterilised gauze was formerly much in vogue, but is, I think, undesirable. Its object was to produce uterine contraction, but this is better brought about by the injection of pituitary extract or ergot at the end of the operation. Anyone who has smelt the gauze removed from a uterine cavity, even 24 hours after the operation, will have been struck by the often offensive odour which emanates from it.

The question of performing curettage is one on which there is much diversity of opinion. Personally, unless there is some molar change in the ovum, I do not think it should be carried out as routine practice.

More Advanced Cases.

In the more advanced cases I think laminaria tents are usually preferable to rapid dilatation, and after removal of the tent and sufficient dilatation of the cervix I insert a specially made small de Ribes bag, which not only ensures the initiation of labour pains, but in cases of placenta prævia safeguards the patient from the results of hæmorrhage. As an argument in favour of this method I know of no more difficult vaginal operation than the removal of a 16–20 weeks' pregnancy by means of ovum forceps after rapid dilatation. The fœtus has by then attained to considerable size, but is still soft in consistence, with a much-enlarged head attached to the body by an easily torn-through neck, and in delivering the fœtus the head may be left behind; this will often defy removal owing to the difficulty of seizing it with any form of forceps at present devised. Much manipulation is necessary in these cases, and bruising and skin-sloughing may result and some form of sepsis ensue.

BRISTOL MENTAL HOSPITAL.—The Bristol Lunatic Asylum at Fishponds will in future be known as the Bristol M[illegible] Hospital. The institution was opened in 1851, at a [illegible]0,000, and then accommodated 220 patients. It has [illegible]arged on several occasions, and now provides room [illegible]y 1000 patients.

THE INCISION FOR APPENDICECTOMY.

BY NORMAN C. LAKE, M.D., M.S., D.SC. LOND., F.R.C.S. ENG.,

ASSISTANT SURGEON, CHARING CROSS HOSPITAL; SURGEON, QUEEN'S HOSPITAL FOR CHILDREN.

THE technique of operations which are performed very frequently tends to become rigidly stereotyped, and while we all have our eyes open to the advantages of a "set" operation, we are unfortunately often blind to its disadvantages. Since the introduction of the operation for the removal of the vermiform appendix, surgeons have for the most part used either the muscle-splitting incision of McBurney, or the rectus incision of Battle. Of these, the former is the more extensively employed, but there can be little doubt that they are both excellent or they would not have stood the test of time. Nevertheless, such stereotyped operations are often dangerous, in that they lead one to fall into the rut of unconsidered repetition.

Disadvantages of Stereotyped Operations.

There is a kind of "herd instinct" about surgery which lends its moral support to the performance of the classical operations, and often completely overbalances the surgeon's considered judgment of the individual case. For these reasons, if for none other, it is necessary to acclaim the stereotyped operations with a certain amount of reserve. They are magnificent for the teaching of operative surgery, but they are designed for ideal cases with a perfect diagnosis, and, as we all know, such cases are rare.

Higher mathematicians in complicated calculations, where perhaps absolute accuracy is not required, are continually dealing with what is known as the percentage error. In any estimation involving two consecutive calculations, the second of which depends upon the result of the first, it is obvious even to the layman that the percentage error must be roughly equal in both. It would, for instance, be futile to determine the second with absolute accuracy, if the first involved a large percentage error. It seems to me that this mathematical principle can be applied with advantage to the surgical treatment of disease. In this sense the treatment of any condition consists of two parts: (1) the diagnosis; (2) the operative treatment, the latter depending upon and being a function of the former. It therefore becomes necessary to have some idea of the percentage error in diagnosis before any estimate can be formed of the accuracy of any method of treatment.

Percentage Error in Diagnosis.

Opinions vary very considerably as to the percentage error of diagnosis in any disease, and it is, of course, impossible to express in mathematical formulæ something which depends to such a large extent upon the personal skill of individuals. Nevertheless, I am sure that many operations are designed without cognisance being taken of the fact that this error is frequently quite a large one. A well-designed operation should allow the error of diagnosis to be corrected if possible at the time of operation, if this cannot be done then the error of diagnosis is carried on through the treatment and the case is unsuccessful. Where, on the other hand, the error of diagnosis is very small—e.g., herniæ—there is little need to depart from the classical operations. Let us now apply this to the case of appendicitis, always remembering that the percentage error will vary within certain limits according to the skill of the individual surgeon. For this very reason it is no use appealing to personal experience only, if anything like an average figure is to be obtained.

Fortunately, I have had the opportunity of following the work of a number of surgeons both at home and abroad for several years, and during this time I have attempted to form some sort of idea as to the percentage error in their diagnosis of disease, and particularly in appendicitis. To read the current books upon the subject one would be led to think that the percentage error was a small one. Actually, however, I have found quite the reverse to be the case. With this, my personal experience, and that of several of my colleagues to whom I have spoken, agrees. It is true, of course, that the more thoroughly a case is investigated and considered, the smaller this error becomes within certain limits. I am dealing rather with diagnosis as it is usually made than with ideal possibilities; but even in the latter case, when the utmost of care is taken, the percentage error is very much larger than we are inclined to think.

For our purpose the disease may be conveniently divided up into two big groups—the acute and the chronic. As mentioned above, it is impossible to give accurate figures, but roughly the error is 10 per cent. to 20 per cent. in the acute cases, and 20 per cent. to 30 per cent. in the chronic cases. It will be seen that the error is a very considerable one, and under the circumstances it is certainly not very logical to deal with the second part of the treatment—namely, the operation—as if there were no need to provide for eventualities in its performance.

There are some surgeons to whom the word appendicitis is apparently a mere shibboleth: they "diagnose" appendicitis, remove the appendix, and are satisfied. No doubt ever seems to enter their mind as to the accuracy of their "diagnosis" and therefore no doubt as to the efficacy of their treatment. Their incisions reflect this confidence, for they are so designed as to preclude the possibility of any exploration of the abdomen beyond the actual appendix. Fortunately for their peace of mind, if the pain recurs the patient most frequently seeks the advice of some other surgeon who is helped towards the correct diagnosis by the previous failure.

An Alternative Incision.

It is because the error of diagnosis is a large one that I think practically all cases, where it is proposed to remove the appendix, should be regarded in the light of exploratory laparotomies with a suitably designed incision for that purpose. Before departing from the more classical incisions, however, it will be necessary to see that their well-tested merits in many respects are not lost, particularly with regard to the accessibility of the appendix and the strength of the resulting scar. The incision which I now use in the great majority of my cases is neither new nor original, but it appears to meet these demands, while at the same time allowing thorough exploration if necessary. It is a vertical rectus incision passing through the anterior rectus sheath at the junction of inner and middle thirds, the *rectus being retracted out* (this constitutes the essential difference from Battle's incision) and the posterior sheath divided in the same vertical plane as the anterior. The great advantage of this incision over Battle's is, that there is no danger of injuring the nerves entering the rectus sheath at its lateral border, *no matter to what length it* may be found necessary to enlarge the incision, should the diagnosis be at fault.

One feels, therefore, no compunction in extending this incision, knowing that no paralysis of the rectus can occur, and consequently that the abdominal wall will not be permanently weakened. It can easily be objected, *of course, that the general* exploration is obtained at the expense of accessibility of the actual appendix, and to some extent this objection is a valid one. The answer can only be obtained by practical experience of the incision. I have now employed it in about 800 cases, and although it would be unwise to draw any far-reaching generalisations *from* such a small number, they are sufficiently numerous to prove that with good retraction there is very little difficulty in getting reasonable exposure of the right iliac fossa, so that any slight disadvantage arising from this is very much overbalanced by the advantage of being able to correct the error of diagnosis. Incidentally, although some of the cases were done seven years ago, I have not had any cases of secondary hernia brought to my notice even in cases which were drained; they may, of course, have occurred and gone elsewhere for treatment.

The importance of attempting to correct the error of diagnosis in the chronic cases is well illustrated by the following, which have all occurred within the last year.

Two of my medical friends have had their appendices removed for sudden attacks of pain in the right iliac fossa. In both cases the respective surgeons used a small *McBurney's incision, and no attempt was made to correct* any error of diagnosis. In both cases the pain recurred after a short interval, and both patients subsequently passed small renal calculi, since when they have been quite well.

There are a large number of conditions enumerated in the text-books of differential diagnosis, which not only may, but do, frequently so closely resemble appendicitis that the most experienced observer cannot with certainty distinguish them. The cases given above are not by any means unique, they occur to every surgeon of experience now and then, and it is surely more honest to recognise the error than to bury one's head in the sand of perfection. Before leaving the chronic cases to consider the rather controversial acute cases I should like to instance one or two further cases in which a more general incision would, in all probability, have demonstrated the diagnosis at the first operation.

A young lady suffering from attacks of pain in the right iliac fossa was subjected to appendicectomy without any relief to her condition. At a subsequent operation undertaken for the relief of "adhesions" it was discovered that her real trouble was a chronic tube on the right side.

A man, aged 36, was similarly operated upon without relief. He died later of a retroperitoneal sarcoma, which would most certainly have been discovered at the operation had the incision been suitably placed.

A case of osteo-arthritis of the spine with referred pain on the right side was subjected to appendicectomy, again without relief. The diagnosis was changed to "gall-stones" and a second operation undertaken for the relief of this. It is obvious that the second operation was not necessary, for a complete exploration of the abdomen the first time would have indicated that the pain could not be explained by any intra-abdominal condition.

It is of great interest to note that in all of the above cases chronic appendicitis was actually present; it does not follow logically, however, that the appendix is necessarily the cause of the patient's present illness. At the same time, these cases illustrate how essential it is, even when the appendix shows obvious signs of disease, to find out whether any other condition exists coincidently.

The Risk of Spreading Infection.

When we come to consider how this affects the case of acute appendicitis, an additional factor enters into the problem, and that is the risk of spreading infection. It will be useful for our purpose to divide up the cases into three groups.

(1) *Those cases in which* the appendix is acutely inflamed, but as yet there is no indication of peritoneal involvement; from our point of view they correspond entirely to the chronic cases, and all that has been said will apply to them.

(2) Those cases in which there is localised abscess formation. It is in this group that the greatest difficulty arises in attempting to vindicate the claims of the rectus incision; *indeed*, if there were no diagnostic error and one could make quite sure that the abscess had reached the anterior peritoneum, then obviously the only logical incision is the McBurney. Unfortunately, the diagnostic error creeps in just as frequently here as in the chronic cases. During the past year I have seen several cases in which the abscess was by no means as localised as it appeared. In addition, it is only quite rarely that the pus has reached the anterior peritoneum at the time of operation, so that any incision which approaches from the front will be bound first to traverse the general peritoneal cavity and thus run the risk of spreading infection. Our ideas of the resisting powers of the peritoneum have luckily changed for the better; we now realise that the peritoneum is exceedingly resistant to infection provided it is not overwhelmed by massive doses. Most of such cases will be drained, and it is difficult to see that the risk can be any greater if the abscess be drained towards the mid-line than if it be drained directly outwards, considering that the general peritoneum will have to be traversed anyhow.

(3) The third group constitute those cases in which there is already general infection of the peritoneum present at the time of operation. In such cases there can be little doubt of the advantage of draining the whole cavity from a point as near the mid-line as possible rather than from an incision placed well out to the side. If it be thought advisable to drain the cæcal area in addition, this is easily done by passing a tube out from the incision.

Illustrative Cases.

Of the three groups of cases, therefore, it would seem that the advantages of the incision are only doubtful in those where the abscess is assumed to be completely localised, and it is because I believe that even in such cases this incision is often superior to the others, that the following cases are recorded with some detail, for they illustrate many of the points mentioned above in its favour.

(1) and (2) Two cases of appendicitis were admitted to Charing Cross Hospital together; the first was a girl of 19 years, and the second a man of 45. Their histories were *precisely similar both as regards duration and symptoms*, and in both cases what was apparently a well-localised abscess was felt. I decided as a test to use the McBurney incision in the first and the inner rectus incision in the other. The similarity of these cases was continued at the operation, indeed, it would have been difficult to find two cases more alike. In both there was a fairly well-localised abscess, but, in addition, a quantity of exudation in the general peritoneal cavity. The appendices were removed and large cigarette drains inserted. The man's recovery was uninterrupted; he left hospital at the end of the third week. The girl, on the other hand, developed a number of residual abscesses, in the peritoneum on right and left sides; she was subjected to several further operations for the drainage of these, and eventually left hospital for a convalescent home, scarcely able to walk unaided, and having barely escaped with her life, at the end of three and a half months. I am strongly of opinion that had this case been drained through a more central incision there would have been no residual infection in the peritoneum, and her recovery would have been as rapid as that of her contemporary. Were this case an isolated one it would prove nothing, the individual differences of resistance being too great; unfortunately, however, such cases can be multiplied.

Of a fairly large number of instances only two more need be given to prove that they are not very uncommon.

(3) A child, aged 5, was admitted to the Queen's Hospital for Children suffering from an obvious appendicitis calling for immediate operation. The resident officer who performed the operation felt so sure of the localisation of the abscess that, contrary to the usual custom, it was decided to use the McBurney incision, through which a large drainage-tube was inserted. After a few days this child died; at the post-mortem examination it was discovered that the abscess was not so localised as had been thought, and that a large extension to the left had been very inefficiently drained by the tube passing in on the right side, although such an extension must almost certainly have been well drained by a tube passing through a rectus incision.

(4) The fourth and last case also occurred at the Children's Hospital. This case had already been diagnosed as an appendix abscess, and upon examination I could find no signs of general peritoneal involvement. So well localised did the abscess appear that McBurney's seemed the only logical incision to use. In view of the above considerations, however, I adopted the inner rectus incision. The actual abscess about the appendix was certainly very localised, but in addition there was a peritoneal infection extending well to the left and not localised. The actual appendix abscess was opened, the appendix removed, and a large tube inserted down into the pelvis, a smaller one being carried out to the right iliac fossa. The boy made a rapid recovery. It is very difficult to see how efficient drainage of both sites of infection could be obtained by any other than a fairly mesial incision.

The mere record of cases grows tedious, especially as everyone must have had numerous examples of the same type in his own experience. They prove, however, that this incision is not devoid of merit, and although to use it as a routine would lead one into the very error of stereotyping which one is trying to avoid, yet I believe that if the indications of these cases are carefully observed, it will be used more frequently than either of the classical incisions.

Summary.

(1) Excessive stereotyping of classical operations is undesirable in view of the variation in cases.

(2) The incisions of McBurney and Battle, while excellent in their way, both limit the general exploration of the abdomen.

(3) The diagnostic error in the case of appendicitis is considerable, and should be corrected if possible at the time of operation.

(4) By the inner rectus incision with the rectus retracted out the whole of the abdomen can be easily explored, while at the same time the accessibility of the right iliac fossa is not seriously affected.

(5) This incision is indicated in all cases except those in which the localisation of an abscess can be guaranteed.

(6) The scar following is a strong one, and no cases of secondary hernia have been recorded.

THE OPERATIVE TREATMENT OF PROLAPSE (PROCIDENTIA) OF THE RECTUM IN ADULTS.[1]

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PROLAPSE of the rectum in adults, while not a dangerous complaint, is certainly one of the most distressing as regards discomfort that a surgeon is called upon to treat. In time it causes complete incontinence of the fæces, and to a large extent prevents the patient from getting about or attending to any form of business. It is notorious that results of treatment have often been very unsatisfactory; it is quite a common thing to find that a patient suffering from this complaint has had several unsuccessful operations performed for its relief.

Conditions Producing Prolapse.

In principle a prolapse is similar to a hernia and requires the same conditions for its cure. In a hernia the condition is produced, first, by the giving way of the muscular and fibrous supports at or near a weak spot in the wall of the abdominal cavity, and, secondly, by the stretching of some part of the contained viscera, which allows it to pass more or less through the opening so caused. These are also the conditions producing a prolapse of the rectum.

In order to cure a prolapse of the rectum it is first necessary to replace and anchor the prolapsed bowel, and then to restore the anal canal so that it is no longer a weak spot in the floor of the pelvis. Both results must be secured, for if one only is obtained recurrence of the condition is almost certain. The method I here describe was first published in THE LANCET during 1910[2]; my excuse for describing it again is that since then I have had a much more extended experience of the operation and its results, and am convinced that it is far superior to any of the other methods. It must be understood that the condition here referred to as prolapse does not include prolapsed piles, however bad, but true procidentia of the rectum, in which all the coats of the rectum are included in the portion which comes down. As a rule the prolapse varies in length from 2 to 8 inches. In old-standing cases the anus is patulous and the muscles badly stretched, while in some it may be almost impossible to elicit any contraction of the external sphincter on stimulation. If there is any appreciable weakening of the sphincter the integrity of the anus must be restored, and the prolapse dealt with at the same time, or a good result cannot be obtained. It is this factor which renders prolapse in the aged so difficult to cure: the muscular tone is gone and cannot be restored, and the surgeon can only hope to narrow the anal orifice.

Method of Operation.

A necessary preliminary to operation is to get the lower bowel thoroughly cleared out, several days being required to do this properly. The principle of the operation is to restore the bowel into its normal place in the hollow of the sacrum and hold it there by firm adhesions. In order to obtain these dense adhesions I make use of healing by granulation, and with this object in view the space posterior and lateral to the prolapsing portion of the rectum is packed with gauze and only allowed to fill up slowly so as to get the densest possible adhesions between the rectum and the sacrum.

The operation is performed as follows: The rectum is thoroughly cleaned out with ether soap and lysol solution, and finally with 75 per cent. spirit and picric acid, the skin of the perineum and buttock being similarly rendered aseptic; after the prolapse has been returned a piece of gauze is placed in the rectum to prevent leakage *during the operation*. A *transverse* incision is next made about 2½ inches long midway between the tip of the coccyx and the posterior margin of the anus. This is deepened until the connective tissue between the rectum and the sacrum is opened. With blunt dissection or with gloved fingers this space is opened as high up as possible and laterally till the rectum has been freed thoroughly at the back and sides. The whole of the space thus opened up is now lightly packed with sterilised vaseline gauze 2 inches wide, and made with a sewn edge, so that it will not fray and leave particles behind. A very considerable amount of gauze tape is used, but the object is to get this spread as flat as possible and not merely to fill the pelvis with it, and so block the rectum. As much as 40 yards of gauze have been employed in some cases. The end of the gauze is left protruding from the wound, and if (as is usually the case) more than one piece is used all the ends are firmly tied together at the finish.

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[1] Being a paper read before the Subsection of Proctology of the Royal Society of Medicine.

[2] THE LANCET, 1910, i., 641.

The next thing is to restore the anus; the type of operation for this purpose will vary according to the condition to be dealt with. My usual method is to extend the ends of the previous incision forward on each side to about half-way between the anterior and posterior margins of the anal orifice. The flap thus formed is dissected up so as to expose the posterior half of the external sphincter. This muscle is then carefully defined and the lateral portions sewn together from behind forwards until the anal orifice is narrowed to the extent considered desirable. No. 1 catgut is used for the stitches, and they are not pulled tight enough to cut through the muscle fibres, but just to bring the sides of the sphincter in close contact. Supporting sutures are put in, and then the flap is loosely stitched back in position, leaving room for the removal of the gauze packing later. A short tube is placed in the rectum to prevent prolapse should the patient strain coming round from the anæsthetic, and the whole perineum covered with sterilised dressings.

Treatment after Operation.

The wound is dressed twice daily and fresh dressings applied, but the packing is not removed for a week. At the end of this time an anæsthetic is given, all the packing removed, and a fresh lot of gauze introduced; this, again, is left in for five days or a week, and then removed; this time no fresh gauze is introduced, a drainage-tube being placed in the cavity left by its removal. The wound should not be allowed to heal under three weeks; in fact, the more slowly it heals the better the result. The bowels are kept confined until the seventh day after operation, when they are relieved by an enema before the removal of the packing; after this they are opened daily with an enema, a slipper bedpan being used. The patient is not allowed out of bed for six weeks and not allowed to sit up for an action of the bowels for two months at least. It is most important in view of the large area of cellular tissue opened up that there should be no sepsis at the time of the operation, but sepsis later is almost certain to occur after the removal of the packing, and is, in fact, desirable. The slower the wound heals and the more fibrous tissue involved the better the result.

Results.

I think I may say that the results of the operation are very good. The earliest case was treated as long ago as 1908, so there has been plenty of time to test the question of a permanent cure. Out of the total of 32 cases there have been only five failures. Two of these were permanently cured by repeating the operation. In one other case two operations failed to cure the patient, but in that case there were special circumstances; the patient, a lady aged 52, suffered from a chronic nervous affection of the spinal cord, which caused great difficulty in micturition, and consequent straining was the cause of recurrence of the prolapse. She was also mentally deficient, so that it was difficult to get her to take reasonable care of herself. With these exceptions all the cases were cured. In quite a number of cases several previous operations had been performed unsuccessfully by other methods. As regards risk, this would with proper precaution appear to be negligible. So far I have not met with any serious complication.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

DISSEMINATED SCLEROSIS TREATED WITH INTRAVENOUS ARSENIC.

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AND
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IN view of the work that has been done in recent years tending to show that disseminated sclerosis is of spirochætal origin the following notes are of interest, showing the effects produced in a case of disseminated sclerosis which was treated by intravenous injections of arsenic:—

J. M. F., aged 26, married, was admitted to the infirmary April 24th, 1916. She had had no previous illness and had three children, all alive and well at the time of her admission. Six months before admission she had noticed loss of power and sensation in the left hand, which had only lasted a short time. Five months later similar symptoms appeared in the right hand and she began to drag her right foot. She became gradually worse and was bedridden for a short time before her admission.

On admission she was well nourished, and there were no physical signs of disease in the heart, lungs, or abdomen. The grip of each hand was very weak; the deep reflexes were present, equal, and active; there was no loss of sensation to light touch, pain, or heat, but there was considerable ataxia of the arms, and she was unable to appreciate weights correctly. The legs were paralysed and flaccid, the deep reflexes much exaggerated, and the plantar reflexes extensor; sensation to light touch, pain, and heat was normal, but the patient complained of pains in her legs at night. The sphincters of the bladder and bowel were affected. There were no lesions of the cranial nerves; the pupils reacted to light and accommodation; the sight, speech, and mental condition were normal. Patient had slight scoliosis; there were no pains in the spine and no "root pains."

A diagnosis of a lesion of the pyramidal and posterior columns—i.e., combined sclerosis—was made. The Wassermann reaction of the patient's blood serum was returned "positive." There was no clinical evidence of syphilis in the patient or her husband, and repeated examinations of the latter's blood were always "negative." However, on the strength of the positive Wassermann, the patient was given a course of intravenous arsenic in the form of galyl in concentrated solution, followed by weekly intramuscular injections of metallic mercury. The improvement in the patient's condition was immediate. She was soon able to move her legs in bed, she recovered control of her sphincters, and four and a half months later she was able to walk about and go home. She attended the infirmary regularly for antisyphilitic treatment, and the Wassermann reaction which was tested every three months, was always negative. A mild paresis of the legs remained and never completely cleared up, but the patient, from being completely bedridden, had become able to walk about, to walk to the infirmary, and to do her housework, and in view of this dramatic improvement, which had apparently been effected by the treatment, the case was looked upon as one of syphilitic meningo-myelitis.

On April 8th, 1918, the patient was readmitted for a severe relapse.

On admission there was definite spastic paraplegia and occasional incontinence. The pupils reacted normally and sight and speech were not affected. Intramuscular injections of mercury were resumed, combined with treatment by massage and radiant heat. Only a slight improvement occurred, and the patient took her discharge on May 8th, 1918, her mental condition beginning to show a little deterioration—e.g., she became discontented and complained without sufficient cause, &c.

She was not seen again until Oct. 8th, 1919, when she was readmitted in a much worse condition than she had been in at any previous time. She was emaciated, bedridden, and suffering from a large bedsore over the sacrum. She was completely paralysed in both legs and incontinent of urine and *fæces*, but had no disorder of sensation; her pupils and sight were normal, and remained so to the end. But a new order of symptoms had appeared; her speech was slurring and characteristic of the kind observed in G.P.I. Her mental condition was still more typical of that disease; *she was disorientated for time and place, was inordinately happy* considering her condition, very emotional at times, and had many delusions of grandeur—e.g., she was a princess, possessed vast sums of money, and kept giving orders for goods on an extravagant scale, &c. The Wassermann reaction of her blood serum remained negative. She got gradually worse and died on March 27th, 1920.

Remarks.

Up to the time of this patient's death, in spite of the absence of pupillary signs, the case was considered to be an unusual one of syphilis of the central nervous system, beginning as a meningo-myelitis, passing into a stage where the physical signs were referable to a healing pachymeningitis and ending as a case of parenchymatous syphilis of the brain (G.P.I.). The post-mortem examination, however, upset the whole of the clinical observations and deductions. The central nervous system presented the typical lesions of disseminated sclerosis with the characteristic haphazard distribution of soft pink patches of sclerosis in the spinal cord and medulla and in the white matter of the brain. The microscopical findings confirmed the naked-eye appearances. No pachymeningitis was found, but there was a mild leptomeningitis.

This case is of interest for the following reasons: (1) The simulation, at first, of a spinal syphilitic lesion, and, later on, of syphilis of the brain by a case of disseminated sclerosis. (2) The remarkable improvement which occurred in a bedridden case of disseminated sclerosis. The improvement was so great that the patient, after having been completely paralysed in both legs, was able to walk without help for two years before a relapse occurred. (3) The possibility that intravenous injections of arsenic may have played some part in producing this improvement.

A NOTE ON THE

ADMINISTRATION OF BILE SALTS IN INFANTILE MARASMUS.

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THE following report is based on observations carried out at the Evelina Hospital in 1918 on four marasmic infants. Publication of results has been delayed until now on account of the limited number of cases hitherto investigated and the paucity of laboratory evidence corroborating clinical observations. However, Dr. R. Miller's recent article, "Cœliac Infantilism: Its Fat Digestion and Treatment by Bile Salts,"[1] and Dr. R. Armstrong's letter[2] have encouraged the present publication, especially as the literature is peculiarly deficient in papers dealing with the clinical aspect of bile-salt therapeutics. On the other hand, there are a number of very interesting pathological investigations that have a bearing on the rationale underlying the treatment to be described. For reference to the researches of W. Jacubowitsch,[3] A. Baginsky,[4] and Arvo Ylppö[5] I am indebted to Dr. W. M. Feldman. Papers by H. Roger,[6] H. Dubin,[7] and R. Simonini[8] were also consulted, though all these investigations had been undertaken with different aims in view.

While it appears unprofitable at this juncture to discuss the particular theories involved, it may be stated that increased fat assimilation is thought to be only one of several therapeutic effects of bile salts. It is further suggested that cases of marasmus most likely to respond to the treatment are those following acute intestinal infections and chronic disorders of the type of H. Finkelstein's "balance disturbance," described by H. C. Cameron as "cow's milk atrophy."[9]

All patients reported in the present series belong to the large group of infants showing evidence of marasmus without other physical signs. In Case 2 the presence of congenital syphilis was suspected, but could not be established. Cases 1 and 3 had a history of wasting of long duration, which in the latter case followed on an attack of infective enteritis. In no case was there any evidence of cœliac disease or any macroscopic indication of fat excess in the fæces. While normal as a rule, the stools were occasionally bile-stained and unduly frequent.

The average dose administered in the course of this investigation consisted of gr. ¼ of the mixed sodium glycocholate and taurocholate for infants 3 months old. No attempt was made to investigate the differential action of the two acids. The patients' diet was kept as uniform as possible; it consisted of pasteurised cow's milk suitably diluted.

CASE 1.—A. B., a girl, aged 10 weeks, admitted July 4th, 1918, weight 3·2 kg. During the first month weight dropped to 2·9 kg., but rose again to a maximum of 3·39 kg. on August 16th. During following month she lost again steadily. On Sept. 19th, her weight then being 3·06 kg., bile salts were administered. She immediately began to put on weight; except for a slight set-back caused by enforced substitution of condensed for fresh milk, this improvement continued throughout her stay in hospital. A fortnight after the administration of bile salts had been stopped her weight had reached 4·12 kg. Therefore, after the first period of 10 weeks in hospital she had lost 0·14 kg.; during the second 10 weeks, while bile salts were given, she gained 1 kg. Her parents reported at the beginning of May, 1919—that is, six months after discharge—that they "could almost see her put on weight" and that she was fit in every respect.

CASE 2.—C. D., a boy, aged 2 weeks on admission; emaciated and very weak. Frequent attacks of vomiting and diarrhœa. Though he was not thought to suffer from typical marasmus, bile salts were administered for two short periods without arresting the steady drop in weight. Altogether he had lost 0·5 kg. when he died. One Wassermann examination had been returned negative, but suspicions of the presence of syphilis remained.

CASE 3.—E. F., a girl, aged 8 weeks, admitted for infective enteritis. A normal infant before this illness, she became marasmic after the attack of enteritis had subsided. On admission her weight was 2·8 kg. After a temporary rise to 3·06 kg. it dropped to 2·7 kg. After 10½ weeks it was just 3 kg. She was then given bile salts. With but one interruption, during an attack of otitis media with otorrhœa, her weight steadily increased to 3·8 kg. During the first 10½ weeks in the ward she had gained 0·2 kg., after many oscillations; during the second period, lasting 6½ weeks, while bile salts were administered, she gained 0·8 kg.

CASE 4.—G. H., a boy, aged 7 weeks. Bile salts were given for one short period only, but neither this nor any other treatment led to a marked improvement. His condition was practically the same on discharge. This case is included merely for the sake of completeness.

Conclusion.

Cases 2 and 4 cannot be shown to have derived any benefit from bile salts. It may be argued that Case 2 was syphilitic, or, in any case, was too much handicapped by infective enteritis to recover with any form of treatment. In judging the improvement in Cases 1 and 3, two outstanding features must be considered in addition to the increase in weight. In the first place neither patient showed any improvement during the first ten weeks in hospital. In spite of all efforts to find a suitable treatment the downhill course had not been stayed. Secondly, the steady general improvement synchronous with the bile-salt treatment impressed all clinical observers. The infants, apathetic and feeble, and to all appearances moribund, responded from the very outset of treatment until they were vigorous and thriving like normal babies. It must be emphasised, therefore, that the actual gain was greater and more complex than a mere increase in weight.

In conclusion, I wish to express my gratitude to Dr. D. Forsyth and Dr. E. P. Poulton for facilities of study and permission to publish these notes.

A SPECIAL meeting of members of the medical profession interested in the subject of the advance of medical education in China will be held on Monday, Feb. 21st, at 5.30 P.M., in the Barnes Hall, Royal Society of Medicine, 1, Wimpole-street, London, W.

BRITISH HOSPITALS' ASSOCIATION.—A conference, called at the request of the British Hospitals Association, was held at the Royal Portsmouth Hospital on Jan. 27th. It was unanimously decided to form a regional committee of representatives of hospitals in Hampshire, Isle of Wight, and part of Sussex, in order to guard the interests of voluntary hospitals, and to give to the Central Committee a combined opinion on questions affecting them. Each hospital will be asked to nominate two delegates. Meetings will be held quarterly in various towns in the district.

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[1] THE LANCET, 1920, ii., 894.
[2] THE LANCET, 1920, ii., 1023.
[3] Jahrb. f. Kinderheilk., 1885, xxiv., 373.
[4] Arch. f. Kinderheilk., xix., 1896, 321.
[5] Zeitschr. f. Kinderheilk., ix., 1913, and xvii., 1915.
[6] Ann. Inst. Past., 1915, xxix., 545.
[7] Jour. Biol. Chem., Balt., 1917, xxxi., 255.
[8] Nipiologia, Napoli, 1918, iv., 1.
[9] Diet and Disease in Infancy.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

A MEETING of this society was held on Jan. 24th, Sir WILLIAM HALE-WHITE, the President, being in the chair, when Dr. A. FEILING read a paper on

Multiple Neuritis.

He said that the term "neuritis" was somewhat misleading, since it conveyed the idea of an inflammatory lesion, rather than of a degeneration of the parenchyma of the nerves. Modern researches had all tended to confirm the view held by the older observers and to enlarge our conception of the disease as one where the neuritis was only part of a generalised disease process which might affect other organs even primarily, and the nerves and central nervous system secondarily. The essential cause of the disease might, broadly speaking, be described as some poison which was either introduced from without (for example, the chemical poisons of alcohol, lead, or arsenic) or elaborated in the body by the growth of bacteria such as the diphtheria bacillus, or which was part of a general infection or intoxication, such as occurred in the specific infections, typhoid fever or influenza, for example. Multiple neuritis might also occur in conditions of altered metabolism, such as were found in diabetes, in cachectic conditions such as tuberculosis or cancer, or in states where a dietetic insufficiency played a large part, as in beri-beri. Pathologically, the process was essentially one of degeneration, and though inflammatory changes were present in some forms they were an inconspicuous feature. Recently more attention had been focused on the changes found in the central nervous system, and more exact methods had brought these changes into increasing prominence. Thus, Marie warned us that the disease was not limited to the peripheral nerves, but that changes might be found in the spinal cord and medulla in many cases. The ganglion cells in the anterior horns constantly showed the changes of chromatolysis, while the posterior root ganglia were often affected. Which was the primary condition had long been a moot point, but the most acceptable explanation was that the action of the toxin fell on both, so that the whole motor neurone, and in many cases the sensory neurone as well, was attacked. The recent researches of Orr and Rows on lymphogenous infection of the central nervous system had demonstrated ascending lymph streams in the spaces of the perineural sheaths, and that toxins could reach both the spinal cord and medulla by this route. F. M. R. Walshe had applied this conception to explain the pathogenesis of diphtheritic paralysis, and had pointed out that the varying nature of the paralysis might be explained by the seat of the toxin in the body. Thus in the ordinary case of faucial diphtheria toxins were elaborated in the membrane and passed to the medulla or mid-brain by the perineural lymph channels of the cranial nerves, and hence the early involvement of those nerves by the action of the toxins on their centres. The multiple neuritis—i.e., that of the arm and legs—was referred to a blood-borne general toxæmia which was usually of later date than the cranial nerve involvement. This contention received support from his experience of diphtheria in the Egyptian Expeditionary Force, in which the site of the infection was the skin in many cases, and in which there was a close connexion between the situation of the primary lesion and that of the initial paralysis. *The importance of a* generalised infection of the central nervous system was also evidenced by the pathology of acute febrile polyneuritis. Such far-reaching changes as involvement of the grey matter, muscular degeneration, and hepatic inflammation could be demonstrated. Bradford, Bashford, and Wilson regarded the disease as essentially a septicæmia, the central nervous system being affected by way of the nerve trunks.

Having spoken briefly of the general signs and symptoms of multiple neuritis he referred more particularly to the work of Walshe on diphtheritic neuritis, and that of Gordon Holmes, and J. R. Bradford, E. F. Bashford, and J. A. Wilson on acute infective polyneuritis.[1] The former had forced us to realise the importance of the skin as a possible portal of entry of infection in multiple neuritis, and impressed upon us the general involvement of all the elements of the nervous system. Bradford, Bashford, and Wilson had concluded as follows:—

1. *So-called acute febrile polyneuritis is a very definite* entity, capable of being separated clinically from other diseases of the nervous system.
2. It is a diffuse affection of the nervous system affecting the spinal cord, spinal ganglia, and peripheral nerves, with but a slight incidence on the cerebral cortex.
3. The lesion is essentially one of the nerve elements—cells and fibres.
4. The malady can be transmitted experimentally to the monkey, and the characteristic lesions reproduced in the experimental animal.
5. A living virus can be shown to be present both in the human cases and in the inoculated monkeys.
6. The disease can be reproduced in the monkey by the suitable inoculation of the virus in pure culture, and the virus can be recovered from the experimental animal.

Similar cases had been noted in civil practice, and he recounted two from his own experience. He then spoke of multiple neuritis following influenza, many cases of which he had met with during the last epidemic. The symptoms were chiefly on the motor side. Wrist-drop and foot-drop were both fairly common, while less frequently the paralysis had involved the muscles of the trunk. He had seen paralysis of the abdominal muscles and of the diaphragm. Patrick had analysed the occurrence of facial paralysis in multiple neuritis, and had found that it occurred most commonly in influenzal cases. Multiple neuritis in the typhoid fevers was very uncommon, and he had never seen a case of any severity. He had met with one remarkable case following typhus in which the muscles most affected were those of the *shoulder girdle. Dysentery, particularly the bacillary* type, could undoubtedly be responsible for multiple neuritis. Several examples which had come under his observation were all mild, and exhibited no special feature beyond a slight motor paresis and subjective disorders of sensation with loss of the knee- and ankle-jerks. After laying stress on the importance of regarding all cases of multiple neuritis as examples of infection or of intoxication affecting the whole body and not merely confining attention to the nervous system, he remarked upon the apparent diminished frequency of alcoholic neuritis, and asked the views of the meeting on the occurrence of multiple neuritis in rheumatoid and other types of infective arthritis.

Discussion.

The PRESIDENT said that he was in full agreement as to the implication of the rest of the nervous system. It was difficult to understand why particular nerves were damaged by particular poisons—for example, the musculo-spiral by lead and the anterior tibial by arsenic. Was there some subtle chemical difference between the two nerves? Another example was the confinement of multiple neuritis of diphtheria in many cases to the mouth and its neighbourhood. He had twice seen neuritis due to alcohol fatal from involvement of the vagus. To ascribe the selection of particular nerves to "selective affinity," as was so often done, was no real explanation. He thought there was certainly a decrease in alcoholic neuritis, and recognised little association between neuritis and rheumatoid arthritis.

Sir DAVID FERRIER, while agreeing that the centres were affected, said there was no doubt that the brunt fell on the peripheral nerves, and until recently pathologists had been unable to discover the lesions of the central nervous system. Paralysis of peripheral neuritis differed from that due to affection of the anterior horn in that it showed itself more particularly in the extensor muscles. This was seen in the case of alcohol, lead, arsenic, and almost every form. If a nerve were pressed upon, the first muscles to become paralysed were again the dorsi-flexors. In pressure on the recurrent laryngeal nerve this was true of the abductors. It appeared that the extensors and the abductors were more vulnerable, and clinically this afforded an important distinction between neuritis and poliomyelitis. The grouping was different from poliomyelitis, and the paralysis corresponded with function. During recovery, again, the last muscles to recover were the extensors.

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[1] THE LANCET, 1919, i., 343.

Handprints of Mental Defectives.

Dr. F. G. CROOKSHANK read a paper on Handprints of Mental Defectives, with special reference to those of Mongolian imbeciles. In order to make clear the point to which he desired to draw attention he explained the lines on the normal palm, using for convenience, without prejudice, the terminology of the palmists. Three main lines were seen on a normal well-developed palm. The first, which skirted the ball of the thumb and was known as the "line of life" being correlated with a well-developed thenar eminence, was more marked in those who are vigorous, both bodily and mentally. Of the two other principal lines one, called the "line of heart," took origin from between the pads at the bases of the first and second fingers and ran outwards to the ulnar border; the other, nearer the wrist, rose near the hypothenar eminence and ran outwards to the cleft between the thumb and the base of the index finger. Though these primary lines were correlated with function they were not actually, and for each individual, developed during and by the use of the hand, as were most of the secondary and tertiary lines. They were normally present in the last week or weeks of fœtal life, their presence at this early stage being an example of the operation of what is called the law of anticipation; that is to say, characters acquired for the race by response to need tended to appear in succeeding generations at early stages of development in anticipation of exercise of that function with which they were correlated and for which or to which they were adapted. When an ill-brought-up child, an idiot, or an ape grasped a fork, a stick, or a straw, not as we hold a pen or a knife, but across the palm, a broad transverse crease was made which showed how the lines of head and heart had been differentiated from one transverse primitive line suited to this primitive usage of the hand. Such a line was seen on the hands of many monkeys, as in the rhesus, and of some apes, especially the orang, and it was this single transverse line that was seen on the palm or palms of many Mongols. In Beamish's "Psychonomy of the Hand" (1864) there was a representation of this type of marking as seen in the hand of a congenital idiot in Cork County Asylum, and some years ago he had seen a similar print from the hand of an American doctor executed at Chicago for murder. Otherwise he believed that this morphological peculiarity had escaped observation. Professor F. Wood Jones, however, mentioned it, though not in connexion with Mongolism. There was a general resemblance between the prints of the right and left hands of a young normal in respect of the primary lines, but amongst Mongolian imbeciles there was often, even at an early age, a difference between the right and left palm. As a rule, the left was the more primitive, but when both were primitive the child was usually of a low grade.

It was, however, not only in respect of Mongolism that a study of hand prints was interesting. Certain mental defectives and some nervous children who were not cretins, but who responded to thyroid treatment, displayed a very characteristic hand print. There were coarse deeply-scored intersecting lines giving the appearance of a photograph from an aeroplane of a barbed wire entanglement. This type was sometimes met with conjoined with that of Mongolism. A good deal of evidence had lately accumulated to show that in Mongolism there was an element of dysthyroidism. The occurrence of mixed types was not so uncommon as was thought, and children with a mild degree of Mongolism, but who were not imbeciles, often became myxœdematous in later life. Besides these two chief types there was another of considerable interest. In the peculiar hands of patients suffering from dementia præcox the lines running up divergently from the wrist were very marked, as in the chimpanzee, and the same thing was seen in the hands of children of the physical and mental type that stamped them as candidates for dementia præcox. Though it was easy to recognise the three types of hand prints, nevertheless mixed cases occurred. The Mongolian line, as seen in adults who are called normal (but who, though able, are usually anything but commonplace), was not a sign of imbecility, but indicated the unit one might call Mongolian, albeit not dominant but in recession. He showed a large number of hand prints to illustrate his paper.

Dr. R. L. LANGDON-DOWN said that particular hand prints were only true, broadly speaking, of those imbeciles called Mongols. The special mal-development of the lines which had been described was confined to Mongols, and though in others there might be irregularity they were not of the same type. They were not seen in all imbeciles. He agreed that in some cases in which there were none of the ordinary traits of Mongols the lines might be useful in diagnosis. He associated both the Buddha posture and the grooves in the hands with the abnormal flexibility of joints and harshness of the skin. Another feature was shortness of the index fingers.

ROYAL SOCIETY OF MEDICINE.

SECTION OF MEDICINE.

A MEETING of this section of the Royal Society of Medicine was held on Jan. 25th, Dr. A. F. VOELCKER, the President, being in the chair.

Dr. P. J. CAMMIDGE read a paper on

Observations Bearing on the Ætiological Classification of Diabetes Mellitus.

After briefly summarising a series of experiments on the changes in the blood and urine associated with pancreatic disease, published in THE LANCET[1] in conjunction with Mr. Cairns Forsyth and Mr. H. A. H. Howard, in which it was shown that the "difference value" of the blood and the iodine coefficient of the urine, estimated at hourly intervals before and after a test-meal taken fasting, vary inversely as the percentage of sugar in the blood and the output of sugar in the urine respectively, the speaker proceeded to describe the results of the application of similar methods to the study of diabetes mellitus. It had been found that in a series of 100 consecutive cases 33 gave curves corresponding to one or other of those obtained with partially or totally depancreatised dogs, and it was inferred that the diabetes was probably of purely pancreatic origin in about this proportion. The remaining cases were divisible into three groups according to the relation between the difference value and blood-sugar curves. In one the difference value starting at or about zero in the fasting state rose with the percentage of sugar in the blood after a meal and continued to rise as the blood sugar dropped again after reaching its maximum. Experimental and clinical evidence was brought forward which indicated that in this type of case the functions of the liver were being imperfectly carried out, and it was concluded that this, the "hepatic" type of curve, probably indicated a different form of diabetes from those in which a "pancreatic" curve was found. In another group the difference value of the blood was found to be abnormally high in the fasting condition, as in "pancreatic" cases, but instead of the ingestion of food being followed by a fall a rise occurred, as in the "hepatic" type. It was, consequently, suggested that cases showing curves of this character were suffering from a combined pancreatic and hepatic disorder. In the remaining cases the difference value and blood-sugar curves ran concurrently, a rise in the one being associated with an increase in the other and vice versa; moreover, in most of them the peak of the blood-sugar curve after a test-meal had been found to occur at the first or second hour instead of at the third hour, as in a normal individual. No definite opinion as to the pathology of this group was expressed, but, as it included cases of exophthalmic goitre and acromegaly, it was suggested that curves of this description might be an expression of disturbances in the nervous system or in the ductless glands, apart from the pancreas. The subject is at present being investigated experimentally. So far as a limited experience allowed of inferences being drawn, the pancreo-hepatic type was much the most serious as regards prognosis, the pure pancreatic type came next, the true hepatic condition was comparatively innocuous, while no deaths had so far occurred among the patients giving a concurrent type of curve. Dr. Cammidge said that the paper was a preliminary communication, and that modifications might become necessary as the investigation advanced.

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[1] THE LANCET, August 21st, 1920, p. 393.

Dr. E. P. POULTON'S paper on the treatment of peptic ulcer by means of gastric and gastro-duodenal tubes appears in full in the present issue of THE LANCET.

SECTION OF OTOLOGY.

AN ordinary meeting of this section of the Royal Society of Medicine was held on Jan. 21st, Mr. ARTHUR CHEATLE, Vice-President of the section, occupying the chair.

CAVERNOUS SINUS THROMBOSIS.

Mr. T. RITCHIE RODGER (Hull) read a paper on four fatal cases of this condition which had been under his care. The origin of the trouble was different in each case. In the first patient the superior petrosal sinus had been primarily infected from the middle ear or the internal ear without previous involvement of the sigmoid or the lateral sinus. The second case had a more usual origin—namely, a carbuncle on the nose. The third was of the middle-ear type, in which the sigmoid was thrombosed, the process extending to the cavernous sinus, presumably viâ either or both petrosals. The fourth was an example of infection following a frontal sinusitis. This was the only case of the four in which permission could be obtained for a post-mortem examination. In this a purulent exudate was found covering the whole of the left side of the brain, and several ounces of pus drained into the basin. The lateral, sigmoid, and longitudinal sinuses were normal. The circular sinus and the anterior part of the right cavernous sinus showed pus and soft thrombi. The dura was adherent to the roof of the left frontal sinus, and the bone was dark-coloured. Removal of this dark bone revealed a frontal sinus full of thick pus and gangrenous mucous membrane. A similar condition was present in the left antrum of Highmore and in the ethmoid cells. Mr. Rodger discussed the methods of approach to the sinuses and the possibility of saving these very fatal cases by setting up a suction action by lavage of the jugular bulb, the idea being to aspirate the septic clot from the inferior petrosal sinus. He said that although cavernous sinus thrombosis was one of the most fatal conditions met with, a sufficient number of recoveries without direct attack had been recorded to encourage otologists to use every available means to attain that end. When dealing with sigmoid sinus thrombosis the most scrupulous cleansing of the mastoid cavity must be carried out before opening the vein, and the greatest care observed in inserting the upper plug. Also vaccines and every possible aid to increase the patient's resistance should be employed, and one of the most important of these means he considered to be fresh air.

Mr. W. STUART-LOW expressed his decided preference for the cortical mastoid operation over the radical operation for young patients. These patients showed great powers of recovery, and after the radical operation there was a considerable tendency for the sepsis to extend into the veins. He also laid stress on an efficient preparation of the field of operation before attempting treatment, and the use of a cage over the wound instead of a tight bandage, to allow of free access of air.

Mr. CHEATLE considered that cases of the kind, when once established, were hopeless. He referred to the operation on the cavernous sinus which was designed by Sir Charles Ballance, and described before the Otological Congress at Boston, U.S.A. He, the speaker, referred to the case of a child which he recently had. The patient was at once operated upon, but all that was found was pus in the antrum. Signs of cavernous sinus thrombosis developed and death ensued. At the autopsy, sepsis was found to have extended to the superior petrosal sinus, which was evidently the pathway of the infection to the cavernous sinus. He referred to the danger of syringing the sinus in operations for thrombosis of the lateral sinus.

Dr. A. A. GRAY (Glasgow) said he had seen four cases of recovery from the condition under discussion, but they may not have been septic cases.

Mr. HAROLD KISCH spoke of recovery in a case of cavernous sinus thrombosis which was under his care. It was that of a Punjab Mahomedan who was wounded in the scalp in 1917. When seen, the scalp was œdematous and very septic. Several incisions were made, and the veins of the scalp were full of pus. He had a high temperature, pain, proptosis, chemosis, &c.; but in a few days there was complete recovery. Native Indians often showed remarkable powers of dealing with sepsis. This man was nursed in a tent, which might have been a factor in his recovery.

Mr. RODGER replied.

EXHIBITION OF CASES.

Tinnitus with Large Rhinolith.

Mr. L. COLLEDGE showed a woman, aged 59, who had been complaining of tinnitus in the right ear for many years. There had also been some discharge from the right nostril, with obstruction of it, causing, however, very little pain, and there was no deafness. There was suppuration in the right antrum of the nose, and some small mucous polypi were present. The stone was felt with the probe, and was removed by an operation on the right antrum; the rhinolith had to be partly crushed before removal to avoid damaging the nose in extraction. A carious second bicuspid tooth was also removed, and there had been great relief since.

Pyorrhœa Alveolaris Affecting the Ears.

Mr. A. J. HUTCHISON showed two cases illustrating this relationship. The first, a girl aged 18, complained of increasing deafness and tinnitus in both ears, but the membranes appeared normal. Following the discovery of pyorrhœa five teeth were extracted; the tinnitus ceased, and hearing greatly improved. The second, a man, had ear pain, which started after bathing, and for 13 months had a varying discharge, and later had pain in knee, elbow, and neck. Pyorrhœa was discovered, teeth extracted, and within two weeks the ear became dry, hearing improved, and the joint-pains ceased.

Long Retention of Bullet in Ear.

Mr. KISCH showed a private soldier who, in January, 1916, was admitted to a military hospital with extreme rheumatoid arthritis in many joints, and emaciation. There was a profuse offensive discharge from the left ear, and the middle ear was filled with granulations; the mastoid was tender, and there was a tendency to spontaneous nystagmus. On exposing the middle ear the base of a rifle bullet could be seen just below the promontory, and it was extracted entire. There was no sign of fracture of the external auditory meatus. The ear progressively recovered, and his joints improved sufficiently for him to live an ordinary life. The bullet had been in situ 15 months.

Foreign Body in Mastoid Antrum.

Mr. T. JEFFERSON FAULDER showed a boy, 8 years of age, in whom a bead was found in the deeper part of the meatus, beyond the isthmus. It completely filled the lumen and was surrounded by a small rim of wax. Attempts at extraction by the natural route failed, and on making a post-aural incision the bead could not be found in the meatus or the tympanum. A later operation exposed the foreign body lying among granulations in the antrum. It appeared to have arrived there by way of a much enlarged aditus.

Deep Aneurysm Involving the Temporal Bone.

Mr. NORMAN PATTERSON showed a patient with this condition, and described the operation he proposed after ascertaining what set of vessels the aneurysm was connected with.

Among the other cases was one by Mr. G. J. JENKINS, Probable Epithelioma of Auricle; and by Mr. W. M. MOLLISON (1) Tympanic Exostoses, and (2) Meatal Polypus due to sinus of the superficial bony meatal wall.

HARVEIAN SOCIETY.

THE FUTURE OF THE POOR-LAW INFIRMARY.

A MEETING was held on Jan. 27th at the Paddington Town Hall, with Dr. G. DE BEC TURTLE, the President, in the chair, when the discussion on the Future of the Poor-law Infirmary,[1] adjourned from Dec. 16th, was resumed. A letter was read from Colonel F. E. Fremantle, M.P., regretting his unavoidable absence, and urging that the problems should be attacked on broad lines.. The opening addresses, by Dr. A. G. Stewart and Dr. R. Dudfield, appear in full in the front part of this issue of THE LANCET.

Dr. J. B. COOK (West Middlesex Poor-law Hospital) spoke of his 16 years' experience of the inside working of an infirmary. The criticisms made against the equipment and treatment of patients were quite unfounded, anyhow as regards modern infirmaries in or near London. Dr. Wilson had suggested that Poor-law infirmaries had no future; if they were as he described, they certainly were not deserving of one. Dr. Charles Buttar had described them as the rubbish-heap of practice. The speaker was proud to have such rubbish on his heap, and confirmed Dr. Stewart's remarks as to the proportion of acute cases treated, the adequate equipment, the facilities for consultation and for pathological investigation, and the excellence of the training of nurses in modern infirmaries. In his opinion the future of the Poor-law infirmaries was assured. They were supported by public funds and would become State hospitals, and therefore their absorption by voluntary hospitals was unlikely. The future of the voluntary hospitals was much more uncertain. The machinery of State hospitals was partly established in the fever and mental hospitals and the infirmaries. In the future the State was bound to extend its care of the sick, which was too important to be left to voluntary efforts. The personal interests of members of the staff of voluntary hospitals were secondary to those of the sick which were the chief concern of the State, but the staff would not necessarily suffer. Why should not medical men find in State hospitals the same opportunities for advancement and advertisement, and be paid instead of exploited? Arrangements for the instruction of students could easily be made. The four points Dr. Cook wished specially to emphasise were: (1) That infirmaries would become State hospitals, whereas the voluntary hospitals would exist only as long as their funds existed. The State must in time enlarge the State hospitals, subsidise voluntary ones, or do both. (2) The infirmaries should be given more resident medical officers. (3) Specialists should be available for consultation when required, and X rays, electric treatment, and pathological investigations should be possible. (4) Paying patients should be allowed; this would be a boon to thousands of patients of the middle classes.

Dr. R. H. COLE gave some historical data showing how much the Poor-law infirmaries have done for mental cases. There was now a movement towards the establishment of out-patient clinics at infirmaries for early mental cases. The practitioner at present found it difficult to deal with such cases. In Dr. Cole's opinion the infirmaries did very good work, but were still capable of vast improvement. The great difficulty was the question of money. He trusted that Dr. Addison's Bill would be reintroduced next session.

Mr. V. Z. COPE said that the good work done by certain infirmaries was undeniable, but there was great inequality and need for standardisation. He thought that the separation of the executive functions of the medical superintendent from the medical and surgical ones was desirable; one excellent surgeon had said he would willingly give up the clinical side of his work and administrate only. As to consultants, in one infirmary 12 consultants were available. Such an infirmary should be made the centre of post-graduate teaching for local practitioners.

Dr. ALEXANDER BLACKHALL-MORISON pointed out that the State Medical Service had not absorbed more than half the profession, and that there remained 12,000 at least who were endeavouring to reassert its freedom. Dr. Blackhall-Morison emphasised the political bearings of the present trend of affairs in medicine, which he deplored. He did not think that Poor-law infirmaries should be alienated from the purpose of their existence, the care of the necessitous poor who would always be with us.

Dr. H. W. BRUCE (Southwark Poor-law Hospital) said that a good medical staff meant a good hospital, and that the staffing was all-important if State hospitals were to succeed. The general practitioner must be brought into it. There were certain practical difficulties. For example, public hospitals must be run on economical lines—this was not so necessary in voluntary hospitals. The cheapest way of staffing was by a whole-time general practitioner as resident, but the part-time system had so many advantages that the economic aspect was overshadowed. Unfortunately, the part-time general practitioner would be wanted by his private cases and in hospital in the morning. Another difficulty lay in the selection between the general practitioners of the district. Again, the question of consultants was thorny. If the infirmaries were to remain localised the consulting staff would have to be drawn from that of the voluntary hospitals, but if they were made to serve a wider area—for example, if the metropolitan infirmaries were brought under the L.C.C., the medical staff would then be large enough to develop its own consultants from members of the service who specialised. As to the medical superintendent, his position as combined administrator, physician, and surgeon could not now be retained, and the scope of his duties must be narrowed, but his future as an administrator who would coördinate the work of the medical staff was not less important.

Dr. NATHAN RAW, M.P., said that the Minister of Health was responsible for the health service for the nation, and had to consider how best to render this complete and adequate. The Minister had shown great courage in framing the Bill recently rejected by the House of Lords, and it would doubtless be reintroduced. The relative merits of Poor-law infirmaries and voluntary hospitals were less important than the problem of how best to use the existing facilities in providing an efficient health service for the nation. Dr. Raw said that of the existing beds for the treatment of various disorders the Poor-law infirmaries provided 95,000 and the voluntary hospitals only 40,000, whereas approximately 290,000 are provided by the State. The 40,000 beds of the voluntary hospitals were totally inadequate to cope with the mass of illness in the country. Dr. Raw said that he hoped never to see a State medical service; the present proposition was the conversion of the Poor-law infirmaries into a municipal service. In 1897 a Liverpool infirmary with which he was connected had applied for the provision of an operating theatre. A special meeting of the Local Government Board had been called together to discuss this request, which involved an important matter of policy. It was then decided to outstep the law, to introduce modern equipment, and now some Poor-law infirmaries are as well-equipped as voluntary hospitals. The present position of chaos, in which two sets of hospitals were competing, must cease. There was no longer the same need for aid for the destitute poor as the pauper class was disappearing. The modern attitude of trade-unionists was to desire neither charity from voluntary hospitals nor relief from the Poor-law, not being paupers. The infirmaries, therefore, should, in Dr. Raw's opinion, be taken over by local authorities and be used by members of the community. At present no one could be admitted unless sent by the relieving officer, except in cases of urgency. Until the law was altered it was surely unwise of infirmaries to open their doors to non-urgent paying patients, as this was not legal. The remedy was obviously to legalise this procedure by transferring to local authorities. We all admired voluntary hospitals, but the public will no longer contribute now that so much is taken from them for the support of the 290,000 beds in State-aided hospitals. The principle of transference of Poor-law infirmaries to local authorities must be admitted. They would then be open to all citizens, who would pay according to their means, and would be admitted free if they could not pay.

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[1] See THE LANCET, 1920, ii., 1307.

Dr. J. C. MUIR (Whipps Cross Poor-law Hospital) considered it almost inevitable that hospitals should be supported more and more out of public funds. The difference between voluntary hospitals and the new hospitals would be that in the former teaching and research would be concerned with the advances of medicine, and at the latter the new knowledge gained would be put into practice.

Dr. C. L. TRAYLEN was glad to hear of an improved outlook for the general practitioner. It was encouraging to think that in the future they would be able to go into a hospital and see their cases through, as was now possible in the Willesden Cottage Hospital.

Dr. A. WITHERS GREEN said that disease was as much the business of the State as was the mud in the street. The insurance principle should be extended, and panel and Poor-law patients should be treated together in out-patient departments. There should be no payments made in infirmaries, but voluntary hospitals should charge fees. Dr. Green approved of the Gloucestershire scheme. He considered that general practitioners could not usefully be employed except to deal with out-patients.

Mr. HUBERT C. PHILLIPS said that great advances had been made in the infirmaries within the last 30 years. He thought the difficulty of selecting general practitioners for the staffs had been exaggerated. These appointments could be advertised and selections made from candidates by the medical superintendent in collaboration with a committee.

The PRESIDENT said that the same system could not be applied throughout the country; details must be left to the several districts. The linking up of voluntary hospitals with infirmaries was desirable; in some cases it might be convenient to affiliate two infirmaries to one voluntary hospital. As to the staffing, in Manchester the arrangement was that the junior staff of voluntary hospitals were attached to the infirmaries, and as they moved up their successors were automatically so appointed. There should be a combined medical committee of the staff of the voluntary hospital and of the infirmary attached thereto.

TUBERCULOSIS SOCIETY.

A CLINICAL meeting of this society was held at the Margaret-street Dispensary, London, W., on Jan. 24th, Dr. NATHAN RAW, M.P., the President, occupying the chair.

Method of Performing the Cuti-reaction.

Dr. HENRY A. ELLIS demonstrated his method of performing the cuti-reaction by making four parallel incisions, drawing blood in each case, on the anterior aspect of the forearm from above downwards, pure P.T.O. being inoculated into the uppermost and into the others successively dilutions of 1/10, 1/100, and 1/500. The reactions are classified as negative; subsensitive, if positive with pure tuberculin and the first dilution; sensitive, up to the second and hypersensitive when all are positive. A subsensitive reaction is a failing reaction and the prognosis is grave, because the case is probably acute and the tissues are unable to respond. So, too, if there be a general reaction without a local one, the prognostic significance is bad, while a high degree of resistance on the part of a woman is a much better sign than it is in a man. A sensitive reaction probably indicates that the case is more or less stabilised, and the clinical findings become of greater value. A hypersensitive reaction indicates that the responsive power of the patient is good and will probably justify sanatorium treatment.

Dr. D. M. BARCROFT emphasised the diagnostic significance of the triad—hæmoptysis, dyspnœa, and progressive loss of weight—in diagnosis, especially when physical signs were absent or uncertain, and Dr. F. HERNAMAN-JOHNSON showed the X ray plates of the same patients and of others, and Dr. CAMPBELL MCCLURE showed other cases. One of the objectives of the dispensary, according to Dr. McClure, is to correlate the findings obtained with the clinical signs and the radiographic appearances. On the whole the results of this "team-work" have so far been encouraging and manifest concordance in about eight out of ten cases, though differences of opinion occurred in interpreting the varying conditions met with in tuberculosis of the lungs. Dr. Hernaman-Johnson stated that he had never seen a case under the X rays of apical tuberculosis without involvement of the hilus, and that, in his opinion, tuberculosis of the lungs was primarily a hilus disease which spread therefrom, fanwise, towards the apices. On the assumption that the striæ which are seen radiating from the hilus to the apex depend for their manifestation upon the deposition of calcium in the walls of the lymphatics, an attempt has been made to demonstrate similar "lines of calcification" from enlarged cervical glands downwards towards the apices, but hitherto without success.—A series of X ray photographs were also shown illustrating difficulties occasionally met with in diagnosis, such as carcinomatous stricture and pouch of the œsophagus, aneurysms, &c., together with a screen case in which, probably as the result of fibroid contraction, the heart had been completely pulled over to the right side. Dr. G. MACDONALD exhibited an extensive case of lupus of the face, which, after a course of tuberculin had failed, was cured by the application of brass-paste.

Cultures of Tubercle Bacilli.

The PRESIDENT showed three cultures of tubercle bacilli of historical interest. The first was the 180th subculture of a bacillus of the human type which he originally obtained from Koch in 1906, the subcultures having been made every month without a break; the second of bovine type from a calf which he obtained from Calmette, then of Lille, in the same year, also in its 180th subculture, and the third of bovine type from a pig which had been given to him by Bang, of Copenhagen, in 1907 and similarly subcultured. All were living and growing true to type, but completely avirulent.

Dr. F. R. WALTERS proposed, and Dr. JAMES WATT seconded, a hearty vote of thanks to Dr. McClure and those associated with him in providing so instructive an evening. It is hoped to hold a series of clinical meetings during the session.

SCOTTISH SOCIETY OF ANÆSTHETISTS.

A MEETING of this society was held on Dec. 4th, 1920, in Edinburgh, with Dr. H. TORRANCE THOMSON, the President, in the chair.

Dr. THOMSON read his inaugural presidential address on

Post-operative Morbidity in Relation to General Anæsthesia.

He said that although many conditions falling into the category named are not directly under the control of the anæsthetist, it is essential that he should be fully acquainted with the literature and current theories of the subject, so that he may play his part in securing improved results. Dr. Thomson reviewed recent work under the three headings: (1) nausea and

(2) chest complications; (3) shock. As to nausea and vomiting recent work did point to some connexion between diminution of alkali reserve and after-vomiting, but that was not the whole problem. The use when possible of nitrous oxide oxygen, smooth administration of the least possible quantity of anæsthetic and gentleness of manipulation on the part of the surgeon, were all factors in its prevention. On the whole, he favoured the preliminary use both of narcotics in moderate dose and of alkalis. As to chest complications he thought that skilful administration was of more importance than the mere choice of anæsthetic. In cases of so-called ether bronchitis or pneumonia he thought the patient usually had a pre-existing catarrh, a point too little recognised by surgeons. Prevention of skin-chilling during operation and transit back to bed also demanded careful attention. The warming of anæsthetic vapours might diminish local irritation of air-passages, but its effects on after-results were not proved, so far as prevention of respiratory complications was concerned. As to shock, the work and literature of the war had shown some connexion between acidosis, falling blood pressure, and clinical shock. It was, however, in cases showing marked diminution of pressure before operation that the connexion seemed closest. From the anæsthetist's point of view such cases should be given gas oxygen. The practical difficulties were the lack of proper plant in many hospitals and the cost and trouble of transporting the apparatus in private work, which would involve raising the standard of remuneration for anæsthetic work. Summing up the whole question, Dr. Thomson thought that the essentials in the prevention of complications were: (*a*) that anæsthesia should never be pushed to a degree greater than was absolutely essential, and that in this respect the surgeon should learn not to be too exacting; (*b*) that Crile's pre-operative anti-emotional technique should be carried out as far as possible; (*c*) that excess in fasting and purgation should be avoided; (*d*) that alkalis and a moderate dose of narcotics should be given before operation.

Dr. H. P. FAIRLIE said, with reference to vomiting, that he was glad to hear a warning regarding the excessive starvation and purgation which are so often prescribed before the administration of an anæsthetic. He agreed that they tended rather to encourage than to prevent post-anæsthetic vomiting. He recalled a measure advocated by the late Dr. Renton—the placing of the patient in the sitting posture after operation. He said that it rendered vomiting less likely to occur, and less objectionable when it did occur. The use of preliminary atropine helped in the prevention of vomiting, and also in the prevention of post-anæsthetic bronchitis, by diminishing the secretions in the mouth which are so liable to be swallowed and inhaled, acting then as an irritant. As to shock, the official publications had impressed him also as being very valuable contributions to the knowledge of this subject and of acidosis. Dr. Fairlie had had considerable experience of gas and oxygen as an anæsthetic, and had found it to be expensive, to require a bulky outfit, and often, especially in abdominal operations, the addition of ether. But he nevertheless agreed that in many operations it was a most valuable anæsthetic. It was safe, it diminished shock, and it left the patient in a much happier state than did ether or chloroform, sickness being less frequent and less severe after gas and oxygen than after either of the other anæsthetics.

Exhibition of Cases.

The PRESIDENT reported a case of a 10 days old child anæsthetised by chloroform-open-ether for an operation lasting a few minutes only. No incident of note during the operation, but the child died suddenly ten days later; post mortem typical status lymphaticus was found.

Dr. D. LAMB recorded a case of Secondary Syncope after breath-holding during an induction by chloroform of a woman some years ago. The respiration began again after the use of artificial respiration and persisted for 40 minutes, although there was no pulse, and with the exception of the chest movement the patient was apparently dead.—Dr. J. S. ROSS said he had seen something of the same in a dog, but never in a human being, nor did the condition persist for more than a minute or two.

Dr. JOHNSTON recorded the case of a woman who had a Pott's fracture reduced under nitrous oxide, and who died ten minutes after recovery from the anæsthetic. Post mortem thrombosis was found in the femoral artery and vein of the affected limb and an embolus in the pulmonary artery.

BRISTOL MEDICO-CHIRURGICAL SOCIETY.

Psychotherapy.

A MEETING of this society on Jan. 12th was devoted to a discussion on Psychotherapy. Dr. L. E. V. EVERY-CLAYTON presided.

Dr. R. G. GORDON said that the time had come to consider how much value can be attached to the three methods of psychotherapy—"suggestion," "persuasion," and "analysis." For hysterical symptoms persuasion was the method of choice. This consisted in giving the patient a full insight into the reasons underlying his condition and encouraging him to employ the function the use of which he has forgotten. It might be found that underlying the hysterical symptom was an anxiety neurosis, and for this analytical treatment was necessary. Dr. Gordon discussed and criticised the methods of Freud and Jung, and those adopted by the English schools, and advocated those expounded by Rivers, Hart, and Ross. He pointed out that psycho-analysis in unskilled hands and unbalanced minds was a dangerous weapon, but that the profession as a whole were not alive to all the possibilities of psychotherapy and often failed to realise how much of the material they have to deal with is functional and curable. The absence of training in medical psychology in the course of the education of the doctor was a serious defect, since at least 40 per cent. of the cases which a general practitioner had to treat were, he said, neurotic.

Professor LLOYD MORGAN pleaded for closer union between academic and clinical psychology, referring to an article recently published by him advocating the teaching of psychology to medical students. He asked the clinical psychologists to "nail their colours to the mast," and to state to which school of psychology they adhered.—Dr. J. R. R. TRIST spoke of the work of a neurological clinic of the Ministry of Pensions, and illustrated the impossibility of separating psychotherapy from other forms of treatment by data regarding the incidence of tuberculosis among neurasthenic ex-Service men.—Dr. H. H. CARLETON referred all conflict to a struggle between the egotistical instincts on the one hand and the higher more recently acquired altruistic motives on the other, and alluded to the importance of the "herd instinct."

Mr. O. H. WOODCOCK confessed himself an adherent of the animistic school of psychology. As a means of preventing psychical disorders he declared his belief in educating the individual to a better understanding of himself and his relation to the cosmic order.—Dr. J. R. CHARLES criticised the philosophy on which modern psychotherapy is founded, pointing out that "conflict" is not merely inevitable but actually necessary as a means of education for the individual and the race. He deprecated the use of hypnosis as a therapeutic measure.—Dr. C. F. COOMBS alluded to the disturbances of visceral function that arise from the psychoneuroses, and also to the part that similar disturbances often play in aggravating the symptoms of organic disease.—Dr. E. T. GLENNY attacked the work of the psycho-analysts, particularly on the grounds that it was falling into the hands of practitioners with inadequate experience of organic disease, and that undue insistence on sexual motives was discrediting the profession in the eyes of the public.—Major A. E. J. LISTER, I.M.S., described the case of an Indian soldier and his recovery from a psychoneurosis by means of auto-suggestion.—To these comments and criticisms Dr. GORDON replied.

Reviews and Notices of Books.

PREVENTION OF VENEREAL DISEASE.

By Sir G. ARCHDALL REID, K.B.E. With Introductory Chapter by Sir H. BRYAN DONKIN, M.D. Oxon., F.R.C.P. London: William Heinemann. 1920. Pp. 447. 15*s.*

THE struggle between the National Council for Combating Venereal Diseases and the Society for the Prevention of Venereal Disease has been watched with interest by medical men and sociologists. Parliamentary debates, articles and letters in our own and other professional journals, White papers, and manifestos have marked its course, but this volume contains the first authoritative and comprehensive exposition of the opposed views. Sir Archdall Reid and Sir Bryan Donkin—who contributes a valuable introduction—are well qualified to produce such a work; it is issued under the auspices of the Society, and is welcome as a statement of the position and tenets of that body. A complementary statement from the Council would be equally welcome; particularly interesting would be the history of the Council's present attitude with regard to immediate disinfection.

It is necessary to realise clearly the standpoint from which this book is written, for an impartial outlook cannot be expected from an author writing in the interest of one side or the other. The work deals primarily with one aspect of prevention; its object is instruction as to "prompt employment of simple antiseptic measures which will effectually destroy the infective agents of syphilis and gonorrhœa before they enter the body tissues and thus definitely prevent the occurrence of disease." In his introduction Sir Bryan Donkin gives a brief résumé of the more recent history of the prevention campaign—by "prevention" is meant "immediate disinfection"—and of the opposition it has met with. He emphasises the present necessity for "a public and unbiased inquiry on the whole matter, including, of course, the official Note to the Minister of Health ...... as well as any subsequent documents on the question which have issued or may issue from the office of that Ministry." Sir Archdall Reid first indicates the urgency of the problem. The figures concerning the civil population need not be discussed, as they are frequently encountered in other publications. He remarks that at the time of the German offensive in 1918 there were in the V.D. hospitals or in the convalescent depôts not only an army corps but a great army of trained soldiers otherwise fit, "complete from almost G.O.C. to trumpeter," all of whom had become diseased after the authorities understood prevention. "These," he says, "were put out of action and the Allied cause brought to the verge of ruin by the fanaticism of a few 'influential people' and the complaisance and timidity of a few obliging officials."

Chapters are devoted to a consideration of "instinct and reason," "development of mind;" and "inclination and morality." The author believes it to be impossible to reach a decision concerning the right and wrong of prevention until we know why some individuals are inclined to be sexually moral and others sexually immoral; his statements under these headings are interesting and stimulating, although we cannot agree with all of them. Opposition to sanitary measures he finds to be based on the contentions (*a*) "that such measures would be ineffectual," and (*b*) "that they would make vice safe and so encourage immorality." He points out that these statements are contradictory, but are reconciled by the assertion (*c*) "that though effective sanitary measures are impossible the public would believe in and practise them with the result that both immorality and venereal disease would receive an impetus." It is the deduction which is in question.

In the author's opinion it is uncertain whether fear acts as a deterrent; we believe it to do so in a very small number of people; moreover, we consider it immoral to withhold knowledge whereby infection may be prevented, lest fear, the last remaining barrier against vice, be removed. It is immoral to bolster up the false morality of those who are restrained by fear, when by so doing protection is withheld from those determined to expose themselves to risks which will in many instances bring suffering and disease to the really innocent. We are glad to see that Sir Archdall Reid exposes the equally immoral attitude of silence as regards sexual matters in dealing with the young; we would, however, suggest that he does not appear to realise the present widespread overthrow of this pernicious reticence. He has also apparently failed to grasp the fundamental importance of the work of the Royal Commission on Venereal Disease. The Commission succeeded to a remarkable extent in the creation of a new atmosphere, to which are practically due the candour and publicity with which sex matters have since been discussed in the councils of the nation, in the press, and in many other ways.

Chapter IX. is devoted to "V.D. in the Army"; we could wish that the author had extended his horizon and given more information, but two important statements appear in this short chapter: (1) owing to a lack of anti-venereal measures the colonial troops suffered so greatly that at one time the Australasian Government were reported to have threatened to withdraw their forces unless better protective measures were taken; (2) in Sir Archdall Reid's own experience existing sanitary measures were, for the first 18 months, practically a dead letter; when the authorities established venereal ablution rooms much good was done, but many cases still occurred. The author lost patience, and, on his own initiative, at considerable risk of official censure or even deprivation of his command, introduced a system of immediate self-disinfection. "Immediately venereal disease vanished from my units. For six months not a single case occurred. In two years and four months, during which quite 20,000 men must have passed through my hands, only seven men were infected. I saw many cases of venereal disease, but these were all among men who had contracted it elsewhere."

"Of these seven cases—six of gonorrhœa and one of syphilis—two were contracted from their own wives by men on leave, two occurred in men so drunk at the time of infection that they had little or no recollection of what had happened, and could only be sure that they had used no antiseptics; one man joined the station late in the afternoon, and contracted disease the same evening. He had received no lecture and had used no disinfectants. The last two men, one of whom developed syphilis, delayed disinfection till their return to barracks, one more than an hour and the other more than two hours after intercourse. They told me that they thought it would be sufficient if they followed official directions and used both the permanganate and calomel."

We are bound to state that when the author gave evidence before the Inter-Departmental Committee the value of his work, which has produced such magnificent results, was subjected to the gravest suspicion. A perusal, however, of his own statements, which can be verified by reference to official figures, and a realisation of the lack of pertinency of questions put to him at the Committee, impress us most strongly with the belief that by means of quick disinfection he achieved results which might with great advantage have been universally used throughout the Army.

The subjects of "comparative statistics" and "civilian treatment centres" are graphically treated. The author contends that no one would attend such centres—that the real intention is for sinners and their millions of innocent victims to stew in their own juice. "What other explanation," he asks, "except an unbelievable degree of folly on the part of the Council, can be thought of?" Without holding any brief for the National Council, fairness compels us to enter a protest against the above inference. Experience has shown that sufferers do attend early treatment centres; and if the intention were to allow retribution to descend on sinners and their victims the logical attitude would be to make no attempt at early treatment, or, as it should be termed, "delayed disinfection." The formation of these centres may be open to criticism, but the statement quoted is neither deserved by those responsible nor worthy of its writer.

The remainder of the work contains an account of the labours of the Inter-Departmental Committee, whose official report should be carefully studied by our readers. Speaking frankly, and without any reference to Sir Archdall Reid, we regard that work as a failure. It must be realised that no member of that body was known to be in favour of early disinfection and many were against it. The report was signed only by the chairman; if there was dissent from the conclusions published nothing of it was made public. Sir William Osler and Lord Dawson were invited to give evidence before the Committee; no mention is made in the Note of their opinions, which have elsewhere publicly and strongly been stated in favour of self-disinfection. An account of the activities of the Society with "Lord Sandhurst's Apologetics" and various interesting appendices are also included.

We sincerely hope that this work will secure the attention it deserves. It is the outcome of the honest efforts and sincere thinking of one who has realised the dimensions of the menace of venereal disease. Two fundamental questions present themselves: 1. Is the author's method for prevention efficient? We believe with full realisation of statements made to the contrary, that there would be no difficulty in instructing the public along these lines. 2. Is it desirable, on the widest grounds, that such knowledge should be promulgated? Here is a difficulty, serious, but not insurmountable. The necessary information should be placed before the public in such a way that suggestiveness is completely avoided; it should be accompanied by the statement that absolute safety lies only in continence, and that promiscuous sexual indulgence is fraught with physical risk, not only to the individual, but to the nation. We thoroughly appreciate the view that information on sex matters should be widely extended to children, but special care should be taken in promulgating knowledge of means of self-disinfection that the young should not be unnecessarily injured. We do not believe that the extension of such knowledge to the public will increase promiscuous sexual intercourse. At the present day the existence of condoms is known to practically all adults, yet many remain chaste, although such appliances are flagrantly available. The object of both forms of protective measures is the same. The public generally already believes in the absolute efficacy which is afforded by condoms. Advice as to immediate disinfection would secure greater provision for their safety without providing increased inducements for promiscuous sexual intercourse. In conclusion, we hope that when the second edition of this work appears its author will see his way to eliminate certain personal, thoughanony mons, references, which, in lack of taste, afford a striking contrast to an otherwise powerfully written and valuable volume.

A GUIDE TO ANATOMY.

For Students of Medical Gymnastics, Massage, and Medical Electricity. By E. D. EWART. London: H. K. Lewis and Co., Ltd. 1920. Pp. xii. + 301. 16*s.*

THIS book, as the title informs us, is intended for students of massage, &c., and is therefore not to be taken as an elementary guide to the whole anatomy of the body. Miss Ewart is well qualified to know the anatomical needs of the class of students for whom she writes, but, surely, some teaching on the situation and association of the ovaries and uterus might be of more utility than short details of *rotatores spinæ* and intertransverse muscles. Such criticism apart, it can be said that the text of this little work appears good and clear and accurate if necessarily abbreviated. The spleen, we observe, has a hilus, whereas the kidney, more accurately, is said to present a hilum. The illustrations are clear, and will serve their purpose satisfactorily, but we notice several errors in detail: thus, the line of the buccinator Fig. 9 gives no area for the gums, the petro-sphenoid suture is out of place in Fig. 11, the psoas is not on the back of the small trochanter, as shown in Fig. 28, nor does the pectoralis minor leave the second rib clear as in Fig. 38. These and similar small inaccuracies do not, however, detract from the utility of the book. Chapters on surface-marking follow each section, and some examination papers are placed at the end.

DIE WURMFORTSATZENTZÜNDUNG.

Eine pathogenetische und histologische Studie mit besonderer Berücksichtigung der Bedeutung der Helminthen, speziell der Oxyuren, und wichtiger allgemeiner klinischer Gesichtspunkte. By Dr. A. RHEINDORF, Prosector am St. Hedwigs-Krankenhaus zu Berlin. Berlin: S. Karger. 1920. Mit 52 Abbildungen. Pp. 244. M.18.

THOUGH helminthic infections of the appendix had been previously noted, it was Metchnikoff (1901) who first drew attention to their ætiological significance in appendicitis. Since these views were expressed two schools of thought have arisen. These are: (1) the followers of Aschoff, whose monograph on appendicitis appeared in 1908, who regard the presence of worms in the appendix as of secondary significance; and (2) those like the writer of the treatise under review, who consider the helminthic infection of primary importance in the production of inflammatory conditions of the appendix.

It is the object of this treatise to establish the view that helminthic infections of the appendix, chiefly those due to oxyuris, and, to a less extent, trichocephalus and ascaris, lead to primary alterations in the structure of the organ, so that secondary bacterial invasion takes place. The author studied a large amount of material in the shape of appendices removed by operation, especially during the war, both from adults and children. In addition, material from individuals killed in the war was also collected. Dr. Rheindorf appears to have conducted his investigations very carefully and has studied the appendices in serial section, the only method which will give reliable information as to the presence or absence of helminths or the lesions they produce. The first chapter of the book is mainly historical and summarises the views held as to the ætiology of appendicitis. In the second chapter are described the various changes induced in the appendix by helminths. The findings are illustrated by excellent microphotographs, which clearly show the lesions produced by the worms. The largest number of oxyuris found in an appendix was 684. Chapter III. is devoted to the clinical aspect of these worm infections. In most cases there are no symptoms, but in certain individuals, who must be assumed to have an idiosyncrasy, definite symptoms arise in the form of irregular febrile attacks, abdominal pains, often localised in the appendicular region, and various neuroses, quite apart from an actual appendicitis. In Chapter IV. the pathology of appendicitis is considered, with special reference to the relationship between the primary helminthic lesions and the subsequent secondary inflammatory condition. Aschoff's view that the latter is primary, and not the result of the changes produced by the worms, is contested, and it is suggested that Aschoff's method of examination led him to overlook the helminthic element in the vast majority of the 1000 cases he studied. In Chapter V. are given figures illustrating the frequency of helminthic infections in men killed during the war in Germany and other countries. In a series of appendices removed at operation oxyuris was found in 50 per cent. of the cases, whereas in the organs from men killed in the fighting oxyuris was found in only 5 per cent. As the author remarks, these figures speak for themselves. Chapter VI. treats of the important subject of prophylaxis. In Dr. Rheindorf's opinion oxyuris is primarily responsible for the overwhelming majority of cases of appendicitis, so that an early eradication of this infection would be followed by an almost complete disappearance of the disease. To accomplish this result an organised campaign against the worm is necessary; the danger of its presence in the bowel must be widely known, and a means must be discovered not only of diagnosing its presence, but of effectively ridding an individual of every trace of the infection.

The treatise is full of interest, and it must be admitted the writer produces facts in support of his arguments. Whether pathologists generally will agree with him remains to be seen. Nevertheless, the views expressed are worthy of careful consideration by all those interested in the ætiology and prevention of such a widespread disease as appendicitis.

MACEDONIA: A PLEA FOR THE PRIMITIVE.

By A. GOFF and HUGH A. FAWCETT, M.R.C.S., D.P.H. London: John Lane. 1921. Pp. 274. 21*s.*

THIS is a curiously simple work. It is evidently written by two young observers to whom the East before their visit was a sealed book, and it records their impressions with a freshness and naïveté altogether delightful. It is a pleasure in these days of introspection and analysis to come across a book in which the writers solemnly record the fact that a tortoise lays eggs or that the Greek Church observances are marked by elaborate ritual. We can sympathise with the writers' pleasure at seeing the primitive Oriental methods of agriculture, ploughing, thrashing, winnowing, and the like; for an observer who sees these for the first time will at once have a clearer idea of the meaning of sundry passages of Scripture and of the whole of the Georgics than he ever had before. But if, when describing things seen the authors are trustworthy, when they wander into the by-paths of history they flounder. It would be difficult to find a more inaccurate statement than the following (p. 179):—

> "The Greek Church as at present constituted was founded by the Roman Byzantine Emperor, Constantine the Great, who, having been converted to Christianity in A.D. 312, lent his support to the orthodox bishops at a great Christian Council at Nicæa (Nice) in the same year."

Now, the Council of Nicæa (the first General Council) was held in A.D. 325, and Constantine no more supported the orthodox bishops at that Council than the King supports either the Conservative or Liberal party at a General Election. The King accepts the verdict of the majority, and so did Constantine. The figures at the Council were: for the insertion of the word "consubstantial" (the orthodox point), 286; against (the Arian point), 17. All that the Emperor did was to confirm the judgment of the Council.

The best part of the book is supplied by the singularly charming reproductions of drawings and water-colours by Mr. Fawcett, and the account of the Plain of the Struma is admirable. It is curious that in their account of the birds the writers make no mention of the crane, the "Strymoniæ grues" of the Georgics.

THE SCIENCE OF EATING.

By ALFRED W. MCCANN. London: Evan Brothers, Ltd. Pp. 408.

IF the statements made by Mr. McCann in this book are true, food conditions in the United States are as bad, if not worse, than they were in this country when, some 70 years ago, THE LANCET entered upon its inquiry into food and its adulterations. It is a pity that Mr. McCann writes in the very worst style of "journalese," for his book is interesting and contains many home truths; but a writer who uses such terms as "kidneycides" and "meatology" is singularly irritating to his readers. (Does anyone recall the veracious history of Mr. Downey V. Green? If so, he will remember Mrs. Cheney's description of Dr. MacGuffin, of Goober Valley, who built up the science of mindology, together with existology and hominology.) However, although Mr. McCann's language be trying, we can go far with him in his strictures on denatured foods, flour that is practically starch, and canned abominations of various kinds. Mr. McCann is severe on those who eat too much meat. In this country, whatever may have been the case in the past, we do not think the population eat too much meat now. Another good point made by Mr. McCann is the wastefulness of throwing away the water in which vegetables have been boiled. Such water should be put into the stock-pot.

JOURNALS.

British Journal of Experimental Pathology. December, 1920. London: H. K. Lewis and Co. 7*s.* 6*d.*—The present number of this journal completes the first volume, which, when bound, will open with an apposite quotation from that wise philosopher, John Locke.—The Ætiology of Epidemic Influenza: Experiments in Search of a Filter-passing Virus, by H. B. Maitland, Mary L. Cowan, and H. K. Detweiler. The authors carried out their investigations during an epidemic of influenza at Toronto in the spring of 1920. In spite of the most careful work no evidence for a filter-passing organism could be obtained.—The Influence of the Reaction of Media and of the Presence of Buffer Salts on the Metabolism of Bacteria, by C. G. L. Wolf. The formation of toxin in cultures of vibrion septique is influenced by the presence of a buffer salt—sodium phosphate. The toxin had a higher potency than the control and a better "keeping" quality.—The Effect of Surgical Anæsthesia on the Reaction of the Blood, by J. B. Collip. The author suggests that during surgical anæsthesia two processes, which are mutually antagonistic, are active, one the "acidotic process" of Haggard and Henderson, due directly to disturbance in metabolism as a result of anæsthesia, the other the "over-ventilation process." Whether the hydrogen-ion concentration of the blood falls, rises, or remains unchanged during surgical anæsthesia would therefore depend upon the relative intensities of these two processes.—Glycogenic Infiltration of the Liver of Laboratory Rabbits, by H. M. Turnbull. This paper is illustrated by two very beautiful drawings, which show that the histological changes seen in ordinary microscopic preparations of the rabbits' liver, when infiltrated with glycogen after a suitable meal, resemble closely those of a severe parenchymatous degeneration.

Journal of Hygiene. Edited by G. H. F. NUTTALL, F.R.S. Vol. XIX., No. 3. January, 1921.—The first paper in this issue of the journal is by G. W. Grabham, M.A., F.G.S., and deals with Some Factors in Thermal Sanitation in the Tropics. The results are given of a number of experiments on the temperatures reached by different coloured cloths and paints exposed to sunlight; the general result is that white clothing is cooler than that of any other colour. The explanations for this are discussed. Texture and translucency of material are also considered.—The Wassermann Test in Patients Affected with Malaria in the Tropics, by F. H. Hehewerth and W. A. Kop. The following results were obtained by the authors: malarial infection causes a positive Wassermann reaction in 50 per cent. of cases in natives; the reaction disappears as a rule under quinine treatment, but may persist three to six months.—Clinical Investigation of Xerophthalmia and Dystrophy in Infants and Young Children (Xerophthalmia et Dystrophia Alipogenetica), by C. E. Block, M.D., Professor of Pediatrics in the University of Copenhagen. A preface to the article is contributed by the Accessory Food Factors Committee (appointed jointly by the Lister Institute and the Medical Research Council). Dr. Bloch by clinical observation arrived at conclusions concerning the importance of certain kinds of fats for nutrition and growths which McCollum reached by experimentation on animals. He gives the term dystrophia alipogenetica to the condition of ill-health which results from deprivation of such fatty foods as butter and milk. Associated with inhibition of growth there is an increased susceptibility and lowered resistance to all infections, including xerophthalmia. The best treatment is the administration of cod-liver oil, but whole milk, butter, eggs, and other fats containing the specific body are also curative. The disease is more common in Denmark than in other countries, the reason apparently being that Denmark exports most of its dairy produce, especially butter. This is borne out in an interesting observation made by Dr. Bloch during the Great War. When the German submarine blockade became established in February, 1917, the import of fodder for cattle was completely stopped. The Danish Government was therefore compelled to take control of all butter and ration it so that everybody, adult and child, was entitled after Dec. 21st, 1917, to 250 g. of butter a week, which was sold at such a low price that all could buy it. From that moment everyone ate butter instead of margarine and since then there has been no xerophthalmia in Denmark. —The Water-supply of the Egyptian Expeditionary Force, with Special Reference to the Efficiency of Mechanical Rapid Filtration with Chlorination, by R. J. S. McDowall, M.B. The water supplied to our troops in Palestine came from the Nile and was rendered potable by rapid filtration and chlorination. —The Chemotactic Effect of Osmosis upon Leucocytes, by F. Maltaner and Ella Hoppe. By means of a number of ingenious experiments the authors show that leucocytes move into solutions of higher density than the solution in which they are suspended. The general rule appears to be that leucocytes move in a direction opposite to that in which dissolved substances are diffusing.—Malaria in England, with Special Reference to the Rôle of Temperature and Humidity, by Lieutenant-Colonel C. A. Gill. This is an interesting communication upon an important subject.

FRENCH SUPPLEMENT TO THE LANCET

Under the Editorial Direction of

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AND

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RETROLABYRINTHINE INVESTIGATION IN OTITIC SUPPURATION OF THE POSTERIOR CEREBRAL FOSSA.

BY DR. A. HAUTANT,
OTO-LARYNGOLOGIST TO THE PARIS HOSPITALS.

IN the presence of endocranial complications of aural origin otologists are united as to the necessity of including in their surgical interventions the following three processes: evacuation of the original lesion of the middle ear; exploration of the parameningeal lesion which conveys the otitic suppuration to the endocranium; and, if necessary, an attack on the endocranial lesion itself. The most important of these processes is exploration of the intermediate lesion, the link between ear and meninges, because (*a*) endocranial complications are *frequently at the outset only accidents of juxtaposition*, a kind of collateral œdema disappearing upon drainage of the otitic lesion and evacuation of the parameningeal abscess; (*b*) endocranial complications do not arise by chance—they develop at the point where the original lesion comes into contact with the meninges, and the surgeon is guided straight to them by the *intermediate lesion*. It is *generally sufficient to explore* this lesion in two directions: (1) at the level of the roof of the attic and the antrum; (2) at the level of the posterior surface of the mastoid. It sometimes happens that this investigation bears no result; a third means of approach is then employed—the internal ear. This last is a new method only employed for about ten years.

Importance of Suppurating Labyrinthitis.

The signs of invasion of the internal ear by infection (total unilateral deafness and absence of the nystagmic reflex) are often observed in otitis with endocranial complications. Injury of the labyrinth always proves the gravity of the infection, but its presence does not necessarily *imply that the infection has passed from* the tympanum to the endocranium through the internal ear. Whilst attacking the labyrinth, infection may spread to the meninges by means of the roof of the attic or the posterior surface of the mastoid. The establishment of labyrinthitis should not be a signal for neglect of the other routes of infection. It is necessary to point out this restriction of the importance of suppurating labyrinthitis, *for* although its frequency has been justly insisted upon, its importance in surgery of the ear has been overestimated.

These reservations once admitted, suppurating labyrinthitis, none the less, represents an important intermediate stage between infections of the middle ear and of the endocranium, from two points of view: (1) Infection of the labyrinth *often gives rise to* defensive lesions which must be respected, but it can also provoke vestibular abscesses, granulations, cholesteatomata, and sequestra, which call for surgical intervention: (2) labyrinthine infection reaching the endocranium can cause localised meningitic lesions (*a*) in the internal auditory passage, where a kind of intrameningeal abscess is *formed* to which surgical approach is almost impossible, and (*b*) on the posterior surface of the petrosa, behind the vestibule, in the neighbourhood of the endolymphatic sac, an extra- or intra-dural abscess can appear, easily reached surgically, and often constituting an intermediate stage leading to encysted meningitis or to a cerebellar abscess. In this way the retrolabyrinthine region is the third area to demand the aurist's attention in labyrinthine lesions with endocranial complications, if and when he has failed to find the connexion between ear and endocranium in the attic or on the posterior surface of the mastoid.

Anatomical Formation of the Semicircular Canals.

Exploration of the retrolabyrinthine region necessitates resection of the bony mass of the semicircular canals; *for this process knowledge of the formation of* the latter is necessary.

(1) Normally this mass, situate behind the vestibule and within the mastoid antrum, is composed of semicircular canals, notably of the canalis semicircularis posterior and the loop of the canalis semicircularis lateralis. These canals are contained in the labyrinthine capsule, which is of very compact hard bone, well named "petrous"; they are sometimes surrounded by diploëtic tissue, by cells connected with the mastoid cells, or, in exceptional cases, in large, deep, retrolabyrinthine cells.

(2) In a pathological condition two facts are to be remembered: (*a*) in acute mastoiditis the diploëtic tissue, or even the retrolabyrinthine cells, may disintegrate and form a large purulent mass situate behind the labyrinth, sometimes approaching the internal auditory canal and capable of giving rise to an extra-dural retropetrous abscess; these are really aberrant sinuses of the acute mastoidal lesion and have nothing *to do* with the lesions deriving from the labyrinth with which we are now dealing; (*b*) in chronic mastoiditis, during the course of chronic *otorrhœa*, the *mastoidal* cells disappear; a process of condensing osteitis has transformed the diploë into compact bone, and the retrolabyrinthine tissue becomes a bony mass *extending from the vestibule to the cerebellar dura mater.* If this chronic mastoiditis is complicated with labyrinthitis (the osseous lesions of which have extended to the cerebellar *surface of the petrous bone*) the following *three important* levels are encountered behind the labyrinth when approaching the cerebellar fossa from the antrum: (1) the internal surface of the antrum; (2) a very compact bony mass, half a centimetre thick, containing the canalis posterior and the loop of the canalis lateralis; (3) in pathological cases, near the dura mater, at the height of the endolymphatic sac, osteitis and granulations, and sometimes a small extra-dural agglomeration of pus.

Thus the presence of lesions at the level of the retrovestibular cul-de-sac cannot be discovered by any sign during exploration of the cavity of a petro-mastoidal ulcer; these lesions are established by a devious route, infection reaches *the* vestibulum, and by a deeper and retrograde course arrives at the retropetrous region of the endolymphatic sac. They require systematic search; for their presence is determined by a process of reasoning, not by *advancing step by step through* osseous lesions, as is usual in exploration of the attic or of the posterior surface of the mastoid.

Conditions Necessitating Retrolabyrinthine Exploration.

Three conditions are necessary to warrant retrolabyrinthine investigation.

(1) There must be a retrolabyrinthine lesion; this is understood, since in *chronic otorrhœa* infection can *only* reach the retrovestibular region *through* the labyrinth. The lesion may be irritative, but that is not enough. Cholesteatoma of the middle ear may set up erosion and irritation of a canal—as digital *compression on the* eyeball irritates the retina—and may induce intense vertigo. If the nystagmic reflex still exists, the labyrinth is still intact, and there can be no question of opening it, still less of exploring the deep retrovestibular region. The labyrinthine lesion *must* be destructive; *infection* has crossed *the* labyrinth and destroyed it. The absence of the nystagmic reaction proves its destruction. This systematic investigation is necessary; no *functional* sign *gives a clue, for* the "quietest" labyrinthine lesions are the gravest.

(2) Infected lesions of the cavities of the ear must be "re-lit"; the signs indicating this reinfection and the first invasion of the endocranium are headache (chiefly occipital), *rise* of temperature (even very slight), modification of the cerebro-spinal fluid, augmentation of albumin content, hypertension, hyperleucocytosis. In fact, if the lesion is not *reinfected intervention can be limited to the middle ear*, or to the vestibule if necessary; it is useless to explore the retrolabyrinthine region and the posterior cerebral fossa if they give no sign of pain.

(3) No other intermediate lesion must be found, during the operation, *between the cavities of the middle ear and the* endocranium. It is obvious that, if an abscess about a sinus,

or an extra-dural abscess on the roof of the attic, has already been disclosed, it is useless to make a systematic search for a retrolabyrinthine abscess. In the absence of such lesions, the first two conditions named being already present, the vestibulum must be opened and explored, and the vestibular cul-de-sac examined. It is true that the results of this examination will often prove negative. It is not necessarily the key to all unexplained instances of spread of infection from the middle-ear to the endocranium. It must not be forgotten that infection may travel by the internal auditory canal, which is practically unexplorable, or *by the venous or lymphatic channels. However, the* possible existence of a retrolabyrinthine abscess, sufficiently easily accessible, and the results which have been obtained, permit us to advocate a search for it under conditions thus prescribed.

Retrolabyrinthine Abscess.

Lesions encountered in the region of the retrolabyrinthine dura mater are similar in every respect to those observed in the roof of the attic—viz., fistula, osteitis, extra-dural abscess; but empyema of the endolymphatic sac forms an exception. There is here a point of pathological anatomy not yet determined; it may be that pus collects between the membranes of the dura mater without the certainty of a connexion with an endo-lymphatic abscess. In order not to prejudge its histological nature I have called this abscess "retrolabyrinthine." It is a small abscess, never exceeding the size of a large lentil, and always extra-petrous, which latter fact differentiates it from the aberrant mastoidal abscesses always confined to the petrosa. It is also extra-meningeal, never passing the dura mater, and thereby escaping all confusion with encysted meningitis. I have observed five instances of this abscess in about 20 cases of labyrinthine lesion with endocranial complications of otitic origin. About 30 scattered cases are to be found in medical literature.

Technique.

The technique of retrolabyrinthine exploration, although simple enough, is hard to describe.

1. To resect the bony retrovestibular mass and uncover the region of the endolymphatic sac the following procedure is necessary: (*a*) Lay bare the dura mater before and behind the lateral sinus to the entire height of the lateral portion of the sinus; lay back this cerebellar dura mater behind. (*b*) Resect the posterior surface of the mastoid, then, *further in, the posterior face of the petrosa*; the first of these is thin, the second compact and resistant. This resection is done with a drill, or better with a gouge. The operative field is confined by the internal surface of the antrum, and includes the triangular region limited behind by the lateral sinus, in front by the facial sinus, and above by the roof of the antrum. The gouge is first used in a vertical direction from above downwards. The internal surface of the antrum is hollowed out; then the gouge enters the lateral and facial sinuses, working from the apex of the *mastoid towards the middle cerebral fossa*; the bony mass of the semicircular canals is chipped with strokes of the gouge in order to facilitate the following process. (*c*) A retrovestibular furrow being thus hollowed out, resection of the mass of the semicircular canals is achieved by placing the gouge this time horizontally, its back against the bend of the facial sinus, the cutting being towards the dura mater at the centre of the cerebellum. The gouge is worked backwards and forwards at first, and a little inwards and outwards, as though aiming for the torcular herophili. It is then pivoted *about the bend of the facial sinus and directed* towards the occipital foramen; finally, it is directed inwards and outwards definitely towards the basilar occipital process. The posterior surface of the petrosa is resected in proportion, and the dura mater uncovered little by little as far as the region of the endolymphatic sac.

2. The action of the gouge in the second process is facilitated by the following points of indication: (*a*) It pivots round the bend of the facial sinus, remaining always in a horizontal plane, passing by the fenestra ovalis and the loop of the horizontal *semicircular canal. (b) In progressively* resecting the mass of the semicircular canals two orifices are laid bare on the same level, corresponding to the opening of the loop of the vertical posterior canal. But the canal of the vestibular aqueduct passes along the loop of that canal; the opening of the latter then indicates that the resection of the semicircular mass is sufficient. (*c*) The cerebellar dura mater which covers the internal surface of the mastoid and of the petrosa is easily separated until the neighbourhood of the endolymphatic sac is reached, at which point it becomes very adherent. Resection of the posterior surface of the petrosa should then be carried out as far as the dura mater permits itself to hang loose. Where it joins the retropetrous periosteum resection must be stopped; that is the region of the endolymphatic sac. This last point of indication is the most important.

3. This technique is not dangerous; it requires to be executed in strips in order to avoid cracking the petrosa and tearing the dura mater continuously. When the conditions necessitating retrovestibular exploration are fulfilled it must be carried out in one operation complementary to petromastoidal evacuation. It is useless to intervene in two stages with an interval of 48 hours, for the entire process is extra-meningeal, and if properly conducted is not dangerous. Nor need the possible length of the operation be *considered; aural intervention never induces operative* shock.

Conclusion.

Resection of the bony retrolabyrinthine mass constitutes a means of reaching the anterior internal portion of the posterior cerebral fossa. It permits of access to—

(1) Extradural abscesses developing *on the posterior* surface of the petrosa between the lateral sinus and the internal auditory canal.

(2) Cerebellar abscesses very deeply situated; these are the most frequent type, and cannot be reached by any other means—either across the shell of the occipital bone or by the internal surface of the mastoid.

(3) Meningitis, localised or predominant, in the posterior cerebral fossa. By incising the dura mater near the endolymphatic sac the whole cerebral sub-arachnoid space may be drained. This incision, if kept *open by means of a piece of gauze*, sets up an abundant flow of cerebro-spinal fluid, resulting in marked diminution of headache and general symptoms. In a case of streptococcal meningitis under my own care this drainage clearly assisted the cure.

CEREBELLAR ABSCESSES OF AURAL ORIGIN.

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CEREBELLAR abscesses have a particular interest among the complications of suppurating otitis, as much because of their variable pathogeny as because of the difficulty of their diagnosis—the latter existing in spite of the recognition of symptoms established by modern semeiology of the cerebellum.

Ætiology.

Frequency.—Rare. Bourgeois believed them to be as frequent as cerebral abscesses. At present it is believed that there is about 1 cerebellar abscess to 4 cerebral abscesses; thus Dench[1] has observed 4 cerebellar to 17 temposphenoidal, and Sydney Scott[2] 12 cerebellar to 42 cerebral. In a third of these cases the cerebellar abscesses were associated with other complications—extradural abscess, thrombo-phlebitis of sinuses, meningitis.

Age.—Exceptional before the age of 10 on account of the high position of the antrum; maximum frequency from 10 to 20 for abscesses following acute otitis, from 20 to 30 for those following chronic otitis.

Sex.—Three times more frequent in the male than in the female.

General causation.—Diabetes and tuberculosis play a disputed part in causation of abscesses.

Influence of traumatism and acute diseases.—Cerebellar abscesses have been attributed to the shock occasioned by gouging; this is a disputable point. They sometimes appear after an acute illness—e.g., measles, scarlet fever, mumps, typhoid.

Influence of the form of otitis.—The preceding otitis is nearly always chronic.

Pathogeny.

Consideration must be given to the following points:—

(*a*) *Routes of Infection in the Petrosa.*

1. *Venous route.*—Phlebitis of the venules connecting the middle ear with the sinus lateralis, or of the osseous venules, notably those of the petro-mastoidal canal.

2. *Cellular route.*—Under the influence of attrition by cholesteatoma or of retention of pus infection proceeds, and a process of osteitis destroys the osseous intercellular walls. The pus can also move along the subantral or peri-labyrinthine cells or the petro-mastoidal canal, and overstep at any point the cortex of the posterior wall of the petrosa.

3. *Labyrinthine route.*—This is the route of infection in nearly half the total number of cases: *it can produce a* fistula of the deep surface of the vestibulum engaged with the cerebellar surface, or, more often, a fistula of the posterior semicircular canal; lastly, much has been made

of the infective agency of the aqueduct of the vestibulum with resultant empyema of the endolymphatic sac. It is probable that a circumscribed extradural collection of pus situate on the posterior surface of the pyramid has often been taken for empyema of this sac. It is, however, none the less true that the importance of this deep retropetrous region is considerable in complications of the cerebellar surface; Vautrain, in his paper[3] suggested by Hautant, insists upon the necessity of his systematised exploration when a deep endocranial complication is suspected.

4. *Route of the internal auditory canal.*—A much rarer route. Infection can gain the canal by two routes—by the Fallopian aqueduct, which the pus traverses after breaking down the thin cortex of the central wall, or by the labyrinth, for the meningeal area is known to communicate with the labyrinthine area by the floor of the internal auditory canal. It must be noted that these different routes may combine to spread infection.

(*b*) *Spread of Infection Beyond the Petrosa.*

1. Infection by contiguity, on contact with the diseased bone; external pachymeningitis, then encephalitis and abscess.
2. Venous route; thrombo-phlebitis and abscess.
3. Arterial route; thrombus, then softening and abscess.
4. Lymphatic route; the pus does not permeate the lymphatic vessels, but follows the perivascular sheaths deriving from the subarachnoid cavity, which surround the lymphatic vessels and communicate with the connective tissue.

Pathological Anatomy.

The abscess is generally solitary, as large as a chestnut or walnut, often situated in the anterior part of the lateral lobes, with predilection for the right side. Classically, an abscess of phlebitic origin is antero-external, an abscess of labyrinthine origin antero-internal. More rarely the vermis is attacked. There is frequently a pachymeningitic lesion around the abscess. The thickness of cerebellar substance separating the abscess from the diseased bony lesion is generally minimal.

The contents of these abscesses vary in colour, odour, and consistency. Bacteriologically are found the usual organisms associated with suppuration, and sometimes anaerobes; sometimes, again, the pus is sterile.

The following varieties are to be distinguished:—

(*a*) Diffluent and ill-defined abscesses, the walls of which fade away with no sclerotic reaction; (*b*) limited abscesses, with a clearly circumscribed cavity whose wall is infiltrated with numerous polynuclear cells, and contains a few connective fibres on the side presented to the vessels; (*c*) encapsuled abscesses, with walls so well defined that the whole can be easily separated from the surrounding cerebral substance, like a real sac; this capsule consists chiefly of conjunctive tissue. The cerebral substance surrounding the abscess is more or less œdematous and hyperæmial.

Symptomatology.

The symptomatology is very varied; only an outline of it can be given. Classically four stages of a cerebellar abscess are described.

(*a*) *Initial stage.*—Where there has been a former otorrhœa with attacks of congestion of the diseased ear. New symptoms will soon appear which are not characteristic, and which give rise to more congestion about the ear, pain, and rise of temperature. Presently clearer signs awake suspicion of infection of the posterior cerebral fossa:—

(1) Injury of the labyrinth—either acute diffuse labyrinthitis with intense vertigo and nystagmus, first towards the diseased ear, then, after several days, towards the healthy ear; or chronic diffuse labyrinthitis, often following the former, and distinguishable by classical tests; (2) facial paralysis, supervening spontaneously during the course of otorrhœa; this sign must always give rise to anxiety, but its prognostic value is still more considerable when it is associated with labyrinthitis; (3) paralysis of the external motor oculi: rarer and of less prognostic value, disclosing an increase of cranial hypertension or a circumscribed leptomeningitis. Its association with other elements of Gradenigo's syndrome (trigeminal neuralgia) may indicate spread of infection towards the cellules of the apex of the petrosa (Baldenweck[4]).

(*b*) *Latent stage.*—A more or less considerable diminution of symptoms of the preceding stage is often observed, but careful general observation discloses morbid conditions the gravity of which will be apparent—viz., alteration in the patient's character, access of sadness and psychic depression; moreover the patient complains of a general feeling of discomfort. This latent stage sometimes appears after petro-mastoidal evacuation which induces an apparent improvement of more or less duration.

(*c*) *Manifest stage.*—Whether the precursory symptoms have already caused petro-mastoidal evacuation to be performed, or whether they have not appeared, multiple symptoms soon supervene in a very variable order of sequence; they may be divided into symptoms of suppuration, of hypertension, and of localisation.

1. *Suppuration.*—(*a*) Special attention has been paid to hyperthermia, and hypothermia attributed to the action of an abscess upon the centre of thermic regulation. As a rule the temperature curve is practically apyretic, and the small irregular thermic rises which are observed on the chart indicate meningeal inoculations. (*b*) Wasting is a capital symptom of cerebellar abscess—a symptom which Lermoyez "wished to see written in capital letters in classical treatises." In a few days muscular degeneration is complete. (*c*) Much less characteristic are the gastro-intestinal disturbances sometimes observed—anorexia, persistent constipation, crusted lips. Sometimes fits of shivering indicate the frequent onset of thrombo-phlebitis; labial herpes and local rise of temperature in the occipital region have also been noted.

2. *Diffuse intracranial hypertension.*—(*a*) *Headache* is the most frequent and earliest symptom of hypertension; it can be general throughout the head, particularly in children; oftener it is localised in the occipital region, with irradiations into the nucha, and sometimes also into the frontal region (Logan Turner[5]) or even on the side opposite to the abscess (Lombard). It is generally a dull, continuous, deep headache with a few paroxysmal crises of very short duration; patients compare it to the pressure of a vice or of a leaden bar inside the head; it is a depressing headache which does not compel the patient to cry out, but he may groan heavily at night. More rarely it is intense and intolerable, exaggerated by anything conducive to congestion of the head—cough, effort, reclining position—and then becomes a bursting sensation. It may be exaggerated by pressure on the eyeballs, but not by percussion or palpation of the occipital region; pain in the latter simply indicates a subdural abscess of the posterior cerebral fossa. (*b*) *Vomiting:* Cerebral, without effort; true regurgitation unconnected with alimentation; sometimes a type of uncontrollable vomiting (Courjon[6]), at other times simple nausea. (*c*) *Retarded pulse:* The pulse is of regular strength and normal amplitude but slackened; it only becomes quickened in the terminal period. (*d*) *Retarded respiration:* Parallel with the bradycardia; in the terminal phase it is accelerated and becomes superficial and irregular. (*e*) *Psychic disturbances:* At the outset mental inertia, cerebral torpor, liability to fatigue, diminution of psychic faculties. Later the patient sinks into stupidity, replying to questions slowly in a tired manner and with a low voice, and being indifferent to his surroundings; he remains for long hours motionless, with eyes half closed. Asthenia becomes complete, and muscular weakness is extreme. Much more rarely phenomena of cerebral excitation are observed; the patient becomes agitated, rises from his bed, and tears off his dressings; in exceptional cases there is melancholia with delirum, necessitating detention of the patient. (*f*) *Generalised convulsions and contractures:* Convulsions are chiefly observed in children; sometimes epileptic crises arise. Contractures are frequently localised in the muscles of the nucha. Stiffness of the nucha, with a drawing backwards of the head, is sometimes seen in cerebellar abscess due to compression of the spinal marrow by the abscess. (*g*) *Lesions of the optic disc and ocular disturbances:* Papillary lesions should always be systematically investigated when deep endocranial complication of otitis is suspected. Congestive vascular disturbances, venous dilatation of papillary stasis or of optic neuritis, may be observed. Absence of these lesions must not, however, occasion rejection of a diagnosis of cerebellar abscess, for they do not appear in a large number of cases (Lundberg,[7]; Dench; and two of the writer's own cases).

3. *Localisation.*—(*a*) Functional symptoms demanding the clinician's notice: (1) more or less intense vertigo, with several special characteristics; frequently a drawing sensation on the infected side. The vertigo is not increased by closing the eyes, nor by increase of pressure in the external auditory canal. It is increased by decubitus on the healthy side; so the patient lies with knees drawn up, on the side of the lesion. It is diminished in the horizontal position. (2) Disturbances of equilibration precede and follow vertiginous cerebellar disturbances. When the patient stands upright—which is not always possible—he moves his feet apart to widen his basis of support; body and head may show more or less distinct movements of oscillation. In Romberg's position it is observed that occlusion of the eyes does not increase disequilibrium; that the fall is usually towards the side of the lesion; that there is no constant connexion between the sensation of falling and the sensation of nystagmus. In walking the legs are widely separated,

and there are festination and titubation. The gait is that of a drunkard, advancing with small steps; the feet are drawn up and set down quickly; the oscillations of head and trunk increase. (3) Nystagmus in either direction—towards the healthy or the affected side; it is often accentuated when the eyes are turned towards the affected side. It tends to increase, not to diminish, as the condition develops. Lastly, it may be modified by excitation of the labyrinth (caloric or rotatory tests).

(*b*) *Motor sensory and reflex disturbances*: (1) Motor disturbances. In many cases paralysis of members of the affected side is observed; this constitutes a clear sign of cerebellar abscess (Damade and Boisserie, Lacroix,[8] Labouré[9]). More rarely double paralysis is observed, due to compression of the pyramidal nerve-tract at the level of the pons; in reality it no longer concerns in this case a focal system, but a symptom produced at a distance. De Stella[10] has reported a case of double paralysis (left side of face and right limbs) with a true cerebellar abscess. Conjugate deviation of head and eyes to the unaffected side has been observed, sometimes ptosis; disturbances of speech, the latter being scanned, with brusque emission of syllables separated by pauses; in exceptional cases there are trismus and difficulty in swallowing. (2) Sensory disturbances, generally absent. (3) Tendon reflexes are generally exaggerated on the affected side.

These different elements sometimes combine in syndromes, of which the most distinct are Brissaud's syndrome (cervico-occipital headache, strained attitudes—e.g., retraction of head, conjugate deviation of head and eyes, disequilibration), and Acland and Ballance's syndrome (exaggerated knee-jerk and sluggishness of lower limbs on affected side, conjugate deviation of head and eyes).

(*c*) Cerebellar tests: A new series of tests has been established in the light of modern knowledge resulting from Babinski's work on the physiology of the cerebellum: (1) Test of routine movements; the patient is told to touch the end of his nose, and his finger passes it. This excess is particularly marked when the movements are made with rapidity; it is not increased by closing of the eyes, and the movement retains its direction and intentional orientation. (2) Test of asynergy—the loss of ability to accomplish simultaneously the various movements which constitute an action. The patient lies down with arms crossed, and is told to sit up. Instead of keeping his legs still he flexes his thighs strongly upon the pelvis, and lifts his heels off the bed. (3) Test of adiadokokinesis—diminution of the faculty to execute movements in rapid succession. (4) Voltaic vertigo test. In the transverse bipolar test—i.e., setting the positive and negative poles symmetrically before the tragus—a rotation of the head is produced, with inclination backwards or always to the same side, whatever the direction of the current. (5) Indication test. This can be applied at different points of articulation—wrists, elbows—but is most easily carried out at the shoulder, by telling the patient to stretch his hands straight in front of him, with extended index fingers. Two kinds of phenomena may then be observed: 1. Spontaneous movements of reaction at the *extremities*; in cases hitherto observed the spontaneous movement has always been made outwards and from the affected side—i.e., with a left cerebellar abscess the right index finger remains immobile. 2. More often the spontaneous reactions are absent; and search must also be made, for presence of movements provoked by reaction, by physiological excitation of the vestibule. Normally, caloric *excitation of the right* ear with cold water results in displacement of the index finger towards the right (this in the position above described). With right cerebellar abscess the left index will travel well to the right, but the right index will remain immobile. If the right labyrinth is destroyed by suppuration the left labyrinth can be used; the opposite reaction will be obtained.

An important *point is that the position* of the articulation at the moment of the test does not influence the direction of the movement; whether the hand is in pronation or supination it is always carried in the same direction during the test.

Final stage.—The duration of the preceding period varies greatly, between a few weeks and three years; as the symptoms become aggravated, emaciation becomes extreme, and death supervenes either by increase of intracranial pressure and progressive coma or by bulbar compression and respiratory syncope (Alt[11]), or again by opening of the abscess into the meningeal cavities.

Evolution after Operation.

Soon after operation there is diminution of the general signs of intercranial hypertension. If coma was present it also disappears shortly, and there is regression of lesions of the fundus oculi; the pocket of the abscess fills up by disappearance of the walls and by granulation, *and in from four to eight* weeks can be healed. Large abscesses may heal without sequelæ. Unfortunately, improvement is often only temporary. Encephalitis is more or less rapidly developed, accompanied sometimes by hæmorrhage which hastens the fatal termination, sometimes by production of a cerebral hernia, which is often symptomatic of a second abscess arising in a diverticulum of the first abscess. Lastly, there is a possibility of recidivity, as in Poli's case,[12] where death occurred from a second cerebellar abscess four and a half years after cure of a first abscess.

Clinical Forms.

(*a*) Symptomatological forms: typhoid, delirant and latent, in which last even very careful examination may elicit no symptom at all, and of which the diagnosis is only made at autopsy; the writer has recently observed such a case. (*b*) Evolved forms: acute or chronic. (*c*) Forms differentiated by age; in the aged a latent or torpid form. (*d*) Forms according to pathogenic organism; the pneumococcus gives chiefly encapsuled abscesses; (*e*) forms complicated by thrombo-phlebitis (Wildenberg[13]), by meningitis, or by cerebral abscess.

Positive Diagnosis.

It is obvious from the multiplicity of symptoms how *complicated and difficult to interpret the clinical picture* may become. The following four tests, of unequal value, are of assistance:—

1. *Lumbar puncture.*—This process gives information as to (*a*) the hypertension of the cerebro-spinal fluid, which is measured by Claude's manometer—a hypertension which is moreover inconstant; (*b*) the meningeal reaction around the cerebellar lesion; the latter is variable, giving now a normal liquid, now albumino-cytological dissociation, now a slight leucocyte reaction, now abundant polynuclear cells, whether altered or not. Borries[14] insists upon what he describes as the "benign picture of the cerebro-spinal fluid"; by a first puncture a cloudy liquid containing micro-organisms and polynuclear cells; in later punctures the polynucleosis is diminished, whilst the bacilli disappear. Borries attributes this to "second-hand" meningitis, betraying evolution of a cerebral or cerebellar abscess.

2. *Hæmatological examination.*—For Sebileau a leucocytosis of 9000 to 15,000, with 70 per cent. polynucleosis, would be the differential count of an encephalic abscess.

3. *Radiography.*—Radiography gives no information.

4. *Aspect of lesions during intervention.*—This constitutes one of the most useful signs; the gouge follows the lesions, which extend backwards towards the posterior cerebral fossa.

Study of all these symptoms admits the assembling of a group of facts favouring the existence of a cerebellar abscess; *investigation by means of puncture is* well advised; except in cases where the abscess communicates with the lesion of the ear it is the only formal means of diagnosis of a cerebellar abscess.

Differential Diagnosis.

We are not now considering those cases where otorrhœa has gone unrecognised owing to insufficient examination; in such cases the most fantastic errors can be made. Here it is understood that otorrhœa has been diagnosed.

1. Otorrhœa as a complication not of otitis, but of an intercurrent disease—typhoid, pneumonia, tuberculous meningitis, cerebral tubercle, cerebellar hæmorrhage, intracerebellar cysticercus, uræmia, or hysteria. Moure[15] has recently reported cases where in the course of otitis media with suppuration symptoms such as nystagmus, torpor, &c., gave rise to the belief that a cerebellar abscess was present; in reality it arose from gingival syphilis which was cured by *treatment.*

2. Otorrhœa as a complication of otitis:—

(*a*) As soon as coma appears the presence of auricular suppuration suggests an encephalic complication; puncture of the cerebrum is then resorted to; if no result is gained it is followed by puncture of the cerebellum; (*b*) if the vestibulo-cerebellar syndrome is absent the following possibilities should be *eliminated: (1) hysteria, persistence of pain after* intervention in neuropathic cases (Bourgeois); (2) otitic hydrocephalus, a sort of œdema of the meninges and of the cerebrum around the affected petrosa, well described by Passot.[15] These phenomena have often wrongly suggested cerebellar abscesses, and futile punctures of the cerebellum have been carried out (Hunter Tod,[17]). Rapid improvement after drainage generally permits the diagnosis; it can sometimes be suspected when lumbar puncture has brought about immediate and complete cessation of the symptoms. (3) Otitic meningitis: the diagnosis is the more difficult in that the two affections can exist side by side, and, moreover, there are forms of localised meningitis of the posterior cerebral fossa with a symptomatology very similar to that of cerebellar abscess. Study of the thermic curve, lumbar puncture, and the cerebellar tests assist in making the diagnosis. (4) Extradural abscess can present symptoms very like those of the cerebellar form. Baldenweck insists upon pain on pressure in the occipital region, characteristic of extra-dural abscess. (5) Phlebitis of the sinuses. The spiky temperature curve and the presence of intense shivering and of pyohæmic complications are the soundest bases for diagnosis; but the two diseases can co-exist. (6) Cerebral abscess. Diagnosis often very difficult. It must be remembered that *nystagmus is frequent in cerebral abscess.* Aphasia is a marked sign of the latter; examination of the lesions in the course of evacuation is most often the best diagnostic indication.

3. There still remains the vestibulo-cerebellar syndrome. Acute labyrinthitis will be present; diagnosis will be difficult, as the two diseases can co-exist or succeed one another. Careful study of the symptoms common to both reveals sufficiently definite differences (Lamois,[18] de Stella [19]).

(*a*) Acute labyrinthitic nystagmus presents a regular evolution. For two or three years it strikes towards the affected ear; at the end of that time caloric excitation of the vestibulum shows it to be more responsive. Then it changes direction, attacking the sound side, the vestibulum becoming unresponsive to hot or cold water. Cerebellar abscess must be considered whenever there is irregularity in evolution of *nystagmus and in excitability of the* labyrinth—e.g., in the following cases: (1) Nystagmus towards the affected ear; 48 hours later, change of direction towards the sound ear; then persisting without modification. (2) Nystagmus for several days towards the sound ear again turning to the affected ear, the vestibulum on the affected side being unresponsive. (*b*) Disturbances of equilibration. The body falls in the direction opposite to that of the nystagmus, and is modified by the situation of the head. In a case of right labyrinthitis with nystagmus towards the left, the patient tends to fall to the right; but if told to turn his head to the right he will fall backwards. This is important, since the cerebellar disturbance is more of equilibration than vertiginous, whilst labyrinthitis is more vertiginous than of disequilibration, and the disequilibration is increased when the eyes are closed. (*c*) In labyrinthitis vomiting does not last longer than two or three days. (*d*) Headache is unknown in labyrinthitis. (*e*) Galvanic test; the bilateral unipolar test, carried out by placing the negative electrode on the nucha and two positive electrodes in front of the ears, induces a fall to the side of the sound labyrinth, whilst the patient with cerebellar abscess, whose intact labyrinths are equally galvanised, does not fall. (*f*) Lumbar puncture shows intact cerebro-spinal fluid in labyrinthitis.

Treatment.

Treatment is purely surgical, and consists of opening the abscess. With regard to anæsthesia, surgeons who during the war observed the danger of chloroform in trephining for wounds of the head became accustomed to using ether; but to avoid the danger of intercranial hypertension induced by ether it is well to precede the operation with a lumbar puncture.

Method of approach.—Authorities are divided as to the best method. (*a*) Some follow the lesions and approach the cerebellum by the mastoidal route, breaking down the posterior wall *of the petrosa and advancing in front* of the lateral sinus, or through it when it is thrombosed (Calamida [21]). (*b*) Others approach the abscess directly by the retro-sinuous occipital route, passing through healthy tissue (Aboulker,[22] Pierce,[23] Curtillet and Aboulker [24]). The chief advantage of this method lies in the harmlessness of futile punctures of the cerebellum made across healthy uninfected tissues. Where a cerebellar abscess is suspected an exploratory cerebellar puncture can thus be made. Lastly, by this method it is easier to supervise the cicatrisation of a cerebellar abscess once the latter has been opened. Opponents of this method say that to open an abscess by crossing a healthy meninx is to risk provocation of a generalised meningitis. *I have been able to demonstrate that this* fear is unfounded,[25] and that the formation of a "cerebral plug" is sufficient to isolate the meningeal space from the cavity of the abscess. (*c*) Combined method—mastoidal with an occipital counter-opening—successfully employed by Luis Suñe y Medan.[26]

Puncture of the cerebellum.—The dura mater has been largely laid bare; its characteristics must be studied. In some cases a small fistula, from which escape drops of pus [illegible] after cleansing, indicates the presence of an abscess; in other cases delicate palpation discloses an abnormal resistance, a characteristic thickness. These are the only certain signs of an abscess. It is better not to *take into account the cerebral pulsation, since some authors consider an increase in the rate to be characteristic of an* abscess, whilst others say the same of a diminution. In exceptional cases there is a cup-shaped depression in the dura mater, as though the latter has been drawn in by the abscess. Soon after the dura mater has been incised the cerebellum prolapses; the latter is punctured, either with Horsley's pus-finder or with aural forceps, the blades of which are parted, or with a hollow sound; the majority of writers have abandoned Preysing's bistoury and Wicart's trocar. Once the pus is *found the forceps are* thrust into the cavity of the abscess and withdrawn with the blades parted. Several writers advise digital exploration of the abscess. Waggett [27] goes so far as to advocate digital search for the abscess.

Dressing and drainage of the abscess.—All writers agree in rejecting drainage by rubber tubing, on which the beating of the cerebral pulse tends to destroy the cerebellar parenchyma. *Gradenigo [28] employs a special encephaloscope.* The floor of the abscess *can also* be touched with various topicæ; most writers have abandoned lavage of the abscess. The school of Saint Antoine, with Mons. Lermoyez, advocate evacuation of the abscess, twice daily, with Péan's forceps or with a long speculum, followed by flat dressing, without the introduction of gauze or drain of any sort.

Vaccinotherapy.—As a result of the work of West autovaccinotherapy has been practised by Stoddart Barr.[29] I am at present studying the action of auto-vaccines in nutritive media with cerebral substance added. This method, intended to conserve the histological affinity of microorganisms for cerebral substances, has been successful when applied to treatment of encephalitis following cerebral wounds caused by projectiles.[30]

Prognosis.

The prognosis is "fatal" when the abscess is *left to* evolve naturally. The most *favourable* statistics *of* operative intervention give about 25 per cent. *of* cures. West [31] is *of* the opinion that the prognosis *of* abscesses following pyo-labyrinthitis is worse than that *of* those following thrombo-phlebitis *of* the sinus.

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THE LANCET.

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The Health of the Teacher.

Mr. RALPH WAGER, of the Department of Biology at the Northern Illinois State Normal School, has been making an inquiry into the health of school teachers and training college students, and he has come to the conclusion that enough is not done to safeguard the health of the teacher either in the training college period or in later employment. His deductions are interesting, although the smallness of the numbers dealt with does not allow us to draw any wide deductions from them. He finds that of 257 students aged 18 to 21 a large percentage were suffering from remediable defects. Forty per cent. had carious teeth, 28 per cent. defective vision, 8 per cent. ear trouble, and 2 per cent. were suffering from abnormal lung conditions. Attention is drawn to the lowness of this last figure. Not long ago, Dr. WILLIAM OLDWRIGHT, Professor of Hygiene in Toronto University, found that out of 1000 deaths of female teachers from all causes 396 were due to pulmonary phthisis, the mortality-rate being about that of printers (398), more of whom succumb to this disease than do any other class of worker, and higher than that of stone-cutters and saloon-keepers.

In England, the teaching class is very much more carefully selected than in America. The Board of Education insists on an examination for medical fitness before entering the training college. Trainees undergo a medical examination each year of their college life, and, finally, a thorough examination is made before they are employed in State-aided schools. All remediable defects are rectified, over-strain is noted, and consequently there is a thorough weeding out of the unfit. From the Registrar-General's reports the mortality of the male school teacher under 45 years of age appears to be below that for all males in selected healthy districts, while above 45 years the rates occasionally exceed that standard. On going more closely into the subject we find that although the comparative mortality from phthisis of occupied and retired male school teachers generally is 113 per 1000 dead—double that of the clerical profession, and considerably below that of occupied and retired males generally, which is 186 per 1000 dead—it is very high considering that these lives are selected on a health standard. Denmark's example in retiring on a liberal pension teachers who have contracted tuberculosis, or giving them long leave of absence on part pay, might well be followed. Of course, a low mortality-rate is quite compatible with a high morbidity-rate, and it is significant that the maximum mortality-rate for teachers is reached 10 to 15 years later than for the general population, a fact which along with Mr. WAGER'S figures would seem to show that the disease is an outcome of conditions of work. Dr. HANS MEIRHOFER found that in Zurich during the years 1912–14 there were 592 teachers' notifications of illness. Of these, 177 were due to respiratory disease (chiefly laryngeal or bronchial), 107 to nervous troubles, 52 to heart weakness, 53 to infectious disease, 78 to digestive troubles, 60 to diseases affecting bones, joints, and muscles; while under the heading "various," which included anæmia and general debility, were classified 45. The proportion of sick women was more than twice that of men. The large preponderance of nervous and respiratory affections will occasion little surprise when we remember the constant strain to which the elementary school teacher is subjected. She is shut up all day with a class of possibly 60 children. Her point of attention is constantly being diverted, never allowing of concentration for any length of time. Indeed, she may eventually lose this power altogether, and she often becomes fussy, over-anxious, and nervous. She rarely sits; for the greater part of her school day she is standing, breathing an atmosphere of stagnant warm air laden with particles of chalk, fibres of clothing, and exudations from 60 children. The average school teacher dislikes the cool atmosphere of a well-ventilated room, and more often than not in the more modern buildings one finds the means of cross ventilation tightly closed.

The remedy lies not only in a closer adherence to the hygiene syllabus of the training colleges (in England now it is a comprehensive one) and in the reduction of the numbers in classes, but also in the growth of the open-air type of school, which is cheaper to build and easier to alter, and better for teacher and taught than the old permanent variety. Shop assistants in England, by a wise law, are encouraged to sit down to their work when possible. The teacher is directed in the training college to teach in the standing position. It may be that 60 children cannot be controlled otherwise, but it is trying and, among other things, conducive to flat-foot, so common in this profession. An unhealthy teacher is a distinct monetary loss to any education authority. The personality of the teacher is often of more educational value to the developing mind of a child than all the formulæ that are taught, and an effective personality is not found in an over-tired and over-strained frame. Here in England we differ from America in getting teaching material certified physically sound, and for the sake of those to be taught, if for nothing else, we ought to keep our stock of material in good condition. We must lessen the over-pressure and examination evil in secondary schools and training colleges, and we must take every means to prevent over-strain and fatigue by insisting on the ordinary laws of general hygiene being practised as well as preached. For instance, how many cases of over-strain and breakdown are due directly or indirectly to ignorance of voice hygiene? Comparatively little attention is paid to this subject, which ought to be a compulsory one in every training college. It is a curious fact that although the teachers' voice is more or less in constant use, and is the principal medium for the practice of their profession, few teachers know how to preserve the voice by proper use. Indeed, few have any knowledge that there are right ways and wrong ways of using it, and the majority of teachers are *ignorant of the fact that expenditure of* effort and energy can be considerably curtailed by pitching the voice differently for different purposes. The late Dr. E. S. YONGE examined the throats of 100 women teachers in Manchester, and found 70 per cent. with pathological change; 31 of these 70 had definite lesions of the vocal cords. These pathological throat conditions, produced most of them by ignorance, result very often in periodic loss of voice and always in fatigue, which reacts upon the children individually.

What of teaching from the teacher's point of view? That teaching as a profession is not attractive can be gathered from the falling-off in the numbers of men and women who go in for it. Other openings are developing for both men and women, and teaching is going by the wall. The reasons are not far to seek. Apart from conditions of pay, the social life of the teacher is limited. Most of the life is spent among children, and entertaining though interchange of ideas with children may be, it is not very stimulating intellectually; consequently mental atrophy is apt to set in. Teachers, too, women especially, are apt to suffer from over-strain—emotional over-strain rather than intellectual. Apart from all this, the outlook is depressing. If a woman teacher over 40, when her powers ought to be at their maximum and her value in any other calling would be recognised, happens to fall ill, or for any other reason decides to give up work, she will find when she desires to resume again that, apart from reasons connected with superannuation allowances, her chances with appointment committees are poor as against that of the young woman between 20 and 30 not long out of college. There is something wrong in the system when a life of monotonous drudgery under unhygienic conditions is also poorly rewarded and in precarious circumstances. Although conditions here are better on the whole than in America, much productive energy might be spent in both countries in alleviating the teacher's lot, and in making the teaching profession a more attractive one all round.

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The Pandemic of Influenza, 1918-1919.[1]

A REPORT on the pandemic of influenza, 1918–1919, has been issued by the Ministry of Health, being No. 4 of the valuable series coming from the Ministry, and dealing generally with public health and medical subjects. The price of the Report is high, but the book is a large closely printed volume, accompanied by the illustrations, maps, and diagrams necessary to its comprehension, while its message is timely as well as of great general value. The responsible authors are Dr. M. B. ARNOLD, Dr. THOMAS CARNWARTH, Dr. S. M. COPEMAN, F.R.S., Dr. BRUCE LOW, Dr. S. P. JAMES, Dr. MAJOR GREENWOOD, and Dr. J. R. HUTCHINSON, attached to the Ministry, aided from without the bureau by, among others, Sir FREDERICK ANDREWES, F.R.S. (professor of pathology in the University of London), Dr. JOHN BROWNLEE (director of statistics to the Medical Research Council), Dr. F. S. CARSON, Dr. HERBERT FRENCH (physician to Guy's Hospital), and Dr. G. W. N. JOSEPH, Dr. A. J. LAIRD, Dr. MORLEY MATHIESON, and Dr. JAMES NIVEN, respectively medical officers of health for Warrington, Cambridge, South Shields, and Manchester. The Report is prefaced with a general survey of the epidemic by Sir GEORGE NEWMAN, chief medical officer to the Ministry, and it is the first intensive study of the scourge that swept across half the world some two years and more ago, claiming a larger total of victims than fell during the whole of the war.

The issue of the Report has been called timely, and this leads us to hope that all who are officially concerned in erecting and maintaining our defences against epidemic disease, will study the terrible story of 1918–1919 in the light of future and organised activities that may be demanded of them. The American who reminded his constituents that "if our foresight was as good as our backsight we should be wiser by a d—n sight" was not belittling, but recommending the study of collated experience, and in the matter of influenza such study may save a vast amount of mortality and misery. True, the deaths from influenza have not exceeded the normal for the last two years, but we must not—neither the public nor the medical profession—build too high on the fact. The disease is now known to recur in successive waves, and we have to face the serious question whether this country is prepared with the knowledge and the weapons whereby to contest a return of the epidemic. For undoubtedly circumstances favour the return of influenza. The compilers of the Report state their view of the matter impressively, if a little obscurely, when they say:—

> "The conclusion to which we are led is that the generation of a great pestilence such as influenza or pneumonic plague is dependent upon disturbance of social order involving for absolutely large numbers of human beings the endurance of conditions of insalubrity which afford for invading parasites a suitable field of modification. ...... No impartial spectator can doubt that at the present time, and almost certainly for a generation to come, there will exist in many nations and over wide tracts of country precisely the type of misery which we suspect to be the appropriate forcing house of a virulent and dispersive germ."

We believe this warning to be warranted by facts, and welcome from the Ministry of Health a Report which, while resuming the past, gives wise counsel for the future. In the light of this Report one of the first tasks for the International Health Bureau will be to track down the epidemic focus of influenza and arrest the disease at its source. Influenza breeding can no longer be tolerated in a world which boasts of a collective health conscience.

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Ill-judged Economy.

THE rise and progress of the science of industrial medicine, its importance to our great working centres, its influence upon human endurance, efficiency, health, and contentment, and especially the invaluable work being conducted by the Industrial Fatigue Research Board, have steadily been placed before our readers. We recognised the appointment of the Board, with a mission to extend and pursue investigations which had been successfully set on foot during the war, as a piece of wise statesmanship. The Board has overcome the initial difficulties, which have been considerable, in getting together a staff of expert investigators and in educating new workers. Such reports as have already been issued have been eagerly welcomed, not only in this country, where employers and employees alike are wishful to reorganise conditions of labour on a scientific basis, but also in the United States, France, Canada, Spain, and Italy, where steps are being taken, or being contemplated, to follow our lead. As in the case of the dye industry, our men of science are ahead of the world; are we again going to leave the harvest to others to reap?

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[1] Report on the Pandemic of Influenza, 1918-1919 (Reports on Public Health and Medical Subjects, No. 4). H.M. Stationery Office. 576. Price 15s. net.

We understand that a decision has been given to cut short the work of the Board at a time when every effort must be put forth to make industry as effective and as healthy as possible. Nor is this all. The Board, originally appointed at the desire of the Home Office, owes official allegiance to the Medical Research Council, and when that Council presented the budget for the coming financial year, the allocation for the Industrial Fatigue Research Board was unconditionally refused by the Treasury. The Board, after balancing the present imperative need for economy with the national importance of the work entrusted to its care, had reduced its requisition to £18,000, but its modesty met with no reward. The decision of the Treasury appears to have been given without investigation of the work of the Board, or any consultation with its members, without any reference to employers and employees, or to the Home Office, whose representatives sit on the Board, or to the Ministry of Health who are naturally interested in medical research and are represented on the Board, or to the Ministry of Labour, who are concerned with industrial contentment and efficiency, and are also represented on the Board. The Chairman of the Industrial Fatigue Research Board is Professor C. S. SHERRINGTON, President of the Royal Society, and among its members are such well-known men in the industrial world as Mr. W. L. HICHENS and Mr. KENNETH LEE, and such scientists as Sir JOSEPH PETAVEL, Professor E. L. COLLIS, Dr. C. S. MYERS, and Professor WINIFRED CULLIS, all of whom give voluntary and unstinted service. We may fairly inquire whether the Treasury is the authority to decide the value and usefulness of any form of medical research, and to do so without inquiry or hesitation. We believe that reduction in the estimate put forward was not asked for, only a curt refusal for the whole sum was sent to the Medical Research Council.

Economy is the plea for this action. It is the sort of economy which makes practical men despair. National wealth depends upon human efficiency in industry. The study of human activity and of the effects of fatigue has in the past been sadly neglected, and the Industrial Fatigue Research Board was removing this reproach. It has, among other things, already pointed out how ventilation may increase output, how rest-pauses scientifically used may improve productivity and increase earnings, how shortened hours may be hygienically and economically beneficial, how industrial accidents, sickness, and activity are influenced by relatively small alterations in temperature, and how intimately certain processes depend on human efficiency. In a little over two years the Board has issued reports relating to the manufacture of shells, the silk industry, foundries, the manufacture of tinplates, cotton spinning and weaving, the boot and shoe trade, and the manufacture of iron and steel, which latter, the *Scotsman* states, "presents a picture of the whole intelligence in the industry engaged in the engrossing pursuit of metallurgical problems to the almost complete exclusion of the factor of human health." We find ourselves in complete agreement with our contemporary that dismissal of the Industrial Fatigue Research Board "is a form of economy which can only, and probably within a short time, involve industry in a good deal of avoidable loss." Then taxation will yield less, while its burden will press heavier.

Annotations.

"Ne quid nimis."

TRINITY COLLEGE, DUBLIN.

THE Report of the Royal Commission appointed last March to investigate the claim of Trinity College, Dublin, to financial aid from the State was published recently. It is strongly in favour of such aid being given, and recommends a non-recurrent immediate grant of £113,000 and an annual subsidy of £49,000. At present the College receives no Government grant, and apart even from its heavy losses during the war, it has insufficient resources to develop in proportion with its needs. Among the most pressing necessities are additional laboratories for pathology and chemistry. In addition to supporting the demands of the College for money, the Commission makes a number of far-reaching suggestions concerning the organisation of the teaching staff. Up to the present not only has the great part of the teaching in Arts been in the hands of the Fellows, but they held the preponderating influence in the life and affairs of the College, the Professors being ancillary. The suggestions of the Royal Commission appear to contemplate a reversal of this position. The Professors will become the predominating power and the Fellows will have a secondary position. This is made clear by the proposals as regards stipends. A whole-time professor is to receive a salary of £1000 or, if he is head of a department, £1300. The junior Fellows, on the other hand, are to be content with stipends beginning at £440 a year and reaching a maximum of £690. They have, naturally, pointed out "that these salaries are quite insufficient in view of the increased cost of living," and they demand that "if a State grant is obtained from the College ...... a further increase in the salaries of Fellows should be made a charge on the grant," but their protest and demand received no support from the Commission. With such inadequate salaries it is bound to be increasingly difficult to attract suitable candidates to the Fellowship of the College. The Commission makes various suggestions concerning the medical and other schools as regards more adequate remuneration for assistants in the faculties. It is proposed also to get rid of the anomaly of the present position of the chair of Institutes of Medicine. The professor of that subject is appointed by the Royal College of Physicians or the foundation of Sir Patrick Dun, but he is, for all practical purposes, a whole-time officer of Trinity College. The Commission proposes that he should, in fact, become so. The Commission makes a not unnecessary recommendation that the authorities of the College should improve the present sanitary arrangements of the College. Only those who have been ill in College rooms, or those who have attended *patients* there, can realise how trying are the present arrangements.

ANTHRAX FROM SHAVING-BRUSHES.

THE Ministry of Health has called attention to the recent occurrence in this country of cases of anthrax, some of which have terminated fatally. Infection has once more been traced to shaving-brushes; in spite of the steps taken to prevent the distribution of Japanese brushes imported before the prohibition order took effect (i.e., Feb. 9th, 1920), there is reason to believe that large numbers of these brushes still remain in the hands of retailers. It is suggested that medical officers of health should communicate with all retail chemists and other dealers in shaving-brushes in their districts, and warn them of the danger of distributing any brushes of Japanese manufacture which they may have in stock. Should the retail dealer be unwilling to have the brushes destroyed, they should be securely wrapped up and returned to the wholesale dealer, together with an explanation. At the beginning of last year a method of partial disinfection of shaving-brushes before use was indicated[1] for the protection of the public, but a method stated to be more reliable is now recommended in a circular issued by the Ministry of Health. The brush should be: (a) thoroughly washed with soap and warm water containing a little washing soda and then allowed to stand for half an hour in warm water containing a little soda; (b) placed in a warm solution of formaldehyde (1 part of 40 per cent. formalin and 16 parts of water—a 2½ per cent. solution of formaldehyde) for half an hour; (c) allowed to dry. It is, however, pointed out that complete sterilisation of brushes is impracticable; the method mentioned above frees the exposed part of the hair from infection, but does not affect spores embedded in the handle of the brush. The following figures have been supplied by the Medical Inspector of Factories with regard to the results of various forms of treatment in 800 cases of cutaneous anthrax (excluding the erysipelatous form) in Great Britain:—

Treatment.	Cases.	Deaths.	Mortality per cent.
Serum only	200	8	4·0
Excision only	397	44	11·1
Excision and serum	174	25	14·4
No special treatment	29	14	48·3
Total	800	91	11·4

It is also stated that in general the best treatment for a case of anthrax is physiological rest of the part affected, combined with intravenous injection of anti-anthrax serum; and that there is always difficulty in estimating the efficacy of different methods of treatment of a malady such as anthrax, which is capable of undergoing spontaneous cure.

THE VENTILATION OF SUBMARINES.

THIS subject has been little discussed in the medical press, which makes more welcome the paper by Lieutenant-Colonel (Surgeon-Commander) R. Marantonio, of the Italian Navy, in *Annali di Medicina Navale* (1920, ii., 467). A small submarine, 100 ft. long and 10 ft. broad, displacing when fully submerged 200 tons, has a crew of 12, and takes down with her some 200 cubic feet of respirable air per man. This air is deteriorated not only by respiration, but by gases given off by the accumulators; as, however, not all parts of the boat are equally occupied, some parts retain a better atmosphere than others, and an equalising system of 4-inch trunks is installed to collect on the starboard side the used air by the help of a Sirocco fan, and discharge it, mixed, on the port side. This circulation does nothing to improve the air supplied, though the motion imparted makes it pleasant and cooling, but the air can, if preferred, be drawn through soda-lime granules, which remove carbonic acid and water vapour. Also, two steel cylinders of oxygen are carried as a reserve. When the boat comes to the surface, where its stay may be short, it is important at once to renew the air within it. That is not invariably easy, as the hatches are small and near the water, still it is managed by help of the Sirocco fan and the previously mentioned ventilation system. The valves on the trunks are set differently, air is sucked out of the ends of the boat, out of the latrine, out of the accumulators, and is driven overboard through an 8-inch trunk abaft the conning-tower, replacement occurring by drift through the hatches, or, if these are closed, through a second 8-inch trunk before the conning-tower. These trunks have their upper ends 8 ft. above the water and are closed by shutters and screws. In larger submarines (150 ft. long, 15 ft. wide, and displacing 474 tons submerged) ventilation is differently arranged and air purifiers are not used. The gases from the accumulators are the chief problem, and the exhaust air from the crew spaces is taken out through the accumulator chambers and pumped overboard to the nearer escape, of which there are two, one forward, one aft. When the oil-motors are running, the boat being on the surface, the required air is taken from the crew spaces, while the used air is discharged overboard, but there are always leakages, and to remove that air ("smoke") a ventilator is fitted at the after end of the engine-room. But this ventilator has to be at once closed if the boat begins to submerge, so that as she submerges the engine-room always wants a blow through. When submerging the openings are all firmly sealed and water is run into the ballast tanks, displacing the air there contained, air that has always a very unpleasant smell, and the barometric pressure increases to 31 in. From all which we learn there are unpleasantnesses in the submarine service as well as risks, and the call for equanimity is as clear as that for courage.

CANCER OF THE UTERUS IN YOUNG WOMEN.

ACCORDING to Dr. Gordon Gibson,[1] of the Long Island College Hospital, who records six cases in women aged from 25–28, cancer of the cervix under 30 is not so rare as is generally supposed. In 500 cases of cancer of the uterus recently reported by Petersen 23, or 4·8 per cent., occurred under 30. Dr. Gibson's percentage is higher, being 6 in 61 cases, or 9·9 per cent. It is noteworthy that 4 of his cases had married early—namely, at 19, 17, 16, and 17 respectively. Of the 5 who had borne children 4 developed the cancer comparatively soon after pregnancy—namely, 16 months, 3½ years, 4 years, and 5 months. In young women the growth, which is usually an epithelioma, is much more rapid than in older women, and it is only when it is seen in the first three months that a radical operation can be done. The extension is particularly rapid when the parametrium becomes involved and death takes place comparatively soon. In only three of Dr. Gibson's cases was the radical operation carried out, and in them the disease had given rise to symptoms for a comparatively short time—namely, three months, two months, and two months respectively. In the others, in whom the symptoms had been present from four to six months, only palliative measures, such as curetting and cauterisation, were possible, and all of them died shortly afterwards.

THE FORM OF MERCURY FOR INUNCTION.

IN the *British Journal of Dermatology and Syphilis* for December, 1920, there appears an interesting article on the absorption and elimination of mercury by Dr. Svend Lomholt, head of the Venereal Clinic of the Royal Danish Marine Hospital, Copenhagen. The author has made a careful analysis of the fæces and urine of patients under various forms of mercurial treatment, and daily charts of the rapidity of elimination of mercury have thus been obtained. Before dealing with the therapeutic conclusions arising from this work, Dr. Lomholt discusses the question whether mercury in the infected body acts directly upon the spirochætes, or indirectly by stimulating the bactericidal forces of the body. Eighteen examinations of blood from patients under full mercurial treatment or severely intoxicated with this metal have shown that the average content of mercury amounts only to 1–2 mg. per litre, and never exceeds 3 mg. The concentration is so feeble that it appears improbable that a direct bactericidal effect takes place. This conclusion is reinforced by experiments conducted in company with Dr. A. Kissmeyer, in which it was found that a colony of spirochætes grew well in horse serum containing 5–10 mg. of $HgCl_2$ per litre. Dr. Lomholt concludes with a review of the various methods of administration of mercury considered from the point of view of absorption and elimination. He is of opinion that the salicylate of mercury is not absolutely reliable, on the one hand, because its chemical composition makes it decomposable only with difficulty, and, on the other hand, because of its extremely rapid elimination. Metallic mercury has a very serious drawback in its slow and sometimes very irregular absorption, which may in some cases produce severe intoxication, and in other cases a feeble therapeutic effect. Treatment by inunctions possesses the advantage of being reliable, effective, and painless. To obtain a rapid saturation of the body, the author suggests that it may be of advantage to give at the beginning of the inunction treatment an injection of the soluble salt of mercury, or simply a dose of 0·5 g. of calomel per os. The daily dose of ointment to be used should vary from 3 to 5 g. according to the size, &c., of the patient. The injection of soluble compounds of mercury is not employed very much nowadays owing to the necessity of daily treatment, but it is specially indicated in idiosyncrasia mercurialis, where a tendency to "hydrargyria cutanea" prevents the use of inunctions.

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[1] THE LANCET, 1920, i., 133.

[1] The American Journal of Obstetrics and Gynæcology, December, 1920.

LONDON PANEL PRACTICE.

THERE are just over 1½ million insured persons on the lists of insurance practitioners in London. Of these 4060, or 1 in 380, gave notice at the New Year that they were desirous of making a change of doctor. The names of 207 insured persons were removed from practitioners' lists at request of the latter. During the third quarter of last year just over 1 million prescriptions were given to insured persons, an average of 0·67 a head at a cost of 9·64*d.* each prescription, the expense being almost equally divided between the cost of ingredients and the fee for dispensing. One practitioner, whose prescriptions for the first quarter of the year averaged 1·11 (instead of 0·92) a head at a cost of 11·91*d.* (instead of 9·25*d.*) each prescription, was surcharged £2 4*s.* 8*d.* by the Insurance Committee on the ground that the drugs ordered were in excess of what was reasonably necessary for adequate treatment. Several of his patients received 25 or more mixtures each during this period. Only 47 insured persons applied to be allowed to make their own arrangements for medical benefit. Over 1,650,000 cards were issued for the new form of medical record which came into operation on Jan. 1st. The current issue of the *London Panel Committee Gazette* replies to certain general questions which have arisen as to the use of these cards. Practitioners are only required to record such clinical notes as they consider will be of use to them or to any practitioner who may subsequently have the care of an insured person. Where an independent record is kept of visits or attendances available for inspection by the regional medical officer it is allowed that after the first visit, or first three attendances, the total number of these may be entered weekly or monthly; the date of the first (or initial) certificate and that of the last (or final) certificate only require to be recorded.

THE CONCENTRATING ACTIVITY OF THE GALL-BLADDER.

IT has long been recognised that the gall-bladder must have a concentrating function, since bile from the gall-bladder is more concentrated or inspissated than that in the bile-ducts of the same animal. Previous experiment[1] has shown that the fluid which collects in bile-ducts artificially obstructed is an inspissated tarry bile when the ducts communicate with the gall-bladder, whereas in ducts unconnected with this viscus the fluid is thin and soon becomes free from pigments and bile salts. Mr. P. Rous and Mr. P. D. McMaster, of the Rockefeller Institute, taking advantage of the disposition of the bile-ducts in the dog, have sought to determine the rate of concentration. There are three hepatic ducts in the dog, which unite to form a common bile-duct, with the cystic duct opening high up into the central one. Through an opening near the lower end of this last a catheter was pushed into the neck of the gall-bladder, which was emptied and washed with salt solution, the duct being ligated after the catheter was withdrawn. The bile from the middle lobes of the liver thus had no escape save into the gall-bladder, while that from the lobes to either side still reached the common duct. From this it was collected into a rubber balloon placed in the peritoneal cavity, the abdominal cavity being then closed. A control experiment was made by substituting a similar balloon for the gall-bladder, which showed that the separated portions of bile differed little in their pigment content, which was taken as the index of concentration. After 24 hours the gall-bladder, still undistended, was regularly found to contain only one-sixth to one-tenth as much fluid as was shown on calculation to have reached it, but this, thick and dark, was six to ten times as concentrated in pigment as the control specimen in the rubber balloon. The results were the same when, without other variations in the experiment, the gall-bladder was filled to the normal distension with sterile bile of known character prior to withdrawal of the catheter. At the autopsy the branches of the hepatic duct always contained a thin bile like that in the balloon, a direct proof that the thick contents of the gall-bladder had not come as such from the liver. It is therefore evident that the gall-bladder can concentrate bile with very great rapidity, and this raises the question whether concentration of the bile in periods of intermittent or partial stasis may not be an important favouring element in the formation of gall-stones.

FRIEDMANN'S VACCINE.

THE controversy over the merits of Friedmann's vaccine appears to be raging as vehemently as ever in the German medical press and at medical meetings, the discussions at which are marked rather by heated partisanship than a judicial preference for truth. In the *Deutsche medizinische Wochenschrift* for Jan. 6th Professor W. Kruse, of Leipzig, complains bitterly of the open hostility with which his address on the subject of Friedmann's vaccine at the Medical Society of Berlin was greeted by his audience. He found it most galling, while voicing his conviction that this vaccine is of incalculable importance both as a prophylactic and as a remedy for tuberculosis in the early stages, to be constantly interrupted by cries of "Keep to the point." Professor J. Schwalbe's answer to this complaint in the same number of this journal is to the effect that when a provincial professor comes to Berlin to teach his colleagues wisdom he should not exasperate them by mouthing platitudes. The audience at the meeting of the Berlin Medical Society had come to hear what the director of the Hygienic Institute of the University of Leipzig had to tell them of his experimental investigations into the action of Friedmann's vaccine, and only after they had listened for some time to such truisms as "...... the germ of tuberculosis is evidently widely distributed and easily transmitted" had silent attention given place to interruptions. To outsiders unfamiliar with the petulant atmosphere in which the Friedmann controversy has been enveloped for several years, it must seem strange that after more than eight years' trial the remedy should still hold such an equivocal position in the medical world.

CARCINOMA OF THE PROSTATE.

Dr. H. C. Bumpus,[1] of Rochester, Minnesota, has made a study of 362 cases of carcinoma of the prostate observed at the Mayo clinic from 1914 to 1919 inclusive, with special reference to metastases. He considers that metastasis to the glands occurs more frequently than is demonstrable clinically—in his series it was found in only 37, or 10·2 per cent.—because of the inaccessibility of the glands first involved. He states that clinically and microscopically carcinoma of the prostate presents two fairly distinct types of enlargement. In the first and more malignant type the gland is so slightly enlarged, and gives rise to so few local symptoms, that the condition is often only recognised by the symptoms produced by metastasis. In the more common type of carcinomatous prostate urinary symptoms are more pronounced, and metastases occur later than in the first type. Owing to its lesser degree of malignancy this type is more amenable to radium-therapy. Dr. Bumpus estimates that one-third of the patients with carcinoma of the prostate have osseous metastases demonstrable by X rays, the most frequent sites being the pelvis, vertebræ, and femora. Pulmonary involvement is rare and occurs late in the disease, probably never without metastases elsewhere. In Dr. Bumpus's three patients in whom metastases were found in the lungs there was also pelvic and spinal involvement, and in two the ribs, and in one the femora were also affected. Spinal cord involvement which occurred in eight of his cases closely simulates primary spinal cord tumours, and is apt to occur when the prostate is only slightly enlarged, giving rise to pain simulating intracostal neuralgia or aneurysmal pains. Owing to the absence of urinary symptoms in a considerable proportion of all cases with metastases—11·5 per cent. in the present series—the possibility of carcinoma of the prostate should always be considered in men above middle age who complain of neuralgia and rheumatic pain. even in the absence of urinary symptoms.

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[1] THE LANCET, 1920, ii., 864.

[1] Surgery, Gynecology, and Obstetrics, January, 1921.

MEDICAL PROVIDENT SCHEMES.

THE Sussex Provident Scheme for Hospital Benefits and Additional Medical Services, of which we were able to give the details in our issue of Jan. 15th, has not only gained the approval of all branches of the medical profession in the county of its origin, but is attracting a good deal of attention elsewhere. And rightly, for, given a comprehensive medical service debarring no one from obtaining every known means of diagnosis and treatment, it does not much matter whether it is paid for by a subscription or premium according to means, or by a tax or rate. The essential aim in either case is to organise a service which the patients can afford and which will at the same time afford fair remuneration to the doctors. The claims made on behalf of the Sussex Provident Scheme may be briefly summarised thus:—

1. That it calls for no capital expenditure and entails no expense either to the State, the rates, or the hospitals, nor does it ask for charitable contributions.

2. That it provides the hospitals with a new source of revenue which has great financial possibilities and may help to save the voluntary system.

3. That it does not materially interfere with the present work or the established routine of the hospital.

4. That, although not offering general practitioner attendance, it supplies its members with all those facilities which may be necessary for their efficient treatment in illness, and which are not provided under the National Health Insurance Acts.

5. That the ready access to these facilities must tend to the prevention and early arrest of disease, and so to an improvement in the standard of national health.

6. That it benefits the general practitioner by giving him wider facilities for diagnosis and treatment; by keeping in his hands many patients whom he would otherwise lose in hospital; and inasmuch as the members of the scheme can only obtain its benefits through their doctor, by giving him a position of greater influence and prestige.

7. That it benefits the consultant by providing remuneration for those members of the honorary staffs of hospitals who are willing to carry out its provisions with regard to consultations, whether personal or by correspondence, at the hospital; and by giving full fees for consultations at the patient's house, instead of the reduced fees which are now so often accepted. It is also obvious that these consultations are likely to be much more numerous when the general practitioner knows that they will entail no expense to his patient.

8. That it gives an opportunity of profiting by hospital treatment to people of many classes whose circumstances are really as necessitous as those of the manual worker, but who have hitherto felt themselves debarred from accepting charity, and have shrunk from the publicity of a hospital.

These ends are to be attained in the Sussex scheme by bringing in all the nine coöperating general and special hospitals on a uniform basis. Urgent cases will be admitted to hospitals as at present, other cases requiring operation or other hospital treatment will, after consultation, be admitted to hospital, or be placed upon the waiting list of the hospital until there is a vacant bed, but a member will not take precedence over more urgent cases, and the ordinary hospital routine will not be disturbed. In all the coöperating hospitals in which private beds are reserved at present for paying patients, members will be admitted to these beds if available, should they desire it, at a uniform reduction of 1 guinea a week from the usual price of the bed. The specific rules, which have been very carefully thought out for local needs, are as follows:—

1. No one will be accepted as a single member except an unmarried man or woman, or a widower or widow without children under the age of 16. The subscription for a single member will be £1 per annum

2. Married people without children, or a widower or widow with only one child under the age of 16 years, may only subscribe jointly at a rate of £1 10*s*. per annum for the two, although each shall be accounted a member.

3. Married people with a child or children under the age of 16, or a widower or widow with children under the age of 16 years, may only subscribe at a family rate of £2 per annum, which shall include the whole family, however large, except children over the age of 16, who must be accepted as single members, although each individual in the family shall be accounted a member. N.B.—These rates are subject to revision by the coöperating hospitals after due notice.

4. All candidates for membership must be approved by the "Committee of Reference" formed by the coöperating hospitals, *except in the case of those insured under the National Health* Insurance Acts, who will produce their medical card. In the event of the eligibility of any member being questioned, the matter will be submitted to the "Committee of Reference," whose decision shall be final.

5. Cards of membership, bearing the date, will be issued on the first day of each month to those who have become members during the preceding month, and the benefits will begin on the date of the card, and continue for one calendar year. These cards can be produced as evidence of membership.

6. At the end of one year from the date of issue of the membership card the benefits will cease unless the subscription has been renewed. Fourteen days grace will be given for renewal (during which no benefit will be available), but, after this, renewed membership will only be possible from the beginning of the next quarter.

7. When the number of members has reached the limit of the capacity of the coöperative hospitals the list will be closed.

8. When a member is leaving the county within the first six months of membership, and in consequence wishes to resign, one-half of the subscription will be repayable upon application.

Consultation fees are to be drawn from a pool formed by deducting 25 per cent. of the moneys allotted to each hospital, and it is obvious that the plan can be similarly applied to the conditions ruling in other areas. It should be carefully noted that the Sussex scheme does not include general practitioner services and is restricted to a maximum yearly income limit at present fixed at £260 for single members and £500 for a family. We publish this week for comparison a scheme for a London coöperative polyclinic drawn up by Mr. C. A. Parker, honorary secretary of the State Medical Service Association, which is of a still more inclusive nature and is intended also to cover the general practitioner service, and is not limited as regards maximum income. In each case the principle of assurance is the same, the fortunate by their annual contributions helping their less fortunate brethren, adhesion being *on* a voluntary basis.

THE ACTION OF SUPRARENAL TOXIC SERUM ON ATHEROMA.

THERE are two theories which hold the field with reference to the pathology of arterio-sclerosis, one which regards hypertension as the principal factor in the arterial lesions, the other which considers these lesions to be directly toxic in nature. Josué found that intravenous injections of adrenalin were followed by increase of arterial pressure, and subsequently produced atheromatous lesions in the arteries. Certain observers explain this experimental atheroma by the vasomotor, others by the toxic, action of the adrenalin, while others again, such as Lucien and Thévanot, hold that this substance acts simply through an atheromatogenous action independent of the two preceding. Observations by Etionne and Parisot, who, by submitting animals to intravenous injections of adrenalin and at the same time of vasodilatory substances, such as iodine and trinitrin, invariably obtained atheromatous lesions of the aorta, seem to indicate that increase of arterial pressure is not a necessary condition to the production of atheroma, and that this is, on the contrary, due to the atheromatogenous action of the adrenalin. Dr. Fabio Marabotto[1] has lately undertaken some new experiments on this question at the Istituto Maragliano at Genoa. Using a watery solution of suprarenal capsule he found it was possible to produce atheroma in rabbits when administered intravenously, but not when given by mouth or subcutaneously. This atheromatogenous action was constant and in direct proportion to the number of intravenous injections given to the animals, and it was always associated with a hypertensive action. By inoculating repeated small doses of emulsion of suprarenal tissue into rabbits Dr. Marabotto induced in their serum lytic properties towards suprarenal tissue and he found that alternate injections of suprarenal extract and of this suprarenal toxic serum, the latter subcutaneously, caused an infinitesimal degree of alteration in the aortic parietes *not in the least comparable with that produced by the* former alone. Similar results followed the administration by mouth of this toxic serum, but the arterial changes were rather more marked. There seems, therefore, a strong probability that such a serum, produced experimentally and having suprarenal toxic properties, may be of use in treating atheroma and arterio-sclerosis in the human subject. The whole question is full of interest; arterio-sclerosis is common, its effects far reaching, serious, and often fatal, its precise origin still undetermined, and any contribution to the solution of the problem, and especially with a view to establishing a scientific treatment, is worthy of the attention and consideration of pathologists.

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[1] Annali dell' Istituto Maragliano, vol viii., Fasc. 4, August, 1920.

HEALTH IN LONDON AND CALCUTTA.

THE vital statistics of the year 1920 for London, issued last week by the Registrar-General, are in striking contrast with those of the year 1919 for Calcutta, available in the report of the health officer which we summarise on p. 307. In London the general death-rate per 1000 living was 12·4, the lowest on record; the infant mortality-rate per 1000 births was 75, also the lowest on record. Dr. H. M. Crake gives the general death-rate for Calcutta as 42·2, the highest rate ever recorded in the city except that of the plague year 1900, and more than treble that of London. The rate varied widely in different parts of the city, reaching the appalling level of 81·1 in Kidderpur, and sinking to 15·3 in the Park-street area and actually to 5·8 in Fort William. There is evidently, as Dr. Crake remarks, nothing in the climate of Calcutta to necessitate this high general level of mortality, which is nearly 50 per cent. higher in females than in males. As regards racial incidence, the death-rate was 45·2 for Hindus, 37·9 for Mohammedans, and 27·4 for non-Asiatics. Cholera, small-pox, and influenza were all present during the year in acutely epidemic form. Plague also was on the increase, enteric fever was more prevalent than in any of the five preceding years, tuberculosis was slightly more fatal, and there was a mysterious outbreak of epidemic dropsy in the latter part of the year. Dr. Crake deals with some of the known causes of these figures—the purdah system depriving women of fresh air and constantly exposing them to insanitary environment, the many potential plague centres, the contamination of water tanks by ceremonial ablution, the movements of pilgrims, the presence of typhoid carriers, the waning protection of vaccination. It certainly seems time that some of the enterprise and effective sanitary administration which have made of London one of the healthiest cities of the world should now be devoted to a concerted campaign against disease in the old capital of the Indian Empire. There is abundant outlet there for the new applications of social medicine, and the new School of Tropical Medicine and Hygiene will be fully opened in Calcutta next month.

THE opening letter in our correspondence columns reiterates the plea, which we have made more than once, for harmonious coöperation in the attack upon venereal diseases. A review of Sir Archdall Reid's book on p. 279 should be read in this connexion.

A SUGGESTED
LONDON COÖPERATIVE POLYCLINIC.

BY CHARLES A. PARKER, F.R.C.S. EDIN.

IN view of the recognised necessity of "team" work amongst the medical profession, and of the strong recommendations of the Dawson Report for a health service "available to all citizens," I suggest that a group or team of medical practitioners should be formed to provide a complete medical service, with a well-equipped health centre, primarily for that large section of the community whose incomes are above the limit of the National Insurance Act, but which nevertheless is unable to provide for itself the costly methods of diagnosis and treatment of the present time. It is especially unable to afford the fees of private nursing homes, and has consequently to seek admission to the voluntary hospitals, thus draining their resources and adding to their long waiting lists.

This section of the community, many of whose members have small fixed incomes, are especially hit by the present high cost of living, and are finding the difficulties consequent upon illness even greater than they were before the war. The provision of such a medical service as that now contemplated is, therefore, more than ever necessary.

The scheme here presented is based upon the principles of insurance, whereby the fortunate by their annual contributions help their less fortunate brethren. This principle is sound, and has been applied with marked success to life, accident, sickness, fire, and burglary, and, indeed, to almost every conceivable risk, and there is every reason to believe that it could be applied with equal success to the provision of medical services. Whilst the scheme is primarily intended for those whose incomes exclude them from the benefits of the National Health Insurance Act, it is nevertheless recognised that there is at present no organised service of consultants and specialists available to nationally insured persons. It is therefore proposed to throw such services open to them at a modified fee. The outlines of the scheme here follow.

Objects.

(1) To provide a complete medical service, including general practitioners, consultants, and specialists of all sorts, for members of the middle classes, not provided for by the National Health Insurance Act, on the principle of voluntary insurance.

(2) To provide a health centre with all necessary consulting-rooms and special departments.

(3) To provide a private hospital, or other hospital accommodation, for its members.

(4) To provide consultative and specialist services, and as far as may be possible hospital accommodation, for those insured under the National Health Insurance Act.

Membership.

Membership shall be limited to persons having incomes between £250 and £1500 or £2000 a year (together with their families), and to those residing within the London postal area. Insured persons (N.H.I. Act) shall be eligible for the consultative, specialist, and hospital portions of the service in consultation with, or accompanied by a written report from, their general practitioners.

Benefits.

The annual subscription shall entitle members to the following benefits: (1) The services of a general practitioner; (2) medical assistance at confinements; (3) the services, when necessary, consultative and operative, of the consultative and specialist staff—individually or collectively; (4) consultations with consultants and specialists other than members of the staff at specially arranged fees; (5) hospital treatment when necessary, provided there be vacant beds; (6) free choice of doctors belonging to the Service.

N.B.—Under special circumstance members shall be permitted to subscribe for the consultative, specialist, and hospital portions of the service only, but they shall only be eligible for such portions in consultation with, or accompanied by a written report from, their general practitioners. This shall also apply, as stated above, to insured persons (N.H.I. Act).

Subscriptions.

Annual subscriptions shall be based on incomes and shall be in accordance with one of the tables attached hereto, or with some modification thereof. The annual subscription for restricted benefits shall be half the subscription for full benefits + 10 per cent., the minimum subscription being in all cases one guinea (£1 1*s.*).

N.B.—Married members must insure *all* their dependents. Drugs and surgical appliances are *not* covered by the subscriptions.

The Medical Staff.

The medical staff shall include: general practitioners, consulting surgeons and physicians, specialists in all branches of medicine and surgery and allied sciences, and consulting dentists—for advice only.

General practitioners.—General practitioners shall form an important part of the organisation and shall in every way be on an equality with the consultative staff. They shall be entitled to the use of the health centre and to its equipment when necessary to them in their work. They shall work in close coöperation with the members of the consultative staff. All general practitioners shall be at liberty to join the staff of the polyclinic, and shall hold office subject to the rules to be drawn up by the committee of management.

Consultants and specialists.—All members of the consultative staff shall be appointed by the committee of management upon the recommendations of a specially appointed committee of selection. They shall (*a*) hold office subject to the rules drawn up by the committee of management; (*b*) attend the health centre on specified days at specified hours for the purpose of seeing patients; (*c*) work in close coöperation with the general practitioners; and (*d*) visit patients in their homes at the request of any other member of the staff, general practitioner or consultant.

Methods of Remuneration.

General practitioners shall be paid at the rate of £1 2*s.* per head of potential patients on their lists. They shall be paid 5 guineas for each confinement. The consultative staff shall be paid in the first instance on a time basis, but later on a definite fee per session will probably be the better plan.

The Private Hospital.

Members of the polyclinic shall be given the first call on all beds of the hospital. They shall be admitted free to the wards of the hospital; moderate fees shall be charged for the use of a private room. When there are vacant beds *non-members may be admitted, preference being given to* patients of the members of the staff. Non-members shall be charged, say, £5 5*s.* a week for a bed in a ward and £8 8*s.* for a private room.

Profits.

All profits shall be applied to one of the following objects: (1) increasing and improving the equipment of the health centre; (2) enlarging or improving the private hospital; (3) reducing the premiums for membership of the polyclinic.

Management.

The management shall be vested in a committee of 12 persons, eight of whom shall be members of the medical staff and four subscribing members of the polyclinic. There shall be a president (lay or medical), who shall be nominated by the Minister of Health, the President of the Royal College of Physicians of London, or the President of the Royal College of Surgeons of England.

The president shall be ex officio chairman of the committee of management. The eight medical members shall be elected by the members of the medical staff, all of whom shall have the right to vote. The four lay members shall be nominated by the president from amongst the members of the polyclinic (or shall be elected at an annual general meeting of the subscribers).

There shall be an honorary treasurer whose duties shall be defined by the committee. The accounts shall be audited by professional auditors appointed by the committee. There shall be a salaried secretary-superintendent, who shall be responsible for the organisation and management of the polyclinic and the private hospital.

Finance.

A small company, registered as a non-profit-earning company, shall be formed for the purpose of acquiring by rent or purchase and of equipping a health centre and private hospital. The necessary capital shall bear a fixed rate of interest, say 6 per cent. A sinking fund shall be established for the purpose of redeeming the capital as soon as possible.

The company shall sublet the health centre and private hospital to the London Coöperative Polyclinic at a rental equivalent to its out-goings, together with 6 per cent. on the capital invested until such is redeemed.

Initial Steps.

In order to carry this scheme into effect it would be necessary to:—

(1) Form a temporary organising committee to approve or amend these suggestions, to get the necessary legal advice, and to get further actuarial advice as to which table of premiums is likely to prove most attractive to the public.

(2) Invite general practitioners to join the staff and to invite applications for the consultative staff of the health centre.

(3) Make the scheme known to the public and open a list of membership.

(4) Open a subscription list for debenture shares at 6 per cent. in the London Polyclinic, Ltd., with the object of providing and equipping the health centre and private hospital and of covering the outgoings for the first two years.

It would not be necessary to wait until the capital had been raised and the health centre and hospital had been equipped, for, in the first instance, it would be possible to arrange with the consultative staff to see patients at their own homes or to obtain the use of one or two rooms as a nucleus of the health centre. It would also be possible to arrange with bacteriologists and radiographers to carry out the necessary work of the polyclinic at their own laboratories. As regards hospital accommodation arrangements could be made with general and special voluntary hospitals and with private nursing homes to take in cases for the polyclinic at fixed rates. Voluntary hospitals could be given a donation of £4 per week per patient admitted, which would be a help towards their funds.

If this scheme were successfully launched in London it could easily be extended to the provinces, and finally to the whole country. It would have the great advantage of keeping the control and management in the hands of medical men and their patients, and it might render an extended system of *compulsory* insurance, now in the air, unnecessary.

Premium and Expenditure Tables.

Explanatory Note.—The last Census returns show that of every 1000 of the adult population—i.e., over 20 years of age—695·5 are married, and that each married couple has an average of 2·2 children. For the purposes of these tables the round figures of 700 married and 300 single are taken. The proportion of 1000 breadwinners or income-owners having the incomes specified are taken from income-tax returns. The necessary premiums are based upon a unit of 1000 breadwinners and 1000 nationally insured persons, but with 5000 subscribing breadwinners and 2000 insured persons the premiums could be reduced by 25 per cent.

TABLE I.—*Premiums per Head of Insured Persons.*
Unit of 1000 Breadwinners representing 3240 Souls.

Incomes.	Single.	Married.	Total.	Dependents.	Total.	Annual premiums per head.	Total receipts per annum.	Premiums for consultative service only.
						£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*
Under £250	1000 insured persons (N.H. Ins. Act) at ...					1 1 0	1,050 0 0	1 1 0
£250– 300	97·5	227·5	325	727	1052	1 15 0	1,841 0 0	1 1 0
300– 400	67·5	157·5	225	504	729	2 0 0	1,458 0 0	1 1 0
400– 500	29	67	96	214·4	310·4	2 7 6	737 4 0	1 8 6
500– 600	23	51	74	163·2	237·2	2 15 0	652 6 0	1 13 0
600– 700	16	39	55	124·8	179·8	3 2 6	561 18 0	1 17 6
700– 800	14	31	45	99·2	144·2	3 10 0	504 14 0	2 2 0
800– 900	10	25	35	80	115	3 17 6	445 12 6	2 6 6
900–1000	8	10	28	64	92	4 5 0	391 0 0	2 11 0
1000–1100	6	14	20	44·8	64·8	4 12 6	299 14 0	2 15 6
1100–1200	5	12	17	38·4	55·4	5 0 0	277 0 0	3 0 0
1200–1300	4½	10½	15	33·6	48·6	5 7 6	261 5 6	3 4 6
1300–1400	4½	10½	15	33·6	48·6	5 15 0	279 9 0	3 9 6
1400–1500	4½	10½	15	33·6	48·6	6 2 6	297 15 0	3 13 6
1500–1750	6	14	20	44·8	64·8	10 0 0	648 0 0	6 0 0
1750–2000	4½	10½	15	33·6	48·6	12 0 0	583 4 0	7 4 0
—	300	700	1000	2240	3240	—	10,238 2 0*	—

* Excluding incomes over £1500 and readjusting, receipts = £9596 or £2 4*s.* 2*d.* a head.

N.B.—A table has also been prepared with incomes grouped more simply in eight divisions.

TABLE II.—*Premiums on Breadwinners, with Extra Premium for Each Dependent.*

Unit of 1000 Breadwinners representing 3240 Souls.

Income.	Single.	Married.	Total bread-winners.	Dependents.	Total persons.	Premiums, bread-winners.	Premiums, dependents.	Total receipts per annum.
						£ s.	£ s.	£ s.
Under £250	1000 Insured persons (N. H. Ins. Act) at					... ...	1 1	1,050 0
£250- 300	97'5	227'5	325	727	1052	3 10	1 0	1,865 10
300- 400	67'5	157'5	225	504	729	4 0	1 0	1,404 0
400- 500	29	67	96	214'4	310'4	4 10	1 5	701 0
500- 600	23	51	74	163'2	237'2	5 0	1 10	615 0
600- 700	16	39	55	121'8	179'8	5 10	1 15	520 0
700- 800	14	31	45	99'2	144'2	6 0	2 0	468 0
800- 900	10	25	35	80	115	6 10	2 5	407 0
900-1000	8	20	28	64	92	7 0	2 10	356 0
1000-1100	6	14	20	44'8	64'8	8 0	3 0	294 0
1100-1200	5	12	17	38'4	55'4	9 0	3 5	277 0
1200-1300	4½	10½	15	33'6	48'6	10 0	3 10	268 0
1300-1400	4½	10½	15	33'6	48'6	11 0	3 15	291 0
1400-1500	4½	10½	15	33'6	48'6	12 0	4 0	314 0
1500-1750	6	14	20	44'8	64'8	20 0	4 10	634 0
1750-2000	4½	10½	15	33'6	48'6	25 0	5 0	543 0
—	300	700	2240	3240	—	—	—	10,007 10*

* Excluding incomes over £1500 and readjusting, receipts will = £9086, or £2 3*s.* 9*d.* a head.

N.B.—A table has also been prepared in which the premium is based upon a percentage of the breadwinner's income: 1½ per cent. up to £1500 and 2 per cent. over £1500. This method has the disadvantage of heavily penalising the unmarried person.

TABLE III.—*Income and Expenditure.*

Receipts (as per Table I.).

	£ s. d.
From 1000 insured persons (N.H.I. Act)	1050 0 0
From incomes from £250 to £1500	8346 0 0
	9396 0 0

Expenditure.

Number of persons covered = 4240.	
Number requiring advice from general practitioners = 2120.	
Number requiring consultations = 12 per cent. of actual patients = 254'4 at, say, £6 6*s.* each	1602 15 0
Number requiring operations = 10 per cent. of consultations, at, say, £36 15s. each...	934 18 0
Hospital cases = all operations and half as many medical cases = 38'16.	
Average stay in hospital = 2 weeks.	
Total weeks of patients in hospital = 76'32, at, say, £5 ...	381 12 0
General practitioners: 3240 persons at, say, £1 2*s.* each...	3564 0 0
Confinements = 50, at, say, £5 5*s.* each	262 10 0
Upkeep of health centre	2000 0 0
Balance	605 5 0
	9396 0 0

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Sensitised Rabbit Serum for Hæmorrhage.

Mons. H. Dufour has issued the interesting results of researches carried out in his laboratory at the Hôpital Broussais in Paris on the use of an antihæmorrhagic serum discovered by him and known as anthema. Mons. Dufour had previously observed[1] that horse serum used as a hæmostatic drug has a marked effect only when it happens to cause anaphylaxis. Anthema is rabbit serum which has been sensitised by the anaphylactic effects of repeated intravenous injections of horse serum. Mons. Dufour, having discovered that rabbit serum prepared in this way causes hypercoagulability of the blood when injected into guinea-pigs, reported this fact to the Académie de Médecine, and advocated the use of anthema serum in cases of hæmorrhage. In a recent article[2] he records most satisfactory results obtained in 20 cases of various kinds of hæmorrhage (epistaxis, hæmoptysis, hæmatemesis, hæmophilia, and intestinal hæmorrhage in typhoid fever). The cases were observed by Mons. Dufour himself and MM. A. Schwartz, G. Caussade, and P. Raymond. The dose consisted of a hypodermic injection of 10 to 20 c.cm. of anthema, which was repeated in certain instances.

Unsuccessful Action against a Medical Practitioner.

A case which has aroused great interest amongst medical practitioners has lately been heard at Nimes, where a doctor was unsuccessfully prosecuted for homicide through imprudence. The charge was against Dr. F. Mazel, who had been called by a Major Arnaud to attend to his two daughters, both of whom died, one in December, 1915, and the other in January, 1916, and Fr.200,000 damages were claimed. The accusation against him was that he changed without sufficient reason the treatment prescribed by the late Professor J. Grasset, that he prescribed subcutaneous injections of strychnine in too large doses, that he procured a nurse who proved incapable, that he continued the course of injections in spite of the formation of secondary abscesses, and that he performed useless lumbar punctures. A Paris physician, Dr. F. Dervieux, who was appointed as medical expert, was of opinion that it was not from typhoid fever that the patients had died, but from septicæmia following septic injections; as he thought that the nurse who gave them had not been sufficiently watched by Dr. Mazel he concluded the responsibility of the accused was undoubted. However, rebutting evidence was given by other doctors in the course of the trial. The verdict of the case, awaited with much concern by medical practitioners, was in Dr. Mazel's favour, and has been received with general approval.

Jan. 29th.

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[1] Utilisation Thérapeutique du choc Anaphylactique, Bulletin de la Société Médicale des Hôpitaux, No. 20, June 11th, 1914.

[2] Le Sérum Sérique Antihémorragique. By MM. H. Dufour and Y. Le Hello. Presse Médicale, Jan. 12th, 1921.

URBAN VITAL STATISTICS.

(Week ended Jan. 29th, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18½ million persons, the annual rate of mortality, which had been 13·9, 12·8, and 13·3 in the three preceding weeks, fell to 12·3 per 1000. In London, with a population of 4½ million persons, the death-rate was 11·6, or 1·3 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 5·9 in Bootle, 6·6 in Reading, and 6·9 in Ilford and in Cambridge, to 19·7 in Middlesbrough, 19·8 in Sunderland, and 21·3 in Barnsley. The principal epidemic diseases caused 250 deaths, which corresponded to an annual rate of 0·7 per 1000, and comprised 90 from infantile diarrhœa, 80 from diphtheria, 33 from whooping-cough, 23 from measles, 22 from scarlet fever, and 2 from enteric fever. Measles caused a death-rate of 1·2 in Middlesbrough, whooping-cough of 1·6 in Willesden, and diphtheria of 2·6 in Ipswich and 2·9 in Barnsley. There were 4171 cases of scarlet fever, 2682 of diphtheria, and 1 of small-pox under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 4350, 2618, and 1 respectively at the end of the previous week. The causes of 25 of the 4360 deaths in the 96 towns were uncertified, of which 5 were registered in Birmingham, and 3 each in South Shields and Gateshead.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 18·4, 15·9, and 15·8 in the three preceding weeks, rose to 16·3 per 1000. The 323 deaths in Glasgow corresponded to an annual rate of 15·3 per 1000, and included 10 from whooping-cough, 8 from infantile diarrhœa, 4 from diphtheria, 2 from small-pox, and 1 each from measles and scarlet fever. The 160 deaths in Edinburgh were equal to a rate of 18·7 per 1000, and included 4 from measles, 3 from infantile diarrhœa, and 1 each from whooping-cough and diphtheria.

Irish Towns.—The 128 deaths in Dublin corresponded to an annual rate of 15·8, or 0·8 per 1000 below that recorded in the previous week, and included 4 from infantile diarrhœa, 2 from whooping-cough, and 1 from diphtheria. The 136 deaths in Belfast were equal to a rate of 16·9 per 1000, and included 6 from whooping-cough, 3 from infantile diarrhœa, and 1 each from enteric fever, scarlet fever, and diphtheria.

Correspondence.

"Audi alteram partem."

PROPHYLAXIS IN VENEREAL DISEASE.

To the Editor of THE LANCET.

SIR,—The dispute which is being waged on the subject of prophylaxis in venereal disease has long ago lost the characteristics of a scientific discussion and is rapidly acquiring those of a family quarrel. What is more distressing still is the fact that this quarrel has spread beyond the confines of the medical into the lay press, so that the noise and clamour of it are plainly heard by the man in the street. Small wonder that the latter has shrugged his shoulders and lost his confidence in those to whom he is entitled to look for leadership and advice.

Has not the time come for emphasising points of agreement rather than those of dispute? Two societies exist for the purpose of combating venereal disease; on their lists of membership appear names that command respect and consideration for the opinions that each society has advanced. No one who has seen the excellent work achieved by the N.C.C.V.D. can consider it an effete body that has sacrificed every practical measure to a sentimental fetish. No one who has read the list of membership of the S.P.V.D. can suppose for one moment that such eminent men would deliberately support a policy that is calculated to undermine the moral welfare of the community. In spite of the noise and dust raised by various extremists it is certain that there exists a considerable sphere of activity common to both societies. It is only over the question of prophylaxis that the split has arisen. The S.P.V.D. is convinced that the packet system has been instrumental in materially reducing the incidence of venereal disease in the Services, and believes that its adoption by the civil community would be equally productive of good. The N.C.C.V.D., on the other hand, is dissatisfied with the results of prophylaxis in the Services, and does not in any case believe that the adoption of the packet would be effective when applied to the civil community. Each of the societies has put forward statistics upon which the other has cast doubts, and each has arrived at conclusions which are endorsed by experienced authorities. Where does the truth lie? It is difficult, or impossible, at the moment to say. Statistics can be found to prove or disprove most of our prejudices, and our attitude towards the question of "packets for the people" must for the present be based on personal opinion rather than established fact. The centre of truth, like the centre of gravity, lies somewhere between the two extremes. It is possible that the N.C.C.V.D. has underrated the importance of prophylaxis in the campaign against venereal disease. It is equally possible that the S.P.V.D. in its enthusiasm for a neglected remedy has tended to regard it as the "single measure that will cure our ills."

There is work for all in the campaign against venereal disease. The N.C.C.V.D. is doing yeoman service in its educational campaign and in its agitation for the provision of free and adequate treatment for venereal disease throughout the world. The S.P.V.D. is convinced of the success of prophylaxis in the army and believes that its extension to the civil population will be equally productive of good; its action is the logical outcome of these views. Let each of the societies work along the line it has chosen, but let it be recognised that until further facts are forthcoming it is upon personal opinion rather than upon verified fact that its conclusions must rest.

Lastly, may I put forward a suggestion that has already been made. Is it asking too much that members of the two societies should arrange to meet? Surely it is better that differences of opinion should be amicably discussed in a meeting of medical men rather than be made the subject of a bitter and somewhat tedious correspondence in the press. I believe that if such a meeting could be arranged a vast amount of common ground would be found to exist between the two societies, and that a satisfactory working agreement could be arrived at on this thorny subject of prophylaxis. I am, Sir, yours faithfully,

Harley-street, W., Jan. 26th, 1921. KENNETH M. WALKER.

PART-TIME OR WHOLE-TIME FOR THE M.O.H. AND S.M.O.

To the Editor of THE LANCET.

SIR,—While agreeing with Dr. A. M. Barford's letter on this subject in THE LANCET of last week in regard to the merits and claims of the general practitioner, I beg permission to re-state the case categorically and more accurately. The question of relative professional attainment does not arise, though it might be strongly argued either way, and, unfortunately, the very lowest standard in this is compatible with "success" in general practice.

The arguments against "whole-time" service are as follows:—

1. It divorces a man from professional work, occupying him with routine.
2. Even of this there is not a sufficiency to keep him busy.
3. The consequent idleness attracts "undesirables" in spite of the low, but in the circumstances adequate, remuneration.

Against "part-time" work *by a general practitioner* may be urged:—

1. That urgent private calls are apt to conflict with official duties.
2. That a greater temptation exists to "scamp" work on account of impatience, fatigue, &c.
3. That the public appointment is apt to be regarded as a makeshift or stepping-stone to the more lucrative practice.
4. That the double duties leave no time for study and research.

Dr. Barford's suggestion that general practice demands or even encourages professional knowledge, and that its exactions in this respect are dreaded is grotesque, and it is to be hoped that his inaccuracy expends itself in his letters. Yet there is some truth also in his remarks. Does "whole-time" school medical service isolate from professional experience? Yes; but the fault lies with the general profession, which claims the treatment of all but minor ailments. It ought not to make this (its own arrangement) a ground of professional disparagement. Not only do the precautions to exclude from treatment all non-necessitous cases hinder us, but the rest of the "routine" is prescribed by Dr. Barford's own department.

He has, in fact, confused two distinct questions—that of "whole-time" *v.* "half-time" service, and that of the value and rival claims upon the service of "statistical research" and of "treatment." Of course, it is quite obvious that both classes of S.M.O.'s do precisely the same work.

I am, Sir, yours faithfully,
I. D. SUTTIE, M.B., Ch.B., F.R.F.P. & S. Glasg.,
Glasgow, Jan. 31st, 1921. Assistant S.M.O., Glasgow.

To the Editor of THE LANCET.

SIR,—As an assistant S.M.O. allow me to make a very emphatic protest against Dr. A. M. Barford's most unjust, insulting, and sweeping denunciation of whole-time M.O.'s, directed, as it was, with particular virulence, towards assistant S.M.O.'s. If we are to believe your correspondent, assistant S.M.O.'s, as a class, are good-for-nothing slackers, unworthy of their hire. For he says:—

> "It appears that the whole-time appointments are often sought after by members of the profession who shrink from the responsibilities and competition of general and special medical and surgical practice because of its hard work and the ever-increasing knowledge and skill required in order to be efficient. ...... It appears that the young medico of to-day desires to obtain a job with as little work as possible. .... The whole time M.O. cannot be said to be a man of the most enterprising and energetic ideals in the practice of his profession."

Now, if Dr. Barford has really met with such despicable characters I cannot see that there is any justification for putting us all in the same class. One butterfly does not make a summer, or one black sheep a black flock. To say that because a man does not select general practice for his life's work he is an unambitious slacker, or, in his own words, "cannot be a man of the most enterprising and energetic ideals" is simply foolish and not true, or we must class the leading lights of the whole-time service as such. It may be argued that these men are exceptions, which I readily admit, but at the same time I submit that the majority of assistant S.M.O.'s aim at higher posts; as Dr. Barford admits himself by describing us as "birds of passage," so that we cannot be called lacking in ambition and enterprise, as it is well known that the higher posts mean ever-increasing work and responsibility without a corresponding increase in salary. As to the time-table he has so kindly made out for us in his endeavour to prove that we cannot do a decent day's work, he omits to allow any time for getting to our destination or getting back, and very generously allows half an hour longer for lunch than is the custom, and also starts half an hour later than necessary at each session. In the West Riding of Yorkshire, at least, it is quite possible to begin work at 9.30 A.M. and 1.30 P.M. sharp without in the least interfering with the "call over" or religious instruction. To keep to this time-table it is necessary to leave home about 8.30 A.M. for most of the schools, and on an average one gets back about 5 P.M., which represents a good eight-hour day, not allowing for any clerical work done at home. If the general practitioner was only to reckon the actual time spent in examining patients and giving advice I venture to say his time-table would not look very imposing in most cases. As to the value of our work, I will refer you to the Annual Report of the chief M.O. of the Board of Education, wherein it will be seen that considerable importance is attached thereto by those best qualified to judge. Dr. Barford's letter brings us no nearer the solution of part-time or whole-time service.—I am, Sir, yours faithfully,

G. W. FLEMING, L.R.C.P. & S. Edin.,
L.R.F.P. & S. Glasg.,
Feb. 1st, 1921. Assistant S.M.O., West Riding.

To the Editor of THE LANCET.

SIR,—Would Dr. A. M. Barford, whose communication under this heading was published in THE LANCET last week, be kind enough to give a list of the delectable public health appointments to which he refers? I am certain there must be many assistant M.O.H.'s who would be very thankful to have the information; certainly there would be no lack of applicants when such posts were advertised. A four-hours' day for only five days a week, and that for only 38 weeks in the year, sounds so wildly improbable to those who have had experience of the many disadvantages and discouragements associated with junior posts in the public health service that it is difficult to believe Dr. Barford has not been indulging in phantasy.

I am, Sir, yours faithfully,
Cambridge, Jan. 31st, 1921. J. H. GELLATLY.

To the Editor of THE LANCET.

SIR,—Dr. A. M. Barford, whose letter under this heading appeared in your issue of Jan. 29th, obviously writes on a matter of which he has only partial knowledge, acquired, one would guess, within very narrow limits. Passing over his severely unkind and untrue description of the applicants for whole-time public appointments, I am led to wonder where Dr. Barford gained his knowledge of school medical work. He starts away with a fundamental error (which I was beginning to hope even laymen had forgotten by now)—viz., that the work of the school medical service is routine inspection.

> "The school *medical service is* a national institution and its task is of vital interest, not merely to diminish the ordinary wastage of infant life, but also to make and keep the rising generation sound in body and mind."

I find, too, that my experience is directly at variance with Dr. Barford's statements when he says that the assistant S.M.O.'s are a string of "birds of passage." It is quite exceptional here and in many other areas of which I have an intimate knowledge for these officers to be frequently changed. His contention that they cannot do a reasonable amount of work in the year is like other of his statements—not universally true. In Sheffield, and in many other places I know quite well, clinics are held every Saturday morning, and assistant M.O.'s are not always unemployed when the schools are closed, as he apparently would have us believe. When he says that "much of this work is very shoddily done," I must avoid the obvious retort, and get what comfort I can from the reflection that he may be as wrong in this as I suspect him to be. Pessimist he certainly is, and his prediction of the early extinction of the whole-time officer therefore should fail to act as a deterrent to those whose inclinations would lead them to enter other ranks than those of the noble army of general practitioners.

I am, Sir, yours faithfully,
Sheffield, Feb. 1st, 1921. T. CHETWOOD.

AN ATTACK ON LUNACY ADMINISTRATION.

To the Editor of THE LANCET.

SIR,—The article on Lunacy Reform in the *Medical Press and Circular* to which Dr. J. B. Tighe drew attention in your last week's issue appears to be only a part of an organised attack on lunacy administration. The statements quoted by Dr. Tighe must appear to everyone really acquainted with public mental hospitals as monstrous exaggerations and perversions. They appear to be the outcome of prejudice rather than of sane and sober desire for the welfare of the insane. They are sufficiently contradicted, if contradiction were necessary, by the evidence of the Mental After-Care Association, whose experience, in recent years of some thousands of recovered cases, is that these almost invariably express the warmest gratitude for the good and kind treatment they have received from the officers and attendants of these institutions throughout the country, and whose physical condition is a good evidence of the care given to their nutrition and general health.—I am, Sir, yours faithfully,

Hampstead, N.W., Jan. 31st, 1921. HENRY RAYNER.

PATCHWORK ANATOMY.

To the Editor of THE LANCET.

SIR,—In an annotation with this title in THE LANCET of Dec. 11th, 1920 (p. 1212), you do me the honor of discussing at length my book on the "Fundamentals of Human Anatomy." Let me here express my appreciation of the generous tone of the article, more particularly as in the United States we are apt to consider the Britisher ultra-conservative, even a bit antagonistic to new ideas. However, as the professional viewpoint gives mainly one side of the story I trust your readers will be interested in the following defence from the practitioner's point of view.

You consider my effort "an honest attempt to achieve the impossible," and in my turn I cannot conceive of a more felicitous phrase to express how the sympathetic practitioner feels toward the effort of the specialist in anatomy. The specialist maintains correctly that every point in anatomy has either present or potential practical value, and tends to attempt to teach every one—the impossible! Almost all practitioners agree that this is so.[1] My book starts with the assumption that for any individual to know everything about anatomy is an impossibility, and therefore attempts to select such major points as are of everyday importance to practitioners in any or all the subdivisions of our medical science from such as are less frequently required or are of real interest only to various special groups. And on how well or how poorly this selection has been made depends, in final analysis, the success or failure of this effort. This book was evolved to fill what I considered an unsupplied and yet fundamental need, with no idea of exclusion, for surely every posted man must recognise the necessity for anatomies from all special points of view, as well as for reference encyclopedias and complete atlases. The other progressive feature worthy of special note is that the concise descriptions of gross anatomy are illuminated and vitalised by the sidelights from histology, embryology, physiology, pathology, and the practice of medicine and surgery.

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[1] See Proceedings American Congress on Medical Education, March, 1920, abstracted Jour. Amer. Med. Assn., vol. lxxiv., No. 12, pp. 824–825; and the Proceedings of the Fourth German Congress of Medical Faculties, January, 1920, summarised Jour. Amer. Med. Assn., vol. lxxv., No. 14, p. 953; and the review in the British Journal of Anatomy, vol. liv., July, 1920, p. 332.

To sum up, the grave shortcomings in the anatomic knowledge of practitioners are widely conceded. The professional anatomist blames it on the clinician, the clinician on the professional anatomist, and latterly the pendulum throughout the world has at least started to swing toward "anatomy in its relation to practice." In conclusion, allow me to quote the final sentence of my preface: "If this volume tends in any degree, directly or indirectly, to bring the teacher and student of anatomy into closer sympathy it will have fulfilled its mission." I am, yours very truly,

St. Louis, Mo., U.S.A., Jan. 10th, 1921. MARSH PITZMAN.

*** We have much pleasure in publishing Dr. Pitzman's views and their sound reasons.—ED. L.

THE INDICATIONS FOR REMOVAL OF TONSILS.

To the Editor of THE LANCET.

SIR,—The article by Mr. M. Vlasto which appears in your issue of Jan. 22nd contains several points which call for comment. The first of these is the statement that tonsillotomy secures drainage for the deeper crypts of the tonsil. Surely the scar-tissue, which is formed as the result of this or any other operation, must bring about just the reverse condition, and is the great argument against this particular operation in any case where one suspects that the "deeper crypts" are involved. Secondly, I do not consider that guillotine enucleation can be satisfactorily performed under short anæsthetics such as ethyl chloride—unless one is satisfied with a "scramble operation." I submit than an adequate general anæsthesia is necessary in all these cases, whether child or adult, if anything like routine success is to attend the efforts of the surgeon. In order to decide if tonsils can be successfully enucleated by the guillotine method it is best to wait till the patient is anæsthetised, and then see whether the tonsil can be dislocated from the pharyngeal wall, and pushed completely through the ring of the guillotine. The instruments for both varieties of technique should be sterilised and at hand, otherwise one is bound to encounter the futile situation where the anæsthetic has been given for a rapid enucleation with guillotine and closer investigation proves that dissection is necessary. It is also vitally important, in either case, that the surgeon should have time to secure any obvious bleeding point and satisfy himself that all bleeding has been controlled *before the case leaves the theatre.*

The writer hardly refers to this possible complication, which cannot be provided for by one of the short anæsthetics: use of the latter, therefore, should not be considered an advantage of enucleation by guillotine. He states that "less traumatism of the tonsillar bed" is produced by the guillotine method than by dissection, and that of two tonsils, one enucleated with the guillotine and the other by dissection, the former will have a capsule "smooth and white," in comparison with the "rougher surface" and "ruddy tinge" of the latter. I maintain that in both these cases the difference is due not to the instrument used, but to (*a*) the tonsil itself and its past history, and (*b*) the skill of the surgeon; and that whereas one of the "small fibroid septic tonsils" enucleated by either method will always present in a greater or less degree "the ruddy tinge of its muscular bed," another tonsil which has not undergone those repeated attacks of inflammation can be removed, with its capsule just as "white and smooth," by means of dissection as by enucleation with the guillotine. *Assuming* the skill of the surgeon to be beyond question, the former type will always be attended with more "after-pain" than the latter, whatever instrument is used. Enucleation with the guillotine is, in my experience, no more "messy" than dissection: nor do I find the "shape" of the adult tonsil to present any disadvantage to the use of the guillotine where this instrument is not contra-indicated by adhesions of capsule, &c.

In conclusion, I feel that throughout the article the writer has not laid sufficient stress on these facts: first, that consideration of the tonsil itself must decide which instrument can best be employed; secondly, that a longer anæsthesia than that produced by ethyl chloride, &c., is essential to success in this operation.

I am, Sir, yours faithfully,

Worcester, Jan. 31st, 1921. J. B. CAVENAGH.

To the Editor of THE LANCET.

SIR,—The perusal of the interesting and helpful papers by Mr. W. Morris and Mr. M. Vlasto in THE LANCET of Jan. 22nd on the removal of tonsils induces me to suggest to your readers the combination of methods for extraction by means of the guillotine which I have, after trying, found most effective in my hands.

Standing on the left side of the patient if he is recumbent, or sitting in front of him if he is in a chair, I commence on the left tonsil (before it has been made slippery by blood) and use a Morell Mackenzie guillotine in my right hand. While steadying counter-pressure is exercised on the left cheek by the anæsthetist I slip the ring over the tonsil and draw this forward on to the tuberosity of the lower jaw; then I exercise pressure outwards, against the jaw, so that the tonsil is made to "squash" through the ring, becoming everted in the process. Lastly, the blade is pushed home and is almost invariably found to have cut out the tonsil completely with the capsule on its deeper surface, and a narrow ring of mucous membrane, like a circumcised prepuce, round its margin. I then take up Ballenger's guillotine in my right hand, push the extremity of the ring behind the right tonsil, which I force from before backwards through the ring, by means of my *left forefinger*, press the tip of the guillotine forwards by levering the handle of the instrument on to the left cheek (which is pressed still more to the right by the anæsthetist) and cut out the tonsil quite as completely as on the left side, but with rather *more* mucous membrane. (Instead of Ballenger's, Mackenzie's guillotine, reversed, can be used.) With my left forefinger I clear the adenoids from the lateral walls of the naso-pharynx so as to press them towards the middle line. Then with Laforce's adenoid box-curette I remove the mass, any remnants being scraped away with Golding-Bird's curette. Lastly, I palpate the posterior extremities of the inferior turbinals, and if I find them enlarged I remove the excess by means of Prince's forceps.

These may seem trumpery details, but it has taken me some time to decide on this mode of removing both tonsils *with my right hand*, being a combination of Sluder's and Whillis's methods.

I am, Sir, yours faithfully,

Harley-street, Feb. 1st, 1921. JAMES DUNDAS-GRANT.

THE DIET OF WELL-TO-DO CHILDREN.

To the Editor of THE LANCET.

SIR,—If you bend the sapling and keep it bent you cannot avoid an angular oak tree. If you overload the juvenile intestine you must expect to find kinks and bands in the adult colon. That we should overload those poor little intestines at all is bad enough, but that we should overload them with the wrong material is infinitely worse.

Intestinal stasis is a deficiency disease. The complete absence of vitamines *from children's food*, which is secured by boiling milk against the bacillus, is the beginning as well as the *head and front of the offending.* If vitamines were supplied instead of being suppressed there would be no overloading, for surfeit would then be followed by a wholly beneficent diarrhœa. The surfeit of boiled milk and other devitalised foods gives rise to intestinal fatigue and stagnation; hence the stasis with its multiple and incalculable consequences. It is surely time that the broad human common-sense irradiated by Dr. Des Vœux's letter in your issue of last week replaced the bacillophobia and pseudo-scientific shibboleths of drug therapeutics which still pervade and degrade the teachings of the schools. We have attained to the point of admitting that the milk of the human mother is better than that of the pasteurised cow. Can we not follow that line of reasoning to its logical, adolescent, and adult conclusion by calling in and cultivating our vitaminous friends to defy our microbic enemies? If we were less given over to antiseptics we should be much more aseptic.

I am, Sir, yours faithfully,
Harley-street, W., Jan. 30th, 1921. LEONARD WILLIAMS.

REFERRED PAIN.

To the Editor of THE LANCET.

SIR,—I have just read the leading article in your issue of Jan. 22nd on the question of "referred pain," and am *surprised at the conclusion that* "reflex, reflected, or, better still, deflected pain, is far from being the common accompaniment of abdominal diseases it is uncritically taken to be," and still more surprised at the grounds for this conclusion—namely, that Dr. A. F. Hurst failed to find any cutaneous hyperæsthesia in ten cases of gastric ulcer operated on by Sir Berkeley Moynihan, although the ulcer was present in nine cases out of ten. Leaving out of the question the point as to whether the internal organs are capable of feeling pain, the practical issue for clinicians is the truth or otherwise of Sir James Mackenzie's viscero-sensory and viscero-motor reflexes, and, as you have practically denied the existence of the first, I propose to give some results showing that it exists. The rigid muscle over an inflamed appendix, for instance, is too familiar to require explaining or describing, and I will assume that Dr. Hurst accepts the usual explanation that it is connected in some way or another with the diseased appendix. This is the viscero-motor reflex, and although it is so common it has to be diligently and carefully sought for as one of the indications of disease of an internal organ, and it may even be the only objective sign, which no physician or surgeon would neglect to evalue in making a diagnosis. Now if the truth of the viscero-motor reflex is granted, why should it be doubted for a moment that the tissues immediately above the muscles can be affected in their own proper way and the viscero-sensory reflex excited?

The terms viscero-sensory reflex and viscero-motor reflex are at once a definition and a description, and, like all truths, appeal at once to the mind by their simplicity, and to elicit them no apparatus is required, while the time taken to test them is very short, and if it is the first procedure used in making an examination the time saved is enormous. The importance and significance of the viscero-sensory reflex and the viscero-motor reflex was first impressed upon me by Mackenzie's book, "Symptoms and their Interpretation," but I owe all I know as to the practical application of this knowledge to Mr. D. Ligat, who was induced by Mackenzie to examine all his cases before operation as to the conditions present in the abdominal wall, and then to try to correlate the conditions found at the operation with the symptoms, subjective and objective, that had been noted during the examination. This took place seven years ago, and ever since then I have been looking for this sign, and can say that every abdominal case I have had has been tested for hyperalgesia, and *if there is* one symptom that has been helpful in enabling me to arrive at a diagnosis as to the abdominal organ at fault, it has been this one. That there are tender areas in the abdominal wall in many abdominal diseases is to me, and to many others who practise it daily, a clinical fact there is no disputing.

Before describing the results of my observations it may be well to state my experience with regard to the attitude I have noticed towards this phenomenon amongst my friends. Generally it has been one of indifference, as the procedure has appeared to be much too simple to elicit anything, while others have been interested and *have tried it, but failed* to make anything of it and have given it up. I am convinced now that if a practical demonstration were given on the person of any sceptic and an unsuspected hyperalgesia were found there would never be any doubters as to the reality of this sign. This actually occurred in the person of a relative who had long toyed with the idea until I elicited an area of hyperalgesia over his stomach. Without meaning disrespect to Dr. Hurst, I should say that he failed to find hyperalgesia because he did not know how to apply the test, as I cannot believe that in 10 successive cases of gastric ulcer hyperalgesia was absent. It is quite possible but not probable. In any case its absence in even 10 cases means nothing, as negative results have no significance, while a positive finding is a fact that cannot be disputed. The proper method to be used is the following, the essential feature being that the whole of the tissues down to the deep fascia covering the muscles must be picked up between the finger and thumb and gently but firmly pressed between the opposing digits. The skin and tissues in the flank are first picked up and the amount of pressure estimated that the patient can stand without pain or discomfort. This is used as a standard for comparison with the points at which hyperalgesia may be found. The skin and tissues over these points are then picked up, and if there is hyperalgesia the patient shows it by flinching or moving away, or even by shouting out, so acute may this hyperalgesia be at times.

It may be thought that this sign would only be useful in examining patients of some degree of intelligence, but as a rule the opposite is the case, as, if anything, it is brought out most accurately in children, in whom it is remarkable to see how they never vary in the spots they say are painful, or indicate to be so by flinching, showing conclusively to my mind that the whole abdominal wall is not hyperalgesic, but only specific parts related in some specific way to some specific organ. In children, too, I have watched them come and go during their gastro-intestinal attacks, in which, by the way, the appendix is usually involved as well, and the conclusions I have come to after watching a great number is, that something is left in the appendix after such attacks—the appendix reflex being the last to disappear—and may become a focus from which chronic dyspepsia, so called, results.

The following case will illustrate what I mean:—

A small boy had such a gastro-intestinal attack with involvement of his appendix five years ago and diagnosed as such by the presence of the usual hyperalgesic areas. The attack was all over in two days. I advised an operation but nothing was done. The boy passed out of my care and I did not see him again until last year, when I was asked to examine him as he was suffering from asthma. After examining the chest, without finding anything to account for his asthma, I examined the abdomen and found very definite hyperalgesia over the small gut *area and appendix*, and gave my diagnosis as chronic appendicitis. I was then told that ever since I had seen him five years ago he had had repeated attacks of indigestion, acute and chronic, and that his life had been a misery to him. He was operated on and the diseased appendix removed, since when he has been perfectly well, although hyperalgesia can still be elicited over the small gut area but not over the appendix.

I find in such cases it takes a very long time for the hyperalgesia to disappear from the small gut areas. It indicates the necessity for careful feeding, &c., for some considerable time and gives a warning that the whole trouble is not removed by taking away the appendix. The following case will *help to make clear* the important fact that this sign is not always present even when sought for, and it may help Dr. Hurst to understand that the "necessary stimulus" is not always present even although the lesion is there.

This lady was taken ill with what she called "acute indigestion" while away on a visit. On returning home she consulted her own doctor, who called in an eminent consultant, and her condition was attributed to a floating kidney. The tumour lay under the right rectus, and could be easily palpated. An attempt to replace the tumour in the right loin only resulted in causing great pain and made her medical attendant begin to doubt the diagnosis. He asked for another consultation with his friend, and, as the patient was a friend of mine, she asked me to be present. I saw her and examined her, and found hyperalgesia over the gall-bladder area and some rigidity of the upper right rectus, and came to the conclusion that she had a distended gall-bladder, and gave that as my diagnosis, but it was not accepted, and Mr. Ligat was asked to see her. He knew what I said I had observed, but when he examined her there was no hyperalgesia and no rigidity. Taking all the facts into consideration, however, he advised an operation, and on cutting down a large gall-bladder full of pus and stones was removed.

Now the only reason why I found hyperalgesia and rigidity was because the "necessary stimulus" had been supplied by the manipulation to replace the supposed kidney in the loin, and this had disappeared by the time Mr. Ligat examined her. As Mr. Ligat states in his lecture, the absence of the sign means nothing, but its presence, even if only noted once, is a fact that may count for everything in arriving at a diagnosis, as in this case. Its presence, however, is so constant is certain conditions, that its absence is remarked upon and there is usually some explanation for the fact forthcoming if the case comes to an operation. In "acute abdomens" the necessity to operate is urgent and the absence of an accurate diagnosis is not altogether detrimental to the successful treatment of the case, although if the lesion can be located by the presence of a hyperalgesic area time is often saved which in such cases is of the first importance to the patient.

In this connexion it has been very interesting to read a paper by Mr. Burgess, of Manchester on "Diagnoses of Acute Abdominal Crises,"[1] in which he states that "the presence of these hyperalgesic areas is of very great value in determining the viscus primarily responsible." In chronic cases, however, such as the two mentioned, in children from whom it is difficult or even impossible to get a satisfactory statement of their ailments, or where their aches and pains are; in some cases where there is nothing to guide one as to the nature of the illness or even what organ of the body is involved, an examination of the abdominal wall for the presence of hyperalgesic areas may reveal the nature of the case and suggest the appropriate treatment.

I am, Sir, yours faithfully,
Bexhill-on-Sea, Jan. 25th, 1921. A. MURDOCH.

. Dr. Murdoch leaves one of the chief points at issue out of the question—viz., whether the internal organs are capable of feeling pain. We said nothing about viscero-motor reflexes. Clinicians must decide whether the method of picking up skin and subcutaneous tissues and applying finger-thumb pressure is not open to fallacies on the part both of examiner and examinee. The misreference of pain from viscus to skin was in no way denied as an occasional occurrence.—ED. L.

SEPARATION OF PRESCRIBING AND DISPENSING.

To the Editor of THE LANCET.

SIR,—The Executive of the Association of Certificated Dispensers has had under consideration the discussion recently appearing in THE LANCET appertaining to the separation of prescribing and dispensing. While it agrees with the general principle, it wishes to make it known that there are over 5000 persons holding the Assistant's Certificate of the Society of Apothecaries, London, who are mainly engaged to-day as dispensers to hospitals, institutions, medical practitioners in private practice, &c., and that any attempt on the part of the Pharmaceutical Council or any other body to displace its members to the favour of pharmacists will be strongly opposed. For the information of those of your readers who may not be conversant with the respective functions of the apothecary's assistant and the pharmacist, it is recalled that the pharmacist is primarily licensed to keep open shop for the retailing and dispensing of poisons only, whereas the apothecary's assistant is a qualified dispenser of all substances used in medicine—poisons or otherwise. He was the first and is now the only non-medical person statutorily qualified in professional pharmacy.

I am, Sir, yours faithfully,
H. C. RICHARDS,
Hon. Sec., Association of Certificated Dispensers.
West Croydon, Jan. 28th, 1921.

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[1] Brit. Med. Journ., Dec. 11th.

ORAL SEPSIS,

WITH SPECIAL REFERENCE TO ROOT INFECTION.

To the Editor of THE LANCET.

SIR,—Dr. Bertram Watson and Dr. W. H. Willcox have done well to call attention once more in your columns to the importance of chronic infective processes at the apices of the teeth in certain cases of obscure disease. The notion of "pyorrhœa" still holds sway over the minds of most practitioners, and of many dentists also, as being the sole type of dental infection which needs investigation and treatment in relation to general health. Suppurating periodontitis is, of course, of great importance as a cause of divers maladies. But the surface of the gums may be comparatively sound, "pockets" may be conspicuous by their absence, and still there may be deep-seated infection, often non-suppurative, at the apices of dead teeth, whether crowned or not. Such infection is, in my experience, even more important than "pyorrhœa" in connexion with such troubles as arthritis, fibrositis, neuritis, and certain blood infections. I advanced this proposition several years ago, and pointed out the importance of taking cultures from small sacs which form at the roots of dead teeth and from the extreme tips of partially absorbed apices themselves, procedures which not infrequently yield a copious and pure growth of streptococci *even when no suppuration is present.*[1] I brought the subject before the Odontological Section of the Royal Society of Medicine in 1914 in a paper published in the Proceedings of the R.S.M.

As bearing upon Dr. Willcox's letter, I quote the following:—

> "Deep-seated toxic processes are often dependent upon non-suppurating infections when the nidus of the micro-organism is in close contact with the blood stream, as at the roots of the teeth. There may be very little suppuration: quite often there is *no* suppuration at all."

In THE LANCET of 1913 (Vol. I., p. 13) will be found an account of a case of ulcerating endocarditis in which the organism recovered by blood culture was *S. salivarius*. The patient's illness started *after* the removal of a tooth having infection of this kind. This case, and some similar ones that I have published, bear out Dr. Willcox's and Sir William Hale-White's experience, quoted by the former.

Dr. Willcox refers to the importance of X ray examination of suspected teeth. I pointed out in the paper above referred to that a critical examination of the alveolus by the naked eye frequently reveals evidence of root infection which otherwise escapes attention: soft spots in the adjacent gum, patches of congestion and blueness, minute sinuses quite remote from the gum margin, and an unduly broadened or thickened alveolar process as a whole. The presence of stigmata like these gives the practitioner valuable support in the view—which the X ray appearances may confirm—that he is wise in advising the sacrifice of teeth which are mechanically useful. In these days of too reckless extractions on inadequate grounds such confirmation is by no means to be lightly ignored.

I am, Sir, yours faithfully,
Harley-street, W., Jan. 30th, 1921. THOMAS HORDER.

PRESCRIBING AND DISPENSING OF IODINE IN LARGE DOSES.

To the Editor of THE LANCET.

SIR,—The annotation in your issue of Jan. 29th on the administration of large doses of iodine anticipates some notes of mine lately read before the Cambridge Medical Society, but not yet ready for publication; yet further methods practically worked out in its administration may not be amiss at once. The chief one, which, it is only fair to say, I owe to Dr. Mackenzie Wallis at the B.M.A. meeting last June, is to give these large doses in *milk*; the burning of the throat is thus entirely eliminated, the taste is not unlike custard, and it is readily taken. A compound of iodine is certainly formed with the casein, but I have found no difference in the therapeutic effects. When dropped into or mixed with water the iodine is liable to separate out and hang about and burn the throat. Another aid, and one which has the advantage of cheapness in saving spirit, is to order the amount of iodine necessary, exactly the same quantity of iodide of potassium and simple water to make the mixture. In the great majority of patients this small quantity of iodide does not produce iodism; but for those who seem unable to take the smallest quantity of iodide the spirituous form in drops dropped into milk must be ordered. The most susceptible can take it without symptoms of iodism in this form.

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[1] Clinical Pathology in Practice, 1910.

I am, Sir, yours faithfully,
St. Ives, Huntingdon, Jan. 29th, 1921. W. R. GROVE.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Lieut. L. F. Strugnell to be Surgeon Lieutenant-Commander.

ARMY MEDICAL SERVICE.

Col. L. P. More is placed on half pay.

Col. J. V. Forrest retires on retired pay.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. A. E. Master retires on retired pay.

Lieut.-Col. J. D. G. Macpherson is placed on retired pay on account of ill-health contracted on active service.

Major H. T. Wilson relinquishes the acting rank of Lieutenant-Colonel.

Officers relinquishing their commissions:—Temporary Captains retaining the rank of Captain: W. S. T. Neville, A. F. Wyatt, R. Grant, J. Monroe, and L. V. Gatt.

SPECIAL RESERVE OF OFFICERS.

Bt. Lieut.-Col. W. H. G. H. Best is restored to the establishment.

TERRITORIAL FORCE.

Lieut.-Col. P. Paget to be Deputy Assistant Director of Medical Services, 42nd (East Lancs.) Division, with pay and allowances of a Major.

Major C. E. Walker (late R.A.M.C) to be Captain and to relinquish the rank of Major.

Major W. Macdonald resigns his commission and retains the rank of Major.

Capts. C. H. Carlton (late R.A.M.C., Spec. Res.) and D. S. Sutherland (from T.F. Res.) to be Captains.

Capts. T. R. Kenworthy and L. D. Bailey to be Majors.

Capts. W. H. Date and J. Morley resign their commissions and retain the rank of Captain.

Lieut. R. K. Nisbet (late R.A.M.C.) to be Lieutenant.

ROYAL AIR FORCE.

Capt. J. J. O'Mullane is transferred to the unemployed list.

INDIA AND THE INDIAN MEDICAL SERVICE.

Capt. H. H. King has been appointed permanently to the Bacteriological Department. Lieut.-Col. J. H. Hugo has been posted as Residency Surgeon, Kashmir, vice Lieut.-Col. McIver Smith. The following Majors have been promoted Lieutenant-Colonels:—A. G. McKendrick, O. S. J. Moses, F. W. Sumner, H. R. Nutt, W. D. Ritchie, J. Husband, G. C. L. Kerans, H. W. Illius, J. B. Christian, L. P. Brassey, P. L. O'Neill, N. E. H. Scott, J. K. S. Fleming, E. C. Hepper, C. E. Southon, G. Fowler, H. B. Foster, C. B. McConaghy, E. W. Browne, A. Murphy, and C. F. Marr. Lieut. F. W. Matthews, superintendent, Central Prison, Naini, Allahabad, has been appointed to officiate as Civil Surgeon, Rai Barelli. Major J. H. Murray has assumed the duties of Superintendent, Central Jail, Lahore. Capt. C. L. Emmerson, R.A.M.C., has been appointed to officiate as Civil Surgeon, Darjeeling, vice Major A. Denham White, who has proceeded on leave. Major J. D. Sandes, surgeon to the Governor of Bengal, has been granted a year's leave. Major R. Knowles, secretary of the School of Tropical Medicine and Hygiene, Calcutta, has proceeded on eight months' leave. Major R. C. Hallowes has been appointed to the Civil charge of Barrackpore. Major D. P. Watson officiates as Civil Surgeon of Naini Tal during the absence on leave of Lieut.-Col. W. S. Willmore. Major S. C. Chuckerbuty has been posted as Civil Surgeon, Kamrup. Lieut.-Col. M. Corry, civil surgeon, has been appointed Lecturer on Midwifery and Forensic Medicine, and Major R. A. Chambers, principal of the school, Lecturer on Medicine in the Government Medical School at Amritsar. Major R. F. D. Macgregor, medical officer of the Consulate, has been appointed to officiate as His Brittanic Majesty's Consul at Seistan pending the arrival of a successor to Mr. B. J. Gould, who has proceeded on leave. Captain E. S. Goss officiates as an Additional Assistant Director-General, Medical Services, at the Headquarters of the Government of India. Lieut.-Col. H. Ross has been appointed Medical Officer in Charge of the British Mission to Cabul.

ROYAL SOCIETY.—On Thursday, Feb. 10th, the Rev. John Roscoe will read a Résumé of the Results obtained by the Mackie Anthropological Expedition to Uganda.

Obituary.

EDMUND JOHNSON SPITTA, M.R.C.S.,
L.R.C.P. LOND.

ON Jan. 21st the death occurred at Hove—where he had resided since his retirement in 1904—of Dr. Edmund Johnson Spitta, late chairman of the Sussex County Council, and well known as an entomologist and lecturer on natural history. Born in 1853, a son of the late Dr. Robert John Spitta, he was educated at Clapham Grammar School and studied medicine at St. George's, St. Thomas's, and Westminster Hospitals. At St. George's he was a prizeman at the medical school, and acted as senior demonstrator of anatomy. He qualified M.R.C.S. Eng., L.R.C.P. Lond., in 1874, and then for 30 years practised with his father in Clapham.

Spitta was in his earlier years especially interested in photography and astronomy; in 1880 he was made a Fellow of the Royal Astronomical Society, of which he afterwards became vice-president. He was also a prominent member of the Royal Microscopical Society and of the Quekett Microscopical Club, holding the offices of vice-president and president respectively. Notwithstanding the claims of a large general practice Dr. Spitta found, or rather made, time to become not only an expert microscopist but an authority on microphotography. His collaboration with Mr. Charles Slater in the production of an excellent Atlas of Bacteriology, published in 1898, marked the beginning of a long friendship between the joint authors. Dr. Spitta's holidays were organised as photographic expeditions and his family enlisted as assistants. His work on microphotography led to an interest in "process" reproduction, to a very valuable study of microscope objectives, and, after his retirement, to the publication in 1907 of a book on Microscopy, of which a third edition appeared last year. This book treats of the subject from a broad standpoint, teaching by means of admirable diagrams and photographs the principles and laws on which the instrument is constructed, as well as the way to get the utmost possible information from its use. Dr. Spitta also published a book on Photomicrography. He enjoyed making microphotographic films for the kinematograph, and was the first to produce moving pictures of plant and insect life. He devised many ingenious pieces of apparatus, and became very popular as a lecturer on scientific subjects, drawing upon his own large stock of photographs for their illustration. Spitta was especially interested in scientific advances which had a practical and mechanical side. Wireless telegraphy and telephony attracted him so much that he fitted his house with receiving apparatus. His mechanical skill was considerable, and his practical mind went straight for essentials. The subjects which interested him he pursued with immense energy and great thoroughness. No trouble was too great to ensure a good result, and he was a severe critic of his own work. Though this showed the accuracy which we now demand from an expert, in the range and character of his interests he resembled less the modern scientific specialist than the scientific inquirers of an earlier generation, and his versatility was not the least of his striking qualities.

DAVID YELLOWLEES, M.D. EDIN., LL.D. GLASG.

WITH the death of Dr. Yellowlees at Edinburgh on Jan. 19th, in his eighty-fifth year, has passed away a man who combined high professional attainment in mental medicine with a gift for administration. David Yellowlees was born and brought up at Stirling, graduated at Edinburgh in 1857, and after a period of study abroad returned as assistant to Sir William Gairdner at the Edinburgh Royal Infirmary. His first appointment in psychiatry was to assist Dr. Skae at the Edinburgh Royal Asylum, Morningside, and in 1863 he went to direct the Glamorgan County Asylum, where he remained 12 years. In 1874 he followed Dr. Mackintosh as physician superintendent to the Royal Glasgow Asylum, Gartnavel, a post which failing eyesight obliged him to relinquish in 1901. During the greater part of this time he lectured on insanity in the University of Glasgow, which conferred upon him the honorary degree of LL.D. in 1888. He presided over the Psychological Section of the British Medical Association which met at Glasgow in 1885, over the Medico-Psychological Association in 1890, and over the Faculty of Physicians and Surgeons of Glasgow in 1892–94.

Under Yellowlees Gartnavel became a keen centre of psychiatric thought. His physical energy and enthusiasm, combined with a radiant optimism, infected his assistants, as well as in some measure the patients and their friends. His routine was to entrust each of his helpers with the entire responsibility of a part of the asylum, and to hear and discuss their reports at his own house every day at noon. He then visited the wards independently, acting as a kindly and sagacious consultant. Simple and frank himself, he expected, and generally found, the same qualities in others, who grew to rely upon his honest and fearless character.

Dr. Yellowlees took a leading part in the philanthropic work of the city which became his second home. He was for the greater part of his active life on the directing board of the Association for the Relief of Incurables, the Bramhill Home for Incurables, and the Lanfine Home for Consumptives. He helped to found the Glasgow Association for the Care of Defective and Feeble-minded Children, and warmly supported the Glasgow Medical Missionary Society. Work for the protection of women and children always found in him a good friend. All these things were the outcome of deep religious conviction.

After his retirement in 1901 Dr. Yellowlees continued to live in Glasgow until the autumn of 1919, when he returned to Edinburgh to spend the last 18 months of his life. He is survived by his wife, a daughter, and two sons, both of whom are in the medical profession. Dr. David Yellowlees is in practice at Stirling; Dr. Henry Yellowlees is senior assistant physician to the Royal Edinburgh Asylum.

ARTHUR JACKSON, F.R.C.S. ENG.

Mr. Jackson, who died at Shrewsbury on Jan. 9th in his 66th year, had long enjoyed a surgical reputation beyond the county borders. A native of Grays in Essex, he took his medical education at St. Bartholomew's Hospital, London, qualifying in 1878, and becoming F.R.C.S. Eng. in 1882. After filling certain house appointments he went to Shrewsbury to join the late Mr. J. R. Humphreys in partnership, and soon joined him also on the surgical staff of the Salop Infirmary. For nearly thirty years he developed his surgical skill and resource here and at other hospitals and institutions in the neighbourhood, while he was in request as a consultant over a wide area. His death was due to double pneumonia accompanying influenza and following on the news of the sudden death in India of his only son. His widow and a daughter survive him. The memorial service on Jan 12th was attended by a large gathering of medical men.

THE LATE MR. W. L. ROBERTSON.—The death took place at Dundee on Jan. 25th of Mr. W. L. Robertson, who was a well-known surgeon there. Death was the result of septicæmia following a punctured wound on the finger, sustained while performing an operation at the Royal Infirmary on Jan. 17th, but it was not until four days after that Mr. Robertson developed serious symptoms. Mr. Robertson was the eldest son of Mr. J. C. Robertson, C.A., ex-Treasurer of Dundee. After receiving his preliminary education at the High School, he proceeded to St. Andrews University, where he graduated M.A. Subsequently he had a distinguished career in medicine at Edinburgh University, graduating M.B., Ch.B. in 1905, and two years later he obtained the Fellowship of the Royal College of Surgeons of Edinburgh.

Medical News.

UNIVERSITY OF OXFORD.—In a Congregation held on Jan. 20th, the degree of Bachelor of Medicine was conferred on Thomas Sydney Nelson, University College, and Harold George Burford, Christ Church.

The Board of the Faculty of Medicine gives notice that in and after Michaelmas Term, 1921, candidates for the Final B.M. Examination will be required to submit a certificate of attendance at a course of practical instruction in ophthalmology, to include not less than 20 meetings, during a period of three months, at an ophthalmic clinic recognised by the Board.

UNIVERSITY OF LONDON.—*Charing Cross Hospital Medical School.*—A special course of lectures on Fevers. their Clinical and Epidemic Features, Measures of Prevention and Treatment, will be delivered by Dr. William Hunter in the Medical School on Thursdays, at 4.30 P.M., beginning Feb. 10th. The lectures are free to doctors and students of medicine.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An ordinary Comitia of the College was held on Jan. 27th, Sir Norman Moore, the President, being in the chair. The following were admitted to the Membership of the College: Drs. J. M. H. Campbell, J. H. Dible, M. G. Hannay, B. Hart, F. G. Hobson, Charlotte A. King, D. McAlpine, W. E. Robinson, M. S. Thomson, and W. Wrangham.—Jointly with the Royal College of Surgeons of England diplomas were granted to the successful candidates in public health, tropical medicine and hygiene, psychological medicine, and ophthalmic medicine and surgery.—Dr. A. P. Beddard, Dr. A. J. Hall, Dr. J. W. Russell, and Dr. Gowland Hopkins were elected councillors to take the place of Dr. W. H. Hamer, Dr. A. F. Voelcker, Sir P. Horton-Smith-Hartley, and Dr. F. F. Caiger.—Leave was granted to Dr. A. Gregson Williams to resign his membership and to Mr. H. H. Coates to resign his Licence and Diploma in Public Health.—Dr. W. G. Tyson was nominated delegate to a Congress of the Royal Sanitary Institute to be held at Folkestone from June 20th to 25th.—A memorial received from the Council of the Section of Otology, Royal Society of Medicine, asking the Royal Colleges to grant a Diploma in Otology, was referred to the Committee of Management for report.—The President announced that he had appointed Dr. Herbert Spencer to deliver the Harveian Oration and Dr. Michael Grabham the Bradshaw Lecture in 1921; and the Council had appointed Dr. Major Greenwood to deliver the Milroy Lectures in 1922.—A medal presented to Sir Humphry Rolleston at the centenary of the Académie de Médecine, was given by him to the College.—Representatives of the College were appointed on the following bodies: Central Midwives Board, Sir Francis Champneys; Court of Governors of Liverpool University, Sir Dyce Duckworth reappointed; Court of Governors of Birmingham University, Dr. Voelcker; Committee of Management of the Chelsea Physic Garden, Sir George Savage reappointed; Conjoint Board of Scientific Societies, the President and Dr. H. Head reappointed; Central Council for District Nursing in London, Sir William Hale-White reappointed.—Acting on a report from the Committee of Management the Technical College, Bradford, was recognised for the course of laboratory instruction for the Diploma in Public Health, and the William Ellis Endowed School, Gospel Oak, N.W., Ipswich School, and the Municipal College, Burnley, were added to the list of institutions recognised for instruction in chemistry, physics, the last-named also in biology; the Infectious Diseases Hospital, Cambridge, was added to the list of fever hospitals recognised by the Conjoint Board; and the special course of three months' study of advanced public health at Haslar was recognised as sufficient to reduce to three months the instruction under a medical officer of health required for the Diploma in Public Health.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—Diplomas have been conferred upon the following candidates who have passed examinations in the undermentioned subjects:—

DIPLOMA IN PSYCHOLOGICAL MEDICINE.

Mostafa Dia, Cairo and St. Mary's; Edmund Duncan Tranchell Hayes, Trin. Coll., Dublin; Owen Sidney Martin, Univ. Coll.; and Henry William Parnis, Malta.

DIPLOMA IN OPHTHALMIC MEDICINE AND SURGERY.

Joseph Ringland Anderson, Melbourne Univ. and Royal London Ophth. Hosp.; Robert Smith Candlish, Sydney and Western Ophth. Hosp.; Kamil Maximus Labiebe, Manchester and Royal London Ophth. Hosp.; William Oliver Lodge, Leeds; Behram Hormusji Pesikaka, Royal London Ophth. Hosp.; Syed Abdur Rahim, Bombay and Royal London Ophth. Hosp. and George Zachariah, Royal Eye Hosp., Southwark.

Royal College of Surgeons of England.—The following lectures are to be delivered in the theatre of the College, Lincoln's Inn-fields:—Two Hunterian lectures on the Surgery of the Peripheral Nerve Injuries of Warfare, by Professor Harry Platt, on Feb. 7th and 9th; one Hunterian lecture on a Research into the Pathology and Ætiology of Loose Bodies Composed of Cartilage or of Cartilage and Bone occurring in Joints, by Professor A. G. Timbrell Fisher, on Feb. 11th; one Arris and Gale lecture on the Cause and Prevention of Myopia, by Dr. F. W. Edridge-Green, on Feb. 16th. These lectures will be given at 5 P.M. On Monday, Feb. 14th, at 4 P.M., the Hunterian oration will be delivered by Sir Charters J. Symonds. Fellows and Members of the College are invited to attend.

Post-Graduate Lectures for London Panel Practitioners.—Further courses in clinical pathology and venereal diseases are being arranged during the spring, and practitioners wishing to attend them are desired to send in their names to the secretary of the Panel Committee. The fee for each course is £3 3*s.*

London Hospital Medical College.—Dr. Percy Kidd, consulting physician to the London Hospital, has been elected Schorstein Memorial Lecturer for 1922. The lecture for 1921 will be delivered on June 3rd by Dr. A. G. Gibson, who has chosen as his subject Chronic Inflammatory Diseases of the Spleen.

Hunterian Society.—The annual oration will be delivered by Dr. Henry Howarth Bashford on "The Ideal Element in Medicine" on Wednesday, Feb. 16th, at 9 P.M., at the Sion College, Embankment, London, E.C. All members of the medical profession are invited to attend.

Medical Coroner.—Dr. William Bentley Purchase has been appointed deputy coroner for the Eastern District of London.

No. 19 C.C.S.: Annual Dinner.—The second annual dinner will take place on Feb. 19th, at the Refectory Restaurant, Golders Green, London. Those wishing to be present are asked to apply for tickets (15*s.*) to the Rev. E. C. Doddrell, 6, Alexandra House, Regent's Park-road, Finchley, N. 3.

National Dental Hospital: Annual Dinner.—The annual dinner of the Students' Society was held at the Hotel Cecil, London, on Jan. 27th. The chairman was Mr. A. B. G. Underwood, sub-dean of the school, who was supported by Sir Kenneth Goadby, Mr. Peter Sidney Spokes, Dr. George Blacker, Mr. Relph, Dr. Dudley Buxton, Dr. J. Strickland Goodall, Mr. J. L. Dudley Buxton, Dr. C. J. Ogle, Dr. J. Maughan, and Dr. H. Pinto-Leite. After the usual toasts had been honoured, a presentation was made to Mr. Spokes by the chairman on behalf of the staff of the National Dental Hospital and other subscribers. Mr. Underwood referred to the great services to the hospital of Mr. Spokes. These extended over a period of 33 years. He had held the office of dean of the school since 1891, and it was mainly through his efforts that the present amalgamation with University College had been carried out, the National Dental Hospital now being the dental school of University College. Mr. Spokes suitably replied. Mr. R. Lindsay gave the toast of "The Students' Society," and Dr. Pinto-Leite proposed "The Visitors" and Mr. E. H. Lawrence "The Chairman." Dr. Blacker and Mr. Underwood responded.

Medical Officers of Schools Association.—A general meeting of this association will be held at 11, Chandos-street, Cavendish-square, London, W., on Feb. 15th, at 4.45 P.M., when a paper will be read by Dr. E. H. T. Nash on "School Punishments." Preparatory to this meeting a questionnaire has been circulated amongst the members of the association. The questions are:—

1. What form or forms of corporal punishment are in use at your school? 2. By whom are they administered? 3. With what are they administered? 4. Is corporal punishment reserved for any special offences? 5. Are any regulations laid down by the authorities, or is each master free to use his own discretion? 6. Do you approve of caning on the hand? Please give reasons for or against. 7. *Have you seen any ill*-results from caning on the hand? If so, what? 8. Have you seen any ill-results from caning on the buttocks, or from any other form of corporal punishment in use at your school? 9. Please state what form of corporal punishment you, as an S.M.O., believe to be the most effective and least liable to produce harmful results. 10. Please state what forms of punishment are in use at your school other than corporal punishment, and what your personal opinions are as to the effect on the pupil. 11. Have any cases come to your notice where corporal punishment has had an unsatisfactory result on the pupil apart from the physical effect? 12. Any *personal opinions* on the matter apart from the foregoing questions will be welcomed.

A general conference of school medical officers, educationists, and others will be convened at a later date to discuss such conclusions as may be reached on Feb. 15th.

Donations and Bequests.—A donation of £12,000 has been received by the Manchester Royal Infirmary from the National Relief Fund, £158 in legacies, and £145 in other donations.—The St. Mary's Hospitals, Manchester, have received £1750 from the Women's Guild of Service, and other donations to the amount of £433.

University of Aberdeen.—A special graduation ceremony took place in Marischal College, Aberdeen, on Jan. 25th, when the graduates in the special final medical examination held last term had their degrees conferred upon them. The capping ceremony was performed by Principal Sir George Adam Smith, Vice-Chancellor, and the graduands were presented by Professor C. R. Marshall, Dean of the Faculty of Medicine.

Scottish Midwives Board.—The Central Midwives Board for Scotland as constituted under the Act of 1915 will consist from Feb. 1st of the following members, the appointing body being given before the name or names:—

Scottish Board of Health, three members, two of whom shall be midwives practising in Scotland: Miss Alice Helen Turnbull, superintendent health visitor, Maternity and Child Welfare Department, Edinburgh. *Practising:* Miss Isabella Lewis Scrimgeour, superintendent, Cottage Nurses' Training Home, Govan; Miss Kate Leslie Scott, chairman of Council of Scottish Midwives' Association, Aberdeen.

Association of County Councils for Scotland: Sir Archibald Buchan-Hepburn, *convener of Haddington County Council.*

Convention of Royal Burghs of Scotland: Sir Robert Cranston, Edinburgh.

Queen Victoria Jubilee Institute for Nurses, Scottish Branch: Dr. James Haig Ferguson, Edinburgh.

Society of Medical Officers of Health of Scotland: Dr. A. Campbell Munro.

University Courts of Edinburgh and St. Andrews, one member, conjointly, Dr. J. A. C. Kynoch, Professor of Midwifery, St. Andrews.

University Courts of Glasgow and Aberdeen, one member, conjointly: *Dr. Robert Gordon McKerron, Professor of Midwifery*, Aberdeen.

The Royal Colleges, one member, conjointly: Dr. Robert Jardine, Glasgow.

Scottish Committee of British Medical Association; Dr. Michael Dewar, Edinburgh; Dr. E. H. L. Oliphant, Glasgow.

Society for the Prevention of Hydrophobia.—A meeting of the committee of this society was held at the Farmers' Club, Whitehall Court, London, on Feb. 1st. Mr. F. W. Fletcher, acting honorary secretary, reported the deaths of Dr. Sidney Turner, the late chairman of the committee, and of Mr. Frank Karslake, the late honorary secretary. The committee then appointed Major J. Penberthy chairman and Mr. Fletcher honorary secretary. Major Penberthy, from the chair, drew attention to the great services rendered to the society by the late Dr. Turner and the late Mr. Karslake, and said that this was also the first opportunity the committee had had of referring to the services of the late Sir Victor Horsley, who had preceded Dr. Turner as chairman and had taken such an active part in the work of the society. A motion was placed on record expressing the committee's sense of the great losses the society had sustained. The minutes of the last meeting of the committee, held in July, 1919, were then read and a financial statement was received from Mr. F. B. Debenham, honorary treasurer, from which it appeared that the society's expenditure from May, 1919, when activities were recommenced, to the end of December, 1920, had been £60 5*s.* 1*d.*, leaving a debit balance of £8 17*s.* 6*d.* The principal item of expense had been the printing of 1000 copies of the booklet on Rabies and Hydrophobia, of which a number were still available at 1*s.* each. The committee then considered what steps should be taken with regard to the renewed outbreaks of rabies which during the past two years have occurred in various parts of the country. It was pointed out that these have probably originated from the smuggling of dogs into the country from the continent, the Air Service affording ample opportunity for this deplorable practice. Fines had no deterrent effect, and it was the intention of the committee to urge the Government to make such smuggling a penal offence. The futility of recent endeavours to stamp out rabies by muzzling dogs in limited areas had again been demonstrated, and until the policy advocated by the society of universal muzzling of dogs for a definite period was adopted, the disease would never be eradicated. Propaganda was indispensable for the enlistment of public support, and a certain amount of expenditure was therefore necessary. The society had no paid officials, the whole of the work entailed being honorary; it was, however, important that the existing deficit be cleared off and that the treasurer should have funds in hand to meet future expenses; it was therefore decided to issue a report setting forth the financial position to members of the society. After a short discussion with reference to the formation of a council and the possibility of strengthening the executive committee, the meeting closed.

Payment for Medical Services at a Voluntary Hospital.—The Great Northern Central Hospital has now graded its accommodation into three sections. In the general wards (140 beds) necessitous cases are admitted free, but patients who can *afford to do so give* 1*s*. to 20*s*., according to circumstances. Patients in the contributory wards (62 beds) pay £1 1*s*. to £4 4*s*., according to their means, as assessed by the committee. The treatment of patients in the *general and contributory* wards is undertaken gratuitously by the honorary medical staff. The recently inaugurated private wards (18 beds) are intended for patients whose means do not allow of the payment of the usual *medical and surgical fees*, but who are willing to contribute towards the cost of medical services and of maintenance while in the hospital. The payments range from 4½ to 6 guineas per week, with a fee for medical service of £1 1*s*. per visit—maximum fee for medical service £3 3*s*. per week. For an operation £5 5*s*. will be payable to cover the reduced fees of the surgeon and the anæsthetist and the charge for the use of the theatre. By arrangement with a member of the honorary medical staff and the patient concerned private practitioners may attend the hospital to share in the treatment. The patient in this case pays the local medical practitioner's fee. In assessing the amount payable by patients the committee will arrange for a rebate of 50 per cent. off the medical fees where the income is the minimum for the private wards or exceeds the minimum by not more than £100.

Admission of Paying Patients to Liverpool Poor-law Hospital.—The guardians of the West Derby Union in the city of Liverpool, with a view to relieve the pressure on accommodation of the voluntary hospitals, have decided to set apart a certain portion of the buildings of their hospital in Mill-road *for the treatment of paying* patients, male or female adults, who reside within the West Derby area and who are suffering from acute disease of a non-infectious or non-contagious character. It is intended to make an inclusive charge of 3 guineas per week for the maintenance and treatment of each patient. This will benefit many who, while unable to receive prompt admission *into one of the* voluntary hospitals, cannot afford to pay the usual fees of the nursing homes. It is anticipated that the sum of 3 guineas will be sufficient to cover the maintenance and treatment of these patients, who will be dealt with on the lines of private patients. *For their treatment* the operating theatre of the hospital will be available, and X ray, electro-therapeutic, and massage departments. The hospital is under the administration of a medical superintendent, who is assisted by three resident medical officers and a visiting staff of specialists. The guardians state that this scheme will not lessen except in a minor degree the accommodation available for the destitute sick. By arrangement with the medical superintendent it will be possible for the patient's own doctor or for any specialist he may desire to consult with the ordinary medical staff of the hospital.

Royal Southern Hospital, Liverpool: Dinner to Sir Robert Jones.—Under the chairmanship of Lord Derby, over 200 friends and colleagues of Major-General Sir Robert Jones assembled in the Adelphi Hotel, Liverpool, on Jan. 31st to entertain him to dinner and present him with his portrait in oils, subscribed *for by the* committee and staff of the Royal Southern Hospital. The gathering was a tribute to the popularity of the guest of the evening; former residents of his had come from all parts of the country to be present; not only were Liverpool surgeons present, but Sir Berkeley Moynihan came from Leeds, and a letter of apology from Sir Anthony Bowlby regretted his unavoidable absence. After the loyal toasts the chairman proposed the toast of "The Guest"; he spoke in terms of the highest appreciation of Sir Robert Jones's work among crippled children, and then passed on to show how the coping-stone had been added to his life's work by the help he had rendered to the crippled and disabled soldiers during and since the war. Under his magnetic spell, and in consequence of his genius for organisation, orthopædic hospitals had been opened in all the great centres in the country, and new hope had been brought into the lives of many a disabled man. Mr. G. P. Newbolt, senior surgeon to the Royal Southern Hospital, in supporting the toast, recalled many interesting incidents in the life of Sir Robert Jones and himself when they had worked together first at the Stanley Hospital and afterwards as surgeons to the men engaged in constructing the Manchester Ship Canal, and he bore high testimony to the lovable qualities of the guest as a colleague and a friend. The toast was pledged with enthusiasm, after which the chairman unveiled and presented the portrait. Sir Robert Jones, who received a great ovation, paid a tribute to the late and great Hugh Owen Thomas, that pioneer in orthopædic surgery whose splint had been the means of reducing the mortality of fracture of the thigh in the war from 80 20 per cent., and he bore witness to the help and encouragement he had received from the chairman as Minister for War in his work of organising the orthopædic centres throughout the country. The following toasts were then honoured: "The Royal Southern Hospital," proposed by Dr. J. Gemmell, President of the Liverpool Medical Institution, and responded to by Mr. Thomas Woodsend, President of the Hospital Committee; "The Guests," proposed by Dr. C. J. Macalister and responded to by Vice-Chancellor J. G. Adami and Sir Berkeley Moynihan; and "The Chairman," proposed by Mr. T. R. W. Armour; to whose work as organising secretary the success of the banquet was largely due.

Lord Mayor of Bristol's Hospital Sunday Fund.—In an appeal for the collection undertaken on Jan. 30th on behalf of this fund, it is stated that in the four chief voluntary hospitals of the city—the General Hospital, the Royal Infirmary, the Children's Hospital, and the Eye Hospital—103,065 patients were treated last year at a cost of £90,792, being nearly £57,501 more than the income. Last year's collection reached a record total of over £6000.

East Grinstead Dispensary.—At the sixty-second annual meeting of this dispensary it was stated that from 1912 onwards the income had only once met the expenditure, and then only with a balance of £1. To meet these yearly deficits the reserve fund had been drawn upon. Three possible courses of action—to continue as at present until the reserve be exhausted, to appeal for funds, or to close down—were considered by the subscribers, and by a unanimous vote it was decided to approach the local Cottage Hospital with a view to amalgamation, and to carry on meanwhile.

R.A.M.C. (T.) Concert at Birmingham.—The annual supper and smoking concert of the Royal Army Medical Corps, Territorial Units of Birmingham, was held at the *White Horse Hotel, Birmingham, on Jan.* 28th, Lieutenant-Colonel C. H. Howkins, R.A.M.C., presiding. The chairman pointed out the great strides that had been made in recruiting for the units since the New Year and the *indication* there was that these units would shortly be at full peace strength. About 100 members were present and an excellent programme of music was provided.

Manchester Royal Eye Hospital.—This hospital is feeling severely the greatly increased cost of upkeep. In spite of an unexpected gift of £5000 from the National Relief Fund, *the year finished with an adverse balance* of £3715, and this takes no account of the sale of certain securities. The St. John-street out-patient department is closed. Its sale will realise a useful sum, but the amount obtained is required for *a* new out-patient department *on* a site already secured opposite the hospital.

Sir George Makins at Belfast.—On Jan. 27th Sir George Makins gave an address to the Ulster Medical Society on "Injuries to the Heart," the President, Dr. Thomas Houston, being in the chair. The address dealt with the experience *garnered in the late war, and* was one of exceptional interest and importance. A vote of thanks to the lecturer was passed by Professor T. Sinclair and seconded by Dr. J. Walton Browne. On Jan. 28th Sir George Makins addressed a meeting of the Belfast Medical Students' Association on "Our Profession," the President of the association, Professor W. St. C. Symmers, being in the chair. There was a crowded attendance of students of both sexes, and the distinguished visitor had an enthusiastic reception. The speaker dealt first with some of the phases of medical education, and pointed out some of the advantages of the old apprenticeship system. He emphasised the importance of practical experience with disease at the earliest stage in the student's career, and expressed his *preference for the older* system under which the student was introduced to hospital work while still engaged in the study of the preliminary subjects. He thought that danger lurked in the multiplication of specialised methods of examination, and pointed out that a fallacy might exist even in a Wassermann reaction. The laboratory worker was no more exempt from error than was the clinician. The large *majority of medical students* became general practitioners, and would often practise in places where they could not command the services of the pathologist or the radiologist. There was the more reason to cultivate the older methods of observation and diagnosis, which were always available. He thought that in many respects the career of the general practitioner was a more desirable one than that *of the* specialist. *The general* practitioner in many cases knew his patients from the cradle and was their trusted friend and adviser, while the relations of the specialist to his patients were slight and casual. In contrasting the surgeon and the physician he thought that while in these days the surgeon had the advantage financially, the physician was in most cases the more learned man.

COMMITTEE ON VOLUNTARY HOSPITALS.—A meeting of Lord Cave's Committee on Voluntary Hospitals was held on Feb. 2nd at the Ministry of Health, when evidence was given in the morning by Sir Cooper Perry and Mr. Maynard on behalf of the King Edward VII. Hospital Fund, and in the afternoon by Mr. Verity, chairman of Charing Cross Hospital. Evidence is to be taken from Mr. Vernor Miles on behalf of the small general hospitals in the London area.

CHILD-STUDY SOCIETY.—A lecture on Vocational Tests will be given by Mr. C. H. Miles, D.Sc., at 90, Buckingham Palace-road, London, S.W., on Thursday, Feb. 10th, at 6 P.M.

MEDICO-LEGAL SOCIETY.—A meeting of this society will be held at 11, Chandos-street, London, W., on Tuesday, Feb. 15th, at 8.30 P.M., when a paper will be read by Dr. Halliday Sutherland on Medical Evidence in the Staunton Murder Trial.

No. 14 GENERAL HOSPITAL: REUNION DINNER.—A reunion dinner of the staff (medical officers, sisters, and V.A.D.'s) of No. 14 General Hospital (Wimereux) will be held at the Ladies' V.A.D. Club, 28, Cavendish-square, London, W., at 7.30 P.M., on Wednesday, March 16th, Sir John Goodwin presiding. Application for tickets, price 15s, inclusive, should be made to Miss Sloggett, 6, Bickenhall Mansions, London, W. 1.

ENCEPHALITIS LETHARGICA.—The Registrar-General's latest return shows that 21 cases of encephalitis lethargica were notified in London during the week ending Jan. 22nd. Of these 5 occurred in Stepney and 2 each in Fulham, Lambeth, and Southwark. Sixteen cases have been reported in Manchester during the last month. A fatal case of a man, aged 24, occurred at Mossley, after being asleep for 11 days. Another fatal case occurred in the Union Infirmary, Oldham, at the end of the week, the victim being a young woman, who had been asleep for 10 days before her death.

Appointments.

HENRY, LYDIA M., M.D. Shef., has been appointed Assistant Medical Officer for Blackburn.

MORLEY, J., Ch.M. Vict. Manch., F.R.C.S. Eng., Honorary Assistant Surgeon, Manchester Royal Infirmary, Manchester.

WHITEFORD, C. HAMILTON, M.R.C.S., L.R.C.P. Lond., Consulting Surgeon to the Great Western Railway, Plymouth Centre.

WYNNE, F. E., M.B., B.Ch. Dubl., D.P.H., Medical Officer of Health for Sheffield.

West London Hospital: STEWART, T. G., M.D. Edin., Physician; PINCHIN, A. J. S., M.D. Lond., Assistant Physician; PATERSON, H., Medical Registrar; DAVIES, T. B., M.D. Lond., Obstetric Registrar.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Dispensary and Vaccine Institution.—Hon. M.O.

All Saints' Hospital for Genito-Urinary Diseases, 19/57, Vauxhall Bridge-road, S.W.—Res. H.S. £200.

Belgrave Hospital for Children, Clapham-road, S.W.—Asst. P. 50 gs.

Birmingham, Dudley-road Hospital.—Res. Asst. M.O. £413.

Bootle Borough Hospital.—Sen. and Jun. H.S.'s. £200 and £150.

Brighouse Borough.—M.O.H. and Sch. M.O. £650.

Burnley County Borough.—Female Asst. M.O.H. £500.

Cardiff, King Edward VII. Hospital.—Hon. Asst. Ophth. S.

Croydon County Borough.—Res. Med. Supt., Sanatorium, North Cheam. £500.

Dreadnought Hospital, Greenwich.—H.P. and H.S. £150.

East Ham Education Committee.—Sch. Dentist. £450.

Eccles and Patricroft Hospital.—Res. H.S. £200.

Exeter, Royal Devon and Exeter Hospital.—P. and S.

Federated Malay States Colonial Service.—Pathologist to the Medical Research Institute. £1050.

Glasgow Education Authority.—Dentist. £400.

Glasgow, Woodilee Mental Hospital, Lenzie, near Glasgow.—Asst. M.O. £350.

Great Yarmouth Hospital.—H.S. £250.

Greenwich and Deptford Practitioners L.C.C. School Clinic Committee, 82, Park-row, Greenwich, S.E.—Refract., P., Aural S., and Anæsth. £80.

Hastings Education Committee.—Asst. Sch. M.O. £500.

Holborn Metropolitan Borough.—M.O.H. £1000.

Hull Royal Infirmary.—Asst. H.S. £150.

Italian Hospital, Queen-square, W.C.—Officer-in-Charge of X Ray Department.

Kent, Borough of Bromley.—M.O.H. £750.

Kent Education Committee.—Female Sch. Med. Inspec. £500.

King's College Hospital, Denmark Hill, S.E.—Jun. Anæsth.

Kingswood, Bristol, Cossham Memorial Hospital.—Visiting S.

Leeds General Infirmary.—M.O. £100.

Leicester Royal Infirmary.—H.S. £200.

London Hospital.—Demonstratorship in Minor Surgery. £200.

London (Royal Free Hospital) School of Medicine for Women and Royal Free Hospital.—First and Second Assts. in Gynæc. and Obst. Unit. £700 and £500.

Loughborough and District General Hospital and Dispensary.—Res. H.S. £200.

Macclesfield, Cheshire County Asylum, Parkside.—Asst. M.O. £350.

Maidstone, Kent County Mental Hospital.—Asst. M.O. £350.

Manchester, Children's Hospital, Pendlebury, near Manchester.—Asst. S. £50.

Manchester Royal Infirmary.—H.S. to Special Departments. £50. Also Jun. Anæsth. £100.

Miller General Hospital for South-East London, Greenwich-road, S.E.—Hon. Asst. P.

National Hospital for the Paralysed and Epileptic, Queen-square, Bloomsbury, W.C.—Res. M.O. £200.

Netherne Mental Hospital, Coulsdon, Surrey.—Asst. M.O. £400.

Newark Hospital and Dispensary.—Res. H.S. £200.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—Res. Anæsth. £120.

Newport, Mon., Royal Gwent Hospital.—H.S. £200.

Northumberland County Asylum, Morpeth.—Asst. M.O. £400.

Oldham Royal Infirmary.—Third H.S. £200.

Peterborough General Infirmary.—H.S. £150.

Plymouth, South Devon and East Cornwall Hospital.—H.P. £175. Also Asst. S.

Plymouth Workhouse and Infirmary.—Res. Asst. M.O. £300.

Portsmouth Royal Hospital.—H.S. £150.

Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Obst. S.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Res. M.O. £200. H.S. £100.

Queen Mary's Hospital for the East End, Stratford, E.—Hon. Ophth. S.

Royal London Ophthalmic Hospital, City-road, E.C.—Pathologist and Curator. £200. Also Sen. H.S. £150.

Royal Waterloo Hospital for Children and Women, S.E.—Cas. O. £150.

Saffron Hill Maternity Centre.—Hon. P.

St. Bartholomew's Hospital.—P.

St. Bartholomew's Hospital Medical School.—Chair of Anatomy. £900.

St. Mary's Hospital, Paddington, W.—Electro-therapeutic O.

St. Peter's Hospital, Henrietta-street, Covent Garden, W.C.—Hon. M.O.

Sheffield Royal Infirmary.—Asst. Cas. O. £150

Singapore, Straits Settlements.—Asst. Principal of Medical School. $600 per month.

Stannington (Northumberland) Children's Sanatorium.—Female Res. M.O. £250.

Sunderland Royal Infirmary.—Two Jun. H.S.'s. £200.

University of London.—External Examiners.

West Bromwich and District Hospital.—Res. Asst. H.S. £200.

York Dispensary.—Res. M.O. £250.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Portree, Horbury, and Penmaenmawr.

Births, Marriages, and Deaths.

BIRTHS.

DREW.—On Jan. 30th, at a nursing home, Chester, the wife of Major C. M. Drew. D.S.O., R.A.M.C., of a son.

MANDEL.—On Jan. 26th, at Harley-street, W., the wife of Dr. Leopold Mandel, M.D., M.R.C.P., of a daughter.

MATTHEWS.—On Jan. 27th, at Onslow-square, the wife of Dr. Guy Matthews, of a son.

RICE-OXLEY.—On Jan. 31st, at Victoria-road, Kensington, W., the wife of Douglas Rice-Oxley, M.C., M.B., B.S., of a son.

MARRIAGES.

HINCKS—MCGILLYCUDDY.—On Jan. 25th, at New Malden, Surrey, A. Cecil Hincks, M.C., M.B., Ch.B., to Ethel Florence, widow of Major R. H. McGillycuddy, M.C., R.A.M.C.

DEATHS.

DAYUS.—On Jan. 26th, at Cumberland Lodge, Romford Road, Forest Gate, after a short illness, Frederick Herbert Dayus, M.R.C.S. Eng., L.R.C.P. Lond., aged 52.

HASSALL.—On Jan. 31st, at The Dingle, Manor-road, Worthing, John Hassall, M.D., M.R.C.S., F.R.M.S., *aged 65 years.*

WRIGHT.—On Jan. 29th, at Mountsorrel, Romford, Alfred Wright, M.R.C.S., L.S.A., J.P., aged 81.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

ARNOLD, EDWARD, London.
A Handbook of Skin Diseases and their Treatment. By Arthur Whitfield, M.D. Lond., F.R.C.P. 2nd revised ed. Pp. 291. 18s.

BAILLIÈRE, TINDALL, AND COX, London.
Physiological Chemistry. By A. P. Mathews, Ph.D. 3rd ed. Pp. 1154. 40s.

FROWDE, HENRY, AND HODDER AND STOUGHTON, London.
Graphic Methods in Heart Disease. By J. Hay, M.D. With Introduction by Sir James Mackenzie. Pp. 178. 12s. 6d.
The Care of Human Machinery. By R. M. Wilson, M.B. Pp. 238. 10s. 6d.
The Science of Ourselves (a Sequel to the "Descent of Man"). By Sir Bampfylde Fuller, K.C.S.I. Pp. 326. 16s.
Medical Notes. By Sir Thomas Horder, M.D. Pp. 112. 6s.
Feebleness of Growth and Congenital Dwarfism. By Dr. Murk Jansen. Pp. 82. 12s. 6d.

LEWIS, H. K., AND CO., London.
Bacteriology, Blood Work, and Animal Parasitology. By E. R. Stitt, M.D. Pp. 633. 20s.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

Thursday, Feb. 10th.—Paper:—The Rev. J. Roscoe: A Résumé of the Results obtained by the Mackie Anthropological Expedition to Uganda.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Feb. 8th.

SECTION OF PSYCHIATRY: at 8.30 P.M.

Paper:

Dr W. A. Potts: Mental Tests.

Wednesday, Feb. 9th.

SECTION OF SURGERY: SUBSECTION OF PROCTOLOGY: at 5.30 P.M.

Case:

Sir Charles Gordon Watson: Fistulæ treated by Excision and Primary Suture.

Papers:

Mr. W. B. Gabriel: The Results of an Experimental and Histological Investigation into 75 Cases of Rectal Fistulæ. (Showing Sections and Cases of Proved Tuberculous Fistulæ.)

Mr. H. Graeme Anderson: Method of Abdomino-perineal Excision of the Rectum in Three Stages.

Thursday, Feb. 10th.

SECTION OF NEUROLOGY.

Clinical Meeting at 8 P.M., at the National Hospital for Paralysis and Epilepsy, Queen-square, W.C. 1.

Those Members who wish to show cases should communicate with the Hon. Secretary, Dr. P. W. Saunders, at the Hospital.

Friday, Feb. 11th.

CLINICAL SECTION
SECTION OF MEDICINE } Joint Meeting: at 5 P.M.
SECTION OF SURGERY

Discussion:

On "The Medical and Surgical Treatment of Graves' Disease" (to be opened by Dr. Hector Mackenzie and Mr. James Berry).

Other Speakers:—Prof. George R. Murray, Sir William Hale-White, Mr. T. P. Dunhill, Mr. Donald Armour, Dr. J. M. H. Campbell, Dr. Florence Stoney, Dr. Hernaman-Johnson, and Mr. W. H. C. Romanis.

The Hon. Secretaries will be glad to learn of other Members who wish to contribute to the discussion.

SECTION OF OPHTHALMOLOGY: at 8.30 P.M. (Cases at 8 P.M.)

Papers:

Mr. B. T. Lang: Scotometry.

Dr. T. Harrison Butler: Late Infections after Sclerectomy.

Mr. M. L. Hepburn: Some Notes on Trephining.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

Monday, Feb. 7th.—9 P.M., Lettsomian Lecture (I.):—Mr. G. E. Gask: Surgery of the Lung and Pleura.

BIRMINGHAM MEDICAL PSYCHOLOGICAL SOCIETY.

Wednesday, Feb. 9th.—4.15 P.M., Paper:—Dr. D. Gillespie: The Symptoms of an Epileptiform Attack.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Monday, Feb. 7th, and Wednesday.—5 P.M., Hunterian Lectures:—Prof. H. Platt: The Surgery of the Peripheral Nerve Injuries of Warfare.

Friday.—5 P.M., Hunterian Lecture:—Prof. A. G. T. Fisher: A Research into the Pathology and Ætiology of Loose Bodies composed of Cartilage or of Cartilage and Bone occurring in Joints.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Monday, Feb. 7th.—2 P.M., Mr. B. Harman: Eye Department. Dr. S. Pinchin: Medical Out-patients. Dr. Morton: X Ray Department. 5 P.M., Lecture:—Dr. A. Saunders: The Digestive Disturbances of Old Age.

Tuesday.—10 A.M., Mr. Steadman: Dental Department. Dr. McDougal: Electrical Department. 2 P.M., Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. 5 P.M., Lecture:—Mr. Baldwin: Appendicitis.

Wednesday.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 2 P.M., Mr. Addison: Operations. Dr. Burnford: Demonstration of Cases (Medical Wards). 5 P.M., Lecture:—Mr. D. Armour: Physical Signs and Diagnosis of Abdominal Tumours.

Thursday.—10.30 A.M., Dr. Simson: Gynæcological Demonstration. 2 P.M., Mr. MacDonald: Surgical Out-patients. Mr. B. Harman: Eye Department. 5 P.M., Special Lecture:—Dr. C. Porter: Epidemic Diarrhœa (open to all medical practitioners).

Friday.—2 P.M., Mr. T. Gray: Surgical Out-patients. Dr. Pernet: Skin Department. 2.30 P.M., Mr. Addison: Visit to Surgical Wards. 5 P.M., Lecture:—Mr. Baldwin: Appendicitis.

Saturday.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Dr. Owen. Medical Out-patients.

Daily:—10 A.M. Ward Visits. 2 P.M., In-patient, Out-patient Clinics and Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Monday, Feb. 7th.—10 A.M., Mr. W. E. Tanner: Surgical Out-patients. 2 P.M., Dr. A. J. Whiting: Medical Wards. 2.30 P.M., Mr. E. Gillespie: Surgical Operations. Mr. J. B. Banister: Gynæcological Out-patients. Dr. J. B. Alexander: Medical Out-patients. 4.30 P.M., Clinical Demonstration:—Mr. J. B. Banister: Heart Disease in Pregnancy. 6 P.M., Dr. F. L. Provis and Mr. T. H. C. Benians: Venereal Department.

Tuesday.—9.45 A.M., Lieut.-Col. R. H. Elliot and Mr. N. Fleming: Eye Operations. 2.30 P.M., Mr. H. W. Carson: Surgical Operations. Mr. C. H. Hayton: Diseases of the Throat, Nose, and Ear. Dr. Metcalfe: X Ray Department. 3 P.M., Clinical Demonstration:—Dr. J. Metcalfe: Treatment of Surface Disease by Electrolysis. 5.30 P.M., Dr. C. E. Sundell: Children In-patients.

Wednesday.—2 P.M., Mr. C. H. Hayton: Throat Operations. 2.30 P.M., Dr. W. J. Oliver: Skin Department. Dr. J. B. Alexander: Medical Out-patients. 4.30 P.M., Clinical Demonstration:—Mr. N. Fleming: Cases of Eye Disease. 5 P.M., Dr. Provis and Mr. Benians: Venereal Department.

Thursday.—2.30 P.M., Mr. N. Fleming: Eye Out-patients. Dr. A. J. Whiting: Medical Out-patients. Mr. H. W. Carson: Surgical Out-patients. Mr. J. B. Banister: Gynæcological Operations. Dr. J. Metcalfe: X Ray Department. 3 P.M., Clinical Demonstration:—Dr. C. F. Hadfield: Anæsthetic Demonstration.

Friday.—2 P.M., Mr. Howell Evans: Surgical Operations. 2.30 P.M., Dr. C. E. Sundell: Children Out-patients. Mr. E. Gillespie: Surgical Out-patients. 3 P.M., Clinical Demonstration:—Mr. T. H. C. Benians: Diagnostic Methods of Clinical Pathology. 5 P.M., Dr. Provis and Mr. Benians: Venereal Department.

Saturday.—3 P.M., Mr. H. W. Carson: Surgical In-patients.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, W.C. 1.

MEDICAL SCHOOL.

Monday, Feb. 7th.—2 P.M., Out-patient Clinic: Dr. Collier. 3.30 P.M., Lecture:—Dr. Kinnier Wilson: Old and New Afferent Systems.

Tuesday, Feb. 8th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Dr. Collier: Diagnosis of Cerebral Vascular Lesions.

Thursday, Feb. 10th.—2 P.M., Out-patient Clinic: Dr. Farquhar Buzzard. 3.30 P.M., Lecture:—Dr. Farquhar Buzzard: Neuritic Affections of the Upper Limbs. (II.)

Friday, Feb. 11th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Lecture:—Mr. Sargent: Cerebral Abscess.

Fee for Post-Graduate Course £7 7s. C. M. Hinds Howell, Dean.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

Thursday, Feb. 10th.—4 P.M., Lecture:—Dr. Nabarro: Congenital Syphilis.

MIDDLESEX HOSPITAL MEDICAL SCHOOL (University of London).

Tuesday, Feb. 8th.—3 P.M., Emeritus Lecture:—Surg.-Rear-Admiral Bassett-Smith: Trypanosomiasis.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W.

Monday, Feb. 7th.—5.30 P.M., Post-Graduate Lecture:—Dr. F. W. Price: The Arterial Pulse.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.

Post-Graduate Course on Infant and Child Welfare.

Tuesday, Feb. 8th.—10.30 A.M., Dr. E. Pritchard: Practical *Demonstrations on the Management and Feeding of Infants and Young Children—Demonstration VII., The Uses of Dried Milk and Patent Foods.*

Thursday.—3 P.M., *Demonstration VIII., The Management of Difficult Cases.*

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

Thursday, Feb. 10th.—6 P.M., Chesterfield Lecture:—Dr. W. K. Sibley: Alopecia and its Treatment.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

Tuesday, Feb. 8th.—4.30 P.M., Lecture:—Dr. H. R. Dean: Recent Work on the Pneumococcus and the Serum Treatment of Pneumonia.

SALFORD ROYAL HOSPITAL and ANCOATS HOSPITAL POST-GRADUATE DEMONSTRATIONS, at the two Hospitals alternately.

Thursday, Feb. 10th.—4.30 P.M., Dr. Morrison: Radiographical Demonstration. (At Ancoats Hospital.)

ST. MARY'S HOSPITALS, MANCHESTER, POST-GRADUATE LECTURE, at Whitworth-street West Branch.

Friday, Feb. 11th.—4.30 P.M., Dr. F. Shaw: The Present Position of Cæsarean Section.

MANCHESTER BABIES' HOSPITAL.

Post-Graduate Lectures and Demonstrations in the Onward Buildings, Deansgate, or at the Hospital, Slade-lane.

Saturday, Feb. 12th.—3.30 P.M., Dr. Dyson: Skin Diseases in the *Infant.* (At Onward Buildings.)

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.

Thursday, Feb. 10th.—4.30 P.M., Dr. W. J. Leighton: Some Chronic Ear Diseases.

THE LANCET: SUBSCRIPTION RATES.

Inland	One Year	£2	2	0
	Six Months	1	1	0
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Abroad	One Year	£2	10	0
	Six Months	1	5	0
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Notes, Short Comments, and Answers to Correspondents.

WARNING TO HOSPITAL AUTHORITIES.

WE are asked to draw the attention of all medical practitioners, and particularly of hospital authorities, to a woman calling herself Margaret Crawford, M.B., Ch.B. Leeds (or Margaret de Lancy Williams), whose arrest is sought on a warrant by the Metropolitan Police for alleged offences against the Medical Act, 1858. It is possible that this woman will seek admission to some hospital or infirmary for the purpose of obtaining instruction in midwifery, and it is requested that any information concerning her should be communicated at once to the local police.

PUBLIC HEALTH IN CALCUTTA, 1919.[1]

THE death-rate in Calcutta during 1918, calculated on the Census population of 1911, was 35 per 1000, representing what Dr. H. M. Crake, the medical officer of health, has characterised in his report as "the appalling total" of 31,371 deaths. A further considerable increase in mortality followed in 1919, when there were 37,839 deaths, giving a ratio of 42·2 per 1000; this is the highest death-rate ever recorded in the city, except that of the plague year, 1900, which was 53·7, and is in great contrast to the rate for 1917 (23·8), which was the lowest ever recorded, and to the quinquennial ratio (1914–18), which was 28·0 per 1007. If 2170 imported cases be deducted, the rate for 1919 becomes 39·8 per 1000. Cholera, small-pox, and influenza were all prevalent in an acutely epidemic form. There was, as usual, considerable variation within the city, which had (in 1911) a population of 896,067. Thus, in Jorabagan Ward the death ratio was 47.4, in Entally 51·3, and in Kidderpur 81·1. On the other hand, in Bamun Bustee the rate was only 26·5; in Fenwick Bazar, 25·2; and in Park-street, 15·3. (The death-rate for Greater London, in 1918, was 15·0 per 1000.) In Fort William the ratio was indeed only 5·8, the quinquennial average having been 3·6. There is evidently nothing in the climate of Calcutta to necessitate a mortality of 42, still less of 81, per 1000. In regard to social condition and religious faith, among Hindus (who compose the great majority of the population), the death-rate was 45·2; for Mohammedans, 37·9; and for Anglo-Indians and other non-Asiatics (numbering 27,659), it was 27·4. As has often been pointed out, the mortality among females was much higher than among males; the respective ratios, 53·7 and 36·7, were as 146 to 100. As Dr. Crake remarks, "this is one of the most striking features of the vital statistics of Calcutta. It has been observed ever since accurate records were kept, and will, I am afraid, continue for many years to come. The heavy mortality amongst females is, in my opinion, intimately associated with the purdah system ...... depriving women of fresh air, and constantly exposing them to insanitary environments." In Burra Bazar Ward, with a mortality of 34·2 per 1000, the rate for females was 63·2, and for males 28·2; there are 140 persons per acre, not so dense a population as in many other wards. In Bamun Bustee Ward, with a mortality of only 26·5, the female ratio was 62·5, and that for males 18·1; here the average density is only 24 per acre. Dr. Crake points out that this "high female death-rate in a first-class European residential quarter is startling, but on examining the data on which the rate is calculated, it is evident that a rate per 1000 based on 37 deaths occurring amongst a female population of 592 must be accepted with caution. In a precisely similar adjoining ward (Park-street) there were 20 deaths among 815 females, a rate of 24·5 per 1000." It is to be noted, however, that in the preceding quinquennium there was a similar great disparity between the sexes in Bamun Bustee, 32·0 deaths per 1000 among females, compared with 10·6 among males.

Principal Causes of Death.

With reference to the diseases that were the principal causes of death, an increase in prevalence has to be recorded in almost every case. For influenza (3863 deaths), however, there was a reduction (3·7 per 1000, compared with 4·6 in 1918), though many deaths from this cause may have been returned under respiratory diseases or fevers. There was some increase in plague, 334 deaths, or 0·37 per 1000 compared with 0·23 in 1918: in Alipur Ward there were 52 deaths (2·6 per 1000). Dr. Crake repeats his warning as to the existence of "many potential plague centres in Calcutta, and that the conditions in many parts of the city are still favourable to its propagation." Cholera caused 3688 deaths (4·1 per 1000), compared with 1526 deaths in 1918. The epidemic began in October, 1918, suddenly assumed an acute form in January (610 deaths), and again in April (1050 deaths), and came to an end in July. Cases occurred in every ward of the city. Kidderpur had the highest mortality (8·0 per 1000), but, with this exception, all the wards with a cholera death-rate of 5 per 1000, or more, abut on the river, pointing to the obvious cause. "The large amount of water-borne cholera in a city like Calcutta, with a filtered water-supply of remarkable purity, is a positive crime, but cannot be eradicated so long as ceremonial ablutions in Tolly's Nullah and contaminated tanks play a large part in the social and religious life of certain sections of the population." Nearly a hundred persons actually suffering from the disease, returning from a native festival at Saugor Island (at the mouth of the Hugli river), arrived in the city on Jan. 17th and 18th, no previous intimation having been received. Prompt action was taken, and everything possible done to deal with this emergency. 300 deaths from cholera occurred between Jan. 16th and 21st, 217 being among the pilgrims who had arrived from Saugor. Dr. Crake emphasises the necessity for systematic medical inspection of all boats arriving at Calcutta, also for a quarantine station and segregation camp. There was an outbreak of small-pox causing 1870 deaths (2·1 per 1000), a considerable increase over the three years immediately preceding, in which the ratios had been (1916–18), 0·06, 0·03, and 0·60 respectively. Primary vaccination is only compulsory at six months of age, therefore a high incidence among infants is almost inevitable: 712 deaths, however, occurred in children under 5 years old, regarding which Dr. Crake (in agreement with Kitasato) considers that the protection afforded by vaccination diminishes much more rapidly than was formerly held to be the case.

Enteric fever was more prevalent than in any of the five years immediately preceding, the death-ratio being 0·44 per 1000, compared with 0·38 in 1918, and 0·27, for the quinquennium 1914–18. The highest ratio (0·83 per 1000) occurred in Jorasanko Ward, with 227 persons to the acre, the most crowded ward (except one) in the whole city; but in other wards with a relatively high enteric incidence there was no obvious connexion with sanitary defects. Infection through carriers is considered to be probable. There was a very slight increase in tuberculosis (2·1 deaths per 1000, compared with 2·0 in 1918, and 1·7 in 1917). The highest incidence occurred in Jorasanko and Sukeas-street Wards (2·7 in each). For Hindus (2·2) and Mohammedans (2·1) the ratios were almost the same; and among Indian Christians the mortality (1·8) was much lower than in 1918, when it had been 4·8 per 1000. The female death-rate for this disease was 3·2, exactly double that for males (1·6); it is, as has been frequently pointed out, chiefly the young women who suffer; for the age-period 15 to 20 the death ratio was 5·6 for females, compared with 1·5 for males. This disparity is due to the purdah system, and continues, though in a lesser degree, up to the age of 40. There was less influenza than in 1918, the deaths (3363) amounting to 3·7 per 1000, compared with 4·6 in the previous year. Kidderpur Ward was most affected, with 12·9 deaths per 1000. The epidemic was dealt with on lines similar to those found to be satisfactory in 1918, over a hundred relief centres being opened for the treatment of mild cases, and serious cases being visited at their homes. A mysterious outbreak of epidemic dropsy occurred in the latter half of the year, causing 96 deaths (65 in November and December). Hindus suffered more than Mohammedans, and women more than men. A protozoal infection is suggested, the bed-bug acting as carrier. Many other subjects of interest are dealt with in this valuable report, which is fully illustrated with diagrams, tables, and a map of Calcutta.

MENTAL TESTS FOR SCHOOL CHILDREN.

FROM the eleventh annual report of the Manchester school medical officer (Dr. A. Brown Ritchie) for 1919, just issued, we learn that medical inspection is being carried out on pre-war lines, but that a larger staff may be needed. Only 40 children needed compulsory cleansing, as compared with 85 in the previous year and 413 in 1915. Of skin diseases 738 cases were discovered and 95 cases of ringworm. At the school clinics for minor ailments in 1915 25,000 cases were treated, as compared with 196,000 in 1919. Included in the report is a suggestive preliminary note by Dr. H. Herd, on the Use of Psychological Tests of Mental Retardation. One of the most important duties of the medical officer is the diagnosis of mental deficiency or backwardness, and the most important part of such an examination is that of the psychological characteristics of the child. It is most essential to examine the functioning mental processes of the child, and this can only be done by definite mental tests. Scholastic progress affords but a poor criterion of the real mental grade of the child. A child with many superficial signs of school "smartness" may be lacking markedly in higher thought qualities, while the innate intelligence of a child may be only partially patent during school work, and appearing only at a late stage of development. Several classes of tests are described, but these mental tests are necessarily only tests of intelligence, and the intelligence is not the whole man. "The instinctive emotional factor," says Dr. Ritchie, "enters as largely into our actions as those of intelligence. The place of the subconscious in life is only now beginning to be recognised, and the discovery is re-creating psychology. Intelligence tests therefore necessarily miss much, but for the immediate practical purpose of the certifying school medical officer their value is undoubted."

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[1] Report of the Health Officer of Calcutta. Corporation Press, Calcutta, 1920.

THE CONTAMINATION OF SHELL-FISH.

THE Health Ministry has recently issued prohibitory orders against the mussels at Lympstone, and promised to provide proper tanks for the purifying of the fish. At the last meeting of the Exeter Port Sanitary Authority it was stated that communications had been received from Dewsbury and other midland towns reporting that the mussels had been sent to them; these were proved on bacteriological examination to be contaminated, and that cases of illness had been caused by the fish. The authority decided to inquire why the mussels had been sent away contrary to regulations. It was also determined to write to the Ministry of Health requesting that the work of constructing the purifying tanks should be expedited.

SLUM LIFE IN MANCHESTER AND ITS RESULTS.

IT is stated that there are 150,000 persons living in slum property in certain already overcrowded areas of Manchester —that is, in Hulme, Ancoats, and Deansgate. Many families are crowded into the 20,000 houses which, according to medical standards, are unfit for human habitation. Even if the health authorities turned these people out of these vastly unhygienic "houses," so great is the shortage of accessible habitations that the outcasts would have no roof to shelter them. In some of what are called "two-up and two-down" tenements, three, four, or five families are huddled together, so that it is impossible to ensure the proper separation of the sexes. Naturally, the death-rate in these over-congested slum areas is abnormally high, varying from 23-29 per 1000, as against 14·5, the general death-rate for the city; the infant mortality is 191·6, as against the general rate of 111·2 per 1000. In one of these areas the death-rate for phthisis is 6, as against 1·56 for the whole city. Moreover, it would seem that house shortage and other conditions lead to the widespread adoption of a policy of birth control by young married couples.

EARLY SEX EXPERIENCE.

Dr. W. A. Brend's article on Psychotherapy and War Experience in the January issue of the *Edinburgh Review* is a useful outline in non-technical language of the new psychology in which Freudian teaching has taken its proper place. Speaking of the early age at which sex tendencies appear, and the help which parents might give in preventing abnormal developments, Dr. Brend goes on to say:—

> "Among boys much harm is done by parents and teachers in stigmatising certain tendencies and actions as vicious and shameful. It is now recognised that these tendencies form one of the natural stages on the way up to full sexual development. The physical harm is probably immaterial; the psychic harm which may result from creating a feeling of guiltiness and inferiority in the boy, or dread of consequences, may be great and lead to life-long disaster."

This statement of Dr. Brend as it stands, seems to us one of those one-sided pronouncements containing only a half truth, which may do as much harm as good. Certainly the harm which comes from masturbation has been exaggerated, and to try to keep boys straight by frightening them is almost always criminal. But to suggest that masturbation (and, presumably, the other practices that often go with it) does not matter is nonsense, as anyone knows who has seen the sequelæ in some boys or who remembers the social value of a normal sex outlook.

In regard to the prevalence of masturbation under a system of co-education, the head of a large mixed residential school writes:

> "Of course, here, as everywhere where adolescents are together, it is not unknown. But I am quite sure that it is not the normal accompaniment of sex-development here. Public opinion is against it. Heads of dormitories, if they have reason to think that any of those in their room are falling into it, speak to them or ask me to do so. That is no more than is done in many schools; the one point in which co-education seems to me to be of special help in the matter is that the daily intercourse of boy and girl affords a constant, largely unconscious, satisfaction of the awakening sex instinct, and so keeps it from turning in upon itself and from that brooding upon it that is, I am sure, the cause of most of the tendency to masturbation."

Plenty of interests—emotional outlet in art, and daily intercourse of the sexes—are undoubtedly useful means of keeping sex-development free from the need of this practice as a rmal stage, and when it is present of making it a com- tively brief stage that does not get the lasting hold that is mind as well as body.

MATERNAL PRECAUTIONS OF THE ELECTRIC SKATE.

Mons. Raphael Dubois made an interesting report to the Académie des Sciences at its session on Dec. 27th, 1920. A large electric skate (*Torpedo mormorotae*) was brought to the Maritime Laboratory of Physiology at Tamaris-sur-Mer. It was on the point of bearing young and gave strong electric shocks. These, apparently, had no ill-effects on the young, who were born the same night and were found snugly concealed beneath their mother next morning. The latter could be handled without any shock while the young were near her, but when the young had been taken away for experimental purposes powerful electric shocks reappeared. Mons. Dubois concludes that the electric discharge is not purely reflex but can be controlled, since in this case it was withheld to avoid doing damage to the offspring.

CHLOROPICRIN AS INSECTICIDE.

EXPERIMENTS carried out with chloropicrin in France have shown that this poison gas is a very effective weapon when used against vermin and insects. No other method, it is claimed in the *Archives de Méd. et Pharm. Navales* (December, 1920, p. 448), is so successful in ridding a building of fleas. A quantity of chloropicrin corresponding to 5 g. per cub.m. is placed in each room to be disinfected, and in a few hours every flea is dead—in carpets, furs, clothing, or no matter where else they may have installed themselves. The gas has no action on metals, paints, or dyes, and all fumes are removed by a few minutes' ventilation. Dr. Mirguet of the French Navy considers this method as particularly convenient for the destruction of vermin and insects on board ship, and urges its routine adoption by the French Ministry of Marine both on account of its intrinsic virtues and on the grounds of economy. The estimated cost is 13–14 francs per litre.

Communications, Letters, &c., to the Editor have been received from—

A.—Association of Certificated Dispensers, Lond., Hon. Sec. of; Dr. R. O. Adamson, Glasgow; Academy of Medicine, Toronto; Dr. J. Adams, Lond.; *Answers*, Lond., Editor of.

B.—British Committee for Aiding Men of Letters and Science in Russia, Lond., Sec. of; Dr. A. Blackhall-Morison, Lond.; Dr. C. W. G. Bryan, Lond.; Dr. H. W. Barber, Lond.; Prof. A. E. Boycott, Lond.

C.—Central News, Lond., Executive Editor of; Dr. R. C. Clarke, Lond.; Dr. H. P. Cholmeley, Forest Row; Mr. G. Chaikin, Lond.; Dr. J. B. Cavenagh, Worcester; Dr. C. Coombs, Bristol; Prof. E. L. Collis, Cardiff; Mr. W. H. S. Cheavin, Lond.; Charing Cross Hospital Medical School, Lond., Dean of; Dr. W. H. Cooke, Bath; Dr. T. Chetwood, Sheffield.

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I.—Insurance Committee for the County of London; International News Correspondence Service, Lond.

J.—*Japan Magazine*, Tokio.

K.—King Edward's Hospital Fund for London, Hon. Sec. of.

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Y.—Dr. H. Yellowlees, Edinburgh.

A RECORD OF
SEVENTY-SIX CASES OF
UTERINE FIBROIDS AND CHRONIC METRITIS TREATED BY X RAYS.

A Communication to the Section of Obstetrics and Gynæcology of the Royal Society of Medicine on Feb. 3rd, 1921,

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THIS paper is a record of 46 cases of uterine fibroid tumours and 30 cases of chronic metritis treated by us with X rays during the years 1914 to 1920 inclusive. All the cases were under the personal supervision of one or other of us throughout treatment, and the X ray exposures were in every case made by one of us (F. L. P.). A large proportion of the cases were patients seen in private practice. Three have died from independent causes since treatment, and we have been able to obtain reports as to the present condition of all but 14 cases, at intervals varying from three months to six years after the treatment. A brief epitome of each will be given later on in the paper. Of the 46 cases of fibroid tumour 30 were married, 15 were single; of the 30 cases of chronic metritis 25 were married, 5 were single. With regard to age, it may be said that 8 cases were between 36 and 39 inclusive, the remainder from 40–56 inclusive; the proportion of cases below 40 was therefore small—viz., about 10 per cent.

Selection of Cases.

The first point to which we wish to direct attention is the method of selection for X ray treatment. Not all cases are suitable for this treatment, and at first we had to feel our way with some caution. The points which bear upon selection are: (1) age of patient, (2) size of tumour (if a fibroid), (3) character of hæmorrhage, (4) degree of anæmia, (5) presence of complications, such as inflammatory disease of the appendages, degeneration of a fibroid tumour, &c.

(1) *Age.*—We have rarely (in only eight cases) treated patients under 38 years of age with X rays; the effect of the rays is exerted primarily upon the ovaries, resulting in destruction, more or less complete, of the active ovarian tissues. Preservation of the ovarian secretion in women under 38 is of great importance, but as the age of the climacteric approaches its importance becomes less.

(2) *Fibroids.*—Fibroid tumours which exceed the level of the umbilicus in height we have, generally speaking, rejected. Nearly all fibroids shrink materially in size after exposure to X rays, but the shrinkage of large tumours may not be sufficient to relieve mechanical symptoms. We have found that while, in such cases, it may be practicable to induce complete amenorrhœa, the tumour may cause so much discomfort from its bulk that only partial relief of symptoms is obtained.

(3) *Hæmorrhage.*—The character of the hæmorrhage is important when it raises the suspicion of malignancy. If the type of menorrhagia is not maintained, and irregular or interval-bleeding is present, the uterus should be first explored to exclude carcinoma of the body.

(4) *Anæmia.*—As will appear later, the first treatment, or the first and second treatments, may be followed by increased, and even by much increased bleeding. In the case of a patient profoundly exsanguine from repeated hæmorrhages it is therefore preferable to advise hysterectomy (vide Case 75).

(5) *Complications.*—Only simple and uncomplicated cases are suitable for X rays. A careful examination of the cervix was made in every case, to exclude appearances suggestive of a malignant growth. The presence of pain is a symptom which requires careful investigation; tenderness or rapid increase in size of a fibroid suggest degenerative changes; limitation of mobility or the presence of a tender swelling on either side of the uterus, or on both sides, suggests inflammatory disease of the appendages. Any of these conditions, if present, render the case unsuitable.

It will therefore be evident that we have not used X rays as a general substitute for hysterectomy, but have, on the contrary, limited its application to carefully selected conditions; and the cases treated have, in fact, constituted only a small proportion of the cases of fibroid tumours and of chronic metritis which have come under our notice in the period under review. We hold strongly that the indiscriminate treatment of these conditions by X rays is a mistake; every case so treated should first be passed as suitable by a competent authority.

With regard to the cases classed as "chronic metritis," it must be said that in every instance the diagnosis was clinical only; if no marked enlargement or irregularity in outline of the uterus could be made out the local condition was for convenience labelled "chronic metritis." In many of the cases the diagnosis was supported by the fact that curetting had been previously performed without relief.

Technique.

The technique adopted in the majority of cases was a modification of that used in Krönig's clinic at Freiburg, the principle of which is the administration of massive doses of X rays in the shortest possible time commensurate with safety as regards the skin of the areas irradiated. In a few cases the total dose has been reduced by diminishing the number of areas irradiated at each treatment, and it is noteworthy that the cases so treated comprise the greater proportion of the failures in our series. They frequently showed a recurrence of hæmorrhage after a period varying in duration, of amenorrhœa. These two facts support the conclusion we have come to from our experience—namely, the importance of giving massive doses and the administration of the treatment for one or two sittings after amenorrhœa has been induced.

In describing the technique it is not intended to go into the details of the technical side of the running of an X ray tube. This part of the technique requires special knowledge, and a lengthy description of the various apparatus used in the successful manipulation of an X ray tube for deep-seated therapeutic purposes. We will therefore only deal with that part of the technique with which the clinician of to-day should be conversant.

The tubes used have been of the water-cooled variety, equipped with osmo regulators, by means of which the hardness of the tube can be regulated. They are maintained at a hardness of 8 to 9 Bauer with an equivalent spark-gap of 8 to 9 inches, with the passage of 2 to 3 milliampères through the tube circuit. The rays are filtered through a 3 mm. aluminium filter, which cuts off all but the hardest rays emitted from the tube. Further filtration is provided by placing between the aluminium filter and the part to be irradiated a loofah sponge enclosed in chamois leather, together with four layers of satrap paper, all of which are enclosed within a linen bag. These measures seem adequately to protect the skin from any injurious effects. The tube is fixed in a suitable stand, the box of which can be moved up and down and fixed at any required angle by manipulation. A wire connects the tube-stand to the earth.

The patient is placed on a suitable couch and the lower abdomen from the level of the umbilicus laid bare. Over this area eight or six square areas are marked out with a coloured pencil, which constitute eight or six ports of entry for the irradiations. Each area is irradiated separately, and is enclosed by two lead angles which are so placed that only the field to be irradiated is left exposed. Over that area is placed the linen bag containing the loofah sponge, chamois leather, &c., already mentioned. On the top of this is placed a sheet of lead rubber in which is cut a square window, and through this the rays pass to the exposed area of the abdomen. In the centre of this square area resting on the linen bag is placed a Kienböck photographic paper, a strip of bromide of silver paper, which when developed acts as a rough guide to the amount of X rays administered. The tube is now placed in position, the tube-box being adjusted in such a manner that the anticathode of the tube is in line with the centre of the square of the exposed area, and at such an angle that the rays pass down into the pelvis. Each area is irradiated for ten minutes.

This concludes the treatment given on the first day, for the remainder of which the patient is ordered to bed. On the following day, with the patient lying prone, four areas are marked out over the sacral and sacro-iliac regions, and each irradiated for ten minutes. The same protective measures, &c., are used as those described when irradiating the abdominal areas. Each "treatment" comprising the exposures on the two consecutive days lasts some three to four hours and comprises one attendance on two consecutive days, the abdominal areas being irradiated on the first day and the sacral areas on the second day. The patient is ordered to bed after the treatment on the first day, but this is not necessary in the majority of cases following the sacral exposures.

An interval of three weeks is allowed to elapse between each treatment as a precautionary measure against injury to the skin. The time selected for administering the treatment should be shortly after the termination of a period. If given immediately before the onset of menstruation it is likely to increase the hæmorrhage rather than to diminish it, especially in the early treatments. The requisite number of treatments will be found to be from four to six, and one treatment at least should be given after amenorrhœa has been induced. Many factors, however, have a bearing on the number of treatments required, and in certain cases a modification of the technique here described may be advantageously adopted.

Dosage.

We now come to the important consideration of the estimation of dosage.

It will have been observed in the summary of the cases no mention of dosage has been made, but that in its place the total time exposure of each case has been given. The reason for this is that none of the many methods devised for the estimation of dosage possess even approximate accuracy. The so-called dosage each area is to receive must in the present state of knowledge and with the existing methods used in estimating the same be left to the judgment of the operator. He will give to the patient that amount of X rays that he knows can be given with safety, gauged by the characteristics of the tube and the number of milliampères passing through it, the reading on the Bauer qualimeter and the length of the equivalent spark gap, controlled by one of the methods devised for estimating the dosage through the discoloration of pastilles or photographic paper after it has been developed. In other words, given certain working data the operator knows for what length of time he can submit his patient to irradiation without inflicting any damage; but to say he can administer such and such a dose of X rays to each ovary is not practicable. Much work has been done, and is being carried out at the present time, to devise some means of recording the accurate dose of X rays administered, but the difficulties of this problem are very great, and until we have some fairly accurate method of measuring the dose the patient receives it appears to us a wiser plan not to speak of some imaginary dose the patient is supposed to have received, but to express the dosage in terms of time exposure.

Effects of X Ray Treatment.

We now come to describe the effects of the treatment as we have seen them in our series of cases.

Mode of action.—It will be sufficient to remember that the outstanding effect of the rays is exerted upon the ovaries, leading to destruction of the follicular and interstitial elements, and eventually to complete fibrosis of the organ. At the same time a very marked and rapid shrinkage occurs, as a rule, in the fibroid tumour, up to complete disappearance in some instances. The tissue elements of the tumour are certainly absorbed, and we believe that this must be due to some process analogous to autolysis. It may be that under the influence of X ray irradiation ferments are produced locally which are active as against the elements of the tumour, but inert as against those of the normal tissues. Inasmuch as the operation of double oöphorectomy for fibroids as formerly practised seldom resulted in any marked degree of shrinkage of the tumour, it is reasonable to conclude that this reduction in size of the fibroid is largely due to the rays, not to the elimination of the internal ovarian secretion.

Effect on menstruation.—We have succeeded in all but five cases treated by X rays either in inducing complete amenorrhœa or in so reducing the frequency and the severity of the losses as to relieve symptoms completely. The dose required, as estimated by the time exposure, varied very much, the limits being 2 hours 27 minutes and 15 hours 35 minutes. The longest exposures (those over 10 hours) were all given in cases of fibroid tumours; on an average it may be said that cases of chronic metritis require a smaller dose to produce amenorrhœa than do fibroids. We cannot find in our cases that the age of the patient has any bearing upon e dose required, although we anticipated in starting our rk that the younger ones would require the larger doses.

The initial effect upon menstruation is often to increase the amount of the flow. This often occurred after the first or second treatment. On the other hand, the first exposure is sometimes followed at once by marked diminution of bleeding, shown by absence of clots, or by a prolonged intermenstrual interval. The early increase in menstrual losses is probably brought about by a stimulation of the activity of the ovarian tissue representing the first effect of a small dose of the rays. As the effects of the rays are continued, stimulation of ovarian tissue is replaced by a reverse action which ends in complete destruction. In the case of fibroid tumours we have several times noted the occurrence of a slight, continuous, blood-stained discharge for some weeks after menstruation proper had ceased. This is probably associated with the changes in the tumour which result in shrinkage.

There were in all 10 cases in which we did not succeed in inducing complete amenorrhœa—5 fibroids and 5 chronic metritis. In 3 of the 10 cases the losses continued to be severe and the patients were eventually operated upon. The details (Nos. 8, 12, and 76) will be found in the account of selected cases at the end of this paper. Another patient (No. 41) refused to continue the treatment, which, if persisted in, would probably have been successful. In another case (No. 29) the treatment, although thoroughly tried, also failed to reduce the monthly losses except temporarily. This patient still refuses operation, and her case must also be classed as a failure. If No. 41 be eliminated there remain 4 cases out of 76—i.e., 5¼ per cent.—in which we failed to produce any lasting effect upon menstruation. All four were cases of fibroid tumour, and accordingly the percentage of failure in cases of fibroid tumour works out at 8·7 per cent., while in cases of chronic metritis there was no failure at all.

Cases in which menstruation was controlled but not suppressed.—In 5 cases a very interesting result was obtained, for, without suppressing menstruation altogether, the treatment so far controlled it that symptoms were entirely relieved without actually inducing the menopause. These cases are numbered 39, 49, 56, 65, and 70; the first a fibroid, the others chronic metritis. A typical example of this class is case No. 39, a patient, 45 years of age, with a fibroid tumour extending nearly to the umbilicus. After prolonged treatment she still has a moderate period about twice a year, there are no menopause symptoms, her general health is good, and the tumour is about two-thirds of its size before treatment. The most striking example of all is No. 70. This was a patient aged 40, classed as chronic metritis, with a history of menorrhagia for 2½ years before treatment. After five treatments she had four months amenorrhœa; then the periods returned, normal in amount and duration. She has continued to menstruate normally for four years and nine months—i.e., up to December, 1920—the date of the last report.

Such effects as these are probably to be explained by assuming that a varying resistance is offered to the rays by ovarian and uterine tissues. The active ovarian elements may perhaps be put out of action by the rays for a more or less prolonged period and then recover some of their functional potency, or the destruction of these elements by the rays may be incomplete, sufficient follicular tissue escaping to induce occasional menstrual periods. Or again, changes may be induced in the uterus which tend to control menstrual hæmorrhages.

Partial suppression of menstruation is not to be regarded as a failure. It would perhaps be right to regard the ideal dose of X rays as that which suffices to confine the monthly losses within normal limits, rather than that which suppresses them altogether. In the present state of uncertainty as to the estimation of dosage the attainment of such an ideal seems impracticable, but our experience leads us to believe that by careful graduation of time-exposures we may be able to reduce excessive monthly losses, or to induce partial amenorrhœa, with the same degree of certainty as we can now induce complete amenorrhœa.

General Effects of X Rays.

The immediate effects produced by the prolonged exposures we used were not constant. The majority of our patients suffered more or less from fatigue, which lasted for two days or more, and which led us to advise that after the X ray exposure the patient should go to bed for the remainder of the day. In one or two rather marked prostrations occurred. In a few instances, on the other hand, the rays appeared to produce a stimulating effect, the patient feeling all the better for it.

Local Effects.

Skin.—The areas exposed to the rays always show immediately afterwards a more or less marked flush, which is later replaced by brown discoloration or pigmentation. No soreness or irritation occurs in connexion with this change, and after treatment has ceased the pigmentation very gradually disappears. In three cases a mild dermatitis occurred during treatment, which was in consequence interrupted for a time. There was no loss of tissue and very little pain accompanying it; in the worst of the three treatment was suspended for six weeks and was then resumed without any further trouble. We have had no case in which skin trouble has developed subsequent to treatment.

The uterus in chronic metritis.—Our impression from bimanual examination made at varying intervals after suppression of menstruation is that a definite reduction in size occurs in the uterus coincident with the suppression of menstruation.

Fibroid tumours.—Definite shrinkage of the tumour followed the suppression of menstruation in all of our fibroids treated except four. The shrinkage is fairly rapid and can be followed during the treatment. In three instances we have noted the practically complete disappearance of a small fibroid tumour, the size of a three months gravid uterus, in less than a year. By "practically complete disappearance" it is meant that nothing remained except one or two small surface nodules suggestive of subperitoneal fibroids, the uterine body being otherwise of approximately normal size. The majority of the cases in which this marked shrinkage has occurred have been examples of small tumours not exceeding the size of a 3½ to 4 months gravid uterus. In three cases, however, we have seen a fibroid reaching as high as the umbilicus disappear entirely with the exception of one or two nodules (Cases 23, 31, and 38). The maximum shrinkage appears to take place in from 6–12 months in tumours not exceeding the size of a 3–4 months pregnancy, and in from 12–24 months in tumours larger than this.

Pelvic and abdominal viscera.—In addition to the effects described upon the uterus and the ovaries, we have been unable to detect any influence upon the other pelvic viscera except possibly in one case recorded fully below. (Case 59.) We have paid careful attention to the mobility of the pelvic organs before and after treatment, and except in this doubtful case we have never found after the X ray treatment that any tenderness or loss of mobility was manifested, in fact, nothing whatever to suggest that any local inflammatory changes were induced by the X rays. In a few cases nausea was complained of for one or two days after each treatment; in one case (Case 1) nausea was very severe and lasted for several days after each treatment, during which the patient could take no food. On one occasion the same patient suffered from severe diarrhœa after a treatment. For over two years since then she has been in good health and is habitually constipated. Whether these effects should be attributed to a direct action of the rays on small intestine or other viscera we are unable to say. In two or three of our cases a little looseness of the bowels was noticed for a few days after treatment.

Possible Risks of Injury by X Rays.

This leads us to the question, Is there any risk that injury may be done by X rays to the skin or to the pelvic and abdominal viscera? With regard to the skin, we have had two cases only of slight dermatitis, both of which cleared up without ulceration; there is no doubt that by efficient filtration and protection the skin can be adequately guarded. The question of the possibility of injury to such organs as the intestines cannot be so readily answered, as they are not under direct observation. Cases of X ray ulceration of the small intestine have been recorded in France and Germany, and in view of the frequency with which coils of jejunum are found lying in the pelvis they may, of course, be subject to irradiation along with the other pelvic contents. No such case has occurred in our series, but we have had one case which was operated on for pelvic inflammation eight months after the cessation of treatment, and terminated fatally. We believe the condition was in reality due to an acute ascending infection which arose after the X ray treatment was concluded. Definite proof is, however, wanting; we therefore lay the facts of this case before the Section, as this is the only one in our series in which any suspicion could arise that injury had been caused by the X ray treatment.

CASE 59.—Married, aged 43; children, 3. (1/4/14.) Symptoms: Menorrhagia of two years' duration. Local conditions: Chronic metritis, uterus enlarged; mobility of uterus impaired; no evidence of tubal inflammation.

Treatment: Total exposure 5 hours 20 minutes in five treatments. April to July, 1914.

Effects on menstruation: Complete amenorrhœa from June, 1914. General effects: General health improved, but symptoms of intestinal irritation commenced with diarrhœa and some abdominal pain. (September, 1914.) These symptoms continued and the patient was admitted to Chelsea Hospital for Women in March, 1915, eight months after the last X ray treatment, not having been seen by me (F. L. P.) since the previous September. She was then found (per vaginam) to have a tender mass filling Douglas's pouch and extending into both sides of the pelvis, especially the left. The motions were fluid, containing small amounts of fæcal matter, but no mucus or blood, attacks of constipation and diarrhœa alternating.

March 23rd, 1915: Laparotomy performed. An inflammatory swelling was found filling up the pelvis, shut off from general abdominal cavity by adhesion of bowel and omentum, which were separated. Uterus adherent to rectum; both tubes inflamed, the left containing about a teaspoonful of pus. On separating uterus from rectum pus escaped which was loculated between the two organs. An opening was at this stage discovered in the rectal wall; whether it was caused by separating adhesions or whether it was an old opening communicating with an abscess cavity could not be decided. There was a great deal of perirectal inflammation. The left tube was removed. The hole in the bowel was closed with great difficulty and the uterus lightly sewn over it. A gauze drain was inserted and the abdomen closed. By an incision in the left inguinal region a portion of the descending colon was brought out of the abdominal cavity and a roll of gauze pushed through the mesentery to secure it in position, and a few stitches fixed the bowel to the inguinal incision. The colotomy was performed four days later. At this time a fæcal fistula had formed in the subumbilical incision. The patient was at first very ill; 48 hours after operation she was much improved, but her condition soon gave rise to considerable anxiety, chiefly because of the quantity of pus discharged from both wounds.

May 5th, 1915: Patient passed a large quantity of pus per rectum. From this date to 5/8/15 condition improved, though the state of the abdominal wounds was never satisfactory. At the latter date severe diarrhœa set in from which she recovered, and her general condition began to improve again, her temperature falling, and her general aspect was much brighter. On 13/8/15 patient was seized with sudden abdominal pain, a large quantity of pus exuded from the colotomy wound, and she died with all the signs of general peritonitis.

This case has been reported fully on account of its importance. The question arises, Was the pelvic condition due to X ray treatment? Unfortunately, no post-mortem examination was made and the presence of ulceration of the bowel cannot therefore be excluded. The first symptoms, sharp pain and flatulence after eating, which also caused the bowels to act slightly, commenced six weeks after the last treatment; the bowels were moved in these attacks some 10 to 12 times and the condition was always relieved by a small dose of castor-oil. This condition, gradually getting worse, continued till her admission to hospital, but the patient was not seen after January, 1915, till her admission in March, 1915.

The fact that both tubes were inflamed points to the possibility of a recently acquired ascending infection, or it may be that a pre-existing but undetected tubal inflammation was activated by the X ray treatment. The early symptoms, which commenced six weeks after the last X ray treatment, pointed, however, to intestinal irritation, and this is the only point in the case which cannot satisfactorily be explained.

The X Ray Menopause.

We have taken the symptom of "flushings" as the best available guide to the severity of the menopausal effects, and inquiry has been made upon this head in every case. The result is that in a little less than 50 per cent. of our cases "flushings" have been reported as "slight" or "absent," or the inquiry has not been answered; in one-eighth they were reported as moderate, and in three-eighths as "severe." In many of the latter class the flushings were frequent both day and night, and persisted in some for two years and upwards after the treatment had ceased. We formed the impression that in some of our cases, a small proportion of the whole, this symptom was more severe and prolonged than we have ever seen it in the natural climacteric.

In all other respects there is nothing that calls for comment in the menopause, except that nervous symptoms of a functional character appeared to be less frequent than under natural conditions. Many of our patients have inquired of us whether as a result of the treatment they would grow fat or lose their feminine qualities of body and mind. Special inquiry has been made of all our patients with regard to the former, with the result that though the majority have gained a certain amount of weight there has been no tendency to corpulence of an unsightly character. With regard to the latter, we have made inquiry when opportunity offered and have not found a single instance in which signs of masculinity appeared or in which there was any loss of sexual feeling; in one case there was a distinct increase of sexual feeling during the treatment, in all others the inquiry was negative.

Relative Advantages of X Ray Treatment and Operation.

As X ray treatment is only suitable for carefully selected cases, we do not think that it will ever supplant hysterectomy as the chief method of dealing with cases of uncontrollable uterine hæmorrhage. Generally speaking, all cases of chronic metritis or fibroid tumours which are complicated by inflammatory disease of the adnexa, all cases of large or degenerating fibroid tumours, and all cases of fibroid polypus must be dealt with by operation. The same must be said of all cases in which malignant disease cannot be satisfactorily excluded. At present it must also be said that only women of 38 years and upwards are suitable for X ray treatment.

These contraindications being granted, there still remains a considerable number of cases of uncomplicated chronic metritis and of small fibroid tumours which can be satisfactorily dealt with by X rays. It is, in our opinion, probable that further experience of the treatment, and perhaps improved technique, will enlarge the scope of the method beyond the limits which we have defined for it. It follows that we have an alternative to hysterectomy in this group of cases, and it is as an alternative procedure only that we have come to regard it.

To many women an operation is an ordeal which is greatly dreaded, while others submit to it with very little reluctance. Most of the cases which we have treated have in fact been so treated on account of the great dread of an operation which these women have manifested. In certain others, special conditions which increase operative risks, such as Graves's disease or valvular disease of the heart, have been present. As a rule, in cases suitable for X ray treatment, we may allow the patient to decide whether she will be operated upon or whether she will be treated, unless some complication exists which will increase operative risks. Except when organic disease exists elsewhere which renders an operation more than ordinarily risky, if the patient prefers an operation she need not be dissuaded from submitting to it.

As compared with hysterectomy X ray treatment has the advantages that the ordinary life and work of the patient need not be interrupted for more than two days at a time, and that the prolonged partial invalidism, which often lasts for several months after an abdominal operation, is completely avoided. These are considerations to which we are bound to give weight, and which will in many cases influence the choice of method. The disadvantages of X ray treatment are the uncertainty as to the length of time required to produce the result aimed at, and the very slight risk there may be that the treatment will be unsuccessful, and that operation may eventually be required. The latter is a minimal risk, and will no doubt be eliminated entirely as experience grows.

Conclusions.

1. In our opinion X ray treatment should be regarded as the method of choice in women over 38 for all uncomplicated cases of severe hæmorrhage due to chronic metritis, or other conditions in which no neoplasm is present. In our experience these cases yield more readily to the treatment than do fibroid tumours. The presence of inflammatory disease of the tubes and ovaries is a contra-indication.

2. Fibroids of the size not exceeding the height of the umbilicus may be treated with X rays if the patient is over 38 years old, if the hæmorrhage is of the regular monthly type, and if there is no evidence of inflammatory disease of the tubes and ovaries, or of advanced degenerative changes in the tumour. If intercurrent conditions which tend to increase operative risks are present X ray treatment should be regarded as the method of choice, in other cases the choice may usually be left to the patient.

3. No case should be submitted to X ray treatment without a careful gynæcological examination being previously made, to exclude malignant disease, inflammatory complications, and degenerative changes in fibroids.

4. The risks of failure with X ray treatment in suitably selected cases are so small as to be negligible; the X ray menopause may be attended by more severe flushings than in the normal menopause, but in other respects there is no difference between them; there is no tendency to corpulency or to psychological changes.

SELECTION FROM EPITOME OF CASES.

The following cases, to which reference was made in the foregoing text, have been selected from an epitomised account of 76 cases:—

CASE 1.—Married, aged 48; children, 0; miscarriage, 0; March, 1918. Symptoms: Severe menorrhagia and dysmenorrhœa. Bad general health; frequent attacks of faintness; these were attributed by Sir James Mackenzie to anæmia resulting from excessive menstrual losses. Local condition: Uterine fibroid size of 2½ months pregnancy.

Treatment: Total exposure, 7 hr. 12 min. in four treatments, from March to June, 1918.

General effects: Patient suffered severely from nausea for several days after each treatment, and on one occasion there was severe diarrhœa. Period April 14th to 25th, much less in amount and less painful. Flushings began in May.

Last report, November, 1920: Complete amenorrhœa since April, 1918. Occasional slight brownish discharge for a day or two. Flushings were severe and still continue. Writes that she is "a new woman since the treatment."

CASE 8.—Married; aged 52; children, 1; miscarriage, 1; July 9th, 1916. Symptoms: Menorrhagia; very severe floodings following first confinement 28 years ago; severe dysmenorrhœa. Diagnosis: Chronic metritis. Uterus nearly twice its normal size.

Treatment: Total exposure, 3 hr. 15 min. in four treatments. July to October, 1918.

Effect on menstruation: Amenorrhœa for 6 weeks after first treatment. After this menses every 2 to 3 weeks, with very severe floodings, for which patient had to be plugged.

Hysterectomy was advised and performed Nov. 6th, 1918. At the operation no adhesions were found; uterus was twice its normal size, the condition present being one of chronic metritis with great thickening of the endometrium. Patient has continued well to the present date—January, 1921,

CASE 12.—Married; aged 37; children, 1; August 21st, 1916. Symptoms: Menorrhagia; very severe backache. Patient suffers from gastric ulcer. Diagnosis: Fibromyoma, extending up to 2 inches below the umbilicus.

Treatment: Total exposures, 3 hr. 29 min. Last treatment, Dec. 2nd, 1915. The treatment carried out by irradiating 3 to 4 areas every three weeks instead of 10 to 12 as was usually done, which probably explains the failure to produce permanent amenorrhœa. The patient refused to have further X ray treatment and requested that the uterus should be removed.

Effect on menstruation: Amenorrhœa, December, 1915, to June 24th, 1916, when a normal period occurred. Then missed for three months, when period came on and recurred every 14 or 21 days, with occasional floodings, to time of operation—March, 1917. Severe backache unrelieved by the treatment. Local effects: Tumour gradually diminished in size till August 3rd, 1916, when a subperitoneal fibroid the size of a hen's egg extending out from the right side of the uterus was all that could be found. General effects: General health improved. Flushings fairly severe still—Jan. 8th, 1921.

Operation (April, 1917): Supravaginal hysterectomy was performed; the uterus contained a fibroid, the size of which is not mentioned in the notes. There were dense adhesions between the uterus and the rectum, and some adhesions of small bowel to the uterus also. The left ovary was cystic. The right small and fibrotic. The left tube and ovary were removed with the uterus. Patient reports herself very well at the present time (January, 1921). No intestinal symptoms reported either before or since operation. The backache, however, remains severe. We consider that failure in this case was due to insufficient treatment.

CASE 23.—Married; aged 50; children, 4; miscarriage, 1; June, 1914. Symptoms: Severe menorrhagia for five years, 10/25. Suffered much from "heart trouble," and this was attributed by Sir James Mackenzie to the profuse monthly losses. Local conditions: Irregular fibroid tumour size of about four months gravid uterus.

Treatment: Total exposure 6 hr. 54 min. in four treatments.

General effects: Complete amenorrhœa after third treatment; first two treatments produced no diminution of bleeding. Severe flushings which lasted for about two years. Local effects: Complete disappearance of the fibroid was noted on March 17th, 1915, the uterus being approximately normal in size and outline.

Last report, January, 1921: No return of periods. General health excellent, and she leads a very active life. The uterus is now about the size of the normal nulliparous organ, and no trace of fibroid tumour can be found.

CASE 29.—Married; aged 42; children, 5; Jan. 8th, 1917. Symptoms: Severe menorrhagia, 10/24, bleeding being at times alarming in severity. Local conditions: Large nodular multiple fibroid tumour extending nearly to umbilicus in mid-line. Patient corpulent.

Treatment: Total exposure, 21 hr. 30 min. in 11 treatments over a period of 14 months.

General effects: The treatment completely failed to arrest bleeding; an interval of 5 months occurred at one time during treatment, but this was succeeded by irregular hæmorrhage which was still continuing, though in less quantity, in December, 1920. The patient persistently refused operation.

CASE 31.—Married; aged 46; children, 2; Oct. 2nd, 1917. Symptoms: Severe menorrhagia, 7-10/21. Local conditions: Smooth hard fibroid extending to lower border of umbilicus and with little mobility.

Treatment: Total exposure, 8 hr. 7 min. in six treatments, October 1917, to April, 1918.

General effects: No serious loss after second treatment; nearly constant slight show of blood from March to June, 1918; no loss at all after then; flushings moderate. Local effects (June 12th, 1918): No tumour palpable on abdominal examination. On vaginal examination uterus found anteverted, bulky, freely mobile, with an ill-defined small outgrowth on left. Slight X ray dermatitis.

Last report (November, 1920): No return of periods since June, 1918. Slight flushings still occur occasionally. General health better than for years and very active.

CASE 38.—Married; aged 45; children, 1; Oct. 17th, 1914. Symptoms: Moderate and irregular menorrhagia. Local conditions: Hard nodular fibroid tumour extending to level of upper border of umbilicus. She had refused to undergo hysterectomy before consulting us.

Treatment: Total exposure 12 hr. 36 min. in eight treatments from October, 1914, to June, 1915.

General effects: Very little until after fourth treatment, then three months amenorrhœa followed by a severe period in April, 1915. Another period in May, then complete amenorrhœa. No flushings during treatments. Local effects Jan. 17th, 1916: Upper border of tumour is felt at level of pubes; on bimanual tumour reduced to less than half its size when first seen. May 19th, 1919, uterus found retroverted; approximately normal size, with several small subperitoneal nodules on surface.

Last report, November, 1920: Flushings have occurred slightly during last six months (age 51). General health very good. Leads an active life. Has lost a little weight.

CASE 39.—Married; aged 45; children, 0; miscarriage, 0; May, 1916. Symptoms: Fairly severe menorrhagia. Local conditions: Hard nodular fibroid tumour extending nearly to umbilicus.

Treatment: Total exposure, 15 hr. 50 min. in eight treatments over two years. June, 1916, to May, 1918.

General effects: After three treatments a two months' interval occurred, followed by a show for 2 to 3 days, and then complete amenorrhœa for six months. Since September, 1917, one or two moderate periods each year. Flushings slight. Local effects: In April, 1918, the fibroid had diminished to two-thirds of its original size; no further shrinkage occurred.

Last report, November, 1920: Good general health and leads an active life. One or two moderate "periods" still occur every year.

CASE 41.—Single; aged 38; July 25th, 1914. Symptoms: Menorrhagia. Diagnosis: Fibroid size of two months gravid uterus.

Treatment: Total exposure, 1 hr. 57 min. in two treatments. Last treatment Sept. 19th, 1914.

Effect on menstruation: *Menorrhagia continues and there is also* slight daily loss, Sept. 19th, 1914. Ceased to attend: Treatment incomplete.

Report, 1920: No reply.

CASE 49.—Married; aged 38; children, 1. Symptoms: Menorrhagia, headaches, debility. Diagnosis: Chronic metritis.

Treatment: Total exposure, 2 hr. 10 min. in two treatments. Last treatment, June 24th, 1918.

Effect: After two treatments period diminished to normal. General health improved. Decided to give no more treatment.

Note taken April 1st, 1920: Amenorrhœa, July, 1918, to January, 1919. January, 1919, to July, 1919, *periods every 14 to 21 days*, duration 10 days. Amenorrhœa July, 1919, to January, 1920. January, 1920, period lasting 14 days. Amenorrhœa since to April 1st, 1920. Patient refused further treatment.

CASE 56.—Married; aged 47; children, 0; May 4th, 1917. Symptoms: Menorrhagia; very marked neurasthenic symptoms. Diagnosis: Chronic metritis.

Treatment: Total exposures 3 hr. 40 min. in three treatments from May to August, 1917.

Effect on menstruation: Amenorrhœa from September, 1917, to September, 1919, when she had hæmorrhage for 2-3 weeks. Advised further treatment, but this was refused. Amenorrhœa from September, 1919, to June, 1920, when severe hæmorrhage occurred, lasting two days. Again severe hæmorrhage September, 1920. Patient has been taking thyroid extract. Advised further treatment or curettage, but this was refused. General effects: Flushings moderately severe.

Last report: Sept. 25th, 1920.

CASE 65.—Married; aged 43; children, 2; Oct. 16th, 1918. Symptoms: Very severe menorrhagia necessitating 3 to 4 days in bed. Local conditions: Bulky uterus but no fibroids, probably chronic metritis.

Treatment: Total exposure 8 hr. 40 min. *in five treatments from* October, 1918, to February, 1919.

General effects: After the first and second treatments considerable improvement, an interval of seven weeks having occurred. After third treatment a very bad hæmorrhage occurred which lasted altogether for a month. Slight flushings.

Last report, January, 1921: Menstruation still occurs at irregular intervals, but loss is moderate since treatment. Flushings only slight.

CASE 70.—Married; aged 40; children, 2; miscarriage, 0; August 6th, 1915. Symptoms: Menorrhagia 2½ years. Severe leucorrhœa. Diagnosis: Retroversion of uterus. Chronic metritis.

Treatment: Total exposuret 4 hr. 40 min. in five treatments, August to December, 1915.

Effects on menstruation: Amenorrhœa from November, 1915, to March, 1916. Regular normal menstruation ever since.

Report, 1920: Periods have been regular, 4 to 5 days, loss slight since March, 1915. General health much improved. Gained weight.

CASE 75.—Married; aged 43; children, 3; August, 1919. Symptoms: Prolonged and very severe hæmorrhages lasting from 2 to 4 weeks, with irregular intervals. Profound anæmia and debility. Local conditions: Bulky uterus, no fibroid. Chronic metritis. Patient was advised to undergo hysterectomy, but she and her husband (a doctor) both declined.

Treatment: One treatment lasting 1 hr. 50 min. was given, and this was followed by a flooding so severe that consent was given to operation. The uterus was successfully removed, and the diagnosis of chronic metritis confirmed.

January, 1921, the patient is now in very good health.

CASE 76.—Single; aged 46; Feb. 14th, 1914. Symptoms: Menorrhagia for 3 years, pain for a week before periods. Local conditions: *Hard fibroid extending to upper border of umbilicus.*

Treatment: Total exposure, 9 hr. 56 min. in six treatments.

Effects: Relief of pain. Amenorrhœa from May to November, 1914. Severe flushings. Severe losses in February, March, and April, 1915. Local effects: No change in fibroid. Hysterectomy, April 30th, 1915. No adhesions.

OPERATION FOR
REMOVAL OF THE APPENDIX IN THE QUIET PERIOD.

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EVEN at the present day differing opinions are given in books on operative surgery regarding the merits or demerits of the various operations for removal of the appendix in the quiet period. Some of them appear to be written with an imperfect knowledge of what practical work may be required in the operation selected. An analysis of the conditions found in the abdomen after one or more attacks of appendicitis in a consecutive series of cases under the care of one surgeon may assist those who have not had large experience of *the problem. The series brought forward are the first* 1000 which came under the writer's care and were operated on by him or by a house surgeon under his supervision; the series was completed some years ago, and it is therefore possible to give some of the results at a sufficiently remote period. In THE LANCET,[1] 1910, a synopsis of 400 cases was given, and to these another 600 are now added, the two series being placed together for the purpose of this paper; in neither group is operation during an acute attack included.

At each operation the parts around were also examined, adhesions estimated and treated, and the pelvic organs examined for abnormality, displacement, or disease. In a few the kidneys, ureter, the gallbladder, and pylorus were palpated, but the operation was done because the symptoms of which the patient complained were considered to be due to a diseased appendix.

Conditions Necessary for Operation.

Any operation performed for removal of the appendix "à froid" must be without risk, should give adequate access to the part where the diseased structure is lying, permit of the manipulation required in every case, and the treatment of local complications due to inflammation, or to some separate disease. It must be possible to close the wound without any local weakness, for the patient must not be handicapped by the necessity of wearing an apparatus to reinforce a weak abdominal wall.

Causation of Fatal Results.

Under modern conditions of wound treatment any incision which opens the peritoneum is safely made, but there must be no question of even 2 per cent. of fatality. The fatal results which ensue after removal *of the appendix* in the quiet period may arise from the following causes:—

(a) *Peritonitis.*—(1) The result of accidental infection during the operation. (2) Contamination during the severance of the appendix. (3) The opening of some concealed abscess, probably of recent formation. (4) Separation of some firm adhesion giving rise to a tear in the wall of the gut, which passes unobserved. In two of the cases there was a second communication between appendix and cæcum. (5) The yielding of sutures placed in the wall of the gut or at the point of section from the cæcum, as a consequence of violent vomiting, sneezing, or coughing.

(b) *Hæmorrhage.*—Hæmorrhage into the peritoneal cavity arising from the slipping of a ligature placed on the vessels of the meso-appendix.

(c) *Other risks.*—Other risks in common with all operations, from the action of the anæsthetic either at the time or during after-treatment, and the progress of some coexisting disease, such as tubercle.

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[1] THE LANCET, 1910, ii., 368.

The attempt to remove the appendix through a keyhole incision is not to be recommended. Anyone making this attempt is probably of the opinion quite unjustified that all cases are easy and without complications. He is not acquainted with the fact that adhesions are common and often dense, that the appendix may be attached to neighbouring organs, and is not infrequently hidden and misplaced.

State of the Appendix in 1000 Cases of Removal in the Quiet Period.

—	Male.	Female.	Ages.							Total
			10	20	30	40	50	60	Over 60	
Apparently normal	4	3	—	4	2	1	—	—	—	7
Hypertrophy	1	—	—	—	1	—	—	—	—	1
Obliterative inflammation	6	10	1	1	2	3	7	2	—	16
Catarrhal	242	269	25	153	201	72	43	16	1	511
Stricture	183	134	21	59	128	65	35	9	—	317
After abscess	71	74	14	41	45	32	8	2	3	145
Tubercle	—	2	—	1	1	—	—	—	—	2
Carcinoma	—	1	—	1	—	—	—	—	—	1
—	507	493	61	260	380	173	93	29	4	1000

This table shows the relative proportion of the various primary conditions of the appendix. *The frequency of secondary complications and their importance must be considered in more detail.*

The operation in a very stout patient may involve incision through some four inches of subcutaneous tissue and fat before the muscular wall of the abdomen is reached. The opening must be adequate and capable of rapid enlargement if the condition found demands more space for manipulation. Such enlargement must not add to the risk of subsequent hernia. There is another reason for securing plenty of space in the fat subject, and that is the necessity of closing the deep wound without catching any omentum, either with the edges of the peritoneum as they come together or by the needle as it is passed across.

It is much easier to remove an acutely inflamed appendix during *a first attack than one which has been* left to become fixed to parts around by adhesions, which are often dense and extensive. They often appear out of proportion to the severity of the attack as described by the patient. In six instances the appendix was apparently normal when removed after more than one definite attack of appendicitis. In one it was removed as a precautionary measure for a nurse who had been in charge of a fatal case of first attack.

A general hypertrophy of the appendix without any evidence of inflammatory changes is not often met with. In the solitary patient of this series, a boy, aged 16, there had been frequent attacks of abdominal pain without any rise of temperature. The attacks were not sufficient to make him stay in bed, but interfered very much with his desire to lead an active life. The appendix was 8 in. in length and very movable.

Results of Chronic Inflammation.

The results of chronic inflammation come under the main headings of Catarrhal 511, Stricture 317, and "After abscess" 145, which "pathologically" come under these two headings. We must consider these groups more closely, as together they constitute a total of 973 out of the 1000, and are therefore the most important.

1. Catarrhal, those in which one or more attacks had resulted in the formation of a fibroid deposit in the wall of the appendix, which had not produced an intrinsic stricturing of the lumen of the tube. There may be no history of an acute attack. The fibrous changes are most frequently met with as a deposit in the submucous tissue at or towards the distal end, and repeated attacks may cure by an obliteration from below upwards. Unfortunately in a large number one attack is sufficient to cause crippling of the muscular wall of the appendix, and it becomes a stiffened tube, incapable of expelling its contents. A sac for the trapping of fæcal matter is formed from which much trouble may arise from painful attacks, with or without signs of inflammation; from toxic absorption, the formation of concretions or coproliths, or from reflex action on other parts.

2. The cicatricial change may be localised (as definite and limited as that of the urethra), a stricture of the tube being formed, the results of which are ultimately dangerous. The lumen becomes obstructed; in some this leads to an acute over-distension of the parts beyond and rupture into the peritoneum. If closure is more gradual dilatation of the appendix beyond may cause a mucocele, the size of which is sometimes great. When an inflammatory attack complicates stricture it may give rise to a retention of pus and fæcal matter which escapes, although with difficulty, and produces but few local signs. If a fæcal concretion is trapped beyond the constricted part it may act like a ball valve, producing an acute distension and rupture, or produce ulceration by pressure on the mucous membrane and structures over it, which perforates into the peritoneum. The immediate danger in cases of rupture varies much according to the situation of the stricture and the amount of septic contents beyond at the time the wall gives way. Sometimes a superficial ulceration of the mucous membrane is disclosed only by microscopical examination. It is a common experience to find a stricture which has obliterated the lumen and given rise to an acute obstructive attack when no history of previous illness can be elicited. This statement applies both to adults and children. Probably some foreign body had caused a breach of the epithelial lining, and been expelled by a reflex contraction of the appendix, but the ulceration continued as a slow process, without producing any symptoms to draw attention to it until contraction had progressed to a definite obstruction.

3. Other changes of a secondary character are found in an appendix after inflammation in addition to its loss of muscular power. It may become knotted or twisted in various ways, this position being rendered permanent by adhesions.

4. The meso-appendix varies in the amount of its involvement during an attack. Its function as the conveyer of blood and lymphatic vessels renders its involvement during appendix inflammations of great moment. Thrombosis is common. Even when the appendix is apparently free from traces of past storms, the meso-appendix may be shortened in one segment, possibly causing a kink, or a more general shortening in a mesentery of a different shape may cause a corkscrew twist. It was often described as shortened, thickened, and indurated.

5. The adhesions which may form from organisation of the lymph effused during the process of limitation of an inflammatory exudation or septic invasion, vary considerably in number and extent. It is not possible to say with much certainty if an attack will be followed by adhesions which may require incision with knife or scissors, or whether the appendix will be free and of apparently normal appearance and attachments.

In 4 cases of the first series of 400 the adhesion of coil to coil *during recovery from an abscess* caused obstruction which required operation. In another (second series) obstruction followed severe intraperitoneal hæmorrhage. Not infrequently it is the strong bands fixed to surrounding parts which prove most dangerous; the wider and more dense which bind down the appendix itself, sometimes completely concealing it, tend to limit later attacks. The danger of obstruction of the bowels by bands which ensue after attacks of inflammation in the abdomen, mostly of appendical origin, must not be forgotten, nor the fact that the appendix itself may become fixed to some structure in the iliac fossa or the pelvis, to the intestine, or to the abdominal wall, and so make a snare for the small gut.

Adhesions.

The question always arises before operation, Are there any adhesions and, if so, are they likely to be numerous or dense? When the patient has a clear history of appendix abscess it is probable that there will be adhesions, and they are likely to be firm, if it is long since the attack.

In examining the cases of appendicitis comprised in this series we find that 223 out of 511 presented adhesions, which may be classified as slight (47) those which could be easily separated with the finger; moderate (75), which required some force to separate them; severe (110), which required to be divided with the knife or scissors.

The importance of previous attacks was investigated, a history of many attacks (more than four) apparently indicated that the appendix was not so likely to be very fixed.

—	Cases.	Slight.	Moderate.	Severe.	Free.
After the 1st attack	96	14	19	38	25
„ „ 2nd „	93	10	17	11	55
„ „ 3rd „	51	8	10	17	16
„ „ 4th „	271	15	29	44	183

This should be compared with the cases in which intrinsic stricture of inflammatory origin was found at operation.

—	Cases.	Slight.	Moderate.	Severe.	Free.
After the 1st attack	69	3	23	25	18
„ „ 2nd „	80	3	19	26	32
„ „ 3rd „	56	3	8	13	32
„ „ 4th „	112	3	14	18	77
	317	12	64	82	159

When dealing with a concealed appendix or with a case in which there are many adhesions, isolate the area involved with gauze wrung out in warm saline. Define the position of the intestinal tract in the adhesions, follow down the anterior band of the cæcum to the root of the appendix. Avoid force in separating any involved coil of bowel, and be careful in dividing strong adhesions. Repair lesions of the intestine, whether they are partial or complete.

Amongst the 145 cases of removal after abscess there were 87 in which the adhesions were extensive, yet at the time of removal of the appendix (usually a few days after closure of the abscess) many yielded to the pressure of the finger. It was possible by this early operation to arrange parts in their normal positions, or put them where contraction would do least harm, should the adhesions re-form. The abscess mostly occurred during the first attack.

It is quite understood that the adhesions formed as a result of the organisation of lymph effused is nature's effort to localise an inflammatory invasion; they were therefore useful to the individual so long as the attempt at invasion was continued. But as organised bands, layers, and attachments of fibrous tissue they are dangerous, interfering with normal movements of the parts, compressing and possibly snaring or obstructing the bowel. In later life these adhesions are amongst the most numerous of the causes of obstruction of an acute character. Deal therefore with these adhesions, and examine the pelvis for isolated bands; you may do much good by placing things in a normal state as far as possible.

To prevent adhesions forming as a result of operation precautions should be taken (1) to handle structures exposed in the abdominal cavity with gentleness; (2) to avoid the use of strong antiseptics, either as solutions during the operation or as applications to the skin. It is not always possible to prevent the omentum or bowel from coming into contact with the skin, and both react very readily to chemical irritants. (The use of picric acid and iodine was given up in consequence of an increase in the complaint of pain afterwards, possibly due to slight adhesions.) (3) Remember the danger of trapping omentum between the edges of the wound, or of possibly snaring it or the intestine with a deep stitch. If the wound is deep and funnel-shaped this is a real danger, especially if respiration is hurried and deep, or vomiting comes on before closure of the wound is effected. Adhesions may be very troublesome, and the patient who submits to early operation during an acute attack may avoid some years of misery.

The aseptic method is much the best in all abdominal cases. The concealed appendix may be found pointing in any direction, and even when it has been found, it may not be possible to extricate it whole from the firm bed in which it is lying. It is not infrequently the wisest plan to shell it out, leaving its adherent peritoneal sheath in the adhesions. The mucous lining is what we wish to obliterate. This method is accompanied by little bleeding. Solitary adhesions must be examined when divided to see that there is no central canal; an adherent appendix or stretched diverticulum may be divided without recognition, the result being disastrous, bowel contents escaping through the opening into the peritoneum after the wound is closed.

In the absence of adhesions the operation does not take much time, but hurried operation is never safe. An attempt to pull an adherent appendix through a keyhole opening is bad surgery. The opening must be adequate, and this can only be decided after examination. By the method employed[2] in the majority of the series given in this paper there need be no hesitation in extending the wound as far as the surgeon wishes. When the appendix is free, and the ovaries and tubes are normal, it will not be necessary to divide any nerve entering the rectus muscle. A long incision may necessitate division of nerves, but the nerve-supply above and below is adequate and no permanent weakness of the muscle ensues. It is an advantage to place the centre of the incision lower in the female than in the male; this gives better access to the pelvic organs.

If there are the remains of an old abscess or a granulation-lined cavity, possibly containing an escaped concretion, it may be cleaned with gauze and then washed out with peroxide of hydrogen. The cases in which drainage may be required are those in which an abscess of recent origin is found. It does not make any difference as regards the future strength of the abdominal wall whether the rectus sheath is incised over the middle of the muscle or more to the outer side. The principle to be remembered is the interposition of part of the uninjured muscle between the two lines of incision in the sheath.

The outer edge of the rectus is at a point three-fifths of the distance from the umbilicus to the ant. sup. spine of the ilium; therefore, if an incision is made over the mid-point between these landmarks it lies over the outer part of the rectus. If you place the cut over the middle of the rectus it is necessary to make a larger incision in the sheath to obtain room for deeper manipulations, because the outer lip of the incision is retracted with more difficulty.

Experience has shown that the appendix must be cut off level with the cæcum. No stump must be left, and the surgeon should ligature the vessels of the meso-appendix himself. There are advantages in using silk for this purpose. A satisfactory plan is the application of a clamp, which leaves a thinned peritoneal area, round which a ligature is placed. The appendix beyond is then removed between this and the forefinger and thumb, which prevent possible escape of contents. The small amount of tissue remaining is sunk in a groove, which is sutured edge to edge with No. 1 silk. The ends of this suture are tied together and the remains of the appendix firmly embedded.

In no instance was the appendix completely destroyed by disease, but in 15 there had been partial destruction. Sometimes the gap was closed by adhesions of the omentum, in others there were separated portions lying more or less in the line of the main body. Some were hard fibrous nodules throughout, others were lined by mucous membrane. Two women were admitted for symptoms similar to those which had induced them to undergo a previous operation for removal of the appendix; in both it was found that removal had been incomplete. One patient had slight evidence of fibrous changes in the thinned wall of an appendix which was distended and filled with gas, resembling a finger-stall. No cause for this unusual condition could be found. In some chronic obstructive conditions of the large gut the appendix occasionally becomes extremely dilated and as large as the big toe of an adult.

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[2] See THE LANCET, 1919, ii., 369.

Of the cases of inflammation which were not accompanied by local stricture of the intrinsic kind, 28 showed evidence of perforation during some previous attack. In some a concretion was found outside, but there was no trace of the perforation to be seen in the wall. In 96 the appendix was kinked or fixed in a twisted position; in several this must have produced an obstruction, the presence of which added to the patient's danger, and sometimes there was a concretion trapped beyond the narrowed part. In six it was thickened and twisted like a corkscrew. In six female patients, living in different parts of the country,[3] the mucous membrane presented a curious brownish-black pigmentation in addition to other changes. The fact that the pigmentation was continued evenly to the line of separation showed that it extended into the cæcum, but there was nothing to show how far beyond this it spread. It is difficult to account for this pigmentation in the absence of any history of the administration of iron, bismuth, or mercury in the form of medicine.[4] In 97 it was much thickened, once it was the size of an adult forefinger. It is not exactly stated in how many the meso-appendix was distorted as a result of inflammation. In a few there was no naked-eye change; in the majority when the appendix showed damage the meso-appendix corresponded.

Amongst those in which definite stricture of the lumen was the outstanding change this was strictly limited to one part in the majority. Its position varied as, indeed, did its length and degree of closure. The position was recorded in most of the 317 cases. It was proximal in 99, mesial in 73, distal in 85. When there were two strictures they were disposed as proximal and mesial, 2; proximal and distal, 12; mesial and distal, 1. Multiple, the strictures being disposed irregularly, 5. There was evidence of old perforation beyond the stricture in 52, and in some, where there had been two strictures, a depressed scar was found distal to each of them. It is interesting to note that these perforations were in the line of attachment of the meso-appendix and not far from the stricture. The evidence of perforation was mostly found in those who admitted only one or two attacks. There was dilatation beyond in several, a sac having been formed of varying size, in 32 mucus was found in this dilated part, and in 28 muco-pus. In 75 the appendix was much thickened and hard, the tip being very commonly bulbous. The presence of a small amount of pus found at operation, caseation or a granulation area near, showed the severity of a previous attack. These areas were sometimes walled in and concealed by adhesions, often of extreme density.

Operation after Abscess.

Under the separate heading of "Operation after abscess," it is not proposed to say much. It is interesting to note, however, that it contains fewer cases in proportion amongst the 600 owing to the great importance attached during recent years to early operation in acute appendicitis. In the former series of 400 there were 79 operations after definite abscess, in the 600 now added there were only 66. Operation was performed in 92 instances after the first attack. The rule has been to advise operation within a short time after closure of the wounds in all cases where the appendix was not removed at the opening of the abscess. The presence of a concretion in the pus did not prevent adherence to this rule. Sixteen suffered from three or more attacks before operation was permitted. In 79 there was a stricture of the appendix. 66 showed changes secondary to a catarrhal inflammation. Of the strictures (mostly single), 29 were proximal, 30 situated in the middle third, and 18 were distal. In 57 there had been perforation; in 9 there was still a small collection of pus, probably residual, which gave no signs of its presence; in 22 there was inspissated pus; and in 2 empyema of the appendix. Where there was a weakness of the ventral scar the layers of the abdominal wall were defined and sutured during the closing of the incision, which followed the line of the old wound. Otherwise all operations were carried out through the incised rectus sheath, with displacement of the rectus inwards. In three cases the appendix was removed at a second operation because the shock which resulted from intraperitoneal rupture of an abscess was so profound when they were admitted.

Pelvic Complications.

Pelvic complications were found at operation in several females. In 25 the ovary was excised for cystic disease (3 suppurating). In one a dermoid cyst was taken away, and in another a cyst of the broad ligament. In two instances where the cystic disease affected both ovaries a paramesial incision was also made. Chronic salpingitis required removal of the tubes in two instances. Small uterine fibroids were not infrequent. Retroflexion was a fairly common complication. In two instances Meckel's diverticulum, showing evidence of previous inflammatory attacks, by adhesion to surrounding parts, &c., was removed, and the opening into ileum sutured. In the first 400 there were 5 cases of superficial thrombosis, but only 2 in the series of 600 now added. The onset of this complication during the after-treatment was usually ill-marked, and in patients who appeared to be progressing normally. In one there was thrombosis during the attack of appendicitis which preceded the operation. Gas followed by ether was the usual routine of anæsthesia in the vast majority of instances given by Dr. Z. Mennell, to whom it is owing that chest complications were few and fatalities nil.

Mortality.

In the first 400 there was one death caused by accidental infection of the peritoneum by the *Bacillus pyogenes aureus*. In the additional 600 now given there was also one death, the result of vomiting and giving way of sutures in a stout flabby woman of 56. In this case there was a partial excision of the cæcum.

Strength of abdominal wall.—In only one of the series did a complete hernia develop; this occurred in a fat agricultural labourer who had much vomiting after operation. In his case the abdominal wall was successfully repaired. In two others there was a weakness of the scar, probably due to the yielding of sutures in the posterior sheath as a result of vomiting, but no bandage (or truss) is required. If the appendix has been cleanly removed at its junction with the cæcum, and there is no other abnormal state of the abdominal organs which has been overlooked, the prognosis as to complete recovery is very good. The attacks of pain will cease and he may expect to resume work under a month. Where the precautions advised at the operation are recommended there will be no likelihood of adhesions forming later, but the prognosis in those cases where adhesions had already formed as a result of previous attacks is less certain, but often these do not produce symptoms. The cases here tabulated give some idea of the amount of illness, pain, and distress which can by saved by operation in the early hours of the first attack of appendicitis. The time lost from the working years of the individual sufferer is not easily calculated; several had become chronic invalids. The patient who has had an undoubted attack of appendicitis is acting wisely to get rid of the probable source of future trouble.

THE Galton dinner will take place on Feb. 16th at the Connaught Rooms, Great Queen-street, Kingsway, London, W.C., at 7.30 P.M. As already announced, the annual Galton address will be delivered by Mr. W. Bateson, F.R.S., at 8.45 P.M., on Common Sense in Racial Problems. The chair at the dinner will be taken by the President of the Eugenics Education Society, Major Leonard Darwin, Sc.D.

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[3] See THE LANCET, 1913, ii., 135; 1915, i., 173.

[4] Trans. Roy. Soc. Med., January, 1915.

QUININE TREATMENT OF MALARIA.

BY SIR PATRICK HEHIR, K.C.I.E., C.B., C.M.G., M.D.
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READERS of THE LANCET interested in the quinine treatment of malaria will, like myself, feel greatly indebted to Majors J. Pratt Johnson and Kenneth Gilchrist for the record[1] of their experience during the German East African campaign contained in a recent issue; the editorial note on their paper in the same issue will be welcomed as emphasising the carefully prepared, accurate and important observations of these two officers. In India we received a large number of cases of malarial infection from German East Africa, many of them both severe and heavy; in the Northern Command we found it necessary to isolate several battalions returning from German East Africa at non-malarial hill stations until their infectivity (in the presence of malaria-carrying anophelines) had undergone considerable reduction. I would ask permission to make a few remarks on their paper, and to attempt to indicate how closely their observations correspond with those of one's own experience in India before and during the war, at the same time endeavouring to lay stress upon some of the more important practical points brought out by these writers.

Large-dose Treatment.

The large-dose treatment by quinine of malarial paroxysms, both in initial attacks and in relapses and reinfections, is probably the greatest improvement of malarial therapeusis in recent times. The records of the military hospitals of the Northern Command in India show that in those malarious stations where curative quinine treatment is most persistently and intensively carried out relapses are decidedly fewer than in those where its adoption has been half-hearted. This form of treatment is partly based on the assumption that the perpetuation of the asexual cycle of malaria parasites in the blood, spleen, and bone marrow is the responsible cause of relapses. It is possible that under certain conditions the asexual forms take on a relative immunity to the toxic action of quinine, although I do not think that we have as yet sufficient evidence to justify our dogmatising on this point. So far as observations go in India we have no definite proof that relapses are caused in any other way than by latent asexual forms of malaria parasites resuming activity and multiplying in the same manner as during the initial infection. Whether under certain conditions the spores of malaria parasites become immune or partially immune to the action of quinine remains to be proved, but the assumption that they do so gives us a definite and practical line of treatment of the initial paroxysms and those of relapses. The special significance of this hypothesis rests on its application to the treatment of malaria. Small doses of quinine, even in the slighter infections, may simply render the asexual cycle relatively immune, so that larger doses, which would probably have eradicated parasites in the early stages, are later ineffectual. It seems probable that were doses larger than those usually administered during the initial infection given for the first three weeks, and smaller doses continued subsequently, there would be considerably fewer relapses. Acceptance of this view implies the necessity of getting all cases of malarial fever under quinine treatment as soon as possible.

Malarial Parthenogenesis in Man.

Ever since 1904 various authors of books on malaria have described the process of parthenogenesis of malaria parasites as occurring in man, and have depicted the stages by which it is carried out, as if it were a universally accepted and regular phase of the life-history of the parasites, and they explain that relapses are due to this phenomenon. This view, of course, had the support of Schaudinn. I personally have never seen this process, although much attention was given to the matter; nor have I met with any fellow-worker in India who has observed it. I should, however, be very reluctant to declare that it does not occur. All I am prepared to state is that the proof so far advanced is not sufficiently convincing to myself.

The ingenious suggestion that large doses of quinine arouse in the malaria parasite the instinct to seek more healthy surroundings and bring about development of the sexual stage is rather captivating, and recalls one of Sir Patrick Manson's original suggestions as to how the malaria parasite was brought into contact with the mosquito.

Disappearance of Parasites after Large Doses.

The acceptance of this view would necessitate the brushing away of some difficulties. For example, it sometimes happens that, after a few large doses of quinine, malaria parasites cease to be visible altogether. The observations made in the Malaria Depôt, Dagshai, a non-malarial hill station in India, show that in some cases malaria parasites permanently disappear from the peripheral circulation after a single intravenous injection of quinine. This sudden disappearance of malaria parasites in some cases under large doses of quinine has been a mysterious phenomenon and intrigued me for many years. At one time I was disposed to consider that quinine not only poisoned the asexual parasites, but had likewise an appreciable toxic influence on the sexual forms. This view appeared to be supported by some observations I carried out in 1909–1913, when busy endeavouring to frame measures to reduce malaria in certain cantonments in India and Burma. I will take the liberty of quoting a few out of over a hundred observations bearing on this point.

CASE 1.—On July 8th, 1909, a Garhwali, aged 22 years, anæmic, with a spleen extending to 2 in. below the left costal arch, came under observation for the first time at 10.30 A.M. Had been having paroxysms during preceding 12 days. The blood was examined and found to contain enormous numbers of benign tertian parasites. In about a quarter of an hour swarms of microgametes were flagellating; in one field (1/16 obj., No. 4 eye-piece) nine were counted, and in 25 minutes free microgametocytes were moving about on the slide. The percentage of red cells infected was 5·5, of which approximately 2·5 were gametes. There were 27 per cent. of large monuclear cells, of which 3 per cent. contained hæmozoin. One 10-grain dose of quinine in solution was given by the mouth at once and repeated at 4 P.M; a third 10-grain dose was given at 9 A.M. on the ninth, when the blood was again examined, the temperature being normal. Not a single parasite could be found in seven stained slides examined, nor in four thick-film preparations; there was still 26 per cent. of large mononuclears, but none of those seen contained pigment. The blood was examined every 12 hours for five consecutive days with negative results.

CASES 2 AND 3.—On June 26th, 1909, two Gurkha lads, aged about 17 and 18 years, were admitted into hospital both with subtertian infection. In both every field of the examined blood contained malignant tertian "rings"; the percentage of infected red cells in one was 2·8, and in the other 2·4. In the former 25 crescents were counted on an average on four slides, and in the latter 11. The younger boy was pale, and his spleen was considerably enlarged. Each got 30 gr. of quinine in solution on the 26th. On the morning of the 28th neither rings nor crescents could be found in the blood of the elder boy, and only two to a slide in the younger; five slides in each were examined. Later, microscopical examinations of the blood once a day for a fortnight were entirely negative in both.

CASE 4.—On Sept. 29th, 1906, a Gurkha, aged 25 years, returned from Assam (where he went on furlough) with an enlarged spleen, anæmia, and regular paroxysms of quartan fever. The blood contained numerous asexual quartan parasites (0·4 per cent. of the red cells were infected) and about eight spherical gametes were found on every slide. On the 29th 30 gr. of quinine in solution were given. On the 30th examination of seven stained smears of blood was quite negative, and continued to be so for 12 days, after which the man was discharged to attend daily for quinine for three months.

The disappearance of the sexual forms from the blood one now looks upon as an indirect effect of quinine only, believing that the drug kills off most of the asexual forms and thereby reduces the number that could develop into sexual forms. I am still, however, not prepared to state that quinine has no action on sexual forms. There may be explanations other than the assumption that this comparatively sudden disappearance of malaria parasites from the blood is due to the toxic influence of quinine; and I should be grateful to anyone, who reads this and has considered the point under reference, if he would give me the benefit of his observations.

Quinine and Sexual Forms of Parasites.

My own observations disagree with the statement that the sexual forms of malaria parasites do not occur in cases of malarial fever untreated by quinine. When I was a regimental medical officer we had about 100 furlough men (Gurkhas) returning at the same time every year from Nepaul with malarial infection, 25 per cent. of whom had sexual forms of parasites in their blood at the time of the first observation; none of these had received any quinine during the five months they were on leave. This is also borne out in almost every Indian village in endemic malarial districts during the malarial season. I am in complete agreement with the statement that the disappearance of crescents and other sexual forms from the blood indicates that progress is maintained in reducing the infection, and that the supply of asexual forms to provide sexual forms has been cut off. The entire disappearance of all forms, sexual and asexual, is also most satisfactory, and appears to show, as the authors of the paper under reference state, that "the infection has been hard hit and so reduced in numbers as to justify a favourable prognosis." Much of what one has stated above is more forcibly and tersely expressed in their penultimate paragraph: "It is clear that the eradication of crescents"—and, it may be added, of other sexual forms—"is satisfactorily secured by the control of the asexual generation of malaria parasites by adequate quininisation."

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[1] A Statistical Investigation of Records of Treatment and Blood Examination in 18,731 Cases of Malaria, THE LANCET, 1921, i., 107.

Initial Infection, Reinfection, and Relapse.

I have employed the large-dose method of quininisation since 1904, and advocated it in all hospitals with which I have been connected since that time. Anterior to the date mentioned I cannot remember following any definite cut-and-dried scheme in using quinine in the curative treatment of malaria. Each case seems to have been treated on its own merits, and although in exceptional cases this has still to be done, I believe we are now in possession of data that give us a basis upon which to formulate a much more rational method of administering the drug. The scheme I worked out in 1904 is detailed elsewhere; it has been altered little since. This large-dose treatment holds good whether we are dealing with initial attacks, reinfections, or relapses. In endemic malarial places, where fresh infections are constantly liable to occur, it is practically impossible for the ordinary medical officer, who is not a malaria expert, to decide whether a particular case is one of reinfection or relapse. A careful scrutiny of each case, with close microscopical examination of the blood, and a history (if any) of the course of the infection, may give information for inferences; but such deductions lack accuracy. The usual indication of a reinfection would be a record to the effect that the preceding attack was caused by a species of parasite different from the one found in the blood during the attack under observation; this does not necessarily mean a reinfection, as a former infection may have been a mixed one, and one or more species of parasite may have died out. The point is not very material, however, as the same course of quinine treatment is indicated whether the case is a relapse, a reinfection, or an initial infection.

Curative Value of Quinine.

It is earnestly to be hoped that the remarks of Majors Johnson and Gilchrist on the limitations of curative quinine treatment in malaria will be fully considered by those who have to treat malaria and organise the control of malarial infection. It is obvious that it has a marked influence on preventive measures likewise. I am not disposed to go so far as to say that quinine is palliative only in the treatment of malaria—in a large percentage of cases it is absolutely and permanently curative, in the absence of reinfection. It does, however, fail to prevent relapses in a higher percentage of cases than was formerly thought—even when given persistently and intensively. It is this failure to eradicate the infection in some cases that has led medical officers to seek other drugs—something more efficient than quinine. In more than one military hospital I have during the last ten years, and especially during the war, felt myself obliged to interdict the use of [illegible]arsan, kharsivan, and such-like drugs, in the treatment of subtertian and relapsing simple tertian, when this was adopted to the exclusion of quinine. I daresay my action was considered arbitrary by the younger medical officers who were trying experiments on our soldiers, but I believe the prohibition was justified; anyhow, one was influenced by pragmatism and the conviction that in quinine we possess a remedy to be better trusted to render our troops efficient in a shorter time than could be effected by the other drugs named.

Practically universal experience indicates that quinine at present is the best drug as a remedy in malarial fevers. This was claimed for it by the father of British tropical medicine, Sir Patrick Manson, almost a generation ago, and that position for quinine remains unassailable to-day. As previously remarked, quinine does undoubtedly fail in a certain proportion of cases for reasons that we are at present unable to understand; this has led to its being disparaged by some medical men and to a certain extent discredited in the lay press. Personally I feel that every medical man who denounces the curative use of quinine in malaria takes upon himself a serious responsibility. I can recall the evil effect of the announcement in India that quinine precipitated attacks of blackwater fever. Without *pressing the point further, it may be reiterated that* we have overwhelming evidence proving quinine to be the drug *par excellence* in malaria, and until something better is discovered its merits should not be depreciated.

Whilst my faith in quinine as a curative of most cases of malarial infection remains unshaken, I confess that I no longer hold it to be an infallible remedy for all cases of malarial infection and all complications arising out of such infection. I have of late years often asked myself whether the search for other drugs in the treatment of malaria has been carried out with the assiduity and perseverance that it deserves. It is quite possible that in the future we may find some drug superior to quinine as a plasmocide; again, someone may discover an external application much more permanently repellent to mosquitoes than those now in use, or a plant may be revealed that mosquitoes do not like, cultivation of which will prevent their invading the precincts of our habitations, any or all of these things may occur; but until this antimalarial millennium arrives our sheet-anchor in malaria, both curatively and prophylactically, is quinine.

Tendency to Relapse in Benign Tertian.

It was interesting to note that Majors Johnson and Gilchrist observed a special tendency to relapse in benign tertian. Many who have studied the question of malaria in India for years know that benign tertian is on the whole epidemiologically a more serious form of infection in that country than malignant tertian as regards morbidity and, indirectly, as regards mortality. I referred to this point in a recent communication in THE LANCET,[2] and I need not now labour it.

Their observation that a mixed infection is more difficult to cure than a single infection will be read with much interest by many. Around this point crowd several questions calling for investigation, questions to which further reference here would be inopportune.

Syphilis and Malaria.

Their remark to the effect that the coexistence of syphilis and malaria retards the cure of malaria and the prevention of relapses by quinine, and brings about more than usual anæmia, is in accordance with one's own experience. It may be remembered by some old workers in malaria that a generation or so ago it was often stated that syphilis and malaria did not coexist. I made some remarks on this as far back as 1891, and in 1910 stated as follows: "Syphilis and malaria may not only occur in the same person, but the one disease aggravates the other, and unless the malaria is promptly treated the dual infection is a very serious matter for the patient."

Establishment of Certainty as to Malarial Infection.

In all endemic malarial places the first point to establish is that the patient is suffering from malarial infection before saturating him with quinine. Every hospital of any size should have the appliances and personnel to determine this. Many people in India who are not suffering from malaria are given huge doses of quinine over long periods. I inspected a hospital on July 6th, 1919, and saw a patient who was suffering from intermittent pyrexial attacks for 12 days. His blood had been examined and found negative as regards malaria parasites on two occasions. Blood cultures had been made and were negative to Eberth and the paras. The medical officer was greatly puzzled. The man had been suffering from toothache off and on; to this little attention had been paid. A dentist was called in and extracted a wisdom tooth; at the same time he opened a putrid alveolar abscess and brought the pyrexial phenomena to an end. This man had received 360 gr. of quinine by the mouth and four intramuscular injections of 10 gr. each of bihydrochloride of quinine. In a letter to the *British Medical Journal*[3] I mentioned the personal experience in July, 1917, of being given 45 gr. of quinine daily for three days when suffering from sandfly fever due to mistaken diagnosis.

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[2] Researches on the Treatment of Benign Tertian Fever, THE LANCET, 1920, i., 1332.

Unsolved Problems.

There are still a great many unsolved problems connected with the treatment, ætiology, and epidemiology of malaria; some are of fundamental importance, and others, at present appearing to possess merely academic interest, may when completely elucidated be shown to have important bearings on the practical side of malaria work.

A great deal has been done since Sir Ronald Ross made his immortal discovery, and much excellent work is being carried on at the present day. One is, however, tempted to consider that something is lacking—some want of a sense of proportion as to the importance of the questions under investigation. As far as India is concerned, one hopes that the recently formed Ministry of Health will create in its Research Department special groups of expert malaria workers who will initially tabulate the unsolved problems of malaria, place them in order of precedence as regards their practical importance in the treatment and prevention of malaria, and work at them continuously until they are wiped off the slate.

The control of malaria in tropical and subtropical countries is now, as in times past, the most important economical problem of the day. As I have elsewhere stated, "this aspect of the question of malaria has been much neglected and its importance has been obscured by relatively insignificant entomological side issues."

SQUINT, MANCINISM, AND TUBERCLE.*

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IN a book[1] published not long ago it was maintained that squint was about three times commoner in consumptives, and probably also in consumptives' parents, than in the non-tuberculous; that such squint seemed to favour the left eye; and that tuberculous squinters were left-handed, and gave a family history of left-handedness oftener than did non-squinters. These five points (which, so far as I know, are new) it is proposed here to examine further in a larger material.

The first comparison was as follows: Ordinary concomitant strabismus in 500 adult or adolescent consumptives, all sputum-positive, 1·2 per cent.; in a comparable control, only 0·4 per cent. Two criticisms[2] were directed to this latter figure—namely, that squint in the ordinary run of children was much commoner than 0·4 per cent. But neither my consumptive nor my control series contained any children. Moreover, a record of the incidence of squint in the young male adult population of this country, hitherto lacking, has since become available. J. D. Comrie[3] found in 10,000 military recruits (whom he stated to represent a fair sample of the community) 31 squinters—i.e., 0·3 per cent. This is remarkably close to my 0·4 per cent., because my controls comprised both sexes, and squint is allowed to affect women a little more than men—at all events girls more than boys. The proportion in controls having been thus confirmed, it seemed desirable to test also the proportion—namely, 1·2 per cent., in consumptives. Through the courtesy of Dr. J. B. McDougall and Dr. J. Rennie, and of the superintendents of various Yorkshire tuberculosis institutions, I examined a fresh series of consumptives (not all sputum-positive), finding in 352 men and 148 women 6 squinters (again 1·2 per cent.). These 6 were 4 male, 2 female, the defect being thus rather commoner in the latter sex. So that the previous comparison was exactly confirmed, whilst further corroboration resulted from renewed search of the literature. Luzzatto[4] has been struck by the frequency of lymphatic and strumous types amongst ordinary squinters. In 200 patients at a hospital clinic he found two with squint, and among squinting school children a very large majority showing the coexistence of ordinary strabismus with plain evidence of scrofulosis. As regards paralytic strabismus, 14 out of 15 children thus affected were of lymphatic-scrofulous type. All this was quite independent of any scrofulous ocular affection likely itself to cause squint.

Age.

Again, to clear up the question of age, I have examined 343 cases of juvenile phthisis in Yorkshire (191 boys, 152 girls). There were 11 squinters; 4 boys and 7 girls, yielding a percentage of 2·0 for the former, 4·6 for the latter; or combined, 3·2 per cent. To compare with ordinary school children in this country, take Bishop Harman's recent London figures[5] of 1·0 per cent. for boys, 1·8 per cent. for girls; or combined, 1·5 per cent. J. Priestley and B. Richardson (loc. cit.), for 20,000 Staffordshire school children during a recent eight-year period, give a combined percentage varying yearly from 1·1 to 1·7, girls being slightly more affected. My own control figures for South Yorkshire schools are about the same. Not stopping, then, to do more than note the apparently new fact that squint is greatly commoner in children than in adults, we reach the first conclusion that *in the subjects of some forms of tubercle squint is as much as twice or thrice as frequent as in normal persons.*

Excessive Squint in Certain Forms of Tubercle.

What forms? In my book—remembering the very few cases seen when once going round the Royal Sea Bathing Hospital, Margate—I had surmised that squint was not in excess in bone and joint tubercle. In a subsequent investigation[6] of the stigmata of predisposition to that affection, I had found in 350 children from the Alton and Sheffield hospitals for bone and joint tubercle, figures for squint actually below the normal estimates just quoted. I was collecting cases of tuberculous adenitis when I came on Luzzatto's paper. So far my results confirm his. In 50 males there were 3 squinters, and in 55 females 2 squinters—a combined percentage of 4·7, which is very high indeed when it is remembered that not quite all of these were children. Of tuberculous peritonitis I have not yet nearly enough cases to judge, but up to now, in 46 cases, 21 of them girls, no instance of squint has occurred. It seems fair, then, to conclude, secondly, that *squint is excessive in lung tubercle and in lymphatic gland tubercle, but not in bone and joint tubercle.*

As to consumptives' parents, taking unselected patients—non-squinting, of course—and their non-tuberculous fathers and mothers, I found 3 squints among 112 mothers, none among 13 fathers. Again a proportion very much higher than the normal (0·3 or 0·4 per cent.). Thirdly, then, *squint is excessive amongst the clinically non-tuberculous mothers (at any rate) of non-squinting consumptives.*

Eye Affected.

I have now particulars of 65 phthisical squinters; 48 of these squinted with the left eye. As to the normal lateral distribution of squint, the text-books appear to be silent. So I have collected 62 non-tuberculous squinters, largely from local schools. Forty of these were left-sided. The difference (73 per cent. as against 64 per cent.) seems insignificant. However, to explore the influence of age aforementioned on squint incidence, both these series have been divided into over and under 16 years old. Over 16: 42 phthisical gave a percentage of 71 left-eyed, 25 non-tuberculous a percentage of 52. Under 16: 23 phthisical gave 78 per cent., 37 non-tuberculous 72 per cent. In all the squinters, agreeably to accepted teaching, the convergent form of strabismus was much commoner than the divergent. Divergent strabismus occurred very much oftener in phthisical than in non-tuberculous girl children. However, the number of these cases is unavoidably so small that the above figures are not worth more than mention. Still, it would appear quite likely that left-eyed preference is a characteristic of squint generally, not only of squint in the tuberculous.

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[3] Brit. Med. Jour., March 27th, 1920.

* Address to Yorkshire Tuberculosis Society, January, 1921.

Mancinism.

Left-handedness, or mancinism, occurs in 2 per cent. to 4 per cent. of the general population. I found [1] it in 2·7 per cent. of non-squinting consumptives. In 60 squinting ones it occurs 4 times (thus in 6·6 per cent.); there are, in addition, 5 cases of ambidexterity. All the left-handers are left-eyed squinters, all the ambidexters right-eyed. Of 60 non-tuberculous squinters, 6 are left-handed (10 per cent.); again, all the left-handers squint with the left eye. There are, too, 2 ambidexters, with left divergent squint. As to sex, in both series the mancinism is much more frequent amongst the males; this is in accordance with what is known of the peculiarity in question (Ogle).

The frequency of a family history of mancinism in the general population does not seem to be known. It is pretty certainly nothing like so high as in left-handers. Ogle stated that out of 57 left-handers 27 know of left-handed relatives—that is 47 per cent. Now out of the above 60 phthisical squinters, 21 know of left-handed relatives—that is 35 per cent. Out of 60 non-tuberculous squinters, 22 know of left-handed relatives—that is 36 per cent. All the left-handed squinters in the phthisical series know of left-handed relatives, and two-thirds of the non-tuberculous left-handed squinters. Right eye and left eye, the latter kind gives a slightly more frequent family history of mancinism. It is reasonable to conclude, then, fourthly, that, *whether in phthisical or in non-tuberculous subjects, left-eyed concomitant strabismus is somewhat associated with mancinism and with a family history of mancinism.*

Deductions.

These four conclusions may be shortly examined and collated. To say that tubercle causes the squint found along with it is inadmissible, because (*a*) the history was always of the squint coming first; (*b*) there were signs of phlyctenules, opacities, &c., in very few of these patients; (*c*) Luzzatto, an ophthalmologist, excluded such a possibility from his cases: (*d*) bone and joint tubercle, in which there is no excess of squint, is by no means free from tuberculous ocular complications. Indeed, the symptom of photophobia seemed to me, when working at Alton, much commoner than in tuberculous children at a dispensary, naturally from the exposure to strong light necessary in heliotherapy.

Squint and a General Tendency to Abnormality.

Nor, of course, on the other hand, can squint be a direct causal factor in tuberculosis. However, its association with that disease should not surprise us, for the insane * are highly subject to both affections. I have shown [1] that it is in just those forms of insanity in which squint is commonest that tubercle is most rife. Squint is a mark of general tendency to abnormality. Ch. Féré [7] describes it as common in neurotic families, A. Crzellitzer [8] as familially related with deaf-mutism. It is also excessive amongst albinos and in their otherwise normal relatives—an incidence which parallels the incidence in phthisis above described; that is, in excess not only in consumptives, but also, at any rate, in their mothers. This point is of distinct service in the diagnosis of phthisis. The possible left-sided incidence of squint recalls the sinistral incidence also [9] of polymastia, another abnormality which has been described as in excess in consumptives.[10] All this makes more probable the association, too, of squint with mancinism, for mancinism (C. Lombroso, Féré) has been reckoned among the stigmata of degeneracy. Savages, lunatics, and criminals show excess of mancinism (Merkel [11] and others), also sexual inverts (M. Hirschfeld). A certain relationship exists between mancinism and stammering; at least, 2 of my 62 non-tuberculous squinters stammer. Papers on this point will be within the recollection of readers. Here, then, is distinct suggestion of the development of clinical tuberculosis being favoured by an abnormal constitution, of which squint is a sign. And such suggestion becomes strengthened when we consider the above-described distribution of squint among the various forms of tuberculosis; that is, in excess in consumption and in scrofula, not in excess in bone and joint tubercle. For it would appear likely that one peculiarity of the tuberculosis of savages, and of the insane too, is excess of lung or lymphatic gland tubercle, deficiency of the osseo-articular form.

Tubercle in coloured and uncivilised communities.—The evidence as regards these communities may be thus summarised. In most accounts lung tubercle is mentioned and no other variety. British colonial reports have a classification of tuberculosis, but it is hardly ever filled in. In one for Natal,[12] however, lymphatic glandular tuberculosis is mentioned as very prevalent. In another for Basutoland [13] the totals are: phthisis pulmonalis, 117 cases; glands, 109; lupus, 43; tabes mesenterica, 7; other forms of tubercle, including bone and joint, nil. Ziemann,[14] for Siam, mentions the lungs and intestines as affected. For Samoa, Togo, Anecho, and the Cameroons, his figures add up to: phthisis pulmonalis and air-passages, 98 cases; bone and joint, 28; other organs, 2. Westenhoeffer,[15] in Chili, divides 59 deaths from tuberculosis into 45 phthisis, 9 urogenital tubercle, 3 generalised, 1 tuberculous empyema, 1 primary intestinal. Bone and joint forms are unmentioned save that one case of miliary tuberculosis had a slight tuberculous dactylitis. Another autopsy record is that of A. Borrel,[16] on Senegalese troops brought to France. In 31 cases, bone and joint lesions are only mentioned twice, and these were evidently secondary to copious tubercle elsewhere; glandular enlargement was almost uniform as the initial manifestation, and the lungs were badly affected in all. Colonel Cummins [17] enthusiastically praises Borrel's general description, and says it applies exactly to the tuberculosis of the Sudanese. Seale Harris [18] states that tuberculous disease of bone and joint is of common occurrence among Alabama negroes, although the lungs were most frequently attacked; he agrees with Osler that tuberculous peritonitis is commoner in black patients than in white. Another writer [19] opines that tuberculosis amongst Sioux Indians does not differ at all from ordinary tuberculosis. E. Metchnikoff,[20] dealing with the Russian Kalmucks round Astrakhan, gives osseous and glandular tuberculosis as commoner than phthisis; he states that these tribes are developing some immunity to the disease. Lastly, Professor Külz,[21] in a full and excellent article on the peculiarities of tuberculosis in Pacific islanders, states that while phthisis, scrofula, and miliary tuberculosis are very common, "alle die Zustände selten sein werden, die bei uns gewöhnlich erst nach längerem Krankheits-bestand aufzutreten pflegen, wie Knochen- und Gelenktuberkulose." In the above it is significant that the exceptions to the general rule just traced are nearly all in races which have been longer in contact with civilised communities, as in Russia and North America, and who therefore may be expected to be in process of immunisation—mainly racial, by selection in Darwin's and Archdall Reid's sense, but possibly slightly individual as well.

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* To ascribe the tubercle of insane persons to bad hygiene flies in the face of the following facts. 1. Its extraordinary frequency, at least eight or ten times that amongst the sane; a disproportion twice as great as between the lower social classes and the upper ones. 2. Its scarcely lessened prevalence in new asylums. 3. The open-air life there, and the general fatness of the inmates. 4. The prevalence amongst the insane of pulmonary gangrene. 5. The comparative freedom from tubercle and gangrene of asylum [illegible]ants.

Tubercle, insanity, and mental deficiency.—As regards the insane and mentally deficient, one cannot cite public sources for the distribution in question, at least as regards this country, for even an inquiry like that of the Medico-Psychological Committee on Tuberculosis in 1901 only speaks of "active tubercle," without mentioning its location. But Dr. C. Caldecott, medical superintendent of Earlswood, an institution the age of whose patients is that common in bone and joint tubercle, is kind enough to write as follows:—

> "No doubt *pulmonary* tuberculosis is the principal form in my experience which affects the mentally defective. We really see very little of bone and joint trouble. ...... We see a good deal of glandular tubercle, and many of the little Mongolian patients seem to suffer primarily from an abdominal form of tuberculosis."

Dr. J. Shaw Bolton, of the Wakefield Asylum, writes that two forms of tuberculosis are common in the insane, lung tubercle and disseminated tubercle, both often associated with intestinal ulceration, and the latter also with enlargement of the lymphatic glands of the chest and abdomen. Affection of the ordinary lymphatic glands of the body is rare, as is bone and joint tubercle. To a third and last inquiry, addressed to another large asylum, the answer was returned that phthisis is "a long way the most common," abdominal tubercle infrequently met with, lymphatic gland tubercle uncommon, and bone and joint tubercle rare. Thus there is evident agreement in location of the tuberculosis of savages and of the insane—the disease in these two classes has other points of similarity, of course—and this location is very much that characterised by excess of squint.

However, it will not do to say that pulmonary phthisis and scrofula are sometimes predisposed to by a degenerate or atavistic want of resistance to the bacillus, shown by squint, and peculiar to these two forms of tubercle, because in bone and joint disease one finds in excess other degenerate or atavistic stigmata. I found[6] ichthyosis, persistent lanugo, and red hair to be so. Bowen[22] and Renshaw[23] have separately advanced an atavistic theory of origin of ichthyosis—a view further confirmed by the existence in Europe of a tribe in which it is the normal condition. I gave Darwin and Lord Avebury as authorities for the atavism of red hair, and, indeed, Eusebius, Broca, Topinard, and recently Kohlbrügge,[24] might have been added; while several writers have noted the affinities of red hair with albinism—indeed, the affinities are like those of squint, for red hair is not only common in albinos (cf., the rufous albino), but also in normal relatives.

Perhaps, then, squint in tuberculosis may be the sign of some abnormality predisposing to phthisis and scrofula, not to osseo-articular lesions; thus an abnormality in connexion with the respiratory tract, say; most likely of its lymphatics, the lymphatic system, according to Virchow, being the one most subject to variation. While, conversely, red hair (not excessive in phthisis, according to F. C. Shrubsall[25]) may be the sign of another abnormality specially predisposing to bone and joint tubercle, possibly undue skin permeability. Ichthyosis, by the way, is in excess both in phthisis and in bone disease. However, there are difficulties in the way of this hypothesis. One is the view that osseo-articular tubercle is secondary to tubercle of the bronchial glands. Another, that red hair is in excess in scrofula as well as in bone and joint disease.

Conclusion.

These are dark matters. Probably both factors act, with others as well. There is a general constitutional susceptibility; there is also some special vulnerability-producing anomaly. I have not enough cases of tuberculous squinters to judge whether or no nasal defect is associated. But be the exact pathogenesis as it may, there can be small doubt of the existence, in more than one form of tubercle, of unmistakable stigmata of predisposition; unmistakable, but, like other signs of that sort, strangely neglected and ignored. Take only the significant phenomenon of squint being much commoner in ordinary school children than in ordinary adults. It might have been predicted; we know from school medical officers that very few working-class children get cured of squint, but we also know that an undue proportion of these squinters are destined to find the asylum and the prison. What use does preventive medicine make of that knowledge? Now add that an undue proportion will also become tuberculous or the mothers of the tuberculous, and that into the bargain there is probably a considerably higher general mortality amongst them than amongst their school fellows. The neglect becomes serious. Of such neglect one great cause is the current undue regard for pathology and bacteriology, in spite of their many failures and false claims in tuberculosis; and the juvenile conception that obtains of research as something necessarily involving the apparatus of the physical laboratory—unfortunate reversal of precedence between temperament and technique!

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THE INCIDENCE OF CONGENITAL SYPHILIS AMONG THE NEWLY BORN.[1]

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THE object of this investigation was to determine if possible the incidence of congenital syphilis among the newly born in a mining town and an industrial town in one of the Midland counties. The cases were entirely unselected, and in no instance had either parent been treated for recognised syphilis. It must be generally admitted that our knowledge of the transmission of syphilis is very incomplete, and that the term "congenital syphilis" is very loosely applied. Cases are dubbed congenital syphilis on the flimsiest of data, while others are missed through want of proper appreciation of symptoms slight in themselves, but the only visible manifestations of this insidious disease, where a Wassermann reaction might have enlightened the practitioner as to the true state of affairs.

John A. Kolmer, of Philadelphia, who has published much original work on syphilis, holds that—

> "Every untreated or inadequately treated syphilitic of either sex, and particularly the woman of child-bearing age, is potentially capable of transmitting the disease, and that the number of such persons must be appallingly large," and secondly, that "it would appear quite certain that the fœtus possesses no natural resistance to infection with *Treponema pallidum* in so far as its own tissues are concerned, and that it may be infected through the mother at any time from conception to late in pregnancy."

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[1] Report to the Medical Research Council on the Wassermann reaction of placental blood in a series of 340 unselected cases in a Midland county.

Any figures based upon the examination of placental blood alone will give a probable under-estimation of the amount of congenital or prenatal syphilis in the general population. Dr. P. Fildes, in a report to the Local Government Board on the prevalence of congenital syphilis among the newly born in the East End of London, 1915, states that "only a minority of syphilitic women induced this positive reaction in the umbilical cord serum," and this view is held by Dr. Amand Routh (Charing Cross Hospital), Dr. Morna Rawlins (Guy's Hospital), and A. F. W.

Collection of Material.

For the collection of the material employed in this investigation, for the mining area two midwives with a large working-class practice were chosen, whose technique in midwifery and trustworthiness in carrying out instructions could be relied on. They were instructed that the cases were in no way to be selected, and that with each case a few essential particulars were to be sent.

The particulars demanded were as follows: name, age, address; date of marriage, number of pregnancies, abortions or miscarriages and period; patient's health, husband's occupation, and husband's health.

The blood was taken from the placental end of the umbilical cord immediately after it was severed from the infant. Sterilised collecting tubes were supplied from the county laboratory, and it was impressed upon the midwives that strict aseptic precautions should be taken in the collection of the specimens. These specimens were then posted to the county laboratory, and after removal of sufficient serum for S. M. R. were forwarded to the Central Hospital, Lichfield, for A. F. W. The period of time covered by the investigation was 16 months (1918–19).

Procedure of Investigation.

The procedure of the investigation into the specimens was decided at a preliminary meeting of the two investigators, after which there was no comparison of notes and no discussion about the results until the investigation was completed. It was decided that each investigator should employ a different method of test; those having been chosen, the same standard was to be used throughout the investigation, and the tests were to be batched along with the ordinary routine Wassermann testing at each laboratory to ensure absolute impartiality. Thus S. M. R. employed Professor H. R. Dean's technique, in which the complement factor is constant with variations in serum, whereas A. F. W. used Colonel L. W. Harrison's method, in which the serum factor is constant and the dose of complement varies. It is thus obvious that as wide a field as possible of technique and experience was brought to bear upon each individual specimen.

It is regretted that it was impossible to get later specimens from either mother or child; it will be readily realised that it was inadvisable in many of the cases to acquaint the parents with what was being done, owing to the risk of misunderstanding and family recriminations. In a considerable number of instances S. M. R. visited the mother to make tactful inquiries into her obstetric history, but owing to the absence of any cursory physical signs of syphilis in parent or child she was either refused or deemed it inadvisable to press for a further blood examination.

Mining Area: Summary of Results.

The result of the investigation into the 300 cases collected in the mining area may be summarised as shown in the table.

In 284 cases, or 94·6 per cent., the results of both workers were identical, 10 cases, or 3·5 per cent., being definitely positive.

1. In 5 cases A. F. W. found a trace of complement deviation which was not found by S. M. R. As this was insufficient reaction to be reported as even a partially positive result, he is of opinion that it was probably due to delay in transit, causing increased deviability of the serum. 2. In 5 cases there was marked disagreement, S. M. R. reporting two specimens positive which A. F. W. reported negative, while 3 S. M. R. reported negative which A. F. W. reported positive. Whether this class of five is due to mistakes in technique or variations of the same on the part of one or the other is so open to debate that it is beside the point to discuss here.

Table of Cases Found Positive by both Observers.

No.	Age	Month and year of marriage.	No. of preg.	Patient's health.	Husband's occupation and health.†	S. M. R. result.	A. F. W. result.
P5	30	May, '04. Dec., '17.	4	Not good. Very anæmic.	Collier.	1–80 +++++	++
P25	32	May, '04.	6*	Has had bronchitis and asthma, rheu. fever, infl. lungs.	Labourer	1–10 ++	++
P77	—	Oct., '01.	8	Had anæmia.	Police.	1–10 ++	±±–
P150	32	Dec., '10. Dec., '17.	4	Good.	Collier.	1–40 ++++	±±–
P152	19	Mar., '18.	—	Had gastric stomach.	"	–20 +++	++
P178	28	Aug., '08.	4	Good.	Missing soldier.‡	1–20 +++	++
P251	35	June, '14.	2	"	Dis. soldier.	1–10 ++	++
P258	23	Mar., '19.	—	"	Collier.	1–5 +	+–
P273	28	Dec., '11.	2	"	"	1–5 +	+–
P285	33	Unmarried.	5	"	—	1–20 +++	++
D39	—	1918.	1	"	Machine ruler.	1–80 ++++	++

* 1 Abortion, 6 weeks. † In each case the husband's health was good.
‡ Patient had a child by another man.

Two specimens cannot be reported on by both workers owing to the control tube not being completely hæmolysed. A. F. W. reported one such failure in a case reported positive by S. M. R., while S. M. R. reported one control tube not hæmolysed in another case which A. F. W. reported negative.

One specimen could not be reported on by either worker.

Industrial Area: Summary of Results.

A similar investigation was also carried out amongst the patients of a large charity practising midwifery in an industrial town in the Midlands, but owing to circumstances over which the investigators had no control only 40 specimens were sent. In this series one case was found positive by both observers, a percentage of 2½. Unfortunately, owing to the difference in the numbers of specimens from the two towns no sort of comparison into the infection of the two areas can be deduced. At the same time it was deemed more illustrative to keep the records apart, as the incidence of 1–40 in the latter town would unjustifiably reduce the positive percentage given in the former series.

Conclusion.

It must be realised that the number of specimens dealt with is too small to draw any definite conclusions from, but the percentage of positive reactions obtained is significant and calls for further investigation in wider areas: first, among unselected cases, and secondly, from those where either parent is known to be infected, so that the reliability of the test may be definitely gauged from the results achieved. The latter investigation could easily be arranged in the lying-in homes of infected patients. When one takes into consideration that women in the latter stage of pregnancy tend to give a much less positive Wassermann reaction than the history of the case warrants, and that congenitally syphilitic babies tend to give a negative Wassermann reaction until a month or so after birth, whether the complement-deviating substance in the placental blood is indicative of syphilis in the mother and not according to Fildes in the child, or in the child and the mother according to Kolmer,[2] the facts are that 3·5 per cent. specimens of placental blood were found positive by two observers using entirely different methods in different laboratories, and we presume to repeat that these results are highly suggestive of the prevalence of apparently undiagnosed syphilis in the general population.

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[2] Archives of Pediatrics, 1920.

In conclusion, both workers would like to express their great indebtedness to their laboratory assistants, C. F. Peckham and Corporal R. W. Jones, Central Hospital, Lichfield. The incidental expenses of the research were defrayed by a grant from the Medical Research Council.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

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A CASE OF MYOCLONIC ENCEPHALITIS.

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THIS dramatic and fatal type of encephalitis is so uncommon that the following case seems worthy of being placed on record.

The patient was a man of 58, free from neuropathic family taint, with an excellent personal history, active, athletic, and of temperate habits. Jan. 17th: Patient complained of sharp pain in the left shin-bone, just below the tuberosity of the tibia. There was exquisite tenderness on slight touches over this spot, but no redness or swelling. Temp. and pulse normal; no history of any local injury. During the day the pain became so intense that bone disease was suspected. Local applications of iodine and later antiphlogistine were used and aspirin was given internally. Jan. 18th: The pain and hyperæsthesia had shifted to the outer side of the left knee and extended down the leg to the outer side of the foot. The old tender spot on the tibia had gone. The patient was now restless and excited and developed sudden jerking movements of the abdominal muscles and the proximal muscles of the arms and thighs. Jan. 19th: Pain in the leg disappeared and did not recur. He was mentally confused and showed a mild delirium of toxic type. He was occasionally disoriented, and had the idea that he was in the country visiting a friend, who had, in fact, been dead for a year. Temp. and pulse remained normal. Jan. 20th: Patient was more excitable, and his delusions were more vivid; he was excited and voluble. There were well-marked spontaneous sudden myoclonic jerks, chiefly of the abdominal muscles, but also affecting the lumbar, lower pectoral muscles, and at times the muscles of the upper arms and thighs. These occurred irregularly at the rate of 14–15 per minute, and produced sudden grunting respiratory movements. The optic discs, pupils, and cranial nerves were normal. There was no motor weakness of the limbs or trunk, but voluntary movements were abnormally rapid and jerky. The knee-jerks and ankle-jerks were normal and the plantar reflexes flexor. The abdominal reflexes were absent. Kernig's sign was negative and there was no cervical rigidity. The temperature was normal, but the pulse was beginning to rise and reached 112. Heart, lungs and abdomen, and urine were normal. It was attempted to induce a fixation abscess by means of 20 minims of oil of turpentine injected into one deltoid muscle. Urotropine, 10 gr., was administered by the mouth six-hourly. The temperature rose the same evening to 100°.

Jan. 21st: Patient was distinctly worse. T. 99°–102°; P. 120. He slept badly in spite of medinal, chloral, and bromide. The myoclonic jerks were more severe, and the delirium more intense. Incontinence of urine was now present. Jan. 22nd: T. touched 103° during the night, but after a hot pack it fell gradually to 99·8°. Patient still mentally confused and completely disoriented, but replied to questions and had no paralysis. The sudden myoclonic jerks were more marked than ever, occurring irregularly, chiefly in the abdominal muscles. Knee-jerks normal. On examination of cerebro-spinal fluid no excess of pressure was found. It contained 5·38 lymphocytes per c.mm. and was free from organisms. 10 c.cm. of the fluid was reinjected into the spinal muscles at the time of lumbar puncture in the hope of furnishing an autogenous vaccine. Later in the evening the patient became lethargic and the knee-jerks could no longer be elicited. Jan. 23rd: The temperature ranged between 104·6° and 101·8°. The pulse steadily rose to 160 and the respirations to 45–50. The myoclonic jerks diminished in intensity and disappeared. Jan. 24th: T. 104°, P. 160, R. 50. Later the pulse became uncountable, and the patient died with a temperature of 103°. No autopsy was obtained.

Remarks.

The foregoing case corresponds in all essential features with those already described in 1920 by Sicard and Kudelsky[1] in Paris and by Ellis[2] in London. Its diagnostic phenomena are the intense initial root-pains, succeeded after a few days by acute myoclonus and delirium of toxic type, culminating in lethargy, coma, and death. The course of the disease in this case, from start to finish, was only seven days.

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[1] Bulletin de la Société Médicale des Hôpitaux de Paris, 1920, xxxvi., p. 94.
[2] THE LANCET, 1920, ii., 114.

A NOTE ON THE RELATIVE ACTIVITY OF THE

FAT-SOLUBLE ACCESSORY FACTOR

IN COD-LIVER OIL AND BUTTER.

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THE therapeutic value of cod-liver oil, especially in the treatment of rickets, has long been appreciated by the clinician. The cause of this remarkable potency has not yet been satisfactorily explained, but the results of recent researches on the accessory food factors strongly favour the view that it is due to the presence of the fat-soluble factor in the oil. Professor Edward Mellanby's experiments with puppies point to the great probability that a deficiency of this factor in the diet is associated with the ætiology of rickets. Cod-liver oil, however, has shown itself always in the treatment of rickets to be superior to other substances which contain the fat-soluble factor. Results obtained by us in connexion with another inquiry seem to offer a possible explanation to this apparent inconsistency.

Our present knowledge of the distribution of the fat-soluble factor in nature is of a qualitative character. It is based on a technique which consists of feeding young rats on a diet adequate in every other respect, but lacking the factor. On such diet the animals decline, but on the addition of a substance containing the principle they resume normal growth. We have been engaged for some time in an investigation with the object of working out a method for the estimation of the fat-soluble factor on quantitative lines. From numerous experiments we have succeeded in ascertaining the necessary conditions under which results of a quantitative nature could be attained, and the method so far worked out, although not perfect, affords the opportunity of comparing the relative content of the fat-soluble factor in various substances with a reasonable degree of accuracy. In this investigation we had the opportunity of testing a variety of substances, and we were struck by the extremely high potency of cod-liver oil. This was specially marked in the case of a sample of crude unrefined cod-liver oil, which was found to be 250 times as potent as butter. The samples of refined cod-liver oil which we examined, although not so active as the crude oil, were also far superior in their activity to butter. It is our opinion that this superiority in potency of cod-liver oil to other substances is responsible for the remarkable results achieved with it therapeutically. Unfortunately, in order to satisfy the requirements of the public there is a great tendency to produce brands of cod-liver oil which retain little of the characteristic taste and which appear almost colourless. In order to achieve this, very drastic means may often be employed which conduce to the partial or even total destruction of the accessory factor. In this connexion one may point out the great instability of the fat-soluble factor when exposed to air (Hopkins, 1920, Drummond and Coward, 1920) and ozone (Zilva, 1920), the latter substance being very often employed as a bleaching agent in many industries. It is hardly necessary to point out the serious consequences which might arise if in the process of refining this exceptional activity of the cod-liver oil were to be vitiated or destroyed in the manipulation of certain preparations.

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References.—Drummond and Coward (1920), Biochem. Journ., xiv., 234. Hopkins (1920), Biochem. Journ., xiv., 725. Zilva (1920), Biochem. Journ., xiv., 740.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

Repair of Fractured Mandible.

A MEETING of this section of the Royal Society of Medicine was held on Feb. 2nd, Mr. W. G. SPENCER, the President, being in the chair, when Mr. GILBERT CHUBB showed cases and radiograms illustrating the technique employed and the results obtained in the Repair of Fractured Mandible by means of the Free Autogenous Bone Graft. An account of his demonstration will appear in a subsequent number of THE LANCET.

Mr. G. E. EDINGTON read a paper on

Meckel's Diverticulum as a Cause of Intestinal Obstruction.

This vestige of a primitive condition was found, he said, by the practical surgeon to assume some prominence in various conditions, of which the principal were umbilical fistula, intestinal obstruction, and diverticulitis. He contributed notes of four cases which illustrated the part which the diverticulum might play in the ætiology of intestinal obstruction.

The first case was that of a youth aged 17; *the diverticulum was adherent to the umbilicus and ensnared a loop of ileum.* There had been previous attacks, and death occurred within 48 hours of the operation from paralytic ileus. Two days before the patient was first seen he had been seized with umbilical pain; the bowels moved about the same time, with which occurred vomiting. Repeated enemata failed to procure further evacuation. The three previous attacks had responded favourably to enemata. Examination showed no very great tenderness; there was dullness over the lower abdomen and in both flanks. At the operation the diverticulum was seen to arise from the side of the ileum to the left of the antimesenteric border, about 16 inches above the ileo-cæcal junction, and as a thick and rounded cord it passed downwards and inwards across the ileum. Externally the cord was continuous with the gut, and internally it passed inwards behind some distended coils and then upwards in the middle line to the umbilicus, to which it was adherent. The vertical portion was found to be much distended. Its blood-supply was obtained from the mesenteric vessels, and was in a fold which sprang from the under surface of the ileum, close to the mesenteric attachment, and ran along the mesentery to the upper (jejunal) side of the diverticulum. Vomiting came on the day after the operation and later became fæculent, and the patient died on the second day.

The second case was that of a boy, aged 10 years, in whom the *invaginated diverticulum formed the commencement of an ileo-ileal and later an ileo-colic intussusception.* Eight days previously there had been vomiting and severe abdominal pain, from which the patient recovered in a few hours. Five days later there was a recurrence of vomiting and pain, and a dark motion (? melæna) was passed on the following day. On admission to hospital the abdomen was rigid but not distended, and tenderness was especially marked about the umbilicus. Under an anæsthetic a hard mass was palpable behind the right rectus abdominis muscle about the level of the appendix. At the operation the ileum was found to be narrowed and fixed downwards and backwards towards the pelvic brim, where the bowel passed into an intussusception. Beyond this point the lower ileum was bulky, and the movable contents could be felt to extend for a distance of about 6 inches into the ascending colon. The intussusception was resected. From the apex of the intussusception hung a pyriform structure 5·5 cm. long by 3 mm. at its origin and 11 mm. at its thickest part. This was cut open and found to be an invaginated Meckel's diverticulum. Death from shock occurred early on the following morning.

The third case was that of a boy, aged 7 years, in whom a *loop of bowel was constricted by the diverticulum having adhesions to the mesentery.* Operation was followed by recovery. Two days before the patient was first seen vomiting and severe abdominal pain had set in and the bowels were moved at intervals. The vomiting continued irregularly, but there was no motion of the bowels after the following day. On this day he seemed well during the forenoon and in the evening castor oil was administered. At 1 A.M. he again vomited; he was collapsed, there was no radial pulse, the pupils were dilated, he was very restless and pointed to the left side of the abdomen as being painful, and coils of intestine could be seen. At operation a loop of the small intestine was exposed, which was very dark in colour and constricted by a Meckel's diverticulum, with adhesions to the mesentery. The diverticulum was excised, as in appendicectomy, and recovery was uneventful.

The fourth case was that of a woman, aged 37 years, in whom the Meckel's diverticulum was *adherent to the umbilicus and, along with the ileum, encircled and obstructed an abnormally free ascending colon.* In this case, also, recovery followed operation. When first seen the patient had acute pain in the lower abdomen of about 20 hours' duration, followed by continuous vomiting of whatever she swallowed. Two days previously there had been a good motion, but the bowels had not acted since. There was no history of previous abdominal troubles, but she had just recovered from pleurisy. Palpation was greatly hindered by very marked tenderness over McBurney's point and the infra-umbilical region. The pulse was 68 and intermittent; the temperature was normal; the tongue was clean and the abdomen was flaccid and suggested an early stage of acute obstruction rather than appendicitis. Under an anæsthetic there seemed to be a bulky swelling behind the lower half of the right rectus. At operation the cæcum was seen to be greatly distended and the appendix was normal. The swelling behind the rectus was caused by a Meckel's diverticulum, forming a firm, bluish, sausage-like structure extending up to the umbilicus, to which it was adherent. At its lower end the diverticulum passed downwards and outwards over the front of the colon, was narrowed and showed an axial twist. A double course of small intestine was found tightly encircling the colon above the level of the diverticulum. The diverticulum was found to arise about 12 inches above the ileo-cæcal junction close to the mesenteric attachment, and there were many old peritonitic adhesions and resulting fossæ in the neighbouring mesentery. The cæcum and the lower half of the ascending colon had a complete investment of peritoneum, rendering them abnormally mobile.

In discussing the cases Mr. Edington dealt first with (1) the anatomical details of the diverticulum, and (2) the details of the obstruction.

With regard to the former, he drew attention to the fact that in two of the cases (1 and 4) the extremity of the diverticulum was definitely attached to the umbilical scar. In one case (2) the diverticulum was quite unattached and had become invaginated into the ileum and formed the starting-point of an intussusception. In the remaining case (3) a band stretched from the apex of the diverticulum to the mesentery and formed the constricting agent, and in this case there were, further, membranous adhesions. Halstead reported 69 cases of obstruction of the bowel, in 63 of which attachment of the diverticulum was noted. Of the 63, 48 (76·19 per cent.) had an attachment, and 15 (23·8 per cent.) were free. Thus an unattached diverticulum was responsible for the obstruction in less than a quarter of the cases. Analysis of the 48 cases in which attachment was present showed that details of the attachment were given in 45. The various points of attachment were: to mesentery (23), umbilicus (15), small intestine (3), omentum (1), transverse mesocolon (1), and periappendicular exudate (1). Attachment of the tip of the diverticulum to the mesentery or to the umbilicus was by the remains of the omphalo-mesenteric vessels; attachment to other points was probably by inflammatory adhesions, and this, according to Halstead, rarely occurred. Cahier, on the other hand, stated that the diverticulum normally lies free in the abdominal cavity, and that adhesions, when present, are often of inflammatory and not congenital origin. According to him adhesions may follow diverticulitis, the lesions of which are analogous to those of appendicitis.

With regard to the details of the obstruction, each of the cases of attached diverticulum presented different details.

In Case 3 the terminal cord or thread adhered to the mesentery and produced a band under which a loop of bowel was snared. In Case 1 the contracted proximal portion of the diverticulum seemed to act as a band under which a loop of bowel had passed; but, in addition, several loops had passed forwards and lay between the diverticulum and the anterior abdominal wall. It was difficult to explain the mechanics of the obstruction in this case. Possibly in the first stage the passage forwards of the ileum over the diverticulum made the proximal part of the latter taut and so allowed of the constriction of a loop lower down near the origin of the diverticulum. If this were the sequence of events it would be fair to consider the obstruction as being due partly to volvulus and partly to band. In Case 4 there was an abnormally mobile colon and cæcum which had travelled inwards behind the diverticulum and then passed down in front of its proximal part. Repetition of this manœuvre led to the relationship of parts found at the time of the operation. There was no torsion of the colon, but the narrow proximal part of the diverticulum showed a very distinct twist. This case, he thought, must be looked upon as one of volvulus, the portion of the gut moving with the clock. In Case 2 the primary cause of the obstruction was invagination of a free diverticulum. In the cases collected by Halstead this form of obstruction occurred in seven of the 15 in which the diverticulum had no attachment.

Speaking of the symptomatology, Mr. Edington said that cases in which obstruction was caused by a Meckel's diverticulum presented little to distinguish them from acute obstruction generally.

According to Halstead, in the great majority of cases the onset was sudden and the symptoms were characteristic of acute obstruction. Porter stated that except where the umbilicus was patulous a positive diagnosis without laparotomy was usually impossible. The following signs and circumstances had been mentioned as pointing to obstruction by a diverticulum:—(*a*) Age: Halstead's statement that it usually occurred in childhood or in young adults was supported by the cases just reported. (*b*) Sex: Porter gave the proportion of males to females as greater than 3 to 1, a proportion which, he thought, supported the view that trauma was to some extent an exciting cause. (*c*) Previous attacks: Such, in minor degree, had been noted in the histories. Only one of the present cases (1) gave a history of such, but possibly there was a previous attack in Case 2. (*d*) The seat of tenderness was usually on the right side at the level of, or just below, the umbilicus, and was likely to lead to confusion with appendicitis. Halstead mentioned that where the diverticulum was attached to the umbilicus Berard laid great stress on the exquisite sensitiveness of the umbilical region. This was marked in Case 4 and contrasted with the usual signs of appendicitis; but it was also noted in Case 2, where the diverticulum had no attachment to the umbilicus. (*e*) Other malformations might, if present, give a hint as to the cause of obstruction, but their absence meant practically nothing. In Halstead's paper a review of 69 cases showed nothing beyond the presence of hare-lip in one only. In the present series of cases no external malformations were noted, with the doubtful exception of a puckered condition of the umbilical scar in Case 4.

With regard to *treatment*, these cases, showing signs of acute obstruction and simulating acute appendicitis, called for immediate operation. The obstruction being relieved, the diverticulum should be excised, and in excising care must be taken not to "borrow" too freely from the wall of the bowel and so cause a narrowing of its lumen. This precaution must be all the more observed because of the narrowing of the bowel which already existed at the seat of origin of the diverticulum.

The paper was discussed by Mr. HOWELL EVANS and Mr. GARNETT WRIGHT.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

A MEETING of this section of the Royal Society of Medicine was held on Feb. 4th, Professor HENRY BRIGGS, the President, being in the chair.

Yearly Tenure of the Office of President.

Mr. COMYNS BERKELEY spoke in support of a resolution, already passed by the Council, that the President should hold office for one year only. Mr. Berkeley explained that the resolution was not retrospective, and thus would not affect the tenure of office of the present President, but he supported it in order that some of the young men who were doing so much work for the section would have a reasonable chance of attaining to the honour. The resolution was passed unanimously.

In the absence of Mr. F. C. PYBUS, his paper on

An Unusual Type of Tuberculous Peritubal Cyst

was read by the senior secretary.

The patient, aged 20, in October, 1918, had had a laparotomy for (?) tuberculous peritonitis with ascites. Some ascitic fluid had been removed and the abdomen had apparently been washed out with saline and closed. Ascites recurred, with constipation. Mr. Pybus first saw the patient on the operating table, when he was asked to perform a second laparotomy. He evacuated a large amount of fluid, at first straw-coloured, and then turbid, with flakes of lymph. The viscera could not be found, and the hand entered a large cyst with a smooth wall, extending from the upper abdomen to the depths of the pelvis, where two papillomatous masses were found and eventually identified as the enlarged fimbriated ends of the Fallopian tubes. The cyst wall was separated and the ampullary end of each tube was amputated. The ovaries were conserved. The intestines were much compressed into the upper and posterior part of the abdomen, and no gross tuberculous lesion could be detected. The patient (December, 1920) is in good health. On examination sections of the cyst wall and of the papillary masses showed that each was tuberculous.

Mr. Pybus had found it difficult to determine whether the cyst was the result of a primary tuberculous peritonitis with encapsulation, involving the tubes, or of a primary tuberculosis of the Fallopian tubes, with pelvic encapsulation and gradual expansion into the abdominal cavity; a point in favour of the latter view was that the ovaries, though attached to the cyst wall, escaped involvement in its cavity.

Dr. T. WATTS EDEN read a paper by himself and Mr. LIONEL PROVIS on the

X Ray Treatment of Uterine Fibroids and Chronic Metritis,

based upon a record of 76 cases, which appears in full in the front part of the present issue of THE LANCET.

The PRESIDENT thanked the authors for a valuable paper, and said he had received messages from Dr. R. Knox and Dr. Ironside Bruce regretting their inability to be present.

Dr. N. S. FINZI also thanked the authors. He said that the principle of X ray therapy was that the same dose has a different effect on ovaries and on fibroids from that which it has on the surrounding tissue. The difficulties, however, of treating a structure 3 to 4 inches from the surface was that the same dose could not be given to the skin and the ovaries from the same port of entry, as the rays fall inversely as the square of the distance from their source, and because the intervening tissues absorb a proportion of the rays. There were two methods of meeting this difficulty: one was the Freiburg method, which consisted in the use of a large number of ports of entry, with the tube close to the skin. The rays were directed towards the ovary on each side, and the radiation was supposed to overlap thereon. The other method, which Dr. Finzi preferred, removed the tubes farther from the skin, thus diminishing the difference between the dose given to the ovaries and that given to the skin. The total exposure-time by the second method could be brought down to 15 min. per series of treatments, whereas the Freiburg method took three to four hours. He used only three ports of entry in thin and four in stout patients. He understood that the Freiburg technique had been given up by its originators in favour of this latter method. Dr. Finzi disagreed with Dr. Eden as to the timing of the treatment; he preferred the week preceding the period, when the parts were more vascular and sensitive. There were not an undue proportion of cases in his experience in whom the first period after treatment was excessive. As to dosage, it was impossible accurately to measure the amount given to the ovaries. In Germany they had tried to estimate it by substituting for human tissues an equivalent thickness of water; but this did not work out right through bony structures, nor was it quite accurate, though approximately so, even through skin and muscle. As to the relative value of radium and X rays, as a rule Dr. Finzi used the latter, but in some cases radium was more useful and it could be used for all. The action of radium was more rapid; it was rare to get an excessive first period after its use, and it was thus especially useful in cases complicated by severe anæmia where X rays were contra-indicated, and where operation, even accompanied by transfusion, was not free from danger. As to number of applications, radium often need only be used once, and seldom more than twice. The action of radium was more localised and tissues round the uterus received but little radiation. As to the disadvantages of X ray treatment, pigmentation and depilation did not matter much, but some late and serious after-results—caused by infection of damaged skin—had been reported from abroad. However, these were unlikely except after the prolonged treatment necessary for carcinoma. The internal after-results in certain patients who were operated on after X ray treatment were found to be the formation of an abnormal number of adhesions and of a hard and dense substance resembling cartilage round the ovaries; X ray treatment thus in many, though not in all, cases increased the difficulty of subsequent operation. Among contra-indications were the age of the patient; sometimes untoward results occurred in the very young, and the nearer the menopause the better the result. As a rule, cases under 38 were excluded; Dr. Finzi's cases were usually over 40. A degenerating fibroid or an inflammatory condition in structures round the ovary were also contra-indications. A dormant pyosalpinx might be lighted up; possibly this is what had taken place in the case described by Dr. Eden. Dr. Finzi had used the treatment in malignant cases, with much bigger doses and longer exposures. As to size, he had treated fibroids coming up to the ensiform cartilage, and had got considerable diminution, progressive for months and years. After the first six months the growth was just above the umbilicus, and at the end of the second six months below the umbilicus. Cases of post-menopausal treatment had been reported from abroad, in which fibroids had shrunk in size. This showed that there was a direct action on fibroids as well as action on the ovaries. Pregnancy was a contra-indication to X ray therapy. Dr. Finzi had treated over 100 selected cases during the last 11 years, of which only one had been a complete failure and one a partial failure. The advantage over operation was that the patient need not lie up. When the treatment ended the patient was well, and there was no prolonged convalescence. Radiation sickness could be avoided if each treatment was spread over three or four days, and repeated three to six times at four-weekly intervals.

Dr. G. BLACKER was interested in the paper by Dr. Eden and Mr. Provis, inasmuch as he himself had abandoned the use of X rays years ago. In a few cases he used radium, but he advocated complete removal of fibroids larger than a four months pregnancy, as well as those complicated by degeneration, pressure symptoms, pelvic inflammation, or pain. Radium, in Dr. Blacker's opinion, combined all the advantages and had none of the disadvantages of X rays. The intra-uterine application of radium eliminated the risk of burns and late sequelæ such as telangiectases, which might occur many years after treatment by X rays. Moreover, it entailed a preliminary exploration of the uterus, a valuable safeguard against missing a malignant case. Dr. Blacker had treated 40 cases in all with radium—about 12 for small fibroids and the rest for hæmorrhage at the menopause, using 100 mg. for 24 hours. He had also used radium in patients as young as 29 to cure menorrhagia, when curetting had failed. With a dose of 2000 mg. hours he obtained 9 months' amenorrhœa, during which time anæmia could be treated and another dose of radium given later if found necessary. The results published in America were on a much larger scale than in this country. Leda J. Stacy of the Mayo clinic had reported 600 cases and H. A. Kelly 180 cases of fibroid tumour, of which 171 had been cured. Nine had had to be operated on and no dense adhesions were found. Dr. Blacker then described the technique used by him. After dilatation and curettage he inserted a tube of 100 to 120 mg., protected by a screen of 2 mm. of lead and 3 mm. of silver, into the uterus. The treatment took 24 hours only and the patient was laid up for only two or three days. He disagreed with Dr. Finzi in so far that he found the first period tended to be excessive and therefore he chose a time midway between periods for treatment. There was no danger at the time, but if a too large dose were given late sequelæ might supervene. A purulent discharge started in one case some months after treatment and a septic arthritis ensued. The radium acted directly on the uterus, causing an obliterative endarteritis: the artificial menopause was thus produced by direct action on uterine tissue. Of Stacy's cases some were quite young, and the dosage in these cases was reduced to 30 or 60 mg., or the time of exposure lessened. It had been said that a monster was likely to result if X rays were used during pregnancy, but of the six cases of pregnancy Stacy's collection three had had healthy children. Radium therapy was short, certain, and efficient; certainly it was expensive, but so, Dr. Blacker understood from patients, was treatment by X rays.

Dr. LOUISA MARTINDALE advocated intensive X ray therapy in a large percentage of cases of fibromyomata of the uterus. Since January, 1914, when she had first started X ray treatment, she had had 136 cases of fibroid uterus under her care. Of these, she had treated 56 by hysterectomy, 5 by myomectomy, and 43 by X ray therapy. In 5 cases hysterectomy was performed after X ray treatment. In 41 per cent. of cases, therefore, of uterine fibroids requiring treatment she had definitely chosen radio-therapy, and since probably 9 of the hysterectomy cases could equally well have been treated by X rays, the percentage of cases suitable for radiotherapy was really nearer 50 per cent. The technique adopted was that studied by Dr. Martindale in 1912 and 1913 in the gynæcological clinic of the Freiburg University under Krönig and Gauss, with slight modifications due chiefly to the use of a Coolidge tube since 1919. She had already published the details of the technique, which, briefly, consisted in the use of much cross fire through 18–22 ports of entry, carefully marked out on the patient's abdomen and sacrum. The tube was tilted so that the central ray through each square area reached the ovaries. Dr. Martindale gave one series of two treatments, irrespective of periods, on two consecutive days once in three weeks; she worked with a very hard tube, at least 9 inches, with 4–5 milliamps, and used a filter of 3 mm. of aluminium. The protection of the patient was extremely thorough, and the dosage was measured by Kienboeck's strips, which the nurse in charge developed at a specified temperature, in a standard developer, for a specified time. Dr. Martindale said she thus had accurate and permanent records of the dosage employed for each patient. She had never seen any bad effects, never a burn, and only twice any pigmentation. In 5 cases there was some "Röntgenjammer." She considered the ideal cases for X ray treatment those in which the patient's age is between 40 and 50, the tumour not bigger than a six months pregnancy, and the fibroid interstitial, the chief symptom being menorrhagia. In such cases from four to six treatments would effect a cure—that is, a lasting amenorrhœa, an improvement in the general condition, a shrinkage of the tumour to at least half its original size, and a climacteric free from uncomfortable symptoms. Cases complicated by grave heart or lung disease, exophthalmic goitre, asthma, or any other serious disease did well with X ray therapy, and in such cases Dr. Martindale had used this treatment even when the tumours reached far above the umbilicus. She chose operative treatment: (1) for submucous, subperitoneal, or pedunculated fibroids; (2) for cases of carcinoma of the body (sometimes a diagnostic curetting was done before treatment was decided on); (3) in all cases of doubtful diagnosis. In 4 cases a fresh series of X ray treatments had to be given after an interval of some months; in 1 case, after ten months' amenorrhœa, there was one period; in another after seven months. In another there was slight metrorrhagia, which subsequently cleared up. In the 5 cases in which a hysterectomy followed X ray treatment sections were made of the uterus and ovaries. In 1 case (9 treatments, 2261 X, Kienboeck) the pathologist reported:—

> Section shows a very cellular fibroid, there is no sign of inflammatory change, and degenerative changes are also absent.

In another (7 treatments, 2390 X):—

> The large fibroid has been cut and shows the usual muscle bundles in a fibrous stroma. There is no obvious increase in the amount of fibrous tissue or other degenerative change. The ovary also shows all the normal structures, including a recent corpus luteum, so that in this case the X rays have not apparently destroyed the ovarian function. No evidence of any malignant growth.

In another case 4 treatments (1250 X in all) cured the menorrhagia, but the year after the patient developed gastro-intestinal trouble and became emaciated, with ascites and symptoms of chronic intestinal obstruction. The uterus was very hard and immovable. A total hysterectomy was performed. No adhesions were found; the fibroid had undergone calcification in some areas, and the intestines were covered by small white spots. The patient died ten days after, and the post-mortem showed—

> Dense matting of all intestines and masses of malignant growth of omentum, stomach, and mesentery; there were numerous hard lumps like sago grains. Sections showed a malignant growth, probably endotheliomatous in origin, and apparently primary in omentum.

Dr. Martindale described one other case in which hysterectomy had been successfully performed after menorrhagia had been relieved, but pressure symptoms remained troublesome. In all the cases of her series, except those mentioned, Dr. Martindale said that the patients had done extremely well. She felt that though the improvement in health was doubtless primarily due to the cure of the anæmia, there was some other factor at work. She had recently corresponded with or seen all her cases except two, and their reports as to their energy and well-being had suggested strongly that a woman who has undergone X ray treatment ages less quickly than one who has suffered a hysterectomy.

Dr. **S. Gilbert Scott** said that larger openings would, in his opinion, have given even fewer failures than those described by Dr. Eden, because ovaries were sometimes tucked away and impossible to locate. Krönig himself had given up the technique of many openings. There was no reason to treat fibroids as different from any other deep abdominal tumour, and no need to use enormous doses. It was now some 18 years since the first attempts were made to apply X rays as a means of inducing an artificial menopause and of relieving symptoms where fibrous and myomatous tumours of the uterus were present. Dr. Scott well remembered how sceptical English radiologists were when this method of treatment was first advocated by continental workers, but practical experience soon proved what a valuable therapeutic agent was at hand. Remarkable results had been achieved, even in those days when apparatus and technique were undeveloped. Gynæcologists had been as sceptical as radiologists and, owing either to conservatism or prejudice, little headway had been made in this country until recently. Dr. Scott congratulated the section on having taken the matter up seriously; the conjoint discussion of radiologists and gynæcologists at Cambridge last year showed the keen interest now being taken in the subject. Dr. Scott was disappointed that Dr. Eden and Mr. Provis did not record 700 instead of 70 odd cases, as it was only from large numbers that any definite rules could be laid down as to which cases are suitable and which unsuitable for X ray treatment. If the results were to be satisfactory, the gynæcologist or radiologist must have absolute control over his technique, dosage, &c. Slipshod methods were not permissible. Moreover, the gynæcologist's opinion was essential before the radiologist could give his as to the suitability of a case. The ideal method was for both specialists to see the patient together in consultation, as was the custom of Dr. Williamson and Dr. Finzi at St. Bartholomew's Hospital. Dr. Scott wished to emphasise the extraordinary control to be obtained over the common menstrual disturbances, such as dysmenorrhœa. The age of the patient did not matter, as there was no risk whatever of sterilisation provided the radiologist had full control over dosage and technique. It was easy to coax the periods back to normal in most cases without the necessity of stopping even one, and it was a mistake to think that to obtain results in these cases, sterilisation, whether temporary or permanent, was necessary. The technique was somewhat different from that used in fibroids—less intensive, as the ovaries were very sensitive. One puzzling point was the occasional early relief of bladder pressure symptoms, at a time when fibroids had not shrunk to any appreciable extent. Dr. Scott agreed with Dr. Martindale that adhesions were not serious in uncomplicated cases; they might result from the disease that was being treated.

Dr. **Herbert Williamson** said he was a firm believer in treatment by X rays and radio-active substances for malignant disease as well as for fibroids. At present such treatment was largely empirical and not scientific, mainly owing to the difficulty of measuring dosage and of estimating how much radiation was lost before reaching the organ or tumour. These difficulties would be overcome in time. He thought it would have been more helpful if the dosage in Dr. Eden's paper had been measured in either H or X units instead of by time of exposure only. With Dr. Finzi, Dr. Williamson had treated 15 cases in the last year and a half, including fibroids, chronic metritis, and so forth. All cases had been curetted and microscoped first; this was of great importance. All but two cases were highly successful, and no untoward results had occurred. On the other hand, it must be remembered how satisfactory were the operative results in the treatment of fibroids, and the ovaries were thus preserved. Dr. Williamson excluded from X ray therapy cases under 40 or those in whom the tumour was very large, or degenerating, or could be enucleated; also where a condition of inflammation or malignancy, pressure symptoms, an ovarian tumour, or pregnancy existed. Grave anæmia was also a contra-indication, but transfusion made all the difference to these cases. In three of his patients, young women under 35, severe chlorosis had followed X ray treatment. Dr. Williamson could not agree that the operation was as easy after as before this treatment. In three cases he had found troublesome adhesions and a cartilaginous condition of the tissues. In two cases of fibroids (red degeneration) these were found on operation in an almost sloughing condition, and the patients were very toxæmic. In another case of chronic metritis treated by X rays with apparent success, six months after treatment a discharge of pus containing *B. coli* began. In three weeks it became blood-stained. Microscopical examination of results of a diagnostic curettage were doubtful, but on hysterectomy a carcinoma of the body was found. As to Dr. Blacker's remarks on the use of radium in young women, Dr. Williamson had tried 25 mmg., filtered with a platinum screen, with the usual exposure and also 1 mmg. for 24 hours, but had had no result, and he therefore thought this treatment could not yet be relied on.

Dr. **Cuthbert Lockyer** thanked Dr. Eden and Mr. Provis for the help their paper would give to other workers in this field. Their experience had proved the value of X rays. He asked what percentage of the total number of fibroids the authors considered suitable for X rays. Dr. Martindale had suggested 39 per cent. at Cambridge, and her optimism had now increased to 50 per cent. Why did the authors not express their dosage in X units? Dr. Lockyer suggested as possible explanations of Dr. Eden's unfortunate case: (1) An ascending infection; (2) ulceration following an injury to the bowel caused by X rays; (3) an unrecognised condition of pelvic inflammation existing from the first.

Mr. **T. G. Stevens** described the case of a patient who had had X ray treatment for uterine hæmorrhage due to fibroids. Complete amenorrhœa had resulted, but on operation four years after a large sarcoma was found extending from the external portion of the side of the cervix. He brought forward the case, not from any conviction that the sarcoma resulted from the treatment, but merely to point out that the method was still at the experimental stage and that it was still questionable what late sequelæ might occur.

Dr. **Agnes Savill** said that she now had the abdomen divided into six areas, and each part got one dose. Another excellent method of treatment which should not be forgotten was ionisation of the uterus. Dr. Savill quoted cases in which this method had been very successful.

Reply to the Discussion.

Dr. **Eden**, in reply, was glad to find unanimity among all of the speakers, with the exception of Dr. Finzi, as to the class of tumour suitable for this treatment. He agreed with Mr. Stevens as to possible remote after-effects. In reply to Dr. Blacker, Dr. Eden said he had seen no evidence of late skin changes. He had seldom seen Dr. Blacker so enthusiastic as he appeared to be over radium treatment. The difference was that radium treatment was really operative, involving a curettage and an anæsthetic, and sometimes even a repetition of the latter. With X ray therapy the patient avoided operation, and it was often used *because* operation had been refused. Dr. Eden *did* not agree with Dr. Williamson and Dr. Blacker about the value of a diagnostic curettage. The uterine cavity was often distorted when fibroids were present and could not be satisfactorily curetted. Careful observation of symptoms would be more use in the recognition of malignancy. Dr. Eden had found no clinical evidence of adhesions at operations after treatment. If Dr. Scott could coax periods in young women back to normal Dr. Eden trusted he would give mankind the benefit of his experience without delay.

Mr. PROVIS said that the omission to state dosage in terms of units was deliberate. What proof was there that the ovary actually received any particular dose? In the use of Kienboeck's strips as indicator the solution must always be of accurate temperature, and this was difficult to achieve. It was much safer therefore to speak of length of exposure. It was imperative that the technical side of the treatment should be thoroughly mastered. As to radium therapy probably the gamma ray from a hard tube was the same as the active agent in radium therapy. Whether the same control could be established was doubtful. Mr. Provis had seen one patient seriously knocked out after radium treatment. As to Krönig having given up the Freiburg method, this was probably true because Krönig was dead.[1] The great advantage of small openings was their safety. It was hardly right to deal with dysmenorrhœa in young women in the present state of our knowledge. No effect might be seen for some time, and suddenly amenorrhœa might be produced without warning.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

EXHIBITION OF CLINICAL CASES.

A MEETING of this section of the Royal Society of Medicine was held on Jan. 28th, Dr. F. S. LANGMEAD, the President, being in the chair.

Dr. J. PORTER PARKINSON showed a case of

Patent Ductus Arteriosus

in a girl, aged 7 years, who had been admitted to hospital for cough and spitting of a small amount of blood which apparently came from the throat.

The family history was unimportant. The child had never been strong; she had had influenza, measles, and chicken-pox, and in 1915 had spat up a little blood, which had continued for about two months; the attacks of hæmoptysis had recurred each following year, and between them she had been well. She was a child of low intelligence with a Mongolian type of face. The cranial circumference was 47 cm. There was no cyanosis or clubbing. The apex of the heart was in the fifth intercostal space, ½ inch inside the nipple line. The right border of deep dullness was ¼ inch to the right of the right border of the sternum, the left border of dullness was continued upwards in the third and second intercostal spaces, gradually approaching the sternum. In the second intercostal space near the sternum could be heard a loud harsh murmur continued through systole into diastole, the murmur being heard, though less loudly, all over the cardiac area, in the vessels of the neck, and at the back of the chest, especially on the left side. The pulmonary second sound was not accentuated. The lungs and abdomen appeared normal, and there was no enlargement of the liver or spleen.

The case was regarded as typical of patency of the ductus arteriosus. Both percussion and a skiagram showed the enlargement of the heart to the right, and Gerhardt's line of dullness prolonging upwards the dullness of the heart, and due doubtless to dilatation of the pulmonary artery. The only unusual sign was accentuation of the pulmonary second sound. This he suggested might be due to patency of the inter-auricular septum.

Dr. F. PARKES WEBER said that there was present in this case the typical murmur of patent ductus arteriosus to which attention had first been drawn by Dr. G. A. Gibson, of Edinburgh. It had lately been recorded, however, that a number of cases had been shown to be of patent ductus arteriosus in which there had been no murmur of the Gibson type. A recent writer had suggested that this murmur was never found in simple ductus arteriosus, but only when the condition was complicated by inflammations and vegetations. An observer, however, had already stated that a patient had had the typical murmur apart from inflammation. —The PRESIDENT said that an interesting point was whether such a murmur was necessary in patent ductus arteriosus. He thought that there were cases of this condition in which only a loud systolic murmur was heard, but the Gibson murmur was, no doubt, more characteristic.

Sir THOMAS HORDER showed a case of

Idiopathic Dilatation of the Alimentary Canal

in a boy, aged 6½ years, who was otherwise quite healthy. The abdomen was large and the costal margin was symmetrically expanded. The enlargement was uniform, the percussion note was tympanitic, there was no enlargement of veins or ascites, and no rhythmical peristalsis. The temperature was normal, there had been no vomiting or sweating, and there was no cardiac or renal disease.

The abdomen had always been large, but two years ago it had become larger. The doctor in attendance was satisfied as to the absence of tuberculous peritonitis, and treated the condition by massage and exercises, with improvement. One month ago the abdomen had again increased in size, and the enlargement had been said to be more noticeable after any nervousness or excitement; there was then also slight pain. Weight had not diminished. The boy passed much wind per anum, but did not eructate. Skiagrams were shown, taken after an opaque meal. There was considerable dilatation of the stomach, which lay athwart the abdomen. It had not dropped, but was clearly atonic. The pyloric segment lay at the top of the right iliac fossa. There was no conspicuous delay in the passage of the opaque meal. After 4½ hours the stomach was empty, and the cæcum, which was dilated, was becoming filled. At the end of six hours the cæcum was packed. At the end of eight hours the cæcum was full, and the sigmoid fairly full and lying to the right of the mid-line. At the end of 25 hours some of the meal still remained in the cæcum and there was a good deal in the sigmoid. The transverse colon was not dilated, but seemed contracted and spastic in places. He thought that a large, dilated, and atonic stomach, a dilated cæcum and ascending colon, and a somewhat dilated sigmoid were present. There was no constipation, the bowels acting two or three times in the 24 hours.

The case did not conform to any of the described types of idiopathic dilatation.

Dr. PARKINSON said that there were no symptoms or signs except those by X rays. At that age slight dilatation of the stomach and of the cæcum was not unusual, especially if the diet were indigestible, as it was likely to be when the mother was over-careful and indulgent, as in this case. All that would probably be necessary would be to regulate the diet carefully.—Dr. G. DE BEC TURTLE thought that the case belonged to a group in which there is spasm of some part of the alimentary tract—in this case in part of the colon. With regard to treatment, he would advise massage and await events. In these mild cases the spasm was often overcome by simple measures and the patient got well.

The PRESIDENT showed a case of

Rheumatoid Arthritis

in a boy aged 6 years. When first seen at 1 year and 9 months there was considerable swelling over the dorsa of the hands and feet not limited to the wrists and ankles, a combined macular and papular rash, and areas of erythema over the breast and arms, and offensive motions. He had regarded the rash and œdema as toxic in origin and connected with the offensive stools, but treatment directed to the latter proved valueless, the rash and œdema persisting, and the boy was admitted to hospital. About this time he developed fixation of the neck, which was very painful and caused cervical caries to be suspected, but this was negatived by X rays. Dr. W. S. Colman, under whose care the child was while in hospital, made the tentative diagnosis of rheumatoid arthritis, which subsequently proved to be the explanation. Later the swelling of the hands became more localised to the carpal and tarsal joints.

After discharge from hospital, he remained pale and looked ill, the joint swellings varying considerably from time to time. The only treatment which appeared to benefit him was thyroid in small doses, and under this he gradually improved. In August, 1917, he was again admitted for fever, breathlessness, and further painful swelling of the joints and painful stiffness of the neck. Thereafter he again improved, though he did not lose the joint swellings and stiff neck. In January, 1920, after a "cold," he again became feverish, and complained of pain in the left ankle; the joints became more swollen and a purplish macular rash appeared on the knees. On admission again his temperature was normal, but pulse 156, and pallor was obvious. About the wrists and ankle-joints were symmetrical periarticular swellings reaching from the lines of these joints to the metacarpo- and metatarso-phalangeal joints. The swelling was limited to the dorsal surfaces. Glands were enlarged in the axillæ and groins. A purplish erythema affected both forearms. Besides the tachycardia a slight systolic murmur, limited to within the apex, was audible. The spleen was palpable, reaching about one inch below the ribs.

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[1] THE LANCET, 1917, i., 841.

With regard to possible sources of infection, there were two carious teeth, and a nasal discharge; the urine was sterile and the stools yielded no lactose-fermenting organisms and no excess of Gram-positive organisms (Dr. D. N. Nabarro). An X-ray examination (Dr. Ironside Bruce) showed "marked general bony changes in the tarsus and carpus which showed advanced ossification as compared with the metatarsus and metacarpus; some signs of localised destruction of bone." Under observation in hospital he ran an irregular fever at intervals of two or three days, his temperature sometimes reaching 102° or 103° F. and subsiding within an hour or two. The rises of temperature were associated with no subjective signs, but a patchy pink erythematous rash appeared on the chest. A vaccine was prepared from the predominant organisms of the stools (*B. coli* and streptococci), but produced neither local nor general reaction to 25 millions of each on two occasions. Later the rash spread to the arms and thighs both on their flexor and extensor aspects, the patches of erythema varying from the size of a pea to that of a sixpence. Another dose of the vaccine (50 millions of each organism) produced again no kind of reaction and failed to affect the disease, the stiffness of the neck and the swelling of joints becoming more marked and an irregular temperature and slight tachycardia persisting. A culture from a septic tooth grew only *Micrococcus catarrhalis* and streptococcus, and a vaccine prepared from them also failed to produce a reaction. Owing to infection in the ward the boy was discharged after three months, in April, 1920. He had since been attending the out-patient department and has again improved with thyroid, the joint swellings and fixity diminishing, the spleen becoming smaller and no further rash having appeared. There was still some stiffness of the neck.

The case was shown to illustrate: (1) The early œdema, resembling toxic œdema, of rheumatoid arthritis. (2) The association of a rash with each recrudescence of joint swelling and pain. (3) The value of thyroid in certain cases of the disease.

Dr. R. LLEWELLYN JONES said that he had found thyroid to be of most value in adult cases with local syncope of the fingers, such as made it difficult to distinguish the condition from Raynaud's disease. His experience corroborated that of the President. He considered that the term "rheumatoid" should not be applied to these cases. He would prefer to reserve that term for atrophic cases with scleroderma. This was undoubtedly a case of Still's disease; he would prefer to call it "infective arthritis."—Mr. H. A. T. FAIRBANK referred to a case in which an operation had been performed and the ileum joined to the colon, but no benefit had resulted. He had seen the child again, and found that the hips were markedly affected and the joints stiff. X ray examination had shown much alteration of the articular surfaces. Dr. Still said that it was not similar to those which he had described, but was an osteo-arthritis with destruction of bones.—Dr. WEBER asked the President whether he had seen these cases associated with psoriasis, for the two were often associated in adults.—The PRESIDENT, in reply, said that he had not recognised the association with psoriasis in childhood. He agreed as to the diagnosis of Still's disease, and, indeed, used the term "rheumatoid arthritis in children" as synonymous with Still's disease.

The PRESIDENT also showed a

Case of Obesity.

The patient was a boy, aged 11½ years, who was admitted to hospital in February, 1920, for "excessive fatness" which had been gradually increasing for one year. He was the eldest of four children, the two youngest of whom had died, one of broncho-pneumonia, the other of diarrhœa and vomiting. His only illnesses had been a severe attack of "diarrhœa and vomiting" when aged 1 year, after which he was greatly wasted, and poliomyelitis, which was not detected until he started to walk at 1 year and 5 months. The atrophy and weakness of muscles was confined to the right leg.

At the age of 9 the boy was a thin weakly child, pale and ill-nourished; at 9½ he appeared well-nourished, at 10 he weighed 5 st. 8 lb. and four months later 6 st. 12 lb. The excess of fat appeared first on the trunk. He suffered every three or four days with nausea and severe frontal headache. When he came under observation his appearance was that of a boy of 13 or 14, rather than of 10½. There was general excess of fat, more marked on the trunk, where it was thrown into folds. The breasts showed gynæcomastia. The genitals were normally infantile. Teeth were normal. No precocious development of hair. Supraclavicular fat not disproportionately excessive. Intelligence good and no abnormal nervous signs (except those of poliomyelitis). The urine was not increased and contained no sugar. He was given 120 g. of sugar after the bladder had been emptied, and three hours later passed urine containing 0·2 per cent. of glucose. An X ray examination of the skull was negative.

Treatment by pituitary extract was given, 8 minims of pituitrin (i.e., a 20 per cent. extract of the posterior lobe) being combined with an extract of anterior lobe of an ox's pituitary (each dose containing 5 gr. of the dried lobe). This was injected into the buttock. At first four doses were given in five days and led to a decrease in weight by 2 lb. 5 oz. When this was followed by weekly doses the weight steadily increased again, and when discharged, after one month, he weighed 12 oz. more than on admission. The initial loss of weight was regarded as probably due to the distress, sleeplessness, and loss of appetite caused by the frequent injections. When next seen in out-patient department in March, 1920, he weighed 7 st. Thyroid (2 gr. daily) was given, and on Sept. 11th the weight, after slight fluctuations, was still 7 st. A slight illness then caused it to drop to 6 st. 10½ lb.; the thyroid was discontinued, and a fortnight later he had gained 2½ lb. Thyroid (3 gr. daily) led at first to a decrease of weight, but after a month it again increased. He was now taking 4 gr. daily. His last weight was 6 st. 9½ lb., which was less by 2½ lb. than in January, 1920. He was more usual in appearance and had grown considerably. There was no evidence of gonadic disability.

The case was regarded as possibly one of subnormal activity of the thyroid gland, and the question was raised as to whether the obesity often met with after recovery from severe inanition in children was so explained. He thought that these cases were often called dyspituitarism on insufficient evidence.

Dr. E. A. COCKAYNE said that cases of this kind which he had seen during the past year or two had shown no evidence of hypopituitarism, and those examined had shown no abnormal sugar tolerance, and the X ray examination had been negative. He doubted if the slight loss of weight after thyroid was an evidence of thyroid deficiency.

Dr. L. W. BATTEN showed for Dr. H. MORLEY FLETCHER a case of

Scleroderma with Sclerodactylia in a Child with Infantilism.

There had also been some joint changes leading to fixation. The muscles were hard and suggested myositis fibrosa, which with the scleroderma contributed to the limitation of movement at the joints. An especial feature was the presence of nodules, situated both over bony prominences and in loose tissues, as in the subcutaneous tissue of the abdominal wall. Some of these were freely movable, others attached to deeper structures. X rays and examination after removal failed to show any calcareous change in them, and microscopically they consisted of fibrous tissue.

Dr. WEBER considered the case to be one of the sclerodactylia form of scleroderma, associated with some remarkable features: (1) the fibrotic changes were not confined to the skin, but had led to stiffness of some of the small joints and possibly also affected muscles, producing a mild condition of myositis fibrosa; (2) infantilism; and (3) the presence of subcutaneous nodules. He felt sure that the nodules, from their appearance and distribution, were of the type of rheumatic nodules not associated with a cardiac lesion. He asked whether the child had been subjected to cold or neglect, for it was possible in sclerodactylia, when affecting young children, that neglect (especially with regard to feeding) and exposure to cold had an effect.—The PRESIDENT said that there was a group of cases, as described by Dr. J. A. Nixon, in which, as well as scleroderma and sclerodactylia, there might be similar changes in muscles, joints, and even in the pleura and pericardium. The present case reminded him of one which he had shown in which there was also myositis fibrosa and scleroderma, sclerodactylia, and fixation of joints, which were well marked within a few weeks of birth, and were probably congenital in origin. An unusual feature in the case now shown was the nodules, which, though resembling those of rheumatism to some extent, he thought were not rheumatic, and were different both in shape and distribution. The nodules reminded him more of calcinosis, which might also be associated with a condition of skin resembling scleroderma, but that was not apparently the explanation in this case. He felt that there was some connecting link between these various conditions.—Mr. B. WHITCHURCH HOWELL spoke of the necessity, from the point of view of practical treatment, of coaxing the joints into the optimum position of utility.

Dr. W. J. PEARSON showed

A Case for Diagnosis.

The patient, a child aged 5 years and 11 months, first attended hospital a year ago for wasting of six months' duration. There had been slight puffiness of the eyes with loss of appetite for two months. A cough was associated with some expectoration; there was no fever. A trace of albumin had been found in the urine on one occasion. The liver reached two and a half finger-breadths below the costal margin; the spleen was not enlarged. The child was undersized for its age, but was bright and intelligent. The middle portion of the trunk resembled that of a developed woman, but the shoulders were comparatively infantile. There was considerable increase of subcutaneous tissue all over the thorax and thighs, but especially noticeable over the abdominal wall. The abdomen was distended. The Wassermann reaction was negative and X ray examination showed no epiphyseal changes.

Dr. WEBER suggested the possibility of suprarenal tumour with which obesity of this form was sometimes associated. In such cases, however, there was usually sexual precocity and hypertrichosis.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

A MEETING of this society was held at 11, Chandos-street, London, W., on Jan. 21st, with Professor W. J. R. SIMPSON, the President, in the chair.

A paper was read by Lieutenant-Colonel C. A. GILL, I.M.S., entitled

The Influence of Humidity on the Life-History of Mosquitoes and on their Power to Transmit Infection.

Hippocrates and many early classical writers had observed the association of malaria with the humid atmospheres prevailing around swamps and marshes. In modern times the importance of humidity was referred to in treatises on malaria, but without regard to its precise significance. Relative humidity—i.e., the amount of moisture in the air expressed as a percentage of that required to cause saturation—he pointed out, was subject to marked variations with change of temperature, the two factors bearing an inverse ratio to each other, and their close interdependence necessitated both being taken into account in determining the influence of either on malaria.

Colonel Gill proceeded to describe experiments which had been conducted with *Culex fatigans* and bird malaria (*Proteosoma grassi*) with reference to the effect of varying degrees of humidity on the length of life of the culex and on its power to transmit bird malaria.

The mosquitoes were placed in a series of incubators at 27° C., and their duration of life was determined under different degrees of relative humidity; in other respects the conditions to which the various batches of insects were exposed were identical after feeding them the previous night on an infected sparrow. Each morning the dead mosquitoes were removed and counted, and dissections were carried out to ascertain the number of oöcysts which had developed in the midgut. Records of humidity and temperature were carefully kept through readings of the wet and dry bulb and maximum and minimum thermometers. Variations in humidity were secured by placing small wet sponges in the incubators and by means of calcium chloride and dilutions of sulphuric acid. Special care was taken to maintain the incubators and constant temperature.

The results of his experiments were briefly summarised, and showed that *Culex fatigans* was invariably killed within five days with a relative humidity of 45 per cent. or less, but death rarely occurred within ten days with a humidity between 65 and 75 per cent., whilst 80 per cent. humidity was even more favourable to life. As with the effect on the culex, so with the development of *Proteosoma grassi*, the influence of these conditions of temperature and humidity proved constant in the regularity of appearance and maturity of the oöcysts found in the midgut of the culex, irrespective of the degree of relative humidity, save that with low humidity (45 per cent. or less) the desiccation of the mosquitoes prevented any further examination. There was, however, apparently a close relationship between the number of oöcysts in the midgut of the mosquito and the number of parasites in the blood of the sparrow, provided the count of the latter was made on the day of feeding. From the results of these experiments he had concluded that a mean relative humidity of not less than 48 per cent. at a temperature of 27° C. was essential to the existence of *Culex fatigans* for a period of five days, and that a lower degree of humidity prevented the transmission of bird malaria owing to the death of the insect host; also that the degree of infection or rate of development of the sexual parasite in the mosquito was not directly influenced by relative humidity. Examples based on observations in Lahore were quoted as to the influence of humidity on the length of life of the culex and the effect of atmospheric changes on the habits of mosquitoes during the course of the day under natural conditions, the preference for the more humid shelter within the house in the heat of the day, and the avoidance of it when night fell. Under both experimental and natural conditions feeding habits of mosquitoes appeared to be governed alike by the degree of relative humidity, for failure to feed occurred in experiments with a daily mean humidity under 40 per cent., whilst successful feeds were obtained when the relative humidity was over 50 per cent. Such influence would seem to account for the disappearance of the mosquito in the Punjab during the intense dry heat of June and for its return and commencing to feed after the first monsoon. During hibernation, when exposed to low mean temperature and high mean relative humidity, insects were known to live for several months. Although his observations had been confined to *Culex fatigans*, he considered it justifiable to assume that his conclusions were applicable in principle to all mosquitoes and to the significance of their habits of selecting special types of shelter favourable to their survival.

The Rôle of Temperature.

Low temperature combined with high degrees of relative humidity was regarded as not unfavourable to the existence of the culex, although at 10° C. the insect became sluggish and showed no desire to feed. At 26° C., however, and with high but *not* with low degrees of humidity, there was marked activity, readiness to feed, and rapid development of eggs, whereas at 40° C. *Culex fatigans* died quickly in contrast to some Indian anophelines. Recent observations made at the London School of Tropical Medicine, and also by Roubaud, led to the conclusion that temperature exerted a direct effect on the malarial parasite in the mosquito; low temperature inhibited the growth of the oöcyst, and within certain limits its rate of development was dependent on the mean temperature. In the case of *Culex fatigans* length of life was compatible with a wide range of temperature, but vitality was reduced at low temperature. He consequently regarded the mechanism of malarial infection as being in no small degree influenced by and dependent on the combination of the factors of temperature and humidity, and he emphasised the importance of ascertaining the optimum conditions of these factors and the range between the limits favourable to the transmission of infection. Such information would serve to elucidate certain points bearing on the endemiology and epidemiology of malaria. As examples, he mentioned that though the distribution of anophelines in the United Kingdom was widespread, indigenous malaria was much restricted, and he subsequently showed that this was due to its confinement to areas where favourable conditions of temperature and humidity prevailed. Similarly, he explained *paludism sine malaria*, the concurrence of anophelines and human carriers with the absence of fresh infections. He also regarded *malaria sine paludism* or the occurrence of new infections in localities where there were few anophelines and human carriers, provided there was a period of potential infection, as attributable to favourable influences of the two factors concerned. He claimed that the rôle of meteorology was a subject of considerable importance, and that the practical bearing of the information it afforded was the possibility, so long as the required meteorological data were available, of determining the season of the year and duration of the period during which malaria could normally be acquired in any particular area. It seemed probable, indeed, that with the knowledge provided by the meteorological conditions in the United Kingdom less importance could be assigned to anti-mosquito measures in the particular areas where conditions were known to be unfavourable to the transmission of malarial infection.

Discussion.

Dr. A. G. MACDONALD was of opinion that warmth and humidity should not be dissociated in a consideration of the subject of the incidence of malaria; temperature had a universal influence, humidity a local influence. He referred to the states of atmospheric temperature and humidity in Mesopotamia and Singapore. In the former region hospital admissions for malaria did not fluctuate during the months of low humidity, but variations in the admission-rate occurred in winter when temperature was lower. There was a reduction of infection in June and July, months of low humidity. Colonel Gill's observations had shown the effects of low humidity and influence of temperature on the development of the parasite. These factors had also an important bearing on the question of preventive measures. The minimum and maximum of conditions favourable for the development of the plasmodium in the mosquito were points requiring investigation; there was also the necessity of ascertaining facts bearing on the distribution and proportion of malarial cases in relation to the factors under discussion.

Dr. B. BLACKLOCK regarded Colonel Gill's conclusions as being in advance of the results obtained in his experimental work. Colonel Gill had proved that when the relative humidity was reduced below 45 per cent. the culex died, and that, with the survival of culex, development of *Proteosoma grassii* proceeded in a regular manner. What bearing had these results on the anopheles and malaria? As 14 of the culices had died and 16 had survived in the course of the experiments, he thought it probable that other factors than humidity would have to be taken into account in connexion with the survival of anopheles and the cycle of development of the parasite. Preventive measures could not yet be guided by Colonel Gill's observations. He criticised the acceptance of some of the mean readings given of relative humidity as inconsistent.

Dr. P. H. MANSON-BAHR stated that the death of the 14 culices could be attributed to the unfortunate accident of starvation and thirst in these particular experiments, and not to the effects of humidity and temperature. He considered that many minor factors besides humidity and temperature had effect on the development of the oöcyst in the mosquito.

Dr. C. M. WENYON described the difficulties of keeping culices alive; if they were kept too moist they died of enteritis, if too dry they died from desiccation. He referred to the dryness of Baghdad and the activity of mosquitoes during the hot months, attributing their survival under natural conditions to their habit of congregating on the water-jars during the heat of the day for the purpose of obtaining necessary moisture.

Mr. A. BACOT attributed the death of the mosquitoes in the experiments to heat-stroke, and regarded the circulation of air in the incubators as an important factor in keeping the insects alive. He inquired as to what they were fed on during the seven days' period, and referred to the favourable influence on mosquito life of isothermic conditions in certain localities, such as the Essex mud flats, and in explanation of their selection of similar haunts.

Sir RONALD ROSS quoted from past observers as to the influence of humidity and temperature, and gave his own experiences of the effect of high temperature on mosquitoes kept for experimental purposes. There were many variable influences to be reckoned with as producing variations in malaria, and it was not a question merely of humidity and temperature.

Reply.

Colonel GILL, replying, stated that the mosquitoes were fed on raisins, sometimes watered once a day by means of a small moist sponge on the bottle cover when the humidity conditions became low. He quite realised that in his experiments he was only partially dealing with two variables influencing malaria. He did not consider the monthly mean humidity of 63 per cent. for the 8 A.M. reading to be inconsistent; the 50·8 per cent. mean of 24-hourly humidity corresponded with a considerably higher 8 A.M. humidity. *Paludism sine malaria* existed if the temperature was not high enough, as no infection could be obtained. The influence of temperature and humidity on the spread of malarial infection varied according to the particular zone concerned; in England temperature was the prevailing factor, but in the tropics humidity was more concerned, and the importance of local conditions was paramount in determining a high or low humidity.

Colonel Gill exhibited charts showing the variations of relative humidity and atmosphere temperature at corresponding times during the 24 hours and the different months of the year. He also showed under the microscope specimens of the mid-gut of *A. maculipennis* which had been fed on a case of benign tertian malaria and incubated at 22° C. and at a relative humidity of 50·5 per cent. for: (1) Six days, showing development of small oöcysts containing pigment; (2) seven days, showing an increase in size of the oöcysts, but less pigment; (3) nine days, with many oöcysts of the same size as (2), but, in addition, the presence of sporozoites.

Demonstrations.

The following demonstrations were given:—

1. Rickettsia in the Bed Bug, by Mr. BACOT. The passage of *R. lectularia* from generation to generation was described as having been traced through the egg of the bed bug without the intervention of an intermediary host. The bodies appeared as minute coccoid, small-rod, and thread forms, and occurring in true diplo-coccoid form within the cytoplasm of the cell, but not in the nucleus. All the bed bugs examined had been found to be infected, and there had been very few failures in making the smears. Cimex of pigeons and bats were wanted for investigation, to see if they showed Rickettsia bodies, as *Cimex lectularia* did in sheep. Mr. Bacot exhibited specimens of *R. lectularia* of the bed bug in sections of the gut and Malpighian tubules, the cells of which were greatly enlarged, due to masses of the minute coccoid and thread forms; also in smears of the gut, ovary, the organ of Berlese, and the egg of the bed bug.

2. Sigmoidoscopic Diagnosis of Amœbic and Bacillary Dysentery, by Dr. MANSON-BAHR and Dr. A. L. GREGG. By means of the epidiascope coloured drawings were shown on the screen of the appearances, as seen through the sigmoidoscope, of the inflamed and ulcerated mucous membrane of the bowel in amœbic and bacillary dysentery, and of the subsequent polypoid and fibrotic

changes. The demonstration also included drawings of dysenteric ulceration in section, and of the material obtained through the sigmoidoscope from an ulcer showing numbers of *E. histolytica*. The sigmoidoscope was passed round for inspection and the method employed for collecting material from the surface of the bowel was explained. The figures quoted by Dr. Manson-Bahr made clear the great value of this method for the examination of material in the establishment of a correct diagnosis of dysentery cases as compared with the usual investigation of fæces only. Out of 247 examinations made, over 60 per cent. of cases had been verified as amœbic dysentery by the use of the sigmoidoscope, whereas by routine microscopic examination of the fæces *E. histolytica* or its cysts had been found in under 40 per cent. only. Preparation of the patient was necessary by means of a dose of ol. ricini, and by the administration of tinct. opii ♏ xv. four hours before examination. The process was more painful in bacillary dysentery and the amount of pain caused required to be taken note of. It was claimed that the sigmoidoscope provided a rapid and accurate means of diagnosis of dysentery, and of the recognition of unsuspected conditions such as internal hæmorrhoids, syphilitic stricture, and malignant disease of the lower bowel.

LIVERPOOL MEDICAL INSTITUTION.

AT a meeting held on Feb. 3rd, with Dr. J. E. GEMMELL, the President, in the chair, Mr. THURSTAN HOLLAND read a paper on

Some of the Rarer Conditions of Bones.

He showed radiographs of some of the accessory bones of the foot and of the sesamoid bones, and discussed their importance from the point of view of industrial injuries and compensation. He also demonstrated radiographs of six cases in which the bone of Vesalius was present in both feet, and discussed in detail the question of differentiating between the sesamoid of the peroneus, the presence of a true bone, and epiphyses at the base of the fifth metatarsal. Two cases of Köhler's disease of the scaphoid bone were demonstrated with radiographs showing the condition at the time and two years later. The paper concluded with a description of an exceedingly rare condition of the patella in which radiograph appeared to show an epiphysis on the upper and outer sides of both patellæ.

Dr. H. BALME delivered an address on Surgical Practice in China and Recent Developments in Medical Education, illustrated by lantern slides.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

THE annual meeting of this society was held at Manchester on Jan. 21st, when Mr. CARLTON OLDFIELD was elected President for the ensuing year.

Dr. H. BRIGGS showed a specimen of Tuberculous Salpingitis removed from a patient 13 years previously. She was now in perfect health. He was of opinion that inflamed tubes were more commonly tuberculous than was usually supposed.

Dr. W. W. KING showed a specimen of Hydrometra removed from a nulliparous patient. The uterus was the size of a four months' pregnancy, and the obstruction to the outlet of uterine secretions was caused by a small cyst arising in the mucosa of the cervical canal.

Dr. H. CLIFFORD showed a large Ovarian Tumour removed from a girl aged 12 years. The growth was a sarcoma of rapid growth with extensive areas of necrosis.

Dr. W. FLETCHER SHAW described a case where he had removed a large Myxomatous Tumour of the Left Ovary, the other ovary being at the time apparently quite healthy. Twelve months later the patient returned with a large abdominal tumour which, on operation, proved to be a similar growth of the right ovary.

Dr. F. H. LACEY read a paper on Induction of Labour for Contracted Pelvis based on a series of 75 cases, in which the conjugata vera measured not less than 3¼ inches in flat and 3½ inches in generally contracted pelves. The method adopted was that of Krause, but this was supplemented in 29 instances by the introduction of a de Ribes bag. The maternal mortality was, of course, nil, the morbidity 1·3 per cent. 84 per cent. of the children were born alive, and of these 78·6 per cent. were discharged well on or about the twelfth day.

Reviews and Notices of Books.

SCURVY, PAST AND PRESENT.

By ALFRED F. HESS, M.D. London and Philadelphia: J. B. Lippincott Company. 1920. Pp. 279. 18s.

PROFESSOR HESS has published so much interesting and original work on scurvy during the past seven or eight years that it seems high time to have his observations collected and published in book form. This book has now appeared under the title, "Scurvy, Past and Present," a book which is entitled to rank as one of the most important monographs of recent years. Since Lind published his great classical treatise on scurvy in 1753 no book has been written in English on this subject. The war has awakened fresh interest in food-deficiency diseases of all sorts, but Professor Hess had made scurvy his special study before the war had directed general attention to this group of diseases. His observations were undertaken in the Pediatric Clinic at New York. His experiences have been amplified and matured by the opportunities for seeing the disease on a widespread scale amongst adults which the war afforded. He does not hesitate in his conclusion that adult and infantile scurvy are one and the same disease, having an identical pathogenesis. Indeed, we may actually complain that Professor Hess is almost too considerate of unproven or even disproved theories as to the pathogenesis of scurvy. The reader grows a little tired of the discussion on McCollum's statement that scurvy is due mainly to constipation. There was ample evidence to knock the bottom out of this theory; that evidence could have been briefly stated once and the theory ignored afterwards. What really interests us is the description of the work done by Hess and his collaborators.

The prevalence of scurvy among infants in America and England has never been correctly appreciated, and a great debt of gratitude is due to Professor Hess for his splendid array of uncontrovertible facts impressing on us the impairment in infant development caused by minor deficiencies in antiscorbutic vitamine. The arraignment of patent foods for infants has never been more clearly or trenchantly set forth. The scurvy-producing effects of proprietary foods are not entirely attributable to the heating of the milk in the process of manufacture; even more important causative factors lie in the inadequate quota of milk used to make up the day's feeding and in the practice of rendering proprietary foods (with certain exceptions) alkaline in order to prevent acid fermentation of the fat. Antiscorbutic vitamine is peculiarly sensitive to the faintest alkaline reaction, and is completely destroyed by heat. But when associated with an acid it is greatly protected from the destructive effect of heat. This is well exemplified by the tomato, which is strongly antiscorbutic even after it has been canned. As regards the effect of heat alone, it appears intensity of heat is not so destructive as prolonged heating. For this reason fresh milk rapidly dried by the Just-Hatmaker process is not deprived of its antiscorbutic properties. Not only, however, is this vitamine easily destroyed by heat, it is also peculiarly sensitive to "ageing." Ageing has least effect when the food with which the vitamine is associated has been dried. Storing in an alkaline or neutral medium causes it to deteriorate most rapidly, but even in an acid medium its potency soon diminishes. On this point Professor Hess disagrees with the report[1] of the Medical Research Council "that it may be regarded as an axiom that dry or dried foodstuffs will not prevent scurvy." He points out in discussing the relationship between infantile scurvy and rickets that there is no causal connexion between these two diseases, and that the pathological interference with the development of the bones is radically different, although the diseases so often occur together.

It is now being fairly widely recognised that scurvy is often diagnosed as rickets in young children. It is important that this confusion should be stopped. The main criterion in diagnosing incipient or latent scurvy is the response made by an ill-nourished infant to the addition of an antiscorbutic to the diet. Professor Hess includes a most comprehensive review of the literature and of the experimental work on scurvy; some of his suggestions are unusually stimulating, as, for instance, his comment on Ingier's study of the effect of a scorbutic diet in the mother on the fœtus. "In view," he writes, "of the similarity between human and guinea-pig scurvy, we should expect not only miscarriages and still-births to result, but cases of congenital scurvy, especially of the latent or rudimentary type." He does full justice to the work of others, and may be congratulated on having made good use of his opportunity "to gather into one volume the recent advances in this field and to offer to the clinician, to the hygienist, and to the biological chemist a presentation of the existing status of this important nutritional disease."

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[1] Special Report Series. No. 38.

DISEASES OF THE LUNGS AND PLEURÆ.

Including Tuberculosis and Mediastinal Growths. Sixth edition. By Sir R. Douglas Powell, Bart., K.C.V.O., M.D., F.R.C.P., and P. Horton-Smith Hartley, C.V.O., M.A., M.D., F.R.C.P., Physician with Charge of Out-patients to St. Bartholomew's Hospital. London: H. K. Lewis and Co., Ltd. 1920. With 36 plates and other illustrations. Pp. xx. + 798. 42s.

This book is, on the whole, of remarkable value. The authors have succeeded in bringing the sixth edition well up to date in most respects, and they have also avoided even critical allusion to certain modern views and teachings which show no sign of viability. There are virtues of omission as well as of commission, and the art of discarding requires even more knowledge and judgment in writing a book on tuberculosis than in playing bridge. To judge by several references to research work published only a little time ago, the authors must have put in much eleventh-hour work. It is, perhaps, a pity that in their preface they write: "...... the last word has been said on antiseptic methods in surgery ......," for such assumption of finality is a challenge liable to be stultified by subsequent events, and it is doubtful if "the last word" has yet been said on this or on any branch of science.

In their first four chapters the authors prepare the reader for the pathology to come by a clear account of the anatomy and physiology of the lungs and of the methods of physical examination they have found most helpful. The illustrations supplementing the text are well chosen; some are the more welcome for being old and trusted friends. In the chapter on hæmothorax and gunshot wounds of the chest the experience of the war has been freely drawn on and the work of British and French surgeons ably summarised. Again, in the chapter on asthma the authors show intimacy with recent advances and appreciation of their importance by devoting considerable space to the work of I. C. Walker, John Freeman, and others on anaphylaxis. In the chapter on actinomycosis the authors follow a time-honoured, almost legendary, tradition in recommending potassium iodide in large doses early in the disease. It will be interesting to see whether or not the claims made on behalf of this drug in actinomycosis will survive the storm of criticism already brewing.

In the large section dealing with tuberculosis the authors range the whole world in their lengthy discussion of various climates; but though they take the reader from Greenland's icy mountains to India's coral strand, they do not introduce him to Leonard Hill's kata-thermometer investigations, which have done so much to convert the empiricism of climatology to a rational science. It is probable that at no time so much as the present has the old controversy over the comparative importance of the "soil" and the "seed" in relation to tuberculosis been so acute, and many readers will, no doubt, first turn to the chapter on this subject to see if the authors have come down heavily on the side of the angels or not. They take the view that the consumptive who, properly trained, is willing and able to carry out instructions, is no real source of danger, and should not be shunned as a leper. They record the case of a lady who, dying of consumption at the age of 48, left 15 children. Of these 15, 7 developed phthisis long afterwards. Why did they do so? "It appears to us that the only answer lies in the doctrine of heredity, the inheritance, as it has been termed, of a 'tuberculous diathesis,' rendering the soil of certain family constitutions more suitable for the growth of the bacillus than that of others, so that, when infected with a suitable dose of the virus, such individuals succumb when their more fortunate brethren escape." The authors then proceed to justify this attitude from a biological standpoint, comparing the fastidious selectiveness of the tubercle bacillus with that of the seed of certain plants. They are, however, careful not to repudiate such a popular and comparatively modern teaching as that of "massive infection." It is curious that they have so little to say about the doctrine that pulmonary tuberculosis is in most cases the direct but distant sequel to infection in early childhood. They do, indeed, briefly refer to this doctrine, but only to pass from it to that of heredity and diathesis.

In a discussion of tuberculous meningitis the authors do not refer to the numerous authenticated records of recovery from this disease. Dealing with laryngeal tuberculosis, they reflect the growing tendency to regard it as a condition best treated by silence and general hygienic measures. The free curetting of ulcerated surfaces, as well as the direct application of lactic acid, so popular a few years ago, are referred to only to be politely damned. In the matter of laryngeal tuberculosis the poor man has in the past, *mirabile dictu*, often been better off than his rich neighbour who has had the help of a restlessly resourceful laryngologist. With regard to modern methods of diagnosis, the authors devote much space to the opsonic index, von Pirquet's reaction falling into the background.

As for treatment, this book is a useful milestone, showing the progress made in recent years. Readers will perhaps come to the conclusion that this "progress" is chiefly to be noted in the discarding and discrediting of such remedies as tuberculin which have diverted research from more promising themes. A new chapter on artificial pneumothorax marks the authors' adherence to this treatment which they recommend in a limited number of cases.

DISEASES OF CHILDREN.

Eleventh edition. By the late Sir James Frederick Goodhart, Bart., M.D., LL.D. Aberd., F.R.C.P. Edited by George Frederick Still, M.A., M.D., F.R.C.P. London: J. and A. Churchill. 1921. With 60 illustrations. Pp. 942. 32s.

A new edition of this tried and trusted volume appears under altered circumstances, for owing to Sir James Goodhart's death the responsibility and labour falls to Dr. Still alone. With a book which has been before the profession for 36 years, and which is, with justice, regarded as a standard work on the subject with which it deals, there is little room for comment or criticism. We must be content to examine the attitude which it takes towards recent advances in the knowledge of pediatrics, and to estimate to what extent it conforms to modern teaching. In regard to the latter inquiry it may be said at once that the new edition is a presentment of all that is sanest and best in English thought and practice in the study of children's diseases. We note, in passing, that no attempt is made to meet the continental conception of infant feeding and of the dyspeptic disorders of children, which has been planted out so widely in the United States, and has obtained a footing in this country. No place is found for separate descriptions of fat-dyspepsia, carbohydrate-dyspepsia, protein-dyspepsia, starch-injuries, and the other various articles of belief of this school. So often is the science of the laboratory distorted to meet the varying needs of clinical medicine, that we thank Dr. Still for his timely words on the application of caloric estimations to infant feeding. "As a guide," he says, "to the general utility of a food its caloric yield has a very limited value. Still less is any such rule-of-thumb method reliable in dealing with the individual infant, for it ignores idiosyncrasy altogether, and, as we all know, one infant can utilise more of one constituent, another of some other, in the food."

Blood diseases are dealt with somewhat briefly; we note that splenic anæmia is taken as synonymous with pseudo-leukæmia, and that no mention is made of the adult form. Nowhere does splenectomy appear to be mentioned, though it has been strongly advocated for splenic anæmia both of the adult and pseudo-leukæmic forms and for familial acholuric jaundice, and many recoveries have attended it. The modern views that the acute leukæmia of children is essentially myeloid in character, in contradistinction to the usually accepted theory of lymphatic origin, and that the cells seen in preponderance in the blood are not lymphocytes but marrow cells, pass unnoticed. Posterior basic meningitis is still kept apart from cerebro-spinal fever; we think that most observers would now regard it as cerebro-spinal fever in infants, occurring in sporadic form. Official circulars would have us believe that rickets has definitely been placed among the group of deficiency diseases. In this regard it is interesting to find that Dr. Still does not accept the vitamine-deficiency explanation as proven, though he sees much to recommend it.

The book occupies a place almost alone in this country in the literature of children's diseases. The editor's hope "that this edition, like its predecessors, may mark a fresh advance in usefulness and interest" is amply fulfilled.

PHARMACOLOGY, TOXICOLOGY, AND MATERIA MEDICA.

1. *A Text-book of Pharmacology and Medical Treatment for Nurses.* By J. M. FORTESCUE-BRICKDALE, M.A., M.D. Oxon., M.R.C.P. Lond., Captain, R.A.M.C. (T.F.). London: Henry Frowde and Hodder and Stoughton. 1920. Pp. 392. 25*s.*
2. *Poisons: Their Effects and Detection.* Fifth edition. By ALEXANDER WYNTER BLYTH, M.R.C.S., F.I.C., F.C.S., &c., and MEREDITH WYNTER BLYTH, B.A. Cantab., B.Sc. Lond., F.I.C., F.C.S., &c. London: Charles Griffin and Co. 1920. Pp. 745. 36*s.*
3. *Scientific and Applied Pharmacognosy.* Second edition. By HENRY KRAEMER, Ph.B. (Chemistry), Ph.M. (Pharmacy), Ph.D. (Botany). New York: John Wiley and Sons; London: Chapman and Hall. 1920. Pp. 741. 38*s.*

1. AMONG recent additions to that excellent series, the Oxford Medical Publications, is "A Text-book of Pharmacology and Medical Treatment for Nurses," by Dr. J. M. Fortescue-Brickdale. The purpose of this book is to explain the principles of medical treatment to nurses, on the assumption that the more fully the ideas underlying directions given by medical men are appreciated, the more accurately and intelligently is the work done. At the same time an effort has been made to impress nurses with the difficulties surrounding practical therapeutics, which can only be met by a training and experience differing widely from their own. The author has carried out this plan with marked success, especially in the first or pharmacological section of the book. The pharmacology of all the more important drugs is dealt with in a clear and straightforward manner, simple explanations of chemical and physical theories being given where necessary. We would suggest, however, that in another edition the number of rarely used synthetic drugs might be reduced with advantage; it must be remembered that, compared with a medical student, the average nurse has but a limited amount of time and energy available for reading during her course of training. This portion of the book concludes with a good section on sera and vaccines.

In the second section the usual treatment of the common diseases—and of some not common—is described, but clinical and pathological descriptions are not given, nor is dosage dealt with except in connexion with the treatment of poisoning. We think that it would have been preferable to lay rather more stress upon general principles and less upon those details in regard to which there is divergence of opinion among physicians. On the other hand, one would have expected to find in such a text-book somewhat fuller descriptions of the technique of treatment usually entrusted to nurses; we have noticed no mention of nasal feeding, for example, and in the directions for giving hot-air baths in the treatment of nephritis there is no indication of the temperature required. Appendices contain useful information on disinfection, the treatment of cases of poisoning, and other matters. The book is lucidly written, and is provided with excellent illustrations, including a number of coloured figures of medicinal plants. A nurse by mastering the contents of this volume will certainly render herself considerably more efficient as an assistant to the physician.

2. We are pleased to note the appearance of the fifth edition of Wynter Blyth's "Poisons, their Effects and Detection," which has ranked for years as a standard work on the subject. In view of the importance of methods for identifying minute quantities of poisonous substances, the authors have laid stress in this edition on microchemical and physical aids to recognition, the latter having the advantage of not changing or wasting the material. Thus, among the new sections we see one on micro-crystallography, which deals with the determination of the angles of crystals, their refractive indices, and so forth, and scattered through the book there are many applications of these principles. The organic derivatives of arsenic and antimony, and the newer potent synthetic drugs generally, have received attention, as has recent progress in connexion with the constituents of poisonous plants. Of such work, carried out since the appearance of the last edition, none rivals the brilliant exposition of the chemistry of ergot by Barger and his co-workers. Some account is given of recent investigations bearing on the variation of pharmacological action with chemical composition in certain groups of substances such as the atropine series, emetine and its derivatives, and the amines related to the active constituents of ergot; but such statements only serve to show how isolated, as yet, are the instances in which it is possible to identify any definite physiological effect with a certain chemical grouping. The number of deaths caused by each of the important poisons in England and Wales during the five years ending December, 1916, is given. Food-poisoning cases head the list, and of the remainder it is instructive to note the high place taken by certain poisons, such as hydrochloric acid (third on the list), the regulations governing the sale of which are the least stringent. Hydrochloric acid, it may be added, is not among the poisons which are obtainable only from qualified chemists; any dealer can sell it. A feature of this work is the account given of criminal and other poisoning cases. We were surprised, therefore, to see no mention of the Crippen case.

The subject-matter of the book as a whole has been brought well up to date, but the sections on ptomaines and food poisoning seem to have hardly received their share of revision. The bases formed during putrefaction are fully described and there is no indication how slight is the evidence upon which they have been regarded as causing poisoning when taken by the mouth. The Gaertner group of organisms, whose toxins are now generally held to be the cause of the majority of cases of food poisoning, deserve more than the few lines devoted to them. No reference is made to the use of poisonous gases in warfare. It is true that comparatively little has been made public on this subject at present, but the investigation of such substances and their effects must have brought to light facts of great toxicological interest. We hope that it will be found possible to add to the information already liberated, without forgetting the advice quoted by Lord Fisher shortly before his death: "Give not the things that are profitable to thee to a strange nation."

3. The first edition of Professor Kraemer's "Scientific and Applied Pharmacognosy," a book dealing systematically with all the more important crude vegetable and animal drugs, their constituents, adulterants, and so

forth, appeared in 1915, and we now welcome its successor. Although a considerable amount of new matter has been added, notably in connexion with progress in pharmaco-chemistry and drug cultivation, the volume has been rendered less bulky and more convenient to handle. Here also we find the importance of physical and micro-chemical method emphasised, these being the departments of analytical work in which the most important advances have been made of recent years—at least as far as the examination of foods and drugs is concerned. Few commodities demand such progressive methods of analytical control as these, on account of the chemical complexity of the substances to be dealt with, the frequency of their adulteration and sophistication, and the scientific methods now employed in preparation for the market. Speaking, presumably, of America, the author says that during the past 10 years something like 50 per cent. of the powdered drugs on sale were adulterated and the trade in spices was even worse; we cannot believe that conditions have been quite as bad in this country, but there is room for improvement. Lately more stringent legislative and analytical control has brought about a great change for the better. Among recent applications of physics we may mention an extended use of refractometric and polarimetric methods. The refractometer is not only useful in controlling the quality of oils and other products, but has been the means of indicating the presence of hitherto undetected constituents, as in the case of eucalyptus oil. The micro-polariscope is being more extensively used for the identification of alkaloids, and a process for the determination of morphia by the polarimeter has recently been described. X rays may be used to detect mineral impurities in such drugs as asafœtida, and the electrolytic determination of metals is continually finding fresh applications.

The author rightly lays stress upon the importance of crystallography as part of the scientific equipment of the pharmacognosist. In this country, at any rate, the acquaintance of analytical chemists with this subject is not always very close, and this remark applies to pharmacists with even greater force. Space can hardly be found for it in the curriculum of the latter under present conditions, but possibly a curtailment of the study of the many little-used drugs, to which pharmaceutical students are now required to devote their attention, might solve the problem. Professor Kraemer has met with considerable success in using the characters of the crystalline sublimates obtained by heating various drugs as aids to recognition, and in the identification of crystals he finds their behaviour on the thermostage of a microscope very useful.

The book is intended for the use of students in pharmacy, as a handbook for pharmacists, and as a reference book for food and drug analysts and pharmacologists. As far as it is possible to supply these needs within the limits of a single volume, it fulfils its purpose admirably. Although for pharmaceutical students it is somewhat overloaded with detail, as a work of reference it is excellent. Analysts will find the illustrations of microscopical details particularly useful in identifying drugs and determining the purity of powders.

ANATOMY OF THE HUMAN SKELETON.

Second edition. By J. ERNEST FRAZER, F.R.C.S. Eng., Professor of Anatomy in the University of London. London: J. and A. Churchill. 1920. Pp. 284. 36*s.*

THE author has not done himself justice in choosing a title for his book, the scope of which is far larger than it suggests. Instead of drily describing the dry bone carefully cleaned and separated from neighbouring structures, Professor Frazer has sought to portray the bones as they are found in the human body with the various structures in relationship to them, and to explain the effects of these relationships on the structure and conformation of the bone. To this end the author gives 219 illustrations, many of them coloured, done by his own pen and brush. Naturally many details are given which are lacking from other text-books, for they can only be seen by the receptive eye of the anatomist himself. *It is just this feature of the book, the appreciation of anatomy for its own sake and not as a means to an end, that is characteristic and of value.* In the present edition the description of the illustrations is written beneath and not on the opposite page, as in the previous edition—an improvement, thereby saving the reader much needless turning backwards and forwards. The small errors which we noted in the earlier edition have now been rectified. We can confidently recommend this book to all students of anatomy, and more especially to those who are candidates for the higher examinations in this subject. Just as in the last generation the work of George Humphry was the chief agent in giving medical students a living interest in the bony skeleton, this book of Professor Frazer's has already been the means of transforming what is too often a permanent distaste for anatomy in the present-day student into a positive enthusiasm.

THE POCKET ANATOMY.

Eighth edition. By C. H. FAGGE, M.B., M.S. Lond., F.R.C.S. London: Baillière, Tindall, and Cox. 1920. Pp. 313. 5*s.*

IT is not necessary to enter into detail in dealing with this little book; the fact that it has reached its eighth edition and fiftieth thousand is in itself enough to show that it serves its purpose well. The old nomenclature has been reinstated throughout. It is undoubtedly the best of the books which serve for refreshing the mind of the student and recalling the academic points of his study.

OLD AT FORTY OR YOUNG AT SIXTY.

By ROBERT S. CARROLL, M.D. New York: The Macmillan Company. 1920. Pp. 148. 13*s.*

THERE have been many books written on the subject of old age, how to procure it and how to enjoy it, from the time of Cicero's "De Senectute" down to Sir Hermann Weber's "Means for the Prolongation of Life," and we doubt the need for yet another book on the subject. However, Dr. Carroll has set down in the work now before us a number of somewhat obvious aphorisms and principles of which those who have reached their fortieth year should take cognisance. Practically they may be summed up in the old lines from the De Regimine Sanitatis of Salerno—

> Si tibi deficiant medici, medici tibi fiant,
> hæc tria, mens hilaris, requies, moderata diæta.

Dr. Carroll rightly lays stress upon the necessity for work in moderation as tending towards a happy frame of mind, and of exercise, also in moderation. "Be cheerful; sleep well, and do not eat too much," sounds easy, but all books on old age and how to enjoy it seem to ignore the fact that, if not riches, at least a competence is necessary. The present unrest all over the world is in great part due, we fancy, to the ever-present spectre of a joyless old age, without the ability to work, and therefore with the accompanying conditions of want. But given even a very small income, old age should be a time of rest and of looking forward to the next life with calmness and that attitude of mind so beautifully described by our own poet Waller in his stanza which begins "The seas are quiet when the winds give o'er."

A *NURSE'S HANDBOOK OF OBSTETRICS.*

For Use in Training-Schools. By JOSEPH BROWN COOKE, M.D., Fellow of the New York Obstetrical Society. Ninth edition, revised and enlarged. By CAROLYN E. GRAY, R.N., Superintendent of City Hospital School of Nursing, Blackwells Island, New York City; and PHILIP F. WILLIAMS, M.D., Instructor in Obstetrics, School of Medicine, University of Pennsylvania. London and Philadelphia: J. B. Lippincott Company. 1920. Pp. 468. 12*s.* 6*d.*

LITTLE need be said in praise of a book which has proved its worth by running through nine editions since it first appeared in 1903. The present edition has been extensively revised and enlarged, and the more important advances in practical nursing incorporated.

New illustrations and some coloured plates have been added and a section on prenatal nursing. The advantages which result from this branch of nursing is demonstrated by the statistics of the Committee for the Reduction of Infant Mortality of the New York Milk Commission. These figures show that among 3000 women who had close supervision during their pregnancy there was a 69 per cent. decrease in the maternal mortality, a 28 per cent. decrease in the deaths of infants under one month, and a 22 per cent. decrease in stillbirths. The importance of such preventive treatment is evident when we remember that over 15,000 women die annually in the United States from childbirth. This book is an extremely good one, and this edition fully maintains the high standard of the previous ones.

JOURNALS.

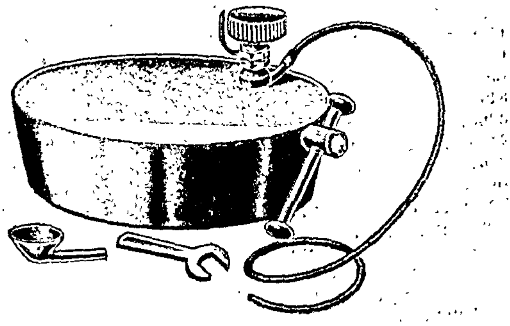
Journal of the Royal Naval Medical Service.—In the issue for January a paper by Surgeon-Commander L. F. Cope, R.N., gives account of his experiences on special service in the Danube from May to September, 1919. It will be remembered[1] that this officer had overcome an epidemic of typhus in Belgrade in December, 1918. In this present period he had little medical work to do, but his account of the fertile Hungarian plain, of the disorganisation and poverty due to Bolshevism, locally held to be entirely engineered by Jews, and his esteem for and confidence in the future of the Hungarians are all interesting, as is also his account of his work on the Food Mission, which existed to buy food but had no currency the peasants would accept. Like others, he tells of the work achieved by individual *British officers in apparently hopeless situations.* His monitor was visited at Budapest by the commandant of the Bolshevik Marine Guard, himself formerly a sailor in the Austrian Navy, in which his present secretary had been a lieutenant. But this topsy-turveydom did not help military action, for the Bolshevists were inattentive and always late, so the threatened monitors got away unharmed; Captain V. H. Haggard, R.N., too, by his mere personality, rescued from them two motor-launches they had seized.—Surgeon Rear-Admiral P. W. Bassett-Smith publishes a very interesting report by Surgeon-Commander W. R. Harrison on Autogenous Pyorrhœa Vaccine made at Greenwich for individual patients of the Dover Patrol. Generally a short Gram-positive streptococcus was isolated. The dental surgeon reported that the loose teeth of each case should be removed, but under local treatment, scaling, hydrogen peroxide or other mouth wash, and vaccine, "the teeth have become *firm, pus has stopped, and gums have healed and hardened.* These are cases which formerly would have had their mouths stripped of teeth." This all means a great advantage to the individual, and a large saving of service to the Navy, and further credit to vaccine therapy.—Surgeon-Commander H. C. Whiteside, who will be remembered for his work on Malta fever 15 years ago, has an article on the Bacteriology of Cerebro-spinal Fever. It is noted that few cases occurred during the war in sea-going ships, 8·7 per cent. only in 1914 and 1915, 13 per cent. in 1916, 1917, 1918, which is tentatively ascribed to the higher degree of immunity of the trained man over the recruit living in new conditions, while fresh air and sunshine cure the carrier condition far better than local treatment. The carrier is thought to be hardly a danger to himself, as so few cases occurred in their isolation camps.—Surgeon-Commander H. S. Burniston (who is Fleet Medical Officer of the Atlantic Fleet, of H.M.S. *Queen Elizabeth*) and others are anxious that a standard treatment for syphilis (also for gonorrhœa) shall be promulgated by authority; in accordance with that all cases would be treated. Then the men will not be confused by the varying opinion of successive medical officers, but having only one system, the best, put before them, they will easily be guided to accept that. Instructions such as asked for appear to have been issued for the treatment of soft chancre. Ablution cabinets are in future to be constructed adjacent to sick bays, and specialists in genito-urinary and venereal diseases are being appointed to fleets, though it is discussed whether all medical officers should not be trained themselves skilfully to administer all such treatments.—We all know the old aphorism about the swing of the pendulum, and are reminded of it in reading Surgeon-Captain M. L. B. Rodd's first note. Things forgotten come back again, but come back with a difference. In the old days "strapping" was applied to ulcers, across them, to draw the edges together and accelerate healing. This method was discredited by surgeons trained in antiseptic surgery and disused. Now Surgeon-Captain Rodd, following Beck of Chicago, recommends that granulating wounds, if healing but slowly, shall have strips of zinc-oxide plaster applied (but note the difference), not across but along the edges of the *granulating* wound; the plaster seems to act as a support to the delicate, rapidly ingrowing epithelial cells. Surgeon-Captain Rodd reports also an operation for strangulated hernia with an acute appendicitis in the sac, and a case of a recurrent torsion of the spermatic cord; also he successfully removed a spleen, ruptured by a punch in the left loin. Very careful provision is being made in the Navy for thorough dental treatment for officers and men, and dental history cards for all are instituted.

New Inventions.

A WARM ETHER BOMB.

THE advantages of administering warm ether are now generally recognised as the result of experimental and clinical observations by Gwathmey, Pembrey, and Shipway. These advantages may be briefly summarised as follows: Diminished loss of body heat; diminution of shock; diminished buccal and bronchial secretions; it is less toxic in its effects on the tissues; warm ether is less irritating to breathe in the conscious stage, and less likely to cause respiratory spasm—in consequence, induction is more rapid; after-vomiting is lessened; there is diminished risk of lung complications.

The apparatus here illustrated, whilst delivering warm ether vapour, has other advantages likely to be of value. 1. The ether is self-delivering and no bellows are required. 2. It is simple, and portable in a small handbag. 3. There is nothing to break. 4. The delivery of the vapour can be very accurately controlled by means of a needle-valve. 5. It is possible to get a stronger vapour than by other methods. 6. It is adaptable to any ordinary open mask, and easily attachable to any closed nitrous oxide or ether inhaler. 7. It affords a convenient means of anæsthetising animals with ether if fitted either to a mask or animal box.



The apparatus consists of a strong steel vessel, capable of holding half a pint of ether and tested to withstand a pressure of 250 lb. per square inch. It is fitted with an aperture for filling, which is closed with a screw plug, and with a needle-valve to regulate the supply of vapour. The valve has a graduated ebonite top and a pointer which indicates when the valve is closed, or the extent to which it is open. The delivery pipe of the valve is connected by rubber tubing of small bore to an ordinary open ether mask by means of a small metal tube, inserted through the covering of the mask. The temperature beneath the mask is between 90° and 98° F.

The apparatus has been in use for 3½ years and has proved perfectly satisfactory, but difficulties in manufacture arose during the war. These have now been overcome and the apparatus is procurable from the Condensed Gas Company, 59-63, Grosvenor-street, All Saints, Manchester.

S. R. WILSON, M.B. Lond., M.Sc. Vict., F.R.C.S. Edin.
Manchester. K. B. PINSON, M.B., Ch.B. Birm.

Dr. Louisa Garrett Anderson has been appointed a member of the Central Committee on Women's Training and Employment.

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[1] THE LANCET, 1920, ii., 222.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 12, 1921.

Following-Up.

PROGRESS in clinical medicine and surgery is to a large extent retarded by the absence of definite evidence of the late results of treatment. If such evidence could be obtained there is no doubt that much of the difference of opinion regarding various lines of treatment would be overcome. It has long been felt that there is a tendency for surgeons and physicians to continue using methods of treatment which were in vogue when they were first appointed to a hospital staff, and which have since become obsolete. One or two good results in the past led to the impression that the treatment is satisfactory; whereas, if a whole series of cases had been investigated a different conclusion might have been reached. To place the various lines of treatment, and especially surgical treatment, upon an accurate basis it is essential to have some form of a "follow-through" department, whereby the cases can be traced for months or years after the treatment is instituted. Several such departments have been started in America, and in London those at the London Hospital are now well established.

Dr. C. L. GIBSON has published an analysis[1] of such a department in the New York Hospital which emphasises the value of this work. The method there followed appears, however, to be incomplete; but, as the author states, it is at present upon trial, and unquestionably will be modified and improved in course of time. For such a department to be of real value every case must be followed whether ill or well, no case must be discharged without the needful information to secure following-up, and means must be taken of determining the number of deaths which occur. By this means the results can be accurately determined over a period of many years. Apparently at the New York Hospital patients are told to come up in three months time, and to report at any time if not so well. The failure of patients to follow such instructions is well known, and apparently this still occurs in the hospital mentioned, for the statement is made that the results appear to be bad owing to the fact that a large number of patients remaining in good health, and having no complaints, do not respond to the request for investigation or examination. These difficulties are well recognised at the London Hospital, where every patient on his discharge from the ward is given a dated card for his next examination, which is usually held two to three weeks later. Three days before this date becomes due a postcard is sent to remind him. When he appears notes of progress are made on the same sheets used while he was an in-patient, so that there is no discontinuity between the in- and out-patient notes, and should he relapse and be admitted again further in-patient notes are added to the same sheets. There is thus on one bound set of sheets a complete history of the patient's hospital life. At the end of the examination he is given a date for his next visit which is entered into a book by a secretary, who sits with the surgeon, and again three days before this examination is due he is written to. Cases progressing satisfactorily may be given a date 6 or 12 months ahead. If simply told to come again in that period probably 50 per cent. would fail to appear, but when reminded with a card two or three days before the date is due it is found that only 2 per cent. of them fail to attend. By such means very accurate data of the value of operative procedures at present under dispute are obtained and by keeping separate card indexes of diseases and operative measures the notes can be readily referred to in a few minutes and the results investigated at short intervals. The relative values of disputed lines of treatment is, in this way, shown by the results of gastro-enterostomy for pyloric and lesser curve ulcers of the stomach, by the effects of partial thyroidectomy for exophthalmic goitre, and by the results of the various forms of therapy for carcinoma of the colon. The patients appreciate the department, which at the London Hospital is held, not in the out-patient department, but in a room lent by the hospital committee, so that there is a personal relationship between the surgeon and his patients, who thus feel that they have what must be regarded as a health insurance. Should they not be making satisfactory progress they can come up on the appointed day of any week, whether written to or not, and if a new disease has arisen which requires treatment in another department they are then referred to that department without loss of time. The value of continuous record is recognised by these patients to the full.

The analysis of Dr. GIBSON, although admittedly only a preliminary report, already brings forward many points of considerable interest, and, as the author states, some of the results are much better and others much worse than were expected. But he indicates clearly that if the method of following-up were more generally followed the majority of surgeons would be considerably less satisfied with some of their methods of treatment—a matter of profound public importance. The article is of value as laying stress upon the importance of a department which should have a great influence upon future treatment. There can be no doubt that it is only by such records of past history and happenings that real progress can be made in medical or surgical treatment, and it is to be hoped that establishments of this sort will rapidly be founded in all big hospitals.

Voluntary Hospital Policy.

THE opening statement of the policy of King Edward's Hospital Fund, as passed by the General Council of the Fund on Jan. 26th, should be carefully weighed. It lays down as the conclusion arrived at by those who framed it "that the voluntary system of hospital management and control should be preserved as being the most efficient method of providing at the least cost the best medical and surgical treatment, combined with advance in medical knowledge and practice." Unless the accuracy of this estimate can be impugned by expert opinion at any rate comparable with that at the command of King Edward's Fund, the voluntary system as the one which can supply the greatest efficiency at the least cost should appeal to the Government and win the support of the country.

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[1] Gibson, C. L., "An Analysis of the Results of Six Years' Follow-up System in a Hospital Surgical Service," Annals of Surgery, December, 1919, p. 661.

The situation requires not only the earnest attention of the Government, but immediate consideration and a definite early pronouncement of the policy that will be followed. Uncertainty as to when and on what conditions the State will finally intervene can only lead to decrease of subscriptions with an accompanying prospect of a larger demand upon public revenues at some not distant date. This uncertainty as to the future position of hospitals is already contributing to the diminution of their incomes, in combination with the certainty that their position of dependence exclusively on the charity of the benevolent cannot be maintained. The question of their future at its present stage is one which the Government, and the Government only, can decide, for there is no way of ascertaining the views of the public as in the case of civil politics. The range of classes and interests from whom opinions would have to be obtained is too wide, including the wealthy, or comparatively wealthy, with those who under the proposals of the Council of King Edward's Hospital Fund may be asked to contribute to the expenses of their own treatment, and those others for whom the help which the hospital affords will always be the gift of charity. Later, when the course adopted has developed, its practical success or failure should be established beyond doubt. If the contributions to be raised voluntarily fall below the proportion necessary to maintain the voluntary status at a prescribed standard, the public vote will have been given, perhaps unconsciously, against the maintenance of the voluntary policy. In that event the taxpayer or ratepayer will be called upon to bear in that very different capacity the burden which he has hitherto been asked to shoulder as a willing and charitable friend of the people. Should the voluntary subscribers make this decision there will follow the opportunity for all to judge whether the Council of King Edward's Hospital Fund was right in recommending the voluntary system as producing the best results at the least cost. Whatever opinion may then be formed the final decision will have been taken. But there will be no possibility of reverting to the voluntary system when once it has been abandoned —an anxious thought for those of us who believe, with the Council of King Edward's Fund, in the paramount merits of the system.

Deep Radiotherapy.

There are signs of a widening interest in what is known as deep radiotherapy, but technical difficulties attend the irradiation of the deeper structures of the body. Recent discussions at the Sections of Electrotherapeutics and of Obstetrics and Gynæcology of the Royal Society of Medicine have shown considerable dissatisfaction among radiologists, not so much with the sources of radiation at their command as with the methods in use for measuring the dose admininistered. There is at present no way of measuring the dose of radiation absorbed by a tumour situated at a depth in the body; we say absorbed advisedly, for only those rays which are absorbed can produce chemical and physical changes, and it is only the amount of radiation that is absorbed by the irradiated tissues which should be included in the term dose. In this connexion some misconception has arisen as to the virtue of very penetrating X rays; it has even been said that in the case of very penetrating rays the amount absorbed by the tumour cells is negligible. As a matter of fact the amount absorbed may be quite large. A beam of X rays issuing from a bulb, at an alternative spark gap of 10 inches, consists of a mixture of rays, generally spoken of as soft, medium, and hard, the hard type predominating with this gap; we will assume that some measure of the intensity of this composite beam can be made photographically. A sheet of aluminium 10 mm. thick, interposed in the path of the beam, has the effect of weeding out all but the hard rays; the beam passing through such a filter is practically homogeneous, but its intensity would, on measurement, be found to be reduced to about one-fifteenth of its original value. If we use for our intensity meter a strip of photographic paper, it is only the small fraction of radiation absorbed by the paper which determines the tint. Prolong the exposure in the second case 15 times, and the resulting tint will be the same as before; we have made the film absorb the necessary amount of the penetrating X rays to give the same result. Hence, in dealing with very penetrating X rays or the still more penetrating gamma rays of radium, the difficulties of getting the requisite dose into a deep-seated tumour do not arise from the degree of penetrating power; they arise first from the limited tolerance of the human skin to these rays, and secondly, from the diminishing intensity of the rays as the distance from their source increases.

Over-dosage of the skin is avoided by employing multiple ports of entry, the rays converging from various directions upon a deep-seated tumour. A gradual fall in intensity through the tissues takes place, however, not only because of the increase in distance from the source but also because of the absorption of the beam by each successive layer; and this variation will be minimal when the penetrating power is maximal. By using a very hard X ray bulb (say 12 inches spark-gap) at a distance of 30 cm. from the skin of the patient, and filtering the rays through 10 mm. of aluminium, the ratio of intensities at 1 and 10 cm. depth in the tissues would be about as 100 : 30. This may indicate to some extent how difficult it is to obtain uniformity of radiation throughout a tumour mass; and if no real uniformity exists we may well ask what is meant by the term "dose of X rays administered." An analogy would be the oral administration of a dose of strychnine; a rather difficult physiological inquiry would be needed to determine how much reaches a certain organ. We have not even arrived at this stage in our radiation measurements. Though it is true that by placing an intensity meter in the path of the beam we may say what intensity of radiation is incident upon the surface of the patient, this is not a measure of the dose; the most that can be done at present is to specify fairly accurately the way in which this intensity falls off as the beam makes its way through the tissues, and pictorial charts of this kind might prove very useful to radiologists. But this is far from being a measure of the dose of radiation. Our electroscopes or photographic films can only act as *intensity* meters. They do not measure the *energy* of the beam of X rays; to do this they would have to absorb it completely. When modes of measurements of this kind are adopted, the time will have come to establish a unit of X ray energy, a demand that has been met in other parts of the spectrum—for example, light and heat. Contrary to the popular conception, it is a simpler matter to give a deep-seated tumour uniform irradiation with highly penetrating rays than with lightly screened X rays consisting of soft, medium, and hard constituents. The next matter for consideration is whether these soft, medium, and hard X rays have appreciably different effects upon actively growing tumour cells in all cases, if the dose absorbed is the same; in other words, have these different rays a differential action? On the answer to this question will depend very largely the warrant for an extended use of the more highly penetrating X rays. We cannot be too careful in adjudging the evidence on this point. If the evidence is brought from a radiological clinic, the first criticism almost invariably directed upon it is that it is practically impossible to arrange under clinical conditions that the cells of tumours in different cases have received the same dose. A rigorous proof of the fact that, in equal doses, "soft," "medium," and "hard" X rays have similar destructive effects upon tumour growth, can perhaps hardly be expected from the clinic itself. A greater degree of exactness is possible in examining this question as far as it applies in animal tumours; and although the evidence is limited, it points to the fact that if the tumour cells are made to absorb equal quantities of soft and of hard X rays, the quantity required for a lethal dose to the cells is not appreciably different in the two cases.

It is in such problems as deep radio-therapy that we are made to realise the necessity of laboratory investigations. Up to a certain point it looks as though the reaction of any particular type of cell is a function of the amount of energy which it absorbs and converts into some other kind: as it is submitted to radiation where the wave-length is inappropriate for this conversion of energy, there is a cessation of reaction, when we say that electro-magnetic radiations have a differential effect upon one and the same variety of cell. Otherwise, if we concentrate our attention upon one variety of ray—say some X ray beam about the middle of the three octaves made use of by the radiologist—by acting with the same beam upon a large variety of tissues, the beautiful phenomena of selective action are disclosed. In the region of the spectrum where X rays have their place, the absorption which the rays suffer in passing through different materials is intimately bound up with the nature of the atoms forming the material, and not with the molecular structure which is so important in the problems of light absorption and transmission. Atoms of high atomic weight absorb a beam of X rays more readily than the atoms of low atomic weight, with exceptions dependent upon characteristic X ray phenomena. If we restrict our attention to one type of absorbing substance, say aluminium or water (about equal in absorbing power to the soft tissues of the body), then it is found that the X rays of long wave-lengths—i.e., soft X rays—are much more absorbed than those of short wave-lengths. This of course accounts for the filtering effect of a sheet of aluminium, its tendency being to stop the long waves and to let through the short ones; some of the short ones are absorbed too, but a much smaller percentage. An X ray which had twice the wave-length of another would be absorbed nearly six times as much by a sheet of aluminium. Numerical values of the average wave-length of a beam of X rays can be found by absorption measurements, and when these come to be used by radiologists instead of the terms "soft" and "hard," a valuable aid to exactness will result. As to the antagonistic effects of different rays, Professor PECH has described some experiments,[1] which appear to show that radiation from one part of the spectrum (visible) acted in an antagonistic manner to the rays from another part (ultra-violet). We look with interest to the development of such investigations in view of their significance in radio-therapy.

Annotations.

"Ne quid nimis."

"SPECIAL" INTERNAL EXAMINATIONS IN MEDICINE.

THE dissatisfaction felt by all teachers with the examination system is as chronic as a winter cough, and as incurable. The fact that the malady increases with the age and individual distinction of the teacher makes it no easier to treat. Occasionally it lights up in acute form, and the result is a series of indeterminate conferences, culminating in a discussion such as that held on Feb. 7th at a meeting convened by the Dean of the Faculty of Medicine in the University of London. The controversial point was a proposal to institute "special"[2] internal second examinations for medical degrees, arising out of a request from University College for permission to hold such examinations in organic chemistry in March, 1921, and in anatomy, pharmacology, and physiology in July, 1921, and similarly in March and July in future years. The Academic Council have had this request under consideration for some time, and a conference was called in February, 1920, of medical representatives of the Senate and of schools and colleges of the University to discuss the expediency of granting this permission. At the conference Professor Starling was the chief advocate for the innovation. He argued that though the present system of examination was perfectly fair, it was one which absolutely destroyed originality of teaching. He held that cast-iron uniformity was not wanted, that in each school there ought to be a tone of individuality, and that it was a way of thought rather than facts that a man should acquire. Against this it might be said, and indeed was said in effect by the opponents of the proposal, that for the practice of medicine more is wanted than education in certain principles. There is, indeed, no scope for originality of teaching in the crowded medical curriculum, unless it be selective; and may this safely be allowed? No analogy can be drawn between medicine and the other faculties in this matter. It may be, and probably is, more conducive to an appreciation of English poetry to know thoroughly the period of Chaucer or Milton than to survey the whole field of English literature through the unilluminating pages of a matriculation cram-book. But the extensive medical syllabus laid down under the supervision of the General Medical Council has been framed to include only that ground which it is deemed essential for a qualified doctor to have covered, and independent examiners are surely the best judges as to whether he has covered it. No arguments throwing fresh light on the question appear to have been brought forward at the meeting of the Faculty, where after much discussion it was ultimately and, we think, wisely decided that the institution of "special" internal examinations in the Faculty was inadvisable.

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[1] Comptes Rendus de l'Acad. des Sciences, May, 1920.

[2] A "special" internal examination is one peculiar to the particular school where it is held. It is conducted by the teachers at the school with the association of an external examiner or examiners, and is designed to enable the students to be examined on the particular course that they have been taught.

The University of London has under its constitution a hard struggle to maintain cohesion, and if internal examinations conducted in its name are not uniform there would seem no need for its continuance as a corporate body. The examination system should be attacked boldly and as a whole by our educational authorities, but we think that experiments might well be conducted where the struggle for life between constituent colleges and between external and internal students does not complicate a problem in itself sufficiently intricate.

THE TREATMENT OF GASTRIC AND DUODENAL ULCERS.

IN spite of the large amount of work which has been carried out in recent years, in investigating the causation of gastric and duodenal ulcers, the problem remains unsolved, especially in regard to the conditions preceding ulceration and those leading to the chronic forms. Experimentally, acute gastric ulcers similar in character to those occurring in man have been produced in animals by Dr. Charles Bolton, but these tended to heal rapidly, unless meat was given or unless some degree of pyloric stenosis was artificially induced. There is now evidence in man that under appropriate treatment, notably rest and careful diet, acute gastric ulcers may heal satisfactorily, and the same is almost certainly true of duodenal ulcers. It is in regard to the chronic ulcers that the choice of treatment is at present so difficult, and concerning this choice the most widely different opinions are held. This is well illustrated in the discussion on this subject before the Royal Glasgow Medico-Chirurgical Society, published in THE LANCET of Jan. 22nd (p. 172). It was a happy arrangement by which the discussion was opened by a physician, a surgeon, and a general practitioner, as it is important to establish the rôle of each in the treatment of these conditions. Whereas formerly treatment was almost exclusively medical, except in the case of perforating ulcers, the pendulum has swung so that in the minds of many practitioners and surgeons the bias is towards surgical treatment in the majority of cases. The immediate results of surgery in many examples of chronic ulcer where medical treatment has failed are so dramatic that there is some excuse for this surgical bias. It should, however, be remembered that surgery also fails in some cases, and that the subsequent development of jejunal ulceration, the vicious circle, and the regurgitation of bile are often dire instances of this. Indeed, the varying technique and form of operation employed by different surgeons, and the not infrequent necessity for secondary or subsequent operations, indicate that the eclectic surgical procedure is yet to seek.

It is a truism that more can be learnt from a study of failures than of successes, and what is needed now is a critical collective study of the causes of failure of both medical and surgical forms of treatment. It is admitted that the surgeon often succeeds where medical treatment has failed, and it is claimed by some of the protagonists of medical treatment that, if medical measures were employed early enough and more efficiently, the surgeon's aid would rarely be necessary. Study of the results suggests that the cases in which surgery is most successful are those of the chronic ulcers, leading to cicatrisation with its sequels of delayed emptying, stasis and dilatation of the stomach. This is almost what might have been anticipated. The aid given by surgery is mechanical, and its chief success is in relieving the mechanical sequels of ulceration. The fundamental problem of the treatment of these ulcers is a more profound one and is essentially medical. The disturbances of vital function, whether secretory, nutritive, or muscular, which lead to ulceration, have to be prevented, and for this purpose further study of the symptoms in their early stages is desirable.

We published an interesting contribution to this aspect of the problem from Dr. E. P. Poulton last week. [illegible] is the results of his investigation of the cause and relief of pain in gastric ulcer. By means of special tubes passed into the stomach and duodenum he has studied the effects of varying intra-gastric pressure. He finds that an important element in the pain of gastric ulcer is distension of the stomach, and that it can be relieved by means of the gastric and duodenal tubes. His results are also of interest as confirming the views of Dr. A. F. Hurst in regard to visceral pain, which are the subject of correspondence in our columns this week. Dr. Poulton found that when distension of the stomach was induced by the introduction of air at a pressure of 20 cm. of water, an actual sensation of pain was produced in the cases where gastric ulcer was present, while a feeling of fullness was induced in other conditions. This reaction cannot, however, be used for purposes of diagnosis since he observed it in a case of carcinoma of the pancreas in which no gastric ulceration was found post mortem. He reports benefit in a considerable number of cases of gastric ulcer treated by the aid of the gastric tube in the manner he describes, but he is careful to point out that his work is still in the experimental stage, and that he is not prepared as yet to recommend it as a general mode of treatment. He suggests that increased intra-gastric pressure may be a factor in the genesis of gastric ulceration, and his example should lead to his hypothesis being examined by other workers. We may have here a sign-post, pointing to measures of value both in prevention and treatment. In the medical treatment of gastric ulcer the recognition of the earliest stages, correction of faulty regimen and diet, and systematic rather than symptomatic treatment are required. Dr. R. O. Adamson, speaking in the Glasgow discussion from the practitioner's standpoint, urged that prolonged after-treatment was an essential in the endeavour to prevent chronicity and mechanical deformities which follow in the train of chronic ulcer. It is evident that the physician and the practitioner are alive to the fundamentals of the problems of gastric and duodenal ulcer.

UNWELCOME DRUG RESTRICTIONS.

WE summarised in THE LANCET of Jan. 15th the draft regulations issued by the Home Office with a view to the carrying out of the Dangerous Drugs Act which became law last August. These regulations concern the manufacture, possession, sale, and distribution of opium, morphine, cocaine, ecgonine, diamorphine and their salts, as well as of any preparations containing not less than $\frac{1}{5}$ per cent. of morphine or $\frac{1}{10}$ per cent. of the other alkaloids. It is, we suppose, inevitable that those concerned with the legitimate use and distribution of these drugs must suffer some inconvenience from the restrictions designed to prevent their illegitimate use, but there should be a just and proper apportionment of inconvenience. After careful study of the regulations it is the concerted view of the medical, dental, veterinary, and pharmaceutical professions that the *restrictions are more than can be* borne. A Memorandum submitted last week by the British Medical Association to the Home Secretary states that the responsibilities and anxieties of medical practitioners are likely to be seriously increased by clerical restrictions *of a kind hitherto unknown* in medical practice; and the Council of the Pharmaceutical Society of Great Britain, in a lengthy manifesto, regards the objections to be so great as to demand an entire redrafting of the regulations. Nearly every regulation involves practical difficulties. From the medical practitioner's point of view it would be a hardship to insist upon the prescription being in writing when it might be typewritten or printed. Personal administration of a narcotic drug, say by hypodermic injection, without prescription appears to be vetoed, a limitation which looks impracticable in hospital work. What the Pharmaceutical Society quaintly calls the "four ledgers" regulation can hardly be fairly enforced on the practitioner who dispenses his own medicines; and the regulation requiring the percentage of any narcotic drug to be marked on the label of the bottle or package is calculated to defeat the intention of the Act itself, which was to prevent improper use of the drug, as doctors will no longer be able to conceal from patients the nature of the prescription One regulation apparently makes it impossible for a patient suffering from a sudden attack (say) of gall stone colic to obtain an emergency dose for the relief of pain, nor is it at all clear how such procedures as cocainising the eye, throat, or nose, or administering a morphine suppository, are to be carried out at all under the regulations The pharmacists naturally have grievances of their own, for while the Pharmaceutical Society has been pressing for the stricter allocation of the functions of prescribing and dispensing, the regulations prohibit pharmacists from retailing while permitting medical practitioners both to prescribe and dispense The fact that the dispensing of poisons is already safeguarded by statutory regulations under the Pharmacy Acts appears to have been ignored by the Home Office It is suggested that far too much importance has been attached to the value of mechanical forms and safeguards The essential part in any control is proper entry of the drugs as received on the one side and upon the other the use made of them, the outgoings being checked, qua sales by the poison book, and qua dispensing by the prescription book The British Dental Association is asking that the registered dentist should be authorised to be in possession of narcotic drugs so far as is necessary for the practice of his profession The Royal College of Veterinary Surgeons desires that its diplomates should be placed with respect to the treatment of diseased and injured animals on the same footing as doctors with respect to the use of drugs in human medicine All parties are uniting in the demand for further consultation with medical, dental, veterinary, and pharmaceutical representatives before the regulations are put in force The Home Office will do well to accede, inasmuch as upon the willing coöperation of the four professions largely depends the effective administration of the Act Ill considered restrictions have their dangers We have seen too much of successful evasion of narcotic Acts elsewhere to be content in this country with regulations which cannot be carried out both in the spirit and the letter

DILATATION OF UPPER PORTION OF INTERNAL SAPHENOUS VEIN SIMULATING FEMORAL HERNIA

Dr W E Sistrunk, of the Mayo Clinic, has recently called attention[1] to the possibility of mistaking dilatation of the upper portion of the internal saphenous for femoral hernia Trendelenburg has pointed out the frequency with which varicose veins are associated with incompetence of the valves guarding the orifice of the internal saphenous vein The valves mentioned are the first between the heart and the peripheral circulation of the lower limbs Their incompetence is probably a factor in producing dilatation of the vein This dilatation does not often produce a swelling likely to be confounded with femoral hernia, but Dr Sistrunk has seen one case in which mistakes were made by experienced clinicians Exploration of the femoral ring failed to reveal a hernia, and after operation the swelling developed again The practitioner who had originally examined the patient now diagnosed obturator hernia, and a second doctor diagnosed recurring femoral hernia The true condition was recognised by the surgical consultant, and a second operation corroborated his diagnosis The differential diagnosis is not difficult In both conditions the swelling appears in practically the same position, but the venous tumour is a little lower. If pressure is made on this tumour it immediately disappears and this occurs also if the patient lies down, especially if the leg is elevated In cases of small femoral hernia the tumour, which is usually produced by a piece of fat pushed through the femoral opening to become attached or strangulated, is often irreducible, does not disappear when the patient lies down, or when the leg is elevated If the dilated vein is emptied by pressure while the patient is standing the tumour immediately recurs when the pressure is released Both tumours give a sense of protrusion on coughing, but in dilatation of the vein a definite thrill is felt In operating on the patient mentioned the vein was doubly ligated close to its juncture with the femoral and then the operation for varicose veins was performed Most of the literature on this subject deals with cases in which a saphenous varix simulated a femoral hernia An article on this subject was written as long ago as 1836 by Boinet Thus not only may definite saphenous varix be mistaken for femoral hernia, but also dilatation of the upper part of the vein may

A DANGEROUS IMPERSONATION

ON Nov 28th, 1905, a man named Arthur or Charles Walters was sentenced by Mr. Justice Grantham to 12 months' hard labour for forging a death certificate in the name of Arthur Piercefield Walters, a duly qualified medical practitioner then residing in the Island of Eigg, but whose address was given elsewhere in the *Medical Register* and *Medical Directory* of that date The impostor was armed with the certificate of registration, birth certificate, and testimonials of Dr. A P Walters, whom he believed to be abroad It was the sagacity of the coroner in ordering an inquest, and the fact that the notice of the inquest in our columns came to the knowledge of the real Dr Walters, that resulted in justice being done We revive this ancient history, for it seems that the impostor is again at large It is reported in the daily press that a man, "described as a doctor, Arthur Percival Walters," was charged at Pontypridd last week with the murder of a single woman on whom he had performed an operation Fortunately, no confusion of identity need arise, for Dr Arthur Piercefield Walters's address is correctly given in the current Register and Directory. The incident may serve as a rather dramatic reminder to medical men of the need to keep their entries up to date, and that for public as well as private reasons

KROPOTKIN'S PHILOSOPHY

THERE is one aspect of the multifarious activities of Prince Peter Kropotkin, whose death has been announced on various authority and at different dates during the week, that has an abiding interest for humanity at large and for biologists in particular Kropotkin's view as to coöperative aid as an agent of social progress throughout the animal world was set forth in a memorable book, entitled "Mutual Aid" This was published in 1902, and combated what was then a popular conception that evolution meant simply the outcome of the struggle for existence Against this view Kropotkin set up the doctrine that evolution is mainly the outcome of mutual aid, of coöperation, and of social effort "The fittest are the most sociable animals, and sociability appears as the chief factor of evolution, both directly by securing the well being of the species, while diminishing the waste of energy, and indirectly by favouring the growth of intelligence" In this connexion it is important to note the full title of Darwin's epoch marking book, published in 1859, "The Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Existence," and also to note in what sense Darwin used the term "struggle for existence" He used it "in a large and metaphorical sense, including the dependence of one being on another, and including, which is more important, not only the life of the individual, but success in leaving progeny" By "favoured races Darwin meant those best suited to their environment, organic and inorganic, including food supply, shelter, climate, chances of mating, and, most important, maintaining offspring, he did not mean those which are best armed for the active destruction and extermination of their neighbours Darwin expressly states that when one species is more successful than another "we feel sure that the cause lies as much in one species being favoured as in another being hurt" But Darwin was also careful to point out the importance of sociability, sympathy and mutual aid, and mutual coöperation as factors in evolution, and in the "Descent of Man" many examples are given of how struggle is replaced by coöperation. "Those communities which include the greatest number of the most sympathetic members would flourish best, and rear the greatest number of offspring." Huxley at first failed to take this view, for he says: "From the point of the moralist, the animal world is on about the same level as the gladiator's show. The creatures are fairly well treated and set to fight, whereby the strongest, the swiftest, and the cunningest live to fight another day. The spectator has no need to turn his thumbs down, as no quarter is given." And again, amongst animals, as amongst primitive men, "life was a continuous free fight, and beyond the limited and temporary relations of the family the Hobbesian war of each against all was the normal state of existence." Kropotkin's "Mutual Aid" is the reply to the Nietzschean doctrine of power, and an appeal to the spacious ideas of Darwin's conception of the "struggle for existence." Moreover, he takes a wide view of evolution in respect to the social institutions of mediæval and modern times.

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[1] Minnesota Medicine December 1920

SOLITARY CYST OF THE KIDNEY.

THE rarity of this condition, according to Dr. Herman L. Kretschmer[1] of Chicago, who records an illustrative case in a man aged 57, is shown by the fact that Simon found only 52 cases on record in 1906, since when Dr. Kretschmer has collected another 48. The condition must be distinguished from congenital polycystic disease and from the small cysts met with in chronic nephritis, with both of which some writers are apt to confuse it. An erroneous diagnosis is the rule, and in only two cases reported by Haenisch and Bockenheimer respectively was a correct diagnosis made before operation. Solitary renal cysts have very frequently been mistaken for lesions of other abdominal viscera, such as ovarian cysts, disease of the gall-bladder, enlargement of the spleen, mesenteric cysts or tuberculous peritonitis. In several instances, though the lesion was localised in the kidney, a diagnosis of tumour, hydronephrosis, calculus, or abscess was made. Nothing definite is known as regards the ætiology, but many authorities favour the so-called retention theory according to which the cysts are due to retention caused by obstruction. Solitary cyst of the kidney occurs most frequently after 30 years of age, although isolated cases have been reported in very young children. Of the 48 cases collected by Dr. Kretschmer 22 were females, 20 males, and in 6 the sex was not stated. Premonitory symptoms are often absent, and the presence of a tumour, as in Dr. Kretschmer's case, is the first thing noticed by the patient. Hæmaturia is an occasional but not frequent occurrence. The pain is that characteristic of the more common surgical diseases of the kidney. When the tumour reaches an enormous size its presence may interfere with the action of the bowels and lead to predominance of intestinal symptoms, such as flatulence and constipation. Dr. Kretschmer's case was characterised by a large solitary cyst and multiple cysts (four in number), and also by a double or bifid pelvis. At the operation at which nephrectomy was performed a single calculus was found in the upper pelvis, which was hydronephrotic. Both the calculus and hydronephrotic pelvis had been demonstrated by X rays prior to the operation. In other cases tuberculosis of the kidney, hypernephroma, horse-shoe kidney, and anomalies of the renal vessels have been found associated with solitary cysts of the kidney. As a rule, solitary cyst of the kidney is a unilateral disease, and is thus distinguished from congenital polycystic disease, which is always bilateral. In two cases, however, reported by Zaccarini and Cunningham respectively, cysts were present in both kidneys. In the remaining 46 only one kidney was involved, cysts being found in the right kidney 21 times and in the left kidney 20 times, the side not being stated in five cases. The size of the cyst varies from that of a hazel nut to that of a child's head. Its location is almost equally frequent in the upper and lower pole of the kidney. In most of the cases in which a mention of the contents is made they are described as clear serous fluid. In Dr. Kretschmer's case the large cyst contained old clotted blood and the smaller cysts clear straw-coloured fluid. In 16 of the 48 cases in his series nephrectomy was performed and in 18 either excision or resection of the cyst. Eleven cases were discovered only at autopsy and in one no mention is made of the type of operation. In one the sac was sutured to the abdominal wound.

NON-GONORRHŒAL BARTHOLINITIS.

AN abscess of the Bartholinian gland not due to gonorrhœa is so exceptional that considerable interest attaches to the case reported by Dr. H. Lippert,[1] of Elberfeld. His patient was a girl, aged 17, who had noticed a swelling of the left labium for about a week. She had never had any intestinal or bladder trouble, and there was no history of chill. Sexual intercourse was denied. Local examination showed well-marked œdema and redness of the left labium minus and some protrusion of the labium majus. Thick yellow pus was evacuated on pressure on the duct of the left Bartholinian gland. Nothing abnormal was found in the duct of the opposite side. The hymen was intact, and there was no discharge from the vagina or urethra. Microscopical examination of the discharge from the duct showed numerous leucocytes and a large number of bacilli, which cultures proved to be *B. coli*, associated with sarcinæ and non-specific cocci. No gonococci were found. Treatment consisted in dilatation of the duct and injection of 10 per cent. silver nitrate alternately with tincture of iodine. Recovery took place without incision. Dr. Lippert concludes by saying that [illegible] attention should be given to this form of Bartholinian abscess, as in a busy practice where there is no time or means of making an exact diagnosis, a patient may be wrongly suspected of gonorrhœal infection.

JOHN HUNTER AT "QUESTION TIME."

YOUNG men like a lecturer to be a dogmatist, and this John Hunter was not. His pupils, therefore, though they numbered among them Carlisle, Abernethy, Astley Cooper, and Chevalier—to name only a few of them—were never very numerous, and must often have been dissatisfied. It is known that Hunter permitted questions from his auditors, and often nonplussed them by the agnosticism of his replies. Several of these are classical, as when Astley Cooper asked with surprise whether a remark just made by Hunter were not a direct contradiction of something that he had stated a year ago, and the great man replied with admirable if disconcerting candour: "Very likely I did [say such and such a thing]; I hope I grow wiser every year." "Never ask me what I have said, or what I have written," he replied to another pupil, "but if you will ask me what my present opinions are I will tell you." To a pupil taking him at his word he nevertheless proved mystifying. This was Charles Brandon Trye, who afterwards became well known for his spirited defence of John Hunter, his master, against the scurrilities of Jesse Foot. Young Trye, in a very interesting MS. report of Hunter's lectures, copied by Charles Seager, F.R.C.S., about the year 1800, and now presented by his grandson, Mr. H. W. Seager, M.B., to the library of the Royal College of Surgeons of England, places it on record in a note that "I enquir'd of Mr. H. [with regard to his well-known definition of Life] if this did not make for the exploded doctrine of Equivocal Generation [Spontaneous Generation]. He told me perhaps it did, and that as to Equivocal Generation all we could have was negative proof of its not taking place. He did not deny that Equivocal Generation happened, there were neither positive proofs for nor against it." This was a singularly honest answer, and it would have delighted Professor Huxley a century later. It was not, however, what a young and ardent admirer had a right to expect. Trye was evidently under the impression that John Hunter lectured in order to state definite truths, and accordingly he arranged his notes of the lectures in a series of aphorisms, in number 1754. He abandoned Hunter's exact phraseology. "I forsook," as he says, "any attempt of following either the language of the lecturer (except in terms of art) or the arrangement of his matter, ... only attempting to give a faithful representation of his lectures according to the sense in which I understood them at the time they were delivered, and the best information I could procure from my fellow pupils on the subject." As a matter of fact, Hunter did not set out to lay down the law; he was, as Palmer points out, advancing paradoxes, starting novelties, and, indeed, inaugurating a revolution in surgery. He was thus often as much a seeker and a questioner as his pupils.

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[1] The Journal of Urology, December, 1920.

[1] Dermatologische Wochenschrift, Jan. 8th, 1921.

THE ABDERHALDEN REACTION.

THE history of the Abderhalden reaction, if written, will make an interesting study in medical science, illustrating the dominance of German opinion in Europe and America until quite recent times. The reaction was first announced as a method for the early diagnosis of pregnancy, but it was quickly applied to the diagnosis of disease and apparently with astonishing success. Other serum diagnostic methods were eclipsed. The reaction became not merely a means of diagnosing diseases the morbid anatomy of which was well understood—for example, tuberculosis or cancer—but it also became an instrument by means of which hypotheses and theories could be put to the test. Obscure nervous maladies have been investigated with a view to the discovery of causes, the result being generally that glands with internal secretions are found to be at fault. Instances of this chain of doubtful evidence are provided in a book recently published by Dr. Gottfried Ewald.[1] The author devotes the first 80 pages of his book to a discussion of the ideas underlying the Abderhalden method of diagnosis—namely, the development of protective ferments in pregnancy and in disease; their origin, nature, and specificity; and the practical methods employed to demonstrate their existence. The remainder of the book deals with the application of the knowledge gained in the author's special domain of medicine, psychiatry. The copious references—289 in number, as well as half a dozen special treatises on the subject, all German—show in what a continuous stream papers on the subject poured out from German laboratories and clinics. Authors appeared who could distinguish between pyloric and duodenal ulcers by a comparatively simple examination of the patient's blood serum. There was obviously a flaw somewhere, or the study of disease was less difficult than most people had formerly thought; and it now seems clear that Abderhalden's original work, on the appearance of protective ferments, was not sound, and had been received with a too easy credulity by the medical scientific world. Competent observers in this country and in America have been unable to verify the results of Abderhalden's primary experiment; for example, Dr. W. E. Gye, in a critical study made at the Imperial Cancer Research Fund, found it impossible[2] to produce in rabbits by injection of raw egg-white a ferment which digests coagulated egg-white. Given a false premiss, the rest does not arise, and a special treatise on the subject has no practical value. Perhaps some day the information that the whole superstructure is a mistake will leak through into Germany, and the enviable capacity of German scientists for continuous intellectual effort will be directed along more fruitful lines.

TREATMENT OF THE WOUNDED AND MUTILATED IN FRANCE.

ACCORDING to the French Law of March 31st, 1919, all who were wounded, mutilated, or otherwise injured during the war are entitled to receive gratuitously, for the rest of their lives, whatever medical treatment their injuries may render necessary. An announcement, however, has just been published to the opposite effect. In consequence of difficulties with the Government, the Union of the Medical Syndicates of France insists that, from the Feb. 1st next, all the war victims must pay the usual medical fees. Needless to say, this bare statement caused considerable resentment, for it was naturally felt that those who have suffered for their country merit less cavalier treatment. We are pleased, therefore, to be able to show that there is no ground of complaint against the medical profession. A frequent correspondent on French affairs writes: "The wounded have been well treated throughout, and it is the medical practitioners who have good cause for complaint. As matters now stand, a former soldier invalided and discharged because of wounds received, is given a book at the town hall of his district which he presents to the practitioner he choses to consult. The latter tears out a coupon from this book for every consultation given, and this coupon is supposed to represent a fee which the local authority should pay. As a matter of fact, hardly any such payment has been effected. Therefore the medical syndicates now propose to reverse the process. They suggest the patient should pay the fee, and the practitioner will give the patient the coupon, who will present it where it has to be met. It is no part of medical practice to spend time in going from office to office to obtain the reimbursement of coupons." The French Minister of Pensions, in face of the situation, has announced, we learn, that a syllabus of regulations will soon be issued dealing with the position and some other matters germane to it. There is notably the question of the amount of the fees that so far have been rarely paid, and then vaguely according to local custom. But local custom varies very considerably, if for no other reason than that the cost of living is about double as much in Paris as, for instance, in the department of the Basses-Pyrénées. The Government naturally would find it much easier to fix a uniform fee for the whole country, though in practice it would mean that those who were in the greatest need would receive proportionately less than those who were better off. Then there is the delicate question of so organising medical relief that it shall not appear as a sort of poor relief. The soldiers, officers and men, who have suffered for their country are entitled to assistance as a matter of right; they have more than earned it, a fact none are more ready to acknowledge than the medical profession itself. Of this generous and grateful disposition the best proof is that, since the enactment of the Law of March 31st, 1919, the medical profession have willingly given their services to the patients in question and, as a rule have not received any remuneration. But it is the State and not the doctor who is indebted to the soldier; the whole nation and not merely the medical profession has to show its gratitude.

WE regret to record the death of Dr. J. C. McWalter, barrister-at-law and high sheriff of Dublin. Dr. McWalter held three M.D. diplomas, those of Dublin (R.U.I.), Durham, and Brussels, and was the recipient of honorary degrees from Dublin, Ottawa, and Alberta Universities.

THE last number we have received of the *Annali di Medicina Navale* brings the regrettable news of the retirement of the Director-General of the Italian Navy, Surgeon Lieutenant General F. Rho, well known for his scientific medical investigations. Of all medical directors general of navies and armies he had the greatest record of scientific work done and published, these officers being usually chosen rather for administrative ability.

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[1] Die Abderhaldensche Reaktion mit besonderer Berücksichtigung ihrer Ergebnisse in der Psychiatrie. Von Privat-dozent Dr. Gottfried Ewald Berlin: S. Karger. 1920. Pp 210 M 24.

[2] THE LANCET, 1915, i, 233

TUBERCULOSIS.

A Census and Survey of Tuberculosis.

THE plan, which seems to have first been devised by Framingham in the U.S.A., of taking a tuberculosis census of a community and conducting a hustling, comprehensive campaign against this disease, is being adopted by other corporate bodies, and the results of such a survey have just been published[1] by the health authorities of Cleveland. It is at present impossible to calculate the exact value of these surveys; undoubtedly they provide useful information, but if this is to be of real value it requires careful sifting and discriminating judgment, for in no disease so much as in tuberculosis is the relation of cause to effect so liable to be misunderstood. And even if the numerous data collected are sorted out in proper perspective, and correct conclusions are drawn therefrom, the adoption of the measures indicated is still apt to be neglected.

Incidence of tuberculosis in Cleveland.—In Cleveland, with a population of about 800,000, between 1000 and 1200 persons die annually of tuberculosis, and nearly 6000 cases occur. At present from 20 to 30 per cent. of all the cases of tuberculosis are not notified before death, and a search for active cases revealed a ratio of 4·7 to every annual death. It is admitted that this ratio is misleading, for in Framingham the search for active cases was so productive that it showed a ratio of approximately nine living cases to one death per annum. Another discovery reflecting on the inadequacy of the present methods of diagnosis is the fact that 50 per cent. of all the cases were in an advanced stage of the disease when first diagnosed. This proportion, it is calculated, could be reduced at least to 25 per cent. by the exercise of greater care and skill on the part of general physicians. In Framingham, on the other hand, the high standard of diagnostic skill has led to 74 per cent. of all the cases being detected in the first stage of the disease. Framingham, by the way, is frequently held up as a model and a standard for comparison in the matter of prevention and early diagnosis.

Milk-supply and tuberculosis.—An attempt was made to study every aspect of the milk-supply of Cleveland as far as it concerned tuberculosis. According to the laws already in force, all certified milk must be obtained from tuberculin-tested and negatively reacting cows, from regularly inspected establishments, and handled by medically inspected employees. All milk must be sold according to specified grades, and all uncertified milk must be pasteurised. So far, so good. But these legislative measures do not, and cannot, control the amount of milk consumed, and it was found that only 44 per cent. of the amount of milk considered desirable was consumed. The actual figures were 1·61 quarts per day for a family of 3·1 children, whereas the estimated quantity considered necessary for a family of this size was 3·6 quarts.

Want of specialists.—Scattered throughout this report are reflections on the quality of the medical and nursing staff engaged on tuberculosis work. It is, apparently, difficult to secure enthusiastic and specially trained physicians for tuberculosis work in the dispensaries. The physicians are for the most part men with no special training, and their work is part-time and receives only part of their interest. The nurses, too, are given tuberculosis work only as a part of their total work, and it is admitted that some public health representatives in Cleveland find that tuberculosis work has suffered from the want of specialisation. But, it is added, there are many advantages to offset the defects of the "generalised" nursing system.

Bureau of statistics.—This department is mentioned only to be vigorously criticised. It provides a very indifferent service, it has no full-time chief, and the methods of developing statistical data seem to be informal and haphazard. No effort is made in the study of tuberculosis mortality to eliminate non-resident deaths and to include the deaths of residents dying out of town. It is evident from criticisms such as the above that the authors of this survey do not feel con[illegible]ed to include "whitewash" in their equipment.

Recommendations.—An aggressive campaign of industrial hygiene to promote the education of employers and employees alike is recommended, as well as the linking up of medical, nursing, and clinical facilities with industry. The routine examination of employees for early signs of disease, and the consistent supervision of arrested cases after return to industrial pursuits are urged as of great importance. Other recommendations are: promotion of home hygiene, preventorium activities, such as summer camps, and possibly the socialisation of the milk-supply. With reference to sanatorium beds which remain empty, and to the premature discharge of patients at their own request, an extensive popular educational campaign is advocated, as well as the appointment of only highly qualified medical officers to sanatoriums. The calculation is made that at least one bed should be provided for every annual death from tuberculosis—a standard which would necessitate the present number of beds in Cleveland being approximately doubled. It is customary in Cleveland for arrested cases to be observed for a period of only six months. This, it is admitted, is far too short. Brief as is this summary of the Cleveland Survey, it shows that the authorities of a progressive community are attempting to set their house in order with thoroughness and impartiality.

Fall of the Tuberculosis Death-rate in Germany.

Professor B. Möllers[2] of Berlin has come to the conclusion that 1918 marked the culmination of the upward wave of tuberculosis in Germany, and that the subsequent ebb shows signs of being rapid. He calculates that, as a result of the war, German towns with a population of 15,000 or more lost approximately 100,000 more inhabitants from tuberculosis than they would have done had the death-rate of 1913 been maintained throughout the years of the war. As his tables show, the mortality in the first half of 1914 was 1·75 per 1000, in the first half of 1919 it was 3·44 per 1000, and in the first half of 1920 it was only 2·08 per 1000. He also calculates that in the first half of 1919 the death-rate was 97·1 per cent. higher than in the first half of 1914, but that in the second half of 1919 this excess over the figures for the corresponding period in 1914 was only 36·3 per cent., and in the first half of 1920 only 18·9 per cent. higher.

Prevention of Tuberculosis at Sea.

It has long been admitted that the conditions under which Norwegian fishermen lived in motor-boats were most unhygienic, and reports were frequent of able-bodied fishermen going to sea for some weeks in these motor-boats and returning home with tuberculosis. In 1913 the Norwegian National Association for Combating Tuberculosis took up this matter, and through the Ministries of Health and Shipping it succeeded in introducing far-reaching reforms, which came into force in December, 1919. To judge by the account given in *Tidsskrift for Den Norske Laegeforening* for Nov. 15th, 1920, these reforms were badly needed and much overdue. As many as five to six men had often to spend the day and night in a tiny cabin in which they had to dry their clothing, reeking with fish offal, as well as cook and eat their food. The floor was bespattered with tobacco juice and fish debris, and there was little or no ventilation for the mixed odours of tobacco-smoke, bilge water, cooking food, fish offal, and the ship's engine. Thanks to the initiative and hustling vigour of the National Association, numerous regulations were drawn up to mitigate these insanitary conditions. It is now incumbent on the owners of fishing boats to renovate (paint) their cabins once a year, to prevent pollution by bilge water and cargo of the air in these cabins, to clean the ballast and bottom of the boat at the end of each fishing season, to provide adequate ventilation for each cabin as well as lighting, to supply a berth of sufficient size to each sailor, and to fit banisters or handles to steps going down to a cabin so that sailors do not have to grip with their hands the steps which they have soiled with their feet. The National Association took steps last summer to prevent the lapse of these reforms to a dead letter.

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[1] and Hospital and Health Survey: Tuberculosis, Part 4, 50c.

[2] Deut. Med. Woch., Jan. 6th, 1921.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Statistics on Suicide in 1920.

A REMARKABLE drop in the number of attempted or committed suicides was noted during the years of war. Whilst in 1913 it was about the same as a year ago—viz., 1500—in 1915 it fell to 881. The figures for the next three years were 842, 804, 700. In 1919, the first year of peace, the figure rose to 1138 cases; in 1920 there were 1189. The highest number—50—occurred as usual during May. The favourite means adopted was, as it has been for many years, hanging (122 persons). Poisoning comes next, with 51 men and 67 women, totalling 118. Suicides by shooting, 80 (65 men, 15 women); by jumping from windows, 57 (13 men, 44 women); 53 persons (28 men, 25 women) threw themselves into water. Injuries inflicted by sharp instruments, by throwing oneself before a vehicle, or by burning were chosen only in a few instances. The age record was 85 years; a man who hanged himself heads the list. A pleasing feature to be noted is the absence of children's suicides for two years.

Mr. Rockefeller's Gift to the Medical Faculties of Austria.

A representative of Mr. Rockefeller called recently upon Professor Haberda, the dean of the Medical Faculty of Vienna University, and informed him that he had been instructed by his principal to present a sum of 20,000 dollars to each of the universities of Vienna, Graz, Innsbruck, Prague, and Budapest. The money is to be devoted solely to the procuring of materials necessary for medical apparatus and laboratories, and the donor has stipulated that an equal sum be raised by the faculties themselves. But it is impossible in this country to get together such a large sum from the funds at the disposal of the universities; nor is it possible to make the students pay fees high enough to reach these figures. Therefore it was arranged, with the consent of Mr. Rockefeller or his representative, that the foreign students, who on account of the exchange value of their money are able to pay high fees, be taxed in order to increase the revenue of the University. Thus, from February they will have to pay a sum of Kr.20 a month for using the University laboratories, apparatus, &c. Nevertheless, it is feared that it will be impossible even by these means to equal the sum of Mr. Rockefeller's gift.

Opening of New Hospitals in Vienna.

Within the last few months a number of new hospitals were opened in this city, or in its vicinity, in spite of the precarious state of the municipal finances. A new building, accommodating 500 patients, situated in extensive grounds and offering ample opportunity for garden work and agricultural occupation, has been devoted to the treatment of venereal diseases of females. Here the patients will also be given psychical treatment, which will no doubt be badly needed by the prostitutes and others who will enter the hospital. Another new hospital, also for 500 patients, containing wards for medical and surgical cases and out-patient departments for diseases of children, eye diseases, and oto-rhino-laryngological work, will be opened shortly on the outskirts of the city, where it is much needed. A special hospital for the study of nervous diseases and conditions like speech-disturbance and writers' cramp has been attached to one of the institutions set apart for shell-shocked cases and injuries to the head. Owing to the munificence of a Swedish committee an institution accommodating 100 tuberculous patients has been erected on a mountain slope not far from Vienna; there the patients, who will mostly be children of the middle classes stricken with the "morbus Viennensis," as tuberculosis is here termed, will be received for a period of not less than three months each. Ample opportunity for treatment by open air as well as by sunlight and electricity is there given. Another special hospital in Baden, a suburb of Vienna, formerly an army hospital, has now been converted for the treatment of rheumatic diseases. In this institution three hot sulphur springs (known to and used by the Romans) are utilised, in combination with massage, modern gymnastics, and electro-therapeutics. The results obtained in this up-to-date hospital are most gratifying both to patients and staff.

Epidemic of Hiccough in Austria.

From various parts of the country, both rural districts and towns, there come reports of an epidemic characterised by persistent and tormenting attacks of hiccough. As a rule these attacks are preceded by an ordinary cold, by bronchitis, cold in the head, "influenza," or the like. Disturbances of the gastro-intestinal tract are rarely the predisposing cause. The age-incidence is not of importance, as both infants and elderly people are affected. Severe exhaustion, giving rise to anxiety, is not rare; in debilitated persons attacks of heart failure sometimes occur after persistent hiccough. The fits last from a few seconds, with short interruptions, up to hours; they generally cease after 5–6 days, leaving the patient very much prostrated; recovery is generally uneventful and rapid. Treatment must be confined to symptomatic remedies—bromides, morphia and its derivatives, care of the heart, and frequent though small quantities of food are very useful. The ætiology is up till now a mystery; no definite micro organism or nervous condition can be held responsible for the affection.

Experiments on the Effects of Saccharine.

Owing to the distribution of saccharine instead of sugar by the Government to the public, reports of its harmful effects were circulated by persons interested in the sale of sugar. Therefore a large number of experiments were conducted, and compared with other results obtained in the Government saccharine factories. An official announcement was then made to the effect that for the 30 years during which saccharine has been produced by Austrian factories not a single case of harmful effect has been known; that saccharine has been shown to be quite indifferent, of no food value, but passing through the body without any noticeable action. In physiological experiments one person has been given up to 100 g. of saccharine (equal to 55 kilos of sugar in sweetening power) within one day without any undesirable effect, and in another series of experiments as much as 500 g. of crystalline saccharine, equal to 220 kilos of sugar, had been given to one individual within nine days, also without any effect. It was also pointed out that diabetic persons frequently take large quantities of saccharine for years without suffering any harm, that saccharine is to be compared to a condiment, but that it is of course important that the product be absolutely pure.

SWITZERLAND.

(FROM OUR OWN CORRESPONDENT.)

Foot-and-mouth Disease.

Foot-and-mouth disease has assumed considerable importance in this country. It can be called now epizoötic. Some time ago the disease was the subject of discussion at a joint meeting of the Medical Society and Veterinary Society of Berne. Berne is the centre of one of the most important agricultural districts of Switzerland, therefore the problem has aroused considerable interest. The following facts seem to be the most noteworthy features of that discussion. During the last century several epidemics have been recorded, the most serious after the Franco Prussian War of 1870–71. The opening of the different transalpine railways has greatly augmented the dangers of infection, therefore a limited number of frontier stations have been designed for the import of cattle which are provided with permanent official veterinary surgeons to secure control. It has been ascertained that the present epidemic found its way into Switzerland from Italy, the first outbreaks being recorded in the canton Ticino and in the Gruyère district. Although all transport of cattle was stopped at once the disease spread rapidly, a proof that there are carriers of the most different kind. It is probable that man is one of them. Amongst game, especially deer and chamois, the disease has never been found. The policy for combating the disease has been roughly the following. Once the nature of the disease is established all the cattle of the farm are slaughtered immediately on the spot. In the neighbouring area all movements of animals are strictly prohibited. The affected centre is isolated for six weeks. The stables are thoroughly disinfected; dogs, cats, pigeons, crows, &c., around the house are killed by the police. At a later period of the epidemic wholesale slaughtering has been given up and more attention has been paid to the movements of man. Pastures were declared prohibited area. In some parts of the country the travelling public had to submit to some measures of disinfection—e.g., the footwear had to be washed in a solution of lysol and the clothes were sprayed with corrosive sublimate. Some of these measures had not been ordered officially but were carried out by the farmers in self-defence. As their application was clumsy, and in some cases so unscientific as to be humorous, the effect was nil.

In some districts the local authorities went so far as to interfere with the railway and road traffic, not only after the outbreak of the disease, but in some cases as a measure of prevention. These things became a public nuisance so that the Federal Government had to intervene and to enforce some general principles for combating the disease. Happily the slaughtering had little or no influence on the milk production. Of the 800,000 milch-cows of Switzerland only 8000 were slaughtered during the year.

Of the pathology of the disease the following points seem to have been elucidated. The cause is a filtrable virus, the resultant immunity is of a very short duration, the same cattle may have the disease three or four times during one year. Experiments have shown that meat and blood from infected cattle is not infectious. The town of Berne consumed for a long time practically exclusively meat of infected cattle. The milk is, on the contrary, contagious. The question of foot-and-mouth disease in man is still open for discussion. It appears that so far no cases have been recorded in Switzerland, where the diagnosis had been surely established. Statistics have shown that outbreaks of aphthous stomatitis amongst children do not occur synchronously with foot-and-mouth disease in cattle. The contrary, I understand, prevails in Great Britain.

Scientific knowledge of the disease is still very small, and therefore doctors and veterinary surgeons fight in the dark. Some months ago the Federal Government nominated a strong committee of leading clinicians and pathologists, both human and veterinary, to investigate the causes.

Feb. 3rd.

THEORY OF RELATIVITY.—A special issue of *Nature* on Feb. 17th will contain an authoritative scientific statement on relativity from different points of view. The 14 articles will include: A Brief Outline of the Development of the Theory of Relativity, by Professor A. Einstein; Electricity and Gravitation, by Professor H. Weyl; Theory and Experiment in Relativity, by Dr. Norman R. Campbell; the Metaphysical Aspects of Relativity, by Professor H. Wildon Carr; the Relativity of Time, by Professor A. S. Eddington, F.R.S. A bibliography of books and pamphlets on relativity will conclude the issue.

BROMPTON HOSPITAL AND THE L.C.C.—The relations between the Brompton Hospital and the London County Council have been made the subject of comment. *The existing arrangements are that the Council send a* certain number of patients to the hospital and to the sanatorium at Frimley. Those sent to the hospital are chiefly for observation and diagnosis. When the latter is established, recommendations are made as to future treatment by the honorary staff. Certain of the medical officers of the Council visit the hospital regularly to [illegible]rate with the staff in regard to these recommenda[illegible] A permanent scheme is under discussion.

Public Health.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

PADDINGTON: 1914–18, INCLUSIVE.

Dr. R. Dudfield issued his last report for the year 1913, and has decided to issue the reports for the following seven years in two volumes, the first to cover 1914-18 and the second to serve for 1919 and 1920. In a preliminary statement he points out that the mortality tended to increase with the prolongation of hostilities, and that this was more particularly observable in the mortality at ages under one year; that the only disease which left an outstanding record during the war was influenza; and that at the close of the war there were considerable arrears of sanitary work to be cleared off.

The population estimates being very vague he has thought it wise to adopt, instead of rates, a comparison between the actual deaths and births of the quinquennium 1914–18 with those of the preceding quinquennium 1909–13. As the population was a slightly decreasing one up to 1914 this method ought to give results not dissimilar from the comparison of rates. The number of births has decreased from 3031 in 1909 to 2017 in 1918, a fall of 33·5 per cent. The percentage of illegitimate to total births has increased from 6·17 in 1914 to 10·41 in 1918. An interesting change has taken place in midwifery practice. In 1914 little more than one-third of the births were notified by midwives, whereas in 1918 the midwives reported 61 per cent. Will the change be temporary or not?

The total deaths for the war quinquennium were 9·3 per cent. higher than for its predecessor. Dr. Dudfield ascribes the relative immunity of the country from enteric fever and small-pox to the high standard of the preventive medical service in the army and the vigilance of the port sanitary service. He emphasises the value of inoculation for preventing enteric fever, and at the same time points out that the proportion of unvaccinated children in Paddington has risen from about 10 per cent. at the beginning of the century to about 30 per cent. during 1917 and 1918, and that "at no very distant date the proportion of the unprotected to the total population will become so large that small-pox will not be kept in check by the vigilance of health officers." In Paddington during the war quinquennium there was an appreciable increase in maternal mortality from puerperal fever and accidents and diseases of parturition. There was also some increase in the notifications of ophthalmia neonatorum. The number of notifications is not a very reliable guide to the prevalence of this disease, and it would be interesting, if it were possible, to have the cases followed up and the amount of the damage to the eyes recorded. Deaths from pulmonary tuberculosis in Paddington showed a 10 per cent. increase for males and a 20 per cent. increase for females during the war years. This is in accord with the experience of other towns. A table is given showing that the deaths from pulmonary tuberculosis occurred at earlier age-periods among women than among men. Attention is drawn to the large number of deaths from tuberculosis of persons who had not been notified during their lifetime. Thus, no less than 64 persons died in their homes in the borough and 32 in local institutions without being notified. The fact that 54·4 per cent. of the cases of pulmonary tuberculosis died in institutions, as compared with 48·3 per cent. in pre-war years, indicates progress in the segregation of advanced cases.

The comparison between the two quinquennia shows a rise in infant mortality from 106 to 109. "Of 1016 illegitimate children born during 1914–18 263 died within the first year of life—equivalent to a mortality of 258 per 1000 births, as compared with 96 among legitimate children." This very high "illegitimate" mortality is somewhat lower than in 1909–13. Perhaps the worst features in the child mortality are the increases in the deaths during the second, third, fourth, and fifth years of life, when comparison is made with the previous quinquennium These increases are shown by Dr Dudfield to be 12 per cent for the second year, 21 per cent for the third year, 70 per cent for the fourth year, and 7 per cent for the fifth year.

We now turn to the administration section of the report The author says "The need of inspection for the discovery and remedy of sanitary defects was greater at the end of 1918 than it had ever been before' The *report describes the flooding with sewage caused by* the rainfalls of June 16th and June 28th, 1917, at the rate of 1 04 inches and 0 75 inch per hour respectively The *smaller number of children of school age found* on the canal boats seems to indicate that their education is receiving more attention. In Paddington, as elsewhere, the black smoke nuisance was left alone during the war owing to the bad class of fuel available, and to the skilled stokers being wanted for the services As dense black smoke from chimneys serving boiler furnaces is quite unnecessary, it is much to be hoped that this neglected matter will be taken up in all parts of the country with vigour Dr Dudfield points to the need for a much more close inspection of the tenement houses—the bugbear of sanitary reformers in every town—and for the resumption of the "annual cleansings"

The report on the Sale of Food and Drugs Acts shows the extremely unsatisfactory state of the milk supply. The percentage of adulterated samples taken at the railway stations ranged from 40 to 50 during the war years The position of the "preservatives in foods" question is pointed out, and examples are given of sausages with over 11 gr of boric acid per lb, lime juice cordial containing over 11 gr per pint of salicylic acid, brawn with over 11 gr per lb of boric acid, &c, and it is suggested that the legislature should settle when (if at all), and in what quantities, these additions to food should be permissible

We look forward with interest to Dr. Dudfield's second volume dealing with the two post war years

URBAN VITAL STATISTICS

(Week ended Feb 5th, 1921)

English and Welsh Towns—In the 96 English and Welsh towns, with an aggregate population estimated at 18¼ million persons, the annual rate of mortality, which had been 12 8, 13 3 and 12 3 in the three preceding weeks, rose to 13 1 per 1000 In London, with a population of 4½ million persons the death rate was 13 3, or 1 7 per 1000 above that recorded in the previous week, while among the remaining towns the rates ranged from 5 8 in Rotherham, 6 5 in Acton, and 6 9 in Cambridge to 20 1 in Warrington, 20 7 in West Hartlepool, and 26 8 in Tynemouth The principal epidemic diseases caused 238 deaths which corresponded to an annual rate of 0 7 per 1000 and comprised 82 from infantile diarrhœa, 65 from diphtheria 56 from whooping cough, 19 from measles 14 from scarlet fever, and 2 from enteric fever Whooping cough caused a death rate of 2 0 in Warrington and 2 3 in Wigan, and diphtheria of 1 9 in Ilford There were 4018 cases of scarlet fever, 2767 of diphtheria and 1 of small pox under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 4171, 2682 and 1 respectively at the end of the previous week. The causes of 36 of the 4649 deaths in the 96 towns were uncertified, of which 12 were registered in Birmingham, and 3 each in London, West Bromwich, and Leicester

Scottish Towns—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons the annual rate of mortality, which had been 15 9, 15 8 and 16 3 in the three preceding weeks, fell to 14 9 per 1000 The 307 deaths in Glasgow corresponded to an annual rate of 14 5 per 1000 and included 16 from whooping-cough, 9 from infantile diarrhœa 4 from diphtheria, and 1 from scarlet fever The 148 deaths in Edinburgh were equal to a rate of 17 3 per 1000, and included 2 each from scarlet fever, diphtheria, and infantile diarrhœa and 1 from measles

Irish Towns—The 114 deaths in Dublin corresponded to an annual rate of 14 1, or 1 7 per 1000 below that recorded in the previous week, and included 3 from diphtheria, 2 from infantile diarrhœa and 1 from scarlet fever The 114 deaths in Belfast were equal to a rate of 14 2 per 1000, and included 6 from whooping-cough, 2 from diphtheria and 1 from infantile diarrhœa

The Services.

THE ARMY DENTAL CORPS

AT the outbreak of war there was no adequate provision for dental services to the troops and this was keenly felt by those forming the original Expeditionary Force The need for such service was early recognised by those in authority, and in October 1914 a commencement was made by the appointment of six dental surgeons With the growth of the Army the dental service was increased, and at the time of the armistice commissions were held by over 800 dental surgeons It is universally acknowledged that the work of these officers added to the efficiency of the forces, and with the return of the Army to a peace basis the Government has wisely decided to form an Army Dental Corps The number of officers has not been stated, but we feel sure with the experience gained in the war an adequate service will be provided It is possible that when these data are forthcoming there will be some who consider the number insufficient, but in any criticism that may be offered due consideration should be taken of the difference between an Army on a war or a peace basis In peace time the medical examination is more searching, and only those dentally fit or able to be easily rendered dentally fit are accepted Further, we believe that there is an Army Order stating that no man requiring dentures can be recruited Under these conditions the appointment of one officer for each 2000 men should be sufficient The rank of officers in the corps is to range from lieutenant to lieutenant colonel and the pay, although on a slightly lower scale than that of the Royal Army Medical Corps, should be sufficient to attract the right type of officer *The formation of an Army Dental Corps* is a distinct step in the right direction, and no doubt a scheme will gradually be evolved for its rapid expansion in the event of war Provision will be needed for the Territorials and for a reserve of officers Arrangements will, we assume be made to enlist the services of the dental schools with their well equipped laboratories

ROYAL NAVAL MEDICAL SERVICE

The following appointments have been notified: Surg Cmdrs J H Lightfoot to *Conqueror* J Bojan to *Defiance*, C T Baxter to *President* additional for R N Recruiting Headquarters

Surg Lieut Cmdr F C Wright to *Birmingham*

Surg Lieuts F L H MacDowel to Haulbowline Hospital and Dockyard and J C Brown to Special R M Battalion

ARMY MEDICAL SERVICE

Col S L Cummins retires on retired pay

TERRITORIAL FORCE

Major Sir R Jones from 1st Western General Hospital to be Colonel and to be granted the honorary rank of Major-General

ROYAL ARMY MEDICAL CORPS

Lieut Col P S Lelean to be Brevet-Colonel

The undermentioned *Majors to be Brevet Lieutenant Colonels* R M J Perry and (Acting Lieut Col) W P MacArthur

Lieut-Col M P Corkery is placed on the half pay list on account of ill health

Major H G Pinches retires on retired pay and is granted the rank of Lieutenant Colonel

Captains to be Majors (Bt Majors) J A Manifold P S Tomlinson M J Williamson S S Dykes W H O Riordan C F V Benson (Acting Lieut Col) W P MacArthur (Acting Major) R C Priest (Temp Major) A D Stirling G I Taylor R C Paris F C Lambkin O W McSheehy C L Franklin M White J J D Roche H F Joynt A S M Winder H R Edwards J R Yourell P G M Elvery J J H Beckton W B Rennie and W Mathieson

Capt L F K Way retires receiving a gratuity and is granted the rank of Lieutenant Colonel

Temp Capt W L Hay relinquishes the acting rank of Major

To be Temporary Captains F W Harlow (late temporary Captain) and Temp Lieut O T J C de H Clayre

The undermentioned Lieutenants (temporary Captains) to be Captains P A Stewart J C Collins W I FitzG Powell G W B Shaw and W C Mackinnon

TERRITORIAL FORCE

Capts R G Badenoch and A Robertson to be Majors

Majors J L Menzies (late R A M C) and P J Gaffikin (late R A M C S R) to be Captains and relinquish the rank of Major

Capts H W Featherstone (late R A M C, S R) and T Carnwath (from T F Res) to be Captains

Capts (Acting Lieut Col) J R Pooler and (Acting Major) W C Gunn relinquish their acting rank on ceasing to be employed

Capt A C Wallace resigns his commission and is granted the rank of Major

Capt J H Barclay resigns his commission and retains the rank of Captain

Capt T D Webster (late R A M C) to be Lieutenant and to relinquish the rank of Captain

Second Lieut R J Dyson (from T F Res W York Regiment) to be Lieutenant

Correspondence.

"Audi alteram partem."

THE DIET OF WELL-TO-DO CHILDREN.

To the Editor of THE LANCET.

SIR,—In connexion with the correspondence on this subject appearing in THE LANCET, may I direct attention to the effects on the gastro-intestinal tract of deficient and ill-balanced foods? In my experience the commoner food faults among the children of the well-to-do are (*a*) an insufficient supply of vitamines—rarely their complete absence; (*b*) a disproportionate richness of the food in carbohydrates, and, when the provision of fresh fruit and green vegetables is scanty and the milk has been super-heated, an insufficient supply of salts—notably of calcium.

The effects of such faulty food, as I have observed them in wild monkeys under experimental conditions, are the following:—(1) Congestion of, and hæmorrhage into, the walls of the stomach and intestine; (2) atrophy of the myenteron; (3) degenerative changes in the ganglionic plexus of Auerbach; (4) dilatations of various parts of the tract; (5) increased tendency to intussusception; (6) inflammatory states, especially of the colon; (7) invasion of the bowel walls and the adjacent lymphatics by intestinal bacteria; and (8) depressed functional activity of the digestive glands. The severity of these changes is dependent upon the degree of avitaminosis, the character and extent of the ill-balance of the food, and the duration of the animal's subjection to it. The more immediate clinical evidences of gastro-intestinal derangement are loss of appetite, anæmia, vomiting (occasionally), digestive disturbances, and diarrhœa; the more remote are distended abdomen, profound anæmia, "air-locks" in the small bowel, dilatation of the stomach and colon, and colitis—the last one of the commonest manifestations of deficient feeding.

There can, I think, be little doubt that the pathological changes above referred to, especially those involving the neuromuscular control of the bowel, afford reasonable ground for attributing to the long-continued use of deficient and ill-balanced food an important part in the production of gastro-intestinal stasis. These changes are similar to those found by Professor Arthur Keith in the colons removed from sufferers from this disease at operation. A contributory factor in their production is the depressed functional activity of the endocrine organs—notably of the suprarenal glands, the pituitary body, and the thyroid gland—which results from the same cause. The interdependence of healthy gastro-intestinal function and efficient endocrine action is so well recognised as to call for no further comment.

I am, Sir, yours faithfully,

Oxford, Feb 4th, 1921. R. MCCARRISON.

REFERRED PAIN.

To the Editor of THE LANCET.

SIR,—In the discussion which centres around the question of referred pain and the viscero-sensory reflex, one simple observation seems almost invariably to escape remark, both by the champions of the viscero-sensory reflex and by those who are not so greatly impressed with its importance. It is that *the superficial hyperæsthesia which constitutes the reflex is only present during the presence of pain or for a limited period thereafter.*

To take the instance of a gastric ulcer, it will be readily accepted that in the majority of instances—especially in hospital and consulting practice—we visit, or are visited by, sufferers from ulcer at a time when they are free from pain. At these times the reflex is usually absent, and most of us have consequently come to regard local superficial hyper[illegible]thesia as an uncommon sign and of slight [illegible]stic value. If, however, the patient is seen during an attack of pain, or within a variable, but limited, time after the pain, hyperæsthesia is more often present and its location may well help to establish a more accurate diagnosis. In other words, it is not the presence of the ulcer but of the pain consequent upon the ulcer which is the stimulus for the reflex. The patient himself quite frequently volunteers a remark which seems to bear out the truth of this observation, for he may tell us that he cannot bear the touch or friction of his clothes over the skin of the epigastrium in the neighbourhood of the period of his worst pains. It has long been recognised that anginal referred pain and tenderness of skin and muscle are present only during, or for a short time after, the attack, and no one would, I think, maintain that the sign was to be elicited in the sometimes long intervals between the attacks. In other words, it is not the presence of a cardiac lesion, but of cardiac pain, which serves as the stimulus for the reflex. We must also recognise that the stimulus is not, whether in quantity or quality, always adequate to produce the reflex, and that in this respect the viscero-sensory reflex does not differ from other established forms of reflex action.

In each of the cases described by Dr. A. Murdoch in his letter in to-day's issue of THE LANCET the factor of recent pain—though in the second case Dr. Murdoch refers to the manipulation as supplying "the necessary stimulus"—was present. In this second case the factor of recent pain was, on the occasion of the examination by Mr. D. Ligat, absent, and so, naturally, was the reflex. In Dr. A. F. Hurst's 10 cases it would be important to know whether pain was a present or recent symptom at the time of application of the test.

I believe the foregoing to be a correct statement of the facts of referred hyperalgesia in visceral disease, and an explanation also of the existence of the two camps which contend on the one hand that viscero-sensory reflexes are of considerable, and on the other hand of inconsiderable, diagnostic value. If the statement is correct, it should serve to stimulate us all to endeavour more often to see our patients during the presence of pain, and even in some instances to induce pain, by giving food or other means, in order that we may accomplish greater accuracy in diagnosis. As to the question of the existence and cause of actual visceral pain, Dr. Hurst's investigations and all clinical experience point to the conclusion that visceral sensation, including pain (whether gastric, intestinal, cardiac, renal, vesical, or elsewhere produced) is dependent on altered intravisceral tension, and that all visceral pain is relieved by lowering intravisceral tension.

I am, Sir, yours faithfully,

J. A. RYLE.

The Warden's House, Guy's Hospital, Feb. 5th, 1921.

To the Editor of THE LANCET.

SIR,—If, before instructing me in the elements of clinical methods, Dr. A. Murdoch had taken the trouble to read my Goulstonian lectures, which were published in THE LANCET in 1911—three years before he began to look for the viscero-motor and viscero-sensory reflexes—he would have found in them a full discussion of these symptoms, the importance of which I have constantly taught for the last 14 years. He would have realised that your references to my observations on Sir Berkeley Moynihan's patients with duodenal ulcer were only concerned with cutaneous hyperæsthesia, which is very rare indeed in cases of ulcer, in contrast with deep tenderness and rigidity, which are almost constantly present, especially at the height of an attack of pain. With regard to visceral pain the evidence I brought forward in 1911, and all my experience since, have convinced me that viscera themselves are sensitive, and that it is a matter of great clinical importance to distinguish between true visceral pain and tenderness on the one hand and reflex visceral pain and tenderness on the other.

I am, Sir, yours faithfully,

ARTHUR F. HURST.

Devonshire-street, W., Feb. 6th, 1921.

THE OPERATIVE TREATMENT OF PROLAPSE.

To the Editor of THE LANCET.

SIR,—I have been much interested in Mr. J. P. Lockhart-Mummery's communication to your pages of to-day on the Operative Treatment of Prolapse (Procidentia) of the Rectum in Adults, although, unlike him, I am not "convinced that it is far superior to any of the other methods" I have obtained results at least equal to those he mentions by the submucous injection of paraffin wax, as described by me in THE LANCET,[1] and since epitomised in successive editions of Jacobson's "Operations of Surgery," combined with a plastic operation for the restoration of the anal canal very similar to that detailed by Mr. Lockhart Mummery. This plastic operation is not necessary in every case, but is always carried out whenever the anus is patulous and the sphincter weakened—as obtains in most instances of long standing prolapse in adults. One of the most extensive cases I have treated is a lady upon whom, in 1906, at the age of 66, I performed this operation for an 8 inch prolapse associated with such extensive excoriation of the constantly prolapsed bowel as to confine her to bed; she is now, at the age of 81, able to get about actively and to strain, without any recurrence of the prolapse. Up to the present I have not heard of any case of failure after I have performed the combined procedure, nor have I had any serious complication afterwards. In comparison with Mr. Lockhart Mummery's operation I claim this method to be very much simpler and less severe, and to be associated with very much less discomfort in its after treatment The removal and replacement of the "as much as 40 yards of gauze" at the end of the first week in his method requires a second anæsthetic, and when this is again removed five days later, although it is not stated that anæsthesia is utilised, yet it must sometimes be wished for. The only special after treatment required in my method is the removal of the sutures used in the "plastic" portion of the procedure—practically painless.

The statement that "sepsis later is almost certain to occur . and is, in fact, desirable," is not altogether pleasant reading, moreover, it presupposes that the scar left after healing by "second intention" is more capable of withstanding subsequent pressure than that of "primary union," which I do not believe or I would deliberately court sepsis every time I perform a radical cure of hernia or close up a laparotomy wound. If I remember rightly, a generation or more ago such a course was actually advocated in the operation for hernia (McBurney), and, less remotely, has been practised as part of the operation for nephropexy, but I was unaware that the principle had received any wide recognition. On the contrary, if there be one fact more firmly established than another in relation to operations for hernia or for any other condition where the scar has subsequently to withstand pressure I should have thought it to be that sepsis, with its consequent healing by granulation, is the most important factor predisposing to a yielding of the scar.

Mr. Lockhart-Mummery writes: "In principle a prolapse is similar to a hernia and requires the same conditions for its cure," but in the next seven lines it becomes evident that he misses the whole point of the analogy, obviously regarding the prolapse of the rectum as the "stretching of some part of the contained viscera"—i e, as the equivalent of the *contents* of an ordinary hernia. This is not so. Prolapse of the rectum *is* a true hernia, of the pelvic floor, but the pelvic floor and rectum constitute the *coverings* and not the *contents* of the hernia, the analogue of the contents of the ordinary hernia is the omentum or small intestine which may occasionally occupy the prolongation of the pouch of Douglas, which accompanies, or rather *precedes* the descent of the rectum, which contents may, like the contents of other herniæ, become strangulated. The position of the rectum in relation to the hernia is exactly that of the cæcum or sigmoid colon in the so called "sliding" hernia, or "hernie par glissement"—i.e., it is extra-saccular. Further, I fail to discover any of the alleged similarity in principle between Mr. Lockart Mummery's operation and that for the radical cure of hernia. The *first*, and as many believe the *sole* essential of the latter, is a complete obliteration of the sac, which Mr. Lockhart Mummery does not even attempt. The only operation with which I am acquainted which really does act on this principle is that described by Dr. A. V. Moschowitz,[2] in which, through a laparotomy wound, the entire pouch of Douglas is obliterated by successive tiers of circular suture. I have performed this operation on three occasions with only partial success, having had to supplement it by a plastic restoration of the anal canal. Anyone who has attempted Moschowitz's procedure will agree that, owing to the surprising depth of the pouch of Douglas in these cases, it is a difficult and severe operation, and not in any way comparable to the easy and safe method of paraffin wax injection which I have described.

I am, Sir, yours faithfully

Manchester, Feb 5th, 1921 ARTHUR H. BURGESS.

PROPHYLAXIS IN VENEREAL DISEASE.

To the Editor of THE LANCET.

SIR,—I was pleased to read Mr. Kenneth M. Walker's letter in your last issue, suggesting that members of the two societies, the N.C.C.V.D. and the S.P.V.D., should arrange to meet. At an official interview with Sir Malcolm Morris last June I said I thought it was a pity that the two societies did not combine, as now their differences were those "twixt Tweedledum and Tweedledee." The N C C.V.D. considers that the recommendation of the washing with water and a well known chemical—namely, soap (which is potassium or sodium stearate, palmitate, or oleate, &c., or a combination of these according to the fats used in its preparation) is not encouraging vice, but that it is encouraging vice for the S.P.V.D. to recommend the use of less common, but scientifically proved to be very efficient, chemicals—namely, water and potassium permanganate, or a 33 per cent. calomel ointment. Also the S.P.V.D. recommends that as the latter are less common, they should be made more easily available. The N.C.C.V.D., however, recommends the use of these disinfectants at so called early treatment centres, which are really *delayed* disinfection centres In addition to the great cost of such centres there are grave reasons rendering their provision by sanitary authorities impracticable.[3]

Mr. Walker states that the N.C C.V.D. does not believe that the "packet" system would be effective when applied to the civil community. The S P.V.D., however, recommends a much less costly system—namely, education by means of posters and leaflets placed in men's underground conveniences, and the latter is the system that was adopted by the Holborn Borough Council last year. 50,000 of the leaflets are supplied at a cost of about £19, that is, less than 1*d*. for 10. For æsthetic reasons also a man is much more likely to adopt *self* disinfection than to go to a centre for disinfection by a skilled attendant. The S.P.V.D., while advocating that no moral measures should be neglected, recognises the plain unsavoury fact that a large proportion of the adult population (notwithstanding all these measures) has practised irregular sexual intercourse, and it therefore recommends the teaching of simple but efficient methods of self disinfection as a practical means of the prevention of venereal diseases; also that the prevention of disease by all practicable means is the paramount duty of sanitary authorities

The Holborn leaflet gives concise information—"What Every Man Should Know"—respecting the terrible ravages caused by these diseases; that the only safe, right, and manly course is to exercise self control; that prevention is infinitely better than cure; and that it is therefore the bounden duty of any man who will indulge in promiscuous sexual intercourse to adopt this disinfection in order to avoid disease, which he may pass on to innocent people. The poster has the same wording. On the back of the leaflet are simple directions respecting (1) immediate self-disinfection, (2) delayed self-disinfection, and the advice (3) if any symptoms of disease arise immediately to consult a doctor or attend one of the special clinics at a hospital. Posters respecting (3) are also exhibited.

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[1] THE LANCET, 1901, ii, 759

[2] A paper read before the New York State Medical Society, April 16th, 1912, and published in Surgery, Gynæcology, and Obstetrics about that time

[3] A solution of potassium permanganate, 1 in 1000, is also well known as it was recommended by the Local Government Board and the Ministry of Health for the prevention of influenza.

Although any fairly intelligent youth or man can very easily carry out the simple directions, human machinery like other machinery is not fool-proof. Much venereal disease is the sequel of foolish indulgence in alcoholic beverages, and if a man will so render himself temporarily idiotic or imbecile he probably then would be unable to carry out efficiently direction (1), therefore the directions (2) and (3) are also given.

I am, Sir, yours faithfully,

Council Offices, High Holborn, Feb. 7th, 1921. W. A. BOND.

THE REGULATIONS FOR DANGEROUS DRUGS.

To the Editor of THE LANCET.

SIR,—I have been instructed by the Executive of the Portsmouth Division, B.M.A., to send to you the following resolution for insertion in THE LANCET:—

> "We, the members of the executive of the Portsmouth Division of the British Medical Association, having read the proposed regulations for the sale of dangerous drugs, &c., emphatically protest against their application to medical men, as it is utterly impossible to carry them out; the result will be, either that the practitioner will be bound to ignore the regulations, or his patients will be deprived of valuable and anodyne drugs, and thereby their sufferings will go unalleviated.".

It was further resolved that this resolution be sent to the Home Secretary, the local Members of Parliament, and the medical press.

I am, Sir, yours faithfully,
C. A. S. RIDOUT, F.R.C.S.,
Honorary Secretary, Portsmouth Division, B.M.A.
Southsea, Feb. 5th, 1921.

THE INDICATIONS FOR REMOVAL OF TONSILS.

To the Editor of THE LANCET.

SIR,—Most surgeons would agree with the conclusions arrived at by Mr. M. Vlasto in his interesting paper on tonsillectomy, which appeared in THE LANCET of Jan. 22nd; at the same time there are points made with which one may differ. He states that the dissection operation causes less *trauma to the faucial* pillars than the use of the guillotine. Following Dr. G. E. Waugh's paper in 1909 I made a practice of removing all tonsils in *children and adults* by the dissection method as a routine; about 1913 I learned of O'Malley's technique of enucleation by the reversed guillotine. I *have no hesitation* in stating my complete agreement with Dr. Dan McKenzie that "enucleation by the guillotine removes the whole of the tonsils yet spares the faucial pillars." My experience of both methods teaches me that the guillotine operation is much the better operation in the case of children, and will rarely fail to effect a complete enucleation if deliberately performed under good anæsthesia. There is no need for it to be a "messy" or "rushed" procedure if the coöperation of a skilled anæsthetist is obtained who is accustomed to work with the surgeon, and so controls the patient as to allow of deliberate swabbing and full inspection of the tonsillar beds. Although in hospital practice, owing to the large number of cases, the operation has perforce to be performed under ethyl chloride or gas and oxygen, these are not nearly so satisfactory as a chloroform and ether mixture. There is no operation in throat work in which a skilled anæsthetist can be of more assistance to the surgeon than in the one under consideration, by inducing the correct degree of anæsthesia, by the proper holding of the head, and by care of the mouth-gag.

In adults, on the other hand, I find that it is usually necessary to use the dissection method to effect complete enucleation, owing to the inflammatory adhesions about the capsule, but I regard this operation as much more formidable as regards risk of hæmorrhage and after-pain than the guillotine operations in children. I use the O'Malley guillotine and endeavour to follow the technique as described by him, and know of none safer or more satisfactory.

I am, Sir, yours faithfully,

Manchester, Feb. 7th, 1921. LINDLEY SEWELL.

THE HAND-MARKINGS OF MONGOLIAN IMBECILES.

To the Editor of THE LANCET.

SIR,—I shall be glad if you will allow me to insist, as I did in my recent paper read before the Medical Society of London, and reported in THE LANCET last week, that it was Dr. R. L. Langdon-Down, and not I, who originally described the peculiar hand-markings of Mongolian imbeciles. Dr. Langdon-Down's observation is one which has not merely clinical interest, but anthropological importance and theriomorphic significance. The latter is emphasised in Professor F. Wood Jones's recent work on the Hand, though the relation to "Mongolism" is not therein mentioned.

I am, Sir, yours faithfully,

Wimpole-street, W., Feb. 7th, 1921. F. G. CROOKSHANK.

THE INDUCTION OF ABORTION.

To the Editor of THE LANCET.

SIR,—The article by Sir John Phillips on this subject in THE LANCET of Feb. 5th opens up a question of great importance. My own experience leads me to believe that the necessity for the induction of abortion very rarely arises. Holding the offices successively of resident obstetric officer, house surgeon, and house physician at St. Mary's Hospital, and working under such well-known men as Alfred Meadows, Braxton Hicks, Montagu Handfield-Jones, Edmund Owen, and William Broadbent, I never once saw the operation performed, and during 30 years of private family practice I have never seen a case in which it was necessary.

Sir John Phillips enumerates a number of conditions under which he considers the operation justifiable or necessary, and I hope that others will comment upon his paper, so that some more definite ruling may be arrived at as to the circumstances under which the induction of abortion becomes a necessity. The operation is repugnant to the conscientious practitioner, and yet one has the feeling that it is sometimes lightly undertaken. That it is a proceeding fraught with very real danger to the patient, and far from easy to perform, there can be little doubt, and that it should never be undertaken without previous consultation, if possible with a gynæcological specialist, I venture to think should be an invariable rule.

I am, Sir, yours faithfully,

Sussex-gardens, W., Feb. 7th, 1921. E. M. CALLENDER.

PART-TIME OR WHOLE-TIME FOR THE M.O.H. AND S.M.O.

To the Editor of THE LANCET.

SIR,—The four writers in THE LANCET of last week upon my letter in the previous issue do not appear to have studied the report of the Consultative Council to which I have referred. Dr. I. D. Suttie, however, accepts in some degree the situation in the right light. Dr. G. W. Fleming, Dr. J. H. Gellatly, and Dr. T. Chetwood seem to be personally aggrieved and to be attempting to justify their positions. These three should most carefully study the report, when they must come to the only conclusion that is to be arrived at—viz., the present service of school medical officers is far from satisfactory. Otherwise, why are such radical changes advocated after 12 years? And this is the crux of the question.

I am, Sir, yours faithfully,

Chichester, Feb. 5th, 1921. A. M. BARFORD.

NITROUS OXIDE AND OXYGEN IN OBSTETRICS.

To the Editor of THE LANCET.

SIR,—Your annotation in THE LANCET of Jan. 15th with reference to the publication of the American Anæsthetic Research Association on the above subject is of interest, in that it emphasises the value attached in America to this method of rendering less painful the bearing of children. Native women, especially those of strong muscular development due to agricultural labour, can usually deliver themselves without much trouble; a Fijian once told me that for the women of her race it was "not much more exertion to bring a baby into the world than to defæcate." With us, unfortunately, labour is frequently pathological and pain is indeed real; its effects on the subsequent health of the mother may be as far-reaching as pain from any other source; hence "twilight sleep" and many other attempts directed towards its mitigation. As demonstrated in your article nitrous oxide analgesia has given satisfaction in the United States. It is popular there—and why not here also? I believe the accouchement position is the same in the two countries; gas can surely be given with absolute safety with the patient on her side in the knee-elbow position. The advantages claimed for nitrous oxide oxygen and nitrous oxide and air are that they permit the patient to bear down without pain or entire loss of consciousness; the gases either prevent painful stimuli from reaching the brain, or greatly reduce their intensity. Between the pains the patient is fully conscious and if desired can even walk about the room. The ideal method is, as you remark, for the administration to be done by an anæsthetist, using such an apparatus as the Teter, Gwathmey,[1] Geoffrey Marshall,[2] or the one described by the present writer.[3] For its portability and absence of fine adjustment valves the Marshall is without doubt the best, although a method of warming the gases would be an advantage.

The expense and difficulty of obtaining the services of an anæsthetist, perhaps for many hours, suggests the value of an apparatus, as used in America, with which the patient may administer the gases to herself, in the presence, of course, of the obstetrician. For this gas and air are the simplest means; what is necessary is enough nitrous oxide to control pain, together with sufficient oxygen or air to maintain adequate tissue respiration. About 10 per cent. to 15 per cent. air or 5 per cent. to 15 per cent. oxygen is needed, the amount varying with individual patients. Re-breathing warms the gases and is economical, but cannot, of course, be employed for self-administration. For this purpose a Colman gas valve is set so as to admit the minimum amount of air that will obviate cyanosis. With those who can and will facilitate nasal breathing a nose-piece may be employed, and pure nitrous oxide is then permissible; otherwise a Barth face-piece is used. When a pain comes on the woman places the mask over her face or adjusts the nose-piece, as the case may be; the handle of the apparatus, which will subsequently be described, is compressed; the patient breathes the gases and is eased of her pain when analgesia is established, but before the onset of anæsthesia she loses power to control the handle; the gases are automatically cut off, and readmitted when the handle is operated on return of pain.

The earlier pain of labour is certainly thus relieved, and exhaustion and shock prevented, without any danger to mother and baby. Complete deadening of pain may not always be obtained during the expulsion stage; for this, surgical anæsthesia with one of the apparatuses named, and the presence of an anæsthetist, are often required.

In designing a self-administration apparatus simplicity and precaution against any possible accident are the main considerations. If a gas-bag is employed the patient can cut off the gas-supply to herself, but not the supply to the bag; unless the obstetrician can turn the latter off at the cylinder the bag may burst and terrify the patient. To prevent this possibility a governor is fitted to the cylinder instead of a bag; when the patient releases the handle the gas is cut off at the source.

You have pointed out the desirability of some details of such an appliance, and I suggest that the latter need merely consist of a 200 gallon gas cylinder with a governor, tubing to connect the latter to the hand-piece, a nasal-piece, and a face-piece with a three-way valve. The hand-piece consists of a ⅛-inch brass tube, perforated at right angles by a double metal tube, the inner tube of which is attached to a handle and kept extended by a spring; the tubes are fitted with ports, so placed that unless the handle is compressed they are not in line and the gas cannot pass. About 100 gallons of gas should last fully over an hour; two or three cylinders should be enough for an average case. Grudel[4] reports cases in which it has been administered for ten hours.

I am, Sir, yours faithfully,
CHARLES T. W. HIRSCH,
Anæsthetist, Samaritan, National Dental Hospitals, &c.
Jan. 25th, 1921.

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[1] Described in THE LANCET, 1916, ii., 607.

[2] Trans. Royal Soc. Med., Dec., 1917.

[3] THE LANCET, 1918, ii., 48.

[4] Nitrous Oxide in Obstetrics, American Year Book of Anæsthetics, New York, 1916.

MEDICAL PROVIDENT SCHEMES.

To the Editor of THE LANCET.

SIR,—In THE LANCET of to-day's date Mr. Charles A. Parker outlines a scheme for a Coöperative Polyclinic. Under this scheme a single man, with an income of £300, is to obtain his doctoring, medical and surgical, for an annual premium of £1 15s. No differentiation appears to be made between an earned income and an income derived from invested capital. An income of £300, if derived from investments, implies a capital of £6000.

Is it intended to supply the possessor of £6000 with medical and surgical treatment for a yearly premium of 35s.? If this is not the intention, what is there in the scheme, as outlined, to prevent such an occurrence?

I am, Sir, yours faithfully,
Plymouth, Feb. 5th, 1921. C. HAMILTON WHITEFORD.

BOOKS, ETC., RECEIVED.

BELL, G., AND SONS, LTD., London.
The Child's Path to Freedom. By N. MacMunn, B.A. Pp. 163. 2s. 6d.

BLACK, A. AND C., London.
General Practice and X Rays. By A. V. Knox, M.B. With chapters on the Production of X Rays and Instrumentation by R. Knox, M.D. Pp. 214. 16s.

HEINEMANN, WILLIAM, London.
The Story of the Horton (County of London) War Hospital, Epsom: Its Inception and Work and Some Reflections. By Lieut.-Col. J. R. Lord, C.B.E., M.B. Pp. 264. 12s. 6d.

KEGAN PAUL, TRENCH, TRUBNER, AND CO., London.
The Autobiography of a Child, written from the Psycho-Sexual Point of View, for Doctors, Parents, Teachers, and Psychologists. Pp. 389. 12s.

LONGMANS, GREEN, AND CO., London.
An Introduction to the Chemistry of Plant Products. Vol. I., On the Nature and Significance of the Common Organic Compounds of Plants. By P. Haas, D.Sc., and T. G. Hill, A.R.C.S. 3rd ed. Pp. 414. 16s.

OLIVER AND BOYD, Edinburgh.
Transactions of the Edinburgh Obstetrical Society, 1919-1920. Vol. XL. Pp. 147.

WILSON, EFFINGHAM, AND STEPHENS AND SONS, London.
Excess Profits Duty and Corporation Profit Tax. By J. Gault. Pp. 190. 16s.

YEAR BOOK PRESS, THE, Chicago.
Practical Medicine Series. Edited by C. L. Mix, M.D. Vol. II., General Surgery, edited by A. J. Ochsner, M.D. Pp. 620. $2.50. Vol. III., The Eye, Ear, Nose and Throat, edited by C. A. Wood, M.D., A. H. Andrews, M.D., and G. M. Shambaugh, M.D. Pp. 382. $1.75. Vol. IV., Pediatrics, edited by I. A. Abt, M.D., and A. Levinson, M.D.; Orthopedic Surgery, edited by E. W. Ryerson, M.D., and R. O. Ritter, M.D. Pp. 256. $1.75.

LEAUCHOIL HOSPITAL, FORRES.—The annual general meeting of the governors of this hospital was held recently, Colonel Norman MacLeod, the chairman, presiding. The report showed that the funds on Dec. 31st, 1919, amounted to £17,749. During the year 1920 £1412 had been received, and after all expenditure had been met there was a balance at Dec. 31st, 1920, of £16,683 0s. 11d. The managers have realised part of their investments to meet the deficiency in the annual income.

Medical News.

UNIVERSITY OF SHEFFIELD.—The results of the December examinations in the Faculty of Medicine of this University are as follows:—

Diploma in Public Health.—W. J. Fordham, G. G. Marshall.
Third M.B., Ch.B.—Annie D. Sykes.

UNIVERSITY OF LONDON.—A lecture on the Innervation of Striped Muscle Fibres and Langley's Receptive Substance, will be given at the Royal Society of Medicine, 1, Wimpole-street, London, W., by Dr. J. Boeke, Professor of Embryology and Histology in the University of Utrecht, at 5 P.M., on Feb. 16th. Professor W. M. Bayliss, F.R.S., will preside at this lecture, which will be delivered in English, and will be addressed to advanced students of the University and to others interested in the subject. Admission is free, without ticket.—*University College:* A Chair of Embryology is to be founded at this College, to which an appointment will shortly be made at a salary of £1000. Dr. Charles Singer has been appointed to a Readership in the History of Medicine tenable at this College.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An ordinary Comitia of the College was held on Feb. 3rd, Sir Norman Moore, the President, being in the chair.—Licences to practise physic were granted to 83 candidates who had conformed to the by-laws and regulations and passed the required examinations.—A letter was received from the secretary of the Voluntary Hospitals Committee, formed by the Ministry of Health to inquire into the financial position of the voluntary hospitals, inviting the College to send representatives to give evidence. A reply was sent, emphasising the importance of the voluntary principle in relation to the interests of the sick, medical education, and the advancement of medical knowledge. The President and Censor were nominated to represent the College if any information were desired on these points.—A report from the Committee of Management concerning the Conjoint Examination in Midwifery and Diseases of Women was received and discussed. It was referred back to the committee for further consideration and report.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—Arris and Gale lectures will be delivered as follows: The *Function of the Kidneys in Enlargement of the Prostate Gland*, by Mr. J. F. Dobson, M.S., on Friday, Feb. 18th, at 5 P.M.; the Azygos System of Veins in their Association with Surgical Affections, by Professor J. Howell Evans, M.Ch., on Monday, Feb. 21st, at 5 P.M.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—As the result of the Final Examination held from Jan. 11th to 28th, the following candidates were approved in the subjects indicated, but are not eligible for diplomas:—

Medicine.—Dulcie Stapleton Adkins, Royal Free; S. Almond, Manchester; G. Armitage, Leeds; H. K. Attacullagh, Royal Free; F. Back, St. Thomas's; E. T. Bailey, Middlesex; May Tilney Bassett, Sheffield; K. M. Bharucha, Bombay and London; R. W. Briggs, Cambridge and St. Thomas's; Marion Constance Vera Clarke, Royal Free; G. R. H. Cooper, Birmingham; P. G. Cumming, Manchester; Edith Margery Pearce Davies, Royal Free; J. R. Dow, Charing Cross; C. F. T. East, Oxford and King's Coll.; Kendwen St. Valentine Edwards, Univ. Coll.; A. Epstein, Birmingham; Olive Gwendolin Fisk, Cambridge and London; Janet Katherine Gatty, Univ. Coll.; Nellie Gray, Westminster; J. B. Gregor, Guy's; S. E. Harvey, St. Thomas's; W. E. Hayes, Oxford and St. Bart.'s; I. Hipshon, Leeds; J. Hollings, London; C. A. Horder, Cambridge and St. Bart.'s; R. W. P. Hosford, St. Bart.'s; Margaret Olwen Howell and M. Jaynkar, Univ. Coll.; B. L. Jeaffreson and L. M. Jennings, St. Bart.'s; J. G. L. Jones, Liverpool; E. J. L. Jones-Evans, St Thomas's; G. Kinneir, St. Bart.'s; Bessie Lovin, Univ. Coll.; C. G Lewis, Birmingham and Univ. Coll.; E. O. Lewis, Cambridge and Univ. Coll.; J. S. Lewis, St. Mary's; J. R. Lund, Cambridge and St. Thomas's; C. H. Macklin, Middlesex; D. McNair, Royal Free; S. E. J. Miedema, Amsterdam; J. C. R. Morgan, Westminster; L. S. Morgan, St. Bart.'s; B. S. Nisse, London; M. M Ostrowick, Edinburgh; W. A. Owen, London; R. J Parry, Univ. Coll.; Cassia Ethel Pratt, Royal Free; W. S. Ratnavale, Calcutta and London; L. M. Rice, Toronto; Edith Marjorie Rooke, Royal Free; T. S. Severs, Durham; L. Smalley, St. Thomas's; Y. A. Sumbul, St. Mary's; H. W. Taylor, Manchester; C. P. Thomas, Westminster; E. W. C. Thomas, St. Bart.'s; A. W. Tibbetts, Birmingham; J. C. Twomey, Liverpool; C. Verheyden, Edinburgh and Univ. Coll.; H. S. Ward, Leeds; L. K. Watson, Guy's; R. A. Webb, Johns Hopkins, Baltimore; and C. F. Young, London.

Midwifery.—Charlotte Katherine Jocelyn Almond, King's Coll.; S Almond, Manchester; G. Armitage, Leeds; F. Back, St. Thomas's; May Tilney Bassett, Sheffield and Charing Cross; F. Basham, Univ. Coll.; F. A. Bruning, King's Coll.; E. M. Burrell, Cambridge and St. Thomas's; H. S. Chadwick, Manchester; L. E. Claremont, Univ. Coll.; Marion Constance Vera Clarke, Royal Free; P. G. Cumming, Manchester; C. B. [illegible], King's Coll.; H. S. Davies, St. Thomas's; Muriel Alice Mary Davies, King's Coll. and St. George's; A. de Souza, Middlesex; S. Douglas and Kendwen St. Valentine Edwards, Univ. Coll.; A. H. El Ramli, Liverpool; J. C. Evans, London; L. Farris, Westminster; Emmie Dorothy Fenwick, St. Mary's; Olive Gwendolin Fisk, Cambridge and London; Betty Fletcher, Royal Free and St. Mary's; M. R. Flynn, Sydney; G. H. Froggatt, Sheffield; Katherine Mary Lovell Gamgee and A. J. Gardham, Univ. Coll.; J. E. Gaze and R. Goodman, Charing Cross; A. H. Hall, Birmingham and London; M. Hall and E. Hardy, Guy's; A. D. Hepburn, Westminster; R. J. Hodgkinson, Guy's; C. A. Horder, Cambridge and St Bart.'s; Margaret Olwen Howell, Univ. Coll.; D. J. Jones, Westminster; D. M. Jones, Univ. Coll.; Margaret Gray Jones, Royal Free; A. H. Kassem, Guy's; J. Kindness, Charing Cross; R. C. Lightwood, King's Coll.; C. G. Lingford, Middlesex; I. B. McCann, Guy's; J. F. C. McColl, Liverpool; A. G. Mackay, Edinburgh; D. McNair, Royal Free; Y. Maximos, Middlesex; Rose Moss, Charing Cross; B. S. Nisse, London; T. S. North, St. Mary's; H. A. Osborn, King's Coll.; R. E. Overton and R. J. Parry, Univ. Coll.; L. P. Phillips and F. A. Pickworth, Charing Cross; Marjorie Pierce and Cassia Ethel Pratt, Royal Free; P. R. Rashbrook, London; T. R. Rees, Cardiff and St. Bart.'s; L. M. Rice, Toronto; G. H. Roberts, Charing Cross; A. Robertson, Guy's; Edith Marjorie Rooke and Margaret Charlotte Scrace, Royal Free; J. Seelenfreund, London; H. Shannon, St. Bart.'s; Creina Shepherd, Calcutta and King's Coll.; A. E. Slater, Cambridge and St. Thomas's; H. K. Snell, King's Coll.; A. D. Soares, Bombay; Dorothy Mary Stewart, Royal Free and St. Mary's; A. E. Strawbaun, Guy's; B. H. Stribling, London; Lucy Maud Summerhayes, St. George's; H. R. J. Thomas and D. D. C. Thomson, London; A. W. Tibbetts, Birmingham; F. H. W. Tozer, London; C. Verheyden, Edinburgh and Univ. Coll.; H. S. Ward, Leeds; E. H. Weatherall, St. Bart.'s; L. R. A. Wells, Guy's; H. L. Willey, Cambridge and St. Thomas's; E. C. A. Wilson, Howard; and E. T. Wright, St. Mary's.

Surgery.—Dulcie Stapleton Adkins, Royal Free; F. G. L. Barnes, St. Bart.'s; E. C. Curwen, Cambridge and St. Thomas's; G. W. Elkington, Guy's; S. Farris, Cairo and Liverpool; A. J. Gardham, Univ. Coll.; Nellie Gray, Westminster; Marjorie Pearl Christine Greene, Royal Free; B. J. Hallowes, St. Bart.'s; C. B. Hawthorne, Cambridge and Birmingham; S. S. Hewitt, St. Mary's; R. W. P. Hosford and D. E. Jones, St. Bart.'s; J. T. Jones, Guy's; M. Kamil and R. Lee Michell, Middlesex; W. B. A. Lewis, Cambridge and St. Bart.'s; A. G. Mackay, Edinburgh; S. E. J. Miedema, Amsterdam; G. B. Oliva, Liverpool; F. A. Phillipps, Cambridge and St. Thomas's; K. P. Raman Pillay, Madras and London; J. G. Reed, St. Thomas's; A. M. Reid, Liverpool; J. Reith, Univ. Coll.; E. Savage, St. Bart.'s; H. E. Suter, St. Mary's; T. S. Severs, Durham; H. W. Taylor, Manchester; J. P. Traylen, London; W. J. G. Walker, Univ. Coll.; and L. S. Woolf, St. Mary's.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.—Dr. T. Gillman Moorhead has been elected to the King's Professorship of Materia Medica in succession to Dr. W. G. Smith, who resigned last November.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH: PARKIN PRIZE.—The subject of the essay for the present period is, in terms of the deed: On the Effects of Volcanic Action in the Production of Epidemic Diseases in the Animal and in the Vegetable Creation, and in the Production of Hurricanes and Abnormal Atmospherical Vicissitudes. The prize, which is of the value of £100, is open to competitors of all nations. Essays intended for competition, written in English, should reach the secretary not later than Dec. 31st, 1921.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL *FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.*—The following candidates have passed the Triple Qualification Examinations:—

THIRD EXAMINATION.

Herbert W. Amyes, Tarabai Kelarkar, Catherine Millar, Rachel Caplan, Irene Ward, Herman S. N. Menko, William Leo Murray, George H. Dobbin, Thomas John Muir, and Thomas T. Hoskins.

Pathology.—Charles W. de Villiero Pritchard and Albert Rudolf Rellum.

Materia Medica.—Ella Doris Messenger, Oliver H. D. Oliver, Akinlawon Adefolu, John Murray Cockburn, and Israel Rowstowsky.

FINAL EXAMINATION.

Richard Arthur Cooper, Frederick James Duncan Cass, Gabriel Jonas Downona Hammond, George John Murray, Jack Shulman, James Hugh Wilson, Arthur Cuthbertson, Mayberry Hugh Carleton, Henry Godfrey Fitz-Maurice, Alexander Forsyth Caddell, Parasuma Parthasarathy, Walter Granville Carew, Joseph Black, Alexander Tirumlaiya, Patabendi Martin Fernando, and John Bertram van Cuylenburg.

Medicine and Surgery.—Don James Hector Ferdinando.

Medicine and Midwifery.—Pauline Figdor, Reginald Edward Hopton, and John Bernard O'Neill.

Medicine.—Herbert Brown, Leo Hugo Peries, and Gwilym ap V. Jones.

Surgery.—John Murray.

Midwifery.—James Sydney Alex. Rogers and John Joseph M'Donald.

Medical Jurisprudence and Public Health.—W. A. M'K. Gibson, Peter J. H. Dobbin, C. T. Williams, Marguerite M. I. Swanson, J. B. Dyce, James Readdie, R. E. O'Keeffe, P. F. Malloch, Marjory J. A. Ogilvie, Alex. G. Thom, Arthur R. Lambie, Tarbai Kelarkar, Daniel R. Cilliers, J. A. H. Dykes, Edward James Sykes, and Thomas Francis Kelly.

HARVEIAN SOCIETY.—A meeting of this society *will be held at the Town Hall, Harrow-road, Paddington*, on Thursday, Feb. 17th, at 8.30 P.M., when a paper will be read by Dr. W. Brown on Psycho-analysis.

RONTGEN SOCIETY.—A general meeting of this society will be held on Feb. 17th, at 8.15 P.M., in the Physics Lecture Theatre, University College, Gower-street, London, W.C., when a paper on Intensifying Screens and Secondary Radiation will be read by Mr. N. E. Luboshey.

VERMIN REPRESSION SOCIETY.—A successful dinner was held at the Connaught Rooms, London, on Feb. 8th, Sir Bruce Bruce-Porter presiding. Various speakers called effective attention to the economic and hygienic losses arising from rats and other animal pests when left unchecked. The formation of official rat offices in every town was advocated.

SOCIETY OF SUPERINTENDENTS OF TUBERCULOSIS INSTITUTIONS.—A meeting of this society will be held at 122, Harley-street, London, W., on Feb. 14th, at 4 P.M., when the main business will be the consideration of reports by committees on the coördination of statistics, the training of nurses, and the standards of medical and nursing staffs in institutions for the treatment of tuberculosis.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—The next quarterly meeting of this association will take place on Feb. 24th, at 11, Chandos-street, Cavendish-square, London, W., at 2.45 P.M., Dr. W. F. Menzies in the chair. Sir Frederick Mott, F.R.S., in conjunction with Dr. Hayao, will read a paper on the Pathology of Dementia Præcox, especially in Relation to the Condition of the Ovaries.

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.—The Association is arranging for the International Union Against Tuberculosis (Paris) to be held in London from July 26th–28th. All countries which have joined the League of Nations, as well as the U.S.A., are represented on the Union, and delegates from about 25 different countries are expected to attend and to take part in the proceedings. Professor J. Calmette will open a discussion on the Modes of Diffusion of Tuberculosis Throughout the Races of the World, and three public addresses will be given by a Frenchman, an American, and an Englishman respectively. Visits to tuberculosis hospitals, sanatoriums, laboratories, and other institutions will be arranged.

OXFORD OPHTHALMOLOGICAL CONGRESS.—This Congress will assemble at Keble College, Oxford, on July 6th next, and the meeting will be held on July 7th and 8th. On the 7th a discussion on the Causes of Infection After Extraction of Senile Cataract will be opened by Dr. Victor Morax, of Paris. The Doyne memorial lecture will be delivered on the 8th by Mr. Ernest E. Maddox on Heterophoria. Members intending to take part in the discussion or desiring to contribute papers, pathological specimens, new *operations, and so forth, are* requested to send in their names as soon as possible to the honorary secretary, Mr. Bernard Cridland, at Salisbury House, Wolverhampton.

RETIREMENT OF PROFESSOR C. LLOYD MORGAN.—Professor Lloyd Morgan, formerly teacher in biology at the Bristol Medical School, is being entertained by the Association of Alumni of the University on Feb. 17th, on the occasion of his retirement from the professorship of psychology. The Chancellor of the university, Lord Haldane, will preside, and tickets (price 12*s.* 6*d.*) may be had on application to Mr. P. Haworth at the university. Although Professor Lloyd Morgan has not for some years now been teaching medical students he has retained an active interest in their work and welfare.

STUDENTS' MEDICAL SOCIETIES.—The following meetings are announced before the end of the winter session:—

St. George's Hospital Clinical Society.—The next meeting will be held on Feb. 17th, when Dr. R. Donaldson will read a paper on Influenza. On March 3rd, the last meeting, Dr. H. C. H. Bull will read a paper. All meetings are held at 8.30 P.M.

Guy's Hospital Pupils' Physical Society.—The next meeting will be on Feb. 17th, when demonstrations of pathological specimens and other communications will be given. On March 2nd there will be a clinical meeting, and on March 16th a paper will be read by Mr. C. H. Laver.

St. Thomas's Hospital Medical and Physical Society.—The next meeting will be held on Feb. 24th, when a paper on the Essentials of Success in Private Practice will be read by Sir Robert Fox-Symons. On March 10th Sir Archibald Reid will speak on Opaque Meals in the Diagnosis of Abdominal Disease. The meetings are held at 8.30 P.M.

ENCEPHALITIS LETHARGICA.—Twenty-nine cases *were notified in London during the week ending Jan. 29th.* Of these 5 occurred in Lambeth, 4 in Hackney, and 4 in Lewisham. The other cases notified were from Woolwich (3), Wandsworth and Shoreditch (2 each), and Battersea, Bethnal Green, Bermondsey, Camberwell, Finsbury, Hampstead, Poplar, Stepney, and Southwark (1 each).

PRESENTATIONS TO MEDICAL MEN.—On his retirement from the office of Principal of Grant Medical College, Bombay, Lieutenant-Colonel Ashton Smith was presented with a farewell address by past and present students at a representative gathering presided over by Major-General W. E. Jennings, K.H.P., Surgeon-General to the Government of Bombay. At the same meeting a portrait was unveiled of General Jennings, which has been presented to the College by his numerous admirers. General Jennings has served in Bombay for nearly all his service, and has taken a very prominent part in the public life of the city.—On his appointment as consulting physician to the National Hospital for Diseases of the Heart, to which hospital he has been a physician for 23 years, Dr. C. Chapman Gibbes was presented by his colleagues on the staff with a silver salver as a token of appreciation. The out-patients also presented him with a silver salver, with a letter expressing great regret at his retirement, and a further presentation has been made to Mrs. Chapman Gibbes of a handsome bowl and stand.—Dr. G. S. Trail, who has recently retired from practice after 43 years' service in Strichen, was on Jan. 19th given a silver salver suitably inscribed and a cheque for £130 by 493 friends and neighbours in the local town hall.

CONGRESS OF RADIOLOGY AND PHYSIOTHERAPY.—A Congress organised by the Electro-Therapeutic Section of the Royal Society of Medicine and the British Association of Radiology and Physiotherapy will be held this year in London on April 14th, 15th, and 16th. The President will be Sir Humphry Rolleston, supported by a long and distinguished list of *Vice-Presidents. The secretary-general is* Dr. G. Harrison Orton; the honorary secretaries for General Correspondence are Dr. Stanley Melville and Dr. Justina Wilson; and the honorary secretaries for Sections are Radiology, Dr. N. S. Finzi; Electrology, Dr. G. Murray Levick; and Physiotherapy, Dr. C. V. MacKay. The provisional programme is as follows: On April 14th, at 10 A.M., the congress will be opened at the Royal Society of Medicine. At 11 A.M. the Section of Radiology will discuss Diseases of Bone; the Section of Electrology, the Action of the Direct (constant) Current on the Tissues in Health and Disease; and to the Section of Physiotherapy, addresses on Physical Training and on the Chartered Society of Massage and Medical Gymnastics will be given. In the afternoon the Section of Radiology will meet at St. Bartholomew's Hospital, where papers and a demonstration on the Intra-peritoneal Injection of Oxygen will be given, and the radiographic departments of selected hospitals will be visited. Members of the Section of Electrology will visit the electrical departments of selected hospitals, while the Section of Physiotherapy will discuss the Treatment of Cardiac Disorders by Physical Means. In the morning of Friday, April 15th, the Section of Radiology will discuss the Normal Stomach; the Section of Electrology, the Uses of Electrical Methods in the Diagnosis and Prognosis of Paralysis; and the Section of Physiotherapy, Physical Treatment as an Aid to Orthopædic Surgery. In the afternoon the Section of Radiology will proceed to the consideration of the Abnormal Stomach, while the other two sections will hold a joint meeting to discuss Re-education of Muscles. On Saturday, April 16th, the Section of Radiology will discuss Deep Therapy and Radium Therapy; the Section of Electrology will deal with the subject of the Physiological Action and Therapeutic Uses of High-frequency Currents; and the Section of Physiotherapy with Backache and Referred Pain. Those who have already promised to contribute the opening papers at certain of the sessions include Dr. S. G. Scott, Dr. Wybauw, Dr. A. E. Barclay, Dr. Kouindjy, Dr. Finzi, and Dr. J. E. A. Lynham. It is hoped that in each section there will be three opening papers in each subject—one from France, one from Belgium, and one from England, each limited to 20 minutes, and followed by a discussion, limited to 10 minutes for each speaker. All communications may be made in French or English. A résumé of all opening papers should reach the secretaries not later than three weeks before the opening of the Congress, and should be addressed to the Royal Society of Medicine. Associated with the Congress will be an exhibition of X ray and electrical apparatus, and a demonstration of physical training, organised by the Ling Association, at the Royal Albert Hall on Saturday, April 16th, at 2.30 P.M. The subscription for English members is £2 2*s.*, for French and Belgian members Fr.40. Application for membership should be sent with the subscription to the honorary treasurer, Dr. J. Metcalfe, Royal Society of Medicine, 1, Wimpole-street, London, W. 1, as early as possible.

Colonel S. Lyle Cummins has vacated the post of professor of pathology at the Royal Army Medical College, London, and has assumed duty as Professor of Tuberculosis at University College, Cardiff.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON).—A course of 12 lecture-demonstrations on Gonorrhœa will be given by Mr. E. R. T. Clarkson and Mr. Malcolm Simpson (chief assistants to the genito-urinary department of the hospital) on Tuesdays, Wednesdays, Thursdays, and Fridays, at 4.30 P.M., in the venereal out-patient department, beginning Tuesday, March 1st. Members of the medical profession are invited to attend.

MIDDLESEX HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON).—Two Emeritus lectures will be delivered in the new theatre of the school on Tuesday, Feb. 22nd, and Friday, Feb. 25th, at 3 P.M. On Tuesday Sir Alfred Pearce Gould takes as his subject "Surgery: a Progressive Science—the Latest Word is Not the Last Word." On Friday Sir Richard Douglas Powell will lecture on "The Ætiology of Phthisis." Visitors are cordially invited.

MANCHESTER'S ANTIVENEREAL POSTER.—Reference has already been made in THE LANCET (1920, ii., 813) to a poster on prevention of venereal diseases affixed in the public lavatories in Manchester. This poster was withdrawn and a new poster which the health committee proposed to issue was considered at a meeting of the city council held on Feb. 2nd, with the result that certain clauses therein were ordered to be deleted by a majority of 4 to 1. Strong objection was taken to certain clauses not only in the council but also by certain outside bodies. One of those complained of read: "Men who are determined to disregard their moral obligations should read the leaflet, 'Directions to Men,' which may be obtained by men on personal application to the Medical Officer of Health, 1, Mount-street, Manchester." The other clauses indicated the position of the centres for early treatment and emphasised the necessity of early action.

ALL-INDIA MEDICAL CONFERENCE.—The fourth session of the All-India Medical Conference was recently held, under the presidency of Dr. Maharaj Krishna Kapur, of Lahore. Over 100 delegates, representing all grades of the profession, attended. The chairman of the reception committee laid stress on the necessity for a reorganisation of the medical services in India and an improvement in medical education. He dwelt on the want of medical relief in the country districts, and expressed the hope that sanitation and medical aid would receive more attention from Government in the future than has hitherto been the case. The President in his address urged the need for better facilities for medical research and for post-graduate training. He emphasised the need for separating the military and civil medical services and the establishment of more hospitals and medical institutions.

DONATIONS AND BEQUESTS.—Messrs. George and Henry Wills have contributed a further £200,000 to finish the building extension of the University of Bristol, which is being erected entirely at their expense.—The Chelsea Hospital for Women has received towards the building of its Nurses' Home £100 from the executors of the late Mr. F. L. Harvey, also £25 from the trustees of the late Robert Williams Edwards Trust.—Under the will of the late Mr. William Morrice Ledingham, of Aberdeen, who died on Sept. 22nd last, leaving £186,000, the sum of between £80,000 and £100,000 will be divided into 17 shares, charitable institutions benefiting in the following proportions: Aberdeen Royal Infirmary, 4 shares; Royal Aberdeen Hospital for Sick Children, 2; Aberdeen District Nursing Association, 1; Newhills Convalescent Home, 1; Aberdeen Asylum for the Blind, 1; Aberdeen Ophthalmic Institute, 1; Aberdeen Dispensary, Maternity Hospital, and Vaccine Institute, 1; Morningfield Hospital, 1.—In aid of Sir James Taggart's Sick Children's Hospital Scheme the employees of Messrs. Mitchell and Rae, Newburgh and Ellon, have contributed four hours' wages, amounting to £58, and the firm have added another £58, making £116 altogether. The Aberdeen city tramwaymen have decided to contribute in the same proportion, and it is hoped that £100 may be obtained from this source. Up to date the town council departments have contributed nearly £210 towards the scheme. The gas-workers have agreed to contribute 1s. each weekly for six weeks.—By the will of the late Mr. W. R. Teage, of Devon and London, the testator, after bequeathing some £75,000 of his estate, which amounts to £80,757 gross value with net personalty of £78,457, to his family and others, bequeathed the residue of his property as follows: Ten-fortieths to the South Devon and East Cornwall Hospital, Plymouth; four-fortieths each to Dartmouth Cottage Hospital and King Edward's Hospital Fund; two-fortieths each to Guy's Hospital, London Hospital, Poplar Hospital, Royal National [illegible] Boat Institution, Boys' Home Industrial School, and [illegible] Market Army Training School for Boys; one-fortieth each to the Middlesex Hospital, the Cancer Investigation Department of the Middlesex Hospital, Royal London Ophthalmic Hospital, Devon and Cornwall Homœopathic Hospital, Devon and Cornwall Ear and Throat Hospital, Plymouth Eye Infirmary, Home for the Dying Poor, Pembridge-square, W., London City Mission, Fox Court Ragged School Mission, and the Charity Organisation Society.—Under the will of the late Mr. H. Ainsworth, of Johannesburg, £1000 are bequeathed to Dr. Barnardo's Homes, and £1000 to the feoffees of Cheetham Hospital, Manchester.—Dr. David Lloyd Roberts, of Manchester, who died on Sept. 27th, 1920, aged 86, has left a fortune of £125,677, the net personalty being £104,462. The chief bequests are £5000 to the Royal Society of Medicine; £5000 to St. Mary's Hospital, Manchester; £3000 to the Manchester Royal Infirmary; £3000 to the Royal College of Physicians, London; £3000 to the Medical Society of London; an additional £500 each to the above societies for an annual lecture on any subject of medical or scientific interest; £2000 to St. David's College, Lampeter; £2000 to the Board of Finance of the Diocese of Manchester in trust for St. David's Church in Lyne-road, Chorlton-on-Medlock. His mezzotints and his water colours, which are mainly of the early English school, ancient glass, and antique silver are left to the Corporation of Manchester for the Art Gallery. After certain other legacies have been deducted, the residue, about £70,000, is to go to University College at Bangor for general purposes.

Appointments.

MACKENZIE, E. A., M.B., Ch.B., D.P.H., has been appointed Assistant Tuberculosis Physician to the King Edward VII. Welsh National Memorial Association.

STUART, F. J., M.R.C.S. Eng.; Medical Superintendent of the County Mental Hospital, Berry Wood, Northampton.

St. Thomas's Hospital: SQUIRES, F. V., M.R.C.S., L.R.C.P. Lond., WALKER, A. R., M.R.C.S., L.R.C.P. Lond., BACK, G. A., M.R.C.S., L.R.C.P. Lond., GRANGER, E. D., M.B., B.S. Lond., HAMILTON, C. K. J., M.B., B.Ch. Oxon., HOEY, J. T. S., M.B., B.Ch. Oxon., LIANG, P. T., B.Ch. Cantab., WHITELAW, A. D., M.R.C.S., L.R.C.P. Lond., Casualty Officers and Resident Anæsthetists; MAXWELL, L. B., M.R.C.S., L.R.C.P. Lond., HAWLEY, A. T., M.R.C.S., L.R.C.P. Lond., KENDALL, G. M., M.B. Cantab., CARDELL, J. D. M., M.R.C.S., L.R.C.P. Lond., Resident House Physicians; HOBBS, F. B., M.B., B.Ch. Cantab., Resident House Physician for Children; GARNETT, D. G., M.R.C.S., L.R.C.P. Lond., HALLIWELL, A. C., M.B., B.Ch. Cantab., LOW, W. A., M.R.C.S., L.R.C.P. Lond., SPENCE, D. B., M.R.C.S., L.R.C.P. Lond., Resident House Surgeons; FOLEY, W. B., M.B., B.S. Lond., Resident Orthopædic House Surgeon; MARRINER, H. L., M.R.C.S., L.R.C.P. Lond., Resident House Surgeon for Ear, Nose, and Throat; ROBINSON, R. H. O. B., M.B., B.Ch. Cantab., House Surgeon to Block 8; MAITLAND, C. D., M.B., B.S. Lond., Senior Obstetric House Physician; ORME, E. S., M.R.C.S., L.R.C.P. Lond., Junior Obstetric House Physician; ROBERTS, E. D. T., M.R.C.S., L.R.C.P. Lond., Senior Ophthalmic House Surgeon; MCLEAN, C. F., M.R.C.S., L.R.C.P. Lond., Junior Ophthalmic House Surgeon; CAVENAGH, J. B., M.B., Ch.B. Oxon., WOOD, F. G., M.A., B.Ch. Cantab., HUMFREY, S. H. G., M.R.C.S., L.R.C.P. Lond., ROBINSON, R. H. O. B., M.B., B.Ch. Cantab., SHAW, J. A. P., M.R.C.S., L.R.C.P. Lond., SYMES, R. N. L., M.R.C.S., L.R.C.P. Lond., TRACY, G. D. C., M.R.C.S., L.R.C.P. Lond., TALLERMAN, K. H., M.R.C.S., L.R.C.P. Lond., SPOOR, A. T., M.R.C.S., L.R.C.P. Lond., SHIRES, B., M.B., Ch.B. Edin., BURNS, C. L. C., M.R.C.S., L.R.C.P. Lond., THOMAS, C. J., M.R.C.S., L.R.C.P. Lond., PARSONS-SMITH, B. T., M.D. Lond., Clinical Assistants.

Certifying Surgeons under the Factory and Workshops Acts: KIRKHOPE, G., M.B., Ch.B. Glasg. (Dalmellington, Ayr); TERRY, L. H., M.R.C.S., L.R.C.P. Lond. (Fishguard); CHURCHOUSE, W. K., M.R.C.S., L.R.C.P. Lond. (Long Buckby); JACKSON, J., M.B., B.Ch. Dubl. (Marple).

Vacancies.

For further information refer to the advertisement columns.

All Saints' Hospital for Genito-Urinary Diseases, 49/57, Vauxhall Bridge-road, S.W.—Res. H.S. £200.

Beckett Hospital, Barnsley.—Jun. H.S. £200.

Belgrave Hospital for Children, Clapham-road, S.W.—Asst. P. 50 gs.

Birmingham Orthopædic Centre, Highbury, Uffculme, Sorrento Hospitals.—Medical Superintendent. £800.

Bolingbroke Hospital, Wandsworth Common, S.W.—Res. M.O. £200

Brighouse Borough.—M.O.H. and Sch. M.O. £650.

Bristol Royal Infirmary.—Hon. Med. Regist. Also H.S. for Ear, Nose, and Throat Dept. £120.

Burnley County Borough.—Female Asst. M.O.H. £500.

Cheshire County Council, Wrenbury Hall Colony.—Res. Med. Supt. £600.

Croydon General Hospital.—Second H.S. £150.

Dreadnought Hospital, Greenwich.—H.P. and H.S. £150.

Dundee Royal Infirmary.—Hon. Visiting S.

East Ham Education Committee.—Sch. Dentist. £450.

East Sussex County Council, Darwell Bank Sanatorium.—Med. Supt. £750.

Eccles and Patricroft Hospital.—Res. H.S. £200.

Evelina Hospital, Southwark, S.E.—H.P. £150. Also Hon. S. to Out-patients.

General Lying-in Hospital, York-road, Lambeth, S.E.—Asst. P.

Great Northern Central Hospital, Holloway, N.—P.

Great Yarmouth Hospital.—H.S. £250.

Hospital for Epilepsy and Paralysis and Other Diseases of the Nervous System, Maida Vale, W.—Res. M.O. £150.

Hospital for Women, Soho-square, W.—Hon. M.O.

Hull Royal Infirmary.—Asst. H.S. £150.

Infants Hospital, Vincent-square, Westminster.—P. Also Asst. P.

Kent County Mental Hospital, Chartham, near Canterbury.—Jun. Asst. (Third) M.O. £350.

Kent Education Committee.—Female Sch. Med. Inspec. £300.

Kingswood, Bristol, Cossham Memorial Hospital.—Visiting S.

Leicester Royal Infirmary.—H.S. £200.

Lincoln County Hospital.—Jun. H.S. £150.

London County Mental Hospitals.—Clin. Assts. £200.

London Lock Hospital, Dean-street, Soho, W.—H.S. £200. Also Registrar.

London Lock Hospital, Harrow-road, W.—H.S. £300.

London (Royal Free Hospital) School of Medicine for Women and Royal Free Hospital.—First and Second Assts. in Gynæc. and Obst. Unit. £700 and £500.

Macclesfield, Cheshire County Asylum, Parkside.—Asst. M.O. £350.

Manchester Royal Eye Hospital.—H.S. £120.

Manchester Royal Infirmary.—Path. Registrar. £350.

Metropolitan Hospital, Kingsland-road, E.—Asst. P.

Middlesex Hospital, W.—Res. Asst. Anæsth. £105.

National Hospital for the Paralysed and Epileptic, Queen-square, Bloomsbury, W.C.—Res. M.O. £200.

Newark Hospital and Dispensary.—Res. H.S. £200.

Newport, Mon., Education Committee.—Asst. Sch. M.O. and Med. Insp. of Schools. £600.

Newport, Mon., Royal Gwent Hospital.—H.S. £200.

Northampton, County Mental Hospital, Berry Wood.—Sen. Asst. M.O. £300. Also Jun. Asst. M.O. £210.

Northumberland County Asylum, Morpeth.—Asst. M.O. £400.

Peterborough General Infirmary.—H.S. £200.

Plymouth, South Devon and East Cornwall Hospital.—H.P. £175. Also Asst. S.

Queen Mary's Hospital for the East End, Stratford, E.—Hon. Ophth. S. Also H.S.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. P.'s.

Royal Waterloo Hospital for Children & Women, S.E.—Cas. O. £150

St Peter's Hospital, Henrietta-street, Covent Garden, W.C.—Hon. M.O.

Sheffield Royal Hospital.—Res. Surg. O. £250.

Sheffield Royal Infirmary.—Asst. Cas. O. £150

Sidcup, Frognal Ministry of Pensions Hospital.—Jun. Res. M.O. £400.

Singapore, Straits Settlements.—Asst. Principal of Medical School. $600 per month.

Sunderland, Ministry of Pensions Hospital.—Jun. M.O. £350.

Sunderland Royal Infirmary.—Two Jun. H.S.'s. £200.

University College Hospital, Gower-street, W.C.—Res. M.O. £150.

Westminster Hospital.—Asst. H.S.

Wigan County Borough.—M.O.H. £850.

Winsley Sanatorium, near Bath.—Asst. Res. M.O. £250.

Wolverhampton and Staffordshire General Hospital.—Hon. Specialist.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at King's Cliffe, at Slamannan, and at Monmouth.

Births, Marriages, and Deaths.

BIRTHS.

CARNEGIE DICKSON.—On Jan. 31st, at Devonshire-street, W., the wife of W. E. Carnegie Dickson, M.D., F.R.C.P.E., Brunswick-place, Regent's Park, N.W., of a daughter.

DICKSON.—On Feb. 4th, the wife of Ian D. Dickson, M.D., Thorpe-road, Norwich, of a daughter.

EAGER.—On Feb. 6th, at Exminster, Devon, the wife of Richard Eager, O.B.E., M.D., of a son.

HALL.—On Jan. 9th, 1921, at 6, Dunluce Terrace, Belfast, the wife of Dr. Robin Hall, of a daughter.

LEE.—On Jan. 30th, at Cardigan-road, Headingley, Leeds, the wife of Harry Lee, F.R.C.S., of a daughter.

MARRIAGES.

HAVARD—HUMPHREY.—On Feb. 5th, at the Chapel Royal, Savoy, Arthur William Havard, M.B., B.S. Lond., late R.A.M.C., to Ursula Vernon, eldest daughter of Major and Mrs Vernon Humphrey, of Ridgmount-gardens, W.

NICHOL—WEIR.—On Jan. 18th, at Caledonian Hotel, Edinburgh, John MacRae Sandilands Nichol, M.B., Ch.B. Edin., to Dorothy, only daughter of Mr. and Mrs. John B. Weir, of 4, Salisbury-road, Edinburgh.

PAULIN—MILLIGAN.—On Feb. 2nd, at St. Paul's Church, Bedford, Dr. George Alexander Paulin, to Mary, daughter of the late Dr. and Mrs. Milligan, De Parys-avenue, Bedford, and Cranfield, Bedfordshire.

DEATHS.

FOSTER.—On Feb. 4th, at the Abbey, Thorpe-le-Soken, Essex, Dr. Francis Wheldale Foster, aged 61.

HARRIS.—On Feb. 5th, at Queen's-road, Southport, Robert Harris, M.B., J.P., aged 73 years.

MILNE.—On Feb. 3rd, at Nordrach-on-Dee, George Wardlaw Milne (late Lieutenant-Colonel, R.A.M.C., T.C.), aged 47.

SCOTT.—At "The Tower," Murrayfield, Edinburgh, on Feb. 2nd, Sarah Jeffrey, wife of Dr. Joseph Scott, Teheran, Persia.

STAPLE.—On Feb. 4th, at Lyme Regis, James Dibble Staple, M.R.C.S., L.S.A., formerly of Cheltenham-road, Bristol, in his 60th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Feb. 15th.

GENERAL MEETING OF FELLOWS: at 5 P.M.
Ballot for Election to the Fellowship. (Names already circulated.)

MEETINGS OF SECTIONS.

Monday, Feb. 14th.

WAR SECTION: at 5 P.M.
Exhibition and Demonstration of Splints and Similar Apparatus by Major Meurice Sinclair.
At 9 P.M.:
Major Meurice Sinclair will read a paper (with illustrative slides).

SECTION OF SURGERY: SUBSECTION OF ORTHOPÆDICS: Members of this Section and Subsection are cordially invited to attend the above meeting.

Tuesday, Feb. 15th.

SECTION OF THERAPEUTICS AND PHARMACOLOGY: at 4.30 P.M.
Papers:
Dr. J. H. Burn: Comparison of Digitalis Tinctures by Different Physiological Methods.
Dr. P. Hamill: Oral Administration of Pituitary Extract (Experimental).
Dr. Donaldson: Oral Administration of Pituitary Extract (Clinical).

SECTION OF PATHOLOGY: at 8.30 P.M.
Communications, &c.:
Dr. W. E. Gye and Dr. E. H. Kettle: Passive Immunity in Tetanus.
Dr. Mackenzie Wallis: Demonstration on Estimation of Sugar in the Blood.
Dr. A. E. Gow: A Specimen of Pancreatic Infarct and Fat Necrosis.
Dr. T. H. G. Shore: (1) Influenzal Meningitis of Spinal Cord; (2) Knee-joint in Hæmophilia; (3) Retrograde Metastases in Carcinoma.
Dr. E. H. Kettle: (1) A Congenital Sacral Teratoma; (2) A Primary Chancre of a Finger following Trauma.

Members desiring to read papers or show specimens are requested to communicate with Dr. E. H. Kettle, 35, Nottingham-place, W. 1.

Wednesday, Feb. 16th.

SECTION OF HISTORY OF MEDICINE: at 5 P.M.
Mr. Robert Steele: The Introduction of Astrology into Western Medicine (Preliminary).
Sir D'Arcy Power: Some XVII. Century Statistical Tables of St. Bartholomew's and St. Thomas's Hospitals.
Dr. Haldin Davis: A Very Early Illustration of a Skin Disease.

Thursday, Feb. 17th.

SECTION OF DERMATOLOGY: at 5 P.M. (Cases at 4.30 P.M.)
Cases: The following will be shown by—
Dr. H. MacCormac: Darier's Disease (?).
Dr. J. L. Bunch: Boeck's Sarcoid.
Other cases will be shown.

Friday, Feb. 18th.

SECTION OF OTOLOGY: at 5 P.M. (Cases at 4.45 P.M.)
Paper:
Dr. A. R. Friel: Zinc Ionisation and Electrolysis in the Treatment of Chronic Otorrhœa.
Cases will be shown by—
Mr. Mollison, Dr. Hutchison, Mr. Cleminson, and Mr. Norman Patterson.

SECTION OF ELECTRO-THERAPEUTICS: at 8.30 P.M.
Social Evening:
Members are invited to communicate with the Hon. Secretary (Dr. Melville, 9, *Chandos-street*) if they wish to show skiagrams of unusual affections of bone, or to bring such for diagnosis.

There will be an informal discussion on questions of interest affecting the Section.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Feb. 14th.—8.30 P.M., Discussion on Skin Disease, its Relation to Internal Disorder, opened by Sir James Galloway. Followed by Dr. A. Hall, Dr E. W. Goodall, Dr. A. Whitfield, Dr. E. G. Little, Dr. H. W. Barber, Dr. H. G. Adamson, Dr. J. M. H. McLeod, Dr. H. MacCormac, Dr. R. Hutchinson.

LONDON DERMATOLOGICAL SOCIETY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Feb. 15th.—4.30 P.M., Pathological Specimens. Cases sent for Consultation. Clinical Cases will be shown by Dr. J. L. Bunch, Dr. W. Griffith, Dr. E. J. D. Mitchell, Dr. S. R. Kapoor, Dr. W. K. Sibley, Dr. Eva White.

HUNTERIAN SOCIETY, at Sion College, Embankment, E.C.
WEDNESDAY, Feb. 16th.—9 P.M., Annual Oration:—Dr. H. H. Bashford: The Ideal Element in Medicine.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.
FRIDAY, Feb 18th.—7.45 P.M., Microscopic Specimens. 8.15 P.M., Papers:—Lt.-Col. J. O. Kennedy, R.A.M.C.: Some Observations on the Pathology of Relapsing Fever.—Dr. A. M. Cole: Five Cases of Sasciolopsis Infection, with Remarks.—Dr. A. Connall: Results of the Examination of Chrysops for Filaria in West Africa.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

MONDAY, Feb. 14th.—4 P.M., Hunterian Oration: Sir Charters J. Symonds.

WEDNESDAY.—5 P.M., Arris and Gale Lecture:—Dr. F. W. Edridge-Green: The Cause and Prevention of Myopia.

FRIDAY.—5 P.M., Arris and Gale Lecture:—Mr. J. F. Dobson: *The Function of the Kidneys in Enlargement of the Prostate Gland.*

UNIVERSITY OF LONDON, at the Rooms of the Royal Society of Medicine, 1, Wimpole-street, W.

Advanced Lecture in Medicine to Students of the University and others interested in the subject.

WEDNESDAY, Feb. 16th.—5 P.M., Dr. J. Boeke: The Innervation *of Striped Muscle Fibres and Langley's Receptive Substance.*

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, Feb. 14th.—2 P.M., Dr. Simson: Diseases of Women. 2.30 P.M., Mr. Baldwin: Visit to Surgical Wards. Dr. A. Saunders: Demonstration of Medical Cases (Medical Wards). 5 P.M., Lecture:—Mr. B. Harman: Intestinal Sepsis and Irido-cyclitis.

TUESDAY.—12 noon, Mr. T. Gray: Demonstration of Fractures. 2 P.M., Dr. Burnford: Medical Out-patients. 2.30 P.M., Mr. Addison: Visit to Surgical Wards. 5 P.M., Lecture:—Dr. Morton: X Ray Appearances of Some Diseases of the Stomach.

WEDNESDAY.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 2 P.M., Mr. Gibb: Eye Department. Mr. D. Armour: Demonstration of Surgical Cases (Surgical Wards). 5 P.M., Lecture:—Dr. Owen: Some Principles of Treatment in *Gastric Disorders.*

THURSDAY.—2 P.M., Dr. S. Pinchin: Medical Out-patients. Mr. D. Armour: Operations. Mr. Baldwin: Orthopædic Department. 5 P.M., Special Lecture:—Dr. I. Bruce: X Ray Diagnosis of Diseases of Joints (open to all medical practitioners).

FRIDAY.—10 A.M., Dr. McDougal: Electrical Department. 2 P.M., Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Skin Department. 5 P.M., Lecture:—Mr. Baldwin: Appendicitis.

SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Dr. Owen. Medical Out-patients.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Feb. 14th.—10 A.M., Mr. W. E. Tanner: Surgical Out-patients. 2 P.M., Dr. A. J. Whiting: Medical In-patients. 2.30 P.M., Mr. E. Gillespie: *Surgical Operations.* Mr. J. B. Banister: Gynæcological Out-patients. Dr. J. B. Alexander: Medical Out-patients. 4.30 P.M., Clinical Demonstration:—Mr. W. E. Tanner: Selected Surgical Cases. 6 P.M., Dr. F. L. Provis and Mr. T. H. C. Benians: Venereal Department.

TUESDAY.—9.45 A.M., Lieut.-Col. R. H. Elliot and Mr. N. Fleming: Eye Operations. 2.30 P.M., Mr. H. W. Carson: Surgical Operations. Mr. C. H. Hayton: Diseases of the Throat, Nose, and Ear. Dr. Metcalfe: X Ray Department. 4.30 P.M., Clinical Demonstration:—Dr. A. J. Whiting: Innocent Irregularities of the Heart. 5.30 P.M., Dr. C. E. Sundell: Children In-patients.

WEDNESDAY.—2 P.M., Mr. C. H. Hayton: Throat Operations. 2.30 P.M., Dr. W. J. Oliver: Skin Department. Dr. J. B. Alexander: Medical Out-patients. 3 P.M., Clinical Demonstration:—Dr. W. J. Oliver: Cases of Skin Disease. 5 P.M., Dr. Provis and Mr. Benians: Venereal Department.

THURSDAY.—2.30 P.M., Mr. N. Fleming: Eye Out-patients. Dr. A. J. Whiting: Medical Out-patients. Mr. H. W. Carson: Surgical Out-patients. Mr. J. B. Banister: Gynæcological Operations. Dr. J. Metcalfe: X Ray Department. 3 P.M., Clinical Demonstration:—Mr. H. W. Carson: Selected Surgical Cases.

FRIDAY.—2 P.M., Mr. Howell Evans: Surgical Operations. 2.30 P.M., Dr. C. E. Sundell: Children Out-patients. Mr. E. Gillespie: Surgical Out-patients. 3 P.M., Clinical Demonstration:—Mr. T. H. C. Benians: Diagnostic Methods of Clinical Pathology. 5 P.M., Dr. Provis and Mr. Benians: Venereal Department.

SATURDAY.—3 P.M., Mr. H. W. Carson: Surgical In-patients.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, W.C. 1.

MEDICAL SCHOOL.

MONDAY, Feb. 14th.—2 P.M., Out-patient Clinic: Dr. Collier. 3.30 P.M., Lecture:—Dr. Kinnier Wilson: Old and New Afferent Systems.

TUESDAY, Feb. 15th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Dr. Collier: Acute Polyneuritis.

THURSDAY, Feb. 17th.—2 P.M., Out-patient Clinic: Dr. Farquhar Buzzard. 3.30 P.M., Dr. Taylor. Lecture Room. Demonstra*tion of Cases.*

FRIDAY, Feb. 18th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Dr. Tooth. Lecture Room. Demonstration of Cases.

Fee for Post-Graduate Course £7 7*s.* C. M. HINDS HOWELL, Dean.

KING'S COLLEGE (DEPARTMENT OF SCIENCE), Strand.

Nine Lectures on Problems of Modern Science.

WEDNESDAY, Feb. 16th.—5.15 P.M., Lecture (V.):—Prof. W. T. Gordon: Geology.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Feb. 17th.—4 P.M., Lecture:—Dr. Cockayne: Myopathy.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W.

MONDAY, Feb. 14th.—5.30 P.M., Post-Graduate Lecture:—Dr. R. Wells: Irregular Heart Action.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.

Post-Graduate Course on Infant and Child Welfare.

TUESDAY, Feb. 15th.—10.30 A.M., Dr. E. Pritchard: Practical Demonstrations on the Management and Feeding of Infants and Young Children—Demonstration IX., Treatment of Minor Ailments.

THURSDAY.—3 P.M., Demonstration X., The Training of the *Motor Functions of the Digestive System.*

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

TUESDAY, Feb. 15th.—4.30 P.M., Lecture:—Dr. F. E. Tylecote: Lumbar Puncture and its Value in Diagnosis.

SALFORD ROYAL HOSPITAL AND ANCOATS HOSPITAL POST-GRADUATE DEMONSTRATIONS, at the two Hospitals alternately.

THURSDAY, Feb. 17th.—4.30 P.M., Mr. Smalley: Importance of Early Recognition and Treatment of Nasal Sinusitis. (At Salford Royal Hospital.)

ST. MARY'S HOSPITALS, MANCHESTER, POST-GRADUATE LECTURE, at Whitworth-street West Branch.

FRIDAY, Feb. 18th.—4.30 P.M., Mr. Morley: Acute Intestinal Obstruction in Infants.

MANCHESTER BABIES' HOSPITAL.

Post-Graduate Lectures and Demonstrations in the Onward Buildings, Deansgate, or at the Hospital, Slade-lane.

SATURDAY, Feb. 19th.—3.30 P.M., Dr. Renshaw: Congenital Syphilis. (At Onward Buildings.)

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.

THURSDAY, Feb. 17th.—4.30 P.M., Dr. N. C. Haring: Some Chronic Lung Diseases.

Communications, Letters, &c., to the Editor have been received from—

A.—*Answers*, Lond., Editor of; Association of British Chemical Manufacturers, Lond., General Manager of; Mr. R. J. Albery, Lond.; Dr. D. K. Adams, Glasgow.

B.—Dr. H. H. Bashford, Lond.; Mr. A. H. Burgess, Manchester; Mr. J. Berry, Lond.; Dr. J. B. Banister, Lond.; Dr. A. M. Barford, Chichester; British Dental Association, Lond.; Mr. G. Bethell, Lond.; British Thomson-Houston Co., Lond.; Mr. H. A. W. Broadbridge, Lond.; Mr. H. W. Bayly, Lond.; Dr. W. A. Bond, Lond.; Board of Trade, Lond.; Bristol, Medical Officer of Health of; Dr. V. Borland, Lond.; Dr. G. Blacker, Lond.

C.—Chelsea Hospital for Women, Lond.; Col. S. L. Cummins, Lond.; Dr. F. G. Crookshank, Lond.; Dr. C. Coombs, Bristol; Mr. G. Chubb, Lond.; Messrs. J. and A. Churchill, Lond.; Dr. E. M. Callender, Lond.; Sir F. Colyer, Lond.; Child-Study Society, Lond.; Chemical Catalog Co., New York; Cox-Cavendish Electrical Co., Lond.

D.—*Dr. H. B. Day, Cairo;* Dr. J. P. Davin, New York; Dr. O. C. M. Davis, Bristol; Dr. A. A. Dear, Lond.; Dr. S. E. Denyer, Hull; Prof. N. A. Dobrovolskaya, Alexandria; Dr. E. Drybrough-Smith, Shebbear.

E.—Mr. G. Evans, Lond.; Dr. J. I. Enright, Lond.; Dr. A. Erian, Cairo.

F.—Dr. A. G. T. Fisher, Purley.

G.—Great Northern Central Hospital, Lond., Sec. of; Mr. A. Green, Lond.; Grosvenor Galleries, Lond.; Dr. A. G. Gibson, Oxford; Prof. E. A. Gardner, Lond.; Sir James Galloway, Lond.; Dr. C. Gouldesbrough, Lond.

H.—Dr. M. E. Harding, Lond.; Dr. S. Herbert, Manchester; Dr. L. Hess, Vienna; Dr. A. F. Hurst, Windsor Forest; Mr. O. Holden, Dewsbury; Hospital Library and Service Bureau, Chicago; Hôpital Français de Manchester; Harrogate Corporation, General Manager of; Mr. A. T. Hutchinson, Gateshead-on-Tyne.

I.—Illuminating Engineering Society, Lond.

K.—Dr. A. F. S. Kent, Manchester.

L.—Dr. R. B. Low, Lond.; Liverpool Medical Institution; Dr. H. A. Ledlard, Carlisle; London Municipal Society, Lond.

M.—Ministry of Health, Lond.; Sir J. Mackenzie, St. Andrews; Dr. P. Manson-Bahr, Lond.; Dr. A. Murdoch, Bexhill-on-Sea; Dr. H. Mackenzie, Lond.; Dr. J. Moore, Paris; Medico-Legal Society, Lond.; Dr. R. Miller, Lond.; Mr. W. St. C. McClure, Manchester; Lt.-Col. R. McCarrison, I.M.S., Oxford.

N.—National Association for the Prevention of Tuberculosis, Lond., Sec. of; *Nature*, Lond., Editor of.

O.—Olympic Press, Lond.; Dr. T. Orr, Lond.; Oxford Ophthalmological Congress, Hon. Sec. of; Messrs. Oliver and Boyd, Edinburgh.

P.—Mr. H. Platt, Manchester; Pharmaceutical Society of Great Britain, Sec. of; Dr. W. A. Potts, Edgbaston.

R.—Royal Society, Lond.; Mr. C. A. S. Ridout, Southampton; Prof. S. Russ, Lond.; Dr. J. A. Ryle, Lond.; Dr. W. C. Rivers, Worsboro' Dale; *Dr. G. P. N.* Richardson, Wembley; Dr. R. M. Riggall, Lond.; Royal Institution of Great Britain, Lond.; Royal College of Veterinary Surgeons, Lond., Sec. of; *Royal* Society of Arts, Lond.; Mr. H. C. Richards, Lond.; Dr. H. Rayner, Lond.; Dr. H. Roberts, Lond.; *Dr. J. Rollier, Leysin;* Royal College of Physicians of Edinburgh; Rontgen Society, Lond.; Dr. M. B. Ray, Lond.

S.—St. Mary's Hospitals, Manchester, Sec. of; Mr. T. Shaft, Lond.; Dr. J. Sorley, Lond.; St. Thomas's Hospital Medical School, Medical Sec. of; Miss D. C. Sloggett, Lond.; Société des Sciences Médicales et Biologiques de Montpellier; Dr. R. H. Steen, Dartford; Dr. L. Sewell, Manchester; Prof. W. Stirling, Manchester; Mr. A. H. Southam, Manchester.

T.—Dr. H. G. Terry, Bath; Dr. F. W. Twort, Lond.; Dr. D. Thomson, Lond.

U.—University of Sheffield, Registrar of.

V.—Incorporated Vermin Repression Society, Lond.; Mr. M. Vlasto, Lond.

W.—Dr. J. Watt, Sutton; West London Hospital Post-Graduate College; Mr. J. W. T. Walker, Lond.; Mr. C. H. Whiteford, Plymouth; Dr. L. Weigert, Amsterdam, New York; Dr. A. P. Walters, Latheron East.

X.—X Rays, Ltd., Lond.

Communications relating to the editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.

Notes, Short Comments, and Answers to Correspondents.

THE WORK OF THE METROPOLITAN ASYLUMS BOARD FOR THE MENTALLY DEFECTIVE.[1]

BY THE VERY REV. CANON SPRANKLING,
CHAIRMAN, METROPOLITAN ASYLUMS BOARD.

THE Metropolitan Asylums Board were required by an Order of the Local Government Board dated April 2nd, 1897, to provide accommodation for Poor-law children "who by reason of defect of intellect...... cannot properly be trained in association with children in ordinary schools." It is of some historical interest to trace briefly the steps taken by the Board to deal with these children.

The Children's Committee (the Central Committee appointed by the Board to deal with cases under the Order of 1897) decided that it would be well to proceed experimentally by providing accommodation in ordinary dwelling houses scattered over the London area, each in touch with one of the special schools provided by the London County Council; at one time there were actually five such homes in existence, the first having been opened in January, 1899. The object was to provide the children with something as nearly akin as possible to the home life of a normal London child, and a house-mother was appointed for each home. The children attended the local special schools, and in some cases considerable improvement was effected. In 1906 provision was found necessary for continuance of control over the children after they reached the age of 16. The Bridge Training Home at Witham in Essex was opened as a working colony for male patients, while High Wood School, Brentwood, which is an institution built on the cottage home principle, had one of the groups of cottages, containing 60 beds, allocated for the accommodation of the elder feeble-minded girls. In 1911, however, the Board referred the whole question of systematic reclassification and treatment of the mentally defective cases, which fell within their sphere of work, to a special committee, who came to the conclusion that the experiment now under discussion had, in spite of all efforts, met with little success. The Committee formed the view that the permanent retention of the majority of the feeble-minded children was necessary in the interests of themselves and of the community, and that by this very fact the desired results could be obtained with as great efficiency in large colonies as in small scattered homes, and much more economically. Recommendations were submitted which led to the placing of all mentally defective persons in the Board's institutions, including the children already referred to (who were not certified under the Lunacy Acts) under the care of the Board's Asylums Committee.

Provision of Certified Accommodation for the Mentally Defective.

The passing of the Mental Deficiency Act, 1913, as it did not place on the Board any duties in regard to the provision of accommodation for mental defectives, did not immediately alter the policy which had been pursued in the past. In May, 1914, however, the Board were approached by the local authority for the metropolis (the London County Council) with a view to their providing certified accommodation under Section 37 of the Act for certain classes of the mentally defective. While the matter was under consideration war broke out; the situation became so altered that the Board felt themselves unable to enter into an agreement such as was suggested. Two years later, however, an opportunity arose for the resumption of negotiations at the instance of the Board of Control and of the London County Council. Ultimately it was arranged that five of the Board's institutions should be certified for the treatment of cases under the Act of 1913, the whole to form a group known as the Metropolitan Asylums Board Certified Institution. Darenth Training Colony and Bridge Training Home were to receive improvable juveniles, Leavesden and Caterham Mental Hospitals were to receive unimprovable adults from 16 years and upwards, and the Fountain Mental Hospital to receive idiot children. The Board made it perfectly clear that they could only undertake this work on special conditions. For instance, it was essential that they should have the absolute right to accept or reject any cases so that in no way should their normal work be jeopardised, and that, further, owing to the existence in their institutions side by side of two classes of certified cases, it would be impossible to follow all the prescribed forms required under the regulations laid down by the Board of Control. There were other stipulations such as a provision that patients might be transferred by the Board from one section of the certified institution to another without the consent of the Board of Control, and also that patients should be treated in precisely the same way as the Poor-law cases received under the Lunacy Acts. The general idea was that the Board might be able to accept something up to 500 mental defectives from the London County Council area and from the Home Counties, with perhaps a few from provincial areas. In 1918, all arrangements having been made, the first cases were admitted.

To-day the Board have about 1000 mental defectives under their care, having thus exceeded by 100 per cent. the utmost promise they were able to hold out in 1917, but the available accommodation and the demand for it are now more or less equalised. Circumstances have rendered it necessary or desirable to depart in a measure from the original arrangements as to the classes of cases to be received at the different institutions. So far as Darenth is concerned, there has been, indeed, no change whatever, cases sent there being all of the trainable class, but it has been found that there are a goodly number of lower-grade cases who, while not prima facie likely to benefit by the special form of instruction given at Darenth, may yet be considered as a separate class from the unimprovable adults it was originally intended should be sent to Leavesden and Caterham.

So impressed were the Board in 1919 with the pressure on the accommodation provided at the Fountain for the most deeply defective cases (it being understood that the Fountain was, in fact, the only institution of its class in the country) that they proceeded to make arrangements for the provision of accommodation for unimprovable children of both sexes at Leavesden Mental Hospital, in upper wards where only the less robust and physically vigorous could be accommodated; thus this provision only slightly relieved the demands on the Fountain.

Training of Patients in Simple Occupations.

Early this year, however, the congestion had again become acute in certain directions; medical superintendents of the various institutions were consulted and the opinion was expressed that there might be found at Darenth a number of cases which after reasonable trial were not "trainable" in the sense given to that word at Darenth, but still were not "unimprovable" in the sense applied to that word at Leavesden and Caterham. It was decided to examine the records of the male patients at Darenth with a view to transferring all those who fell into this category to Caterham, there to be segregated as far as possible and employed in simple trades such as wood-cutting, land work, laundry work, &c. The idea was that if these cases were found to be susceptible of a higher degree of training in any particular industry, steps would be taken to provide facilities for such training at Caterham. Further, the advantage of transferring cases which were not likely to benefit to the fullest extent from the specialised accommodation at Darenth was obvious, seeing that at that time there were about 180 cases of mental defectives awaiting admission to Darenth all classed as "trainable." Thus, the first considerable change in the original arrangements for the reception of mental defectives was made, a change which seems to mark a step forward in the classification of these cases. To-day a number of the patients thus transferred to Caterham from Darenth are engaged in industries (such as carpentry) with what is looked upon by the medical superintendent as a remarkable degree of success. The system adopted has been to start classes of three or four pupils in a very small way without any idea of "forcing the pace" or aiming at output. The patients are encouraged to play at their work in the first place. When they become interested and begin to understand how to use, for instance, a hammer and a nail, they are allowed to make some simple object which will be of use and which they know will be of use. There are classes also in mat-making and tailoring, but it will be understood that the whole scheme is, at the present time, in embryo, and that it is too soon to suggest any very reliable inferences as to its future possibilities. I should say in passing, however, that a similar scheme is being adopted on the female side at Caterham among the young women, who are being trained to do more than had hitherto been done there in the way of needlework, rug-making, and so on. Results of these experiments are being carefully watched. The next step was to make further use of the vacant male adult blocks at Caterham by transferring thither the elder boys at the Fountain who had reached the age of about 9 years, and were found more suitable for male than for female nursing. A block was therefore prepared at Caterham and all the boys were transferred last spring.

An interesting feature of this change was provided by the statement made to the Board by the responsible medical officers that it was hard to say that any child was quite "unimprovable," and that it was in fact more correct to say that nearly all the cases at the Fountain hitherto considered hopeless were trainable to a greater or lesser degree. It was decided in future to reserve the Fountain for unimprovable boys under the age of 9, for unimprovable girls up to the age of 16, and for children of both sexes whether stated to be "trainable" or not up to 7 years. The reason for this change was that it was felt that there was need for a testing institution at which children could be observed so that their capacity might be more or less accurately measured before they were sent to Darenth. Previous to this arrangement all children of whatever age who were stated to be "trainable" had been admitted direct to Darenth, but it was found that so many were not really "trainable" in the Darenth sense that the accommodation there became as it were choked with cases which were not suitable, and which could not benefit by the specialised arrangements provided. On the other hand, the children admitted to the Fountain as unimprovable had, in some cases at any rate, been found to be so far superior to the original estimate of their capacity as to be suited for Darenth. At present, therefore, all children under 7 are admitted to the Fountain, where they are carefully watched, and after a longer or shorter period the medical superintendent of that institution consults the medical superintendent of Darenth with a view to the admission to the latter colony of all those whom experience has shown are "trainable."

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[1] Being the substance of a paper read on Nov. 26th, 1920, during the Conference on Mental Deficiency and Special Schools at Church House, Westminster.

Christmas Toys for Sick Children.

This procedure of selection is, as a matter of fact, merely carrying into the working of the Mental Deficiency Act the scheme which has worked well in connexion with Lunacy Act cases. So far no use was made of Bridge Training Home under the Mental Deficiency Act. Cases there are all uncertified. Apart from school training at Darenth a very large number of industries are carried on; and the Metropolitan Asylums Board actually relies to a considerable extent for the toys provided every Christmas for the children in their hospitals upon the workshops at Darenth which make these toys from waste materials of all kinds. Leavesden Mental Hospital has been as far as possible turned into an infirmary for the harmless imbecile classes and to a large extent its inmates are Lunacy Act cases. The mentally defective children housed there are practically all paralysed or helpless, and, while everything possible is done for them, their infirmities are so many and so overwhelming that it is hardly possible to give them any instruction or training. But these cases are not to be taken as disproving the view that few cases can truly be spoken of as "unimprovable."

At the Fountain Mental Hospital the very lowest grade of idiot children is provided for, the common types admitted being the helpless, paralysed, and epileptic. It became evident soon after the hospital was opened that as many of these children were trained to feed and dress themselves, and in other ways become clean and even tidy and useful, some higher form of training might be attempted. To this end a school was started in 1917, a suitable teacher-nurse being selected to take charge of the children. She started by teaching them how to play, and gradually advanced them through elementary kindergarten work, musical drill, and singing with action songs and dancing, to doll-making, mat-making, and the dressing of dolls. This simple instruction may not appear to mean much, but in practice it is found to be economical in many ways, and, above all, the lives of these unfortunate children are made much brighter and happier. Every care is taken to select suitable nurses who are specially interested in children, and over them are fully trained sisters who work in conjunction with the matron and her assistant. After the children have been to school for a certain period they are subjected to special tests periodically by the medical officers with a view to selecting the best for further intensive training at Darenth.

No one who sees the children as they are on admission can fail to be struck with the remarkable change achieved in most instances after a comparatively short period. The patience and care lavished on these afflicted atoms can hardly be appreciated except by those who watch the work of the institution constantly.

I need scarcely say, in conclusion, that the Board are well aware of the splendid work done under Section 37 of the Mental Deficiency Act, by boards of guardians and combinations of boards of guardians at Monyhull Colony and elsewhere.

EXPERIMENTAL GIGANTISM BY FEEDING WITH PITUITARY GLAND.

WHEN growth continues beyond the normal size of the species the condition is known as gigantism. Clinically, evidence points to the conclusion that at least one form of gigantism is due to over-function of the pituitary gland. Attempts, however, to produce gigantism by feeding with pituitary have not hitherto been successful. E. Uhlenhuth, Rockefeller Institute, has continued his researches and has now succeeded in producing experimental gigantism. His experiments were made on salamanders, and the experiments showed that it is the anterior lobe alone of the gland which possesses the ability of maintaining growth after the normal size of the species is reached. The function of the posterior lobe is still unknown, since it is the intermediate part which supplies the extracts which excite unstriated muscle, produce diuresis, and raise blood pressure. The effect of the anterior lobe diet depends on the developmental stage of the salamander. Larvæ do not respond to it; the growth-promoting effect of the gland commences only after metamorphosis has taken place. Specimens of *Amblyostoma opacum* have been kept and measured for several years. After the first year the animals grow very little. The largest control animal in one group measured 115 mm., while the largest hypophysis-fed animal measured 138 mm. In another example the normal typical animal, 3 years old, measured 111·5 mm., and the corresponding control 131 mm. at 2 years of age. The feeding was begun after the animal was 1 year old. Similar results were obtained on the species *A. tigrinum*. Every single animal of this species fed on the anterior lobe outgrew all the controls and other normal animals raised in the laboratory. If the animals were fed on the posterior lobe growth was not only not stimulated, but even greatly retarded. Feeding with the anterior lobe causes: (1) a very marked acceleration of growth; and (2) a continuation of growth beyond the specific size of the species, resulting thus in hypophysis or pituitary gigantism. It is impossible to renew growth by feeding with large quantities of normal food after growth has practically come to a standstill. The continuation of growth beyond the normal size of the species is not due to an increased amount of food, and it would seem that at a stage where growth ceases or is greatly diminished under normal conditions cell proliferation can be actually enforced by the specific growth-promoting substance contained in the anterior lobe of the hypophysis.

THE BOLSHEVIST UNIVERSITY OF SARATOFF.

AT Saratoff, on the Volga, has been established the first free scholastic and socialistic University, of the ordinances of which the Italian journal, *Patologica* (xiii., 291, Jan. 1st, 1921, 3) reproduces the salient points. The aims of the University are apparently (1) to give the proletariat a communistic conception of the world based on rigorously scientific data; (2) to initiate the proletariat at the earliest possible moment into all the most recent discoveries of science by inducing it to seek ever new scientific paths; (3) to explain to the masses the intimate connexion between the so-called exact sciences and practical life; (4) to excite in them not only a burning zeal for knowledge but for action also; (5) to direct them towards creative activity on a scientific basis; (6) to guide, train, and attract towards activity creative of social reconstruction the more capable proletarian elements; (7) to create institutions qualified to develop in the citizens aspirations towards self-culture.

Systematic and special lectures have been organised, together with work in laboratories, scientific departments, libraries and museums, and scientific excursions will be undertaken. All citizens of both sexes over 16 years of age who can read and write may attend the University, and the students are divided into groups in accordance with (*a*) the state of their preparatory work and mental development; (*b*) their predilection for one or other branch of science; (*c*) their reference to some particular psychological type as determined by the application of tests.

The syllabus of instruction comprises (1) the Universe (Cosmology), (2) Man (Anthropology), and (3) Human Society (Social Sciences). Since the aim of the University is not only the development of the intellect but also the development of character, the fundamental principle of the socialistic University is the self-education of the students. To this end the University has organised a series of lectures on the development of the will power by auto-analysis (systematic self-observation) and by some degree of practical instruction applied by the student to himself. To make the teaching more homogeneous and to link up all the subjects taught, a chair of Methodology (the first in an institution of this type) has been created for the purpose of unifying the separate lectures and making them conform to the fundamental programme of the University—the attainment of a vast communistic interpretation of the Universe. The course will extend over two or three years and the lectures will be given during three hours on three or five evenings every week. In association with the University are libraries, laboratories, museums, excursion and information departments and means for liaison with other similar organisations. When every citizen possesses not only general knowledge but also a scientific grounding, is able to think and speak, to make scientific generalisations and researches, to think for himself and to illumine scientific concepts with the facts of daily life, the world should be a very different place.

The Hunterian Oration

ON

ASTLEY COOPER AND HUNTERIAN PRINCIPLES.

Delivered before the Royal College of Surgeons of England on Feb. 14th, 1921, the Anniversary of Hunter's Birth,

BY SIR CHARTERS J. SYMONDS, K.B.E., C.B.,
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WHEN your predecessor, Sir, in the chair invited me to deliver this oration—part of the Hunterian Festival—I felt misgivings as to my capacity to deal adequately with a subject which had occupied the attention of so many distinguished men. It seemed impossible to say anything new about Hunter, and, moreover, I had in 1892 dealt with his work in the annual oration before the Hunterian Society. It appeared to me, however, that this was an occasion when one might endeavour to trace the influence on others of one who by his sole effort had transformed professional outlook and teaching; to see how far his immediate pupils had carried forward his exploration into the untrodden fields of physiology and pathology. Let me first pay a tribute to the memory of the great biologist and surgeon whose birth we commemorate to-day.

HUNTER AS LECTURER.

When Hunter began his lectures in 1774, at the age of 46, it became obvious that a new era had arisen, a new conception of the processes of life, and of these as modified by disease, was being enunciated. These lectures he continued for 20 years—he died in 1793—and his doctrines gradually transformed the teaching in the schools, and thence in the profession, at home and abroad. For the first time surgery was taught as a science. The processes of healing and restoration of injured and diseased parts were shown to depend on the operation of broad and constant laws. He showed, moreover, that there is one pathology for medicine and for surgery; that medicine in its widest sense is one and indivisible, and must be learned as a whole. The physician must understand surgery, and the surgeon the medical aspect of disease. He was not an attractive lecturer, and the terms he employed being new to the older surgeons the attendance was small. He attracted, however, the younger apprentices, who, recognising the scientific value of the teaching, were not deterred by the obscurity of his style. Moreover, they found it worth while to attend year by year, for the new information forthcoming as the result of fresh experience and experiment sometimes reversed a previous conclusion.

Among the first pupils may be mentioned Abernethy, whose philosophic mind was well able to grasp Hunter's reasoning, and who became the chief exponent of his physiological discoveries; Astley Cooper, Blizzard, Chevalier, Anthony Carlisle, Everard Home, Henry Earle—all men who have left their mark on surgery and became teachers in the schools.

In the early orations there are many tributes to the scientific value of the teaching, and its effect in elevating the position of surgery.

Cline attended the first course when just out of his apprenticeship. He writes: "Having heard Mr. Hunter's lectures on the subject of disease, I found them so far superior to everything I had conceived or heard before, that there seemed no comparison between the great mind of the man who delivered them and all who had gone before him." Astley Cooper attended the lectures for several years, and writes: "His vast museum is a proof of what industry can accomplish, for it contains matter for seven years of investigation." It took Clift ten years to arrange the collection, and yet there was no confusion; every specimen was labelled and set in its proper order, for Hunter seemed to realise that it must be for others to build the structure which he had designed. He knew the malady from which he suffered—angina—and said that his life was at the mercy of any rascal who would make him angry. Yet he never relaxed his efforts. He felt there was a vast amount to be done and few to do it, and he therefore took every opportunity of communicating his observations to others, not by writing, but by word of mouth and of pointing out the path of progress.

Finally, let me quote the words of the greatest orator of our own time, Paget:—

> "The influence of such men as Hunter reaches far beyond the time and space of their conscious activity; their true thoughts live after them. Thus when we honour the memory of Hunter we honour not only that which is passed, but that which is still present—a still abiding power doing good."

It is now my object to trace in the career of one distinguished pupil—Astley Cooper—the influence of Hunter's teaching, and to show how the principles laid down were expanded and applied. It is becoming that I should choose a Guy's surgeon, for through Cheselden of St. Thomas's and Sharp of Guy's the Hunters derived their early instruction in surgery, and, moreover, we find in him perhaps the best exponent of the application of Hunter's teaching and one who did more than any other surgeon of the time to stimulate inquiry.

ASTLEY COOPER.

Time will not permit more than the briefest account of the long and busy life of this great teacher, who from the age of 17 till the year of his death at 74 never relaxed his investigations in anatomy, physiology, and surgery. He was endowed by nature with many fine qualities—courage, originality, a critical mind, power of concentration, a wise scepticism, and a lively imagination. He inherited splendid health, the value of which he fully recognised, and was blessed with a sense of humour, and a frank, open-hearted, generous nature. From his father, a clergyman, for those days of liberal thought and wide outside interests, he learnt the classics. His mother taught him history and grammar, and instilled into his mind religious principles, truthfulness, and a taste for literature; for she was an authoress of no mean repute. He was a high-sprited, attractive lad, fond of practical jokes, and showed none of the studious habits of his brothers who were sent to the university. The decision to apprentice him to surgery was made at the suggestion of his uncle and not from any predilection on the part of the nephew. The boy thus had a free youth, not over-taught nor overstrained, and had enjoyed the usual country sports. He had just completed his sixteenth year when he arrived in London in the month of August, 1784, to become apprentice to his uncle, Mr. Cooper, at that time surgeon to Guy's Hospital. He was a tall handsome youth, overflowing with high spirits, and soon became a favourite in the household of Mr. Cline, where he lived. It was usual for the apprentice to dwell with his master, but it was thought better for uncle and nephew not to be thus associated. Shortly afterwards, at his own request, he was transferred as apprentice to Mr. Cline, a circumstance having a far-reaching effect on his future, when the characters of the two surgeons are contrasted. His uncle was a fair anatomist, but as a surgeon followed traditional lines, and was too set to appreciate Hunter's teaching. He acknowledged that he could never understand him, and usually fell asleep at his lectures.

Cline, on the other hand, now about 38, was surgeon at St. Thomas's. He was a follower of Hunter, carried out his principles in his teaching, followed his experimental methods, was a good practical surgeon, and a man of sound judgment. He published hardly anything, and we know most about him from the frequent references of Astley Cooper. The democratic views held by Cline were inhibited by his apprentices. Such an influence was conducive in encouraging an opposition to tradition, and had its value, no doubt, in forming the mental outlook of Astley Cooper. Cline, no doubt, gauged the tendencies and character of the lad, who had exhibited no special leaning towards surgery, and set him a task in dissection which put him on his mettle. The performance was successful and the young student seems at once to have grasped the importance and interest of the subject, and from that time became an ardent anatomist. No doubt Cline, as he watched the progress of the dissection, which was made in his own house, pointed out the meaning of the structures exposed and directed the young observer to further inquiries.

He now threw all his energy into the study of anatomy and surgery, having the entry into both St. Thomas's and Guy's, which at that time were on opposite sides of the same street, the two hospitals being known as the Borough Schools. In scraps of autobiography he mentions his constant attendance at these hospitals and his habit of making notes of all important cases, and of taking every opportunity of attending post-mortems—then quite exceptional—and of examining the parts removed by operation. At Cline's suggestion, no doubt, he began attendance at Hunter's lectures, and had the priceless advantage of talking over the subject with his master and with other apprentices, one of whom interested him in botany and another in physiology.

In his indentures it was provided that he might spend a session in Edinburgh, and thither he went in October, 1787, in his twentieth year. He carried introductions to the leading professors, of whom, having heard much, he was anxious to see and hear. And he was not disappointed. Cooper was by this time a good anatomist, and, moreover, had spent much time at the bedside and had made careful notes of the cases, so that he was in a position to discuss both anatomical and surgical questions. From his frank and courteous manner, free from assertion, he was well received, and was made a member of the famous Royal Medical Society and offered the presidency should he return. He made good use of these seven months—spending his time in the infirmary, making notes of the cases, and attending lectures by Monro and others. "Being near them," he writes, "did not diminish the importance I had been led to attach to them from their public character." At Edinburgh he learned order and system, for which the teaching has always been famous, and under this guidance he planned a method of examining cases of disease which led to the surest and safest mode of forming a diagnosis, and this he pursued throughout his life to the advantage of his teaching and his practice.

Now comes his first appointment as a teacher of anatomy. He had proved himself an industrious and zealous student, and for some time had assisted his fellow students in their dissections. In 1789 he was appointed demonstrator of anatomy at St. Thomas's Hospital, and so well had he filled this important position that two years later he was asked by Mr. Cline to take a share in the lectures on anatomy and surgery. He was now 23 and not quite out of his seven years' apprenticeship; he had put into these seven years an immense amount of work and was well qualified to undertake the duties With Hunter he must have been on as familiar terms as any of his class, and had assisted him in the dissection of a whale. He had spent seven months at Edinburgh in close association with the eminent men at that renowned school. He had acquired at the Physical Society the art of speaking and discussion. When one adds to this record his personal charm, his fine presence, his interest in others, and his enthusiasm and love for his profession, one can hardly wonder at Cline's choice of an assistant.

Hitherto the subjects of anatomy and surgery were combined in the same lectures, a plan which Astley Cooper considered was injurious to both. After some hesitation Cline agreed to their separation, and in future the anatomical lecture was given daily from 2-3.30, and that on surgery in the evening at 8 o'clock. He now resolved to devote the next three years solely to [illegible]ing his knowledge of anatomy and surgery, [illegible] endeavouring to amplify his income derived [illegible] lectureship, by seeking private practice. This momentous resolve he was enabled to carry out, owing to his wife—whom he married this year—possessing a considerable fortune. Then followed a very happy domestic life, clouded, alas, in the early years, by the death of their only child while still an infant.

In his first course of lectures on surgery he followed the Hunterian model, but was disappointed to find that his class was inattentive, and suffered still greater disappointment when the number entering for the following year had decreased. Reflecting on the cause of this want of success, he realised that the men had been apprenticed for five years under surgeons taught on the old lines, and could not understand such terms as "action," "adhesion," "resolution" as applied to living processes. At these terms Hunter's own contemporaries had scoffed. He arrived at the quite sound conclusion that it was necessary for his pupils to have a considerable knowledge of surgery before they could comprehend the application of the principles enunciated by Hunter. He at once changed his method, and with immediate success. Cases of disease and injury were brought before the class, the cause and nature of the disease or accident described, with the appropriate treatment, and afterwards the physiological and pathological bearings applied and further illustrated by morbid specimens and experimental results. This method he pursued throughout his 40 years, enriching his lectures with cases from his own experience, and as this widened the lectures became more and more valuable. But never did he lose sight of the scientific side or relapse into the method of earlier lecturers, who dealt with cases only. Always inquiring by dissection, by study of disease in the living and the dead, and by experiment he was constantly improving his teaching. The lessons to be learnt from such vast inquiry were brought to the service of his class, and each year further light was thrown upon old subjects, and not from second-hand knowledge, but from the actual observation of the teacher himself.

So successful had his lectures become in his second course that when he began the third in 1793 the number of entries had doubled. In this year, at the age of 25, he was appointed lecturer at Surgeons' Hall. This was an annual appointment made by the Company of Surgeons. It was renewed for the next two years, when he resigned. The lectures were given on the bodies of executed "persons," to use his own terms, the theatre was constantly crowded and the applause excessive. With pardonable pride he writes: "I became a very popular lecturer." To further improve the education he very soon after his appointment promoted a society, confined to the pupils of the two hospitals, where cases of interest were shown and discussed. This existed for several years and was of particular value to the younger men, for the discussions at the Physical Society were beyond the range of any but the senior members of the schools. In a word, he devoted the first three years to the welfare of the students, and when one adds his personality, the buoyant spirits, the sense of humour, the hearty laughter, his readiness to help in their work, and his kindly advice and often assistance in more substantial ways, is it any wonder that he was sought after as a teacher and beloved as a friend. For nine years he continued these demonstrations and lectures, pursuing without intermission his studies in anatomy, comparative anatomy, and physiology. He had gradually obtained private practice, and by the end of the period his income from this source was said to amount to £1000.

In 1800 he was appointed surgeon to Guy's Hospital, thus securing the acme of his ambition at the age of 32. Objections were raised on account of his democratic associations, but the treasurer, Mr. Harrison, being satisfied that Astley Cooper had abandoned these political connexions, and convinced that he was the better candidate, allowed him to canvass the governors, with the result that he received their unanimous support. He was well equipped for the position, for though he could not have performed many operations, he had acquired from his dissections such a knowledge of anatomy as would enable him to work with accuracy and speed, and from his experiments on animals a refinement of technique not possessed by any of the other competitors.

[Sir Charters Symonds pointed out how the progress of surgery had depended largely upon the use of living animals, dwelling especially upon the present position of cerebral surgery, saying that further progress requires the same means of investigation, surrounded, of course, by due safeguards and in the hands only of competent persons.]

As a Teacher.

Astley Cooper was undoubtedly a great teacher and in this regard probably had a wider influence than anyone of his time. He no doubt possessed a natural gift for teaching, but this would not have gained him the position he obtained in this respect had it not been for his industry and his determination to enunciate no doctrine unless proved by observation and experiment. He was not a genius in any sense, and he himself attributed his success entirely to his industry. He had clear ideas how knowledge should be acquired, and constantly impressed upon his class the importance of personal observation. He recognised the evil effect of too much teaching and inculcated personal observation of the processes of nature.

> "If," he writes, "the method of observation be not pursued and too much attention be given to theory, they have (i.e., the students) afterwards, when they embark on their professional practice, not only everything to learn, but also to abandon those false impressions which hypothesis is sure to create. It is right, therefore, that those who are studying their profession should be aware that there is no short cut to knowledge."

He further lays it down that—

> "In collecting evidence upon any medical subject, there are but three sources from which we can hope to obtain it—from observation on the living subject, from examination of the dead, and from experiments on living animals. By the first we learn the history of disease, by the second its real nature so far as it can be certainly known, and by experiments on living animals we ascertain the processes resorted to by nature for restoring parts which have sustained injuries, and then apply that knowledge to accidents in man." "These," he adds, "are the only sources of true knowledge, and the deductions from these are the sole basis of legitimate theory."

MODERN MEDICAL EDUCATION.

This advice is as sound to-day as when it was uttered. Let us see how far we are conducting education by the method of observation. Our problems with regard to teaching to-day are even greater than in his time, and chiefly because of the immense increase in knowledge. Anatomy remains much the same—it is a finite subject; while physiology, and especially medicine—in its largest sense—have expanded enormously. Even anatomy as taught at present has become too heavy a burden for the average student. Has it not become too minute? Consider the enormous number of names to be memorised. Is it really necessary for anyone but a pure anatomist to know the exact attachment of all the muscles—for example, of those of the spine, the minute markings in the bones, to which side a bone of the carpus belongs, the whole account of, say, the lachrymal bone and to which side it belongs? Take the brain and central nervous system. Might not more than half be omitted? In all directions I would urge curtailment of the requirements in this subject for the pass examinations and a fuller study of the essential parts. Examiners may reply that they do not expect the candidate to know the whole of anatomy. But the candidate does not know this, and if he wishes to make sure of passing is obliged to cover the contents of a text-book. What is the result? He is not familiar with any part, and while he should be giving time to the larger and more important questions—to the coördination of muscles, to the bearing of anatomy on surgery—he is compelled to "get up," say, the otic ganglion and to be able to recognise any cross-section of the brain. Examiners complain that a candidate often fails to recognise an ordinary muscle, and I have seen one fail over the supinator longus. But is this his fault? I claim it is not, for he has little chance of making himself familiar with the structures in various attitudes because of the lack of opportunity. How can familiarity with anatomy be acquired when three men are engaged on one part? It is impossible to learn anatomy from pickles and wax models. But apart altogether from this deficiency in material I would urge a large reduction in the amount to be acquired. It would surely be possible to cut out a good third of anatomy without the omission of anything essential, or diminishing the instructive value of the subject. I appreciate the dislike of any anatomist to rest satisfied with less than the whole, but I fear he must be called upon to modify his desire.

Dearth of Subjects.

Observation in anatomy is being hampered by the lack of material. There were difficulties in obtaining material for dissection in Astley Cooper's time, and though since the Anatomy Act the supply has been regularised, the schools are again so short of material that the teaching is seriously imperilled. At the opening of the session last year, when the entries were particularly large, the supply was almost nil; urgent representations have been made to the Health Minister who now controls this question. In his reply he states that there is a sufficient supply of unclaimed bodies, and that pressure would be brought upon the guardians. It cannot be too strongly represented to the public at large that anatomical and surgical teaching is at present seriously interfered with. Operative surgery cannot be taught, and the practical examination in this subject for the final Fellowship has in consequence for the present been abandoned. Those in opposition to this essential requisite for instruction cannot be ignorant that it is impossible without dissection to educate medical practitioners, and more especially surgeons. They are acting against their own interests and the welfare of the community. Fresh legislation may be necessary, and this has been promised should the present effort be fruitless. I would here appeal to all who have any influence to press this matter upon the attention of those in authority.

Again, physiology has become such an enormous subject that it is impossible for any student adequately to cover the ground in the time at his disposal. The physiologists, many of whom are specialists in one branch—for you can only dig deeply in a narrow field—are the examiners. One can quite understand an examiner, an authority on, say, respiration, being dissatisfied with the answer of a student who has gained his knowledge from a text-book and sat under a lecturer whose chief interest is in the nervous system, and obtained most of his practical instruction from demonstrators. The time has come, indeed has long come, when some definite agreement should be arrived at between the teachers and the examining board as to what limit should be set for the pass examination in both subjects. Are not the rejections in these two subjects excessive? And yet the men, as a rule, are attentive, do their best, read the text-books, and yet fail. Why is this? Not, I believe, because the students are idle or lacking in ordinary ability, but because of the magnitude of the subjects. And yet when these men enter the wards the majority find no further difficulty and turn out capable practitioners. We can all as teachers in the medical schools recall really good men who have been rejected, in both these subjects and at the finals. In dealing with these matters we must always keep before us the capacity of the man with average abilities and the requirements for a pass examination. Far be it from me to advocate anything which would diminish the highest scientific culture to which we can attain; for this would be contrary to the teaching of Hunter and his pupils, who did so much to elevate the position of the medical profession.

But we have also to consider our responsibility to humanity and the call upon us to give our men such instruction in the limited time at our disposal as will not fail them at the bedside.

Evil Effect of the Prolonged Course in the Preliminary Sciences.

The effect, it seems to me, of the long course in the preliminary subjects on the mind of the average man is to check his powers of observation and fatigue his brain. He has to learn from a book the greater part of his work, to conduct chemical experiments according to plan, to dissect a worm guided by a diagram. In anatomy he must get up a host of things to be soon forgotten. What is the result? He comes to the wards after an all too brief holiday, often with the edge of his keenness dulled, with some of his best energy wasted, and without having had any opportunity of exercising independent inquiry or observation. The man with able brain and good physical power does not suffer materially, for he has found relaxation in outside reading, intellectual associations, and in exercise. In the majority both mind and body have suffered, the former from too narrow a course of study, which has cramped the powers and allowed no freedom of thought, the latter from too little recreation. The student inclined to take a by-path in physiology must forgo what would be a valuable exercise in order to keep to the syllabus, for the examination is always before him. In effect the student being a man is still under tutelage as a boy and, I submit, suffers injury. The only remedy is, I believe, first to reduce the curriculum to reasonable dimensions and then to bring the student early in contact with the sick and injured. Here he will learn to observe and have the opportunity of applying his knowledge as it is acquired. Consider, moreover, the immense value to younger men of having such a common ground for discussion, and of getting away from books and the routine of the class-room.

While by no means wishing to be understood as decrying the study of the collateral sciences—these handmaids of medicine—an acquaintance with which is indispensable, the question I would raise is this—Do they hold, as taught to-day, their due proportion to the later subjects? However well informed a man may be in the preliminary sciences, the final court of appeal is at the bedside. Here alone can he acquire familiarity with disease. The mental attitude of the patient must be studied, he must be considered as a man, as a sensitive being. The special reactions of each individual to his surroundings and to the disease from which he suffers must be noted. The student must learn to set a value on signs which are not to be estimated by any physical apparatus; in children to interpret the meaning of a cry, a restlessness, a refusal of food. Familiarity at the bedside can alone provide such knowledge. The student of medicine throughout his life must be sensible of the atmosphere which surrounds the sick-bed.

Is a due proportion of his time in hospital allotted to this most essential part of the curriculum? If not, then surely our method is at fault, and we are like to turn out men armed with all kinds of scientific method, but lacking that most necessary possession the power of interpreting the condition of the patient. When the time allotted to professional studies is considered, and when the range of these studies is taken into account, does there appear to be no danger, that, in some instances at least, that which is subordinate may in a great measure supersede that which is essential.

We constantly hear it said by examiners in the final subjects, who are at the same time teachers, that the candidate shows a lack of familiarity with bedside knowledge. He "has too much teaching," is "spoon-fed," his answers are drawn from the book and not from observation. If there be anything in this criticism, is it applicable to such a proportion of students as to compel attention to the mode of education? What proportion of the men preparing for any profession, given opportunity and a few directions, may be left to themselves, to extract the honey from the flowers? Is it more than 5 per cent.? Whatever it be, the majority require more direction, and if the result of our teaching in surgery is that 45 per cent. are rejected it does seem that, given average ability in the students, a defect exists, and must lie in the education, in the examination, or in some want of coördination between the two.

What characterises the man of ability is the power to observe, to coördinate, to contrast, and to draw deduc- [illegible] The average man possesses his share of these powers, but they have not been exercised, and our problem, especially in the clinical period, is to develop the power of observation. The only opportunity the student of medicine has for independent observation, it seems to me, is in the clinical field, and the sooner he is brought there the better.

Now let us look for a moment at the curriculum as a whole. The man who qualifies in five years must not fail at any examination. Of this period he has no more than 20 months for the study of the final subjects, and to accomplish the result he must hold appointments continuously. Only a very able man can get through in the time, and very few make the attempt. The majority take over six years, a good many seven years, to pass the Conjoint Board. Is there any wonder when one considers what he has to learn? What is to be done? It is clear to everyone that the curriculum is overloaded, and there are only two remedies: Reduce the subjects in the earlier studies or lengthen the curriculum. The latter no one desires, but there is, as far as I can gather, a general opinion that a drastic reform is needed in the time allotted to the earlier subjects, and more especially in their extent. I admit that, ideally, it looks well for the student to advance from the lower organic world to the higher, but I very much question whether it is not better for him to begin with human anatomy, leaving the study of the lower animals and vegetable world to be worked in with human physiology. Physiology is more important in the study of medicine than anatomy, and if curtailed in the earlier years is there any reason why it should not form part of the later period? I believe the student would gain immensely by such a change, for he would constantly be applying his knowledge—which would in this way be kept fresh—in the explanation of morbid processes. Moreover, he would be informed of the newer discoveries, for the knowledge of physiology is constantly advancing; it is not finite as is anatomy. We require, indeed, a new conception in the teaching of this important subject, and almost a new kind of teacher—one who has a practical knowledge of disease. There was a time when a physician lectured on physiology, and provided he did not carry on too long the plan was sound. The student was shown the application of the science. Is it not possible to get back to some such combination with physiology predominant? So one day we may see the physiologist at the bedside. Simplify anatomy in the early period, and in the later period let applied anatomy be taught by the professor in this subject.

Contrast for one moment the teaching in Astley Cooper's time—then the student came in contact with the sick and injured at once, and he learnt to apply his anatomical and physiological knowledge, and, above all, his powers of observation were being exercised. Have we improved in this? Personally, I am convinced that the sooner the student is brought into contact with the sick the better. It is satisfactory to see that in Birmingham the first-year men are shown examples of disease and injury, and that each year the time allotted in this way is increased. I hear that in the physiological lectures at one school in London patients are introduced to illustrate the effects of disease, a member of the general staff being associated with the lecturer on physiology. Under the unit system at one hospital the first-year men, I am informed, help in the out-patient work. It is a return to the days of Astley Cooper—from which we may extract something that may be useful to-day. My opinion is that we should reduce the time spent on the preliminary sciences, introduce clinical opportunities from the very first, and secure three years out of the five for the final courses.

Astley Cooper as Surgeon.

From the investigator and teacher let us pass to the consideration of the surgeon. As a surgeon Astley Cooper's name will always be associated with the ligature of arteries, for he it was who first put a ligature on the carotid; he was one of the earliest to tie the external iliac, and the only surgeon of his time to ligature the aorta. From his earliest days as an apprentice, and all through his life, he carried on experiments of all kinds, and to him was largely due the demonstration of anastomotic circulation. Hunter had ligatured the femoral for the cure of popliteal aneurysm in 1785, when Astley Cooper was in the first year of his apprenticeship to Cline. No doubt master and pupil talked over this revolution in surgery which has saved so many lives, and saw the application of the principle to other situations. During the years that followed he tied all the main vessels in dogs and other animals to prove the truth of the anastomotic circulation. Both carotids were held to be essential to the integrity of the brain in man and animals. The fallacy was soon dismissed as far as dogs were concerned, for he tied both vessels simply and simultaneously, without ill-effects, and later combined ligature of both carotids with double ligature of the vertebrals. This was generally fatal, but one dog at any rate survived. The performance of such a feat in half an hour was a tribute to the operator's accurate anatomy and technical skill. It was his custom also to ligature the carotid at his lectures to demonstrate the safety as regards the brain. It was, however, generally considered that such an operation in man was "impracticable or would be injurious to the functions of the sensorium." Cooper, however, had found a case where one carotid had been obstructed by disease, and Dr. Baillie had communicated an example of complete obstruction of one and partial of the other carotid without ill-effects. The defence of the operation put forward by Travers after his own operation shows the controversy that existed, and emphasises the boldness of Cooper's undertaking.

The opportunity long anticipated at last arrived, and it was on Nov. 1st, 1805, that he ligatured the common carotid in a woman. It was an advanced case of aneurysm, and occupied so large a space, that it was just a question whether there was room for a ligature between the sac and the clavicle. In the skilled hands of Astley Cooper, however, that was accomplished which few would have attempted. The patient died from suppuration of the sac 20 days later. Astley Cooper was not discouraged, for he had established two points: that the carotid could be safely tied and without injury to the brain. In reading the account before the Medico-Chirurgical Society on Jan. 29th, 1806, he says: "The failure was due to the operation being too long delayed, and ...... it will not prevent my performing it in any case in which the disease is somewhat less advanced." It is not difficult to imagine the criticisms that would be levelled by those who thought such an operation unjustifiable.

The second opportunity came on June 22nd, 1808, and was a complete success. In reading this case before the same society reference is made to experimental ligature "many years ago." On the death of this patient 13 years later from apoplexy the brain was obtained, and a drawing is given in Guy's Hospital Reports, Vol. I. Both these operations were carried out in the presence of several surgeons of the hospitals and some visitors, and one cannot but admire the courage of the operator's convictions. In both instances examination showed that no injury had been sustained by neighbouring structures. On the same day on which the second operation took place he ligatured the external iliac in an urgent case in which rupture was imminent. Eighteen years later the specimen was obtained at considerable expense and trouble, for the man lived in the country. I am able to exhibit to you the preparation, which displays in an admirable manner the anastomotic circulation.

Finally came the culmination of this work in the ligature of the aorta. The operation was performed on June 25th, 1817, by the transperitoneal route. In referring to his experiments, when reading the paper on ligature of the carotid, he says: "Lastly, I was anxious to ascertain when even the aorta was tied if the blood would still find its course by anastomosis." This he had demonstrated in dogs, and had repeated the experiments two years before—i.e., in 1815. "The animal," he says, "survived the experiment and maintained his usual health." In Medico-Chirurgical Transactions, vol. ii., will be found a coloured illustration of the injected specimen. Here is a specimen of Astley Cooper's showing successful ligature in a dog. Again, it was unfortunate that the case was an advanced one and the man greatly reduced by hæmorrhage. The story of this operation is dramatic, but time will not permit more than a brief summary. The aneurysm was of immense size and filled the left iliac fossa; operation by the route adopted on animals was impossible, and he determined, rather than that the man should be left, to open the abdomen, displace the intestines, and secure the artery above the bifurcation. With his usual solicitude he explained the position to the patient, who replied, "Sir, I leave myself in your hands." With that dexterity which was the outcome of his experimental inquiries, he then placed the ligature without, as it proved, any injury to other structures. Though the man lived only 40 hours, the right limb had recovered its warmth and sensation, but the left—the affected side—remained cold and discoloured. This he considered due to the pressure of the large aneurysm interfering with the anastomosing vessels. Astley Cooper in his comments, after referring to the fear of many that such an operation would be immediately fatal, writes:—

> "We had to lament not that the operation was performed, but that it had not been sooner done. Sorry indeed should I be," he adds, "to sport with the life of a fellow creature, who might repose a confidence either in my surgical knowledge or my sympathy."

Thus we see that he had broken new ground, had thought out the details of possible operations, had by experiment on animals proved that so far as they were concerned success was obtained, and therefore might be anticipated in man. "The secret of success in life is for a man to be ready when his opportunity comes."

[The orator here considered Sir Astley Cooper's contributions to knowledge in wider fields; his publications on hernia, on fractures and dislocations, and on the anatomy of the breast. Travel, museum study, and discussion, of which Cooper recognised the educative value, brought him into personal touch with such men as Desault and Chopart. The orator set out the value of collective observation as it was made clear in Cooper's experience.]

PERSONALITY.

He was accused by some of his contemporaries of ignoring the work of others, especially his predecessors. This he frankly acknowledges, for so much of the teaching being vague and traditional, he felt that progress could only be made by individual research. He, however, frequently acknowledges his debt to Hunter, to whom he owed most, and next to his master, Cline, upon whose sound judgment he sets great reliance. He calls him "my most able and judicious præceptor," and in the dedication of the first volume on hernia acknowledges "that many of the ideas which it contains have been derived from your public and private instruction." The active part he took in the discussion at societies shows his respect for the opinion of his contemporaries. Of the younger men he showed no jealousy: "If I am more proud of one thing than another it is of inspiring zeal in the rising generation; it is in seeing the Lawrences, the Traverses, the Stanleys, the Brooks, the Earls of the day, rising into eminence."

Both Hunter and Astley Cooper fully gave of their knowledge to others, and were not concerned who discovered the truth so long as it was found. Truth to them was bigger than person or school. He held with Kipling that, "The game is more than the man in the game and the ship is more than the crew."

I have incidentally mentioned many points revealing his personality. A glance at the portrait shows that he was a man who must have had a commanding influence on others, both morally and intellectually. Offending at times from the rapidity of his decision in diagnoses, he nevertheless compelled attention from his superior knowledge. Writing of himself in the third person he says his "strength consisted in the quickness with which he could decide upon the nature of a case, as well as the readiness with which he adopted his means of treatment. He was a good anatomist, but never a good operator where delicacy was required; for the operation of cataract he was never fitted by nature; for stone, aneurysm, hernia, and the removal of tumours prior to his giddiness he was excellent." These comments are somewhat disparaging when one recalls what he accomplished in the way of operations.

"His affection and consideration," says one of his dressers, a long and close friend, "brought comfort and confidence. In his behaviour towards his patients he set a fine example, explaining to the poorest in a kindly manner the nature of a proposed operation." When, however, he had made up his mind as to an operation there was no hesitation, and from his accurate anatomy and his skilful technique, he was rapid yet without hurry, accurate without delay, bold without rashness—essentials when we remember that there were no anæsthetics. He was generous in dealing with those to whom a fee meant a good deal. From the officers of Wellington's army he declined remuneration, explaining that as they had fought and endured hardships while he had benefited by the protection thus afforded, the least he could do was by showing his gratitude in the only way in his power.

Time will not permit even a list of the many honours conferred upon him at home and abroad. He was serjeant-surgeon to two sovereigns, upon one of whom he performed an operation, receiving a baronetcy in 1821. Two tributes, however, deserve special mention—the portrait which is before you, subscribed for by his old pupils, and the statue in St. Paul's erected at the expense of the senior members of the profession. The portrait by Sir T. Lawrence exhibits Astley Cooper somewhere approaching 60, and is considered the chef d'œuvre of this great painter. It is interesting to compare it with that of Hunter; both are looking up and into the future, both see much to be done—Hunter the philosophic genius and Cooper his great pupil, ready for any emergency.

He died in 1841 at the age of 74, having extended and upheld the reputation of British surgery for half a century, and was buried beneath the chapel of the hospital he loved so well and whose fame he did so much to extend. By his will he founded a triennial prize, and it is significant that he directed that the first subjects for inquiry should be upon the thyroid, the spleen, the thymus, the suprarenal capsules, and the state of the blood and blood-vessels in inflammation, all subjects on which he had himself made observations and conducted experiments. He foresaw that future workers, better equipped, would unravel the secrets which had baffled him.

The Hunterian era awoke in the minds of men a desire to explore the old ground by new methods, and to unearth the truths so long concealed. There was a spirit of adventure, like that which animated the Elizabethan explorers, the ambition of the healthy human intellect to extend its range of vision and knowledge.

To Hunter belongs the credit of the discovery of this new world. He it was who lighted the torch, and I hope I have shown that Astley Cooper was amongst those who first carried it forward in the race, kept it alight, and then passed it on not only undiminished, but burning with a brighter flame; and so when his course was run the goal was nearer for the part he had taken. "After brief life men die, and like runners in a race hand on their torch to another."

SUSSEX THROAT AND EAR HOSPITAL.—Reference was again made at the annual meeting of the governors of the Sussex Throat and Ear Hospital at Brighton on Feb. 5th to the need of an additional wing, but the proposal has been abandoned until better times. Rearrangement of the present accommodation, however, has provided five or six additional beds. The demands upon the hospital have again been very considerable during the year. Out- and in-patients have made increases in their payments during the year, the total increase from in-patients (500) amounting to £76 9s. 6d., and from out-patients (5000) to £32 9s. 11d.

An Address

ON

SKIN DISEASE

IN RELATION TO INTERNAL DISORDER.

Being the Opening Address delivered at a Discussion held on Feb. 14th, 1921, by the Medical Society of London,

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THIS subject has been attractive to trained and untrained minds from early times, and has proved to be sufficiently alluring to stimulate the interest of some of the most esteemed members of our own calling. I need only recall to your memory the work done in this field by members of your own school of medicine—Thomas Addison, Charles Hilton Fagge, and Philip Pye Smith; by others such as Jonathan Hutchinson, Stephen Mackenzie, and William Osler; the special studies by Henry Radcliffe Crocker, and by a secretary of this society whose knowledge of clinical medicine and whose personal character had a great and abiding influence on his colleagues and friends—Thomas Colcott Fox.

LOCAL CUTANEOUS INFECTIONS.

The attraction of this field of study to the trained physician is no doubt partly due to the fact that the knowledge of external and visible signs may lead to the interpretation of their hidden cause, the recognition, it may be, of a mysterious malady, to its treatment and the restoration to health of the sufferer. But the diseases which affect the surface of the body are in many cases the malady itself, and its cause need not be sought further afield than in the lesions which are visible. This is notably the case in many external infective diseases, and in certain of the abnormalities of growth and degenerative processes to which the skin is liable. Examples of these morbid states of purely local origin are the diseases recognised to be due to external parasitic infections, the diseases of the "ringworm group," for instance, due to growth in the skin of various hyphomycetes; many of the inflamed conditions of the surface included under the term eczema, and due primarily or secondarily to infection by pyogenic bacteria; in all probability also the inflamed and desquamative conditions of which psoriasis may be taken as the type disease. Examples of abnormal growth of tissue cells and of various forms of degeneration are seen in the primary neoplasms of the skin of epitheliomatous and other types.

All these may be considered as diseases affecting the integument itself. Their diagnosis, treatment, and prognosis demand chiefly an accurate knowledge of the structure and functions of the skin. In all such diseases, however, due, as we believe, to local causes only, he would be an unskilled physician who refused to take into cognisance the physical condition, the idiosyncrasies, and the mental state of his patient, and the manner in which these react on the external malady. Anyone who has seen the grave results of pyogenic infections in patients suffering from glycosuria, or of the extension of psoriasis during development of the later stages of pulmonary tuberculosis, and anyone who has made efforts to treat this disease of the skin in the case of patients suffering from certain forms of arthritis, will not require to be convinced of the influence exerted by general or internal disease on what appears to be a local cutaneous malady. "The conditions which modify the characters of inflammations of the skin and their influence on treatment" were ably discussed by Radcliffe Crocker in his Lettsomian lectures to our society (1904).

Passing from maladies, of which we believe the causes to be entirely external and local, and on which health and disease exert influences by raising or depressing the powers of resistance and of healing, I wish to draw attention to cutaneous manifestations in many cases even more striking, but which must be regarded as phases or results of a general infective process or of some internal disorder.

THE ERYTHEMA GROUP.

The first group of cutaneous diseases to which I would draw attention is the "erythema group," a class sufficiently well defined for purposes of clinical recognition. The various forms of reddening produced by merely local, mechanical, or bacterial reactions are excluded. On the other hand, the manifestations of this group may be not only erythematous but also urticarial, exudative, vesicular, and hæmorrhagic in character.

Acute Exanthematous Diseases.

The eruptions of the acute exanthematous diseases first attract attention. In the case of some of these diseases the eruption appeared to be so important a feature in the minds of our predecessors that it may well have seemed to be the disease itself, hence we have such names as rubella, morbilli, scarlatina, and the varieties of pox. So soon, however, as modern ideas concerning the origin of infectious diseases were conceived, it followed that the visible eruptions came to be regarded only as a phase or as one result of an infective process, and to be considered merely as a sign of the disease itself, the true cause being capable of producing more extensive and serious results than the eruptive phenomena. The later development in our ideas of infection, the possibilities of lessened or increased sensibility of the tissues and of the organism to toxins of various sorts, including foreign proteins not in themselves primarily toxic, naturally caused doubt as to the actual origin of these exanthems.

At the present time the most reasonable explanation seems to be that the special eruptions of these diseases result from the direct action of the infecting elements, protozoal or bacterial, on the skin. The chief considerations which led to these conclusions are first that the eruptions are very distinctive. They differ from each other sufficiently in the case of each disease to be fairly easily distinguished so that they form an important factor in the diagnosis. The eruptions which form a part of the reaction of the organism to bacterial and other protein poisons conform to one type—namely, the type of the urticarial, erythematous, and exudative erythemas. In the case, however, of the exanthems, the types of eruption differ sufficiently to be clearly recognisable, as in the case of scarlet fever and of chicken-pox, and the distinctive eruption is "true" to the set of symptoms which we recognise as indicating the malady in any individual case. The second important consideration is that in the case of certain of these diseases the organism recognised as the cause of the disorder has actually been found in the exanthem, as in the case of enteric fever and of syphilis.

It is important and suggestive to remember that in the case of many of the specific exanthematous fevers other eruptions than those considered to be specific do occur at various stages in the disease, sometimes early, usually late. These eruptions are of the erythematous type, possessing the characters of general erythematous reactions and without the specific features.

Action of Alien Proteins.

Much interesting and important information has come to us from the study of the effects of the action of alien proteins on the tissues and on the organism. As is well known, some of the results which have been obtained experimentally are of the most dramatic character. In addition to the very serious effects upon the nervous, the cardio-vascular, the respiratory, and the gastro-intestinal systems, it is well known that an important series of skin phenomena occur. These consist of eruptions varying from transient urticaria and erythema to changes involving destruction of the walls of the small blood-vessels, exudation of the blood contents, and later, it may be, to reactionary changes in the tissue elements of the skin. From the point of view of the clinical symptoms, these phenomena resemble closely the eruptions of the erythema group.

In the case of certain infective fevers, special opportunities have arisen for the careful study of the effects of such proteins as a result of the use of alien antitoxic sera in treatment. The serum sickness which may result, its symptoms and consequences, may be considered as a fair example of the reaction of the body to the introduction of alien proteins. In this remarkable condition it is well established that there occur variations from the "normal" reaction, due to what is apparently increased or diminished sensibility of the organism to the action of the alien protein. These variations from the normal seem to exist as a congenital or a natural disposition in a small number of individuals, but more commonly the condition is artificially acquired, and appears to be due to the influence produced by previous administration of the same alien protein. There is thus presented to us a set of phenomena very different in nature from those of an ordinary infection, though it is probable that these conditions of over and under sensibility are closely related to the biological conditions underlying what we understand to be immunity or proneness to disease.

Two facts stand out clearly for our recognition from the clinical point of view: First, as the result of absorption of proteins alien to the invaded organism, eruptions make their appearance closely similar to the erythema group of skin diseases; second, that these eruptions vary in degree, severity, and time of incidence, and these variations depend on stages of increased or diminished sensibility which may be acquired by artificial methods. Recognising these salient points, we may see how large is the field of medical investigation which they indicate; moreover, they may serve to point out the path through a field of clinical medicine which is as yet little known.

Exudative Erythema.

Let us take examples of cutaneous eruptions as seen in clinical practice, and inquire what explanation can be given of their origin in terms of our present ideas of the effects on the tissue elements produced by parasitic infection, or by the action of alien protein poisons. The type of disease to which I now refer is erythema exudativum multiforme. This disease shows very similar and very characteristic manifestations throughout the range of its incidence. It consists, as is well known, of erythematous and urticarial eruptions associated with œdema and other forms of exudation, sometimes showing vesication, and is occasionally purpuric. An important feature of outbursts of the disease is the tendency to localisation of the lesions to certain localities, such as the extremities, the face, and extensor surfaces; in many cases considerable areas of unaffected skin extend between the reacting or damaged tissues. This disease has long been suspected to have relations in the sense of cause and effect with certain generalised infections or localised centres of disease. Sir William Osler was much interested in tracing these connexions, and reported a series of cases during a period of several years in which the occurrence of erythema exudativum was associated with visceral lesions. These internal conditions were various, some of the cases showed disorders of the gastro-intestinal tract, others showed cerebral symptoms, in some there was co-existing evidence of serious damage to the kidney, and in one or two evidence of localised inflammatory disease. By attempting to establish the frequency of the association of the two morbid states, external and internal, he sought to suggest a causal relationship. With our present knowledge it is, at any rate, intelligible that such a relationship exists. In the case of localised inflammatory visceral lesions we know that various toxins are formed, bacterial or protozoal in origin. These toxins, which exist within the parasitic cells, and on the dissolution of these cells find their way into the surrounding fluids, pass into the circulation and are capable of affecting the structures of the invaded organism, either generally or in areas specially liable to injury In the case of the bacterial products it is known that they have various destructive influences. Amongst the better recognised are the neuro-toxic, the thrombotic, and the hæmolytic toxins, and it is also known that they have a special power of damaging the endothelium of the capillaries and the small arterioles. Such poisons arising from any infective focus in the body may act on the tissues in a very direct fashion analogous to the action produced by such toxins as those of the "venin" group. It is, therefore, not a matter of surprise, given a focal lesion, such as suppurative inflammation of the naso-pharynx or a circumscribed empyema of the pleura, that toxins are liberated which will produce damage to the endothelium of capillaries, associated with hæmolytic or thrombotic effects, in certain areas specially liable to damage, and thus cause the manifestations as we see them in exudative erythema.

Disorders of the Gastro-intestinal Tract.

In the case of the disorders of the gastro-intestinal tract, which are apparently so frequently associated with these cutaneous manifestations, the same influence of bacterial origin may be at work. Bacterial or other parasitic toxins escape from the gastro-intestinal tract into the circulation and produce the changes at a distance such as those already mentioned. It is, however, possible that in the case of the gastro-intestinal tract another cause of poisoning may exist—namely, that the damage to the gastro-intestinal tract may permit of protein substances passing into the circulation directly from the food. These proteins do not pass through the stages of normal digestion whereby they are rendered safe and useful to the body, but escape into the circulation more or less in their original form with comparatively unaltered protein molecules, and thus act as alien proteins. There is plenty of evidence of the highly toxic effects produced by the parenteral introduction of alien proteins; substances passing into the circulation from the gastro-intestinal tract in the way suggested may act in a similar manner. It is in this relationship that the studies of the reaction of serum sickness are so suggestive and valuable. The erythematous eruptions which are found associated with gastro-intestinal disturbance resemble closely the eruptions in the skin following the introduction of alien proteins in the form of antitoxic and other alien sera. In the case of both sets of poisons, the toxins of parasitic origin and the alien proteins, the possibility of increased sensibility or of diminished sensibility must be borne in mind.

We have, therefore, presented to us the very important suggestion that general or focal infections are capable of admitting into the body toxins producing destructive influences, and also that substances resembling more closely the alien proteins producing the protein reactions—serum sickness and analogous conditions—may also find their way into the circulation in visceral disease. Both these sets of poisons are capable of damaging the tissues, especially the blood and blood-vessels, in such a way that the diseases of the erythema group may be understood to occur. Many of the clinical phenomena, such as the distribution, incidence, the recurrence of these cutaneous manifestations, can be explained by the possibility of increased or diminished sensibility of the affected organism.

Erythema Nodosum.

Erythema nodosum is a remarkable affection possibly related closely to the erythema multiforme group. As is well known, this manifestation has long been suspected in this country to have special relationship to rheumatism. Sir Stephen Mackenzie was a strong upholder of this view, and by recording a series of cases in which the conditions co-existed he sought to suggest their causal relationship. I had the advantage of being his house-physician, and I recollect that he would declare on examining a case of erythema nodosum that there was no need to search further for the nature of the disease from which the patient suffered—that the eruption on the skin was as much evidence of rheumatism as the peculiar arthritis, or an attack of pericarditis or endocarditis. Probably most of us at the present day would not uphold the proposition in such an uncompromising manner. Erythema nodosum occurs in cases where there may be no other evidence of acute rheumatism. Failing to recognise the evidence of acute rheumatic fever, it would be unwise to bind erythema nodosum and rheumatism too closely together. But erythema nodosum is remarkable among the erythemas for the constant similarity of the lesions constituting the disease, differing considerably from the features of a typical "erythema." It may be possible that erythema nodosum is a "true" eruption, a manifestation of a specific circulating poison producing local damage, just as the special eruptions of the specific fevers.

Lupus Erythematosus.

There is another disease not properly included in the erythematous series to which I must call attention in this place—namely, true lupus erythematosus. This disease shows certain relationships with the erythematous group in the manner of its occurrence and in the area of its distribution, but it varies widely from the erythema type inasmuch as the lesions are long lasting, and that a certain amount of destruction of tissue is ultimately noticeable. In addition to the long-lasting erythema fibroid changes make their appearance, so that a certain amount of scar is noticeable to the naked eye in a large majority of cases. This disease has long been suspected to be the result of a general infective process. The absorption of toxins from quiescent tuberculous foci is thought by some to be the cause. On the other hand, the disease occurs sometimes in its most widespread and most dangerous manifestations where there is no evidence or suspicion of tuberculosis in the ordinary sense. One of the most severe cases in my own experience occurred in a patient who gave no evidence of tuberculosis, but who developed marked signs of cirrhosis of the liver soon after the appearance of the widespread eruption; to the effects of this disease she ultimately succumbed.

New and interesting information as to the cause of this mysterious skin infection has recently been obtained by the observations and experiments of Dr. Harold Barber. Dr. Barber has found lupus erythematosus coexisting with localised pyogenic infections. In one remarkable case he was able to prepare an autogenous streptococcic vaccine from the excised tonsils of a patient suffering from lupus erythematosus. The use of this vaccine provoked marked local reactions on the skin lesions, a result which is perhaps not to be wondered at; but more important was the fact that the continued use of the vaccine was followed by the disappearance and cure of the cutaneous malady.

The Pemphigoid Group.

There is another group of skin affections to which I would draw attention in this relationship, the so-called pemphigoid group, of which dermatitis herpetiformis may be looked upon as a type. In these cases there are eruptions on the skin of very similar type, localised erythema and urticaria, followed by various degrees of vesication, and frequently associated with pain or disturbance of sensation in the affected parts. This disease has long been suspected to be due to toxic processes of internal origin. Perhaps the most remarkable of the forms of the disease is that occurring in pregnancy known by the name herpes gestationis or the dermatitis herpetiformis of pregnancy. I do not think that anyone who has had the opportunity of seeing such a case, and of noting its coincidence with pregnancy, its waxing and waning with the period of gestation and the puerperium, can avoid the conclusion that the two conditions are intimately related. It is only recently, however, that any approach to a definite explanation has offered itself. With our knowledge respecting the relationship of the embryonal and maternal structures it is fair to assume that embryonal cells and their products may act as an alien protein. During the process of growth and absorption of the placental villi the proteins of the syncytial layers may be absorbed into the maternal circulation producing poisoning directly, or, on the other hand, a process of sensitisation of the tissues of the mother may take place, and at certain stages of pregnancy, due to the absorption of syncytial proteins, there are produced the lesions of the skin characterising one of the most distressing of the complications of pregnancy—namely, herpes gestationis. That the duration and severity of the disease increase with successive pregnancies is a strong suggestion that the maternal tissues become sensitised to the proteins of the embryo.

THE SKIN AND ITS BLOOD-VESSELS.

That the skin depends immediately for nutrition on its blood-vessels is obvious, and it has long been recognised that destruction of the skin and underlying tissues of the most severe nature occurs as the result of disease of arteries and veins. Morbid conditions due to stagnating peripheral circulation, such as redness, cyanosis, and œdema of the extremities, with alterations in the secretions of the skin, are not only unsightly and difficult to bear, but they produce weakening of the surface, so that pyogenic infections easily occur with serious consequences. These conditions are most commonly seen in the extremities. Rarely a similar state may be observed affecting the whole surface, associated with tachycardia and low blood pressure. The sufferer is in miserable health and death occurs from this cause alone. Such disorders of the circulation show certain similarities to true Raynaud's disease, though the pathogeny may be very distinct. Disease of the skin associated with functional disturbance of the blood-vessels requires much further observation and study before we can profess to understand its causes.

Thrombo-angeitis Obliterans.

Disease of the blood-vessels causing obstruction to the supply or to the return of the blood produces more easily understood changes from malnutrition, secondary pyogenic infection, and necrosis. Thus it may be claimed that the cause of gangrene of the extremities associated with senile, syphilitic, and other forms of occluding arterial disease is fairly well understood. There are, however, types of the disease concerning which our knowledge as to causation is still very defective. The noteworthy example is the strange disease of the blood-vessels causing necrosis of the extremities recently drawn attention to by Leo Buerger in New York and Parkes Weber in London. The condition, to which the name thrombo-angeitis obliterans has been given, occurs in young persons, nearly always of Jewish race. It appears to have no relationship with the ordinary causes of arterio-sclerotic change of the blood-vessels; its actual cause is still a mystery. The conditions which I have mentioned are the results of serious functional disturbance or of gross structural damage to larger blood-vessels. We are apt to forget that the supply of blood to the skin depends upon the minute blood-vessels, and that these small blood-vessels suffer degenerative changes, due to syphilis and other causes, just as those that are large. Microscopical examination gives evidence that the smaller arteries of the skin may be extensively diseased and disorganised; under these circumstances the skin, in spite of a fairly free collateral circulation, is badly nourished. The results are seen chiefly in the extremities; the skin becomes parched, the epidermis desquamates; coincidently, the white and especially the yellow elastic fibres degenerate, so that the skin loses its elasticity, and is seen to be in fine crackled wrinkles and folds. Under these circumstances pyogenic infection readily occurs; a spreading dermatitis, usually superficial and mild in degree in the first instance, is established; the condition then becomes described as "eczema," and the patient may be treated for this secondary result alone. Probably the state of affairs which I have outlined is the real basis for the condition spoken of by our predecessors as "gouty eczema." The spreading pyogenic dermatitis which we see is a secondary phenomenon only; the malnutrition of the skin, owing to sclerotic degeneration of the superficial blood-vessels, is the real disease. The generally accepted rules of treatment of many of the eczematoid diseases occurring in adults and older people require reconsideration. The local use of drugs supposed to have antiseptic effects in most cases does more harm than good; the fact that the eczematous state may be a secondary result of the vascular degeneration should be clear in the mind of everyone who is called on to treat such cases.

Permanent Dilatation of Arteries and Capillaries.

A very remarkable change in the superficial blood-vessels may be seen from time to time. It consists in permanent dilatation of the small arteries and capillaries, sometimes known as "nævi," but more accurately as telangiectases of various forms, affecting both the skin and mucous membranes. In some cases these occur in family groups, and there may under such conditions be a congenital weakness of the blood-vessels permitting these superficial dilatations to be formed. When these telangiectases are situated in the naso-pharynx or in other mucous surfaces the hæmorrhages may lead ultimately to fatal results. Some of these patients have been apparently wrongly considered to be examples of hæmophilia. In addition to this type, in which congenital defect seems to be the cause, very similar conditions producing widespread telangiectatic degeneration of the blood-vessels of the skin and mucous membranes occur in the course of long-lasting infective disorders, probably of diverse origin. Many of these cases, and perhaps the most severe, have been noted in connexion with infective conditions producing cirrhosis of the liver. They may form true angiomata with a central pulsing artery of supply surrounded by a lace-like network of dilated capillaries and venules. It may easily be understood that profuse and dangerous hæmorrhage may arise from injury to these angiomata.

THE SKIN AND DISEASES OF THE NERVOUS SYSTEM.

The nervous system, both central and peripheral, has long been held responsible for exerting influences on disease of the skin. It is easy to understand the way in which such opinions were formed. The skin is not only the integument, but, in addition to its other functions, is an organ of sense. It would thus easily occur to the minds of men that a close relationship existed when it was noted that injuries to nerves or to the central nervous system were associated immediately with alteration in cutaneous sensation—intensification, diminution, or complete loss—and it would not be difficult to conceive that the nervous system controlled the blood-supply of the skin, permitting of flushing, swelling, blanching, and shrinking as the effects of emotion, of excitement and terror, were noted. But although this co-relation of observations might well bring about the formation of the opinion, it is not an easy process to trace the actual influence of the nervous system on the tissues of the skin, even if such influences are strongly suspected to exist in individual cases.

Herpes Zoster.

The most noteworthy instance of close relationship is the interesting and well-known disease herpes zoster. The present evidence seems to establish clearly that this disease of the skin is associated directly with a peculiar, often hæmorrhagic, inflammation of the posterior root ganglia of the spinal cord and the analogous ganglionic structures. The peculiar destruction of the ganglionic cells is associated, on the one hand, with *degeneration of their nerve connexions with* the spinal cord; and, on the other hand, with changes in the neurons passing through the peripheral nerves to the skin. The very peculiar and characteristic lesions on the skin are slight, severe, localised, or extensive, depending upon the amount of damage to one ganglion or neighbouring ganglia. The well-known pre-herpetic, and especially the post-herpetic, neuralgia is evidence of the injury not only to the root ganglia, but to their nerve extensions. Accumulating evidence seems to point to the whole series of these morbid conditions being due to an infective process, of which the main brunt falls primarily on the ganglionic structures. It follows that true herpes—herpes zoster—must be distinguished from somewhat similar eruptions with more or less clinical resemblance, such as the so-called "symptomatic" herpes occurring in pneumonia and certain other infective diseases.

Syringomyelia.

The series of cutaneous reactions and injuries associated with disease of the spinal cord and brain are, however, not so easy of explanation. The organic disease of the nervous system in which the cutaneous changes have received most attention is syringomyelia. In this condition it will be recollected that as the result of congenital malformation or of acquired conditions, an excess of neuroglia, resembling glioma, is found in parts, or it may be throughout the whole extent, of the spinal cord and its continuation into the brain. This new tissue is found in relation to the position of the original neural tube, and occupies, therefore, the posterior fissure of the cord, involving the central canal. The result of the formation of this abnormal tissue or of its degeneration is that important tracts of the spinal cord, through which sensory impulses coming from all parts of the surface are conveyed upwards to the brain, become dislocated and destroyed. It is probable that the structures controlling the nutrition and vascular supply of the skin may also become disorganised. The signs of this peculiar lesion appear in the extraordinary sensory cutaneous symptoms occurring in syringomyelia. From the clinical point of view two main symptoms are prominent: first, interference with the control of blood-vessels, especially the blood-vessels of the peripheral parts of the body, permitting of phases of relaxation, with redness, swelling, and œdema, or of spasm of the blood-vessels, when there may occur blanching of the extremities. Usually flushing of the extremities, with cyanosis, is the most marked feature. In process of time atrophic changes take place both in the epidermis and the cutis. With the disappearance of the œdema the very characteristic appearance described as "glossy skin" may be seen.

The second and even more striking series of clinical changes is due to the remarkable alteration in sensation. This is due to the fact that the position of the morbid lesion on the cord is capable of producing dissociation of sensations. The forms of tactile sensation early in development, such as of ordinary contact, and pressure—"muscular sense"—the knowledge of position in space and the shape and size of objects handled, may remain intact, while sensations, such as of pain, heat and cold, and superficial touch are lost.

It can thus be easily understood that patients suffering from this disease are extremely liable to unconscious injuries to the affected areas; they have lost the protection afforded by the appreciation of pain, heat, and cold; and the loss of vaso-motor control with consequent œdema and malnutrition permits of easy and severe pyogenic infection. In this way occur the painless whitlows, the destruction of the skin, the loss of deeper parts, injury to nerves, disorganisation of the joints, and the phenomena observed so closely and described in such an interesting manner by Dr. H. Morvan of Lannilis.

Although these disorders are witnessed perhaps in their severest forms in syringomyelia, changes of similar character occur in other diseases of the nervous system influencing the vascular supply, the nutrition, and the sensation of the body.

THE SKIN IN RELATION TO DISORDERS OF ABDOMINAL AND OTHER VISCERA.

From this wide field only a few examples can be taken. It is a matter of surprise, considering the close physiological relationships which exist between the kidneys and the skin, that disease of the kidney is not more often associated with manifestations on the skin. On thinking over the large number of cases of Bright's disease of various types which come under observation in hospital and elsewhere, very few examples occur to mind of skin outbursts occurring in the course of the renal disease. Certain erythematous eruptions do ually occur, and have been mentioned by s writers. Two important considerations require to be noted. In cases of severe disease of the skin, especially in cases of exfoliative dermatitis, albuminuria and nephritis occur. This complication has been frequently noted both in the case of children and in adults, and is not a matter for surprise. It appears that in cases of exfoliation of the epidermis the risk of generalised infections is intensified by the fact that these patients are unusually liable to chills and cold. Such patients should always be protected against cold in the most careful way possible. The appearance of albuminuria in such cases is always dangerous and not infrequently leads to a fatal result. The second observation in this connexion is noteworthy. On reading the series of cases of erythema multiforme collected by various authors, it is by no means infrequent to find a record of albuminuria, hæmaturia, and nephritis. I think the presumption in such cases is that the cutaneous disease and the renal disorder are manifestations of the same toxic cause and that it is not correct to assume that the symptoms on the skin are caused by the disease of the kidney.

Xanthoma.

Many remarkable manifestations on the skin occur during the course of disorders of metabolism. One of the most interesting of these is the condition known as xanthoma. It is probable that the varieties of this condition are all associated with functional disturbances of metabolism. The most important type is that known as xanthoma tuberosum multiplex, which occurs so comparatively frequently in cases of glycosuria that sometimes it is described as xanthoma diabeticorum. But it may be seen in patients who show no glycosuria, though in such cases there may be indications, functional or structural, of disorders of organs such as the pancreas and the liver. The histological structure of xanthoma has been carefully investigated on many occasions, and at first was not easy to understand. The tumours consist of aggregations of newly formed cells conforming in type to the cells of the connective tissue, sometimes containing more than one nucleus; to these the name of xanthoma cells has been given, lending an air of special mystery to this peculiar growth. The cells suggest a reaction of the connective tissue to a mild non-pyogenic irritation. The interesting feature is that within the cells and in the intercellular spaces and channels granules of a fat-like material are to be seen. The tissue, as is not surprising, gives reactions indicating the presence of cholesterin, and it is said that cholesterin crystals or granules may also be seen.

The trend of these observations seems to point to the fact that in glycosuria and in allied conditions substances derived from the imperfect metabolism of the fats may be deposited at certain vulnerable points in the body, and by their presence produce local irritation of the connective tissue cells. Or, on the other hand, that poisons due to metabolic errors may damage these areas, and that the lipoid substances are formed locally in consequence and aid in the production of the characteristic xanthoma nodule. If this is so in the case of xanthoma it is probable that other reactions of somewhat similar type occur. In this connexion I should like to draw attention to the fact that lichen planus seems to occur with undue facility in certain patients suffering from glycosuria and in disorders of nutrition allied to this disease. The suggestion naturally arises as to whether the ætiology of lichen planus and certain similar reactions of the skin may not also be associated with metabolic disorders of this type.

Pigmentary Changes.

Pigmentary changes in the skin have long been associated with our ideas of the health of the patient. The fact that a patient loses his normal colour and appearance is recognised as an indication that all is not well, and in clinical records it is frequently noted that a "sallow" or "earthy" appearance of the patient develops during the course of illness. The nature of the pigmentation producing the varieties of jaundice resulting from the staining of the tissues by the bile pigments is fairly well understood. We know that in addition to the true bile pigment the skin may also be coloured by other blood-derived pigments, such as urobilin. Still more recently it has been recognised that the tissues may be stained by pigments more remotely derived from the blood pigments in disease affecting the spleen, the liver, sometimes associated with glycosuria; we occasionally see examples of bronzed diabetes and of *hæmachromatosis* associated with certain types of splenomegaly. In addition, however, to these pigmentations, which are capable of explanation, there occur a series of disorders of pigmentation in which the colouring material is not derived directly from the blood pigment, but appears to be due to the formation of true melanin, the normal pigment of the body. A familiar example is the waxing and waning of pigmentation in certain parts of the body during pregnancy, the chloasma uterinum. But the most remarkable cases of increase of pigmentation occur in the course of Addison's disease. The newly deposited pigment is apparently true melanin, and its increase seems to be the direct result of disorder of the function of the suprarenal gland. It is known that pigmentation of exactly the same type may occur without the ordinary symptoms of Addison's disease. In a case under my own observation the patient, a young woman, suffered from great ascites, was severely ill with loss of weight and strength; the skin was widely pigmented, as in Addison's disease. The abdomen was opened, the abdominal fluid removed, and evidences of a mild, chronic peritonitis were observed. No opinion was formed as to the actual cause of the peritonitis. This patient, however, fortunately made an uninterrupted recovery and returned to her work as a school teacher, and remained under observation for some years. She gained strength, and at first gradually, then more rapidly, the abnormal pigmentation of the body vanished. It is very probable that some of the cases of leucomelanodermia which come under observation from time to time are associated with disease or disorder of the abdominal viscera in the neighbourhood of the suprarenal gland. It is interesting to recall that, just as in the case of xanthoma, in which there is reaction and overgrowth of tissue elements owing to irritation due to metabolic error, so in the case of these abnormal pigmentations the affected parts may react and increase in thickness owing to the formation of a certain amount of new tissue. The remarkable disease known as acanthosis nigricans, proved to be frequently associated with organic disease of abdominal viscera, appears to be an example of this sequence of events. With regard to this remarkable series of pigmentary diseases, the suggestion naturally arises in the mind, and is supported by a considerable body of clinical observation, that alterations in the distribution and amount of melanin pigmentation is directly associated with disorders or disease of the suprarenal gland and certain other glands producing "internal secretions."

Skin, Blood, and Lymphatic Glands.

In a review, however short, of the relationships we have been discussing, one cannot fail to refer to the change in the skin associated with disease affecting the structure of the blood and certain hitherto unknown affections of the lymphatic glands. The two conditions, lymphatic leukæmia on the one hand and the lymphogranulomatosis known as Hodgkin's disease, may be taken as examples. In both these conditions, differing so widely in many of their clinical symptoms, two sets of phenomena affect the skin. The skin in both may show tumours, lymphoid nodules in the case of leukæmia and lympho-granulomata in the case of Hodgkin's disease. In addition they both show remarkable cutaneous reactions without definite tumour formation. The skin may become erythematous and thickened, with symptoms of the most intense pruritus. There are few disorders of the skin so distressing as the pruriginous manifestations of both leukæmia and of Hodgkin's disease. They are, as is well known, frequently associated with characteristic fever. The evidence seems to point strongly in both cases to the infective origin of the classes of disease of which lymphatic leukæmia and Hodgkin's disease are examples.

A LOCAL SURVEY OF ENCEPHALITIS LETHARGICA,

BASED ON 32 CASES OCCURRING IN MANCHESTER DURING 1920.

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IN view of the varying types of this disease which have been reported in different parts of the country, it seems desirable that some account of the incidence, distribution, and symptoms noted in a series of 32 cases occurring in Manchester during 1920 should be recorded.

The name encephalitis lethargica is apt to mislead, because, although lethargy is present in many cases, yet it is not an essential symptom, and it may be that, on account of the use of this term, cases occurring without lethargy have remained unrecognised, and have not, in consequence, been reported. During 1920 and in the early weeks of 1921, 39 cases, in which the date of onset of illness was in 1920, were reported to be suffering or suspected to be suffering from this disease. After investigation and observation 32 were accepted as true cases, some other diagnosis being subsequently arrived at in the other seven. Five of these seven cases ended fatally, and by post-mortem examination or by positive findings in the cerebro-spinal fluid the cause of death was found to be cerebral abscess, cerebral tumour, cerebral hæmorrhage, tubercular meningitis, and cerebral softening. The symptoms in the other two were accounted for by influenza. There remain 32 cases in which the diagnosis was accepted as correct.

The epidemiology and pathology of the disease are known to a limited extent only, and up to the present time no causal organism has been isolated. From analogy with similar diseases it seems likely that the illness is brought about by some infective microorganism. Nevertheless, there has not been in Manchester any spread of infection from one person to another, nor has any connexion between the cases been discovered.

Seasonal and Local Incidence of the Disease.

The cases were distributed over the year, according to the dates of onset as follows: first quarter, 2 cases; second quarter, 8; third quarter, 3; fourth quarter, 19. In the second quarter 2 cases occurred in April, 3 in May, and 3 in June; reported cases then became few until November, when there were 3, and in the month of December the prevalence reached its maximum, 16 cases coming to our notice.

The cases were widely distributed over the city and no connexion between them was traced, although careful inquiry was made. The following figures show the incidence on the various districts: Ancoats, 2 cases; Central, 1; *Cheetham*, 3; *Crumpsall*, 3; *Newton*, 1; Clayton, 1; Ardwick, 1; Openshaw, 1; West Gorton, 3; Rusholme, 1; Chorlton-on-Medlock, 2; Moss Side, 2; Withington, 4; Gorton, 3; Levenshulme, 4. If the three divisions of the city be taken, 3 cases occurred in Manchester township, 8 in North Manchester, and 21 in South Manchester, the incidence rates being 0·30, 0·34, and 0·45 per 10,000 of the several populations. The 16 cases in which the onset of the illness was in December occurred in 12 different districts.

Infectivity.

The disease has shown no signs of infectivity—that is to say, no connexion has been traced between the cases which were widespread over the city, nor did infection spread to any of 138 family contacts. No common source of infection was found. As regards the milk-supply, for instance, of the 32 persons affected four habitually consumed condensed milk, and the remainder obtained their milk from 28 different sources; nor does transference by means of other foods seem likely, though our investigation in this direction is incomplete. Housewives and workers have been attacked in about equal numbers, scholars and infants have not escaped. It is certain that cases of encephalitis lethargica occur which remain unrecognised and escape investigation, and so connecting links may be missed. Nevertheless, the conclusion may be deduced either that the disease is not infectious or that the infective material is widespread, and that there exists amongst the majority of people a natural immunity to it.

Cases of poliomyelitis and of cerebro-spinal fever crop up from time to time in a similar manner. These two diseases are known to be due to infective micro-organisms, but no satisfactory explanation of their mode of spread is forthcoming. It appears that they may occur sporadically, or may, under certain unknown circumstances, assume epidemic form. Until our knowledge becomes more complete encephalitis lethargica should be presumed to be infectious or contagious and precautions taken accordingly.

Age- and Sex-Incidence.

Table I. gives the age-groups and the sex of those attacked and of those whose illness proved fatal. It will be noted that males and females were about equally affected and that adults were attacked rather than children.

TABLE I.

Age-groups.	Cases. M.	Cases. F.	Deaths. M.	Deaths. F.	Total cases.	Total deaths.
Under 10 years	2	3	2	3	5	5
10 to 19 „	7	4	2	2	11	4
20 „ 29 „	2	2	1	0	4	1
30 „ 39 „	1	2	1	1	3	2
40 „ 49 „	1	4	1	2	5	3
50 „ 59 „	3	1	2	0	4	2
			Total ...	...	32	17

The question whether this disease is the same as, or a variant form of, poliomyelitis has been studied by a number of workers, and the conclusion arrived at on the evidence so far obtained is that encephalitis lethargica is a distinct entity. The data in the Manchester series as regards seasonal incidence, age of attack, and clinical manifestations tend to confirm this conclusion, but the number of cases dealt with is small and reliable inferences cannot safely be drawn. During the year only 6 cases of poliomyelitis were reported, 1 in July, 2 in August, 1 in September, and 2 in October. The entire absence of reported cases of poliomyelitis in November and December, when encephalitis lethargica reached its maximum prevalence, is a point to be noticed.

Occupational and Class Incidence.

Of the 32 patients 4 were infants, 4 scholars, 10 were women engaged in housework, and 14 were adults employed, each in a different occupation. There is nothing to be learned, therefore, by further analysis. The social status of those attacked may be gathered from a consideration of the size of house occupied by them, and by the presence or absence of overcrowding. The figures are given in Table II.

TABLE II.

Houses with—	No. of cases.	Number of houses with— 1 person or less per room.	Number of houses with— More than 1 but less than 2 per room.	Number of houses with— 2 or more per room.
4 rooms	12	4	7	1
5 „	3	3	0	0
6 „	11	8	3	0
7 „	2	2	0	0
8 „	4	4	0	0

The greater number of cases occurred in houses with n average of one person or less per room, and the idence is fairly well spread over the various social des.

Symptoms.

It is only by the collection and study of the symptoms esented by a large number of cases that any reliable classification can be made. The symptoms found in the 32 cases under consideration and their relative frequency are therefore recorded here without much attempt to draw any general inferences.

General symptoms.—Most, but not all, began with symptoms of an acute infection, fever, headache, vomiting, pains in the body and limbs. Fever was not constant, and when present the temperature rarely exceeded 103° F., more commonly it ranged between 100° and 102°. In 11 cases it was absent altogether. This may be because the cases were not seen early enough but, in any event, the rise in temperature was, in many, a brief incident at the commencement of the illness. The absence of temperature is not necessarily of good portent; of the 11 cases in which it was absent, 6 died, 3 recovered, and 2 are yet ill. Headache was complained of by 16 patients, and 11 began with vomiting. Both headache and vomiting disappeared within a few days as a rule. In a few, headache was persistent throughout and in one case in which the diagnosis is still in doubt, vomiting has continued for several weeks. Pain in the limbs and body occurred in about half the cases as an initial symptom, and in rather less than this number pains of a more localised character, and probably nervous in origin, have been a marked feature in the later phases of the illness. General asthenia, becoming more pronounced as the disease progressed, but without any marked wasting, occurred in all our cases.

Duration of symptoms of onset.—The period elapsing between the appearance of the first symptom and the onset of prostration can be stated approximately as follows: 1 to 3 days—14 cases; 4 to 7 days—8 cases; 8 to 14 days—7 cases; 15 to 24 days—3 cases. It is not, therefore, generally speaking, a disease of sudden onset, as is the case with cerebro-spinal fever, and as a rule with poliomyelitis.

Nervous symptoms.—Lethargy, which became extreme at some stage of the illness, was a prominent symptom in 29 cases. In the remaining 3, although there was some hebetude of body, there was no inclination to sleep.

Paralyses.—Fifteen cases were associated with cranial nerve paralysis, and, in addition, 5 others complained of diplopia at some time during their illness. There were also cases in which the muscles of the face were relaxed and expressionless, due apparently to general asthenia. The various nerves were involved as follows: third, 4 cases; third and sixth, 2 cases; sixth, 1 case; sixth and seventh, 2 cases; seventh, 4 cases; seventh and ninth, 1 case; and possibly the fifth in 1 case. Paralysis of the third nerves was seldom complete. Squint or diplopia occurred in 13 cases, or in rather less than half of the total. Nystagmus of a coarse kind was present in 3 cases. The condition of the pupils and the pupillary reactions were found to vary at different stages of the illness, and gave no aid to diagnosis. The fundus oculi was examined in 17 cases and was unchanged in 11; the retinal veins were congested in 4, and in 2 there were signs of commencing optic neuritis.

Limb paralyses.—In no instance was there paralysis of the limbs, but in 2 cases the left arm was found weaker than the right, and in 1 case there was temporary paresis of the arm and leg on one side.

Positive nervous symptoms.—These symptoms did not predominate in our series. Convulsions ushered in the illness in 2 instances, bilateral twitchings of the lower face muscles occurred in 2, of the jaw muscles in 1, of a group of muscles in the upper arm in 3, and spasms of both arms in 1 case. Persistent headache or pains in some part of the body, usually the shoulders or back, were recorded in 8 cases.

Other symptoms and signs.—Hiccough was the initial symptom in 2 cases; buzzing in the ear was the first sign of illness in 1. Swelling and redness of one side of the face was noticed twice, and swelling of one leg once. Bowels were commonly constipated. Incontinence of urine was noted in 7 cases and retention in 3: paralysis of the sphincter ani was present in 5 cases. Skin eruption was seen only in 1 case, and in that instance it was of an acneiform character on the back.

The condition of certain reflexes was recorded in 29 cases as follows:—Patellar reflexes: about normal 10, increased 2, absent 8. Plantar reflex: normal 16, extensor response 2, absent 2. Ankle clonus: present in 1. Kernig's sign: present in 5.

Results of Illness.

Of the 32 cases, 17, or about 53 per cent., proved fatal. The duration of illness in the fatal cases was as follows: Under 1 week, 5 cases; 1 to 2 weeks, 4 cases; 2 to 3 weeks, 2 cases: over 3 weeks, 6 cases. One was ill for 170 days, one for 74, and one for 57 days. Of the remaining 15 cases, 2 made a complete recovery, 7 have been ill for a few weeks and are still ill. The condition of the other 6 may be stated briefly:—

CASE 7.—M., 50. Condition nine months after onset: Face expressionless; head and shoulders bowed, limbs stiff, shuffling gait.

CASE 8.—F., 20. Condition nine months after onset: Mental depression, head and shoulders bowed, arms bent, stiff, and "sticky," paresis left shoulder muscles.

CASE 15.—F., 45. Condition three months after onset: General asthenia, paresis right arm and forearm.

CASE 17.—M., 22. Condition two months after onset: General asthenia, mental dullness, right partial ptosis.

CASE 24.—F., 42. Condition two months after onset: General asthenia, paresis right forearm.

CASE 32.—M., 17. Condition nine weeks after onset: General asthenia, mental dullness, and noises in ear.

Pathological Examinations.

The blood of two patients was examined for Wassermann reaction, with a negative result in one and a doubtful result in the other. Cerebro-spinal fluid was examined from 12 patients. In all it was clear; in one *Staphylococcus aureus* was said to be present; in the remainder no organisms were found. In one instance there were 159 lymphocytes per c.mm., in another 30. In the remainder there were either no cells or very few.

Post-mortem Examinations.

In two cases a post-mortem examination was made.

CASE A.—M., 28. Onset of illness, May 24th, 1920; date of death, June 10th. Illness began with hiccough, followed by headache and drowsiness progressing to extreme lethargy. Ptosis and left internal strabismus were present.

The following is a copy of a report upon the examination of the brain by Dr. G. D. Dawson, a worker in Professor S. Delépine's laboratory. The brain was sent for examination by Dr. T. E. Dickinson, acting superintendent of Monsall Hospital:—

"A brain, weight 1315 grammes, shape normal. There is general congestion of superficial blood-vessels. No evidence of meningitis. On section, the grey and white matter everywhere showed numerous small, dilated blood-vessels, the congestion is most pronounced in the pons and perhaps in the occipital lobes. No hæmorrhages or other lesions are visible to the naked eye. The ventricles are of normal size and do not contain any excess of fluid."

Microscopical Examination.

A. *Transverse section through middle of pons.*—"There is no evidence of meningitis. The most noticeable feature is the presence, especially in the grey matter, of numerous congested blood-vessels, mostly of small size. In most cases the perivascular spaces are distinctly enlarged: some are filled with small round cells, others contain a few extravasated red cells. Some hæmorrhages are present, but they are small and few. There is no clear evidence of any considerable degree of chromatolysis."

B. *Section through part of left occipital lobe.*—"The appearances are similar to those of section A, but less pronounced."

CASE B.—Male, 39 years; onset of illness, Nov. 14th, 1920, date of death, Jan. 26th, 1921. The illness began with pains in the "stomach" and vomiting. No headache, but pains in shoulders and back. Three weeks later there were diplopia and blurring of vision; ptosis of the left eyelid and left internal strabismus subsequently developed. There was little or no lethargy, but progressive asthenia ended in death.

A post-mortem examination was made. There was no evidence of meningitis, no deformity, no adhesions or thickening of the membranes. On section, no gross lesions were seen, though the posterior half of the brain was decidedly congested. The microscopical examination has not yet been completed.

I am indebted to those medical practitioners who allowed me to see their patients.

A CASE OF OSTEITIS DEFORMANS.

BY DOROTHY C. HARE, C.B.E., M.D. LOND., M.R.C.P. LOND.,

ASSISTANT PHYSICIAN, ELIZABETH GARRETT ANDERSON HOSPITAL.

With X Ray Report

BY C. C. BERNARD, M.A., L.M.S.S.A.,

HONORARY RADIOLOGIST TO THE ABOVE HOSPITAL.

THE patient, an unmarried woman, aged 47, is a native of Rangoon. Her mother was Armenian, her father Eurasian; she was healthy, though not robust, as a child and young woman. At the age of 26 she had both ovaries removed for uterine fibroid at Madras Maternity Hospital by Sir Arthur Branfoot, after which she is said to have had fair health; but between the ages of 30 and 40 she had attacks of "kidney trouble" and recurrent fever diagnosed as malaria. At about the age of 42 she was told that her mitral valve was affected. The present affection of the bones was first noticed about June, 1917, when a nurse, who was massaging the patient, discovered that her right humerus and right femur were bent. The patient at this time complained of pains in the back, ribs, and ankles, and of general tenderness in the limbs. She went to the General Hospital, Madras, in October, 1917, where the disease was diagnosed as osteo-malacia. She was treated with calcium lactate, and during the next few months the pains and tenderness lessened, and have never returned so acutely since. She has, however, complained increasingly of pain in the lower part of the spine, relieved by lying down. She has been unable to walk far and is easily tired by exertion.

The patient's height has diminished progressively, and she is said to have lost at least 7 inches. The only written record is that in 1918 she measured 4 ft. 9 in. in her stockings; her present height is 4 ft. 7 in. The weight does not seem to have varied much, being 102 lb. in January, 1918, and 93 lb. in July, 1920. The head has gradually enlarged; the patient says that the increase in size was first noticed by her friends in the latter part of 1917, and that in 1919 it measured 23⅜ in. in circumference; the present measurement is 24½ in. During 1918 there was a return of kidney trouble, and small quantities of blood and pus were passed in the urine, which contained at times a red sediment. The patient says that she has suffered frequently from intestinal flatulence, but on the whole her general health has remained good.

Dietetic Habits.

Full notes on the patient's customary diet are recorded in view of the possibility that this disease may one day be brought into line with other bone diseases due to food deficiencies. The patient has always had plenty of eggs and milk. She is fond of meat and usually eats it twice a day. She has never eaten much vegetable, and would go for weeks without taking green vegetables, roots, or potatoes; but she has always eaten some fruit daily, such as mangoes, mangosteens, bananas, or plantains; apples, pears, or grapes have been eaten occasionally. She eats very little bread and does not care for sugar or sweets. She never takes meat fat, and very little butter; bacon has only been eaten recently. The patient has always been careful of her diet on account of indigestion, but made no alteration in her habits of diet before the onset of this illness. She suffered no shortage of any particular article of diet during the war.

Previous Treatments.

From October, 1917, for about six months the patient was treated with large doses of calcium lactate, 30 to 40 gr. daily. After that time the drug was stopped, as it was thought to be causing indigestion, but it has been taken at irregular intervals since. The tenderness of the bones disappeared whilst taking the drug. During 1918 the patient was given pituitary extract in tablet form, 2 gr. daily for about three months, but it was not taken with great regularity. The patient noticed no effects. The kidney symptoms were treated with an autogenous vaccine of a coliform bacillus from November, 1919. Three series of ten injections each have been given. In March, 1920, the patient was recommended to come to England to see Dr. Louisa Hamilton, and was admitted to the Elizabeth Garrett Anderson Hospital on June 26th, 1920.

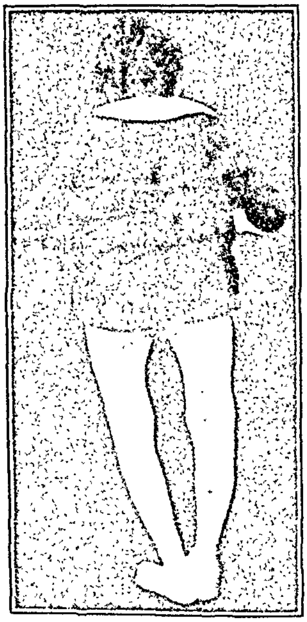
General Appearance.

The patient is a small woman, height 4 ft. 7 in., of a sallow, dark complexion; she is thin, with very poor muscular development, but not wasted. She walks with a stick, moving slowly and with caution, carrying the trunk forward and the head well in advance of the rest of the body. The back is bent and the legs bowed. The neck appears to be short, as the chin is bent down on the chest. The large size of the forehead immediately attracts attention. The expression of the face is intelligent and mobile. In conversation the patient shows a normal mentality, though she is emotional and nervous.

Skeleton.

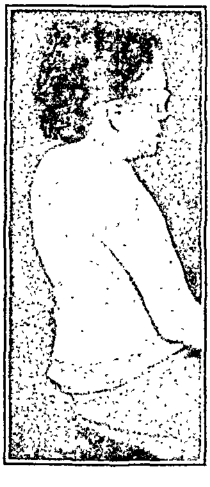
Skull.—The cranium is enlarged and the forehead high and broad. The face bones are normal in appearance, but small in comparison with the size of the cranium. Teeth good.

FIG. 1.



Showing bowing of the legs.

FIG. 2.



Showing position of head, shortening of neck, and curvature of spine and right humerus.

Measurements.—Horizontal circumference at level of temporal fossæ, 24½ in.; circumference at level of occipital spine and frontal prominence, 24½ in.; antero-posterior circumference between same points, 15 in.; antero-posterior diameter between occipital spine and base of nasal bones, 7¼ in.; maximum transverse diameter between mastoid processes, 7⅝ in.

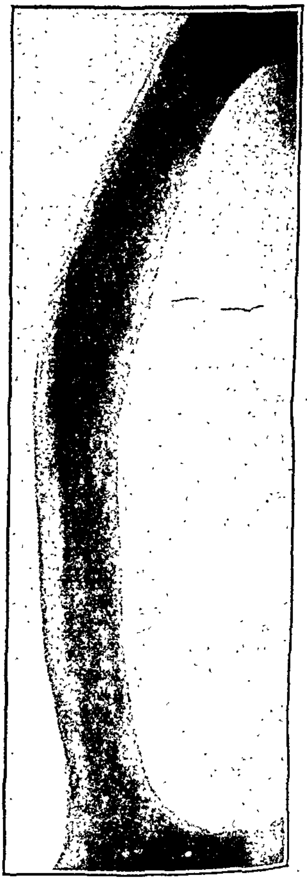
Trunk.—The spine has a double antero-posterior curvature, with an exaggerated convexity backwards in the upper dorsal region and forwards in the lumbar region: thorax correspondingly flattened in front and abdomen short and wide; right clavicle thickened and the natural curves increased; pelvis slightly flattened and sacrum pushed forward.

Limbs.—Right humerus bent forwards and slightly outwards and thickened: left humerus shows a very slightly increased curve. No change detected in bones of forearms or wrists: in right hand first and third metacarpal bones are thickened and convex dorsally: other bones of the hands unchanged. Both *femora* show changes, being bent outwards and forwards and moderately thickened. No apparent alteration of the angle of neck and shaft. Measurement (with the patient in horizontal position) from tip of great trochanter to the vertical line from anterior iliac spine is 2½ in. Tibiæ bowed forwards and thickened. When patient stands with ankles touching, the knees are widely separated. Feet show no deformity; joints are unaffected and movements free.

Other Systems.

Circulatory system.—No evidence of thickening of the arteries; heart shows no enlargement and is regular in force and frequency. At apex the first sound is short, and there is a systolic murmur conducted outwards. At base a loud rough systolic bruit most marked in the pulmonary area. *Digestive system.*—As stated above, the patient has always been liable to flatulence, otherwise there is no abnormality. *Urinary system.*—No enlargement of kidneys can be detected; urine has always been normal while the patient has been under observation. *Blood.*—No anæmia. Wassermann test negative. *Nervous system.*—No abnormality noted.

FIG. 3.

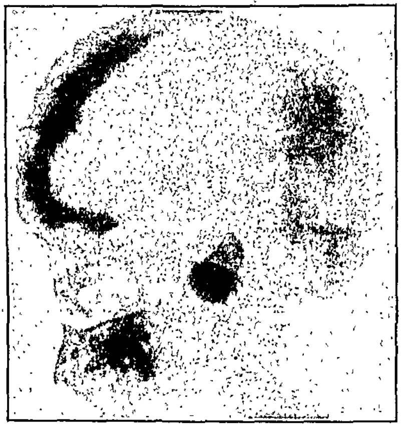


The right humerus.

Discussion.

The diagnosis in this case is of interest. Clinically the changes observed are fairly in accordance with those of Sir James Paget's[1] classical description, on which the differentiation of the disease as a clinical entity was first established. The insidious onset, chronic course, and relatively slight disturbance of general health, the conspicuous bending and thickening of the bones, tendency to symmetry in the changes, absence of arthritis, and above all the progressive enlargement of the cranial bones make up a diagnostic picture. The X ray examination of the skeleton, however, confirms the diagnosis and is in agreement with the reports of recent cases. Locke[2] and R. Abbe[3] both publish accounts in which X ray photographs of the skull are printed, and lay stress on the enormous thickening of the frontal, parietal, and occipital bones, with an indefinite woolly outline to the shadow. The first writer remarks that this thickening may be disclosed by X ray examination when the head is not apparently greatly enlarged. Abbé considers that the X ray of the skull may in some cases be the only means of establishing the diagnosis. The differential diagnosis from osteo-malacia, however, rests not only on this condition of the skull, but on the changes in the long bones. In osteitis deformans the shafts of the long bones are gradually thickened and uniformly curved, whereas in osteo-malacia they are thin and atrophied and yield with an angular bend. No doubt at the beginning of this patient's illness the clinical diagnosis might have offered some difficulty, but by X ray examination the two conditions should be distinguishable even in the early stages. In a recent report on osteo-malacia and late rickets by Professor E. Looser,[4] of Vienna, the writer states that in osteo-malacia X rays show bony changes even in cases of moderate severity, and that in slight cases thinning of the wall of the shaft of the long bones is seen, and is especially plainly demonstrated in the hand. He publishes plates to confirm this. In contrast to these the radiogram of the hand printed herewith is interesting, showing as it does the dense thickening of two metacarpals, in an otherwise normal picture. Late rickets, according to the same authority, cannot be distinguished clinically from osteo-malacia, the differences lying in the age and rapidity of onset. Late rickets usually appears in adolescence, and osteo-malacia in young adults. The X ray appearances of these two diseases are indistinguishable. From these considerations there seems to be little doubt that the diagnosis in this case is osteitis deformans. The nature of the disease is still unknown, and its causes hardly even conjectured. The possibility of it being a syphilitic affection has been discussed by those qualified to give an opinion, and has been dismissed as unproven and improbable. The Wassermann reaction in this patient is negative. Other chronic infective conditions, deficiencies of diet, and disorders of internal secretions are all known as causes of bone diseases, but there is at present no certain knowledge of the causative factor in osteitis deformans.

FIG. 4.



The skull.

I am indebted to Dr. Louisa Hamilton for permission to publish this case, and to Dr. C. C. Bernard for her coöperation.

X Ray Report.

The skeleton shows changes typical of osteitis deformans; these changes are most marked in the skull, the right humerus, the femora, and the lumbar vertebræ and the pelvis. The appearances of the bones are as follows:—

Skull.—The whole calvarium is much thickened in the frontal region to over 1½ inches. There are variations in the density of the bone, causing a mottled appearance, and a woolly outline. (See Fig. 4.)

Right clavicle.—The bone is about double the thickness of the left clavicle, and the normal curves are exaggerated.

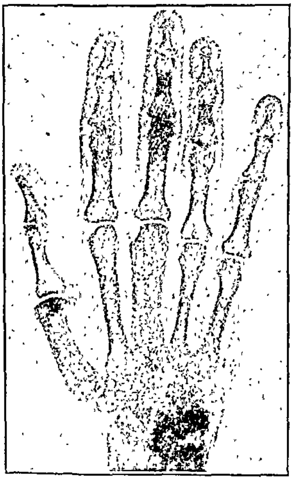
Spine.—The lower three lumbar vertebræ have an irregular outline; the bone is increased in density and the normal structure is gone. The same changes are marked in the sacrum. The other vertebræ do not appear to be much affected.

Pelvis.—All the bones are thickened. The changes in the minute structure are most marked in the ischia and pubes.

Right humerus.—The whole bone is much thickened and is curved forwards. The medullary cavity is invisible, and the normal structure is completely gone except in the two condyles. (See Fig. 3.)

Right hand.—The third metacarpal is about twice the normal diameter; the first metacarpal is thickened in a less degree. There is no differentiation between the cortex and the medulla, and the minute structure is abnormal. All the other bones of the hands are unaffected. (See Fig. 5.)

FIG. 5.



The right hand.

Right femur.—The lower third of the shaft is much thickened, the upper third somewhat, the cortex and medulla being visible in the middle third only. There is a slight outward curve.

Right tibia.—The bone is thickened, the medullary cavity obliterated, and the minute structure abnormal. There is a curve forwards.

Left femur.—The bone is curved forwards, this being most marked in the lower third, where the bend appears to form a wide angle. The upper and lower thirds are much thickened with obliteration of the medullary cavity.

Left tibia.—There is a slight forward curve, and marked thickening in the upper and lower thirds. In the middle third there is some thickening of the cortex, and though the medullary cavity is present, it would appear to be in an early stage of the disease.

No changes are detected in the bones of the face, left clavicle, ribs, left upper limb, right forearm, fibulæ, and feet. There are also no changes in the bones entering into the joints. There is no evidence of calcification of the arteries. In the abdomen there is a shadow, probably due to renal calculus.

References.—1. Paget, Sir James: Med.-Chir. Trans., London, vol. lx. 2. Locke, E. A.: Med. Clinics of N. Amer., 1918, i., 947. 3. Abbé, R.: Jour. Amer. Med. Assoc., vol. lxx., p. 371. 4. Looser, E.: Deutsch. Zeitsch. f. Chir., Ueber Spätrachitis und Osteo-malacie, Leipz., 1920, cliii., 210.

AURICULAR FIBRILLATION:

SOME OBSERVATIONS AND DEDUCTIONS FROM A SERIES OF 400 CASES.

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OF all conditions treated at this hospital that of auricular fibrillation forms one of the most important, if not the most important group. It is found in no less than 25 per cent. of all patients admitted to the wards,[1] yet approximately 8 cases out of 10 are not fully recognised as such prior to admission, whereas even without polygraphic or electrographic help not more than 1 out of 10 should be missed.

The following observations are based on 400 cases of this condition, 110 of which were in-patients and 290 out-patients. The youngest was 16 years of age and the oldest 76.

In auricular fibrillation there is a lack of coördinate muscle contraction, and in its place individual fibres or groups of fibres contract incoördinately. Some of these individual stimuli are transmitted through the bundle system, and accordingly the ventricles contract unequally and irregularly and usually with increased rate. This is manifested not only in the complete irregularity of the heart, but also in the complete irregularity of the pulse. This irregular irregularity is the most important sign we have, and is almost pathognomonic of auricular fibrillation. The force of the individual beats varies, and it is usually found that some of the ventricle beats do not reach the wrist, hence it is necessary to take the heart-rate at the apex as well as the pulse, the latter being an index as to the number of efficient ventricle contractions. The greater the difference between the apex- and pulse-rates, the greater the number of inefficient beats, tending to ventricular exhaustion.

Differential Diagnosis.

There are two other conditions giving rise to an irregularly irregular pulse and which must be differentiated from auricular fibrillation, viz.: 1. Multiple premature beats, especially when auricular in origin. 2. Sino-auricular heart-block. In most cases of premature beats of ventricular origin there is an underlying regular rhythm, the contractions of which are practically always of equal force, recognised by continued auscultation at the apex, the premature beat usually being followed by a comparatively long pause. Frequently in these cases slight exercise will eliminate the premature beats, or at least sufficiently so for diagnosis, while in auricular fibrillation exercise almost invariably accentuates the irregularity. Rarely is it necessary to resort to polygraphic or electrocardiographic means for differentiation. In auricular premature beats, a rather infrequent condition, the diagnosis is made certain only by an electrocardiogram or polygram. Clinically, however, auricular premature beats may precede the onset of auricular fibrillation. Sino-auricular heart-block, on the other hand, is usually associated with an approximately normal or somewhat lower heart-rate, while in auricular fibrillation the rate is more often very rapid. Also in sino-auricular block the apex- and pulse-rates are the same, and there are long pauses in which the heart is completely silent. Sino-auricular block can be definitely differentiated from a slow fibrillation only by the electrocardiogram or polygram. It is, however, a comparatively rare condition. Another common irregularity, which ought not, however, to be confused with auricular fibrillation, is sinus arrhythmia. This is a regular irregularity in which the heart-rate usually increases during inspiration and decreases in expiration. This condition is very easily differentiated if watched for, and is frequently found in children.

Investigation of Pathological Condition.

Having diagnosed auricular fibrillation, the two essential points to consider are: (1) the pathological condition of the heart which led to auricular fibrillation; (2) the effect that fibrillation of the auricles will have on the circulation as a whole, and particularly on the left ventricle.

Post-mortem examination shows that there is almost always definite myocardial change, usually fibrosis in the wall of the auricles, interfering with the normal activity of those chambers. Furthermore, one has to determine (*a*) whether this myocardial change is confined to the auricles, or (*b*) whether the ventricles also are affected. Naturally, if the ventricles are involved, especially the left ventricle, the onset of fibrillation is a much more serious matter, because it is the left ventricle that is mainly responsible for the circulation.

In mitral stenosis there is very little doubt but that the left auricle is greatly handicapped, being possibly the only part of the heart muscle affected. There is usually dilatation and hypertrophy followed by muscle failure, ending in degeneration. The degenerated muscle becomes hyper-irritable.[2] When the irritability of the various groups of auricular fibres becomes greater than at the normal pace-maker, auricular fibrillation sets in. Occasionally there is a localised myocardial involvement of the auricles secondary to pericarditis, or, as is even more unusual, auricular damage alone may remain following a general infection.

After the onset of auricular fibrillation the ventricle-rate is a matter of great importance, for the more rapid the rate the more will it tend to produce myocardial exhaustion. The ventricular rate may be greatly influenced by emotion. This is shown clinically by the fact that the practical normal heart-rate of a patient fully under the influence of digitalis may be greatly increased by excitement or fright. The ventricular rate is also increased by exertion, and usually out of proportion to the amount of exertion, especially when there is marked muscle involvement of ventricle. If one compares the effect of emotion and exercise on the ventricular rate, one frequently finds that the heart-rate may go up much higher on slight excitement than after exertion—e.g., in one case a patient without continuous fibrillation was easily made to fibrillate by the breaking of an electric bulb or by the loud slamming of a door, but would not fibrillate on walking up five flights of stairs. Another patient, on the other hand, was easily made to fibrillate by either excitement or exertion, but would soon return to the normal rhythm.

Treatment.

The main object to be achieved when treating auricular fibrillation is to get the heart-rate at the level where it produces an adequate circulation without undue ventricular work, which is usually between 65 and 80 a minute. This is best produced by giving digitalis in sufficiently large doses to bring the heart-rate down to approximately 50 beats a minute, when the drug is stopped. The digitalis is then again started, but in a smaller dose, and gradually increased until the desired rate is procured. The resulting dose is continued indefinitely, with changes only as varied circumstances may require. Occasionally it is desirable to keep the rate nearer to 90 a minute, but here the prognosis is worse.

The great therapeutic agent in auricular fibrillation, therefore, is physical, mental, and cardiac rest. Cardiac rest is produced by the digitalis group, resulting in partial paralysis of the bundle of His, less impulses being transmitted to the ventricles. Associated conditions and symptoms, as hyperchlorhydria with wind in stomach, must also be dealt with.

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[1] Patients considered suitable for admission include those suffering from acute valvular disease, chronic valvular disease, myocardial disease, advanced arterio-sclerosis, including secondary kidney involvement, advanced Graves's disease with myocardial involvement, acute infective endocarditis, aneurysm, &c.

[2] The normal cardiac contraction starts at the sino-auricular node at the most irritable area.

Analysis of Cases.

Turning to the actual detailed analysis of the 400 cases of auricular fibrillation, we shall consider: (1) Ætiology: (*a*) age- and sex-incidence, (*b*) pre-existing disease; (2) symptoms, relative frequency; (3) associated conditions; (4) X ray appearances, measurements.

1. *Ætiology*.—(*a*) Age and sex incidence. Of the 400 patients with auricular fibrillation examined 220 were males and 180 females, in the proportion, therefore, of 11 males to 9 females. From this it is apparent that one sex cannot be considered very much more susceptible to this condition than the other sex. Going into the ages of these patients, 265 of the 400 cases, or 66 per cent., occurred *after 40 years*, the largest number 112, or 28 per cent. of the total, occurring between 41 and 50 years. (See Table I.) (*b*) Pre-existing disease. Rheumatic fever is by far the commonest antecedent disease in auricular fibrillation, being found in no less than 123 (8 of which also had chorea), or 35 per cent. of the 348 cases in Table II. If to this we add the 14 cases of chorea alone, the cause of which is strongly affiliated with that of rheumatic fever, we have 39 per cent. of the total. On the other hand, there was a history of no previous illness in 66, or 19 per cent. of the total, a very appreciable factor and a distinctly important point in the matter of causation. Of the 46 cases giving a history of influenza, the actual cause is debatable, the severe forms of influenza being, however, of definite importance in cases with heart strain or where the heart muscle has been previously affected. Scarlet fever is not an uncommon disease in childhood; it is doubtful whether it is a cause of cardiac disease. A prominent observation in this series is that Graves's disease was found in ten cases, all of which were myocardial only.[3] The Wassermann reaction was taken in only definitely suspected cases and not as a routine, there being seven positive, in five of which the myocardium alone was involved. Apart from the subject of auricular fibrillation Table II. shows two outstanding facts which might usefully here be mentioned: (*a*) Rheumatic fever is much more likely to involve valves or valves and myocardium—such being the case in 109 out of 123 patients—than myocardium alone; (*b*) of the 14 cases of chorea (without rheumatic fever) all involved valves. In no case was the myocardium alone affected.

TABLE I.—*Age and Sex.*

—	Sex.	Age. 16-20	21-30	31-40	41-50	51-60	61-70	71-76	Total.
Out-patients	M.	3	30	34	42	41	12	0	162
	F.	4	18	26	37	33	5	0	123
In-patients...	M.	0	14	14	15	9	1	5	58
	F.	1	7	14	18	12	5	0	57
Total ...	...	8	69	88	112	95	23	5	400

2. *Symptoms, relative frequency*.—There are no symptoms pathognomonic of auricular fibrillation, nor are there any that are much more suggestive of this than of other cardiac conditions. In the 400 cases used in this series (all in-patients) there were no leading questions asked, and the symptoms are those given by the patients practically unaided. It is very apparent here (Table III.) that the commonest symptom in heart failure is dyspnœa and that this symptom is found as often when fibrillation is absent as in its presence. The next two symptoms commonly met with are pain (under or across the heart) and palpitation. Pain is somewhat more common in the absence of fibrillation, while palpitation is found somewhat more often in fibrillation cases. Among the less usual symptoms, cough is twice as common, and insomnia four times as many fibrillation as in non-fibrillation cases. While nervousness is objectively common, it is but seldom complained of as a symptom. Subjective feeling of irregular beating of the heart has been mentioned as a common symptom, but in this series, shown in Table III., it is comparatively rare.

TABLE II.—*Pre-existing Disease.*

(A) Rheumatic fever.
(B) No previous illness.
(C) Influenza.
(D) Rheumatism.
(E) Chorea.
(F) Scarlet fever.
(G) Graves's disease.
(H) Enteric fever.
(I) Small-pox.
(J) Diphtheria.
(K) Syphilis.

—	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K	Total
Mitral disease	92	20	20	17	13	23	0	3	0	2	1	193
Myocard. disease	16	38	25	7	0	15	10	6	3	2	5	127
Aortic and mitral ...	11	5	1	4	1	0	0	0	0	0	1	23
Aortic	4	1	0	0	0	0	0	0	0	0	0	5
Total	123	66	45	28	14	38	10	9	3	4	7	348

TABLE III.—*Symptoms.*

(A) Dyspnœa.
(B) Pain.
(C) Palpitation.
(D) Vertigo.
(E) Cough.
(F) Weakness.
(G) Insomnia.
(H) Nervousness.
(I) Choking feeling.
(J) Fainting (unconscious).
(K) Irregularity.

—	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)
(1)	182	72	82	40	26	24	16	16	6	8	6
(2)	183	106	70	48	13	21	4	3	15	2	3

(1) = 200 cases of fibrillation.
(2) = 200 cases without fibrillation.

3. *Associated conditions*.—Of 359 cases: (*a*) 133, or approximately 37 per cent., had definite mitral stenosis; (*b*) 132, or approximately 37 per cent., appeared to be primary myocardial; (*c*) 65, or 18 per cent., had mitral regurgitation; (*d*) 24, or 6·7 per cent., had both mitral and aortic involvement; (*e*) 5, or 1·4 per cent. had aortic involvement only, including 2 cases with double aortic. From this one would infer that myocardial involvement alone is found associated with auricular fibrillation practically as frequently as pure mitral stenosis, although some authorities have stated that mitral stenosis is associated with most cases. If, however, we add the mitral and aortic cases having mitral stenosis, of which there were 10 out of 24, we have 143 mitral stenosis cases as against 132 myocardial, or only 8½ per cent. more in a total of 359 cases. Aortic disease alone accompanied auricular fibrillation in only 5 cases and is therefore comparatively unusual, while both mitral and aortic involvement occurred in 24 cases, or 6·7 per cent., of the total. (Table IV.) Group (*c*) consists of patients having only a distinct blowing systolic murmur at the apex transmitted to the axilla. Since most patients with auricular fibrillation are first seen at the hospital after fibrillation has commenced, there is no certain way of recognising those cases which showed a presystolic murmur before

TABLE IV.—*Associated Conditions in 359 Cases.*

—	Age. 16-20	21-30	31-40	41-50	51-60	61-70	71-76	Total
Myocardial	0	13	21	28	48	18	4	132
Double mitral ...	4	19	20	25	13	1	0	82
Mitral regurg. ...	2	5	19	14	20	4	1	65
Mitral stenosis ...	0	14	15	19	3	0	0	51
Mitral and aortic	1	6	4	7	6	0	0	24
Aortic	0	1	1	3	0	0	0	5
Total	7	58	80	96	90	23	5	359

—	Mitral stenosis and double mitral.	Myocardial.	Mitral regurgitation.	Aortic and mitral.	Aortic.
No. of cases ...	133	132	65	24	5
Per cent. ...	37	37	18	6·7	1·4

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[3] "The Heart in Graves's Disease," by J. Strickland Goodall, Practitioner, July, 1920.

the onset of this change of rhythm.[4] If the second pulmonary sound is reduplicated or markedly accentuated and the electrocardiogram shows a right-sided preponderance, mitral stenosis is more likely to be present. A diastolic murmur at the apex not of aortic or exocardial origin is, of course, sufficient to diagnose stenosis. Also, considering the very large size of the heart in auricular fibrillation, especially of the auricles, it is apparent that some of the mitral regurgitation murmurs, in spite of all the signs of what is considered an organic lesion, are due to relative mitral regurgitation, as was the case in a recent post-mortem examination at this hospital. These cases would accordingly come under the heading of those associated with myocardial diseases.

4. *X ray appearances; measurements.*—All patients coming to this hospital are X rayed as part of the routine examination. With the tube 6 ft. away from the object the rays are practically parallel, and the image is then the same size as the object. For convenience in actual practice, however, it is desirable to place the tube very much closer to the patient and to allow for the distortion, and as used at this hospital the image on the screen is ¼ in. to ½ in. larger than the actual size of the heart. The size of the normal heart varies with age, sex, mode of life, &c., of the individual. Working on healthy hearts of young men under 30, Strickland Goodall showed that the average of the transverse diameters in a series of cases was 5¼ in., and this figure is taken as a standard in Table V.

TABLE V.—*Transverse Diameter of Heart.*

Fibrillation.	Without fibrillation.
One case with diameter to 5⅜ in.	33%
16% with diameter of 5⅛ to 6 in.	26%
42% „ „ 6⅛ to 7 in.	26%
24% „ „ 7⅛ to 8 in.	11%
16% „ „ 8⅛ to 9 in.	2%

The sign most commonly found in auricular fibrillation, next to irregular irregular rhythm, is enlarged heart, particularly the auricles being so. In the 117 cases detailed here, where the percussion figures were corroborated by X ray, and in which the actual measurements are given, only one heart showed a diameter of 5⅜ in. or less. Therefore in practically every case the diameter of the heart was above the normal limit. Over 80 per cent. of the fibrillation cases showed a heart diameter of 6 in. or more, as against 40 per cent. in non-fibrillation cases, while 40 per cent. showed 7⅛ in. or more, as against 13 per cent. in non-fibrillation cases. When in auricular fibrillation the heart is beating rapidly the apex-rate as a rule differs from the pulse-rate, and it is necessary to count both. (This is, therefore, a third sign to be looked for.) Since the apex gives the actual ventricle-rate, while the radial pulse gives only the rate of those beats that are sufficiently powerful to force the blood through the body, a rapid apex-rate leads to earlier ventricular exhaustion. This sign is of great importance in prognosis. As a general rule the greater the difference between the apex-rate and the pulse-rate, especially after exercise or emotion, the worse the prognosis.

The three signs of auricular fibrillation to be emphasised are thus: (1) Complete irregularity of the heart. (2) Increase of the cardiac diameter. (3) A difference in apex- and pulse-rate.

Prognosis.

Paroxysmal attacks of tachycardia occasionally prove to be attacks of auricular fibrillation, and may last only a few minutes to several days and then return to normal. There may be but one such attack in the patient's life, or there may be several, or, as is most usual, once fibrillation starts it continues the rest of the patient's life. If the ventricle, particularly the myocardium, is in good condition, and the rate has been kept down sufficiently to avoid exhausting it (at or near 70), whether by nature, rest, or digitalis, the auricles will continue to fibrillate until they become completely exhausted. The auricle waves in the electrocardiogram then become very small and fine, and ultimately disappear almost entirely. In other words, the auricles now become passive chambers and take very little active part in the cardiac cycle.[5] The ventricles, however, may continue to receive the impulses from the auricles through the bundle of His. Sometimes it is necessary to use a continuous drum over a comparatively long time before any auricle waves can be found. This condition is differentiated from a complete heart-block in that (*a*) the waves in the auricles will be found, if carefully looked for, usually as fine waves, however, while in a true complete heart-block practically normal P waves are present; (*b*) the rhythm of the heart continues irregularly irregular, while in a complete heart-block the ventricle usually takes on a regular rhythm; (*c*) the rate is usually higher than in the heart-block. It is thus apparent that the impulse starts in the sinus or some part of the auricle, that it is transmitted through the auricle and bundle of His to the ventricles, and that the auricles have almost completely lost their power of contractility. This state of affairs, though found in long-standing cases of auricular fibrillation, from a practical point of view is less inconvenient to the patient than when the auricles are actively fibrillating, and when the ventricle in spite of treatment continues to beat at a very rapid rate, or when the rate is greatly increased by the least excitement or exertion.

Summary and Conclusions.

1. The three most constant and diagnosable signs found in auricular fibrillation are: (1) the irregular irregularity in rhythm, (2) enlarged transverse diameter of the heart, (3) a difference in the apex- and pulse-rate.

2. An irregular irregular heart rhythm is almost pathognomonic of auricular fibrillation. It must be differentiated from that found in (*a*) multiple premature beats, especially those of auricular origin, and (*b*) sino-auricular heart-block.

3. There are no symptoms pathognomonic of auricular fibrillation, nor are there any much more suggestive of this than of other cardiac conditions.

4. A diagnosis of auricular fibrillation having been made it is essential to consider (1) the pathological condition of the heart which led to this condition, and (2) the effect that the fibrillation will have on the circulation as a whole, and especially on the left ventricle.

5. It is desirable to decide whether there is myocardial change in the auricles alone, or whether the ventricles also are affected. If the latter is the case, the prognosis is distinctly worse.

6. The main object to be achieved when treating auricular fibrillation is to adjust the rate of the ventricles so as to produce an adequate circulation without undue ventricular work.

7. The great therapeutic agent is rest—physical, mental, and cardiac.

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[4] In these cases the murmur was due to the forcing of the blood by a more or less hypertrophied left auricle through the narrowed mitral opening. In auricular fibrillation this action is absent and hence the associated mitral stenosis both as a pathological condition and as the possible underlying cause of auricular fibrillation is often missed. Clinically, however, some patients with auricular fibrillation still give what appears as a presystolic murmur on auscultation. Leaving out of consideration Flint's murmur, a presystolic murmur rarely heard at the apex in aortic regurgitation, these can be divided into two types: 1. Those in which the presystolic is not a true recognised presystolic, but in which the diastolic murmur runs through the period of diastole into the following systole, the heart rest period being short. It is really, then, a diminuendo murmur instead of a crescendo murmur. When the rest period is long, on the other hand, the diastolic murmur ends as usual and there is a distinct interval previous to the following systole. 2. Among my cases there were two in which there was a distinct and true definite presystolic murmur not a prolonged diastolic, and in which there was also fibrillation. There was also a presystolic thrill palpable. The murmur and thrill were present only occasionally and of varying force. It was quite clear, however, that these did not have any relationship to the period between diastole and the following systole. It may be inferred that there is a definite stage between the normal auricular contraction and a condition of auricular fibrillation. Though the impulses are generated there is not a definite complete contraction preceding and in normal relation to the ventricular contraction, but there are a sufficient number of groups of fibres contracting simultaneously to produce a distinct murmur on forcing the blood through the stenosed mitral valve at or near the time when the ordinary presystolic murmur of mitral stenosis would be heard the heart not fibrillating. If the presystolic murmur had ared one might have inferred that it was due to occasional ls of normal cardiac rhythm.

[5] It is interesting to note in this connexion that, according to some authorities, 40 per cent. of the ventricular filling in the normal heart is performed by the auricles.

8. The commonest antecedent disease is rheumatic fever. Rheumatic fever or chorea was found in 39 per cent. of the total number questioned, while 19 per cent. of the total gave a history of no previous illness. Graves's disease very definitely leads to fibrillation.

9. Primary myocardial involvement was found in as many cases as were associated with pure mitral stenosis. The other conditions in the order of their frequency were mitral regurgitation, both mitral and aortic disease, and lastly, aortic disease alone.

10. Fibrillation of the auricles can continue until the auricles are completely exhausted and become practically a passive chamber. The contractions may then come on only occasionally and be very slight, but impulses will still be transmitted to the ventricles.

11. There is no predisposition in either sex towards fibrillation.

12. As the pulse-rate usually does not give the ventricular rate of contraction, it is necessary in all cases of auricular fibrillation to count the apex-rate as well.

13. A murmur presystolic in time can be heard in some cases of auricular fibrillation associated with mitral stenosis, but this is usually due to a diastolic murmur running into the following systole when the rest period is short.

14. 25 per cent. of all patients admitted into the wards of the National Hospital for Diseases of the Heart have auricular fibrillation.

I have to thank Dr. J. Strickland Goodall for his invaluable help and kind interest in the preparation of this paper, and also Drs. R. O. Moon, S. Russell Wells, P. Hamill, and F. Price for permission to use the cases admitted under them.

PERCENTAGE AND FRACTIONAL DILUTIONS.

BY B. BLACKLOCK, M.D. EDIN.

(From the Liverpool School of Tropical Medicine.)

IN THE LANCET of Jan. 29th, p. 223, Dr. William Fletcher gives formulæ for preparing percentages of fluids and for fractional dilutions. Professor J. W. W. Stephens and Dr. S. R. Christophers gave 12 years ago[1] a simple formula for obtaining percentage dilutions. It shows the amount of diluting fluid which it is necessary to add to 1 volume of fluid of percentage x in order to reduce that volume to the desired percentage y. The formula is $\frac{x}{y} - 1$; where x represents the original percentage and y the desired percentage. Thus, to dilute a solution from 20 per cent. to 5 per cent. add to each volume of solution $\frac{20}{5} - 1 = 3$ of the diluting fluid.

The following formula can be used where it is necessary to prepare specified volumes of lower percentage or higher dilution from higher percentages and lower dilutions respectively.

Percentage dilution.—To prepare a specified volume z of a y per cent. solution from an x per cent. solution, take of the latter $\frac{z \times y}{x}$ volume and make up to z volume with diluting fluid.

Example.—To obtain 12 c.cm. of a 24 per cent. solution from an 80 per cent. solution, take of the latter $\frac{12 \times 24}{80} = 3{\cdot}6$ c.cm., and make up to 12 c.cm. with diluting fluid.

Fractional dilution.—To prepare a specified volume z of a $\frac{1}{y}$ dilution from a $\frac{1}{x}$ dilution, take of the latter $\frac{z \times x}{y}$ volume and make up to z volume with diluting fluid.

Example.—To obtain 60 minims of a $\frac{1}{100}$ dilution from a $\frac{1}{10}$ dilution, take of the latter $\frac{60 \times 10}{100} = 6$ minims, and make up to 60 minims with diluting fluid.

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[1] Stephens and Christophers, 1909: Practical Study of Malaria and Blood Parasites, p. 441.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A NOTE ON

NON-INFECTIVE THROMBOSIS OF PELVIC AND ABDOMINAL VEINS.

BY R. J. MORRIS, C.B.E., M.D. DURH., M.R.C.P. LOND.

INTRAVASCULAR clotting (thrombosis) may occur under imperfectly understood conditions; this is particularly true of non-infective thrombosis. The following case is illustrative; the cause is obscure, the termination unusual, and the difficulty of diagnosis from the initial symptoms is apparent.

M. D., aged 59, weight 15 st. 2 lb., height 5 ft. 11 in. Always had good health; no venereal disease; led an active athletic life; wore a double inguinal truss since April, 1918. No serious illness up to August, 1918, when he had an operation for appendicitis. Recovery appeared to be complete and satisfactory. He resumed military duty six weeks after the operation, and remained in excellent health up to April, 1919, when he had a severe attack of influenza affecting throat and chest. After four weeks he made a satisfactory recovery, and was in usual health up to Nov. 5th, 1919.

On the 5th he had much abdominal distension, slight abdominal pain, pain in area of prostate gland, congestion of penis and a very thin urine stream, took considerable time to empty the bladder; the congestion was less and the bladder was emptied with more ease in the recumbent position than when standing up. On the 6th, during a round of golf, he felt an acute pain over the left sacro-iliac joint. The next day the pain was more acute in the back, and he had a feeling of great abdominal distension, and some nausea and vomiting. On examination a fibrositic nodule over the left sacro-iliac joint, some tenderness over the gall-bladder, and slight œdema of right foot were found. Temperature normal, heart and lungs normal, pulse 68. No cause could be found for the distension and œdema, and there was no notable point in the history of the case except that he had been taking an aperient dose of Epsom salts in a glass of hot water before breakfast since the attack of influenza in April, 1919. No definite diagnosis could be made.

On the 8th he was seen by surgeon in consultation. Much abdominal distension. Dull continuous pain in abdomen; pain in back more acute; tenderness on pressure over the external abdominal rings. Examination per rectum revealed nothing. Condition remained the same up to the 11th, when in addition to the abdominal pain and distension acute pain commenced in right thigh, and pain over the femoral vessels in Scarpa's triangle. No tenderness on pressure. Œdema of both feet. On the 12th again seen in consultation. Abdominal pain and distension more marked. Temperature 99° F. Urine had trace of albumin, and on centrifugalisation a few red blood cells were seen. An elastic swelling found in right lumbar region. On the 14th left thigh became painful. Much tenderness in Scarpa's triangle. Temperature rose to 101·2°. On the 16th right thigh and groin more painful, and much œdema of both legs from hips to toes. No œdema of back. Temperature varied from 101·2° to 99·6° during the day.

On the 17th examination per rectum revealed nothing further than some ballooning and emptiness. Urine loaded with urates. Fluid appeared in tunica vag. testis. Acute pain to right of umbilicus. Temperature 99°. Œdema of legs increased, much pain in legs, no tenderness. On the 20th he was seen by surgeon in consultation. He found "a definite 'pappy' or semi-elastic swelling in right lumbar region, felt bi-manually in neighbourhood of right kidney." Discussion ensued on the possibility of the condition being inflammatory (diverticulitis). Temperature varied between normal and 99·8°. Castor oil emulsion by the mouth, and simple enemas were given daily; good result, and the tumour in lumbar region rapidly diminished in size.

By the 22nd condition improved; abdominal pain ceased; pains in both legs became less; œdema remained about the same and confined to legs; no œdema or swelling of back, and not higher than Poupart's ligament. Abdominal distension still continued. On the 23rd pains in legs and much abdominal distension, with pain and tenderness in right half of abdomen. Temperature 99·8°. On the 24th griping pain in abdomen caused restlessness, but less aching in legs, and less pain and tenderness in Scarpa's triangles. Temperature normal or subnormal. Blood examination: hæmoglobin, 92 per cent.; red cells, 5,200,000; white cells, 9100. Urine: minute trace of albumin, centrifugalised deposit showed red blood cells in small numbers.

On the 29th consultation with the two surgeons. Operation was discussed and the decision come to not to operate. Discussion followed on the probability of the tumour being malignant and partially occluding the inferior vena cava. From this date up to Dec. 4th condition remained about the same, œdema tending to subside. Pain and tenderness remained along the femoral vessels in both legs, in Scarpa's triangles, and Hunter's canal. Weight was found to be increased by 2 lb., accounted for by the fluid in the tissues of the legs. On the 12th patient was partially dressed and walked a little in bedroom; much aching in both legs followed and œdema increased. Notwithstanding this, he got up each day for varying periods and steadily improved from this date.

On Jan. 7th, sixty-fourth day of the illness, consultation of physicians and surgeons. Tumour in right lumbar region much smaller and difficult to locate. Change of air and scene recommended. Arrived Hyères, France, Jan. 31st, 1920, and returned May 7th.

Present condition, December, 1920, more than 12 months since illness commenced: In good health. Tumour right lumbar region disappeared about Jan. 16th. Urine normal, slight congestion of penis remains. Weight 15 st. 9 lb., as compared with usual weight 15 st. 2 lb. Can walk well and play golf. Very slight œdema over the tibiæ occasionally and some blueness about the ankles at night, never present in the morning. Slight dilatation of superficial veins of anterior surface of abdomen. No varicose veins anywhere. *He has discarded his truss and feels no inconvenience* in consequence.

Remarks.

The cause of the condition in this case is obscure. The purging by daily doses of magnesium sulphate may have caused the original phlebitis in the hæmorrhoidal or veins of the vesico-prostatic plexus. The attack of influenza in April, 1919, or the appendicitis and operation in August, 1918, may have left some smouldering trouble, or pressure by the double inguinal truss worn regularly from April, 1918, up to the time of the operation, and after the operation up to Nov. 5th, 1919. The first signs were abdominal distension, congestion of penis, difficulty in passing urine, and pain in right groin about the position of Scarpa's triangle; then followed tenderness over the colon, much distension and partial paralysis of it, evidently due to interference with the venous supply, œdema of right foot, pain in right thigh followed by pain, swelling, and œdema of the whole leg, but no apparent inflammation of the femoral veins. On Nov. 14th the left thigh became painful, swollen, and œdematous, with pain along the course of the vessels. It is reasonable to conclude that the initial lesion was thrombosis of one of the veins of the vesico-prostatic plexus spreading to the internal iliac and thence probably to the inferior vena cava. It is difficult in this case to decide how far in this direction the thrombosis advanced, as there was no swelling or œdema of the back, or higher than Poupart's ligament in front. As the course of the case ended in recovery it is difficult to explain how resolution came about, and why the thrombus was non-infective. The highest temperature was 101·2°; it became normal about the nineteenth day of the illness and remained so. The diagnostic alternatives were malignant tumour, inflammatory tumour (diverticulitis), fibrous tumour or contracting cicatrix obstructing the inferior vena cava.

A SECOND ATTACK OF CHICKEN-POX.

By FREDERIC HOLLAND THOMSON, M.B., C.M. ABERD.,

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MOST authorities in this country consider that a second attack of chicken-pox in the same individual is rare. For example, J. MacCombie, in his long experience, had never seen a case, and some observers seem inclined to be sceptical of its occurrence. Therefore, the following case may be of interest and seems worth recording:—

A. K., aged 5½ years, was admitted to this hospital in November, 1917, suffering from scarlet fever and with a *history of having* suffered from chicken-pox. On his chest and forehead were old scars identical with those left by chicken-pox.

In the ward in which he was resident the following cases of chicken-pox arose: L. B., aged 6 years, showed the eruption on Dec. 24th; R. F., aged 6, and D. V., aged 4, on Dec. 25th. A. K. developed a typical eruption of chicken-pox on Jan. 10th, 1918.

A NOTE ON

THE "STERNO-HYOID" ARTERY.

By LAMBERT ROGERS, M.R.C.S. ENG., L.R.C.P. LOND.,

DEMONSTRATOR IN ANATOMY AND HOUSE SURGEON, MIDDLESEX HOSPITAL.

Kocher believed one of the most important factors in operations for exophthalmic goitre to be avoidance of hæmorrhage. Referring to excision, he states: "*The* result really depends for success on the most careful arrest of hæmorrhage," a view thoroughly endorsed by Mr. James Berry and others. Apart from Graves's disease and old toxic goitres (so-called secondary [illegible]'s disease), operations for simple goitres are often associated with much blood loss, and since thyroidectomies of varying extent are becoming more frequent, it may not be inappropriate to draw attention to a source of hæmorrhage in an unnamed, but relatively large, vessel shown by recent dissections to be a muscular branch of the superior thyroid artery. Moreover, reference to the literature has revealed only the briefest mention of the muscular branches of the artery.

The superior thyroid, after giving off its hyoid, superior laryngeal and sterno-mastoid branches, frequently divides into two trunks of almost equal calibre. This bifurcation has been noticed in the carotid triangle or immediately behind the anterior belly of the omohyoid but may occur farther forward in the muscular triangle. Of the divisions, the larger runs downwards and inwards behind the sterno-thyroid to end in the gland, the other superficial to this muscle lying in a groove between the insertion of the latter and the thyro-hyoid. In this position it gives off branches to the infra-hyoids and continues downwards in a more nearly vertical course, giving rise to the crico-thyroid artery, and may here give off twigs either to the lateral lobe or the pyramid where one exists. Of the muscular branches proceeding from this division by far the largest is that to the sterno-hyoid (see diagram). This branch enters the muscle high up, roughly at the junction of the upper and middle thirds, and on its posterior aspect.

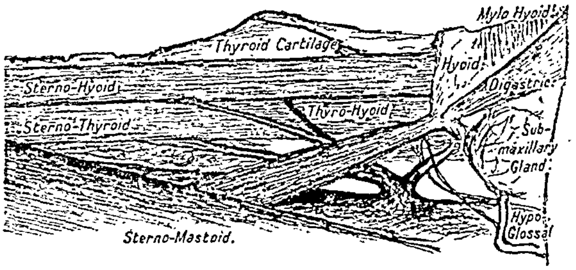


Diagram of artery.—In this case there is a common origin for the superior thyroid and the lingual. The branch to the sterno-hyoid is marked in black.

Professor Thomas Yeates is aware of the existence of the artery, and has noticed it repeatedly, and Mr. Berry tells me that when he has to divide the sterno-hyoid muscle this vessel usually requires a ligature. Professor Kocher refers to the large anterior branch as a guide to the main trunk of the superior thyroid in ligating the latter, and it is from this branch that the sterno-hyoid twig arises. It is hoped that the description may be of use to workers in this region, since it would appear that this vessel is liable to damage in thyroid operations, particularly when division of the infra-hyoids is found necessary.

A CASE OF

CHRONIC HYDROCEPHALUS SIMULATING HYSTERIA.

By M. S. MONIER-WILLIAMS, M.A. OXON., M.R.C.S., L.R.C.P., LOND.

With Post-mortem Notes by HELEN INGLEBY, M.B., B.S. LOND., M.R.C.P. LOND.

THE following case appears of sufficient interest to be recorded:—

The patient, a man of well-marked neurotic temperament, enjoyed average good health until he joined the R.N.V.R. in 1914 at the age of 46. Exposure on anti-aircraft service caused frequent attacks of bronchitis, so that he was invalided out of the Navy. In the spring of 1917, he had a severe attack of influenza *followed by meningitis according to the diagnosis* of Dr. Philip Birch, who was then attending him, and of Dr. F. W. Tunnicliffe. He first came under my care in the spring of 1918 with the following symptoms: Chronic headache (dating back to the meningitis) and "a curious pain from between the shoulders up the spine to the back of the head." The pain was associated with nausea, and there were occasional attacks of retching, but no actual vomiting. He walked with difficulty, like a very old man, "because his legs felt weak, and because it hurt his head to walk." He was inclined to be drowsy, and complained that he slept too much. He had a cough which caused intolerable pain in the head which, on examination, was shown to be due to bronchitis, and, as he breathed with difficulty, and air entry, particularly on the right side of the chest, was deficient, I sent him to Dr. A. C. Jordan for X ray examination. Dr. Jordan reported peribronchial fibrosis in both lungs, probably phthisical, the impairment being most pronounced on the right side. Sputum examined on several occasions by Dr. John Matthews showed no tubercle bacilli. The blood, also examined by Dr. Matthews, gave a negative Wassermann reaction. There was no optic neuritis.

A year later the patient's condition was much the same, except that he now suffered from occasional attacks of giddiness, was subject to slight febrile attacks now and again, had worse headache, and more frequent attacks of nausea and retching, walked with more difficulty, found it an effort to get in and out of chairs, talked at times vaguely and rather childishly, and had a strange manner, and an obviously failing memory. He visited St. Margaret's Bay, Dover, and was there taken suddenly with his final illness which lasted about six weeks. Constant giddiness and nausea, with much increased loss of power in the legs, was followed by vomiting, which was almost continuous for a fortnight, and there was steadily progressive vacant loss of memory. When the vomiting had abated he was brought back to London in a motor ambulance.

The diagnosis being extremely obscure, several consultations were arranged. Dr. Arthur Latham considered that he was not tuberculous and that the lung condition was an unessential part of his illness. Mr. Seccombe Hett excluded any gross lesion of throat, nose, and accessory sinuses. Sir James Purves Stewart found no evidence of any organic affection of the cerebro-spinal nervous system. The only objective abnormality he noted was a slight flattening of both pupils, so that they were not completely circular. He drew attention to the similarity of the patient's gait to that seen in hysterical conditions, and considered that the case was probably one of hysteria. Sir Humphry Rolleston offered no positive diagnosis, but made several suggestions, and named chronic hydrocephalus as a possible cause of the condition.

The patient's state now rapidly grew worse. He behaved as one suffering from dementia, and later developed incontinence of fæces and retention of urine. Catheterisation performed with the usual aseptic precautions was followed by acute hæmorrhagic cystitis, and coma of 24 hours' duration preceded death.

A post-mortem examination, at which Sir Humphry Rolleston was present, was performed eight hours after death by Dr. Helen Ingleby, who very kindly adds her notes.

Post-mortem Examination.

A thin body. There were old-standing adhesions of the right pleura, none of the left. The lungs showed a remarkable puckering and furrowing of their posterior surfaces at the level of the hilum, the upper halves of both lower lobes being the parts chiefly involved. In either lung a hard mass could be felt in the region of the hilum, and this on section proved to be due to extensive peribronchial fibrosis. Smaller areas of fibrosis were scattered throughout the lung tissue. The apices, however, remained free from disease. No signs of active tuberculosis were found, but calcareous changes had taken place in the peribronchial glands. Compensatory emphysema was in evidence in the non-fibrosed areas. The bronchi were somewhat thickened and dilated, but there was no acute bronchitis.

The heart showed nothing abnormal beyond slight right-sided dilatation. The vessels were remarkably free from atheroma. Below the diaphragm the most interesting lesion was in the bladder, which was full of blood, and showed severe hæmorrhagic cystitis with sloughing of the mucous membrane. The condition was apparently akin to the acute bedsore that sometimes develops in cerebral cases. The kidneys and prostate were normal. In the other abdominal organs the only noteworthy feature was a fairly marked perilobular fibrosis of the pancreas.

Cranium: The brain was moderately injected. Old adhesions were present between the lobes, and especially between the medulla and cerebellum. The pia-arachnoid was somewhat thickened. The brain substance was soft, and the ventricles distended with slightly opalescent cerebro-spinal fluid. The fluid was under considerable pressure, and spurted with some force through the infundibulum as the brain was being removed. All the ventricles, including the fourth ventricle and the aqueduct of Sylvius, were enlarged, and the foramen of Monro was about three times its normal size.

Microscopically the meningeal thickening was confirmed, the pia showing moderate infiltration with lymphocytes and plasma cells. No excess of cells was present in the cerebro-spinal fluid.

In the nerve cells the protoplasm was somewhat vacuolated and the Nissl granules disappeared from the cells in the cortex and in the medulla oblongata. Altzheimer's fuchsinophil granules were present in all the cells, but this appears to have no special significance. The nuclei were practically normal, so that one must regard the changes in the protoplasm as a terminal event. The microscopical findings thus confirm the naked-eye conclusion that chronic hydrocephalus and not structural alterations of the grey matter was responsible for the symptoms.

The total illness of the patient lasted a little over two years.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

COMBINED MEETING OF CLINICAL, MEDICAL, AND SURGICAL SECTIONS.

GRAVES'S DISEASE: ITS MEDICAL AND SURGICAL TREATMENT.

A COMBINED meeting of these sections was held on Feb. 11th, Sir ANTHONY BOWLBY, President of the Clinical Section, being in the chair.

The Medical Side.

Dr. HECTOR MACKENZIE, who opened the discussion, spoke of the advantages offered by surgical treatment in saving patients from suffering for long periods of ill-health. He related two typical cases of long-standing exophthalmic goitre in which the patients had been treated medically; most of the symptoms and signs of the disease had disappeared, but in one case the heart had remained rapid and irregular, and in the other there was, as well, auricular fibrillation. It was generally admitted that most of the symptoms resulted from hyperthyroidism, and the problem presented itself as to what was to be done to reduce the over-secretion of the thyroid gland. There were two methods of bringing this about: (1) X ray radiation, and (2) by surgical treatment. He had tried X ray treatment in a considerable number of cases, but it was not until 1915 that he met with any convincing evidence of its efficacy. In this case the patient, after treatment in the X ray department, presented herself without any signs of Graves's disease, but evidently suffering from myxœdema. The goitre had entirely disappeared, the eyes were normal, and the heart was quiet. She quickly lost the symptoms of myxœdema under thyroid treatment and then appeared normal in every way. After this he had had a large number of cases so treated, but on the whole he considered the results as having been very disappointing. He had seen another case in which, although there was practically a cure, yet there resulted a severe X ray burn, followed by keloid growth. The cure, which was brought about by X ray treatment even in only a few cases, went far to establish the truth that the essential nature of exophthalmic goitre was hyperthyroidism. The conclusions he had come to from the results of his own observations were that in many cases there was no obvious benefit, and that even with many applications over a long period of time a cure was very rarely effected. The danger of X ray burning, too, must not be forgotten.

Dr. Mackenzie then considered the surgical treatment, the pioneer in which, he said, was Lord Lister, who, in 1877, removed the greater part of a goitre in a case of Graves's disease, in which the patient's life was in danger from suffocation. A few weeks later all the symptoms were alleviated, and it was recorded that after another 10 years the patient presented few signs of her former malady. This successful result encouraged other surgeons to perform similar operations, but the risks to life were found to be so considerable that for many years not many cases were treated in this way, at any rate in this country. Encouraged by the reports of Kocher and others he had now and again ventured to have recourse to operative treatment for his patients, but his experience was most disheartening at this time, for the operation under general anæsthesia proved fatal in a number of cases. Ligature of the thyroid arteries came into vogue in the first decade of this c
although comparatively safe, did not appear
be followed by such improvement as to
while to go on with it. The in
anæsthesia and advances in surgical
great reduction in the operative mortality.

At a former discussion of the R
Medicine on the subject Mr. T. P. Dunhill
a series of cases of exophthalmic goitre
under local anæsthesia, and followed by

tory results; and in 1915 Mr. Dunhill had successfully operated upon a severe case of his (Dr. Mackenzie's), using a local anæsthetic. Mr. Dunhill had initiated the late Mr. Stewart Rouquette and, after his untimely death, Mr. W. H. C. Romanis into his technique, and with the collaboration of these various surgeons he (Dr. Mackenzie) had been able to apply surgical treatment to all those cases in which he thought it was indicated. He thought that the leading principle for selection of cases suitable for operation was that a fair trial had been given to medical treatment and that the case had shown no real improvement. Any surgeon who was unduly influenced by statistics would probably have declined to operate on most of them. Of 30 private cases successfully operated upon the average duration of symptoms before operation had been nearly four years, and the cases had all been more or less severe; some had required more than one operation. The usual immediate results following partial thyroidectomy were: (1) the patient became restful and tranquil; (2) there was an increase in strength; and (3) the heart's action became slower, but this might only come about gradually. When only one lobe was removed amelioration was sometimes the most which followed, and further operation was necessary to bring about the best result. The prospects of the patient with one lobe removed were much better than they would have been without the operation. Exophthalmos appeared to be the most persistent symptom, but although the eyes remained prominent the staring frightened look was lost. Among several hundreds of cases of operation, private and hospital combined, there had not been more than 2 per cent. of deaths.

Dr. Mackenzie then discussed the contra-indications to operation. One would have thought, he said, that auricular fibrillation was one, but he had had several cases operated upon in which this had been present and the result of the operation had been that the heart had become quiet and regular. He had ventured on operation in a case in which the patient was bordering on mental derangement, and after operation the nocturnal delusions disappeared. He thought that, as a rule, mental symptoms should contra-indicate. In the presence of undoubted diabetes operation should not be performed. Fear or dread of the operation was another contra-indication. He had seen one case in which an air raid had come on after the patient had been prepared for operation; the pulse went up to 200 and the patient died from fright. At the present time there were probably some members of the profession who were altogether opposed to the surgical treatment of exophthalmic goitre. They had exaggerated ideas of the dangers of operation, and they shut their eyes to, or were ignorant of, the benefits which it brought about, and possibly they expected more from the results of surgical treatment than experience justified. On the other hand, there might be some who would advocate surgical treatment without delay in every case. Both would be wrong in his opinion. The patient should have a fair trial of medical treatment, but if he or she did not improve within a reasonable time the possible benefits of surgical treatment should be mentioned and the patient given a chance of taking advantage of them. To his knowledge there was no other treatment available at the present time which offered so good a prospect of restoration to health and vigour.

The Surgical Side.

Mr. **James Berry**, who opened the discussion from the surgical side, said that he felt deeply the responsibility which devolved upon him in opening the debate from the surgical aspect and trusted that the statements which he would make would be regarded as but the expression of opinion of an individual based in the main upon his own personal experiences. By speaking somewhat dogmatically he hoped to evoke criticism and a good discussion. In 1914, in the *British Journal of Surgery*, he had gone very fully into the whole subject, and since that time his views had undergone but [illegible]vely little change. A wider experience, however, had led him to take, on the whole, a somewhat less sanguine view of the advantages of operation than he did then, mainly on the ground of the tendency to relapse after even the most successful operation, and the incompleteness of the cure in many cases which at first sight seemed most favourable. He was glad to see at the meeting many surgeons of large experience in this branch of surgery who would doubtless tell of their own results and probably differ from him in many of his conclusions. He was especially glad to see there his friend Mr. Dunhill, who had recently forsaken the antipodes and come to place his talents at the service of this country. He would begin by making two statements which would not, he thought, be controverted by anyone who had had large experience of these operations.

1. That the usual result of an operation for exophthalmic goitre was that within a very short space of time, generally within a few days, the patient felt that she had derived *immense benefit* from the operation. The feeling of illness, of wretchedness, of depression quickly disappeared. The tachycardia often diminished very greatly, and might disappear completely in a few weeks. Exophthalmos was often lessened, although complete disappearance was much less common. The amount of benefit depended largely, but by no means wholly, upon the amount of gland that had been removed.

2. The operation for removal of an exophthalmic goitre, even when skilfully performed and carried out under the best conditions, involved *considerable danger to life*, a danger which was far greater than that for simple goitre. The mortality of these latter operations had now been reduced by most surgeons familiar with thyroid surgery to a mere fraction of 1 per cent., due to complications and accidents.

The operation for removal of true exophthalmic goitre involved a mortality of at least 3 to 5 per cent., and it was well known that many series of such operations, although mostly unpublished, gave a far higher mortality than this. Too much stress must not, however, be laid upon mere mortality. The disease was undoubtedly a very serious one and a mortality of even 5 per cent. was one that most patients suffering severely from the disease would willingly undergo if the operation offered a good chance of complete and permanent cure. He would like to state that he was speaking only of true exophthalmic goitre, and that he did not include those numerous cases of simple goitre accompanied, as they often were, by palpitation, tremor, &c. Such cases did not develop exophthalmos, and their inclusion in statistics of exophthalmic goitre was wholly misleading. They did not show the characteristic pathological changes in the thyroid gland, and the mortality of operations upon them was little, if at all, higher than it was in simple goitre.

Five Questions for the Surgeon.

He suggested for discussion: 1. What surgical treatment should be adopted for exophthalmic goitre. 2. When operation should be performed. 3. How it should be performed. 4. How the patient should be treated afterwards. 5. The question of relapse.

1. Of the numerous operations open to us he would confine himself to the only two which, in his opinion, had any real value—namely, removal of a portion of the thyroid gland, and ligation of thyroid arteries, the only two which he himself performed. Operations upon the sympathetic, exothyropexy, injections of boiling water and other substances into the gland he did not think worth discussion. The operation of removal of the thymus gland, which was always enlarged in cases of true exophthalmic goitre, was an operation much praised by some. It might be valuable, but he had no personal experience of it, and he did not think that sufficient proof of its value had yet been adduced. It was often very difficult or impossible to perform, and owing to the intimate relations of this gland to the innominate vein and pericardium the removal of any considerable portion of it must involve considerable danger. Ligation of the inferior thyroid artery he had completely abandoned, as it was a difficult operation, scarcely inferior in difficulty and danger to removal of a lobe, which was far more likely to cure the disease. Ligation of the superior thyroid had the very great advantage of being a comparatively easy, short and, on the whole, a very safe operation. He had not lost a case for more than eight years, during which time he had performed a large number of these operations. In itself it often did much to improve the

patient's condition and afforded the surgeon valuable means of judging whether he could, *if necessary, proceed* subsequently to the larger operation of thyroidectomy. It was most suitable for cases of large exophthalmic goitres in patients who were either acutely ill or suffering severely from visceral complications. But it could not be done with impunity in every case.

Mr. Berry showed the following table giving particulars of his operations of ligation of the superior thyroid artery for exophthalmic goitre during the years 1913 to 1919 inclusive:—

Hospital Cases Only.

Patients—Male 1, females 27; total 28.

Operations ...	Bilateral simultaneous ...	5 patients	= 10 arteries.
	Bilateral at different times	14 „	= 28 „
	Unilateral	9 „	= 9 „
		28 „	= 47 „
		= 42 operations.	

There were no deaths in any of these cases or in any of the private cases during this period. Nine of the patients subsequently underwent extirpation of one lobe. The main question of interest with regard to removal of the gland was how much should be removed. He had almost abandoned the practice of operating simultaneously upon both lobes, as in most cases he thought it involved too much risk to life. *Nor did he now usually remove* even the whole of one lobe. He always left a small portion at the hilus, and he liked to leave a good deal of the posterior capsule. Among other reasons, damage to the recurrent laryngeal nerve was much more likely to occur if the whole of the posterior capsule were removed. Enucleation or "shelling out" operations should, of course, never be attempted in any case of true exophthalmic goitre, except in those very rare cases in which true Graves's disease was superadded to an old encapsuled cystic or solid adenoma. These cases were quite distinct from those of the so-called "toxic adenoma," in which there was little danger more than that of any ordinary goitre operation.

2. When operation should be performed. There were, he thought, some surgeons who operated upon nearly every case, independent of the stage which the disease had reached and of the complications, especially cardiac, which might exist. Although personally he believed this to be a mistake, it would be interesting to learn what results, immediate and remote, followed such a practice. He believed that it was wrong to do thyroidectomy when the patient was suffering from very acute mental excitement, or when the visceral complications, *especially myocardial degeneration*, were very marked. But sometimes a mere ligation was permissible under conditions which would preclude the performance of the larger operation. In Graves's disease there were generally periods of remission during which operation might be undertaken with much greater safety than at the other times. It was just during the period of exacerbation when the patient, and often the general practitioner, and sometimes the physician, were most anxious for operation, and when *the surgeon should resist* the temptation to operate at a time when his better judgment should tell him that this ought not to be done. He would also add that operation should never be performed until the patient had been resting quietly in hospital or nursing home for at least a few days and had become accustomed to the new surroundings. On the other hand, he did not operate at any stage upon patients who were steadily and continuously improving, and especially upon patients, and there were many such, *who did not feel at all ill. Operations* under such conditions were, he thought, unnecessary. He never tried to persuade a patient to be operated upon against her own wish. The converse was very much more likely to occur, since he found that most really bad cases of exophthalmic goitre were only too willing to submit to any operation that afforded a prospect of cure. He never tried to "steal the gland" by not telling the patient when the operation was to be done. On the contrary, he thought that it was much better to gain the *patient's confidence* by talking to her frankly of the discomfort that she must expect to undergo, and that she would probably feel very ill for a day or two. By doing so a patient was much less likely to be frightened and excitable *after* the operation at a time when it was *important* that she should keep quiet.

3. How the operation should be done. The ordinary rules for removal of a goitre should be followed, the greatest possible care being taken with hæmostasis and, of course, with asepsis. No kind of antiseptic should ever be put into the wound. The question of anæsthesia was a very important one. He was coming more and more to believe that a very light open ether anæsthesia was preferable for most cases, although undoubtedly there were some in which local *anæsthesia* was preferable if the patient had sufficient resolution to stand what was undoubtedly a very disagreeable performance. There were some surgeons, he knew, and he thought more physicians, who thought that the use of a local anæsthetic was the main factor of safety *in the operation. But it was by no* means the only factor, and was not even, in his opinion, the main one. The method of operating varied a good deal according to the shape and size of the goitre and especially as regarded the size of the isthmus. The rigidity and solidity of the goitre and the presence of a thick isthmus often made the operation extremely difficult, especially at the stage of ligation, in its continuity, of the inferior thyroid artery. This was an important step in the operation, which was nevertheless sometimes impossible to execute. It was here that the aid of a really skilled assistant was most valuable, as he could sometimes, with one finger, control temporarily the circulation through this artery when it *could not be reached* for ligation. He would here express the opinion that except in some cases of acute intoxication and of myocardial degeneration it was usually hæmorrhage—sheer hæmorrhage—that was the main cause of death after removal of an exophthalmic goitre as ordinarily performed. Even a comparatively small amount of hæmorrhage which would be of little or no importance in a case of ordinary goitre might easily prove fatal in an exophthalmic one. He left the important question of the heart to be dealt with by Dr. Strickland Goodall.

4. The after-treatment might be summed up in the single word "water." The patient must be encouraged to drink large quantities (many pints) of water, or if a general anæsthetic had been employed, large quantities of saline solution must be introduced into the rectum by the continuous-drop method, care being taken that the rectum was never distended. In one rather exceptional case of his, which recovered, as much as 18 pints of fluid were absorbed in the first 24 hours, but the absorption of 8–10 pints of fluid in this period was not unusual. It was here that the services of a skilled nurse, trained in the after-treatment of these cases, was most valuable. Drugs were of little value in the after-treatment, as far as he was aware.

5. Relapse. There was no doubt that a good many patients who had made good recoveries from the operations and had remained well, or practically well *for considerable periods of time, were liable to relapse, and they might even* die of the disease. In some of these cases a second operation was advisable, more gland being removed. But there was a limit to the amount of gland that could be removed, lest the ultimate condition of the patient, although different, might be as bad as, or even worse than, the first. Some of the operations, the results of which were recorded in the table (shown) were second operations, a primary operation having previously been performed either by himself or by *other surgeons.*

A table of the ultimate results of 79 operations (upon 78 patients) for removal of true exophthalmic goitre (excluding mere ligations) during the seven years, *1913–1919*, was shown; *53* of the patients were practically well, 18 were much improved, 3 were but little or not at all improved, 1 was worse, and 3 died as the result of the operation. Several patients who had undergone operation were exhibited, together with photographs and pathological specimens.

Outlook Apart from Operation.

Mr. T. P. DUNHILL spoke on three aspects of the question: (1) the grounds on which he considered some intervention other than medical to be necessary in some cases; (2) what degree of improvement *could* be obtained by surgical methods; (3) what permanence one might expect in this improvement. With regard to the first point as to whether there was any necessity to consider surgical treatment, he said *that death was not* the only tragedy in Graves's disease. The late Mr. Jessop had collected 25 cases of Graves's disease in which an eye was lost, due to ulceration occurring through the extreme proptosis. *He himself had had two* cases in which an eye was lost and another in which haziness of the cornea resulted. He had seen auricular fibrillation in many cases and had known it *develop* in at least three cases while they were under *medical* supervision, and he had known many cases of *generalised* œdema. Not all cases should be operated upon, *for* we all recognised that some cases recovered. *When* we had discovered which recovered, and *why they* recovered, we should have learnt much. *We did not* know the factors which enabled some *individuals* to recover an equilibrium—a glandular and *nervous* balance. No single drug would bring it *about. The* idea of operation was not to be *entertained* (1) removal of every toxic focus, (2) rest, and (3) *efficient* ptomatic drug treatment had been given *while* No *time limit* should be put to *this;*

was definite improvement which could be shown on a chart this treatment should be persevered with, but when improvement ceased, or if no improvement occurred, other measures must be considered without delay. The other measures were X ray treatment and operation. His personal experience of X ray treatment was unsatisfactory. The patients felt better while they were under treatment, but the pulse-rate had not come down, the size of the gland had not been reduced, the exophthalmos had not been altered, nor had the tremors disappeared. There was one theoretical objection against X rays. Dr. Murray stated that pathological examination of glandular tissue after X ray treatment had shown well-marked fibrosis in the gland, as well as fibrosis surrounding the alveoli and around the gland. This fibrosis continued long after the application of X rays, and might be more likely to induce myxœdema through cell-atrophy than clean removal of excess of gland tissue. He had seen many advanced cases whom he had been compelled to operate upon subsequently to X ray treatment.

What was the outlook if patients were not improving? It was said that the course of the disease ended in (1) recovery, (2) myxœdema, (3) death; but there were numbers of patients in various grades of ill-health down to the most complete bedridden wrecks. Some could do light work, some could keep going if they rested much and limited their activities. Some were very ill, but unable to rest, for a spirit of restlessness possessed them, and some were waterlogged from cardiac and renal incompetence. In some an eye was irretrievably damaged. These conditions were far more common than myxœdema, and they were not passing phases. In each of these grades there were those in whom improvement, if it occurred, took years, and those who would never improve. Long periods of most of these patients' lives had been spent in striving to get on to a higher plane of health while gradually slipping down on to a lower. He would venture to state that there were none of these cases which might not be very much improved by operation. Cases were then described and photographs were shown illustrating the improvement after operation. The patients were extremely ill and getting worse. The downward course was stopped at once when a lobe was removed, and the improvement was completed by removing the optimum amount of gland tissue. Exophthalmos would generally disappear if cases were sent for operation within a reasonable time and if sufficient gland tissue was removed. If they were kept until spasm in Müller's muscle had become a contracture, proptosis would be kept up for two reasons, first, because the muscle itself pushed the eye forwards, and secondly, because the œdema induced in the orbital cellular tissues by the contractured muscle caused further proptosis. It was not the fault of the surgeon, but of the delay in the case coming for operation which was the cause of the permanence of the exophthalmos. This symptom took longer than the others to disappear. If there had been great proptosis which disappeared, there remained a bagginess of the lids, particularly the lower one, which was very obvious. He showed photographs of patients in whom there was marked proptosis. In two an eye was lost, and in the other, while the eyes ultimately were saved, haziness of the cornea occurred. In one case in which the eye was lost the exophthalmos in the other disappeared entirely after the operation. He had operated upon many whose hearts were irregular, and upon some who suffered from proved auricular fibrillation. Not all of these had lost the fibrillation; it was a question of the length of time or the extent of the damage. He showed the electro-cardiographic tracings of the heart of a patient before and subsequent to the operation, when it showed no trace of fibrillation. The patient was now doing heavy housework.

Grade of Improvement Obtainable by Operation.

With regard to the degree of improvement which might be attained in the ordinary but severe case which was resistant to medical treatment, our criteria were the pulse-rate, the exophthalmos, the tremor, the menstrual condition, the muscular weakness, and the mental agitation. He would presently be able to use an instrument—the respiratory valve spirometer—for measuring the basal metabolic rate which would give a more accurate measurement of the degree of the disease and its amount of improvement. So far sufficient evidence had not been accumulated to record. Without using the word "cure" one might state that all these cases could be placed on an industrial level, a level where they were able to carry on their household duties, earn their living, bear children, dance, and swim. This result was not always or often going to be obtained by removing one lobe and the isthmus, or by combining this [illegible] ture of the superior artery of the opposite side. Kocher had stated that partial excision of the second lobe was only exceptionally necessary, and that it was an unsafe procedure on account of danger from hæmorrhage. He could not regard either statement as true. Many cases would not be cured without removal of a portion of the second lobe—none of the bad cases were sufficiently improved unless this was done. As regarded its safety, he had never yet lost a patient at a second operation on a case of exophthalmic goitre. This aspect of the subject demanded close scrutiny, for it was the crux of the whole matter. Physicians were dissatisfied with the degree of improvement which operation gave. Many surgeons stated that they removed one lobe, the isthmus, and perhaps ligatured an artery on the opposite side, leaving a lobe may be twice or several times as large as the normal thyroid gland, and a cure was expected. This could not be so. He knew that there were some cases in which removal of one lobe might turn the scale and allow a patient to regain an equilibrium, particularly in early cases or in cases which were very nearly winning their own battle. But this was not the kind of case which was usually sent to the surgeon. It was "unsurgical," if one might use the term, to remove sufficient at one operation. There were some cases in which one's judgment or one's instinct indicated that it should be done, but there were some in which removal of a lesser amount would improve the patient sufficiently. We had no right to remove from an individual more than was necessary to achieve the purpose, but we must remove enough. It was very important, in his opinion, to leave the blood-supply of the portion of gland which was left intact; the gland tissue would never atrophy and it would be more permanently efficient than gland in which fibrosis and cell-atrophy had been induced by X rays.

The next thing to be considered was what made for safety of operation. He knew that the death-rate was extremely low in cases operated upon at any reasonable period during the course of the disease. It rose as one was prepared to undertake grave surgical risks in order to try and save lives in cases which came far too late to the surgeon. A thyroid operation in Graves's disease differed in many respects from, say, a stomach operation, in which the chief consideration for the patient was that the work should be carefully and accurately done, and where it was not of great importance to the patient whether it took 20 minutes or 1½ hours so long as there was careful handling. An operation had never been done by him without fear and great anxiety, even in cases which seemed simple. The fear and anxiety began as soon as one knew that the operation was inevitable, and it did not cease until after the operation had been done. He would plead for earlier operation. It would be safer, it would free the patient, physician, and surgeon from anxiety, the operations would be less extensive, the tragedies, whether of death or ill-health, would be prevented, and patients would be restored to a degree of health unattainable when operation has been postponed too long.

Natural History of the Disease without Operation.

Sir WILLIAM HALE-WHITE said that before we could decide upon the proper treatment of any disease it was necessary to know the life-history of those afflicted with it. In the *Quarterly Journal of Medicine* (vol. iv., No. 13) he published the results of an inquiry into the after-history of every patient suffering from exophthalmic goitre who had been in Guy's Hospital from 1888 to 1907 and of every private patient he himself had seen. After deducting cases operated on and those which could not be traced, 102 remained for consideration. Contrasting their after-history with the expectancy of life of healthy females of the same period of life it appeared that the mortality of sufferers from exophthalmic goitre was about twice as great as it should be. This, however, gave too serious a view of the mortality, for in the first place sufferers from exophthalmic goitre were of such an age that but few healthy persons of the same age died and therefore a double mortality was not a great mortality; in the second place, his cases were all either ill enough to come into hospital or seek a second opinion. The conclusion seemed justified that persons with exophthalmic goitre had not an expected mortality much higher than normal. This was borne out by the fact that the disease was unusual in the post-mortem room. But it was rarely seen in elderly persons, therefore it must be a disease the natural tendency of which was to get well. His figures bore this out, for among the hospital-traced cases 65 per cent. got quite well, 30 per cent. were much better, and 5 per cent. were better in some respects. Among the private-traced cases 74·5 per cent. got quite well, 19·1 per cent. were much better, and 6·4 per cent.

were better. The most interesting causes of death were enteritis and diabetes. It was impossible to allude in detail to all the cases, but to show how well some of them did the following were mentioned:—

Female, aged 21: a severe case in all respects; had glycosuria. Fourteen years later was normal; no glycosuria. Female, aged 23; a very severe case. Seven and a half years later was quite well. Female, aged 29; very severe case; got practically well. Female, aged 20; severe case. Wrote 20 years later to say that she works hard and has done so for 18 years, was married, had three children, and is now a widow. Female, aged 23; medium case. Wrote to say that she was married, had six children, and had not required any treatment for 11 years.

Nowadays the difficult question that always presented itself was whether or not we should advise an operation. With the present state of our knowledge we had not sufficient evidence to answer this question. In order to do so we required the after-history, for a period of 20 years, of at least 100 cases submitted to operation. Then we could learn whether their expectancy of life was better than those not operated upon, and whether they got well sooner, for not all the cases operated upon got quite well; some were only considerably improved. We should also learn whether, having had half their gland removed, they were more liable to myxœdema, and how often they relapsed. There was also the difficulty that the slight cases hardly needed operation, and the danger of it was considerable in the very bad cases. Most of those who were especially interested in the subject could recall deaths either during or immediately after operation, and we must give the patient the opportunity of deciding whether she was willing to run this risk for the cure of a disease the natural tendency of which was to get well. Probably, however, with increasing surgical skill the risk was diminishing. The following case illustrated that an operation might be advised unnecessarily.

A woman was admitted to a surgical ward for operation for exophthalmic goitre. After she had been in a few days, and before the operation, signs of typical typhoid fever showed themselves. She was transferred to a medical ward, and under the rest in bed necessitated by the fever she got completely well of her exophthalmic goitre.

He (the speaker) was not arguing against operation, but was only urging that to bring forward a few cases shown some months after operation was not proof that surgical treatment was best, for it was as easy to show cases which had done just as well without operation. It was notorious that patients with acute peritonitis, empyema, and many other conditions did very badly if operation were not undertaken, but we knew that exophthalmic goitre was a disease the natural tendency of which was to get well, and therefore at least a hundred patients who had been operated on would have to be followed for about 20 years before we should have sufficient data from which to draw a conclusion.

Cardiac Complications.

Dr. J. STRICKLAND GOODALL said that whether patients were treated from a medical or surgical standpoint the condition of the heart was of greatest importance. Working in collaboration with Mr. Berry, he had been carrying out investigations of the heart disorder in Graves's disease, and had made many hundreds of observations. The basal metabolic rates as tested by Benedict's machine would probably prove very useful. He had recently used a modified form of the machine by which graphic records could be obtained. He had come to the conclusion that a patient suffering from Graves's disease probably died from ventricular fibrillation, in the production of which two factors were concerned—pre-existing myocardial degeneration and high blood pressure. The dangerous case was that in which there was definite myocardial degeneration, and in which the blood pressure was high. There had been differences of opinion as to the usual blood pressure in exophthalmic goitre. He thought that it was tri-phasic, the first phase being a transient rise, the second a fall, and the third a rise again.

The discussion will be resumed on Friday, Feb. 25th, at 8.30 P.M.

SECTION OF SURGERY: SUBSECTION OF ORTHOPÆDICS.

EXHIBITION OF CLINICAL CASES.

A MEETING of this section of the Royal Society of Medicine was held on Feb. 1st, Mr. E. LAMING EVANS, the President, being in the chair. Among the cases exhibited were the following.

Mr. B. WHITCHURCH HOWELL showed a case of

Dislocation of the Hip and Other Deformities.

The patient was a girl, aged 7½ years, who had never walked properly. At the age of 2 years she had had pneumonia, followed by diphtheria, after which she began to walk, and the mother stated that it was only then that she noticed that the child waddled and that the feet were deformed. There were no deformities in the family. The patient was fairly intelligent. The right lower limb was one inch shorter than the left. There was talipes equino-valgus, the knee was contracted, the hip was dislocated, and there was coxa valga. The left lower limb showed talipes calcaneo-valgus, slight wasting of the leg, paresis of the tibialis anticus, and contraction of the knee. In the spine there was a dorsi-lumbar scoliosis to the right. Walking was very difficult, the gait was stiff, but not spastic; sensation was unaffected; the left leg was distinctly colder than the right. *In the hands the little fingers were radially* deformed.

Mr. Howell asked for opinions as to diagnosis, treatment, and prognosis. He thought that the talipes was secondary to the pneumonia and diphtheria, and that the deformity of the hip was congenital.

The PRESIDENT and Mr. R. C. ELMSLIE discussed the case, and thought that all the deformities were congenital.

A Case for Diagnosis.

Mr. M. FITZMAURICE KELLY showed a case for diagnosis. It was that of a man, aged 54 years, who was injured in 1902 by a fall from a horse. There had been a fracture of the left patella, which was still ununited, and the right knee was injured. The joint was opened and drained four days later. He was in hospital for four months, and was well enough to ride again 12 months after the accident. During the war he served in the Royal Engineers, and was struck on the knee in April, 1919, while in Palestine. He remained on duty for a week, then went into hospital, and had been under treatment ever since. When seen early in January, 1921, there was great swelling of the right knee, which contained fluid, and surrounding the joint were several firm elastic masses, which did not communicate with it. The largest of these was in the region of the bursa in connexion with the insertion of the sartorius, gracilis, and semitendinosus. Movement was free and painless, but there was some aching of the joint after prolonged use. A skiagram showed the presence of opaque masses in the region of the swellings and of the supra-patellar pouch of synovial membrane; there was no bony change. The pupils were unequal and irregular but reacted normally; the knee-jerks were unobtainable owing to the condition of the knees. The Wassermann reaction was negative and there was no history of syphilis.—Mr. A. N. SHEEN thought that the condition might be tuberculous.—Mr. H. A. T. FAIRBANK suggested new growth. He thought that it was not tuberculous or syphilitic.—Mr. P. B. ROTH considered the possibility of Baker's cyst.—Mr. BLUNDELL BANKHART did not think that it was new growth. There was probably joint fluid in the most accessible swellings. He had seen gummata about a joint, but they had not felt like these swellings. He thought that it was a chronic inflammatory condition probably dating from the injury.—Mr. R. C. ELMSLIE was opposed to the theory of a chronic inflammatory condition of the synovial membrane, but thought it might be a slow-growing fibroma with cystic degeneration of the synovial membrane; it might possibly be a lipoma.

Mr. KELLY, in reply, said that he thought it unlikely to be new growth, as the swellings were multiple and separated from each other, and on account of the amount of fluid present. (Since the case was shown operation has been performed. The swelling over the inner tuberosity of the tibia consisted of a multilocular mass containing a little fluid resembling synovia, but chiefly a semi-solid mass resembling altered blood clot. A portion of this is being examined, and a further report will be communicated at a later meeting of the section.)

Mr. ASLETT BALDWIN showed a case of

Still's Disease

in a girl, aged 13, who had suffered from the disease since the age of 5 years. Both hip-joints were flexed, there were flexion and adduction of both knees, ankylosis of the left elbow, both ankles and spine. X ray examination showed considerable rarefaction of the bones of the knee-joints.

The PRESIDENT spoke of a case of Still's Disease, in which he had excised an elbow and both knees which were all ankylosed, but in this case the patient had flexible hips.—Mr. H. A. T. FAIRBANK, in discussing the treatment, said that he would employ slow methods to reduce deformity rather than active methods. The main point was to know when the disease was at an end, and this was extremely difficult owing to the fact that exacerbations usually occurred. It was very important that all active measures should be deferred until the disease was over.

Reactions and Electrical Treatment of the Intrinsic Muscles of the Foot.

Dr. MURRAY LEVICK read a paper on the rôles of some of the intrinsic muscles of the foot, and their importance in maintaining the longitudinal and transverse arches. This was followed by a demonstration of his method of treating these muscles electrically, the various groups being singled out and made to contract in response to faradic stimulation, so as to show clearly the accuracy of what he had said, and the efficacy of the treatment in certain affections of the foot. He said that the treatment was applicable to the preliminary stages of flat foot, and to the after-treatment of those more advanced cases which had been wrenched and fixed in plaster or undergone surgical operation. The rôle played by the flexors of the toes (especially flexor brevis hallucis and flexor brevis digitorum) in supporting the longitudinal arch of the foot was a very important one, because when the weight of the body was thrown forward on to the toes with the heel off the ground the action of both long and short flexors was to draw the heel towards the toes, acting as a bowstring across the arch from heel to toe. For this reason the way to land from a jump was to have the whole weight of the body borne between the balls of the feet and ends of the toes. Also when patients were given heel-raising exercises from the standing position this distribution of the weight should be carefully taught by telling them to grasp the floor with the toes, which thus became the fixed points from which their flexors acted. Flexor brevis digitorum, being inserted into the middle phalanges, was at a mechanical disadvantage in bending the toes when compared with flexor longus, and therefore acted more strongly as an arch-raiser. The flexors of the toes should be used to assist progression in walking quickly or running, those of the great toe being of special importance. If the above points were borne in mind, the efficacy of the treatment demonstrated would be clear. Graduated contraction of any of the intrinsic muscles could be obtained at will. As this treatment was carried out and the active electrode was placed in position to stimulate the desired group of muscles a clear view was gained of the action of the dorsal interossei in raising the transverse arch of the foot. It was seen that this was a strong action, and it emphasised the importance of these muscles. As the core of the coil was introduced and withdrawn, the transverse arch was seen to rise and fall in time with the rise and fall of the current, and a clear mental picture could be formed of the dorsal interossei with their bipennate origins drawing the metatarsal bones together. To describe the action of one of these muscles would suffice to explain the action of the rest, and for purposes of demonstration the second metatarsal bone was considered as the keystone and as the middle line. When [illegible]cond dorsal interosseous muscle contracted it [illegible]ed the following rôles in the order given. These [illegible]d been carefully observed during electrical stimulation of individual muscles, and then of the group as a whole.

(1) Feeble contraction. Abduction of first phalanx from middle line.

(2) Stronger contraction. Flexion of metatarsal-phalangeal joint, plus the pull on the extensor tendon. End of toe brought into contact with the ground (in voluntary movement this contact was, of course, strengthened by the flexors).

(3) Powerful contraction. The fixed points from which the muscle acted were now (*a*) the second metatarsal bone, (*b*) the insertion of the tendon into the first phalanx. As the muscle contracted the third metatarsal bone was drawn towards the second—i.e., towards the middle line. In voluntary movement the second metatarsal was fixed by the opposition of the first dorsal interosseous muscle, which also fixed the first phalanx of the second toe, and so on.

As each metatarsal bone was drawn towards the second metatarsal it was pulled into a plane below that of its more mesial neighbour. It would be seen that the arch-raising action of the dorsal interossei is very powerful and that these muscles must be regarded as of great importance. Still more strongly was the impression given of the action of the short flexors of the toes in raising the longitudinal arch, while the toes, acting as fixed points, pressed the bottom of the bath. The marked action of abductor hallucis showed how it can still be trained to assist in maintaining an improved position of the great toe when this has been corrected by mechanical means. Tibialis posticus and the long toe flexors were stimulated individually, and were seen each to raise the longitudinal arch in turn. He said that the method of treatment he had shown was strongly to be recommended as a preliminary to voluntary exercise. It was waste of time and discouraging to the patient to begin re-education before the intrinsic muscles of the foot were in at least a fair state of nutrition. He regarded it as inseparable from the satisfactory treatment of flat-foot after seeing the surprisingly good results that it yielded. Often it is difficult or impossible to re-develop the small muscles by voluntary exercise alone; this applied especially to those cases which had been re-postured by surgical means, so that they were suddenly relaxed after a long period of overstretching with its accompanying atony.

SECTION OF LARYNGOLOGY.

A MEETING of this section of the Royal Society of Medicine was held on Feb. 4th under the presidency of Dr. W. JOBSON HORNE.

Tumours of the Ventricle and of the Ventricular Band of the Larynx.

The PRESIDENT, à propos of a case of supposed prolapse of the ventricle of the larynx shown by Dr. Frederick Spicer at the last preceding meeting of the section, gave an instructive epidiascopic demonstration on some cases of tumours of these parts which he had collected over a long experience of post-mortem examinations, with the object of contributing to the discussion as to whether prolapse of the lining of the ventricle ever occurred. He did not enter into the question of malignant tumours. In the first of the specimens the ventricle was occupied by a dependent growth. On cutting the larynx through, the growth was found to occupy almost the entire length of the ventricle. That tumour might eventually appear at the mouth of the ventricle and suggest prolapse, in spite of its being merely a supernumerary ventricular band. The second specimen (which was exhibited in spirit) was one of genuine prolapse of the lining membrane. There was necrosis of cartilage at the site of an old gumma, the epiglottis and aryepiglottic fold were considerably swollen, setting up real œdema of the larynx. The ventricle was occupied by the prolapsed membrane, and the prolapse came about through the cartilage necrosing. The lining membrane had become detached and had dropped out, and could be seen lying over the cord. The man was so desperately ill that he died practically on arrival at the hospital, before tracheotomy could relieve him. Other sections were shown in the series.

Dr. F. SPICER reported that when a portion was removed from his case the inflation collapsed entirely. —Dr. W. HILL showed a sketch of Dr. Spicer's case as it was seen by him. The sacculus laryngis perforated the false ligament and pushed the membrane of the ventricular band in front of it. When it collapsed it lay on the anterior part of the ventricular band. He regarded the case as one of sacculus laryngis.

Eversion of Sacculus Laryngis.

Dr. IRWIN MOORE demonstrated, by means of the epidiascope, two authenticated specimens of eversion of the sacculus laryngis, pointing out the need for discriminating between eversion of the sacculus laryngis and eversion of the ventricle. He contended that there was no such condition as prolapse of the ventricle, but it could be simulated by a tumour behind the ventricle pushing it forward.

Sir JAMES DUNDAS-GRANT considered that the appearance presented by Dr. Spicer's case when he examined it could only have been produced—with such a history —by a lesion beneath the vocal cord, at a spot where trauma had occurred, and air had been forced through this and through the submucous tissue of the vocal cord and the ventricular band. He gave his reasons for the belief. With regard to prolapse of the larynx, he agreed that every patient with that condition was tuberculous. He believed prolapse of the saccule of the ventricle could exist. — Sir STCLAIR THOMSON repeated his disbelief in the existence of prolapse of the ventricle of the larynx. Sir Morel Mackenzie, in his vast experience, evidently had not seen a case of it. Kocher cut sections in 19 cases of the supposed condition in Vienna, but did not find real prolapse in any.—The PRESIDENT said it was generally agreed that in speaking of the ventricle the sacculus was included. The eversion Dr. Irwin Moore spoke of did occur.

Tongue Adhesions.

Mr. NORMAN PATTERSON showed a bookbinder, aged 22, who five years ago had difficulty in swallowing and received treatment for "swollen larynx." It was not painful. A year ago he had treatment for lupus of the skin of the nose; he also had nasopharyngeal obstruction. Adenoids and tonsils were removed at 6 years of age, and since 9 years he had had skin lupus following trauma. He now had dyspnœa on exertion. Numerous bands of scar tissue could be seen in the oropharynx, extending to the base of the tongue in the region of the lingual tonsils. Wassermann reaction was negative.

Mr. G. W. DAWSON referred to two young cases of adherent palate. The complaint was of deafness and the discomfort of retained secretions in the nose. They were found to have congenital syphilis. Operations failed to maintain an opening, and recourse was had to an artificial palate, which was a success.—Sir WILLIAM MILLIGAN suggested that the present case might be one which sprang from unrecognised diphtheria, and the lupus might also have had an influence on it. Treatment of these cases he had found to be very unsatisfactory.

Fatal Tonsillectomy.

Dr. MCLEOD reported the cases of patients aged 10 and 6 years, girls, who died shortly after removal of their tonsils. For each the anæsthetic was C_1E_3. The first patient was quite well at 2.30, but two hours later was vomiting bright blood, and also one and a half hours later still. There was a blood clot in the naso-pharynx, but none in the tonsillar fossæ. Various procedures, including stitching of the faucial pillars, left the child improving and without bleeding, and at 10 P.M. she was talking. At 3 A.M., however, death suddenly occurred. In the second case the operation was done at a school clinic at 10.30 A.M. At 12.30 Dr. McLeod was called to the case on account of hæmorrhage and vomiting. As it had not ceased at 1 o'clock the anæsthetic was again given and the left fossa stitched and the naso-pharynx plugged. There was a clot in the left fossa. Consciousness did not return, and the end came at 5 P.M. The plug was firm in the naso-pharynx and there was no bleeding. Prolonged artificial respiration, injection of ether and strychnine, and heart massage failed to restore animation. Dr. McLeod sought information on the probable cause of death in these cases.

In the discussion on the cases attention was directed to the amount of blood which might enter the stomach from mere oozing without any bleeding vessel being specially identified. A case was mentioned in which a tuberculous gland had ulcerated into the carotid artery, and if that child had been put on the table for removal of adenoids the operation would have been blamed for a fatal result. Importance was also laid on the surgeon assuring himself that the bleeding had ceased before the patient was taken off the table. Acute acidosis was suggested as a possible cause of death. One speaker referred to only 5 deaths in 14,700 cases of this kind, ethyl chloride having been the anæsthetic. All the speakers commended Dr. McLeod on his courage in reporting the cases and seeking help for future guidance.

Osteomyelitis After Intranasal Operation.

Dr. DAN MCKENZIE showed a man, aged 29, on whom an intranasal operation on the frontal and maxillary sinuses was performed 12 months ago. A fortnight later an abscess formed at the inner angle of the corresponding orbit, and was opened by an external incision. The disease spread to parts of the face bones, and was checked by free removal of the infected bone areas. During the illness an autogenous vaccine was tried, but was discontinued, as it was causing severe focal reaction. The intravenous use of argentum colloid, however, produced great benefit. Convalescence was checked by acute rheumatism. The residual facial deformity is but slight.

Mr. W. M. MOLLISON offered his congratulations on the case, and spoke of the obstinate character of the condition in many instances.

Large Growth of Nasal Septum.

Mr. HERBERT TILLEY showed a woman aged 42, who had had a swelling on the right side of the nose eight months. An operation was done eight months ago, and was followed by a rapid recurrence of the growth and bleeding from the nose. Two months ago a large fungating mass projected from the right nostril. At the operation on that date the growth was seen to be attached to the septal cartilage by a pedicle one-sixth inch in diameter, and the swelling extended upwards and backwards to the ethmoidal region. Sarcoma seemed the most likely diagnosis.

Webbing of the Larynx.

The PRESIDENT showed a case of web in the larynx, the like of which neither the exhibitor nor any of the members present had ever seen.

Dr. A. LOGAN TURNER showed water-colour sketches of a number of diseased conditions, with notes of the cases portrayed.

Other cases were shown for diagnosis and were discussed.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

AT a meeting held on Feb. 3rd Dr. W. LANGDON BROWN read a paper on

Types of Glycosuria and their Treatment.

He said that although carbohydrate forms more than 70 per cent. of the ordinary diet it only constitutes about 1 per cent. of the body-weight. This simple consideration showed that it is the most easily metabolised of the foodstuffs, so that disturbed metabolism is apt to show itself particularly in respect of carbohydrate. That true diabetes implied a great deal more than a mere disturbance of carbohydrate metabolism was now recognised; it was a disease characterised by exaggerated katabolism, which shows itself first and most obviously in respect of carbohydrates. Dr. Langdon Brown discussed the various ways in wh the body normally dealt with carbohydrates, and po out that it attempted to compensate for an imp power to assimilate them (1) by storing more usual as fat in the earlier stages of metabolism; (2) by raising the "leak-point" for sugar, thus diminishing its escape. He said that in some persons the leak-point is abnormally low, constituting renal glycosuria, which can usually be recognised by the constant output of sugar, irrespective of diet. Since the sugar in the blood and in the urine do not run parallel owing to variations in the leak-point, it is important to know what is happening in the former. A single observation is not of much use; it is far more helpful to give a dose of sugar and watch how the body is able to dispose of it by estimating the blood sugar at regular intervals. Adopting this method, Mackenzie Wallis had shown that the blood sugar followed an entirely different curve in different types of the disease. Dr. Langdon Brown demonstrated a number of curves which indicated the help that could be given in prognosis and treatment by this means. Some of these illustrated renal glycosuria, others the response of normal individuals. A series of curves were shown from mild, intermediate, and severe cases, illustrating the gradual approach of the curve to the severe type in which hyperglycæmia might be present even without glycosuria, but in which the administration of sugar was followed by an abnormally steep and sudden rise with a great delay in the fall. An interesting point was that the glycosuria of pregnancy followed the same type of curve as that due to thyroid or pituitary excess, confirming the view that it is due to the stimulating effect of pregnancy on these glands. Dr. Langdon Brown discussed the help which these curves gave in adapting treatment to individual cases, ensuring that these would neither be under-treated nor over-treated. He then considered the influence of alimentary rest, and said that something intermediate between Allen and Graham's plan would in the future probably be found to give the best results. Unfortunately, alimentary rest could not affect the underlying disturbance of the sympathetic nervous system, which he believed to be present in all severe cases, but could only deal with the result as expressed in the exaggerated katabolism. Therefore, carbohydrate tolerance sometimes continued to fall despite such treatment. Nevertheless, in other cases the damaged mechanism was able to show some degree of recovery through not being overtaxed, and certainly alimentary rest gave a more hopeful outlook in the treatment of diabetes than had existed previously.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Cases and Specimens.

A clinical meeting of this society was held at the West London Hospital on Feb. 4th, Dr. F. J. **McCann**, the President, occupying the chair. The following cases and exhibits were shown:—

Dr. F. S. **Palmer**: A case of Progressive Muscular Atrophy (Aran-Duchenne type) in a man of 73. The disease was advanced, though symptoms had been present only 14 months. The whole right arm was markedly wasted and flail-like, with vaso-motor changes in the hand. Wasting was most evident about the shoulder. The left arm was affected to a less degree. Fibrillary tremors were present. Sensory changes were absent.—In reply to Dr. J. **Brindley-James**, Dr. **Palmer** said he was treating the case by electrical stimulation of the affected muscles and a strychnine tonic, but he did not know of any form of treatment that had any real influence on the course of the disease.

Dr. Arthur **Saunders**: A case of Facial and Lingual Hemiatrophy of Congenital Origin, in a girl. The auricle was malformed, though hearing was normal. X rays showed defective development of the cranial bones on the affected side.—Dr. **Palmer** remarked that alopecia was usually present in these cases on the affected side and was absent in this case.

Mr. **Aslett Baldwin**: (1) A case of Rodent Ulcer of Nose and Cheek treated by excision and plastic operation.—Mr. **Bishop Harman** cited cases of similar ulcers which had invaded the orbit necessitating exenteration of the orbit, and pleaded for early excision of ulcers of this type. (2) A case of Syphilitic Aneurysm of the Subclavian and Axillary and perhaps also the Innominate Arteries, noticed first two [illegible]hs ago. Pain was entirely absent. (3) A case with [illegible]ing of Uncertain Origin over the Scaphoid Bone of the Foot of three years' duration. An X ray plate of the foot was shown.—Mr. O. L. **Addison** expressed the opinion that the condition was certainly of inflammatory origin as shown by the skiagram. (4) A case of Multiple Enchondromata of the fingers after operation. X ray plates were shown to illustrate the condition of the parts.

Mr. **Bishop Harman**: A new Direct Record Scotometer which he had recently designed.

Mr. B. **Sangster Simmonds**: (1) A case of gunshot wound of the brachial plexus (complete lesion) treated by secondary suture. Operation was undertaken eight months after the injury. Sixteen months later there was some voluntary contraction in deltoid and biceps, with regenerating sensation. At present the deltoid, biceps, triceps, supinator longus, and extensores carpi radialis longior and brevior contracted voluntarily. (2) A case of Right Hemiplegia with Cortical Hemianæsthesia and Aphasia following gunshot wound of left parietal region. Patient was unconscious for three months. At present (30 months after injury) there was diminished but not complete loss of tactile, pain, and thermal sensations on the right side, while stereognosis and position sense were completely lost. Localisation was poor on this side. The hemiplegia and aphasia were recovering. (3) A case of Complete Lesion of Median and Ulnar Nerves of gunshot origin. A graft had been done from the internal cutaneous to the ulnar without success. The median nerve had been sutured a year ago. Mr. Simmonds said he proposed excising the ulnar graft and suturing the ends directly and bringing the nerve in front of the condyle. (4) Two cases of Gunshot Lesions of the Musculo-spiral Nerve. In one a 4-inch gap had rendered end-to-end suture impossible. Mr. Simmonds had 20 months ago performed tendon transplantation at the wrist. The man had now a useful hand with which he could earn his living as a clerk.—Mr. **Baldwin** wished to congratulate Mr. Simmonds on the excellent series of cases he had shown, and drew attention particularly to the last case in which a crippled limb had been restored to practically normal function.

Dr. D. G. **Rice-Oxley**: A case of Advanced Osteo-arthritis in a woman. There was no obvious source of infection, and all the usual remedies had proved ineffective. He had recently treated her with rheumatic phylacogen.—Dr. **Vaughan Pendred** cited a case in which he had found phylacogen of great benefit.—Dr. A. **Lapthorn Smith** asked if any members had experience of colloid sulphur.—Dr. **Rice-Oxley** said sulphur had not been used in his case.

Dr. J. **Burnford**: (1) A case of Complete Lesion of the Fifth Cranial Nerve of Tertiary Syphilitic Origin in a woman of 63. The condition was improving under specific treatment. (2) A case of Aneurysm of the Aortic Arch and Innominate Arteries. "Tracheal tugging" and "chin-jerking" were present. No laryngeal paralysis was present. (3) A well-marked case of Acromegaly in a woman. Symptoms had been present nine months.—Dr. **Lapthorn Smith** referred to the importance of "tracheal tugging" as a sign of aortic aneurysm.—Dr. **Rickard Lloyd** drew attention to the inequality of the pupils in the case of acromegaly.

Mr. **Tyrrell Gray**: (1) A case of Median Hare-lip, with marked lobulation of the tongue and a cleft of the soft palate of irregular form. (2) A case of Dupuytren's Contracture of Both Thumbs in a woman of 72, by occupation a cook. The condition was most marked in the right thumb. (3) A Sebaceous Horn of the Abdominal Wall which had recurred after removal of horn alone.

Dr. **Reginald Morton** showed an X ray of the chest of a diamond-miner suffering from silicosis. He pointed out the difference in the X ray appearances between this condition and pulmonary tuberculosis.—Dr. **Saunders** referred to the frequency of tuberculosis in the subjects affected by silicosis.

Dr. S. D. **Clippingdale** showed a Walking-stick, said to be 200 years old and now in possession of the Faggo family. It was of the type used by medical men of that period, and in its hollow handle and shaft were contained a phial and measuring-glass.

Manchester Royal Infirmary.—The annual report of the Manchester Royal Infirmary states that the total number of persons treated in all departments was 57,210—11,550 in-patients, 44,071 out-patients, and accident cases. The expenditure has increased to such an extent that but for a large donation from the National Relief Fund, which will not recur, and the disposal of £30,000 invested funds, the expenditure would have exceeded the income by £40,000. In order to induce the right type of women to take up the occupation of nursing, better salaries must be given and hours shortened. An additional income of £12,000 a year will be required for the maintenance alone of the staff in the nurses' home, which is to be erected near the infirmary at an estimated cost of £96,000. It is anticipated that during the next three years a total deficit of £200,000, involving the exhaustion of all funded capital, will have to be faced.

Reviews and Notices of Books.

TRAITÉ PRATIQUE DE SÉROLOGIE ET DE SÉRO-DIAGNOSTIC.

By MARC RUBINSTEIN. Paris: A. Maloine et Fils. 1921. Pp. 414. Fr.22.

THE author of this book disarms criticism at the outset by pointing out how impossible it is nowadays to keep abreast of research work in serology. Every laboratory worker who has made the attempt will heartily agree with him. One of the difficulties appears to be the interchange of foreign journals. We have reviewed more than one foreign book recently in which British and American work has been scantily considered, and doubtless there are English publications of which a foreigner might make a similar criticism.

The book before us is largely the outcome of an inquiry made by the author into the serology of syphilis, on behalf of the French Government. Consequently, the portion which deals with this subject is the most extensive; in fact, the discussion of the practical laboratory side of the serology of syphilis and cognate matters accounts approximately for one-third of the book. Dr. Rubinstein has evidently approached this side of the work with great enthusiasm, and has made investigations on collateral subjects, such as standardisation of complement, the variations in normal complement, and the "index de la sensibilisatrice." With considerable care he has also studied in detail most of the methods used for the Wassermann reaction, together with the well-known modifications which have been introduced from time to time.

The first part of the book discusses general questions, such as the examination and standardisation of antigens, the action of antibodies, and physico-chemical problems related to them. All these points are dealt with in a practical straightforward manner. There is little theory, and the more academic side of immunity, such as anaphylaxis, is only mentioned in so far as it relates to serum diagnosis. The last part of the work treats of serum diagnosis as applied to enteric, cholera, gonorrhœa, plague, tuberculosis; and closes with special chapters on the serum diagnosis of carcinoma and the Abderhalden reaction. With the treatment of these subjects the author has not, in our opinion, been so successful. There is no reference to the work of the American serologists on the pneumococcus, or to similar work on the meningococcus by A. Flexner and H. M. Gordon, and the workers of the Medical Research Council; again, there is very little reference to work on tuberculosis published since 1914, especially American work on complement-fixation. No doubt much of this was unavoidable owing to the difficulties of the war, but in some cases well-established pre-war work is omitted. In conclusion, therefore, we cannot help feeling that the author would have been well advised to confine his book to the serology of syphilis, of which he has evidently made a thoroughly able study, rather than to include other diseases in which he has not been able to bring his subject matter up to date. Dr. Rubinstein is to be congratulated on the excellence of his reference work as far as French and German authorities are concerned. This will be most helpful to English readers, but we cannot help regretting again that he has not included more references to good and reliable British and American research work on serum diagnosis.

MEDICAL ELECTRICITY.

By the late Dr. LEWIS JONES. Eighth edition. Revised and edited by L. W. BATHURST, M.D. London: H. K. Lewis and Co., Ltd. 1920. Pp. xvi. + 575. 22s. 6d.

THE present edition differs from those which have preceded it by the omission of the chapter on the Rontgen rays, and the addition of a new chapter on ultra-violet radiation. The subject of radiology has become so large that it cannot be adequately treated in a book devoted to electrotherapeutics. The effects of X rays are, however, described, and in the chapters dealing with treatment references are frequently made to their use for various diseases. In the chapter on ultra-violet radiation the experience of many recent workers in the use of the tungsten arc lamp is incorporated. Among other additions is an account of some work by Adrian on the measurement of the current that will cause contraction of normal and paralysed muscle when the duration of its flow is varied, the results being plotted in the form of curves. The editor is apparently not tempted to discuss the significance of these curves or to speculate on the part which the measurement of the chronaxie may play in the testing of the reactions of muscle and nerve.

Students of electrotherapy who are not familiar with the work of the late Dr. Lewis Jones would do well to read this book, as it contains the experience of one who was not only master of his subject but was a sound and safe teacher of a branch of therapeutics in which exaggerated claims and fantastic theories are too often presented, and are likely to mislead the beginner. The editor has done good service by his survey of recent literature and the addition to the book of the experiences of other English and foreign writers. Readers are thus acquainted with the work which has been done during the past two years on electrotherapy and electro-diagnosis. The treatment of the genital tract in the female might with advantage have been more fully considered. The present edition contains a more complete index than did its predecessors.

GENERAL PRACTICE AND X RAYS.

A Handbook for the General Practitioner and Student. By ALICE VANCE KNOX, M.B., B.Ch. With Chapters on the Production of X Rays and Instrumentation, by ROBERT KNOX, M.D., C.M., M.R.C.S., L.R.C.P. London: A. and C. Black, Ltd. 1921. With 32 page plates and 56 diagrams. Pp. 214. 16s.

IN spite of a declaration in the introduction that this handbook is written particularly for those who already realise the value of X rays, the text is chiefly occupied in emphasising in general terms the value of X rays in the diagnosis and treatment of disease. The reader will look in vain for concise information in regard to the preparation of the patient, his examination, or the reading of the radiograms produced. In the preparation of a patient for a barium meal it is advised to give a "good aperient" two nights before, a "mild aperient" the night before, and an enema on the morning of examination, which preliminary treatment would in most cases produce an unphysiological condition of the alimentary tract. The relation of the normal or abnormal stomach to the umbilicus is not given, nor is it mentioned that the patient should be examined standing as well as recumbent. Other matters are dealt with in a manner that suggests a writer who realises the value of radiography, but has little knowledge of its use. There is no reference to radiography of the teeth. The plates are very good and excellently reproduced. Part 2 gives a slight introduction to radiology and description of some of the apparatus in use, but the reader would require a knowledge of physics to gain instruction by reading it.

WHITE AND MARTIN'S GENITO-URINARY SURGERY.

Twelfth edition. By EDWARD MARTIN, BENJAMIN THOMAS, and STIRLING MOORHEAD. London and Philadelphia: J. B. Lippincott Company. 1920. Pp. 928. 35s.

IN the preface of this book the authors state that since their last edition the text has been revised and new illustrations been added, together with a special section on the prophylaxis of venereal disease. It is difficult to find any of these changes with the exception of the latter, incorporated in a useful article, although rather short. The book covers the whole of genito-urinary diseases and is essentially practical; the attention paid to differential diagnosis is especially valuable to the practitioner. More information might be given in future editions with regard to the methods and treatment of bladder papillomata by diathermic cauterisation: this is becoming a universal form of treatment, but is dismissed in a single sentence. The description of the various stages in the treatment of venereal disease is admirably full. The illustrations are, on the whole, excellent, but the reproduction of X ray photographs is still somewhat disappointing, as in the previous edition. The fact that the book has gone into 12 editions is sufficient evidence of its use.

MEDICAL NOTES.

By Sir THOMAS HORDER, M.D. Lond., F.R.C.P. Lond. London: Henry Frowde and Hodder and Stoughton. 1921. Pp. 112. 6s.

IN this little book, written in the form of clipt paragraphs, Sir Thomas Horder gives some of the results of a great experience of clinical and academic medicine. The book claims interest from every student and practitioner of medicine, and the material gives evidence of having been carefully filtered before it was allowed to crystallise into its present form. It is written, necessarily, in disjointed paragraphs, but a single idea runs through it and gives it sequence and uniformity. The "Notes" centre round diagnosis; the first proclaims its paramount importance, but nevertheless due place is found for treatment and prognosis. Diagnosis depends on physical signs, for "one physical sign is of more value than many symptoms," a point worth remembering at the present time, when some would appear to believe that symptoms always develop before signs of disease. Many "Notes" show the minute care taken in eliciting physical signs, while perhaps the most refreshing current running through the text is the critical appreciation of the value of the observed signs and of the limits to the deductions to be drawn from them. There is obvious courage in an author who gives the world a clear insight into his practice of medicine and who lays himself open to criticism by dogmatic statements. That some of the statements, which bear the sure stamp of originality, are the commonplace of current text-books is no criticism of these "Notes," but it is pleasant evidence that text-books themselves are ultimately based on personal experience. Though the "Notes" have no doubt been jotted down at any moment that they took form in the author's mind, yet the subjects dealt with preserve a certain proportion. Common diseases and conditions are recognised as more important than the uncommon; the "tripod of life," the heart, lungs, and brain, claims 72 pages of the total 112, evidence, were it needed, of the well-balanced mind of its author.

IN SEARCH OF THE SOUL.

The Mechanism of Thought, Emotion, and Conduct. A treatise in two volumes. By BERNARD HOLLANDER, M.D. Vol I., The History of Philosophy and Science from Ancient Times to the Present Day. Vol. II., The Origin of the Mental Capacities and Dispositions of Man and their Normal, Abnormal, and Supernormal Manifestations. London: Kegan Paul, Trench, Trübner, and Co., Ltd. Vol. I., pp. 516; Vol. II., pp. 361. £2 2s. complete.

ABOUT one hundred years ago a certain Mr. Robert Montgomery wrote some singularly bad poems, in one of which occurred the couplet, damned for ever by Macaulay:—

> The soul, aspiring, strives its source to mount,
> As streams meander level with their fount.

Montgomery's absurdity must have exercised some influence upon Dr. Hollander's unconscious mind, for just as Montgomery's soul strove for an absolute impossibility (no stream can, or ever could, "meander level with its fount"), so Dr. Hollander comes to this conclusion at the end of his second volume: "It would be audacity on my part to affirm or deny, or even to argue, on the existence of a soul and a life hereafter. Not until investigations are made on the lines described in this work, not until ethology is recognised as well as psychology, not until brain research is extended from motor and sensory to mental manifestations ...... will it to speculate on the soul and spiritual nature Only one suggestion I would venture in conclusion. Every particle of man is alive and adjusted in its function to the whole being, the self, and by his thought and emotion he can control not only his brain activity but every function of the body, accelerating or inhibiting it. From this it appears to me that instead of saying, 'man has a soul' it would be more correct to say that 'man himself is a soul.' He is not a conscious machine, but a spiritual being." However, although Dr. Hollander ends with the same note as Ecclesiastes, his two closely printed volumes contain an enormous amount of information, and the first volume in particular is most useful as a book of reference. We have noticed a slip or two—for instance, he makes no mention of the Minoan civilisation, and on p. 121 the date of John of Gaddesden's notes on travel is given as 1350 instead of 1305, which it probably was, and no one would gather from his notice of Weyer (Wierus) that he was much in advance of his time in writing on the folly and cruelty of trials for witchcraft. Nearly 200 pages of Vol. I. are devoted to an account and examination of Gall's life and work and point out what is generally unknown or overlooked—viz., that Gall was not so much a phrenologist as a great anatomist, physiologist, and psychologist. Vol. II. is mainly concerned with ethology, or the science of character, and the cerebral origin of intellectual operations. Dr. Hollander pleads, and rightly so we consider, for early and individual treatment of mental cases (pp. 241–242). The book as a whole is a useful contribution towards the study of a very obscure subject, though here and there it has its longeurs, and the very close print makes its reading for any length of time somewhat difficult.

PROTHÈSE DENTAIRE.

Third edition. By MAURICE WISNER. Paris: Libraire Le François. With 55 illustrations. 1920. Pp. 224. Fr.12.

THIS book, which, according to the preface, is intended for practitioners and not students, contains information dealing with the rudiments of dental mechanics. Some of the author's ideas are a little out of date—for example, the suggestion that crowns should be fixed with silk and mastic varnish. The author advocates the removal of a plaster impression before it has quite set, a plan which cannot fail to produce defectively fitting dentures. Dental mechanics is too large a subject to be dealt with efficiently in such a small work.

THE SCIENCE OF OURSELVES.

A Sequel to the "Descent of Man." By BAMFYLDE FULLER. Oxford Medical Publications. London: Henry Frowde and Hodder and Stoughton. 1921. Pp. 326. 16s.

THIS pleasant book, by one who has seen much of the world in different continents, centres round the proposition that, as man's bodily characteristics have evolved from those of the lower animals, so his mind must also have developed in much the same way from a simpler state. Consciousness, and that awaredness of consciousness which is the outstanding property of the human mind, must have evolved from the unconscious, and by a study of the different "planes" on which the nervous system acts the author seeks to show how this may have come about. He never really faces up to the question whether the mind is a product of the brain or whether the brain is, as James would say, a window which lets something in from outside; but it is evident that while he would have preferred the latter conclusion he feels that the evidence compels him to accept the materialistic interpretation. And in this there is some encouragement: man is a disappointing angel but an astonishingly good ape, and if we realise that anger, pride, and jealousy are merely nervous reactions without any particular nobility of origin we are the better able to resist them. The other great problem, whether elementary animals have "minds" and "souls," is not brought under close survey. Like most people who are interested chiefly in human affairs the author roughly assumes that they have not; if he had been a naturalist with the same shrewd kindly outlook on worms and insects as he has on his fellow-men he would probably have held the opposite view. It is doubtful whether the book can be classed as a great contribution to the understanding of the nervous system or of the mind, but it will do most people good to read it and follow out for themselves some of the many lines of thought which it will suggest. There is an interesting note on Indian "wolf-children," the genuine occurrence of which is regarded as substantially authenticated.

Selected Materia Medica.

By W. C. Sillar, M.D., B.Sc., and C. G. Lambie, M.B., Ch.B. Edinburgh: James Thin. 1920. Pp. 41. 2*s*. 6*d*.

Here we have a series of interleaved tables whose purpose is to render more simple the memorising of the pharmacological actions, therapeutic uses, and doses of drugs, the material dealt with having been chosen with a view to eliminating "the redundancy of the official list." The following tables are among those included: a list of the English names of drugs arranged pharmacologically, with average metric doses and Latin abbreviations, which, by the way, are not always identical with the official ones; drugs and preparations for oral administration, arranged according to dosage, but subdivided into certain fairly well-defined groups; and various tables of drugs and preparations applied externally or given by injection, inhalation, and so forth, with the strengths of the preparation so employed. About a page is devoted to prescription writing, and some information is given as to the dosage of sera and vaccines. It will be gathered from the foregoing that the volume falls into that class of books which, when judiciously used, are helpful for purposes of revision and rapid reference; but our advice to the student is that he should, if possible, himself compile such synopses, of which he will then realise the limitations, from standard works and lecture notes. He will not fail to acquire much valuable knowledge in the process.

JOURNALS.

Journal of Laryngology and Otology.—The January issue of this journal, formerly the *Journal of Laryngology, Rhinology, and Otology*, contains, under the title Chorditis Fibrinosa, an interesting paper by Dr. A. Brown Kelly. He describes an uncommon variety of acute laryngitis characterised by the deposition of fibrin and the occasional formation of erosions on the vocal cords. All his cases occurred amongst soldiers, and he comments upon the obvious rarity of the affection in civilian life. The irritating effect of gas was the commonest cause assigned for its production.—Dr. Irwin Moore gives the first instalment of a paper upon Angeiomata of the Larynx, a variety of tumour sufficiently rare to merit the labour which he has expended upon collecting all the references to it in literature.—Dr. J. Kerr Love contributes a Critical Review upon Deaf Mutism, a subject upon which he is well entitled to write. He emphasises the important point that it is the duty of the medical man to search for the causes of deafness and to apply this knowledge to its prevention. In the hands of the new management, the general appearance of the journal, as regards paper and type, has been much improved.

Brain. Vol. XLII., Part 4.—Suggestion and Suggestibility, by E. Prideaux. The author defines suggestion as "a mental process resulting in the acceptance with conviction of a proposition in the absence of logically adequate grounds for its acceptance." The chief factor in the process is the suggestibility of the patient. Four forms of this are differentiated: (*a*) Individual, (*b*) conditional, (*c*) specific, (*d*) personal. All come into play in the process of suggestion; they are "affective states evoked by the stimulation of different instinctive tendencies." Depending upon the relationship of the suggested idea to the several forms of suggestibility, three types of response are possible: (1) Positive, (2) negative, (3) neutral. An idea is accepted because it harmonises with some preformed interest, sentiment, or complex; a negative response results when the idea is not in harmony with these—i.e., "negativism" is marked; the response is neutral either when there are no preformed complexes to which the suggestion can attach itself or when there is a conflict of motives with the production of a state of doubt. Hypnosis is to be regarded only as an exaggerated form of suggestion. The aim in treatment is to induce suggestibility in its various forms in the patient; the affective state may be altered by inducing an emotion of surprise or anger. "There is no question that the method of normal suggestion by explanation and appeals to feelings is the best. ...... In the other methods the patient relies entirely on the physician, does not understand his condition, and is much more likely to relapse."—Lethargic Encephalitis; Its Sequelæ and Morbid Anatomy, by E. Farquhar Buzzard and J. G. Greenfield. 20 cases and the pathological findings in five fatal ones are recorded. The symptomatology is much more varied than was at first believed. It is suggested that the characteristic lethargy may be attributed to blockage of the iter by inflammatory œdema of the region of the corpora quadrigemina. There are three main types of case: (1) with hemiplegia, &c.; (2) resembling paralysis agitans, the basal ganglia group; (3) with implication of the cranial nerves. But the lesions are always more widespread than the main symptoms suggest. A striking feature of the more serious cases is the late development of involuntary movements of the limbs, jaw, or tongue. The authors consider that probably "they represent the release of some nervous activity by interference with control." The only treatment advocated is re-education of control, and the prognosis is favourable. Four cases in people over the age of 40 are described, from which the following important lessons are to be learned: (1) that patients over 40 may be the victims of encephalitis, producing hemiplegia, &c.; (2) when there are no obvious gross signs of disease in the cerebral arteries to account for a hæmorrhage it is essential that microscopical investigation should be carried out; (3) the presence of thrombosed cortical veins associated with hæmorrhage in the neighbouring brain substance is strongly indicative of an inflammatory process. The microscopical features are vascular congestion, toxic degeneration of nerve cells and neuronophagy, proliferation of the mesoblastic cells of the vessel walls and infiltration of the nervous tissue by these cells, small-celled infiltration of the Virchow-Robin space, glial proliferation. Venous thrombosis and hæmorrhage are not uncommon; the latter occurs round a congested vessel, usually a vein, or as a result of infarction from an arteriole.—Local Paralysis Following Superficial Injuries not Involving Nerve Trunks, with Special Reference to Traumatic "Ascending Neuritis" and to "Reflex Paralysis," by F. M. R. Walshe. Four cases are described which indicate that in rare instances the clinical manifestations of a local neuritis may follow trivial injuries of the afferent terminations of the nerve affected. The symptoms were progressive, but in only one case was there evidence of continued upward extension. The author considers that the cases approximate to the condition known as "ascending neuritis" rather than to the muscular reflex affection of acute arthritis and allied lesions; he suggests that a small proportion of Babinski's cases of "reflex nervous disorders" may have been of the same nature.

Vol. XLIII., Part 2, 1920.—Aphasia and Kindred Disorders of Speech, by Henry Head. In this, the Linacre lecture for 1920, the author puts forward a fresh conception of the clinical phenomena of loss of speech from the physiological rather than from the anatomical point of view. All previous theories fail to explain clinical facts. In particular, those presuming a localisable "faculty of speech" or the storing of "images" of movement, hearing, and sight give no explanation of the inconstant response to tests which is so characteristic in lesions of the cerebral cortex. The author has elaborated a new method of examination by "serial tests, which alone make it possible to draw any conclusion from the inconstant responses." Owing to the war it has been possible to apply the tests to men who, apart from their head injuries, were in perfect health, a very different type from the usual civilian aphasic. For a description of the tests the reader is referred to the original paper; any summary of them would be misleading, for they depend for their usefulness on the most minute observance of detail. As a result of this research the author is enabled to draw the following conclusions. Disorders in the use of language, due to a unilateral lesion of the brain, cannot be classed under the categories of isolated affections of speaking, reading, or writing. They cannot be explained as due to destruction of images. In cases of so-called "motor" aphasia not only external speech but certain aspects of internal verbalisation are affected. The gravest and most definite disturbance is to be found in the use of words, figures, and other symbols; the functions which are affected in aphasia and kindred disorders of speech may be grouped under the heading of "symbolic thinking and expression." and any act is liable to suffer which requires for its perfect performance the antecedent formulation of the ultimate intention or goal towards which it is directed. The more nearly a symbolic action approximates to a proposition the greater difficulty it will present. Lastly, under the influence of lesions situated in different parts of the brain the various functions comprised under "symbolic thinking and expression" may become dissociated into forms which may be comprised under the headings: (*a*) verbal aphasia, a defect of word formation; (*b*) nominal aphasia, a defective use of names and want of comprehension of the nominal value of words or other symbols; (*c*) syntactical aphasia, articulation of the word is ill-balanced, the rhythm of the phrase is defective, and there is want of grammatical coherence; (*d*) semantic aphasia (from *σημαίνειν*, to signify), a want of recognition of the full significance of words and phrases; the patient may understand each word or short phrase, but the ultimate meaning escapes him; he cannot formulate symbolically a general conception.—Congenital Familial Spinal Muscular Atrophies and their Relation to Amyotonia Congenita, by Knud K. Krabbe. Six cases of the former extremely rare condition are recorded, and the published cases of the latter subjected to a critical review. The author emphasises the "radical pathological differences existing between the heredo-familial diseases and other diseases." He considers that "the cases which have been described as amyotonia congenita represented really two different diseases: (1) Amyotonia congenita, a benign disease, which consists of a congenital hypotonia, hyperflexibility and weakness, but no atrophies. It is not familial and can possibly be considered as a retarded development of the muscles; (2) congenital familial progressive spinal muscular atrophy, a type most related to Werdnig-Hoffmann's disease, but congenital, and which bears a certain resemblance to amyotonia congenita clinically, but differs from it in that the muscles show a marked atrophy, demonstrable by the X rays, that it has a tendency to progression, or at any rate not to improvement, and in a certain number of cases it can be shown that the disease is familial.

Reports and Analytical Records

FROM

THE LANCET LABORATORY.

PURE GLUCOSE AND PURE ANHYDROUS GLUCOSE.

(BRITISH DRUG HOUSES, LTD., 22-30, GRAHAM-STREET, CITY-ROAD, LONDON, N.)

PURE glucose is extensively used in medical and surgical practice as an intravenous, subcutaneous, or rectal injection. It has been claimed that the substitution of glucose solutions for saline solutions is a step forward in therapeutics, since glucose solutions have no injurious action on the kidneys, and, in addition to a diuretic action, possess notable nutritive properties. An examination showed that the "pure glucose" had a specific rotatory power of + 52·3° (absolute), was free from mineral matter, and had the composition of the monohydrate $C_6H_{12}O_6+H_2O$. The "pure anhydrous glucose" had a specific rotatory power of + 53·2° (absolute), and is accurately described as anhydrous. It is prepared specially for use in bacteriological laboratories and as an excipient for hypodermic tablets. For the first mentioned purpose, however, we are of opinion that anhydrous glucose offers no advantages over the hydrate. It is satisfactory to learn that glucose of this high degree of purity, which prior to the war was a continental product, is now being manufactured in this country.

(1) OSCOL STIBIUM; (2) ASEPTOIDS: NASAL COMP.

(OPPENHEIMER, SON, AND CO., LTD., 179, QUEEN VICTORIA-STREET, LONDON, E.C.)

(1) This is a true colloidal preparation of antimony sulphide (Sb_2S_3), and it is stated to have been used with advantage in the treatment of bilharzia and leprosy. If this is correct the preparation may be found useful in other directions. On analysis we find that 3 parts of antimony sulphide are present in 2000, which confirms the statement that 1 part of antimony (Sb) is present in 2000. (2) These tablets are made from a formula supplied by the late Dr. H. Macnaughton-Jones, which is referred to in his latest work on diseases of the nose, throat, and ear. The ingredients are sodii chlor., sodii bibor., menthol, thymol, eucaine hydrochlor., ol. gaultheriæ, ac. boric et sodii benz. These are made into square-shaped tablets and are not compressed, so that when dissolved in warm water rapid solution is effected.

METAGEN.

(PARKE, DAVIS, AND CO., BEAK-STREET, REGENT-STREET, LONDON, W.)

This preparation is stated to contain the three types of vitamines—the fat-soluble A vitamine, which possesses antirachitic properties, the water-soluble B vitamine, which exerts a growth-promoting and antineuritic influence, and the water-soluble C vitamine, which is an antiscorbutic. The material is conveniently supplied in soluble gelatin capsules, each containing 5 gr. It is stated that metagen may be advantageously administered in cases of lowered bodily tone, subnormal nutrition, and in diseases arising from a lack of vitamines in the diet, such as scurvy, beri-beri, marasmus, malnutrition, &c. It is also applicable where it is desired to build up nutrition—e.g., tuberculosis, rickets, simple anæmia, chlorosis, and other blood diseases. Unfortunately, the activity of the vitamines cannot be expressed quantitatively by chemical means, the only methods available being physiological. Messrs. Parke, Davis, and Co. state that the efficiency of metagen has been widely tested in hospital and private practice, and the recommendations concerning the use and mode of administration of metagen are based on the reports of impartial clinicians.

"GADUS" VIRGIN COD-LIVER OIL.

(JOHN BELL AND CROYDEN, LTD., 76-80, KENSAL-ROAD, LONDON, W.)

Messrs. Bell and Croyden are the sole British agents for this oil, which is stated to be prepared in the Lofoten Islands, Norway, from the liver of the cod on the same day that the fish is caught. The oil when analysed was found to have the constants of a pure cod-liver oil, and it also responded to the customary chemical and B.P. tests. The iodine value was slightly lower than that usually found. The oil is pale-yellow in colour and is devoid of any unpleasant smell or flavour. The manufacturers claim that its low viscosity renders it less objectionable to the palate than the thicker oils, with the consequence that it is readily tolerated and does not repeat.

New Inventions.

IMPROVED GAS-OXYGEN-ETHER OUTFIT.

THE illustrations show some improvements that have been made for use with my gas-oxygen-ether outfit. Fig. 1 is an improved ether or mixture bottle comprising a three-way valve, below which is a perforated cup that can be raised or lowered upon the inlet tube inside the bottle. The tube is perforated in two places, the upper being inside the cup and the lower one below the cup. The open end of the tube makes a third aperture. A filling funnel is placed behind the valve. The advantages of this bottle are that the anæsthetist can graduate the amount of ether or mixture better than was possible with the older pattern, for with this bottle the gases can pass in three ways: (1) to the patient direct and without any ether; (2) over the surface of the ether or mixture, thus giving quite a small amount; (3) through the ether or mixture when the anæsthesia has to be deepened. Fig. 2 shows a nasal attachment comprising a metal stirrup to which are attached a couple of short soft rubber tubes. I have found this very useful for endobuccal and endopharyngeal anæsthesia, and especially for such cases as diathermy of the tongue or palate, or for œsophagoscopy and bronchoscopy. It is also very useful for some operations upon glands in the neck, enabling the anæsthetist to keep well out of the way of the surgeon. The rubber tubes should be about four inches long. The appliances are made by Messrs. Coxeter and Son, 171, Pancras-road, N.W. 1.

FIG. 1.

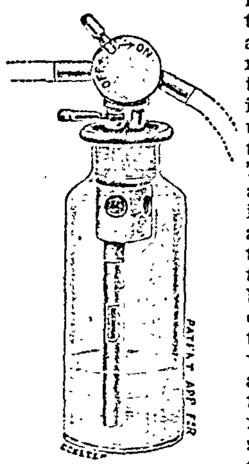
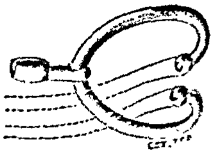


FIG. 2.



H. E. G. BOYLE, O.B.E., M.R.C.S.,
London. W. L.R.C.P. Lond.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 19, 1921.

Dermatology in Relation to General Medicine.

THE admirable address delivered before the Medical Society of London last Monday by Sir JAMES GALLOWAY on the relation of skin diseases to internal disorders, which we publish this week, sets forth very clearly the important part that the study of dermatology should take in the training of the general physician. There is a tendency even in these days to consider dermatology as a subject apart, and the average student of medicine is content if he can recognise the eruptions of the specific fevers, a typical case of scabies or ringworm, and a few other common skin diseases, such as psoriasis and impetigo contagiosa. He is not unnaturally appalled at the complexity of dermatological terminology, and when later he is confronted in practice with a skin eruption, which he may or may not recognise, he is inclined to ring the changes on a few ointments or lotions in the hope that one may eventually "touch the spot," without considering the possible connexion between the patient's skin and the general state of health. Yet, as Sir JAMES GALLOWAY aptly says, "the knowledge of external and visible signs may lead to the interpretation of their hidden cause, the recognition, it may be, of a mysterious malady, to its treatment, and the restoration to health of the sufferer." This, it seems to us, is the crux of the whole matter. It is difficult for the consulting physician, and quite impossible for the general practitioner, to become familiar with the rarer diseases of the skin or with the progress of dermatological research; but every student should be taught not only to recognise the commoner dermatoses, but also to interpret the cutaneous manifestations of internal disorders, such as errors of digestion, intestinal intoxication, and the like. He should be made to look at the skin as assiduously as he listens to the chest. That he does not do so is, we think, largely because he is taught dermatology from this wrong point of view: "Here is a patient with a dry scaly rash, the distribution is largely on the extensor surfaces, more particularly on the elbows and knees; the disease is, in fact, psoriasis, and we will order a tar or chrysarobin ointment and increasing doses of arsenic internally"—and that is all. He will be taught that we do not know the cause of psoriasis, but he will probably not be taught that every case of the disease should, if possible, be investigated as completely as if it were an obscure case in the medical wards, that it is important to know whether a patient with psoriasis has any symptoms or signs of rheumatoid arthritis, and that, if such be the case, foci of infection must be carefully sought for and treated, that a complete examination of the whole digestive system must be made, the urine tested for excessive acidity and for indican, and the blood, perhaps, for excess of sugar.

The tendency is, in fact, for the student to learn to label certain eruptions, and to associate with each a certain stock treatment, such as tar for psoriasis and chronic eczema, mercury for impetigo, and sulphur for acne, whereas, except in diseases of purely external origin such as ringworm and scabies, the majority of patients with skin disease require a complete medical examination. Conversely a great deal may be learnt from the appearance of the skin, its colour, the activity of its secreting glands or the presence of pigmentation, in cases of dyspepsia, neurasthenia, and chronic ill-health. This leads us to the consideration of the much debated question of intestinal toxæmia. It would seem that two main types can be recognised:—that in which there is abnormal fermentation of carbohydrate, and that in which excessive intestinal putrefaction occurs. The difference in appearance presented by patients of these two types is very striking. In the former the skin of the face, neck, ears, and scalp is flushed, the sebaceous and sometimes the sweat-glands are hyperactive, the lips are bright red and covered with a kind of scum, the tongue is firm and red, with prominent papillæ, and aphthous ulcers are sometimes present in the mouth. The gastric acidity varies. The urine is usually hyperacid, and as a rule contains no indican. Persons of this type are liable to acne and boils, and to acute seborrhœic eczema. On the other hand, the person in whom intestinal putrefaction is in excess corresponds to the description given by LANE of the sufferer from chronic intestinal stasis. The complexion is sallow; the lips have a bluish tint; the tongue is pale, smooth, and indented at the edges; there is pigmentation around the eyes, in the joint flexures and wherever pressure occurs on the skin, as from corsets; the extremities are blue and cold and in a state of clammy perspiration; and often these unfortunate patients emit a peculiarly offensive sour odour. The gastric acidity is almost always low, and there may be complete achylia. The urine nearly always gives an intense indican reaction. These patients are not uncommonly subject to recurrent attacks of pompholyx. We need not pursue this comparison further; it has been given merely to show that the skin is a mirror in which the state of a person's health may often be clearly visible.

As indicated by Sir JAMES GALLOWAY, the appearance of a cutaneous eruption is frequently the first available clue to the presence of some focus of infection. This is well illustrated by the group of eruptions to which DARIER has given the name tuberculides. As examples may be given the erythema induratum of BAZIN, and the papulo-necrotic lesions that occur on the distal parts of the extremities. These eruptions are evidently inflammatory reactions around tubercle bacilli brought by the blood-stream from some distant tuberculous focus, usually glandular, and coming to rest in parts where the cutaneous circulation is sluggish. The appearance of such lesions may be the first indication that a patient is suffering from active tuberculosis, although nearly all people who develop tuberculides exhibit the stigmata which betray a massive infection with tubercle in early life. In the same way erythema nodosum, and in some cases erythema multiforme, are reactions to a streptococcal infection. The early recognition of eruptions such as these, and of their significance, is obviously of great importance, in order that the patient may be submitted to an exhaustive examination, and be given the treatment necessary to combat the underlying infective condition which the cutaneous lesions have revealed.

Medical Education in China.

A SPECIAL meeting of the medical profession will be held on the afternoon of Monday next, Feb. 21st, at the Royal Society of Medicine, the object being to emphasise the developments which have been made in China in recent years in medical education—developments to which medical practitioners from the United States and this country have mainly contributed. To our readers the information that the profession of medicine is held in the deepest esteem in China will not come as news, for we have been able from time to time to keep them posted in things medical, as they occur in the vast Eastern Republic. Dr. WU LIEN TEH, physician extraordinary to the President of China, published in our issue of May 29th, 1920, a detailed account of medical progress in China since the establishment of the Republic, and especially since the issue of a Presidential mandate in 1915 recognising Western medicine as the proper course of medical practice in China. The *National Medical Journal of China* has brought the story up to date, a recent issue containing, in addition to a varied assortment of quite modern medical articles, an excellent essay by Dr. PETER C. KIANG, showing the keenness and devotion of the Chinese medical student to the calling which he has adopted.

The Republic of China is in a state of transition, so that all vocational education of a modern sort is complicated by the political situation. But the calling of medicine appears likely to be the first to establish itself on an organised basis, chiefly because a greater percentage of medical students than of students in any other faculty stick to the profession of their first choice, practising it faithfully after return from universities or professional schools to which they may have been attached abroad. This is a distinguishing feature of the medical student. Other students, on their return to China from abroad, are prone to change the direction of their work. Chemists and engineers go into the public services or into the employment of banks, and mining engineers drift into commerce; but the Chinese medical man, educated in Europe or America, on returning to his native land invariably practises medicine. And he does this, as many of our own medical men do, not because an easy or lucrative career is open to him, but because, having served his apprenticeship in medicine, no other metier seems worth following. The career of the Chinese general practitioner among his own people is attended with two main drawbacks which make general practice so often hard in this country —the life is physically a wearing one, and the public appreciation of medical efforts is capricious. Criticism, indeed, of the Chinese practitioner appears to be prompt and outspoken, for if a patient's temperature does not abate on the mere appearance of the doctor, the reason why is demanded severely. Public opinion therefore needs to be cultivated, and education of the public earnestly undertaken. But we may be certain that the fact of the medical students sticking persistently and faithfully to their profession, when they return from abroad, will prove a great public argument for a better appreciation of science. The Chinese are notoriously good and honourable men of business, and to them the recognition that medical men prefer their o [illegible] lling to any other, despite its drawbacks [illegible] ite invitations to easier careers, will form [illegible] proof that the rewards of a life with noble ideal are higher than those of an exclusively material objective, and that the calling must be a high one which obtains adherence on such a basis.

Modern China is ripe for the development of modern medicine. Medical learning in China has passed the first and difficult stage, and now it is necessary that the standards of medical education should be raised, and that hospital practice should be more generally based upon the science of to-day. Dr. HAROLD BALME's work, prepared under the auspices of the China Continuation Committee, a committee instituted to inquire into the scientific efficiency of mission hospitals in China, indicates a general consensus of opinion in regard to this matter. The institution of this committee, the fine housing of the China Medical Board, and the equipment of the Pekin Central Hospital and Union Medical College alike prove this. The pioneers of medical science in China have to face a considerable difficulty in laying out a medical curriculum for Chinese students, for whom it is necessary to have a bilingual system in medical nomenclature, with the attendant difficulty of securing an exact equivalent of meaning. But a good beginning is bound to have a fruitful issue.

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The Sanitary Authority and Encephalitis Lethargica.

As is well known, acute encephalitis lethargica has been a notifiable disease since Jan. 1st, 1919, and the number of cases notified in the administrative county of London is issued weekly on the authority of the Registrar-General and is recorded in our columns. One of the striking features in the interesting survey of the cases notified in Manchester during 1920, which we publish in our present issue, is that in not a single instance has the spread of infection from one person to another been traced. Not one of the 138 family "contacts" of the disease caught the infection. Dr. W. ST. C. MCCLURE makes the deduction that the disease is not infectious or that the infection is widespread and most people are immune. He, however, "hedges" by the suggestion that until our knowledge becomes more complete we ought to presume the disease infectious or contagious and take precautions accordingly. The fatality of the Manchester cases is very high. The diagnosis was confirmed in 32 cases, of which 17 proved fatal. Of the remaining 15 only 2 have made a complete recovery, 7 are still ill, and 6 at periods varying from two to nine months after the onset are seriously damaged. It seems probable from this high fatality that a considerable number of milder cases have been unrecognised. We believe that experience elsewhere confirms the Manchester experience as to the failure of the patient to spread infection, but that elsewhere the occurrence of a larger number of milder cases has been reported. The value of notification at present is chiefly the facilitation of investigation, and the Manchester Public Health Department, through its staff of medical assistants, has been in a good position to undertake such inquiries.

For most notifiable diseases there is a routine procedure—isolation of the patient, removal to hospital, and disinfection of the house. In the case of encephalitis lethargica, those who have had experience do not hesitate to treat patients in a general hospital. Nor can we see that it is justifiable, in view of the apparently non-infectious nature of the disease, to exclude "contacts" from school or work. Education is already much interfered with by diseases known to be infectious and we ought not to add another disease to the list without any evidence of its infectivity and simply because it is as yet a mystery. The tendency is rather to regard a mysterious disease as infectious. In Osler's Medicine, the edition published in 1901, it is mentioned that the leading Russian medical authorities at that time believed scurvy to be infectious, and Osler himself classified beri-beri among the specific infectious diseases. In these last years we understand these two diseases better. There is already too great a tendency on the part of the half-informed to create scares about new diseases and we must not pander to that tendency. Notification has its value no doubt as a means of putting the medical practitioner on the alert when he meets with obscure ailments resembling encephalitis lethargica, and of thus facilitating the patient investigation of its cause, but it cannot be said that, in the present state of our knowledge, notification enables the sanitary authority to take any practical steps for the prevention of encephalitis lethargica.

The Prince of Wales, F.R.C.S.

On the occasion of the birth of the Prince of Wales as third in direct succession to the Crown, a partly humorous but wholly loyal suggestion was thrown out in these columns that, having regard to the increasing part which things medical must play in future Imperial administration, his Royal Highness should be a medical man. The suggestion became a fact on Monday evening last, when at the Hunterian Festival Dinner his Royal Highness was admitted an Honorary Fellow of the Royal College of Surgeons of England. At the time of his birth the constitution of the College made no provision for Honorary Fellows, but in 1900, that being the centenary date of the reconstitution of the College under Royal Charter, the necessary powers were acquired, and the first Honorary Fellow thus admitted was the late King Edward VII. The present King, while Prince of Wales, graciously accepted the same diploma, and now the Prince of Wales has followed his father's and grandfather's suit, being elected among a group of six who have especially distinguished themselves in the war. The other five are the Duke of Connaught, Colonel-in-Chief of the Royal Army Medical Corps; Dr. Pierre Duval and Professor Antoine Depage, respectively selected to represent the medical work of our Allies, France and Belgium; and Brigadier-General J. M. T. Finney and Dr. Charles Mayo, respectively Chief Surgeon to the American Army in France and Adviser to the Army Medical Service in the United States. The Prince of Wales's right to inclusion in this distinguished group was justified fully by Sir Anthony Bowlby at the Hunterian Festival Dinner, when he described the Prince's work at the front as admirable, his personality to have acted throughout the war in all ranks as a source of inspiration, and his tour of the Empire to have been an unqualified success. The President obviously spoke out of conviction and not out of courtliness, and the Prince of Wales in his reply took the opportunity of paying a tribute to the service of medicine throughout the war in words which clearly had their origin in sights which he had seen and things which he had learned. The impressive part of a dignified ceremony was that it was the outward sign of genuine feeling.

Annotations.

"Ne quid nimis."

THE DISPOSAL OF DOMESTIC REFUSE.

An inquiry held by the Ministry of Health on Jan. 12th at Sheffield with regard to a proposal to spend £200,000 on a new method of disposing of the city's refuse has more than a local interest. The problem has its economic side and its sanitary aspect. It was shown that the total amount of refuse collected annually is about 130,000 tons from a population of about half a million. Putting aside the 20,000 tons from the privy middens, an incubus which must continue to be dealt with at the destructors till the privy middens are all converted into water-closets, the problem consisted of dealing with the contents of dustbins and so-called dry ashpits. Three methods were considered—viz., the reconstruction and extension of the destructors, tipping, and a special method of sorting and screening the refuse. It was shown that the capital cost of reconstructing and extending the destructors would be from £150,000 to £200,000, while the cost of burning the refuse at the destructors after collection would be equal to a shilling rate, or over £90,000 per annum. Tipping was ruled out largely on sanitary grounds. The tips would have had to be at a long distance from the city, and objection is always raised by the residents of the districts in which they are established. Besides the nuisance from rats, effluvia, paper being blown about, the firing of the tips, and so forth, the cost is always run up by the heavy transport charges.

The third method was the one selected. Plant of a size capable of dealing with the refuse of a population of 40,000 has been in use for some time, so that the method has already had a sufficient trial to enable reliable estimates to be made as to the cost of the process. The plant consists of electrically driven revolving screens, which sort the refuse into constituent parts according to the size of the mesh of the screen. The first material sorted out is a fine dust, about 33 per cent. of the whole, which passes through a $\frac{3}{16}$ in. screen. This dust has a higher manurial value in nitrogen, phosphates, and lime than stable manure, and good reports have been received of it from agriculturalists and golf clubs. The second material removed is a fine cinder which passes through a ½ in. mesh, amounting to about 26 per cent. of the refuse. This fine cinder when made into briquettes, with the addition of 8⅓ per cent. of pitch and ½ per cent. of tar, has a high calorific value. The third material is large cinder which, owing to its specific gravity, can be separated by a washing process from the heavier residue and has also a high calorific value. Its fuel value is 11, taking coal as 14, and it is used instead of coal for heating the corporation baths. The large cinder constitutes about 18·5 per cent. of the whole. The heavy material which is separated by the washer amounts to about 14 per cent. and consists of stone, shale, broken pottery, while it also contains a certain amount of unburnt coal which falls out with the heavy debris. The unburnt coal is one of the few useful things not used, but its quantity would not justify the cost of sorting. This heavy residue being washed forms a quite innocuous material for tipping, very different from the stuff at present tipped, being more like clean builders' rubbish. The vegetable matter, amounting to between 3 and 4 per cent., will either be burnt in the destructor or pulverised and added to the dust to increase its manurial value, provided a good market is found for the dust. The "tailings" or larger particles, containing tins (1 per cent.), rags (0·4 per cent.), paper (3·6 per cent.), are carried on to a revolving belt where articles of value are picked off by hand. This hand sorting is light work of a quite unobjectionable nature on sanitary grounds and is necessary because of the varying value of the tailings. For example, during the war a good price could be got for the paper; now there is no market for it. The tins are de-tinned in a furnace and pressed into bales and find a ready market. The oily rags have the oil extracted, the dirty rags are sterilised, and a market is found for the clean remainder and the recovered oil. The total estimated annual expenditure for the new system put before the inspector was £85,000, against which there is an expected revenue from sales amounting to £49,000, leaving a net annual expenditure for the proposed new plant of £36,000. The present annual expenditure in Sheffield on burning and tipping is £50,000, so that the new system is estimated to effect an actual saving of £14,000 per annum. This net expenditure of £36,000 has also to be compared with an estimated annual expenditure of £91,600 if a scheme had been adopted for burning the whole of the refuse of the city at destructors. There was plenty of evidence at the inquiry that the estimated revenue from sales was a very safe one and much below prices which are at present being realised.

If the Ministry's approval is obtained the progress of the scheme will be watched with general interest. Mr. Mortimore (Messrs. Mortimore, Lyon, and Co., Manchester), in his evidence, stated that the analysis of the Sheffield refuse showed it to be similar to that of other towns, and later in the inquiry it was suggested that the dustbins of the country are an untapped source of fuel to the extent of 3,000,000 tons a year. It does not seem likely that the general adoption of gas-fires or central heating will diminish this new source of fuel for years to come, and from the sanitary point of view the new system is eminently desirable. We shall get rid of the nuisances inseparable from tips, and the refuse will be dealt with in a manner which demands a minimum of handling and involves no disagreeable work for those employed in working the system.

BENZYL BENZOATE IN DISEASES OF CHILDREN.

WE have recently[1] called attention to an important new antispasmodic discovered by Dr. David Macht in the pharmacological laboratory of the Johns Hopkins University and to its value in persistent hiccup, whooping-cough, and asthma. Pharmaco-dynamic analysis of the papaverin group of the opium alkaloids, which have a sedative effect on smooth muscle, pointed to the benzyl nucleus as responsible for the sedation. On searching for a simpler compound of benzyl with the sedative effect of papaverin and without its narcotic effect, Dr. Macht found that benzyl benzoate had all the effect of papaverin on smooth muscle and was much less toxic. The field of utility for such a drug, especially in diseases of children, is obviously extensive. Dr. Macht's claims have been confirmed by other observers. In the *American Journal of the Medical Sciences* for January Dr. John Ruhräh has published an important paper on benzyl benzoate in diseases of children. He points out that the drug stops the rhythmic contractions, lowers the tone, and relaxes the spasm of smooth muscle. This action has been observed on the muscle of the intestine, gall-bladder, uterus, and urinary bladder. On the circulation the action is chiefly on the peripheral vessels, producing a fall of blood pressure. But in ordinary cases this action may be disregarded. Dr. Ruhräh has found its action most favourable on general convulsive conditions, though this could scarcely be expected. Thus an infant was circumcised immediately after birth. The wound became infected and 40 to 60 convulsive seizures occurred daily. Four-drop doses of benzyl benzoate, diluted, were given, and later one or two drops at intervals of four hours. The convulsions diminished to half a dozen daily and the child could nurse with comfort and recovered. With regard to whooping-cough, Dr. Ruhräh refers to the notoriously uncertain action of antispasmodics. What quietens one child has little action on another. Belladonna, he finds, gives the best results in the greatest number of cases, but it cannot be left indiscriminately in the hands of the careless. Benzyl benzoate acts fairly well in many cases, lessening the number of attacks, but its action is uncertain. Possibly this may be due to lack of knowledge as to dosage. In bronchial asthma and spasmodic bronchitis he found the effect most happy and more certain than in any other disease. In intestinal colic relief was unusually prompt, and in severe hiccup the results were better than those of any other drug. In pylorospasm (which must be differentiated from cases in which the obstruction is chiefly due to pyloric hypertrophy) atropine proved so satisfactory that other drugs made little appeal. But there are cases in which the amount required to cause relaxation already produced toxic symptoms. In such cases benzyl benzoate is of use. In diarrhœa it may be used to check excessive peristalsis, and, as it does not check secretion, it may eventually replace opium. In spastic constipation it is of value. The drug seems non-toxic, but it is hot and unpleasant to most children, and must be diluted with water, sweetened water, or milk. Older children may take it dissolved in olive oil or in capsules, but plenty of water should be taken at the same time. Ampoules in olive oil for hypodermic use may be had when rapid action is desired. The injection should be intramuscular. Dr. Macht gives the adult dose as 20 minims, but this is too small in many cases. For children the dose may be calculated, according to weight, from the adult dose (taking the maximum, average, and minimum doses as respectively 60, 40, and 20 minims for a patient weighing 150 lb.), or according to age by Young's table.

AN AMERICAN ENDEMIC FOCUS OF LEPROSY.

SOME of the problems associated with leprosy are still unsolved, notwithstanding the advances which have been made in our knowledge of the disease in recent years. Contributions to the literature of the subject are, therefore, specially welcome, particularly when made by earnest and competent observers. In the United States Public Health Reports for Dec. 17th, 1920, two past assistant surgeons of the U.S. Public Health Service, Dr. Mark F. Boyd and Dr. Warren F. Fox, have published a paper entitled "An Epidemiological Study of an Endemic Focus of Leprosy," in which some interesting facts are given respecting the incidence of the disease in a seaport town situated on an island in the Gulf of Mexico, off the coast of Texas, and having a population at present estimated at over 44,000. The name of this seaport is not stated by the authors, but from their description we conclude that the place referred to is the ill-fated port of Galveston. In this area during the past 30 years some 45 cases of leprosy have come under observation, and concerning these various particulars were obtained partly from the patients themselves and partly from local medical practitioners. In addition, 25 other cases were heard of, making a total of 70 in all, but of the latter group little definite information was available, consequently the authors have confined their special inquiries to the first-mentioned 45 cases. Of these 26 are still alive, 13 have died, and the remaining 6, although presumably still living, have left the town and taken up residence elsewhere. Five of the 45 cases were considered to be imported instances, 36 were regarded as having contracted the infection locally, and in the remaining 4 the origin of the disease was too obscure to allow of any statement being made. Omitting the imported cases, of the remaining 40, 7 were negroes, 29 were whites, and the racial origin of 9 was not ascertained. The incidence of leprosy among negroes and whites appeared to be only in proportion to the distribution of the population, but cases were more numerous among whites of foreign-born parentage than among native-born whites. This incidence seemed to be proportionately higher among those of German parentage than among those of other descent. The significance of this is not clear, but it is suggested that it may possibly indicate a greater susceptibility among persons of German ancestry, or perhaps that the strain of leprosy infection prevalent in the affected area may be of Teutonic origin. As regards sex, 25 of the 40 cases were males and 15 females. With respect to age-distribution, more cases developed their illness between 10 and 20 years than in any other period, though no age-group appeared to be immune. Length of residence in the area seemed to be a more important factor than age in determining the onset of the disease. Most of the leprous patients developed their illness after ten or more years' residence in the town. The bulk of those who suffered were poor persons of the labouring class. Single cases occurred in 19 houses; two houses had each two cases, and in one house there were three cases. The tubercular type was more common than the anæsthetic, the mixed type being more frequent than either of the others. The majority of the patients gave a history of contact or association with a previous case before the development of their own attack.

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[1] THE LANCET, 1920, ii., pp. 512, 515, 838.

As a result of their investigations the authors formed the opinion that there existed in the town a number of unrecognised lepers. The incidence of the malady in this area is therefore probably greater than the previous figures would lead us to suppose; in any case, it appears to be higher than in any other of the recognised endemic foci of leprosy in the United States. In the annual report of the Surgeon-General of the U.S. Public Health Service for 1918 it is stated that the number of cases of leprosy in the whole of the United States in that year was 209. The spread of leprosy in this Texan seaport town is apparently due, to a great extent, to contact with recognised or unrecognised cases of the disease. Various other hypothetical modes of spread were considered, and as regards possible transmission of the infection to man by rats or by insects no satisfactory evidence was forthcoming. The relation of a fish diet to the incidence of the disease was also examined, but this was also dismissed as being unsupported by any evidence. In concluding their contribution the authors draw attention to the fact that "absolutely no official control or supervision in any form has ever been exercised over the leprosy cases" in this affected area. It is proper to mention that these studies of leprosy in the seaport town in question were undertaken by Dr. Boyd and Dr. Fox in an unofficial capacity.

THE SUPRARENAL GLANDS IN DEFICIENCY DISEASES.

THE widespread effects of the absence of vitamines in the diet on certain organs apparently remote from their influence is perhaps only just becoming recognised. R. McCarrison, in his observations[1] on the genesis of œdema in beri-beri states that in pigeons suffering from experimental beri-beri the œdema is always associated with considerable increase in the size of the suprarenal bodies and that four-fifths of the animals with enlarged suprarenals show some form of œdema. The adrenalin content was increased proportionately to the weight of the organs. The pigeons had been fed on polished rice heated in an autoclave, until they showed signs of polyneuritis. In 10 out of 22 pigeons œdema occurred. The increase in size of the suprarenals is a true hypertrophy at least of the medulla, and if the increase of the adrenalin content can really be brought into causal relation with the œdema it is possible that this factor may be found to play some part in the production of œdema generally. While the size of the suprarenals appears to have relation to the absence of the antineuritic factor, it would appear that the suprarenals are also affected by diets deficient in the antiscorbutic vitamine, as shown by the experiments of Victor K. La Mer and H. L. Campbell, of Columbia University. These observers fed young guinea-pigs, weighing 250-300 g., on a diet deficient in the antiscorbutic vitamine, and found an increase of weight of the adrenal glands amounting to approximately 100 per cent. when computed on the basis of body weight minus alimentary canal. Control animals which have been subjected to starvation do not show an increase of adrenal weight, which in those fed on scorbutic diet is directly proportional to the time during which their food has been deficient. It is most pronounced in those animals whose life has been prolonged by the partial protection afforded by small but insufficient quantities of tomato juice. La Mer and Campbell interpret the increased weight as indicating a compensatory response to the decreased adrenalin production known to exist in the scorbutic animal, a point which has interest in connexion with the extensive intramuscular and intestinal hæmorrhages found in scurvy. The heart and kidneys are increased on the scorbutic diet, while there is no evidence that the liver is affected by a lack of water-soluble C alone.

TESTING OF CLINICAL THERMOMETERS.

AN announcement was published last week by the Board of Trade that there is reason to believe that numbers of imported thermometers are being offered for sale in this country without having been officially tested. The reminder is therefore timely that, under the provisions of the Clinical Thermometers Order, 1918, no person may sell, offer for sale, supply, or deliver any clinical thermometers which have not been tested, approved, and marked at the National Physical Laboratory. Purchasers should, in their own interests, see that any thermometers offered to them bear the official test mark—namely, a monogram formed with the capital letters N.P.L., followed by two figures denoting the year of test. The requirements apply to foreign thermometers imported into this country equally with those of British manufacture, although clinical thermometers exported from the United Kingdom need not at present be tested and marked.

A BICAMERAL HEART.

LAST November a curious specimen of cardiac abnormality was brought before the Section of Medicine of the Royal Society of Medicine by Professor A. Keith and Dr. J. J. MacDonnell, and an illustrated and detailed description of it appears in the current issue of the Society's Proceedings. As Professor Keith remarks, in his report on the specimen, every one of the abnormalities shown has been frequently seen before, but the peculiar combination appears to be unknown. The case was one of complete transposition of viscera, and the apex of the heart was in the right nipple line, but the autopsy disclosed a strange state of affairs. Briefly, there was an apparently ordinary aortic arch, directed to the left, but attached to the heart in front of a dilated vessel, which otherwise was in the place of a normal pulmonary artery. The normally situated ductus arteriosus was patent, and through it the systemic blood passed, for the aortic arch received no blood from its ventricle. This dummy aorta arose from a ventricle which was the ordinary right ventricle, morphologically and descriptively, while the "pulmonary aorta" came from a ventricle to the left and in front of the other. Thus, the ventricles were not transposed, while the aortic stems were transposed so far as their ventricular relations went. The relations between the big vessels are those which would come into being as a result of a reversal of the direction of the line of septum formation in the single aortic stem, in keeping with the general transposition, but not with the left-sided arch. The ventricular position is normal, and it may be pointed out that the heart sometimes does not share in situs inversus. The intra-ventricular conditions indicated that the embryonic development of the ventricular and bulbous regions had been more or less normal, so that the inversion of the aortic septum is all that need be postulated here. But at the auricular end of the heart the auricle on the left side received the two venæ cavæ as well as the pulmonary veins, and there was no inter-auricular foramen, so that the auricle to the right received no blood and could not feed the right ventricle and aortic arch. The pulmonary veins joined into a common trunk—a primitive embryonic stage—and opened into the auricle through what was really a greatly distended sinus venosus or coronary sinus; an additional upper pulmonary vein on the right side, however, opened into the right innominate vein. This, as Professor Keith points out, is doubtless the remnant of a drainage into an embryonic vena cava on that side. Possibly this last vein represents an opening into the azygos system and thence into the vena cava, and might be looked on as a modified bronchial vein. The other pulmonary veins are apparently in a persistent embryonic stage, but the rest of the arrangements in this curious auricular region would seem to defy probable analysis from a developmental point of view; it is another example of the inadequacy of normal embryology to account for abnormalities under certain conditions, in which we get occasional glimpses of deeper causative genetic factors of which we know nothing. The specimen is a most interesting one as a pathological condition, and it is only necessary to add that it was consistent with a measure of independent life, as the child lived seven months, dying apparently from capillary bronchitis.

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[1] Proceedings of the Royal Society, 1920, vol. xci.

HEREDITARY HÆMORRHAGIC TELANGIECTASIA.

IN a review of the literature of hereditary hæmorrhagic telangiectasia associated with familial epistaxis, Dr. Hyman I. Goldstein,[1] of Camden, N.J., who himself reports 11 cases in one family, states that 31 families affected with this disease are on record, as well as several cases which are not altogether typical. Isolated examples of the condition with no other instances occurring in the patients' families have been described. In some cases hereditary telangiectases have been noted in one or several members of a family, but without recurring epistaxis; in others there were persistent recurrent attacks of epistaxis of the familial type, but without telangiectases either in the patient or other members of the family. Males and females are affected alike, and are equally capable of transmitting the disease to their offspring. Hæmorrhage is the one constant symptom. In the great majority of cases it occurs in the form of epistaxis, but in some cases hæmorrhage may occur from the telangiectases on the tongue, lips, fingers, buccal mucous membrane, or even from the rectum. Multiple telangiectases, which constitute the sole characteristic of this condition, are found most commonly on the buccal and nasal mucous membranes and upon the lips. They may also occur on the face, feet, hands, ears, scalp, neck, forearms, and chest. The telangiectases associated with epistaxis may occur in three forms: (1) pin-point; (2) spider form, the most common; and (3) nodular. The lesions are apt to become prominent and increase in numbers between the ages of 35 and 50. Many of the patients present symptoms of profound secondary anæmia. The diagnosis is not difficult. The cases must not be confounded with hæmophilia, hæmorrhagic diathesis, purpura, scurvy, pernicious anæmia, or "the phthisical state with hæmorrhages." The clotting and bleeding time is always normal, and there is no history of hæmophilia. The blood platelets are not appreciably reduced, and the resistance of the red cells remains normal. No general treatment seems to be effective, but local treatment may reduce the number and severity of the hæmorrhages and improve the patient's general condition.

COMPARATIVE RESISTANCE OF TISSUES TO LOCAL ANÆMIA.

AMONGST the many experiments which were made in the attempts to allocate the relative share of blood pressure, blood flow, and the renal tubules in the secretion of urine was the experimental ligature of the renal vein. It was found that its closure for even a very short time led to prolonged cessation of the secretion, and that when this was resumed the urine contained albumin. Loren R. Chandler, of Stanford, California, has now studied the effects of producing a temporary renal anæmia of two hours' duration by placing a ligature about the renal artery of a rabbit. The rabbit is killed from one to four days later, when histological study invariably shows necrosis of practi- the entire cortical tubular epithelium, with few, if any, changes in the glomerular and interstitial elements. This method of producing epithelial necrosis with the minimum amount of injury to other elements adds another method for the study of epithelial regeneration and the pathology of renal secretion. It has been applied also to the study of hepatic function and regeneration, and tests have been made of the effects of temporary local anæmia of the liver of dogs. To produce this anæmia Eck's fistulæ were made. Five to seven weeks later the abdomen of each dog was reopened, and temporary ligatures placed about the hepatic artery and portal vein, and the ligatures kept in place from three to 12 hours. The animals were killed two to six days later. During the period of ligation the dogs showed no toxic symptoms. After removal of the ligature they appeared in every way normal until they were killed. At the autopsy the histological examination showed that in those with vessels ligatured for three hours there was no thrombosis, no necrosis or atrophy of the hepatic parenchyma; a moderate degree of fatty degeneration was mainly confined to the central third of the lobule. In the animals subjected to 12 hours of local anæmia there was similarly no thrombosis or necrosis; there was marked fatty degeneration of the central half of the lobule, with slight atrophy of the parenchyma immediately surrounding the central vein. It would appear that the power of the hepatic cells to resist local anæmia is in striking contrast to the sensibility of the secreting renal epithelium. In fact, the infrequency of infarcts in the liver, usually attributed solely to the pressure of the double hepatic circulation, is probably due in large measure to this power. It affords yet another example of the wonderful stability of the liver cells, which, though apparently so simple in structure, are yet so manifold in their functions.

THE PERSONAL ELEMENT IN EFFICIENCY.

AN Efficiency Exhibition promoted by the proprietors of the *Daily Mail* is being held this week at Olympia, West Kensington, and is to remain open until Feb. 26th. The promoters have shown through their selection and arrangement of the exhibits how interest is growing in the human side of efficiency, in contrast with the technical or mechanical side. The exhibits of two hospitals, St. Mary's and the Middlesex, imply a recognition that efficiency depends upon health, and health in its turn upon medical knowledge. A good idea is given to the public how chemical, physiological, and bacteriological research is carried out; the Middlesex stall is particularly well equipped, and is attracting much attention. In another place the People's League of Health are showing how inefficient in matters of health the nation is to-day, emphasising the need for further research and the necessity for popularising knowledge. In the gallery Major Frank Gilbreth, from America, who is himself in attendance at the exhibition, has a display of unusual interest, setting forth his methods of adding to efficiency by minimising industrial fatigue through scientific motion and time study. The whole of the annexe, placed at the disposal of the Ministry of Labour, is devoted to disabled ex-Service men who have been trained to become efficient craftsmen, and there they may be seen weaving, cabinet-making, printing, laying bricks, and doing a number of other things—a wonderful demonstration of what determined men can do to overcome physical disabilities. The need for the personal and human note, for physiological and psychological health, in order to ensure efficiency, was borne testimony to by both Sir Robert Horne and Dr. Macnamara in their speeches on the opening day. The same factor appeared in planning the scientific conferences which are taking place daily; for the pride of place was given to health questions, covering such diverse subjects as maternity, child welfare, food, milk-supply, industrial hygiene, tuberculosis, and other matters, each discussed by experts. Lady Barrett and Professor W. M. Bayliss presided on Feb. 10th, when Dr. C. W. Saleeby and Professor E. L. Collis spoke. Sir H. Baldwin, Mr. E. B. Turner, and Dr. A. Latham were among the speakers on the following day. Dr. H. M. Vernon and Professor A. F. Stanley Kent contributed to the conference on fatigue elimination. Dr. S. Russell Wells presided at a discussion on commercial education. We welcome this new note in the community, and consider that should the Efficiency Exhibition do nothing else it will have rendered good service by bringing personal efficiency so prominently before a large public.

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[1] Archives of Internal Medicine, Jan. 15th, 1921.

TORSION OF THE FALLOPIAN TUBE.

Dr. S. D. Dearborn has reported[1] a case of a very rare condition—torsion of the Fallopian tube. The patient was a married nullipara, aged 50 years. She was vigorous and active. At intervals of a few weeks or months she suffered from pains in the lumbar region and pelvis on both sides, which lasted for a short time, with complete freedom in the intervals. The catamenia occurred every three and a half to four weeks. Five years ago they had been excessive, but of late years they had been normal. After working in the garden she was seized with severe pain in the right loin. Examination showed marked tenderness in the region of the right kidney, the lower portion of which was palpable and freely movable. The pulse, temperature, and urine were normal. On the following day the pain was in the region of McBurney's point, where there was also tenderness. Vaginal examination showed an apparently normal uterus and slight feeling of resistance in both fornices. On the third day the pain occurred at intervals, but was more severe over the whole lower abdomen. There was tenderness over Morris's and McBurney's points. Increased resistance to abdominal palpation, but no absolute rigidity of the recti, and moderate distension were found. The nurse reported a "show" of blood from the vagina on the previous night. Vaginal examination revealed a tender mass behind the cervix. Examination was not very satisfactory because of a fat abdominal wall, distension, and general tenderness. The pulse was 90 and the temperature 100·6° F. The bowels had moved freely and there was no nausea or vomiting. The diagnosis was probably appendicitis with salpingitis and less probably extra-uterine pregnancy. On operation the right tube was found to be of twice its normal size, twisted once and a half on itself, and black as gangrenous intestine. The fimbriated end lay behind the uterus just above the junction with the cervix. The right ovary was of the size of a plum and somewhat darker than normal and it contained several small cysts. The left tube was enlarged to thrice its normal size, slightly injected, and filled with pale, straw-coloured fluid. The appendix was enlarged, convoluted, and deeply injected, and it contained a concretion at its tip. The tubes, ovaries, and appendix were removed. Convalescence was uneventful.

A NEW ANTI-SERUM FOR TUBERCULOSIS.

THE first communication on Mons. Henri Spahlinger's serum treatment for tuberculosis was made to the Académie de Médecine shortly before the outbreak of war by Professor Letulle on behalf of the discoverer. Mons. Spahlinger is a Swiss bacteriologist who has spent several years in a painstaking endeavour to unravel a very knotty problem—viz., the use of antiserums in the treatment of tuberculosis. The report made six years ago was preliminary to more extensive study and contained records of a small number of selected cases treated by a few physicians in London and Paris. A *further communication* has now been given to the medical public in a report made to the Académie des Sciences, on behalf of Mons. Spahlinger, by Professor D'Arsonval. This report has already attracted the attention of the daily press both in Paris and in London. It contained two sets of recorded cases by British physicians, Dr. A. H. Croucher and Dr. Leonard Williams. The former states that the patients treated by him with Spahlinger's method in 1913 are still alive and well, including two cases of laryngeal tuberculosis. All were cases of advanced pulmonary lesions at the time of treatment, and they are now all at work with their disease apparently quiescent. Dr. Williams gives an account of a series of cases of surgical tuberculosis and of open pulmonary tuberculosis with bacilli in the sputum and physical signs of advanced disease. He reports that when examined in October, 1920, these cases were found to be free from active tuberculosis, and that the condition of the lungs in the pulmonary cases was remarkably good. No bacteriological details are given in the report, but we note that Professor D'Arsonval's communication states that the treatment is based on the progressive destruction of tubercle toxins and subsequent active immunisation. According to this communication Mons. Spahlinger divides his cases into two classes: (1) acute cases treated by means of "complex antitoxic and bacteriolytic" serums; and (2) chronic cases treated by vaccination with a series of antigens and ferments, the former being derived from the bacillary substance of the tubercle bacilli. Patients are finally treated with a graduated series of injections of these different antigens given separately. It is impossible to make fair or useful comment on Mons. Spahlinger's work at its present stage. We must await further enlightenment in regard to those laboratory data without which an immunological remedy cannot be claimed as specific.

A FAVOURED UNIVERSITY.

SHORTLY before the war Mr. G. A. Wills and Mr. H. H. Wills decided to build for the University of Bristol a block of new buildings, to include libraries, an assembly hall, and a tower, in memory of their father, Mr. Henry Overton Wills. The war not only delayed the accomplishment of this purpose, but it also greatly increased the cost. Last week we chronicled the intention of the donors to add a sum of £200,000 to their former benefaction in order to complete the buildings, which are already making good progress. From the same source the University will also receive money for the building and equipment of a new physics department, as well as a public hall to be used as a students' union and various hostels and halls of residence for students. In the near future the University of Bristol will find itself possessed of a fine set of buildings, largely through the repeated generosity of one family. The sensational Rockefeller benefaction to University College Hospital and Medical School led to some criticism of the meagre support given for educational and *research purposes by wealthy men in this country*. Bristol is exceptionally happy in having stimulated the local patriotism of citizens who, having once decided to support the University, keep watch over its changing needs and supplement with such a lavish hand their previous benefactions.

ALBUMINURIA AND EOSINOPHILIA IN SCABIES.

Dr. Joseph M. Hayman, jun., and Dr. Temple S. Fay,[1] of Philadelphia, have made a study of the frequency of albuminuria and eosinophilia in scabies. Albuminuria was found in 10, or 20·4 per cent., of 49 scabies patients examined. In these 10 cases the eruption was generalised, and none showed any peculiar type of lesion, nor was pustulation especially in evidence. In all but one case, in which there was a light cloud, the albuminuria was slight and transient. Hyaline casts were occasionally present in one case, but in none were the urinary findings of any clinical significance. As regards the cause of the albuminuria, the writers exclude secondary pyogenic infection as a factor, for albuminuria occurred independently of pustulation in 100 per cent. of these cases. Treatment was undoubtedly reponsible for the phenomenon in some cases, as was shown by the higher incidence of albuminuria in treated cases (23 as compared with 17 per cent.). The frequency of albuminuria was too high to justify the supposition that it was always the manifestation of pre-existing nephritis, and it was also too transient to indicate a genuine nephritis. Like Nicholas and Jambon, Dr. Hayman and Dr. Fay regard the albuminuria as a manifestation of the cutaneous disease itself, but reject three of the factors incriminated by the French writers—viz., suppression of the skin function, toxin of the parasites, and absorption of products from detached cells in the cutaneous lesions. The most probable explanation seems to be a renal hyperæmia caused by irritation of peripheral nerves at the skin lesion similar to what occurs in various vaso-motor disorders such as Raynaud's disease, angio-neurotic œdema, and occasionally pemphigus. In 55 scabies patients the blood was examined by the writers for eosinophilia, with the result that 32 patients, or 58 per cent., showed 5 per cent. of eosinophils or more, and 20 of these, or 36·6 per cent. of the series, showed 7 per cent. of eosinophils or more. The degree of eosinophilia was, in general, proportional to the extent of the infestation, the higher percentages being found in the more extensive attacks, and the low or normal counts in cases where the lesions were very recent or slight. There was no increase of blood eosinophilia in the neighbourhood of the cutaneous lesions. As it is so variable in itself and so common in other skin conditions, the writers do not regard eosinophilia as of any value in the differential diagnosis of scabies.

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[1] Boston Medical and Surgical Journal, Jan. 6th, 1921.

[1] Archives of Dermatology and Syphilology, January, 1921.

SIR WILLIAM RICHMOND.

THE death, after protracted illness, of Sir William Blake Richmond must not pass unnoticed in these columns, for his interest in and admiration of scientific medicine was unbounded, and he was a first-class topographical anatomist, as well as a man of all-round accomplishment. As a painter he excelled both in portraiture and imaginative landscape; he was a bold and original sculptor; and his scheme of decoration for St. Paul's Cathedral, though much criticised, remains in the opinion of all a wonderful piece of work. But it is as a sanitary reformer that he should be gratefully remembered by medical men. No doubt the destructive influence of coal-smoke upon pictures, sculpture, and decorative façades made him its declared enemy, and when the Coal-Smoke Abatement Society was started it was natural to find Sir William Richmond its President, with Mr. O. B. Thomas as secretary, and Dr. Harold Des Vœux as treasurer. Art and medicine here joined hands in a piece of constructive hygiene for the benefit of posterity, and the town-dweller will gain immensely in the future as the ideals of the society obtain realisation.

Miss Anne Louise McIlroy, M.D., D.Sc. Glasg., has been appointed to the University Chair of Obstetrics and Gynæcology, tenable at the London School of Medicine for Women. Dr. McIlroy will direct the Obstetrical and Gynæcological Unit at the Royal Free Hospital.

THE summer meeting of the Section of Laryngology of the Royal Society of Medicine will be held on June 2nd and 3rd, when a dinner in connexion with the meeting will be held. The agenda will include papers and demonstrations, an exhibition of instruments, and a museum.

UNDER the auspices of the Fellowship of Medicine Dr. Gustave Monod, of Vichy, will deliver a lecture at the Royal Society of Medicine, 1, Wimpole-street, London, W., on Wednesday, Feb. 23rd, at 5 P.M. The lecture will be illustrated by a retarded kinema, and will be a study of athletic movements, cardio-pulmonary circulation, and an analysis of golf shots by this means. Dr. Monod, who is paying a visit to this country in the interests of the Association pour le Développement des Relations Médicales of the Paris Faculté de Médecine, will also speak on the closer relations between French and British medicine. Members of the profession and friends are invited to be present.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE HUNTERIAN ORATION: ADMISSION OF H.R.H. THE PRINCE OF WALES TO THE FELLOWSHIP.

ON Monday last the Hunterian Oration of the Royal College of Surgeons of England was delivered in the afternoon at the College by Sir Charters J. Symonds, the Orator of the year (see p. 359). Sir Charters Symonds, using the career of Sir Astley Cooper for the purpose, illustrated the influence which Hunter had upon medical progress and medical education, acting through a group of his enthusiastic and distinguished pupils. He further made an eloquent plea for the simplification of the medical curriculum, urging that more stress should be laid on the clinical side.

The Hunterian Festival Dinner.

The Hunterian Festival Dinner was held in the library of the College the same evening, Sir ANTHONY BOWLBY, the President of the College, presiding, His Royal Highness the Prince of Wales being present and a large group of distinguished guests. After the loyal toasts the PRESIDENT proposed the health of the Prince of Wales in the following terms:—

May it please your Royal Highness: The Royal College of Surgeons of England is the descendant of two civic institutions which date back to the fourteenth century—namely, the Guild of Surgeons and the Company of Barber Surgeons—but it was founded by Charter as a Royal College in the year 1800. It was not, however, until the College celebrated its centenary in the year 1900 that it became empowered to create Honorary Fellows, and its first Honorary Fellow, Sir, was your illustrious grandfather, King Edward VII., who, while Prince of Wales, was graciously pleased to accept our diploma in June, 1900. At a later date His Majesty King George bestowed upon us a similar distinction, and I have now the honour of welcoming your Royal Highness as the third Prince of Wales to become an Honorary Fellow of the College.

Since the election of its first Honorary Fellow the College has from time to time elected other Fellows, and has generally done so in order to commemorate some important event. Following this precedent, it proceeded on July 24th, 1919, to commemorate the close of the Great War by electing six honorary Fellows from those who had specially distinguished themselves in the war, and it was under these circumstances, Sir, that we requested you to allow us to propose your name. We know the encouragement that your presence has been at the Front; we appreciated your zeal and keenness for everything that benefited our soldiers; and, above all, we admired the spirit in which you performed the duties allotted to you as an officer in His Majesty's army.

On the same date we elected His Royal Highness, the Duke of Connaught, not only as a representative of the Royal House who had been closely associated with the army all his life, but also because he was the Colonel-in-Chief of that Royal Army Medical Corps, which had served with such great distinction, and won for itself such universal praise. We elected Dr. Pierre Duval, the distinguished French surgeon, and Dr. Depage, the equally eminent Belgian professor, both of whom had so closely coöperated with us in the field and had personally attended many British soldiers.

Finally, we elected two representatives of our sister nation, the United States of America, and we chose Brigadier-General Finney, the "chief surgeon" to the American army in France and the professor of surgery at Baltimore, and Charles Mayo of Rochester, who had acted as adviser to the Army Medical Service in America, and whose fame is world-wide. The medical professions of Great Britain and of the United States have for many years enjoyed the closest coöperation and friendship, and we were in no way surprised that, as soon as ever the drums of war beat to arms, the surgeons of America sprang to our aid. Within a very few months they supplied the personnel of six general hospitals and, at a later period, over one thousand of them served in our army in France pending the arrival of their own troops. They served in our base hospitals, in our regiments, our field ambulances, and our casualty clearing stations during the third battle of Ypres, and amongst them we were especially glad to welcome some of our own Honorary Fellows.

Such, Sir, is a brief record of the claims of the Honorary Fellows elected as representatives of our Allies at the time when you consented to accept our Diploma, and the College has never been more fortunate than in the distinguished names which it has been able to add to its roll at the end of the Great War. The Royal College of Surgeons performs various public duties which I will not detail. It is the national custodian of the unequalled Hunterian Museum. It possesses a most valuable library open to the whole medical profession; and the Members and Fellows who have passed its examinations number, at the present time, nearly 18,000. Our great master, John Hunter, was the Surgeon-General *to the army for some years before his death in* 1793, and ever since his time large numbers of men holding our diplomas have served with the Imperial Forces of the Crown. The present Chief Medical Officers of the Navy, of the Army, and of the Air Force, are all Members of our College, and several thousand of our Fellows and Members served in the late war. Over 350 of these gave their lives for their country, and your Royal Highness knows from your own experience in France that these lives were not given in vain.

We, *Sir, in common with all sections of the community,* have watched with the deepest interest both the career of your Royal Highness in the war, and also your more recent and invaluable missions to those great British possessions overseas which have so gallantly supported our common cause. We recognise that, both in war and in peace, in France and in the Dominions, you have been a fertile source of inspiration and of good fellowship, and, at the same time, we like to recall that, however far you may have roamed, you have not visited a dominion or a *colony in which our College was not represented. We may,* indeed, justly claim that, while the heart of our College is in England, our Fellows and Members circulate throughout the world. You, Sir, have been frequently described as "Britain's best Ambassador," but, if I may say so, you are far more than that. An Ambassador is but the delegate of a friendly country to a foreign nation, while you are a living and indispensable link in that human chain of common aspirations, common ideals, and common patriotism which binds together all parts of our great Empire in a bond which is infinitely *more enduring and* unbreakable than all the Treaties that ever have been or ever will be written.

We use no mere form of words when we say that we fervently trust you may long live in health and happiness to further the good work for the Empire you have so successfully begun. In the name of the Royal College of Surgeons of England, Sir, I beg to thank you most heartily for coming amongst us this evening, and for doing us the honour of becoming an Honorary Fellow.

H.R.H. the PRINCE OF WALES then signed the roll of the Fellows of the College and returned thanks to the President and Council for his election in sequence to the election of his grandfather and father, mentioning also that he was proud to receive the diploma at the same time as the Duke of Connaught and the eminent group of surgeons from Allied countries. He admitted that before the war neither he nor any of his contemporaries had much idea what the letters F.R.C.S. meant, but the war brought home to them, and indeed to everybody, the full significance of the initials, as representing the long years of progressive research and experiment of surgery.

"Before we went out to the front," he said, "speaking for myself and my contemporaries, we began for the first time to take a practical interest in surgery. The doctors of our units lectured to us and our female relatives and friends practised on us, while later, those who got in the way of a Hun bullet or shell became passive subjects for surgical work. All who served in the Great War had great or small dealings with your profession and its members, and I have never heard anything but the deepest gratitude for the medical branches of both Services and those who belong to them, from the surgeons—those who had regular commissions, and thousands of them, many members of this College, who joined up—down to the sick-bay stewards, and, in the case of the army, the orderlies. I include here those eminent surgeons who, like our chairman, gave their valuable time and their help and their advice. Among the most gallant episodes *of the war are those of battalion medical* officers in the army and their small staffs of stretcher-bearers. The work done by our surgeons and by our doctors is one of the finest chapters in the history of the war, and there is no doubt that the fact that the men knew that if they were wounded they were going to be well treated cheered them up more than one can understand.

It is in this building that we are sitting in to-night that so much of the work and the knowledge which made all this possible had its origin. Knowing what that work was, having seen something of it for myself, and realising what is being done here now, makes me doubly proud of the honour which has been done me to-night by having been admitted to your Fellowship. Thank you very much."

The toast of the memory of John Hunter having been drunk in silence, Sir CHARLES BALLANCE, Senior Vice-President of the College, proposed the health of the visitors in a speech in which he vaunted eloquently the beauty of surgical work, its indispensability, and the inexpressible satisfaction given by its happy accomplishment. He mentions as particular examples of surgical progress the successful *experiments upon the* transplantation of organs, and the rejuvenescence of aged hairless rats by a slight operation. He alluded humorously to the vista which such procedures opened up.

The toast was replied to by the SPEAKER of the House of Commons, who said there were three professions—surgery, law, and politics—to the last two of which he himself belonged—which were absolutely indispensable. *No one went through life without consulting the doctor* or the lawyer, or cursing the politician. They had, he said to a highly amused audience, a collection of rats in his own Chamber, and some of them were hairless, but there was no great desire to see them rejuvenated, while he indicated that rejuvenescence had one drawback, it was likely to stop promotion. He bore testimony to the good work done by members of the medical profession in Parliament.

Sir GEORGE PARKIN proposed the health of the Hunterian Orator, congratulating his fellow Canadian, Sir Charters Symonds, whose admirable work in the war was known to everyone present, on reaching the great distinction in his profession implied by his selection to deliver the Hunterian Oration. He pointed out that, whereas up to quite recent times the colonies and distant possessions had drawn from the mother country their distinguished leaders, now a reflux had commenced, and we were witnessing the mother country receiving gladly the services of the children from her outlying provinces. This interchange of work and personnel between all parts of the empire he happily compared with the discovery by Harvey of the circulation of the blood.

Sir CHARTERS SYMONDS, having briefly responded, a very successful dinner came to a close.

ROUMANIA.

(FROM OUR OWN CORRESPONDENT.)

The Health of the City of Budapest.

THE Statistical Bureau of the city of Budapest has just issued its report for the year 1920. Every year some new feature is introduced, and in this issue a summary of the statistics appears on the first page, giving at a glance the condition of public health during the past year. The population of the city is nearly 1,000,000, the average density of distribution 34·06 per acre. The birth-rate was 19·1 and the death-rate 15·06. Of the total deaths about 1 in every 4 (125 per 1000 births) was under 1 year. The zymotic death-rate was 2·28 per 1000. The birth-rate has been steadily falling since 1914, *when it was 29·44 per 1000, and is at present* lower than in any other capital of Europe, except Vienna. To compensate for this the low annual death-rate constitutes a record in the annals of the city. Ten or fifteen years ago 18–19 per 1000 was a good average, and in the "sixties" and "seventies" such figures as 23 or 27 per 1000 were common. The age-distribution of deaths was much the same as in former years; the city has been comparatively free from serious zymotic diseases, but whooping-cough and *diphtheria* have been somewhat more prevalent. Three cases of hydrophobia, following rabid dog bites, occurred. Deaths from tubercle show a slight but definite decline; deaths from cancer remain fairly stationary.

The number of notified infectious diseases totalled 5219 cases, showing a slight decrease from the preceding year. Scarlet fever was much less, but diphtheria was more prevalent. No small-pox case occurred at all. Only one outbreak of typhus occurred, being limited to one street. Typhoid was twice as frequent on the right bank of the Danube in Buda, which lies much lower than Pest; diphtheria was very much more prevalent in Pest and its suburbs. The increase of diphtheria is the chief fact the sanitary authorities have to face. The cause of this is not apparent. It is not connected with milk-supply or obvious sanitary defects, and is most common in the best parts of the city.

A Disputed Fee.

An eminent Roumanian surgeon, recently summoned to a member of the English Mission, performed upon the latter an operation for incarcerated hernia. The fee asked by the doctor was 10,000 lei, the charge including cost of 14 days' residence in a sanatorium. The Englishman considered the fee excessive, and offered 5000 lei. This the doctor refused, and instituted legal proceedings in order to recover the amount claimed. The case went against the surgeon, who then gave notice of appeal; the Court of Appeal has now confirmed the decision. The surgeon was allowed 5000 lei, and had to pay the costs of both actions, amounting to about 1200 lei.

An Incorrect Diagnosis.

A case of considerable importance to the medical profession has recently been tried at the Bucharest Court. It appears that the porter of a hotel was attended for a skin disease by a medical man, who made a diagnosis of syphilis. The patient's wife thereupon left him, and the secretary of the hotel discharged him. The patient was then informed by a club doctor that his malady was not syphilis, but simply scabies. The man sued his own medical attendant for damages, but did not claim his wife. The nature of the disease does not appear to have been disputed at the trial. The main point at issue was that of negligence. The judge held that the plaintiff's discharge was the direct consequence of the error, and awarded him a sum equivalent to six weeks' salary, and costs.

Sleeping Palsy in Roumania.

Two cases of encephalitis lethargica recently occurred in an infantry regiment stationed at Craiova. Up to the present the source of infection has not been detected, although Professor Langier, chief medical superintendent of the town, has made careful investigations. Extensive preventive measures have also been instituted.

Hiccup Epidemic in Budapest.

The present epidemic of hiccup is the second which has occurred in Budapest; the affection is apparently of a less serious type than previously, although serious cases were observed, and one case ended fatally with symptoms of syncope. Nervously disposed subjects are chiefly affected, and suggestive therapy is of great value. In a case of Dr. Balint, lecturer on Internal Medicine at the University of Budapest, the hiccup ceased instantly when he shouted to the patient: "Leave off that hiccup, otherwise you will die!" In other cases light faradisation stopped the attack. Where treatment is of no avail the hiccup ceases naturally after four or five days.

Jan. 24th.

BRIGHTON AND HOVE DISPENSARY.—In acknowledgment of his services in organising an Oriental bazaar, which realised £1035, in aid of Hove Hospital, the Hove branch of the Brighton and Hove Dispensary has made the Mayor and Mayoress of Hove (Councillor and Mrs. F. W. A. Cushman) honorary life governors.

LITERARY INTELLIGENCE.—Messrs. J. and A. Churchill announce the early appearance of "Critical Microscopy: How to get the best out of the Microscope," by Dr. A. C. Coles; "Ammonia and the Nitrites," by Dr. E. B. Maxted; and an eighth edition of Mr. Bolles Lee's "Microtomist's Vade-Mecum," under the editorship of Dr. J. Bronte Gatenby. For this edition Professor W. M. Bayliss has written a new chapter on the Theory of Dyes and Staining; Dr. Da Fano has recast the chapters on Neurological Methods, and Dr. A. Drew has written a new section on Protozoological Techniques; the chapter on Bone and Teeth has been revised by Dr. J. Thornton Carter; Dr. W. Cramer and Dr. Gatenby have written a special section dealing with the study of Fatty Substances.—Messrs. Kegan Paul, Trench, Trübner, and Co., Ltd., will publish at an early date a translation of "Das Liebe Ich" ("The Ego"), by Dr. Wilhelm Stekel.

Public Health.

SCHOOL MEDICAL SERVICE:

REPORTS OF SCHOOL MEDICAL OFFICERS.

Derbyshire.

THE total number of children enrolled as attending the 168 council and 212 voluntary schools under the Derbyshire Education Committee in 1919 was 76,527; of these 24,791 were systematically examined in the code groups, and in addition 2083 were dealt with as special cases. In the former category 4026 were found to be in need of medical treatment (16·24 per cent.), while an additional 39·68 per cent. were recommended to be kept under observation. The defects most prevalent were, as usual, those of the throat and eyes. Enlarged tonsils, or adenoids, or both, were found in 4780 children, treatment being considered necessary in 1505 cases. The eyesight was sufficiently defective to need treatment in 1638 children, and in addition 1981 required to be kept under observation. Organic heart disease was diagnosed in 190 children, of whom 48 were referred for treatment. The remaining 142 cases "require to be kept under observation," but apparently no medical treatment is considered to be necessary or desirable, although they are classified as "organic." No particulars are given as to the nature or degree of organic heart disease that is considered not to require medical care, the responsibility for the health of these children in school being left to the respective teachers concerned, who (it is to be presumed) have been warned. Mention is made of the connexion between heart disease and the presence of adenoids, and it is recommended that such cases should be watched and not allowed to remain in school in damp clothing. Dr. J. Perrin Brown, reporting on the work at the Tonsil and Adenoid Clinics, emphasises the fact that this is not merely concerned with affections of the nose and throat, but that "its chief value is that we are dealing with the Beginnings of Disease; 30 per cent. of the tonsils recently enucleated have been found to contain tubercle bacilli. This is essentially preventive treatment; we have caught the tubercle bacillus at its port of entry. Had it been left the sequence would have been—enlarged cervical glands, subsequently infection of the glands in the lungs, and finally infection of the lungs themselves." He also advises that every child suffering from early heart disease should be referred for an opinion whether the tonsils should or should not be enucleated. Breathing exercises, as usually carried out, may sometimes really make matters worse, and require careful watching; the teeth must be set right and the nose kept free from mucus, and every expiration made as complete as possible. As many as 640 throat operations have been done during the year at the Derby and Chesterfield throat clinics, and similar clinics will be opened at other centres shortly. The county council has purchased Bretby Hall and 446 acres of surrounding land for a sanatorium and open-air school for tuberculous and pre-tuberculous children. Dr. Sidney Barwise, who presents this report as school medical officer, repeats his former summing-up, which all medical authorities will heartily endorse, that "by keeping the children's teeth sound, by physical exercises, by open-air schools, and the provision of baths, the bulk of the diseases we now find in the schools would be prevented."

Perth County.

The annual report of the school medical officer shows that out of a school population of 18,288, 8048 children were medically examined during the school year ending July 31st, 1920. Of these 5517 came under the heading of routine inspections, 999 were special cases, and 1532 re-examinations. Eighty per cent. showed defective teeth, while in the same batch of children there were only 7 cases of pronounced rickets and 36 showing slight signs of the disease. Bad vision occurred in 4·9 per cent. of the cases. Dr. D. J. McLeish complains of the inadequacy of physical instruction in the schools. A county organiser of physical education is, however, to be appointed, and this ought to go far to remedy matters. Following up is done in the city of Perth by school nurses, and the children attend clinics for treatment, while in the country districts lists of defects are sent to the district nurse, or failing her to the head teacher, who reports as to whether treatment has been carried out or not. An apparently very necessary campaign against insanitary conditions in the schools is being vigorously carried out in this county.

Liverpool.

Of the 137,430 children on the school rolls at Liverpool in 1919, 27,890 were examined systematically in the code groups of entrants and leavers, as well as 4436 special cases. In the former category the chief defects requiring treatment were those of eyesight (1766) and of the nose and throat (1694); among the children specially examined 1846 and 481 were found to need treatment for these two conditions respectively. The presence of organic heart disease was detected in 52 children (0·018 per cent.) in the code groups; treatment was considered necessary in only 11 cases, the remaining 41 being recommended for observation only. No children were found to be suffering from definite pulmonary tuberculosis needing treatment among the 27,890 systematically examined; 3 only were recommended to be kept under observation; and in addition 12 suspected cases were recommended for treatment. There are, however, 389 children suffering from the pulmonary form excluded from school, but kept under observation, and 378 non-pulmonary cases attending physically defective schools or (if their condition enables them to do so) the ordinary school. Only 59 children (0·21 per cent.) were found to be suffering from malnutrition requiring treatment among the code groups; besides these 182 were kept under observation. Two new clinics were opened during the year, and the total attendances at the five clinics now at work amounted to 80,123, as compared with 26,762 in the previous year. The schools were closed in the early part of the year on account of influenza, and there was also a prevalence of measles and whooping-cough, though less than in 1918. Dr. E. W. Hope, the medical officer of health for the city and school medical officer, refers to an important point in connexion with the treatment of defective eyesight; altogether 2245 new cases were treated, the number having steadily fallen since 1915 (when 5068 were seen), owing to arrears having been gradually overtaken. But "it is still a matter for serious comment that, having obtained glasses, a large proportion of the children do not wear them regularly, even at school." Many glasses get broken, or lost, and are not replaced. If glasses are provided, but not worn, there is a waste of money by the parents, of time and skill by the oculist and optician, and of money, time, and skill of the educational *authority, representing* the whole body of ratepayers. When glasses are not obtained, though prescribed by the oculist, or if obtained not worn, disciplinary measures should be taken to enforce their use in school (which is quite practicable), and every effort made to ensure their use at home, through the agency of the Care Committee. Mr. Alfred Harris, inspector of physical training, shortly describes the excellent work carried on in connexion with the Sports Committee of the Liverpool and District Teachers' Association; amongst many very satisfactory items, not the least is the statement that 3504 swimming certificates were awarded, and of these 667 were won by girls.

Eastbourne.

At Eastbourne Dr. W. G. Willoughby *states that* "the most extensive group of defects is that of the nose and throat, especially enlarged tonsils and adenoids." Out of a total of 1625 children examined in the code groups in 1919—these forming 29·14 per cent. of the number on the registers—no less than 155 were found to require treatment for these affections, and 99 others needed to be kept under observation; 83 other children were specially brought forward to be examined on this account, of whom 65 were recommended for treatment; therefore 15·6 per cent. of the code group children, and 33·6 per cent. of the special cases were considered to be suffering, more or less, from nose and throat defects. This would hardly be expected at a seaside health resort. Only one definite case of pulmonary tuberculosis was found to require treatment; and, though 16 cases of organic heart disease were diagnosed, none were recommended for treatment. There were 55 cases of anæmia, of which 37 were sufficiently marked to need treatment. Dr. Willoughby states that an open-air school is contemplated, which no doubt will benefit these anæmic and tuberculous children. The only other physical *defect of frequent* occurrence was that of vision, 72 children needing glasses among those examined in the code groups, besides 35 others specially brought forward on this account.

URBAN VITAL STATISTICS.

(Week ended Feb. 12th, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18½ million persons, the annual rate of mortality, which had been 13·3, 12·3, and 13·1 in the three preceding weeks, rose to 14·0 per 1000. In London, with a population of 4½ million persons, the death-rate was 13·2, against 13·3 per 1000 in the previous week, whilst among the remaining towns the rates ranged from 4·1 in Eastbourne, 5·7 in Dewsbury, and 7·5 in Ealing, to 23·0 in West Hartlepool, 23·4 in South Shields, and 25·7 in Southport. The principal epidemic diseases caused 250 deaths, which corresponded to an annual rate of 0·7 per 1000, and comprised 72 from infantile diarrhœa, 71 from diphtheria, 60 from whooping-cough, 24 from scarlet fever, 19 from measles, and 4 from enteric fever. Whooping-cough caused a death-rate of 1·2 in Swansea and 1·7 in Wigan, and diphtheria of 2·2 in West Bromwich. There were 3945 cases of scarlet fever and 2770 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 4018 and 2767 respectively at the end of the previous week. The causes of 37 of the 4997 deaths in the 96 towns were uncertified, of which 6 were registered in Birmingham, 5 in Gateshead, and 3 each in London and Liverpool. During the week 80 cases of pneumonia, 6 of cerebro-spinal fever, 2 of dysentery, and 22 of encephalitis lethargica were notified in the administrative County of London, as compared with 105, 2, 4, and 29 respectively, in the previous week.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 15·8, 16·3, and 14·9 in the three preceding weeks, rose to 17·4 per 1000. The 380 deaths in Glasgow corresponded to an annual rate of 18·0 per 1000, and included 36 from whooping-cough, 8 from infantile diarrhœa, 5 from diphtheria, and 1 each from small-pox and scarlet fever. The 150 deaths in Edinburgh were equal to a rate of 17·5 per 1000, and included 4 from diphtheria, 3 from whooping-cough, 2 from measles, and 1 each from enteric fever and scarlet fever.

Irish Towns.—The 153 deaths in Dublin corresponded to an annual rate of 18·9, *or 4·8 per 1000 above that recorded* in the previous week, and included 4 each from diphtheria and infantile diarrhœa, and 1 from scarlet fever. The 128 deaths in Belfast were equal to a rate of 15·9 per 1000, and included 13 from whooping-cough.

VITAL STATISTICS OF LONDON DURING JANUARY, 1921.

IN the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the ten diseases notified in the table was equal to an annual rate of 10·4 per 1000 of the population, estimated at 4,531,971 persons in the middle of 1920; in the three preceding months the rates *had been 15·7, 15·2, and 11·9 per 1000.* Among the metropolitan boroughs the lowest rates from these diseases were recorded in Chelsea, the City of Westminster, St. Marylebone, Holborn, the City of London, and Lambeth; and the highest in Bethnal Green, Poplar, Bermondsey, Deptford, Greenwich, and Woolwich. The prevalence of scarlet fever was 17 per cent. less than in the preceding month; this disease was proportionally most prevalent in Hammersmith, Bethnal Green, Poplar, Bermondsey, Deptford, and Woolwich. The Metropolitan Asylums

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING JANUARY, 1921.

(*Specially compiled for* THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1920.	Notified Cases of Infectious Disease.												Deaths from Principal Infectious Diseases.									Deaths from all causes.	Death-rate per 1000 living.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	4,531,971	—	2102	1270	—	21	—	37	174	11	1	3616	10·4	—	7	23	94	20	3	74	221	0·6	4348	12·5
West Districts:																								
Paddington	149,673	—	51	55	—	—	—	2	5	—	—	113	9·8	—	1	—	7	1	—	4	13	1·1	155	13·5
Kensington	164,177	—	58	28	—	1	—	2	7	—	—	96	7·6	—	1	—	2	1	—	3	7	0·6	199	15·8
Hammersmith ...	136,200	—	94	34	—	—	—	3	2	—	—	133	12·7	—	—	2	—	—	—	2	4	0·4	130	12·4
Fulham	158,621	—	81	53	—	1	—	6	7	2	—	150	12·3	—	—	—	5	—	—	3	8	0·7	137	11·3
Chelsea	62,987	—	12	10	—	—	—	—	2	—	—	24	5·0	—	—	—	1	—	—	—	1	0·2	79	16·3
City of Westminst'r	132,615	—	21	24	—	—	—	—	9	—	—	54	5·3	—	—	—	6	—	—	2	8	0·8	115	11·3
North Districts:																								
St. Marylebone ...	101,856	—	24	16	—	1	—	—	3	—	1	45	5·8	—	—	—	2	1	—	—	3	0·4	98	12·5
Hampstead	91,519	—	33	27	—	2	—	—	1	—	—	63	9·0	—	—	—	1	—	—	—	1	0·1	72	10·3
St. Pancras	228,178	—	85	41	—	2	—	—	9	1	—	138	7·9	—	—	1	2	2	—	7	12	0·7	212	12·1
Islington	335,907	—	138	170	—	1	—	1	8	1	—	319	12·4	—	1	2	21	—	—	5	29	1·1	351	13·6
Stoke Newington...	52,984	—	32	14	—	—	—	—	2	—	—	48	11·8	—	—	—	2	—	—	—	2	0·5	49	12·1
Hackney	225,372	—	112	73	—	1	—	4	13	2	—	205	11·9	—	—	2	4	1	—	2	9	0·5	193	11·2
Central Districts:																								
Holborn	39,676	—	9	12	—	—	—	—	1	—	—	22	7·2	—	—	—	—	1	—	—	1	0·3	37	12·2
Finsbury...	78,291	—	29	15	—	—	—	—	6	—	—	50	8·3	—	—	—	2	1	—	1	4	0·7	86	14·3
City of London ...	14,447	—	3	1	—	—	—	—	—	—	—	4	3·6	—	—	—	—	—	—	—	—	—	9	8·1
East Districts:																								
Shoreditch	102,044	—	60	31	—	2	—	1	6	—	—	100	12·8	—	—	1	3	2	—	2	8	1·0	120	15·3
Bethnal Green ...	114,471	—	91	39	—	—	—	2	7	1	—	140	15·9	—	—	1	—	—	—	5	6	0·7	113	12·9
Stepney	241,770	—	132	50	—	1	—	1	9	—	—	193	10·4	—	1	4	4	—	—	9	18	1·0	281	15·2
Poplar	159,766	—	112	56	—	1	—	—	6	1	—	176	14·4	—	2	1	5	1	1	3	13	1·1	166	13·5
South Districts:																								
Southwark	187,142	—	89	40	—	—	—	—	6	1	—	136	9·5	—	—	1	4	—	—	6	11	0·7	219	15·3
Bermondsey	129,189	—	86	44	—	1	—	1	3	—	—	135	13·6	—	—	2	3	—	—	1	6	0·6	143	14·4
Lambeth...	293,572	—	101	54	—	—	—	2	10	—	—	167	7·4	—	—	2	5	1	—	2	10	0·4	261	11·6
Battersea	165,664	—	78	36	—	1	—	1	8	—	—	124	9·8	—	1	—	2	2	1	3	9	0·7	149	11·7
Wandsworth... ...	346,930	—	132	87	—	2	—	1	12	1	—	235	8·8	—	—	—	6	3	—	4	13	0·5	278	10·4
Camberwell	284,712	—	114	83	—	2	—	4	10	—	—	213	9·8	—	—	2	6	2	—	3	13	0·6	240	11·0
Deptford...	115,633	—	87	34	—	—	—	1	2	—	—	124	14·0	—	—	2	—	—	—	3	5	0·6	105	11·8
Greenwich	102,403	—	61	61	—	1	—	2	6	—	—	131	16·7	—	—	—	—	—	—	—	—	—	85	10·9
Lewisham	174,438	—	61	42	—	1	—	—	8	1	—	113	8·4	—	—	—	1	—	1	3	5	0·4	151	11·3
Woolwich	141,665	—	116	40	—	—	—	3	6	—	—	165	15·2	—	—	—	—	1	—	1	2	0·2	114	10·5
Port of London ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

Hospitals contained 4112 scarlet fever patients at the end of the month, against 5117, 5508, and 4729 at the end of the three preceding months; the weekly admissions averaged 489, against 873, 780, and 590 in the three preceding months. Diphtheria was slightly less prevalent than in the preceding month; the greatest proportional prevalence of this disease was recorded in Paddington, Fulham, Islington, Hackney, Bethnal Green, Poplar, Bermondsey, and Greenwich. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 2284, 2604, and 2615 at the end of the three preceding months, numbered 2648 at the end of January; the weekly admissions averaged 319, against 364, 360, and 316 in the three preceding months. The prevalence of enteric fever was slightly less than in the preceding five months; of the 21 cases notified during the four weeks ended Jan. 29th, 2 belonged to each of the boroughs of Hampstead, St. Pancras, Shoreditch, Wandsworth, and Camberwell. There were 11 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 19, 16, and 15 at the end of the three preceding months; the weekly admissions averaged 3, against 4, 3, and 2 in the three preceding months. Erysipelas was proportionally most prevalent in the City of Westminster, Hackney, Finsbury, Shoreditch, Bethnal Green, and Greenwich. The 37 cases of puerperal fever included 6 in Fulham, 4 in Hackney, 4 in Camberwell, 3 in Hammersmith, and 3 in Woolwich. The 11 cases of cerebro-spinal meningitis included 2 in Fulham and 2 in Hackney; while the one case of poliomyelitis notified during the month belonged to St. Marylebone.

The mortality statistics in the table relate to the deaths of civilians actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ended Jan. 29th the deaths of 4348 London residents were registered, equal to an annual rate of 12·5 per 1000; in the three preceding months the rates had been *10·1, 13·1, and 14·2* per 1000. The death-rates ranged from 8·1 in the City of London, 10·3 in Hampstead, 10·4 in Wandsworth, 10·5 in Woolwich, 10·9 in Greenwich, and 11·0 in Camberwell, to in Finsbury, 14·4 in Bermondsey, 15·2 in Stepney, Shoreditch and in Southwark, 15·8 in Kensington, and 16·3 in Chelsea. The 4348 deaths from all causes included 221 deaths which were referred to the principal infectious diseases; of these, 7 resulted from measles, 23 from scarlet fever, 94 from diphtheria, 20 from whooping-cough, 3 from enteric fever, and 74 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded in the City of London or in Greenwich. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Chelsea, Hampstead, Holborn, and Woolwich; and the highest in Paddington, Islington, Shoreditch, Stepney, and Poplar. The 7 deaths from measles were less than one-twelfth of the average number in the corresponding period of the five preceding years; of these, 2 belonged to Poplar. The 23 fatal cases of scarlet fever exceeded the average by 12; of these, 4 belonged to Stepney and 2 each to Hammersmith, Islington, Hackney, Bermondsey, Lambeth, Camberwell, and Deptford. The 94 deaths from diphtheria exceeded the average number by 21; the greatest proportional mortality from this disease occurred in Paddington, Fulham, the City of Westminster, Islington, Stoke Newington, Shoreditch, and Poplar. The 20 fatal cases of whooping-cough were less than a third of the average; of these, 3 belonged to Wandsworth and 2 each to St. Pancras, Shoreditch, Battersea, and Camberwell. Three deaths from enteric fever were registered during the month, against an average of 6. The 74 fatal cases of infantile diarrhœa were three in excess of the average number; the greatest proportional mortality from this disease occurred in Paddington, St. Pancras, Bethnal Green, Stepney, Southwark, and Deptford. In conclusion, it may be stated that the aggregate mortality in London during January from these principal infectious diseases was 31 per cent. below the average in the corresponding period of the five preceding years.

SUSSEX EYE HOSPITAL.—The Sussex Eye Hospital has now adopted the principle of paying patients. During the last year 249 in-patients were attended as compared with 244 in the previous year; the out-patients numbered [illegible] against 2572 (attendances 8501); 209 operations were performed against 138; and the casualties attended were [illegible] against 394. There was a loss on the year's working of [illegible]

Correspondence.

"Audi alteram partem."

REFERRED PAIN.

THE VISCERO-SENSORY REFLEX IN ABDOMINAL DISEASE.

To the Editor of THE LANCET.

SIR,—I have read with much interest the letter from Dr. A. Murdoch published in your issue of Feb. 5th, in which he criticises the conclusions of your leading article on the subject of Referred Pain in the issue of Jan. 22nd. Sir James Mackenzie and Mr. David Ligat are together responsible for an admirable attempt to simplify all abdominal diagnosis by the discovery of definite areas of hyperalgesia of the skin and subcutaneous tissues of the abdominal wall due primarily to lesions of intra-abdominal organs. It is attractive, it is ingenious, in their hands it may be correct, but does it work out in general clinical experience? My own observations agree with those of Dr. A. F. Hurst, who has doubts as to the reliability of this test.

For a number of years before reading Mr. Ligat's Hunterian lecture I was in the habit of examining all acute abdominal cases by the method of light pin-prick. Then I added his method of pinching up the skin and raising it from the deep fascia, because he suggested that fallacies arose from the methods of observation adopted. My results were just the same, and I found that abdominal cutaneous hyperalgesia, as a clinical sign, was often of value in deciding between the perforation of a gastric as compared with a duodenal ulcer. The former caused hyperalgesia to the left, and the latter to the right, of the middle line. In addition to this, such hyperalgesia was almost invariably present over the appendix area in cases with an acutely inflamed, distended, but non-perforated appendix.

In the case of chronic diseases I have only found this sign to be of value in the presence of distension of the *diseased hollow organs, and I believe that in regarding* distension as the prime cause of abdominal viscero-sensory reflexes I am in accord with Dr. Hurst and other observers. The clinical value of the viscero-motor reflex is fully established, and its presence in duodenal ulcer is of the highest importance.

To explain the existence of the viscero-sensory reflex Sir James Mackenzie postulates the ascension of stimuli from such lesions as ulcers of the stomach and the diffusion of these stimuli amongst the centres of the cord, and this does not tax one's imagination severely, but if it does not work out in clinical experience one may question its correctness. In fact, it is apparently too good to be true, for it would reduce abdominal diagnosis to a childishly simple process of pinching the abdominal wall. When the patient flinched the clinician would only have to look at the chart, as published by Ligat, and the organ diseased would be revealed.

One of the worst fallacies of Ligat's observations, according to my own experience, is the statement that no matter what the anatomical position of the appendix cutaneous hyperalgesia when present is found in the typical area of the right iliac fossa. Such has not been the case with my patients, and several times I have found this cutaneous reflex where the appendix was abnormally placed, but always it has been over the situation of this organ, as revealed by subsequent abdominal section. Mr. Ligat, I believe, in his Hunterian lecture, claimed success for this auxiliary method of diagnosis in a very large proportion of chronic abdominal conditions, but stated that in the acute abdomen its value was apt to be interfered with by the co-existence of peritonitis. Others have considered it of greater value in acute abdominal disease, and I have added above my observations with reference to distension. Distension of a hollow viscus causes traction on the mesenteries which contain its sensory nerves, and thus, I believe, reflexes may be initiated.

As to the statement in Dr. Murdoch's letter that the absence of the sign means nothing, but its presence, even if only noted once, makes all the difference to the diagnosis, this is contrary to our scientific methods of assessing the value of clinical observations. Negatives are surely of the same relative value as positives.

I am, Sir, yours faithfully,

Devonshire-place, W., Feb. 9th, 1921. JOSEPH E. ADAMS.

PS.—This was written before I had read the letter from Dr. J. A. Ryle in your issue of Feb. 12th, but it will be seen how closely we are in clinical agreement.

To the Editor of THE LANCET.

SIR,—In regard to this subject: firstly, do we all mean the same thing when we talk of superficial hyperalgesia? I think not. Some of us mean a definite hyperalgesic area of the skin itself, gentle stroking of which causes pain. That this condition occurs is undoubted, but that it is a rarity is also undoubted. If Dr. J. A. Ryle (Feb. 12th) is referring to this phenomenon when he says that "the superficial hyperæsthesia, which constitutes the reflex, is only present during the presence of pain or for a limited period thereafter," I agree with him and will go further and say that it is very seldom present even then. On the other hand, others of us, when we talk of a hyperalgesic area of the abdominal wall refer to an area of skin *with its underlying subcutaneous tissue;* to test this reflex the skin and subcutaneous tissue must be picked up and pressed between the finger and thumb. In my own experience this functional area is hyperalgesic to pinch in the majority of visceral lesions, excluding those of the large gut, and is of great value in arriving at an exact diagnosis.

If this is the superficial hyperæsthesia which Dr. Ryle refers to I entirely disagree with him when he says that it can only be demonstrated during the presence of pain or for a limited period thereafter. May I quote just one case out of many in support of this?—

A young medical man whom I knew, acting as house surgeon in a London hospital, was a thorough sceptic in regard to the clinical value of the functional area reflex. He joined up during the war. Some time after his discharge he called on me, and he mentioned that about six months previously he had had a sharp attack of appendicitis, but had not had his appendix removed as the conditions at the time were unfavourable. Asked if he had had it out after leaving the army, he said: "No; as I haven't had the slightest pain or discomfort for months, I don't think it is going to worry me again." I asked him to allow me to examine his abdominal reflexes. He laughed, but said I might. I picked up the skin and subcutaneous tissue in the left hypochondriac region and pressed it firmly. He smiled. I did exactly the same to his appendix functional area. He cried out with pain. Two days after his late chief removed a red, swollen appendix.

In my experience the test thus applied evokes the reflex so constantly in visceral lesions that it is a matter for surprise when one fails to find it. I have little doubt but that this reflex could have been elicited in seven or eight of the ten cases which Dr. A. F. Hurst has mentioned, but I should have been surprised had he found the purely cutaneous reflex in any of them, as I think its incidence in such cases (presumably cases of chronic gastric ulcer) is nearer 1 per cent. than 10.

I am, Sir, yours faithfully,

D. LIGAT.

Devonshire-street, Portland-place, W., Feb. 14th, 1921.

PSEUDO-COXALGIA.

To the Editor of THE LANCET.

SIR,—Mr. H. A. T. Fairbank has performed important service in directing attention in THE LANCET (Jan. 1st) to the condition called, amongst other names, "Pseudo-coxalgia," and outlining the differential diagnosis between it and tuberculous disease of the hip-joint. It is remarkable that while well recognised on the continent and in America, it has attracted little attention in this country, and is not diagnosed by the majority of surgeons and practitioners, but confused with tuberculous arthritis of the hip.

In the X ray room of the Treloar Cripples' Hospital at Alton I always have a skiagram illustrating the condition on view, and have been struck by the rarity with which the disease is recognised by English medical colleagues, while it is almost invariably immediately diagnosed by medical visitors from abroad. The condition is undoubtedly much commoner than might be supposed, and it may be of interest to call attention to its incidence by giving the numbers of cases admitted to Alton during the years 1918, 1919, 1920 :—

Year.	No. of cases of alleged tuberculous disease of hip.	Pseudo-coxalgia.	*Percentage.*
1918	67	3	4·4
1919	95	3	3·1
1920	89	6	6·7
—	251	12	4·8

The diagnosis in each case was confirmed by X ray examination. In every case the patient was sent in as suffering from tuberculous disease of the hip-joint, and the majority of cases were transferred from other hospitals.

It may be assumed that these cases are: (1) frequently incorrectly diagnosed; and (2) that the relative incidence is greater than in the figures obtainable from Alton. The second assumption I base on the following grounds. In the majority of cases of tuberculous arthritis sent to Alton the disease is acute, cases which rapidly improve with domiciliary or general hospital treatment rarely reach us, and in many cases application for admission is withdrawn before orders for admission are sent if the patient is not found to require further institutional treatment. It may also, I think, be a reasonable inference to make that no inconsiderable proportion of patients with alleged tuberculous disease of the hip-joint who rapidly improve under treatment or without treatment are in reality suffering from pseudo-coxalgia, and that many patients whose mysteriously rapid recovery has puzzled their medical attendants belong to this group. There remains, however, a residuum of patients with pseudo-coxalgia in whom the condition is acute and continues so for some months with considerable muscular spasm, and where clinical diagnosis from tuberculous disease of the hip-joint may be difficult, though radiographic examination will always afford certain differentiation. For these, recumbency and extension of the leg on the affected side with attempted gradual abduction is the treatment which I have found most efficacious, and I continue such treatment until the sign of activity in tuberculous disease of the hip-joint, which I have already described, is no longer present.[1] Finally, recognising that damage has been done to the head of the femur, I, with Mr. Fairbank, do not consider it wise to allow the patient to walk at first without removing pressure from the hip-joint on the affected side, though in place of the calliper splint he advocates I usually substitute the splint here described, which I have also often found useful in the ambulatory treatment of tuberculous disease of the hip-joint when that disease is no longer acute. Essentially the splint is as follows: A flexible strip of sheet iron suitably padded passes round the pelvis below the iliac crests, but above the great trochanters, and is buckled in front. Posteriorly, two padded pieces of duralumin are fixed to the pelvic band and moulded on to the ischial tuberosities. These effectually prevent the pelvic band from being displaced upwards. Finally, from the posterior part of the pelvic band immediately behind the great trochanter and extending vertically downwards is an extensible and adjustable duralumin rod, expanding outwards to firmly grip the femoral condyles of the affected limb. The weight of the body is thus taken off the hip-joint on the affected side and transmitted via the ischial tuberosity. This apparatus is simple and efficacious.

In your issue of Jan. 8th you again refer to the condition in an annotation under the heading "Quiet Hip Disease." In the present state of our knowledge I confess I cannot as yet agree with the views on the ætiology of the condition therein ascribed to Dr. Sundt. Sundt and Legg both consider that trauma is the cause and that the condition is not due to infection. Clinical considerations and X ray findings, to my mind, do not compel such a view, and I cannot but think that trauma plays no greater a part in pseudo-coxalgia than it does in tuberculosis of the hip-joint. In further support of this statement I would record that many of my patients have been cachectic and appeared to be suffering from some toxæmia. I do not know what the causal agent can be, *but it may not be without some significance that* in three out of my last 30 cases, the notes of which I have looked up, the Wassermann test was positive. Of these 30 cases (22 hospital and eight private), when treatment was sought at Alton or I was consulted privately, the average age was 8 years, the youngest patient was aged 4 years, the oldest 12 years. The average duration of symptoms before I saw the patient was 13 months, the shortest one month, the longest four years. In 15 cases the right hip was affected, in 13 cases the left, and in two cases both hips. Five of these patients were girls, 25 were boys. This latter observation might be considered to favour the traumatic theory of origin. Incidentally, "flat-headed femur," the most expressive name I have heard given to the condition, hails from America.

With other observers, I would agree that the condition always progresses towards recovery. As far as I am aware, no directly fatal case has ever been recorded, nor is permanent disability, other than slight shortening and limitation of abduction, to be anticipated. Nevertheless, in a few cases the condition may remain acute and be associated with pain, tenderness, and muscular spasm, for some months, and call for recumbent treatment as already outlined. I have two such cases under my care at the moment. In one, a boy, tuberculous disease of the hip-joint was diagnosed two and a half years before admission to Alton. He was treated at two separate hospitals, from both of which he was discharged as cured. At his third relapse he was sent to Alton. On admission he was markedly cachectic, and his general appearance was consistent with an active case of tuberculous disease of the hip-joint. The affected limb was slightly flexed, but further flexion to a right angle was possible, though painful, abduction and rotation of the limb very limited. The muscular spasm was relieved by extension and the limb straightened, but ambulatory treatment was accompanied by return of the symptoms. The patient is now at ease in a plaster spica, but remains cachectic. The other active case now under treatment was similarly admitted with symptoms of acute disease and similar limitation of movement and was also markedly cachectic. Shortly after admission she *developed acute abdominal pain simulating* appendicitis, which was in due course relieved without operative interference. This was probably not secondary to the pseudo-coxalgia. She is still being treated recumbently and with extension, the condition is still active, but less acute, and she has less cachexia.

The further contribution by Dr. H. B. Roderick on this interesting condition in THE LANCET (Jan. 29th) is a valuable one. Dr. Roderick's argument that the disease may be caused by circulatory disturbance secondary to trauma is a well-reasoned and weighty one. He, however, has laid little stress on changes which radiography shows take place in the femoral neck, and does not explain the apparent shortening and marked thickening of the neck of the femur often observed. On my last admission day, Jan. 27th, I took in at Alton 10 cases of alleged tuberculous disease of the hip-joint. Of these, two have proved to be cases of Legg's disease. The first, a boy aged 8 years, was admitted with suspected tuberculous disease of the left hip-joint. He proves to be a case of double pseudo-coxalgia. The second, a girl aged 13 years, has had symptoms suggestive of tuberculous disease of the right hip for the last nine months, and has *also been* treated as tuberculous.

I am, Sir, yours faithfully,
HENRY J. GAUVAIN.
Harley-street, W., Feb. 11th, 1921.

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[1] Sign of Pathological Activity in Tuberculous Disease of the Hip. H. J. Gauvain, THE LANCET, Nov. 20th, 1915.

DANGEROUS DRUGS ACT, 1920.

To the Editor of THE LANCET.

SIR,—The Medical Benefit Subcommittee of the Insurance Committee for the Borough of Brighton have had before them, and have very carefully considered, the provisions of the draft Regulations proposed to be issued by the Secretary of State for Home Affairs under the above Act. As a result of this consideration the Subcommittee passed the following resolutions:—

> (*a*) "That the Secretary of State for Home Affairs be informed that the procedure which it is required in compliance with the proposed Regulations that insurance practitioners should adopt will prove, under the unnecessary official interference with everyday practice, so irksome to practitioners, that it will be detrimental to the interests of the insured person, inasmuch as the consequence will be, in many cases, to deprive the insured person of the drug which may be necessary and which would otherwise be given, and further, if such drug is prescribed, its required advertisement on the bottle or package will have a harmful effect on the patient in many cases."
>
> (*b*) "That the insurance practitioner should be allowed, as heretofore, every latitude in determining the drugs considered most desirable for his insurance patient without having to disclose to lay inspecting officials professional matters and should be responsible to the Minister of Health alone for his actions in this direction."

In the discussion which took place the main points which were emphasised are as follows:—

1. Article 8 (8) of the terms of service for insurance practitioners stipulates:—

> "A practitioner is required to supply to a patient where requisite drugs and appliances, which are necessarily or ordinarily administered by a practitioner in person, or are needed for immediate administration or application, or needed for use before a supply can conveniently be obtained otherwise under the Regulations."

It would appear from the rather vague terms of the draft Regulations, that on every occasion upon which an insurance practitioner is under the necessity of complying with the obligations undertaken as a consequence of the foregoing article he must make, or cause to be made, in a book kept for the purpose, specific and detailed, and, indeed, somewhat laboured entries, if the particular drug comes within the scope of these proposed Regulations. It is strongly felt that this would be detrimental to the interests of insured persons, inasmuch as the practitioner, rather than comply with the irksome necessary clerical procedure, may refrain from giving the necessary drug. I am aware that Sir Edward Troup, Permanent Under Secretary at the Home Office, in a letter which appeared in the *Times* on Feb. 9th, wrote as follows:—

> "In several important respects the draft Regulations have been misunderstood. It has been suggested, for instance, that a doctor is required on each occasion on which he gives a hypodermic injection of morphia or otherwise administers any of the drugs to enter the fact in a book. This is not so. The Regulations require certain records to be kept in cases where drugs are supplied, and these apply to doctors who supply medicines to their patients, as well as to chemists who supply them on a doctor's prescription. But there is no requirement that a record has to be kept of a personal administration of the drugs by a doctor."

If Sir Edward Troup's interpretation on this point is the correct one, then it is respectfully submitted that the draft Regulations should be so amended as to make the matter quite clear.

2. Provided an insurance practitioner has occasion to prescribe medicines containing an amount beyond the statutory limit of any of the drugs set forth in the proposed Regulations then the fact must be advertised on the bottle or package containing such drugs. Indeed, the Article defining the "application" of the Regulations in connexion with morphine, cocaine, ecgonine, and diamorphine, when read in conjunction with Article (8) of the Regulations, is rather confusing. However, it is suggested that a bottle or package which loudly proclaims to the insured person the fact that it contains a certain percentage of a dangerous drug is not conducive to that serene frame of mind which in the interests of the patient himself his medical attendant would wish *him* to cultivate.

It is hoped that your influential paper will support the views above expressed, and make every endeavour to get the proposed Regulations so amended as to entirely safeguard the interests of the country's insured population.—I am, Sir, yours faithfully,

JNO. CAMPBELL,
Acting Clerk to the Brighton Insurance Committee.
Brighton, Feb. 11th, 1921.

PROPHYLAXIS AND VENEREAL DISEASE.

To the Editor of THE LANCET.

SIR,—Mr. Kenneth M. Walker, supposing that "it is only over the question of prophylaxis that the split has arisen" between the National Council for Combating Venereal Diseases and the Society for the Prevention of Venereal Disease in your issue of Feb. 5th, says:—

> "...I put forward a suggestion that has already been made. Is it asking too much that members of the two societies should arrange to meet? Surely it is better that differences of opinion should be amicably discussed in a meeting of medical men rather than be made the subject of a bitter and somewhat tedious correspondence in the press."

I fear, however, that more than medical men are involved in this matter and that more separates the two societies than the mere question of prophylaxis. Very grave accusations have been made. The S.P.V.D. is pressing for a public inquiry into the past on the grounds that the truth has been suppressed both during and since the war, that the Ministry of Health itself has issued misleading statistics with comments equally misleading, and that the careers of public officials have depended on considerations other than efficient performance of duty. I need not expatiate on all this; I have dealt with it elsewhere; but, obviously, if these things are believed, those who credit them can feel no safety about the future until there has been an authoritative inquiry into the past. If the N.C.C.V.D. will join the S.P.V.D. in pressing for such an independent inquiry, I feel sure that all differences, if not of opinion, at least of policy, will be eliminated.

May I thank your reviewer for his most kind and indulgent review of my book? But will he please forgive me just one comment? He writes:

> "In conclusion, we hope that when the second edition of this work appears its author will see his way to eliminate certain personal though anonymous references, which, in lack of taste, afford a striking contrast to an otherwise powerfully written and valuable volume."

But if the statements I have made be true, how is it possible to avoid these personal references? Events do not happen of themselves. Even the reviewer, when alluding to the Inter-Departmental Committee, makes just such personal references.

I am, Sir, yours faithfully,
Southsea, Feb. 10th, 1921. G. ARCHDALL REID.

To the Editor of THE LANCET.

SIR,—My Executive Committee, at their meeting on Feb. 10th, requested me to inform your readers that Mr. Kenneth Walker's statements in his letter published in your issue of Feb. 5th, regarding the policy of the Society for the Prevention of Venereal Disease, were incorrect, and evidently based on a misapprehension of the origin and scope of our society. This society was founded solely to fill in the gap in the propaganda of the National Council for Combating Venereal Diseases left by their opposition to instruction of the public in the prevention of infection by means of immediate self-disinfection. My society, while freely acknowledging that immediate self-disinfection is only one of many methods for diminishing venereal disease, believe that this method is an extremely important and valuable one, and our propaganda is devoted solely to bringing this method before the public, not because we are in any way whatever antagonistic to other methods, but because this method was not only neglected, but actively opposed by the N.C.C.V.D. Our work is not in opposition to but complementary to that of the National Council.

In order to obviate overlapping we confine our work to giving publicity to the one method not included in the useful and widespread propaganda of the N.C.C.V.D. The suggestion that we "regard it [i.e., immediate self-disinfection] as the single measure that will cure our ills" is therefore founded on ignorance of our published statements. Again, we have times without number pointed out that we do not advocate the packet system, and in our letter published in the *Times* of Oct. 13th, 1919, which defined our policy, we stated:—

> "We decline to accept the description of our policy as the issue of prophylactic packets to the civilian community in the way in which they were issued to H.M. Forces. No suggestion has yet

been made by our committee as to the methods or means by which the public may obtain the necessary disinfecting material, the fact that such materials are easily obtained at any chemist being in our opinion quite sufficient. The aim of the committee is solely the instruction of the public."

Mr. Walker has summed up our wishes in his sentence, "let each of the societies work along the line it has chosen." My society would welcome the teachers of moral prevention as allies working along another line towards the same goal, if they on their part would accept the alliance of the teachers of medical prevention and not waste valuable energy in opposition that is not only unnecessary but also hopeless as long as disinfectants are acknowledged to disinfect. As regards Mr. Walker's suggested meeting between the two societies, official correspondence between the presidents of the two societies with this object occurred not long after the foundation of our society in 1919. My society stated their willingness to meet the National Council in conference if the National Council would accept and endorse the principles and practice of immediate self-disinfection as one of the valuable methods of preventing venereal infection. This the National Council were unable to do, and therefore the conference fell through. Our offer to meet the National Council on these grounds has never been withdrawn.—I am, Sir, yours faithfully,

H. WANSEY BAYLY,
Honorary Secretary, Society for the Prevention of Venereal Disease.

143, Harley-street, W., Feb. 12th, 1921.

CONGENITAL SYPHILIS AMONG THE NEWLY BORN.

To the Editor of THE LANCET.

SIR,—In your issue of Feb. 12th Dr. S. M. Ross and Dr. A. F. Wright, in an article under this heading, seem to quote me in support of their statement that an estimate of the amount of congenital syphilis among the newly born, based upon Wassermann reactions upon the umbilical cord serum, will be lower than is actually the case. This is the exact opposite of the impression I wished to convey in the paper they referred to. I showed that a positive Wassermann reaction at birth in most cases merely indicated that the mother had a positive reaction, which passed passively into the infant. If the infant was tested a short time after birth it was found to have a negative reaction. Thus a test of the umbilical cord serum cannot be taken as an indication of syphilis in the infant and estimates of incidence based upon such tests will be *much too high.*

Since my paper was published in 1915 I have seen this umbilical cord reaction quoted as evidence of the ravages of syphilis, and, further, such "syphilitic" infants have been "cured" with remarkable facility with salvarsan. It has always seemed to me that this test introduces a gross error into the work of infant welfare organisations so far as syphilis is concerned. No one can take exception to the conclusions of the present authors, but it is to be hoped that orators will not quote them as saying that 3·5 per cent. of infants are syphilitic.—I am, Sir, yours faithfully,

P. FILDES.

London Hospital, E., Feb. 11th, 1921.

THE INDICATIONS FOR REMOVAL OF TONSILS.

To the Editor of THE LANCET.

SIR,—With reference to recent correspondence in THE LANCET on this subject, I am of opinion, after considerable experience, that the following conclusions are justified: 1. That in children practically all tonsils can be enucleated readily and easily with the guillotine. 2. That in adults they are better removed by a dissection operation. I personally use a McKenzie separator. Provided sufficient care is taken to hit the capsule the operation is easy. But in both cases a very great deal depends upon the skill of the anæsthetist. The latter should not only be able to control the patient's head, but he should know his operator's methods well enough as to reciprocate him.

I am, Sir, yours faithfully,
MACLEOD YEARSLEY.

lbeck-street, Cavendish-square, W., Feb. 15th, 1921.

THE OPERATIVE TREATMENT OF PROLAPSE.

To the Editor of THE LANCET.

SIR,—I am surprised to find from Mr. A. H. Burgess's letter in THE LANCET last week that he is still using paraffin wax injections for prolapse. At one time the method was popular, but, as there were so many bad results from it, I thought it had been entirely discarded. I have never used it myself, not liking the idea of introducing a foreign mass into the pelvis, which cannot be removed. But I have seen the secondary results in quite a number of cases, and these included large pelvic abscesses, often months after the injection of the paraffin, and one of the worst tunnel strictures I ever saw. The stricture case proved to be hopeless, as the mass of paraffin wax prohibited all efforts to dilate the stricture, and the patient had to have a colostomy performed. The great objection to the wax treatment is that if anything goes wrong the mass cannot be removed.

I cannot understand Mr. Burgess's argument about primary union, as, surely, with primary union no adhesions are formed. My reason for using healing by granulation in these cases is that firm adhesions between the rectal and the pelvic walls are produced —the condition which is required to hold up the prolapse; stitching the rectum to the sacrum and pelvic wall is not possible, and this method has proved a very satisfactory alternative. If the surgeon is for some reason unable to stitch up a hernial ring, or otherwise to close the opening, he will find that leaving the wound to close by granulation is a satisfactory substitute, although, of course, inferior to stitching up the parts. All I claim is that where, as in the case of prolapse, stitching is useless, the method I employ is a very satisfactory substitute—and the value of an operation depends upon the results obtained. I have treated 32 cases by this method, with only one complete failure. I am surprised that Mr. Burgess has had no failures after paraffin wax injections, and should like to know his figures.—I am, Sir, yours faithfully,

J. P. LOCKHART-MUMMERY, F.R.C.S.

London, Feb. 15th, 1921.

THE DEVELOPMENT OF STUMPS.

To the Editor of THE LANCET.

SIR,—Many surgeons of the limb-fitting centres of the United Kingdom find, after performing a very successful amputation or re-amputation of a limb, that their patients, on being fitted with artificial limbs, fail utterly to carry them, either through muscular weakness, awkwardness, or shrinkage of the stump. The surgeon naturally turns to massage and stump exercises for a remedy. These exercises are usually carried out against resistance, and to a certain extent do some good, but i is necessary to call to one's aid the brain of the patient I make a practice of asking the patient to concentrat his mind on the foot or hand, as the case may be, o the limb he has lost. He at first finds this mental co centration hard to acquire, but once it is established h can contract muscles at the end of his stump whic would be impossible without mentally attaching to h limb the distal member which has been amputate Take, for example, a below-the-knee amputation, upp third. If the patient is asked to extend his leg wi the toes pointing to the ground, both vasti will thrown into a far greater state of contraction than th obtained by the present faulty system of exercis Now in this same amputation, if the patient is asked flex and extend the foot at the ankle-joint, and a evert and invert the foot, the end of the stump will seen dimpling owing to the action of the musc brought into play by movements at the ankle-joint.

The advantage of this system of exercises will quickly seen in the tone of the muscles and nouri ment of the stump. In educating the patient in t remembrance of the distal end of the amputated li the tone and development of the muscles are retain The strength of the voluntary muscles is fully doubl The artificial limb becomes animate and equilibriu established.—I am, Sir, yours faithfully,

M. DOCKRELL, L.R.C.P. & S. Irel.
Special Surgical Hospital, Blackrock, co. Dub
Ministry of Pensions.

Feb. 14th, 1921.

Medical News.

UNIVERSITY OF CAMBRIDGE.—In accordance with the decision of the Senate on Jan. 28th the General Board of Studies have appointed Dr. C. S. Myers, F.R.S., as Reader in Experimental Psychology for five years from Oct. 1st last. The University Lectureship in Experimental Psychology has been held by Dr. Myers since 1907.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An ordinary Council meeting was held on Feb. 10th, with Sir Anthony Bowlby in the chair.—A report was read from the Court of Examiners respecting candidates found qualified for the diploma of Member, and diplomas were granted to 84 candidates mentioned in the report.—A report was read from the secretary of the Conjoint Examining Board respecting candidates found qualified for the diploma in Ophthalmic Medicine and Surgery of the two Colleges, and diplomas were granted jointly with the Royal College of Physicians to seven candidates mentioned in the report.—Dr. W. S. A. Griffith was reappointed the representative of the College on the Central Midwives Board for one year from March 31st, 1921, and a vote of thanks was passed to him for his services on the Board during the past year.—A letter was read from the Registrar of the General Medical Council calling attention to the fact that on and after Jan. 1st, 1923, all those who desire to be registered as medical or dental students will have to produce evidence that they have attained the age of 17 years, and that the minimum standard of general education required will be that of university matriculation or entrance examination; that before registration as a medical student every applicant will be required to have passed in addition to the examination in general education, an examination in elementary physics and elementary chemistry conducted or recognised by one of the licensing bodies, and that a student who has diligently attended an approved course of instruction in elementary biology at a secondary school or other teaching institution recognised by a licensing body may be admitted to the professional examination in elementary biology immediately after his registration as a student. The matter was referred to the Dental Board and the Committee of Management of the Conjoint Board.—A memorial was read from the Section of Otology of the Royal Society of Medicine, asking the Royal Colleges to grant a diploma in the science and art of otology. The matter was referred to the Committee of Management of the Conjoint Board.—A letter was read from the Voluntary Hospital Committee appointed by the Minister of Health to inquire into the financial position of the voluntary hospitals and to make recommendations, asking whether the Royal College of Surgeons desires to present any evidence to the Committee. The President, with Mr. H. J. Waring, Mr. Raymond Johnson, and Sir Cuthbert Wallace were appointed to consider the matter.—Sir Charles Ballance reported to the Council on his recent visit to Egypt for the purpose of inspecting the Cairo School of Medicine.—The President reported that a meeting of the Fellows would be held at the College on Thursday, July 7th next, for the election of four Fellows into the Council in the vacancies occasioned by the retirement in rotation of Sir George H. Makins, Mr. J. Ernest Lane, Mr. H. J. Waring, and Mr. F. F. Burghard; that notice of the meeting would be given to Fellows by advertisement and by circular on March 11th; that March 21st would be the last day for the nomination of candidates; and that a voting paper would be sent on April 5th to every Fellow of the College whose address is registered at the College.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At a meeting of Comitia of the Royal College of Physicians on Feb. 3rd and of the Council of the Royal College of Surgeons on Feb. 10th diplomas of L.R.C.P. and M.R.C.S. were conferred upon 84 candidates (including 16 women) who have passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Board, and have complied with the by-laws of the Colleges. The following are the names and medical schools of the successful candidates:—

Doris Elizabeth Alcock, Royal Free Hosp.; H. E. Alexander, Pennsylvania University; G. W. Almeyda, London Hosp.; C. H. Andrewes and H. N. Andrewes, St. Bart.'s Hosp.; Kathleen Ardell, Royal Free Hosp.; O. A. Baker, W. E. Barnes, and H. E. Beasley, Univ. Coll. Hosp.; *Evelyn Frances Bebbington, Liverpool University; Margaret Gladys Best, St. Mary's Hosp.; L. M. Billingham, St. Bart.'s Hosp.; I. Blain, Manchester University; C. H. Bracewell and J. L. M. Brown, St. Bart.'s Hosp.; R. Buddle, Otago University; C. L. C. Burns, St. Thomas's Hosp.; A. Y. Cantin, Paris and London Hosp.; Dorothy Spencer Chamberlain, King's Coll. Hosp.; L. C. F. Chevens, St. Thomas's Hosp.; F. Christian, Univ. Coll. Hosp.; Ivy Collier, St. Mary's Hosp.; F. P. de Caux, St. Bart.'s Hosp.; A. H. G. Down, Univ. Coll. Hosp.; A. O. Duncan, London Hosp.; T. A. Eccles, St. Bart.'s Hosp.; R. T. Edwards, London Hosp.; H. Franklyn, Cambridge University and St. Bart.'s Hosp.; O. P. Gallegos, Charing Cross Hosp.; G. I. Griffiths, Liverpool University; W. R. W. Haight, Toronto University; H. W. Hammond, St. Bart.'s Hosp.; Katharine May Harbord, Royal Free Hosp.; H. J. B. Hendley, St. Bart.'s Hosp.; T. B. Hodgson, Oxford University and St. Bart.'s Hosp.; S. H. G. Humfrey, Cambridge University and St. Thomas's Hosp.; A. Y. Ibrahim, St. Thomas's Hosp.; J. G. Johnstone, Oxford University and St. Bart.'s Hosp.; H. C. V. Joy, London Hosp.; A. N. Kingsbury, Middlesex Hosp.; F. G. Latham, Liverpool University; Anna Gwenllian Mary Lewis, Univ. Coll. Hosp.; C. J. Lewis, Birmingham University; C. A. Lindup, Univ. Coll. Hosp.; Kathleen Maria Boyce McArthur, Cambridge and St. Mary's Hosp.; H. McKenzie, London Hosp.; Elizabeth Matthai, Royal Free Hosp.; A. Mikhail, Guy's Hosp.; G. S. Mitchell, Westminster Hosp.; W. P. Newman, St. Thomas's Hosp.; Helen O'Brien, Royal Free and St. Mary's Hosps.; F. R. Oliver and S. Orchard, Cambridge University and St. Bart.'s Hosp.; T. L. Ormerod, St. Bart.'s Hosp.; Tresilla Laura Pires, Charing Cross Hosp.; Olive Gwendoline Potter, London Hosp.; C. S. C. Prance, St. Bart.'s Hosp.; I. M. Rattray, St. George's Hosp.; P. L. Richardson, Guy's Hosp.; O. A. L. Roberts, St. Mary's Hosp.; A. R. Roushdy, Charing Cross Hosp.; G. R. A. de M. Rudolf, King's Coll. Hosp.; H. L. Sackett, St. Bart.'s Hosp.; A. R. Sami, St. Thomas's Hosp.; Maud Sanderson, St. Mary's Hosp.; R. G. V. Shaw, Sydney University and London Hosp.; N. L. Shoorey, Bombay University and London Hosp.; E. A. Sparks, St. Thomas's Hosp.; H. Spibey, Univ. Coll. Hosp.; J. A. Stephens, Leeds University; R. N. L. Symes, St. Thomas's Hosp.; A. H. Talaat, Middlesex Hosp., K. H. Tallerman, Cambridge University and St. Thomas's Hosp.; H. E. Thomas, Univ. Coll. Hosp.; J. S. Thomas, London Hosp.; N. G. Thomson, Cambridge University and St. Bart.'s Hosp.; H. M. Toop, London Hosp.; G. D. C. Tracy, Cambridge University and St. Thomas's Hosp.; T. W. Turner, Guy's Hosp.; Madeline Hilda Jane Umpleby, St. George's Hosp.; Gladys Mary Wauhope, St. Andrews University and London Hosp.; May Grant Williams, Royal Free Hosp.; H. N. Witham, St. Thomas's Hosp.; and F. W. Zaglama, Manchester University.

* Diploma of M.R.C.S. alone conferred.

ROYAL INSTITUTION OF GREAT BRITAIN.—On Tuesday, Feb. 22nd, at 3 P.M., Professor Arthur Keith, F.R.S., will give the first of four lectures on Darwin's Theory of Man's Origin (in the Light of Present-day Evidence).

SOCIETY OF M.O.H.: SCHOOL MEDICAL SERVICE GROUP.—A meeting of the Group Council will be held to-day, Saturday, at 11 A.M., and of the Group at 11.30 A.M. at 1, Upper Montague-street, Russell-square, London, W.C. The subjects for discussion are (1) Uniformity of Medical Inspection Cards and Schedules and (2) Superannuation and Security of Tenure. Members of the school medical service who are not members of the society will be welcome as visitors. Suggestions for papers or notice of any other matter of special interest to the service will be welcomed by the honorary secretary, Dr. Armly Ashkenny, Health Department, West Bromwich.

THE HORSLEY MEMORIAL.—The executive committee of this Fund publish the following second list of subscriptions:—

	£	s.	d.
Mr. and Mrs. Edward Robinson	105	0	0
Sir F. W. Chance	20	0	0
Dr. W. S. Coleman, Mr. A. H. Burgess, Mr. C. H. Carlisle ... ... each	10	10	0
Miss M. W. Ranken	10	0	0
Sir Berkeley Moynihan, Sir A. Pearce Gould, Dr. J. Smith Whitaker, Dr. F. J. Hopkinson, Mr. Wilfred Trotter, Miss Mary Robinson, Miss Margaret Knowles ... each	5	5	0
Mrs. Scharlieb, M.D., Mrs. Rosa Napier, Miss Emily Chaplin ... ... each	5	0	0
Sir Thomas Barlow, Sir Humphry D. Rolleston, Mr. Harry Platt, Dr. Thomas Wilson, Mrs. Frances Levy, Dr. Thomas W. Thomas, Dr. W. H. Rivers, Anonymous (per Dr. Collier) ... ... each	3	3	0
Sir William Macewen, Dr. E. Rowland Fothergill, Right Rev. Dr. Hine, Dr. May Thorne, Sir Squire Sprigge, Mrs. Henry Fawcett, Mr. J. H. Morgan, Dr. George Pernet, Professor James Sully, Dr. J. A. Macdonald, Dr. Edwin Bramwell, Mr. J. Furneaux Jordan, Mr. J. H. Bown, Professor W. D. Halliburton ... ... each	2	2	0
Lady Rhondda, Dr. Joyce, Dr. Wallace Henry, Professor Keith, Sister Newill, Sister Frinzeauma Low, P. Maud Webbe and A. J. Webbe, Canon J. W. Horsley, Mr. C. W. Beresford, Mrs. E. J. Dawson, Miss Juliet Simons, Dr. Herbert Jones, Dr. Harriette Chick ... ... each	1	1	0
Miss T. R. Murray	1	0	0
Mrs. Lindo Henry...	0	10	6
Mr. George E. Abbot	0	10	0
Dutch Branch of the International League against Epilepsy (per Dr. Muskens, Amsterdam)			

The amount acknowledged in the first list (THE LANCET, Jan. 1st, p. 46) was £324 17s., and in that list "Sir Charles Harrison" should read "Sir Cecil Harrison, K.B.E." Further subscriptions may be sent to the honorary treasurers, Sir Frederick Mott, K.B.E., Maudsley Neurological Hospital, Denmark Hill, S.E. 5, and Dr. Howard Tooth, C.B., C.M.G., 34, Harley-street, W. 1, or the honorary secretaries, Sir W. Arbuthnot Lane, Bart., C.B., and Edward J. Domville, O.B.E., Shutes, Symondsbury, Bridport.

Obituary.

WILLIAM LATTO ROBERTSON, *M.C.*, M.B., CH.B. EDIN., F.R.C.S. EDIN., &c.,

CAPTAIN, R.A.M.C.

William Latto Robertson, who died on Jan. 24th from blood poisoning, the result of puncturing his finger while performing an operation at the Royal Infirmary, Dundee, during the previous week, was educated at the High School, Dundee, and at St. Andrews University, where he graduated M.A. In 1905 he graduated M.B., Ch.B., at Edinburgh University, in which year he also took the L.R.C.P., L.R.C.S. Edin., L.R.F.P.S. Glasg. Following qualification he held residential appointments at the Chalmers' Hospital, the Royal Infirmary, and the Royal Hospital for Sick Children, Edinburgh, and, after visiting various clinics abroad, joined Mr. D. M. Greig in his private surgical practice as assistant at Dundee in 1907. In that year he obtained the F.R.C.S. Edin. Subsequently he became assistant surgeon at Dundee Royal Infirmary and clinical tutor at St. Andrews University. On the outbreak of war Captain Robertson went with the 3rd Highland Field Ambulance to France, was mentioned in despatches on two occasions, and in 1918 was awarded the Military Cross. After acting as D.A.D.M.S. he was transferred to Italy, where he later acted as A.D.M.S., with the rank of lieutenant-colonel. On resuming practice in Dundee he was appointed full surgeon at the Royal Infirmary, and in December of last year a lecturer in clinical surgery at St. Andrews University and Dundee University College. Captain Robertson had an engaging and modest personality; his death at the age of 38 years has cut short the promise of a successful surgical career.

THE LATE DR. EDWARD BUCKELL.—Dr. Edward Buckell, who died at Brighton on Feb. 5th at the age of 94, had lived in retirement for many years. He qualified M.R.C.S.Eng. and L.S.A. as long ago as 1849 from University College Hospital, where he was one of those present on Dec. 21st, 1846, at the first operation performed under ether in Europe—an amputation of the leg by Robert Liston. He spent the best part of his professional life at Winchester, where he practised for 26 years, and was district medical officer to the Winchester Union. Dr. Buckell was a son of the late Mr. John Westmore Buckell, of Chichester, where members of his family are still in practice.

THE LATE DR. J. C. MCWALTER.—The death of Dr. J. C. McWalter in Dublin on Feb. 8th was announced in our columns last week. He was only 50 years of age, and appeared in good health, but on the evening previous to his death, as the sequel of a hurried walk of two miles, he showed signs of collapse on reaching home. Under medical attention he appeared to recover, but later his heart failed again, and death followed shortly. Dr. McWalter was a man of great energy and versatility. A medical man in busy practice, interested in all professional affairs, a member of the Corporation of Dublin, attending to his duties with scrupulous care, chairman of many committees, an indefatigable writer of letters, notes, and articles to the medical and lay papers, he yet found time to read for qualifications beyond count. Possessed of degrees in medicine, arts, or law of four universities, and diplomas from three corporations, he was also a barrister-at-law and a civil engineer. During the war he served as a captain in the R.A.M.C., most of his foreign service being in the Mediterranean area. He was High Sheriff of Dublin at the time of his sudden death.

THE LATE DR. FRANCIS WILLIAM DAVIDSON.—The death took place at Banchory on Feb. 10th of Dr. Francis W. Davidson, late of Thornton Heath, Surrey. Dr. Davidson, who was 38 years of age, was a son of the late Mr. Alex. D. Davidson, of London. He was educated at the Grammar School and University of Aberdeen, where he graduated M.B., Ch.B., in 1904. On leaving the university he held the appointments of house physician and house surgeon at the Royal Hospital, Richmond, and afterwards joined his elder brother, the late Dr. James Gellie Davidson, in practice at Thornton Heath. The brothers built up an extensive practice, assisted later by a third brother, also a graduate of Aberdeen, Dr. R. Gibson Davidson. Dr. F. W. Davidson once contributed to THE LANCET (1910, ii., 1276) an account of a remarkable case, which should have attracted [illegible] tion than it apparently did, of concurrent extra- and intra-uterine pregnancy. A ruptured ectopic gestation was diagnosed by him, and on operation two fœtuses of about two months development were found. Six months after a normal full-term child was delivered at term. Dr. Davidson joined the R.A.M.C. during the war, and served in Egypt. In December last, on account of failing health, he sold his practice and went to live in Banchory. His interests outside medicine were many—music, art, and architecture, and he was learned upon the structures of old cathedrals and churches. Dr. Davidson was unmarried, and is survived by his mother, brother, and sister.

THE LATE MR. J. D. STAPLE.—The death occurred suddenly on Feb. 4th, from cerebral hæmorrhage, of James Dibble Staple, M.R.C.S.Eng., L.S.A., at Lyme Regis, where he had been residing for the past five years. Mr. Staple was born at Crewkerne, being the only son of members of two old Somersetshire families. After being educated at private schools and abroad, he studied at Westminster Hospital and took the qualifications of L.S.A. in 1884 and M.R.C.S. in 1887. After holding appointments as house surgeon at Plymouth, Norwich, and Stockport, he settled in Bristol, where he resided for 30 years and acquired a very extensive practice, for 20 years being medical officer for No. 3 District and public vaccinator for the Ashley District of the Bristol Union. In 1916, owing to failing health, Mr. Staple went to Lyme Regis, where he was still able to do a small amount of medical work up to and including the day of his death. Mr. Staple was of a genial and sympathetic nature and much beloved by his patients and friends, by whom he will be greatly missed.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

J. St. B. Crosbie is granted a commission as Surgeon-Lieutenant.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. J. Grech retires on retired pay and is granted the rank of Colonel.

The undermentioned relinquish the acting rank of Lieutenant-Colonel: Capt. and Bt. Major R. E. Barnsley and Major C. R. M. Morris.

Temp. Capts. C. F. Strange (retains the rank of Captain) and F. W. H. Pilot relinquish their commissions.

SPECIAL RESERVE OF OFFICERS.

The undermentioned Captains relinquish their commissions and retain the rank of Captain: W. Buchan, V. D. Wyborn, D. Roger, E. S. Davies, A. J. Macartney, and C. B. Dyson.

TERRITORIAL FORCE.

Major W. T. Rowe to be Lieutenant-Colonel and command 3rd Northern Casualty Clearing Station.

Capt. G. T. Willan to be Major.

Capt. A. C. MacDonald (late R.A.M.C., S.R.) to be Captain.

ROYAL AIR FORCE.

The undermentioned are granted short service commissions as Flight Lieutenants, retaining their present seniority: S. E. Duff and C. McC. Jones.

Flight Lieutenant R. Mugliston resigns his short service commission and is permitted to retain the rank of Captain.

INDIA AND THE INDIAN MEDICAL SERVICE.

Capt. J. Horn has been appointed Temporary Director of the Pasteur Institute. Lieut.-Col. T. Hunter has been appointed Civil Surgeon from Mussoorie to Bareilly. Lieut.-Col. W. Battye, on return from leave, has been posted as Residency Surgeon at Hyderabad. Major T. A. Hughes has been appointed Professor of Physiology, Medical College, Lahore. Major M. R. C. MacWalters, professor of surgery, Medical College, Lucknow, has been granted six months' leave. During his absence Lieut.-Col. Barnardo will have entire charge of Simla. Lieut.-Col. Watson has been posted as Civil Surgeon at Ajmer. Lieut.-Col. McGaw has been declared a member of the United Provinces Medical Council. Major C. L. Dunn, on return from leave, resumes his duties as Sanitary Commissioner, United Provinces. Major A. E. J. Lister, professor, King George Medical College, has been granted leave on a medical certificate. Lieut. C. L. Amenrand to hold Civil Medical Charge of Raniket in addition to his duties, vice Capt. R. Hemphill, D.S.O., R.A.M.C. Lieut.-Col. T. Hunter has been appointed Civil Surgeon, Mussoorie, on completion of his special duty. Major A. S. Fry has relinquished charge of the duties of medical officer, Seistan. Major A. H. Napier, military medical officer, to have Charge of Roorkee, vice Capt. H. K. Diskehit. Major R. A. Chambers assumes charge of office of Principal Medical School, Amritzar.

ST. MARK'S HOSPITAL.—The annual meeting was held at the Mansion House on Feb. 10th. In the unavoidable absence of the Lord Mayor, Colonel Sheriff Wishart took the chair on his behalf. The report showed that £1200 had been raised towards the much-needed improvement of the nurses' quarters, but that a balance of £800 was still required. During the past year 630 in-patients had been under treatment, and 1510 out-patients made 4576 attendances.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

Thursday, Feb. 24th.—Papers:—Sir Ray Lankester: A Remarkable Flint Implement from Selsey Bill.—Dr. E. J. Allen: Regeneration and Reproduction of the Syllid Procerastea.—Mr. E. C. Grey and Mr. E. G. Young: The Enzymes of *B. Coli Communis*. Part. II., (*a*) Anaerobic Growth followed by Anaerobic and Aerobic Fermentation; (*b*) The Effects of Aeration during the Fermentation (communicated by Prof. F. G. Hopkins).—Dr. A. E. Everest and Mr. A. J. Hall: Anthocyanins and Anthocyanidins. Part IV. (communicated by Prof. F. Keeble).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Feb. 22nd.

SECTION OF MEDICINE: at Guy's Hospital, S.E.

Tea and Demonstrations (at 4–5.30 P.M.):

Dr. G. H. Hunt: An Experimental Oxygen Chamber.

Dr. G. K. Marshall: Apparatus for Induction of Artificial Pneumothorax.

Dr. G. H. Hunt and Dr. E. P. Poulton: Congenital Heart Disease with Analysis of Arterial Blood.

Dr. C. P. Symonds: A Case of Charcot-Marie-Tooth Muscular Dystrophy with Pseudo-hypertrophy.

And other Demonstrations by the Physicians and Assistant Physicians.

At 5.30 P.M.:

Dr. G. H. Hunt: Cardiac Efficiency in Normal and Pathological Conditions.

Mr. J. M. H. Campbell: Factors in the Causation of Dyspnœa.

Dr. J. A. Ryle: The Diagnostic Value and the Limitations of the Fractional Test-meal.

Will Members intending to come to tea kindly notify Dr. Poulton at Guy's Hospital not later than Feb. 20th.

Thursday, Feb. 24th.

SECTION OF TROPICAL MEDICINE: at 5 P.M.

Election of Officers and Council for the current Session.

Presidential Address by Sir Leonard Rogers, C.I.E.

Paper: Dr. J. Gordon Thomson and Dr. A. Robertson: The Value of Laboratory Reports in the Diagnosis of Suspected Dysentery, and their Interpretation by the Clinician.

Demonstrations by Professor Leiper and others.

SECTION OF UROLOGY: at 8.30 P.M.

CLINICAL and PATHOLOGICAL EVENING.

Specimens will be shown by—

Mr. Jocelyn Swan: Angeioma of Kidney.

Mr. Girling Ball: Hæmatoma of Kidney.

Will Members desiring to show specimens similar to the above please communicate with the Hon. Secretary, Mr. Cyril A. R. Nitch, 69, Harley-street, W. 1.

Friday, Feb 25th.

SECTION OF STUDY OF DISEASE IN CHILDREN: at 4.30 P.M. (instead of 5 P.M.)

Discussion: On "The Diagnosis and Treatment of Congenital Syphilis and its Effects."

To be opened by Sir Humphry Rolleston and Mr. O. L. Addison, followed by Dr. Findlay, Dr. Nabarro, and others.

CLINICAL SECTION
SECTION OF MEDICINE } ADJOURNED JOINT MEETING: at 8.30 P.M.
SECTION OF SURGERY

Discussion: On "The Medical and Surgical Treatment of Graves' Disease" (to be reopened by Mr. Donald Armour, Dr. J. M. H. Campbell, Mr. W. H. C. Romanis, Mr. A. J. Walton, Professor Earle, and others.

SECTION OF EPIDEMIOLOGY AND STATE MEDICINE: at 8.30 P.M.

Paper: Dr. R. M. F. Picken: The Epidemiology of Measles in a Rural and Residential Area.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

Monday, Feb. 21st.—9 P.M., Lettsomian Lecture (II.):—Mr. G. E. Gask: Surgery of the Lung and Pleura.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Monday, Feb. 21st.—5 P.M., Arris and Gale Lecture:—Prof. J. Howell Evans: The Azygos System of Veins in their Association with Surgical Affections.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Monday, Feb. 21st.—2 P.M., Mr. B. Harman: Eye Department. Dr. Simson: Diseases of Women. 2.30 P.M., Mr. Baldwin: Visit to Surgical Wards. 5 P.M., Lecture:—Dr. G. Stewart: Locomotor Ataxia.

Tuesday.—10 A.M., Mr. Steadman: Dental Department. Dr. McDougall: Electrical Department. 12 noon, Mr. T. Gray: Demonstration of Fractures. 5 P.M., Lecture:—Dr. Burnford: Investigation of the Functions of the Digestive Tract.

Wednesday.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Mr. Gibb: Eye Department. 5 P.M., Lecture:—Mr. D. Armour: Physical Signs and Diagnosis of Abdominal Tumours.

Thursday.—2 P.M., Dr. S. Pinchin: Medical Out-patients. Mr. Baldwin: Orthopædic Department. Mr. D. Armour: Operations. 5 P.M., Special Lecture:—Mr. S. Edwards: Points in Rectal Surgery (open to all medical practitioners).

Friday.—10 A.M., Mr. D. Buxton: Dental Department. 2 P.M., Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Skin Department. 5 P.M., Lecture:—Mr. Addison: Carcinoma of the Breast.

Saturday.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 2 P.M., Dr. Owen: Medical Out-patients.

Daily:—10 A.M. Ward Visits. 2 P.M., In-patient, Out-patient Clinics and Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Monday, Feb. 21st.—10 A.M., Mr. W. E. Tanner: Surgical Out-patients. 2 P.M.; Dr. A. J. Whiting: Medical In-patients. 2.30 P.M., Mr. E. Gillespie: Surgical Operations. Mr. J. B. Banister: Gynæcological Out-patients. Dr. J. B. Alexander: Medical Out-patients. 4.30 P.M., Clinical Demonstration:—Dr. J. B. Alexander: Cases of Medical Interest. 6 P.M., Dr. F. L. Provis and Mr. T. H. C. Benians: Venereal Department.

Tuesday.—9.45 A.M., Lieut.-Col. R. H. Elliot and Mr. N. Fleming: Eye Operations. 2.30 P.M., Mr. H. W. Carson: Surgical Operations. Mr. C. H. Hayton: Diseases of the Throat, Nose, and Ear. Dr. Metcalfe: X Ray Department. 3 P.M., Clinical Demonstration:—Mr. C. H. Hayton: Lupus of Nose and Pharynx. 5.30 P.M., Dr. C. E. Sundell: Children In-patients.

Wednesday.—2 P.M., Mr. C. H. Hayton: Throat Operations. 2.30 P.M., Dr. W. J. Oliver: Skin Department. Dr. J. B. Alexander: Medical Out-patients. 4.30 P.M., Clinical Demonstration:—Mr. N. Fleming: Cases of Eye Disease. 5 P.M., Dr. Provis and Mr. Benians: Venereal Department.

Thursday.—2 P.M., Mr. N. Fleming: Eye Out-patients. 2.30 P.M., Dr. A. J. Whiting: Medical Out-patients. Mr. H. W. Carson: Surgical Out-patients. Mr. J. B. Banister: Gynæcological Operations. Dr. J. Metcalfe: X Ray Department. 3 P.M., Clinical Demonstration:—Dr. J. Metcalfe: Treatment by Ionic Medication.

Friday.—2 P.M., Mr. Howell Evans: Surgical Operations. 2.30 P.M., Dr. C. E. Sundell: Children Out-patients. Mr. E. Gillespie: Surgical Out-patients. 4.30 P.M., Clinical Demonstration:—Dr. R. M. Leslie: Selected Medical Cases. 5 P.M., Dr. Provis and Mr. Benians: Venereal Department.

Saturday.—3 P.M., Mr. H. W. Carson: Surgical In-patients.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, W.C. 1.

MEDICAL SCHOOL.

Monday, Feb. 21st.—2 P.M., Out-patient Clinic: Dr. Collier. 3.30 P.M., Lecture:—Dr. Kinnier Wilson: Hysteria and its Treatment.

Tuesday, Feb. 22nd.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Dr. Collier: Diseases of the Cranial Nerves.

Thursday, Feb. 24th.—2 P.M., Out-patient Clinic: Dr. Farquhar Buzzard. 3.30 P.M., Lecture:—Mr. Scott: Disturbances of the Vestibular System. (I.)

Friday, Feb. 25th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Lecture:—Dr. Grainger Stewart: Affections of the Pituitary Gland.

Fee for Post-Graduate Course £7 7s. C. M. Hinds Howell, Dean.

MIDDLESEX HOSPITAL MEDICAL SCHOOL (University of London).

Tuesday, Feb. 22nd.—3 P.M., Emeritus Lecture:—Sir Alfred Pearce Gould: Surgery.

KING'S COLLEGE (Department of Science), Strand.

Nine Lectures on Problems of Modern Science.

Wednesday, Feb. 23rd.—5.15 P.M., Lecture (VI.):—Prof. A. Dendy: Biology.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

Thursday, Feb. 24th.—4 P.M., Lecture:—Dr. T. Thompson: Neuritis.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W.

Monday, Feb. 21st.—5.30 P.M., Post-Graduate Lecture:—Dr. P. Hamill: Myocardial Disease.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.

Post-Graduate Course on Infant and Child Welfare.

Tuesday, Feb. 22nd.—10.30 A.M., Dr. E. Pritchard: Practical Demonstrations on the Management and Feeding of Infants and Young Children—Demonstration XI., The Treatment of the Heat Regulating Functions.

Thursday.—3 P.M., Demonstration XII., The Feeding of Children between Nine Months and Two Years.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

Thursday, Feb. 24th.—6 P.M., Chesterfield Lecture:—Dr. W. Griffith: Diseases of the Skin Appendages.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

Tuesday, Feb. 22nd.—3 P.M., Lecture:—Prof. A. Keith: Darwin's *Theory of Man's Origin*.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

Tuesday, Feb. 22nd.—4.30 P.M., Lecture:—Mr. P. R. Wrigley: Cholecystitis.

SALFORD ROYAL HOSPITAL AND ANCOATS HOSPITAL POST-GRADUATE DEMONSTRATIONS, at the two Hospitals alternately.

Thursday, Feb. 24th.—4.30 P.M., Dr. Stirling: Common Eye Diseases and their Treatment. (At Ancoats Hospital.)

ST. MARY'S HOSPITALS, MANCHESTER, POST-GRADUATE LECTURE, at Whitworth-street West Branch.

Friday, Feb. 25th.—4.30 P.M., Dr. Lacey: The Toxæmias of Pregnancy.

MANCHESTER BABIES' HOSPITAL.

Post-Graduate Lectures and Demonstrations in the Onward Buildings, Deansgate, or at the Hospital, Slade lane.

Saturday, Feb. 26th.—3.30 P.M., Dr. Chisholm: Demonstration of Differing Types of the Non-Thriving Infant. (At the Babies' Hospital.)

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.

Thursday, Feb. 24th.—4.30 P.M., Dr. A. C. Magian: Some Chronic Uterine Diseases and their Treatment.

Obituary.

WILLIAM LATTO ROBERTSON, *M.C.*, M.B., CH.B. EDIN., F.R.C.S. EDIN., &c.,

CAPTAIN, R.A.M.C.

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Temp. Capts. C. F. Strange (retains the rank of Captain) and F. W. H. Pilot relinquish their commissions.

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INDIA AND THE INDIAN MEDICAL SERVICE.

Capt. J. Horn has been appointed Temporary Director of the Pasteur Institute. Lieut.-Col. T. Hunter has been appointed Civil Surgeon from Mussoorie to Bareilly. Lieut.-Col. W. Battye, on return from leave, has been posted as Residency Surgeon at Hyderabad. Major T. A. Hughes has been appointed Professor of Physiology, Medical College, Lahore. Major M. R. C. MacWalters, professor of surgery, Medical College, Lucknow, has been granted six months' leave. During his absence Lieut.-Col. Barnards will have entire charge of Simla. Lieut.-Col. Watson has been posted as Civil Surgeon at Ajmer. Lieut.-Col. McGaw has been declared a member of the United Provinces Medical Council. Major C. L. Dunn, on return from leave, resumes his duties as Sanitary Commissioner, United Provinces. Major A. E. J. Lister, professor, King George Medical College, has been granted leave on a medical certificate. Lieut. C. L. Amenrand to hold Civil Medical Charge of Raniket in addition to his duties, vice Capt. R. Hemphill, D.S.O., R.A.M.C. Lieut.-Col. T. Hunter has been appointed Civil Surgeon, Mussoorie, on completion of his special duty. Major A. S. Fry has relinquished charge of the duties of medical officer, Seistan. Major A. H. Napier, military medical officer, to have Charge of Roorkee, vice Capt. H. K. Diskshit. Major R. A. Chambers assumes charge of office of Principal Medical School, Amritzar.

ST. MARK'S HOSPITAL.—The annual meeting was held at the Mansion House on Feb. 10th. In the unavoidable absence of the Lord Mayor, Colonel Sheriff Wishart took the chair on his behalf. The report showed that £1200 had been raised towards the much-needed improvement of the nurses' quarters, but that a balance of £800 was still required. During the past year 630 in-patients had been under treatment, and 1510 out-patients made 4576 attendances.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

Thursday, Feb. 24th.—Papers:—Sir Ray Lankester: A Remarkable Flint Implement from Selsey Bill.—Dr. E. J. Allen: Regeneration and Reproduction of the Syllid Procerastea.—Mr. E. C. Grey and Mr. E. G. Young: The Enzymes of *B. Coli Communis.* Part. II., (*a*) Anaerobic Growth followed *by Anaerobic* and Aerobic Fermentation; (*b*) The Effects of Aeration during the Fermentation (communicated by Prof. F. G. Hopkins).—Dr. A. E. Everest and Mr. A. J. Hall: Anthocyanins and Anthocyanidins. Part IV. (communicated by Prof. F. Keeble).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Feb. 22nd.

SECTION OF MEDICINE: at Guy's Hospital, S.E.

Tea and Demonstrations (at 4-5.30 P.M.):

Dr. G. H. Hunt: An Experimental Oxygen Chamber.

Dr. G. K. Marshall: Apparatus for Induction of Artificial Pneumothorax.

Dr. G. H. Hunt and Dr. E. P. Poulton: Congenital Heart Disease with Analysis of Arterial Blood.

Dr. C. P. Symonds: A Case of Charcot-Marie-Tooth Muscular Dystrophy with Pseudo-hypertrophy.

And other Demonstrations by the Physicians and Assistant Physicians.

At 5.30 P.M.:

Dr. G. H. Hunt: Cardiac Efficiency in Normal and Pathological Conditions.

Mr. J. M. H. Campbell: Factors in the Causation of Dyspnœa.

Dr. J. A. Ryle: The Diagnostic Value and the Limitations of the Fractional Test-meal.

Will Members intending to come to tea kindly notify Dr. Poulton at Guy's Hospital not later than Feb. 20th.

Thursday, Feb. 24th.

SECTION OF TROPICAL MEDICINE: at 5 P.M.

Election of Officers and Council for the current Session.

Presidential Address by Sir Leonard Rogers, C.I.E.

Paper: Dr. J. Gordon Thomson and Dr. A. Robertson: The Value of Laboratory Reports in the Diagnosis of Suspected Dysentery, and their Interpretation by the Clinician.

Demonstrations by Professor Leiper and others.

SECTION OF UROLOGY: at 8.30 P.M.

Clinical and Pathological Evening.

Specimens will be shown by—

Mr. Jocelyn Swan: Angeioma of Kidney.

Mr. Girling Ball: Hæmatoma of Kidney.

Will Members desiring to show specimens similar to the above please communicate with the Hon. Secretary, Mr. Cyril A. R. Nitch, 69, Harley-street, W. 1.

Friday, Feb 25th.

SECTION OF STUDY OF *DISEASE IN CHILDREN*: at 4.30 P.M. (instead of 5 P.M.)

Discussion: On "The Diagnosis and Treatment of Congenital Syphilis and its Effects."

To be opened by Sir Humphry Rolleston and Mr. O. L. Addison, followed by Dr. Findlay, Dr. Nabarro, and others.

CLINICAL SECTION
SECTION OF MEDICINE } Adjourned Joint Meeting: at 8.30 P.M.
SECTION OF SURGERY

Discussion: On "The Medical and Surgical Treatment of Graves' Disease" (to be reopened by Mr. Donald Armour, Dr. J. M. H. Campbell, Mr. W. H. C. Romanis, Mr. A. J. Walton, Professor Earle, and others.

SECTION OF EPIDEMIOLOGY AND STATE MEDICINE: at 8.30 P.M.

Paper: Dr. R. M. F. Picken. The Epidemiology of Measles in a Rural and Residential Area.

MEDICAL SOCIETY OF LONDON, 11, *Chandos-street, Cavendish-square, W.*

Monday, Feb. 21st.—9 P.M., Lettsomian Lecture (II.):—Mr. G. E. Gask: Surgery of the Lung and Pleura.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Monday, Feb. 21st.—5 P.M., Arris and Gale Lecture:—Prof. J. Howell Evans: The Azygos System of Veins in their Association with Surgical Affections.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Monday, Feb. 21st.—2 P.M., *Mr. B. Harman: Eye Department.* Dr. Simson: Diseases of Women. 2.30 P.M., Mr. Baldwin: Visit to Surgical Wards. 5 P.M., Lecture:—Dr. G. Stewart: Locomotor Ataxia.

Tuesday.—10 A.M., Mr. Steadman: Dental Department. Dr. McDougall: Electrical Department. 12 noon, Mr. T. Gray: Demonstration of Fractures 5 P.M., Lecture:—Dr. Burnford: Investigation of the Functions of the Digestive Tract.

Wednesday.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Mr. Gibb: Eye Department. 5 P.M., Lecture:—Mr. D. Armour: Physical Signs and Diagnosis of Abdominal Tumours.

Thursday.—2 P.M., Dr. S. Pinchin: Medical Out-patients. Mr. Baldwin: Orthopædic *Department. Mr. D. Armour: Operations.* 5 P.M., Special Lecture:—Mr. S. Edwards: Points in Rectal Surgery (open to all medical practitioners).

Friday.—10 A.M., Mr. D. Buxton: Dental Department. 2 P.M., Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Skin Department. 5 P.M., Lecture:—Mr. Addison: Carcinoma of the Breast.

Saturday.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 2 P.M., Dr. Owen: Medical Out-patients.

Daily:—10 A.M. Ward Visits. 2 P.M., In-patient, Out-patient Clinics and Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Monday, Feb. 21st.—10 A.M., Mr. W. E. Tanner: Surgical Out-patients. 2 P.M., Dr. A. J. Whiting: Medical In-patients. 2.30 P.M., Mr. E. Gillespie: Surgical Operations. Mr. J. B. Banister: Gynæcological Out-patients. Dr. J. B. Alexander: Medical Out-patients. 4.30 P.M., Clinical Demonstration:—Dr. J. B. Alexander: Cases of Medical Interest. 6 P.M., Dr. *F. L. Provis and Mr. T. H. C. Benians: Venereal Department.*

Tuesday.—9.45 A.M., Lieut.-Col. R. H. Elliot and Mr. N. Fleming: Eye Operations. 2.30 P.M., Mr. H. W. Carson: Surgical Operations. Mr. C. H. Hayton: Diseases of the Throat, Nose, and Ear. Dr. Metcalfe: X Ray Department. 3 P.M., Clinical Demonstration:—Mr. C. H. Hayton: Lupus of Nose and Pharynx. 5.30 P.M., Dr. C. E. Sundell: Children In-patients.

Wednesday.—2 P.M., Mr. C. H. Hayton: Throat Operations. 2.30 *P.M., Dr. W. J. Oliver: Skin Department. Dr. J. B.* Alexander: Medical Out-patients. 4.30 P.M., Clinical Demonstration:—Mr. N. Fleming: Cases of Eye Disease. 5 P.M., Dr. Provis and Mr. Benians: Venereal Department.

Thursday.—2 P.M., Mr. N. Fleming: Eye Out-patients. 2.30 P.M., Dr. A. J. Whiting: Medical Out-patients. Mr. H. W. Carson: Surgical Out-patients. Mr. J. B. Banister: Gynæcological Operations. Dr. J. Metcalfe: X Ray Department. 3 P.M., Clinical Demonstration:—Dr. J. Metcalfe: Treatment by *Ionic Medication.*

Friday.—2 P.M., Mr. Howell Evans: Surgical Operations. 2.30 P.M., Dr. C. E. Sundell: Children Out-patients. Mr. E. Gillespie: Surgical Out-patients. 4.30 P.M., Clinical Demonstration:—Dr. R. M. Leslie: Selected Medical Cases. 5 P.M., Dr. Provis and Mr. Benians: Venereal Department.

Saturday.—3 P.M., Mr. H. W. Carson: Surgical In-patients.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, W.C. 1.

MEDICAL SCHOOL.

Monday, Feb. 21st.—2 P.M., Out-patient Clinic: Dr. Collier. 3.30 P.M., Lecture:—Dr. Kinnier Wilson: Hysteria and its Treatment.

Tuesday, *Feb. 22nd.—2 P.M., Out-patient Clinic:* Dr. Grainger Stewart. 3.30 P.M., Lecture:—Dr. Collier: Diseases of the Cranial Nerves.

Thursday, Feb. 24th.—2 P.M., Out-patient Clinic: Dr. Farquhar Buzzard. 3.30 P.M., Lecture:—Mr. Scott: Disturbances of the Vestibular System. (I.)

Friday, Feb. 25th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Lecture:—Dr. Grainger Stewart: Affections of the Pituitary Gland.

Fee for Post-Graduate Course £7 7s. C. M. Hinds Howell, Dean.

MIDDLESEX HOSPITAL MEDICAL SCHOOL (University of London).

Tuesday, Feb. 22nd.—3 P.M., Emeritus Lecture:—Sir Alfred Pearçe Gould: Surgery.

KING'S COLLEGE (Department of Science), Strand.

Nine Lectures on Problems of Modern Science.

Wednesday, Feb. 23rd.—5.15 P.M., Lecture (VI.):—Prof. A. Dendy: Biology.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

Thursday, Feb. 24th.—4 P.M., Lecture:—Dr. T. Thompson: Neuritis.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W.

Monday, Feb. 21st.—5.30 P.M., Post-Graduate Lecture:—Dr. P. Hamill: Myocardial Disease.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.

Post-Graduate Course on Infant and Child Welfare.

Tuesday, Feb. 22nd.—10.30 A.M., Dr. E. Pritchard: Practical Demonstrations on the Management and Feeding of Infants and Young Children—Demonstration XI., The Treatment of the Heat Regulating Functions.

Thursday.—3 P.M., Demonstration XII., The Feeding of Children between Nine Months and Two Years.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, *Leicester-square*, W.C.

Thursday, Feb. 24th.—6 P.M., Chesterfield Lecture:—Dr. W. Griffith: Diseases of the Skin Appendages.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

Tuesday, Feb. 22nd.—3 P.M., Lecture:—Prof. A. Keith: Darwin's Theory of Man's Origin.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

Tuesday, Feb. 22nd.—4.30 P.M., Lecture:—Mr. P. R. Wrigley: Cholecystitis.

SALFORD ROYAL HOSPITAL and ANCOATS HOSPITAL POST-GRADUATE DEMONSTRATIONS, at the two Hospitals alternately.

Thursday, *Feb. 24th.—4.30 P.M.,* Dr. Stirling: *Common Eye* Diseases and their Treatment. (At Ancoats Hospital.)

ST. MARY'S HOSPITALS, MANCHESTER, POST-GRADUATE LECTURE, at Whitworth-street West Branch.

Friday, Feb. 25th.—4.30 P.M., Dr. Lacey: The Toxæmias of Pregnancy.

MANCHESTER BABIES' HOSPITAL.

Post-Graduate Lectures and Demonstrations in the Onward Buildings, Deansgate, or at the Hospital, Slade lane.

Saturday, Feb. 25th.—3.30 P.M., *Dr. Chisholm: Demonstration* of Differing Types of the Non-Thriving Infant. (At the Babies' Hospital.)

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.

Thursday, Feb. 24th.—4.30 P.M., Dr. A. C. Magian: Some Chronic Uterine Diseases and their Treatment.

Appointments.

BURGESS, A. H., F.R.C.S. Eng., M.B., M.Sc. Vict., has been appointed Professor of Clinical Surgery in the University of Manchester.

JACKSON, J., Certifying Surgeon under the Factory and Workshops Acts for the Marple district.

McDONALD, N., M.B., Ch.B. Vict., Anæsthetist to the Great Northern Central Hospital, London, N.

TODD, A. H., M.S., B.Sc. Lond., F.R.C.S. Eng., Assistant Surgeon to the Queen's Hospital for Children, Hackney.

Vacancies.

For further information refer to the advertisement columns.

Beckett Hospital, Barnsley.—Jun. H.S. £200.

Belgrave Hospital for Children, Clapham-road, S.W.—Asst. P. 50 gs.

Birmingham General Hospital.—Res. Anæsth., H.S., Obstet. H.S. £100. Also H.S. to Skin and Venereal Depts. £125.

Bolingbroke Hospital, Wandsworth Common, S.W.—Res. M.O. £200. Also H.S. £150.

Bradford Royal Infirmary.—Two H.S.'s. £200. Also H.P. £200.

Bristol Royal Hospital for Sick Children and Women.—H.S. and H.P. £150 each.

Bristol Royal Infirmary.—Two H.S.'s for General Dept. £120. H.S. for Ear, Nose, and Throat Dept. £120.

Cairo, Egyptian Government School of Medicine.—Two Professorships of Ophthalmology. British, L.E.600. Egyptian, L.E.500.

Central London Ophthalmic Hospital, Judd-street, W.C.—Jun. H.S. £50.

Cheshire County Council, Wrenbury Hall Colony.—Res. Med. Supt. £600.

City of London Hospital for Diseases of the Chest, Victoria Park, E.—M.O. £200.

City of London Maternity Hospital, City-road, E.C.—Res. M.O. £100.

City of London Union, 2a, Bow-road, E.—M.O. £900.

Dewsbury and District General Infirmary.—H.S. £250.

Dorchester, Dorset Mental Hospital, Herrison.—Sec. Asst. M.O. £400.

Dundee Royal Infirmary.—Hon. Visiting S.

Eastern Dispensary, Leman-street, E.—P. and Ophthal. S.

East Sussex County Council, Darvell Bank Sanatorium.—Med. Supt. £750.

Enham Village Centre for the Treatment and Training of Disabled Ex-Service Men, near Andover, Hants.—Medical Director. £700.

Evelina Hospital, Southwark, S.E.—H.P. £160. Also Hon. S. to Out patients.

Exeter, Royal Devon and Exeter Hospital.—H.P. £150.

Great Northern Central Hospital, Holloway, N.—P. to out-patients.

Herefordshire General Hospital.—H.S. £200.

Hospital for Women, Soho-square, W.—Clin. Assts.

Hull Royal Infirmary.—Asst. H.S. £150.

Ipswich, East Suffolk and Ipswich Hospital.—Female H.S.

Kent County Mental Hospital, Chartham, near Canterbury.—Jun. Asst. (Third) M.O. £350.

Kingswood, Bristol, Cossham Memorial Hospital.—Visiting S.

Lincoln County Hospital.—Jun. H.S. £150.

Liverpool Maternity Hospital and Ladies' Charity.—Hon. S.

London County Council, Hackney Institute, Dalston-lane, E.—Lect. in Sanitary Science. 30*s.* each attendance.

London County Council, Public Health Department.—Asst. M.O.'s. £400.

London County Mental Hospitals.—Clin. Assts. £200.

London Lock Hospital, Dean-street, Soho, W.—H.S. £200. Also Registrar.

Maidstone, Kent County Mental Hospital.—Asst. M.O. £350.

Manchester, Ancoats Hospital.—Hon. S.

Ministry of Pensions, Grangethorpe (Orthopædic) Hospital, Manchester.—Jun. M.O. £350.

National Hospital for the Paralysed and Epileptic, Queen-square, Bloomsbury, W.C.—Res. M.O. £200.

Newark Hospital and Dispensary.—Res. H.S. £200.

Newport, Mon., Royal Gwent Hospital.—H.S. £200.

Northampton, County Mental Hospital, Berry Wood.—Sen. Asst. M.O. £300. Also Jun. Asst. M.O. £210.

North Middlesex Hospital, Silver-street, Edmonton.—Asst. S. 28*s.* daily.

North Riding of Yorkshire County Council Education Committee.—Two Asst. Sch. M.O.'s. £500 each.

Nottingham City.—Asst. Res. M.O. £300.

Nottingham General Hospital.—H.S. £200.

Oldham Royal Infirmary.—Third H.S. £200.

Queen Mary's Hospital for the East End, Stratford, E.—H.S. and H.P. £150 each.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. P.'s.

Rochester, Kent, St. Bartholomew's Hospital.—Res. H. S. £250.

Royal Waterloo Hospital for Children & Women, S.E.—Cas. O. £150

St. Bartholomew's Hospital Medical School.—Chair of Anatomy. £900.

St. Pancras Dispensary, 30, Oakley-square, N.W.—Hon. P.

St Peter's Hospital, Henrietta-street, Covent Garden, W.C.—Hon. M.O.

Sheffield City.—Asst. Tuberc. O. £500.

Sheffield Royal Hospital.—Res. Surg. O. £250.

Sheffield Royal Infirmary.—Asst. Cas. O. £150

Stroud General Hospital.—H.S. £200.

Sunderland Children's Hospital.—Female Jun. Res. M.O. £150.

Western General Dispensary, Marylebone-road, N.W.—Hon. P. and Asst. Hon. Aural S.

Wigan County Borough.—M.O.H. £550.

Wilts County Council.—Female Asst. County M.O.H. and Asst. Sch. Med. Inspec. £500.

Wolverhampton and Staffordshire General Hospital.—Hon. Specialist Ear, Nose, and Throat Dept.

York Dispensary.—Res. M.O. £250.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshops Acts at Westbury (Salop).

Births, Marriages, and Deaths.

BIRTHS.

DEWAR.—On Feb. 11th, at The Nook, Tuxford, Notts, the wife of Allan Dewar, M.R.C.S., L.R.C.P., Captain (late R.A.M.C.), of a daughter.

DICK.—On Feb. 6th, at Beaufort House, Grange Park, Ealing, the wife of Major A. M. Dick, F.R.C.S., I.M.S., of a daughter.

TAYLOR.—On Feb. 7th, at Wayland House, Bridlington, the wife of C. R. Taylor, O.B.E., M.B., B.Ch. Cantab., of a daughter.

WILLCOCKS.—On Feb. 10th, in Sydney, to George C. Willcocks, M.R.C.P., F.R.C.S., and Hilda (née Richards) Willcocks, L.R.C.P., M.R.C.S.—a son.

MARRIAGES.

COVENTON—OSTLE.—On Jan. 29th, at St. Bartholomew's-the-Less, E.C., Albert William Duncan Coventon, M.B., to Helen Muriel, youngest daughter of the late Rev. W. and Mrs. Ostle.

POOLE—BUCHANAN.—On Feb. 5th, at St. Martin's-in-the-Fields, Frank Stedman Poole, M.R.C.S., L.R.C.P., to Marjorie, younger daughter of Mr. and Mrs. James Buchanan, of Drayton-gardens, S.W.

DEATHS.

TOMLINSON.—On Feb. 8th, at Sparth Hall, Stockport, John Tomlinson, M.R.C.S., in his 90th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. J. E. Adams, Lond.; Mr. C. Alvarez, Malaga; Army Medical Service, Lond., Director-General of; Association of School Medical Officers of Scotland, Edinburgh, Hon. Sec. of; Messrs. Allen and Hanburys, Lond.

B.—Dr. G. Blacker, Lond.; Dr. B. Blacklock, Liverpool; British Thomson-Houston Co., Lond.; Dr. W. A. Bond, Lond.; Board of Trade, Lond.; Dr. V. J. Blake, Portsmouth; Brighton and Sussex Medico-Chirurgical Society, Sub-Librarian of; Dr. H. W. Barber, Lond.; Dr. J. Brown, Blackpool; Dr. R. K. Brown, Lond.; British Industries Fair, Lond., Sec. of; Dr. B. G. Brock, Clocolan, South Africa; Dr. W. Brown, Lond.; Mrs. C. L. Boycott, Radlett; Mr. L. E. Barrington-Ward, Lond.

C.—Mr. T. A. Crompton, Kirby Cross; Dr. S. D. Clippingdale, Lond.; Dr. C. Chisholm, Manchester; Mr. A. Cooke, Cambridge; Dr. C. Coombs, Bristol; Miss G. Cowlin, Lond.; Dr. J. R. Carver, Manchester.

D.—Mr. H. Dickinson, Lond.; Mr. C. Damiens, Lond.; Surg.-Cdr. K. D. Bell, R.N.; Mr. M. Dockrell, Blackrock; Dr. A. T. Davies, Lond.; Dr. V. Dickinson, Lond.

E.—Dr. M. Erfan, Cairo; Dr. G. H. Edington, Glasgow.

F.—Faraday Society, Lond.; Dr. P. Fildes, Lond.; Mr. G. W. Fleming, Wakefield.

G.—Dr. W. E. Gye, Lond.; Mr. H. Grover, Lond.; Government Printing Offices, Washington; Great Northern Central Hospital, Lond.; Sir H. J. Gauvain, Lond.; Dr. M. Greenwood, Loughton; Dr. E. G. Glover, Berlin; Dr. S. Gloyne, Lond.

H.—Harveian Society of London; Dr. A. J. Hall, Sheffield; Dr. D. C. Hare, Lond.; Dr. C. W. Hutt, Lond.

I.—Insurance Committee for the Borough of Brighton, Acting Clerk of.

L.—Lyceum Club, Lond.; London Hospital Medical College, Sec. of; Mr. D. Ligat, Lond.; Dr. J. E. A. Lynham, Lond.; Dr. F. G. Lloyd, Lond.; Mr. J. B. Lamb, Lond.; Mr. W. Leavis, Lond.; Mrs. S. Levy, Lond.; Mr. J. P. Lockhart-Mummery, Lond.; Dr. R. F. Licorish, Barbados.

M.—Dr. P. Manson-Bahr, Lond.; Sir J. Y. W. MacAlister, Lond.; Dr. J. S. Manson, Warrington; Dr. J. McIntosh, Lond.; Dr. R. J. Morris, Lond.; Messrs. Maskelynes, Ltd., Lond.; Dr. J. M. Morris, Neath; Mental After-Care Association, Lond.; Dr. A. Murdoch, Bexhill-on-Sea; Dr. A. Macklin, Lancaster; Ministry of Health, Lond.

N.—New York Tuberculosis Association; National Council for Combating Venereal Diseases, Lond.; Dr. R. Nixon, Liverpool.

O.—Ophthalmological Society of the United Kingdom, Lond., Hon. Secs. of.

P.—Mr. A. D. Peacock, Newcastle-on-Tyne; Mr. H. Platt, Manchester; Prof. N. Paton, Glasgow; People's League of Health, Lond.

R.—Royal Society, Lond., Sec. of; Mr. R. M. Riggall, Lond.; Dr. J. D. Rolleston, Lond.; Miss B. F. Runge, Lond.; Mr. R. V. Rao, Srirangam; Royal Society of Medicine, Lond.; Royal Medical Benevolent Fund, Lond.; Sir G. A. Reid, Southsea; Dr. W. C. Rivers, Worsboro' Dale; Royal Sanitary Institute, Lond.; Dr. R. J. Rowlette, Dublin.

S.—Société des Sciences Médicales et Biologiques de Montpellier; Prof. M. J. Stewart, Leeds; St. Mary's Hospitals, Manchester, Sec. of; Dr. H. Scurfield, Sheffield; Shantung Christian University School of Medicine, Sec. of; Mrs. E. Staple, Lyme Regis; Sir C. Symonds, Lond.; Society for the Prevention of Venereal Disease, Lond., Hon. Sec. of; St. Bartholomew's Hospital, Lond., Clerk of; Dr. G. H. Sherman, Detroit; Dr. W. Schuurmans-Stekhoven, Ruinen, Holland.

T.—Dr. J. B. Tighe, Newcastle-on-Tyne; Mr. C. J. S. Thompson, Lond.; Dr. H. M. Turnbull, Lond.

U.—Messrs. T. Fisher Unwin, Ltd., Lond.; Union of Medical Practitioners, Lond., Hon. Sec. of.

V.—Dr. H. W. Verdon, Lond.

W.—Dr. J. W. T. Walker, Lond.; Dr. John Watson, Jersey.

Y.—Miss M. Yates, Lond.; Mr. M. Yearsley, Lond.

Notes, Short Comments, and Answers to Correspondents.

KINEMATOGRAPH ILLUMINATION:

THE USE AND ABUSE OF LIGHT IN STUDIOS FOR KINEMA FILM PRODUCTION.[1]

BY J. C. ELVY, A.M.I.E.E.,
CONSULTING ENGINEER.

The Lighting Equipment of Kinema Studios.

THERE are a number of points to be considered in the lighting equipment of a kinema studio. The essential factors are the actinic values of the various lighting units available, the amount of electrical energy required to operate them, the initial cost of the equipment, and the cost of maintenance. The question of illumination and its relationship to the sensitiveness of both the photographic film and the physiological system is now gaining the prominence it deserves.

Eyesight Troubles in Kinema Studios.

It is now more than a year ago since I referred to the possibility of eyesight trouble in kinema studios, arising from the special lighting conditions employed. The eye has been developed under conditions of natural lighting which involve only moderate intrinsic brilliances. The accompanying table shows the intrinsic brilliances of various illuminants:—

Source of light.	Candle-power per sq. in.	Source of light.	Candle-power per sq. in.
Uniform white sky...	2·5	Flame arc	5,000
Oil lamp	3—5	Open arc	10,000—50,000
Mercury vapour lamp	15—20	Open arc (crater)	200,000
Enclosed arc	100—500	Sun...	500,000—600,000
Gas-filled tungsten filament lamp ...	2200		

This table alone suffices to show the great differences between the conditions when a film is taken in the open air by the natural light of the white sky, and by powerful arc lamps at close quarters.

There seems to be a general impression that the main source of eyesight trouble in studios, when it occurs, is the exposure to sources of very great intrinsic brilliancy. It is possible that the strong ultra-violet component in some lights, may accentuate a tendency to inflammation of the eyes, as it has been remarked in other processes—e.g., in arc-welding, &c. Inflammation or scorching of the skin which accompanies eye irritation in some cases is also a well-known result of excessive exposure to ultra-violet light. Again, prolonged exposure to light of a peculiar colour may lead to subsequent derangement of colour vision. Professor Burch, by exposure of his own eye to intense monochromatic light, produced disturbances which persisted for more than a year. These are questions on which the coöperation of ophthalmologists is necessary. It seems clear, however, that whichever of the above effects is concerned, the danger of injury occurs mainly when images of great concentrated brightness are formed on the retina of the eye.

There have been reports in newspapers of artistes suffering from eyesight troubles, which have been ascribed to the effect of exposure to very powerful illuminants. I have an extract from the *Picture Playgoers* (Nov. 22nd, 1919, p. 614) showing where several artistes of a film company are affected by semi-blindness, due, it is stated, to the powerful studio lights. The manifestation of this trouble in a severe form in this country seems to have coincided with the importation of certain types of lamps, though it may have existed in a minor form before then, due perhaps to carelessness in manipulation of arc lamps without suitable diffusers.

Dr. Chappe, in a paper read before the Société Française d'Ophtalmologie, said that "the painful results of the arc lamps' glare become most acute two or three hours after the artistes leave the studio." On his advice one studio has inaugurated a regular system of eye baths for artistes on the conclusion of the day's work. From an artistic and human point of view it is impossible for artistes to act naturally under the blinding glare of points of high intrinsic brilliancy. Producers are endeavouring to overcome the difficulty by providing coloured spectacles for artistes' use during rehearsals, and removing them before the actual "take." But how can one in these circumstances get the correct expressions? The human eye cannot instantly adapt itself to these great contrasts. One trade journal, *The Bioscope*, compares artistes with miners, as taking up a career of their own free will and fully cognisant of the risks they run. But, I may remark, up to a certain time the artistes were not aware of running any risks; also, that the miners are protected by Government regulations, and industrial factory operatives are similarly safeguarded.

Visual and Photographic Effect.

A point of very great importance in the lighting of kinema studios is the distinction between visible light and light of photographic value. The human eye is generally regarded as being sensitive to light within the wave-lengths of about $0{\cdot}39\mu$ (violet) to $0{\cdot}75\mu$ (deep red). The maximum luminosity occurs near $0{\cdot}55\mu$, corresponding to yellow-green coloured light, but the maximum chemical or photographic effect occurs near $0{\cdot}39\mu$, corresponding to the region just outside the visible rays. Thus for photographic purposes—that is, for actinic rays—the visual light is practically of no value as a guide. From the photographic standpoint, it is desirable, according to Dr. Mees of the Kodak Co., to select an illuminant with an abundance of rays of approximately $0{\cdot}40\mu$ wave-length, and a certain amount of ultra-violet rays. To attain this result efficiently one should dismiss the aim of producing an extravagant visual candle-power. Excess of ultra-violet rays has a prejudicial effect on the eyes, but it is known that all varieties of ultra-violet light are not equally injurious, and it would therefore be a useful inquiry to ascertain whether the rays which are chiefly needed from a photographic standpoint fall within the range of wave-length that is liable to cause eye trouble.

It is clearly of great importance to have available data comparing, not merely the efficiency of illuminants in a visual sense (i.e., for the purpose of creating *brightness*), but their relative value in terms of chemical or photographic effect. Dr. Mees remarks:—

> "For cinematograph work where halation is a difficulty it is an advantage therefore, both for the attaining of the best gradation and for the reduction of halation to a minimum, to use for these ordinary (photographic) materials, light of an average wave-length as near as possible $\lambda\,400\mu\mu$ rather than light having its maximum near $\lambda\,470\mu\mu$."

He gives the following data, applying to ordinary photographic work:—

*Photographic efficiency.**	
Enclosed arc as	62
Flame "	52
Mercury vapour (not quartz type; quartz is transparent to ultra-violet rays)	47

Constancy and steadiness of light.	
Arcs	Fair.
Mercury vapour	Good.

* Due regard must be paid to electrical current values when reading these figures.

Recently an impartial judge selected the best of a series of photographs taken by artificial light; this was produced by an illuminant using only ¾ of a unit of electricity per hour, as compared with others requiring respectively 3¼ and 6 units.

The Lighting of Scenes in Studios.

The qualities desirable in illuminants for use in kinema studies may be roughly summarised as follows: (*a*) high actinic value with relatively low consumption of energy and small losses in diffusion, reflection, and resistances; (*b*) low intrinsic brilliancy; (*c*) absence of heat or fumes or other harmful conditions; (*d*) long useful life; (*e*) constancy and steadiness of light. Some producers emphasise "snappiness," "needle-point sharpness," "crispness" as desirable qualities. Picture-goers, however, do not always comment favourably on these extreme black and white contrasts, which are fatiguing to the eyes.

At the present time one experiences the need of suitable instruments for testing photographic value—similar to those already available for the rapid determination of visible illumination. Present forms of actinometers which involve waiting for the coloration of a strip of sensitised paper are inconvenient and liable to present difficulties to an operator whose eye has already been fatigued by or dazzled by looking at the lights. I suggest the use of some convenient unit, such as photmen or phot, similar to the term "lumen," which is used for visual illumination and which is readily ascertained by simple devices.

In the studio methods of directing and occasionally shading the light deserve study. The suggestion that illuminants using white light should be covered with blue glass cannot be approved. In this way the actinic value for a given visible illumination would doubtless be increased, and possibly the device might tend towards the comfort of actors. But such screening involves a loss in efficiency. One merely absorbs a considerable amount of visible light and some ultra-violet. What is desirable is to produce a source which itself emits radiation of the requisite quality, bearing in mind that, at the present time, certain difficulties are experienced with a film base of a panchromatic nature.

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[1] Part of an introduction to a discussion at a meeting of the Illuminating Engineering Society held on Jan. 13th.

REPORT ON THE GLOVER SERUM.

AN interim report has been presented by the special committee appointed by the council of the Academy of Medicine, Toronto, to examine all the available data, experimental and clinical, upon which Dr. Glover had based his claims to advance our knowledge of the causation and treatment of cancer. The data which the committee was able to obtain did not convince it that the results of treatment by the use of Dr. Glover's serum were better than those obtained by similar methods introduced by others, which had ultimately disappointed the hopes entertained of them. The report is signed by W. H. Harris (chairman), H. B. Anderson, Herbert A. Bruce, John J. MacKenzie, Jabez H. Elliott (ex-officio), Harris McPhedran (secretary), and received the concurrence of Geoffrey Boyd, W. P. Caven, and A. Primrose, who were added to the committee. It was adopted by the council of the Academy on Jan. 13th.

A CHILD PILGRIMAGE LASTING TWO YEARS.

WE have received from *La Nouvelle Revue* (Paris) a brochure entitled "800 Enfants Russes autour du Monde," in which Mons. P.-L. Hervier sets out attractively the adventures of the 800 Russian children, the residue of a much larger number of children of well-to-do Petrograd parents, who sent them to the Ural in the spring of 1918 on the assurance of safety and plenty there. Cut off in the summer by the varying fortune in the encounter between Czecho-Slovak troops and the Red army, and deserted by many of their supervisors, these children began to run wild in the woods, seeking their own food. In January, 1919, the American Red Cross took them in charge and conducted them by easy stages round the world—Vladivostok, San Francisco, Panama Canal, New York, Finland—back again to Petrograd at the end of 1920, where a committee of parents was prepared to receive them. At New York the children showed their initiative by refusing to go to a camp being prepared for them near Bordeaux, electing to go straight home whatever might be the privations in store for them.

"IRIDIAGNOSIS."

ANY claim to a startling discovery by a layman in the domain of medicine is certain of a wide advertisement irrespective of its inherent credibility. A few weeks ago we commented on the claim of a Paris professor to have discovered hitherto unknown organs of vision, enabling the blind to see. Now we are told that a graduate of Edinburgh University has been lecturing in London on a new method of diagnosing all sorts of diseases merely by gazing into the eyes of the sufferer. It seems that the condition of every organ and part of the body is reflected in the iris. By this means, an interviewer for the *Star* was told, it is possible to diagnose not only the ailments from which anyone may be suffering, but also the remedies which have been adopted to treat them. Nothing, apparently, eludes the "peering, incisive look" of the "iridiagnostician," whether it is a cured cold, the quinine that has been taken to cure the cold, a cut finger which has healed, or even incipient cancer.

It is, we think, an unfortunate fact that to the majority of people the human body is as mysterious a subject as is the human mind to nearly all of us. Perhaps to include a little elementary physiology in ordinary school teaching would be the best antidote to the rubbish on the subject which finds its way to popular notice. Meantime, we are not surprised that the possibilities of the iris in this connexion have been exploited. The iris is one of the most variable, as it is one of the most beautiful structures in the human body. The distribution of pigment in it is not, any more than the conformation of the cutaneous ridges on the fingers, identical in any two individuals. Unfortunately for the theory put forward, the pigmentation of the iris is laid down once for all in early life, and, save as the result of diseases directly affecting the eye itself, does not change in later years. With this exception, therefore, the only problems on which the pigmentation of the iris can throw any light are those connected with heredity.

COLONIAL HEALTH REPORTS.

Nyasaland.—In the report for 1918-19 the following reference to the public health occurs: "Owing to the presence during 1918 of the German enemy forces along the eastern borders of Nyasaland and on Lake Nyasa there was a widespread and continuous movement of our troops, followers, and carriers within the Protectorate throughout the year, movements which afforded every facility for the spread of infectious and contagious diseases. Small-pox was confined to the districts in which it was prevalent in the previous year, though sporadic outbreaks occurred in other areas, but with the assistance of the military medical officers these outbreaks were promptly dealt with and did not assume an epidemic intensity. There were only five cases of bubonic plague reported from the North Nyasa district in the neighbourhood of Karonga, as against 25 in the previous year and 15 in the year before that. No recurrence of cerebro-spinal fever occurred during the year, and this disease may now be regarded as non-existent in Nyasaland. From the epidemiological point of view one of the most notable events of the year, and a factor affecting the public health of the Protectorate more prejudicially than any other, was the appearance of influenza in the month of November. This epidemic rapidly spread throughout the Protectorate, reached its maximum intensity in December, and declined steadily during the month of January. The number of Europeans resident in the Protectorate on March 31st, 1919, including officials, was 492 males and 232 females, as compared with 463 males and 252 females in the previous year. The Asiatic population numbered 407. The native population is estimated at 1,216,100—approximately 551,600 males and 664,000 females.

Turks and Caicos Islands.—Mr. G. Whitfield Smith, the commissioner and acting judge for these West India Islands (geographically forming a sort of annexe of the Bahama group), writes in his report for 1919: "No serious epidemic or outbreak of sickness was reported during the year. The number of births was 173 and of deaths 169, representing 30·8 and 30 per 1000 of the population respectively. On Jan. 9th 64 natives of the Dependency perished at the stranding of the s.s. *Yuna* on Mouchoir Bank, which accounts for the abnormally high death-rate. The Manning Hospital continues to minister to the needs of suffering humanity in a most satisfactory manner; 55 cases are stated by Dr. H. H. Purinton to have received treatment at this hospital during the quarter ending Sept. 30th, 1919, and the acting Government Medical Officer concludes his report by saying there are few, if any, public expenditures in the Island of Grand Turk, and, in fact, in the whole Colony, which have been a greater benefit to the population than the money spent for the support of the Manning Hospital."

"SQUINT, MANCINISM, AND TUBERCLE."

To the Editor of THE LANCET.

SIR,—"Squint" being a vernacular word, and lay journalists being in the habit of looking at THE LANCET, it results that the article in your last week's issue got into a daily paper, unfortunately with mention of my name, after which an interviewer called and was refused what he asked. Publication of this disclaimer would oblige.

I am, Sir, yours faithfully,
THE AUTHOR.
Feb. 13th, 1921.

To the Editor of THE LANCET.

SIR,—Dr. Rivers in his interesting article upon squint in this week's LANCET uses the term "mancinism" as indicating left-handedness. I cannot find this word in any dictionary, lay or medical. For the benefit of those who may be as ignorant as myself, will Dr. Rivers kindly give its etymology?

I am, Sir, yours faithfully,
IGNORAMUS.
Feb. 13th, 1921.

⁂ If "Ignoramus" consults the "Dictionary of Medicine" (Gould) he will see that it simply gives the following entry: "Mancinism (*mancus*, imperfect, maimed), left-handedness." This probably is based on the statement of Ulpian, the Roman jurist, who refers to two kinds of left-handed persons, he that is naturally left-handed being called "scæva" and he that uses the left hand through a weakness of the right being called "mancus." This word seems to have been borrowed by the French in the word "manchot," and to have meant that through a weakness in either hand the other was used only, as displayed in the couplet by Delille (1738-1813), a French classical poet, who occupied the chair of Latin poetry at the Collège de France:—

> "Le bras manchot qui, resté sans office,
> Laisse au survivancier tout le poids du service,"

the word "survivancier" being "reversioner" in English. Now the word "manchot" seems to be more applied to a one-handed or one-armed person (à qui il manque un bras ou une main).—ED. L.

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An Address

ON

INTERNATIONAL ORGANISATION AND PUBLIC HEALTH.

Read before the Society of Medical Officers of Health on Feb. 18th, 1921,

BY G. S. BUCHANAN, C.B., M.D. LOND.,
SENIOR MEDICAL OFFICER, MINISTRY OF HEALTH.

THE invitation of your President gives me the opportunity of drawing the attention of the society to some recent international arrangements for the promotion of public health, and in particular I have thought it would be of interest to say a few words about the International Health Organisation which will shortly come into being, as a result of a series of detailed resolutions which were passed by the Assembly of the League of Nations at Geneva in December. With the project envisaged by these resolutions I have personally been somewhat closely associated, as it was my privilege to be nominated by the Ministry of Health, on the recommendation of the chief medical officer, to be the technical adviser on this subject to the British delegation, and, what in this connexion was perhaps more important, to take part in the original international discussions which were initiated by Dr. Addison more than a year ago, when it became necessary to examine the position in regard to international health matters which had been created by the Treaty of Versailles.

THE LEAGUE OF NATIONS AND PUBLIC HEALTH.

It will be remembered that by the Covenant of the League of Nations, which forms an integral part of that Treaty, the members of the League undertake to take steps in matters of international concern for the prevention and control of disease. The League is also empowered to take over the direction of international bureaux established by general treaties, among which is included the existing Office International d'Hygiène Publique, which was established by the Convention of Rome, 1907.

These provisions undoubtedly form something of a land-mark in public health history by giving formal expression to the importance which health questions now assume in the practical affairs of the government of the nations of the world. They show, internationally, the effect of the same movements which in this country led to the central amalgamation of health services and the creation of a Minister of Health; which in France also have since led to the splitting off of public health administration from the other departmental matters which were overshadowing it at the Ministry of the Interior; which have resulted in the Ministries of Health which have been established in the new countries of Central Europe; and which have brought about also the remodelling and strengthening of central public health services which we are now witnessing in the United States and in our own Dominions. The Covenant wisely recognised that as nations thus increase and strengthen their internal health government, new points of contact, need for common action, and even risks of political differences must arise internationally. It was necessary that a league designed to secure comity among nations, and to prevent or resolve disputes, should bring public health questions within its range of activities.

The practical sanitarian, accustomed to look with small enthusiasm on the elaboration of schemes which appear far reaching only on paper, and with that mistrust of long views which is so useful in the pursuit of our calling, is perhaps likely to exhibit only a mild interest in the fact that the League of Nations, whose own future in many directions is uncertain, has taken to itself a wide outlook over technical matters—economics, finance, international transit, world conditions of labour, and the like—and has added public health to them. It is for him of greater interest to take the short view, and to ask first whether, as a practical matter, international official action can contribute anything worth having at the present time to public health that cannot be obtained as easily without it and then to inquire how, through the League of Nations or otherwise, *it is proposed that this action should be taken.* The manner of doing things, as he knows well, is often as least as important as the matter of them.

LIMITATIONS OF OFFICIAL INTERNATIONAL WORK.

To answer this question it may be useful to begin, and perhaps rather in a wholesale way, by a process of elimination. It must be remembered that the League of Nations represents associated Governments, and its activities depend first and last on the views and action of Governments, in other words, it is an official machinery if it is anything. For international cöoperation in health questions that do not require official or Government intervention and support a League of Nations machinery would offer little advantage. Accepting this, we can at once exclude from the question before us much that can in a general sense be termed international medical work. All medical science, in a sense, is international; it is as cosmopolitan as music. In medicine, least of all, do we want to ask, when we hear news of progress, whether or not it is "official." Jenner, Pasteur, Metchnikoff, Ehrlich—it is the man's work that leaps to the mind with names such as these, *not their nationality.* We do not need to set up an international bureau to tell us in all the official languages of discoveries and new knowledge given us by workers all over the world. Have we not enough—even more than enough—of abstracts and summaries and translations? There are special cases, to which I will refer shortly, where we can only get the information we require for public health work through Governments, but all will agree that our own journals, not forgetting the "Medical Science Abstracts and Reviews" of the Medical Research Council, which give them freely and in one tongue, amply suffice for all ordinary needs, while we have also all our medical societies—always on the look-out for information from other countries—and our international medical and sanitary congresses which are all the better for their voluntary character and independence.

International Medical Research.

So also with research. At the Assembly at Geneva much attention was given to an attractive proposal by the Argentine delegates that the League of Nations should promote medical research on a large scale by establishing and financing a large central research institution, and should take active part in the establishment of health laboratories all over the world for the investigation and prevention of disease. The project, had it been pressed and accepted in committee, would probably have been wrecked on the financial rocks; the budget and commitments of the League and its proposed technical organisations were being closely scrutinised. But it was at least debatable whether on its merits it would have been right to press it. Someone once proposed to give a great mansion and grounds for habitation by poets, where their products could be turned out under ideal conditions of comfort and in contact with other poetic minds. The true medical research worker would probably be as horrified at the prospect as the poet. Without shutting the door to future functions of an official international health office as a clearing-house for certain kinds of research work—a matter obviously to be considered—it cannot be maintained that nations wishing to progress in medical science would be doing their best by putting their men and money into any international forcing house for research. Both would be better employed at home. Moreover, the days of private support to public medicine are happily not over. The Rockefeller Foundation, with its world-wide humanitarian scope, gives us an example of a magnificent form of internationalism all the more effective by its freedom from official control.

International Red Cross Activities.

So again with the great humanitarian institutions. The benevolent in all civilised countries combined in

No. 5087.

the interests of international public health. The various Red Cross organisations, now so much strengthened in authority and funds by the war, have united to form a common organisation—the League of Red Cross Societies—which is to work for health in time of peace, with the special function of educating and helping backward or poverty-stricken countries. These Red Cross activities received special recognition in the Covenant of the League of Nations, which requires the signatory countries to encourage them. I do not propose here to formulate the lines of demarkation which should be followed between this important voluntary body and an official health organisation of the League of Nations, especially as the matter has been recently and fully discussed by Sir G. Newman in his first annual report to the Ministry of Health. The various conferences on the subject have always led to the same conclusion—namely, that in practice the line should be easily drawn (the more so as the League of Red Cross Societies is itself established in Geneva); that not only should there be no reason for rivalry, but each should be strengthened by the other. It is the fact, I believe, that the League of Red Cross Societies has already found itself hampered by the absence of a health section at the League of Nations, and it is obvious that the latter, when established, will be much advantaged by what has already been accomplished and prepared by the Red Cross organisation. The situation, in fact, is one which is familiar to public health officers in every administrative area where voluntary work and expenditure of voluntary funds on health matters go on side by side with official work, and when ordinary tact and prudence are exercised harmony and mutual benefit are secured.

OBJECTS OF THE INTERNATIONAL HEALTH ORGANISATION OF THE LEAGUE.

If any further fears are entertained that those who have been concerned with this question have been carried away by unreasoning international idealism, or have bureaucratic designs to capture public medicine at large by some new international machinery, they will, I think, be sufficiently dispelled by a study of the objects which the proposed organisation is in fact required to fulfil. These objects are stated as follows in the resolutions of the Assembly; it will be seen that their terms are carefully guarded.

(*a*) To advise the League of Nations in matters affecting health.

(*b*) To bring administrative health authorities in different countries into closer relationship with each other.

(*c*) To organise means of more rapid interchange of information on matters where immediate precautions against disease may be required (e.g., epidemics) and to simplify methods for acting rapidly on such information where it affects more than one country.

(*d*) To furnish a ready organisation for securing or revising necessary international agreements for administrative action in matters of health, and more particularly for examining those subjects which it is proposed to bring before the Standing and General Committees, with a view to international conventions.

(*e*) In regard to measures for the protection of the worker against sickness, disease and injury arising out of his employment, which fall within the province of the International Labour Organisation, the International Health Organisation will coöperate with and assist the International Labour Organisation, it being understood that the International Labour Organisation will on its side act in consultation with the International Health Organisation in regard to all health matters.

(*f*) To confer and coöperate with international Red Cross societies and other similar societies under Article 25 of the Covenant.

(*g*) To advise, when requested, other voluntary organisations in health matters of international concern.

(*h*) To organise missions in connexion with matters of health at the request of the League of Nations and with the concurrence of the countries affected within the limits provided by Sub-paragraph (*a*) or by the International Convention of Rome (1907).

SOME QUESTIONS AWAITING INTERNATIONAL AGREEMENTS.

The way is now clearer to continue with the practical question which I have assumed to be put. The objects of the organisation have been settled and defined in the general terms which I have just read. Representatives of the public health departments of the civilised countries of the world will be collected together to pursue them. What is ready to their hand to begin upon? The material is really abundant, and none the less important because the subjects concerned are somewhat technical and unlikely to make much appeal to popular imagination.

New International Sanitary Conventions.

Let me illustrate this first by health questions connected with sea and land frontiers. The measures taken in regard to ships coming from infected ports have in this country a long history beginning with the now obsolete Quarantine Acts, going on to the International Sanitary Convention of 1903, with which our present practice conforms, and ending with the most recent International Sanitary Convention, that of 1912, the ratification of which was completed only a few months ago. One of the most creditable contributions of this country to the public health of the world resulted from the appreciation which was given in England at a very early stage to the fundamental principles which should govern the action taken by port authorities to prevent the introduction of diseases like cholera and plague, so as to combine a maximum of efficiency with a minimum of interference with traffic and commerce. The international adoption of these principles, though secured by international agreements, has, however, not seldom stopped at the signature of these agreements. Some countries have regarded sanitary conventions as merely giving minimum requirements, and in practice have superseded them by laws and regulations greatly in excess of the principles of the agreements to which they are signatory. Other countries, including certain of the British colonies, have stayed out of the Conventions and retained old-fashioned quarantine laws. All these Conventions depend in large measure on a system of formal notification to other countries of the first occurrence of plague or cholera in an affected country, but their requirement has often been defeated by the burden of its own formality. Under the Conventions the health department of one country does not notify the health department of another, but the information proceeds through diplomatic channels and Foreign Offices, for which, naturally enough, any report of plague or cholera carries with it visions of disaster, restrictions, reprisals, and other fantasies which attend the unknown, and thus leads, if not to suppression of facts, at least to delay and to studied ambiguity in their presentment which defeats the object of the notification. And perhaps the greatest difficulty with these Conventions—the observance of which is of such great importance to commerce as well as to health—is their absence of elasticity. The Convention of 1912, drawn up after long conferences and discussions, was ratified only last year. Though in many ways a satisfactory code and in advance of that of 1903, it is already in several respects out of date. In regard to plague precautions on ships it still treats human plague infection and not rat plague infection as the primary consideration; in regard to cholera, it gives no sufficient guide about the carrier; in regard to yellow fever, its requirements do not satisfy, and are not practised by, any of the countries in the yellow fever zone, and they are considered insufficient by India, which is now apprehensive of the introduction of this disease.

Meanwhile, there is an insistent demand, not only from our own administration, but from that of many other nations, for the establishment of international rules which should govern the handling of other infections, such as small-pox and typhus, not dealt with in the present Conventions. These are of daily importance, particularly in connexion with the migrations which are beginning, and likely to be continued, from the epidemic-stricken regions of Eastern Europe. The demand for revision here extends to the case of land frontiers, which hitherto have received scant consideration in international conventions. The division of large parts of Europe into new States, the probability that for many years to come small-pox, typhus, cholera, and other acute epidemics may progress westward through the Continent, and particularly the unhappy experience already gained on the borders of Poland and Soviet Russia, make it essential on land frontiers that, on the one hand, strict measures should be taken for observation, detention, disinfection, and the like, applicable to persons of all nationalities, and on the other hand, that these measures, like those for shipping, should be so contrived as to produce the minimum of interference and annoyance in international traffic and commerce.

Now, in present circumstances, it is difficult for any busy public health officer to contemplate without dismay the prospect of a new and protracted official international conference to recast and reconsider all these questions in detail. Many new States will, for the first time, come into these deliberations; they cover a larger ground than before; and when a solution is ultimately arrived at there is a prospect that it can only be made effective by a repetition of the diplomatic procedure which delayed us for eight years after 1912; that the resulting document might once again be out of date by the time it is ratified; and that it would after all leave us as uncertain as before of the extent to which the Convention, when completed, was observed in practice by the signatory countries.

An official central health bureau, with international authority and adequate machinery, affords the most hopeful way out. It has already been proposed that the next International Sanitary Convention should be framed on broader and simpler lines, leaving details to be filled in by schedules and supplementary agreements. This is feasible if a standing expert authority has the duty of making adjustments as occasion requires to meet advances in knowledge and changes in the epidemic situation. In an International Health Organisation on which all the central health departments of the chief maritime States are represented, there should be no difficulty in designating the right men for this purpose and in securing international approval of necessary amendments without long delays and needless formalities. Such an organisation, moreover, could do much to secure that accurate information is obtained regarding the measures taken in each country to give effect to the agreements. The Geneva Resolutions, besides providing for this central body, lay down a new method for the conclusion of Conventions on health matters which, it may be hoped, will remove some of the obstacles met with hitherto. The efficacy of this method has still to be tested, but in any case the main cause of past delays, the fact that it has been nobody's business to see to progress, should now be removed.

Epidemic Intelligence.

Another matter requiring attention at the present time is the collection of intelligence regarding the progress and prevalence of principal epidemic diseases. At the Ministry of Health we find this essential not only for our own sanitary administration but also to meet, as we desire to do, the strongly expressed wishes of our self-governing Dominions for such systematic intelligence. Port medical officers of health who receive from the Ministry the weekly statements of epidemic diseases abroad, which have lately been much expanded and improved through the energy of my colleague Colonel S. P. James, will realise the duplications of labour which result from the present system; indeed its absurdity when it is remembered that other countries, like the United States, are laboriously and independently following the same method. At present we obtain a large amount of our information about epidemics by the coöperation of our Foreign Office and through the zeal of British consuls abroad. In existing conditions this is the only way, and is most helpful. But, after all, the consul, himself a layman, has to approach a foreign lay municipality for his facts, and at best can obtain them only for a limited area of the country. Other consuls at the same place are going through the same system of inquiry and cabling to their Governments. For some countries —China, for instance—no efficient substitute for consular information can be suggested. But for many nations it ought to be practicable to replace messages from British representatives in a few centres by a single communication sent to the Ministry of Health by the corresponding department of the foreign country. We are already in England able to give such information either to other countries or to a central office. The practicability of the establishment of a central epidemic intelligence centre in connexion with the new International Health Organisation needs to be studied in detail and as soon as possible. It would hasten more than any other measure the codification of epidemic intelligence in countries, like France, which have not yet developed notification as we know it over here. Given the necessary communications from the periphery, a central transmitting station such as the League of Nations is bound to possess, and the condensing resources of a code, it should not be difficult in a few words to signify each week to all the countries the main facts of each of the principal epidemics which require to be watched. Much less useful matter is daily transmitted all over the world by wireless. The expense should not be great and would be saved in other directions by every country concerned.

Health of Ships' Crews.

The hygiene of ships, so far as it affects that deserving but often hygienically neglected section of the population termed merchant seamen, is receiving attention on the international side from the International Labour Office, and is being brought into great prominence by seamen's labour organisations all over the world. Its settlement requires international action in which the best and most recent public health knowledge should be incorporated. The Geneva Resolutions establishing the International Health Organisation have now provided a means by which competent sanitarians can take their proper part in the international regulation of matters like ship ventilation, the construction of crews' quarters, their rations, facilities for cleansing, and the like. The subject bristles with difficulties, but also with great opportunities, and I may express the hope that when proposals on this matter are taking concrete form the British delegates may have the advantage of assistance from those medical officers of health of port sanitary authorities who have specially studied the hygiene of ships' crews.

Let me refer also to another international measure affecting merchant seamen—their treatment for venereal disease at seaports. This ground has been explored officially by the Ministry of Health, and unofficially by the National Council for Combating Venereal Diseases, and it is clear that international agreement is both desirable and practical to ensure that at any large seaport the sailor has access to modern methods of treatment, without charge or disability to himself, without reference to his nationality, and, if I may express a personal view, without cost or prejudice to the shipowner. This treatment should include in-patient treatment where necessary, and a standard form of record of his condition and treatment—forms of record really may have their uses—which he can take with him to the next port. Nothing approaching this system at present exists, but little consideration is necessary to realise the gain which might accrue from such an international undertaking. The practical difficulty hitherto has been that no one nation has been in position to press the matter strongly on other nations and remove the minor obstacles, still less to secure that the goodwill and assent of other countries, when obtained, is translated into appropriate action.

Anthrax: Rat Destruction.

I may refer to two or three other health questions which seem ripe for international agreement or study with a view to agreement, and where necessary should be taken up in consultation with the International Labour Office in the interest of the workers. One is anthrax, where at least two things are required: first, the general adoption of a system officially recognising that raw hides and wool have been disinfected by an approved process at the place of their collection or the port of despatch. This system, which would produce a great saving and greater efficiency, has been shown to be practicable by the work of Dr. T. M. Legge, Dr. F. W.

Eurich, and others in this country, and the minute attention given to the whole question by the Anthrax Committee and the Home Office. Secondly, there is real need for an understanding about the future of the important Japanese export trade in shaving brushes. As you are aware, the British Government has been obliged by the demonstrated danger of these brushes to prohibit their importation altogether. It is undesirable that we should have been forced to this procedure, especially as other countries have not taken corresponding action. The real remedy seems to lie in action in Japan to secure that the hair, usually imported from China, is efficiently cleansed and disinfected before it is made up, under supervision by Japanese bacteriologists in whom all the world can have confidence, officially arranged and guaranteed by the Japanese Government.

Then again, to revert to a subject which affects port sanitary authorities and shipping, is the subject of periodic destruction of rats on ships. There is no reason why a ship should not be overhauled to remove its rats every six months as a routine just as necessary as its repainting, or the overhaul of its boilers. Such a requirement, which would be greatly in the interests of shipowners as well as of health, could only be effected by international agreement, coupled with a system of intelligence at the central offices regarding the action to give effect to the requirements of that agreement.

International Vital Statistics.

There can be no doubt that the work of medical statisticians is greatly hampered by unnecessary differences which at present exist in methods of certifying and of recording deaths. I may draw attention in this connexion to a useful article on death certification contributed by Professor J. Glaister to the last number of the *Journal of Comparative Legislation.* When one remembers that the vital statistics of Switzerland, for example, are obtained by a system of confidential certification in which the medical cause of death is not stated to friends and relatives, one realises how large a discrepancy there may be in the comparison of the vital statistics of that country with others in respect, let us say, of alcoholism or syphilis. Then, again, the use by the certifying doctor of "primary" and "secondary" causes of death is a matter in which there are divergences so wide as to make vital statistics which are seemingly comparable really incompatible in actual fact. Even as between England and Scotland, as you are aware, there are a few differences of this kind—a death which is certified as due primarily to influenza and secondarily to pneumonia, will in England be ascribed to influenza and in Scotland to pneumonia. There must, of course, be substantial differences between countries in regard to the reliability of their death certificates and vital statistics, even between those which are most highly civilised; but at the same time a great many points of difference have only to be pointed out and discussed in order to be removed, with great advantage to comparative work. Some effective progress has already been made in this matter on the question of tabulation of causes of death under the headings of the International List, which is revised every 10 years. The Conference last year at Paris, which completed the most recent decennial revision, was at once an example of the praiseworthy desire of statisticians and registrars to obtain international accord in their "long" and "short" lists of cases of death, and a demonstration of the ineffectiveness of the arrangements which at present exist to bring about that accord in a satisfactory and convenient manner. Anyone who experienced, as I did, the difficulties of discussion of a large number of complicated details by 50 delegates of different nations, meeting on four consecutive days from early morning to late night, and trying to make progress without agreed rules of procedure, agenda, drafts, copyists, shorthand-writers, or interpreters, would not need to be convinced of the practical advantage of transferring such work to a centre where all these arrangements for international discussion are automatically and well supplied.

Exceptional Epidemic Conditions: the Typhus Commission.

Another important aspect of international official work lies in the direction of combining efforts to deal with exceptional epidemic conditions. This has already been illustrated in connexion with the advance of typhus and cholera from Russia into Eastern Europe. To check that advance, especially by dealing at the frontiers with the large numbers of refugees, prisoners of war, and the like, arriving from the East in mass along the principal railway lines, en route to all parts of Europe, is a matter which obviously concerns many Governments very vitally, apart altogether from the humanitarian aspect of the question, which may be considered to affect the whole world. A large amount of voluntary aid has been forthcoming or promised to deal with this situation, especially through the Red Cross agencies, but the conditions in Poland and the other border States has been such that it has been impossible for this voluntary action to be made effective without strong official international backing. Moreover, the resources of the charitable public in the United States and elsewhere have been insufficient to secure the necessary preventive measures on a sufficient and systematic scale. In these circumstances the League of Nations, as is well known, has made an effort to supply the need by appointing a special epidemic commission and obtaining funds for this work from a large number of the Governments represented in the League. Although these funds are not yet adequate for the purpose, they have even now been sufficient to enable a good start to be made in the most difficult and dangerous area, and the Typhus Commission, with general consent, is now able to attach to itself, or direct the use of, the important auxiliary services which the Red Cross bodies are able to bring in.

Occurrences of this kind are not likely to be numerous, as in all ordinary cases an epidemic-stricken country would take its own measures and be unwilling to call for, or to receive, international official help. When they do occur, however, as to-day in Eastern Europe, or as they may arise to-morrow, say, in the case of pneumonic plague in the East, it is evident that the League of Nations can only act effectively and quickly if it has behind it experts who can appreciate the situation and the needs of the case, and are in close touch with their Governments. The absence of a public health organisation in the present case has been one of the serious handicaps to the League in the prosecution of its campaign against typhus. It may be added that if the Treaty of Sèvres is ratified, still more if it is taken as a precedent for other treaties, the League of Nations will assume a very direct responsibility in regard to quarantine. Under that Treaty the League will be required to form a special committee to coördinate the practice of the different quarantine stations which deal with the Mecca pilgrimage.

THE MACHINERY OF THE INTERNATIONAL HEALTH ORGANISATION.

Leaving these questions of the work before the organisation, we may now consider the further practical question how such work is to be effected. It requires that a body of men should be got together at least once or twice a year from a large number of countries who are persons of some weight and authority in the public health work of their respective Governments and who, if they are not themselves expert in the particular technical question of the moment, will have been able to obtain or to bring the best technical assistance or advice on the subject. If we were on entirely new ground with no experience, it might be difficult to say that this is likely to be practicable. Fortunately, however, we have the necessary experience. Such meetings to a large extent already take place once if not twice a year at the Committee of the Office International d'Hygiène Publique in Paris, which is to form an integral part of the new organisation. This Committee is in one important respect wider than any body could be which only represents members of the League of Nations at the present time, as it includes the representative of the United States Public Health Service.

The Office International d'Hygiène Publique was established by the Convention of Rome of 1907 with a constitution which enables it, as a consultative body, to deal with most, if not all, of the subjects which I have mentioned above. The value of the past work of the Office International must not be belittled or overlooked. It is hardly as well known in this country as it should be. The Office has been a very bad advertiser, and, as its meeting place and offices are in Paris and its official language is French, it has been regarded here as perhaps too exclusively a Latin institution. The *procès verbaux* of its meetings are formidable official records which are seldom found outside Government offices, and its Monthly Bulletin—which is on sale, and incidentally, at the rate of exchange of to-day, represents a higher public health value than any other periodical known to me that is purchasable for *5d.*—is largely concerned with official regulations, and its epidemic intelligence and excellent abstracts are apt to be a little out of date.

As regards its conferences, I can only speak personally regarding those held since the armistice under the able presidency of Monsieur Velghe, the principal officer of the Belgian Public Health Service. There can be no question of the great practical value of these meetings, which has been proved, especially in connexion with the information interchanged and collected regarding the influenza pandemic, the present prevalence of encephalitis lethargica, the practical measures adopted to deal with venereal disease in different countries, and other matters. At the recent sessions, moreover, since the question was raised of providing for international health work on a larger scale and with more important machinery and larger funds, the delegates to the Office International have most materially advanced the consideration of a number of international questions to which I have already alluded, in particular the revision of the sanitary conventions and the proposed agreement to deal with venereal disease at seaports. In general it may be said that the delegates are precisely the men who would be selected by their Governments to represent them on any important international health question involving official action. The British Empire representation has recently been a strong one, as we have been fortunate in including representatives who are either leading public health officers in their respective British countries or have recently held such appointments.

Continuance and Incorporation of the Office International d'Hygiène Publique.

All those who have had to consider the way in which the health obligations in the League of Nations Covenant should be met and the nature of the problems before us have agreed that continuity should be secured and that the League would benefit by the experience and personnel of the Office International. Moreover, the Covenant has made it impossible for the Office International to develop in any useful direction by continuing an independent existence. This view by general consent and goodwill has now been adopted in the resolutions of the Assembly. The International Health Organisation is to be based on the Office International, which will in future have additional representatives from certain countries, like Japan, which are members of the League, but have not previously sent delegates to the Office. The League of Nations system of General Assembly, Council, and Secretariat has, broadly speaking, been followed in the subsequent arrangements. The Committee of the Office International, enlarged as indicated, becomes the equivalent of the General Assembly of all the nations. In the capacity of the General Committee of the International Health Organisation, it will continue to meet in Paris once or twice a year and retain its offices there. Its work will be carried on under its former constitution with such modifications as may be necessary to fulfil its further duties of advising the League. It will, however, be provided with a Standing Committee, roughly analogous to the Council of the League, which can meet in the intervals of the general meetings, appoint subcommittees and arrange for export inquiries; and it is to have a medical secretary and International Health Bureau at Geneva. The Assembly has allotted some £17,000 to the organisation for its first year, and it will continue to receive also the relatively small contributions from the signatory Governments which have hitherto supported the Office International.

Central Bureaucracy.

It may be noted with satisfaction that the official requirements for the working of the organisation laid down by the resolutions of the Assembly are, as international arrangements go, relatively simple. Much latitude has been given to the organisation to work out its own procedure as circumstances dictate. It is true that the system could have been very considerably simplified if we could have envisaged the appointment at Geneva of a superman for international health, possessing a large central office and staff, in position to prosecute inquiries in and demand information from the respective national health offices of the world, and to lay down international rules with which those national offices would comply. But no public health department in any country would be prepared to accept this dictation at the hands of any man, however distinguished. And if they were so prepared, no Government would be disposed to accept such a system. There were, indeed, many indications at Geneva of the intrinsic objection held by the representatives of the constituent nations of the League to any international procedure which suggested servitude to a central bureaucracy.

Common action among nations (for purposes such as we are considering) must depend upon the fullest discussion and consideration of the position of each country—even in such technical matters as quarantine laws, or death certification, or standards of ships' hygiene—and on willing agreement after such discussion. This means a slow rate of progress, of course, but it is necessary, and the originators of the health scheme have recognised it by making the meetings of representatives of all countries—i.e., the General Committee which continues the Office International d'Hygiène Publique—the real basis of the organisation: the new additions of standing committees and secretariat being the necessary auxiliaries to its efficient work. Any permanent headquarter officers who are appointed will need ability and experience in handling the subjects for inquiry and giving effect to the decision of the international representative body. But these after all are qualities exercised every day by medical officers in every important public health service, no more difficult or complicated than managing the health matters of a great municipality. They require good men, but not Napoleons.

THE OPPORTUNITY OF STATE PUBLIC HEALTH DEPARTMENTS.

It is permissible, I think, to conclude from this short survey that the International Health Organisation of the League of Nations will have before it on its formation a number of important practical matters of hygiene which are ripe for concerted government action, and call for an organised action by the official public health services of the civilised Governments of the world; that it will start on these subjects with the advantage of continuing the collaboration which has been obtained in the more limited sphere of the Office International d'Hygiène Publique under the Rome Convention of 1907, and of the preliminary work already done by that Office in several of the subjects awaiting settlement; and, finally, that the means and funds placed at the disposal of the organisation for meetings, inquiries, and draft agreements, promise to be satisfactory for the purpose.

I think this is quite enough to enable us to wish it a good start and every success on an admittedly difficult road, without prophesying for it a future extension in many other directions which can be suggested, or must even be anticipated, if the League of Nations increases its authority and influence, or if, whether through the League of Nations or in any other way, the countries of the world demand in future a much closer degree of international coöperation for objects such as public health. In any event the outlook for the organisation will largely depend on the willingness of the public health services in the different countries to make use of the present opportunity, and the support which these services in so doing receive from their Governments. One satisfactory part of the scheme adopted by the Assembly should be noted. The League of Nations will have its budget control, a certain power of withholding sanction to action proposed by the organisation, the right of sanctioning appointments of paid officers and of receiving reports, but, apart from these, the general working of the organisation, the regulation of its internal affairs, and the appointment of staff is left entirely to the organisation itself—in other words, to the public health men themselves.

Here is the opportunity of the public health officers, and it is to be hoped that they will not only be willing to seize it—this may be taken for granted—but will find themselves in position to give necessary time and labour to ensure its success, and be supported in their respective countries by departments which realise that practical international action and agreement is a fundamental part of any good State public health policy. As regards countries within or associated with the British Empire we have every reason to anticipate that this support will be given, in the Dominions, India and Egypt, as well as at home.

As I have said so much about this new organisation, it is only fitting that I should conclude by reference to a few of those to whom the fact that it has now been established by resolution of the Assembly is mainly due. These preliminary steps have not been achieved without labour. Many of us have worked hard at the matter at the Ministry of Health, and much is due to our French colleagues, Mons. Brisac and Dr. Léon Bernard, to Dr. Lutrario (the chief of the public health service in Italy), to Dr. Hugh Cumming (now head of the United States Public Health Service), to the Japanese representation, and especially to the principal officers of the secretariat of the League of Nations and of the Office International d'Hygiène Publique—all of whom originally took part in working out the main lines in 1919 at the London Conference under the guidance of Lord Astor. At the Assembly itself the scheme was fortunate in having such able exponents as the Rt. Hon. G. L. Barnes, M.P., one of the delegates for Great Britain, and Mons. Gabriel Hanotaux for France; their statesmanship and industry piloted it past the not inconsiderable difficulties inherent in the first establishment of international technical organisations by the League, and in the official requirement that resolutions of the Assembly can only be obtained by a unanimous vote of all the nations represented.

THE CEREBRO-SPINAL FLUID IN DISSEMINATED SCLEROSIS.

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THE following is a résumé of a preliminary report to the Medical Research Council on work done in an experimental investigation into the ætiology of disseminated sclerosis. The first part only of the work is referred to in this paper; it consists of observations upon the cerebro-spinal fluid in this disease.

Method of Examination.

The method employed in the examination of the cerebro-spinal fluid was as follows:—

(1) *Cell count.*—A Fuchs-Rosenthal chamber was employed and the enumeration carried out immediately on the withdrawal of the cerebro-spinal fluid.

(2) *Test for protein content.*—This was carried out by the Ross-Jones method, for details of which the reader is referred to the literature on the subject.

(3) *Wassermann reactions* of the blood and cerebro-spinal fluid before and during treatment were carried out in Professor C. H. Browning's laboratory, Glasgow University, by his assistant, Dr. Ernest M. Dunlop.

(4) *Dark-ground illumination.*—In every case the cerebro-spinal fluid was centrifugalised and examined by this method.

(5) *Colloidal gold reaction.*—The work of Zsigmondy, who found that certain colloids exerted definite degrees of protective action on the precipitation of gold suspensions by sodium chloride, suggested to Lange the application of this test to the protein of cerebro-spinal fluid. He found that normal cerebro-spinal fluid when diluted with a 0·4 per cent. solution of sodium chloride does not affect the solution of colloidal gold, whilst the fluid in disease of the central nervous system often produces characteristic changes. In preparing the gold solution and in carrying out the test it was found that the precautions recommended by J. Cruickshank[1] to ensure absolute cleanliness were essential for success, and that disregard of these precautions was likely to entail failure.

The method of carrying out the test is as follows[1]:—

Eleven perfectly clean and dry test-tubes are placed in a rack. To the first 0·9 c.cm. of a 0·4 per cent. solution of sodium chloride is added, and to each of the others 0·5 c.cm. of the cerebro-spinal fluid is now added and shaken up. Of the resulting mixture 0·5 c.cm. is withdrawn and added to the next tube in the series. This in turn is shaken up and 0·5 c.cm. withdrawn and added to the next tube, and this process is repeated right down the series. This gives a dilution of cerebro-spinal fluid of 1:10, 1:20, 1:40, &c. To each tube 2·5 c.cm. of colloidal gold solution are added, and the colour changes, if any, are noted in an hour, and again in 24 hours. The colloidal gold must be neutral in reaction, perfectly clear by transmitted and by reflected light. In the flask it is a deep red colour. In a test-tube it appears pink. The final criterion of the suitability of a specimen of colloidal gold for testing cerebro-spinal fluid is: (*a*) That it should give a paretic reaction (vid. inf.) with the cerebro-spinal fluid from a case of general paralysis; (*b*) that it should show no change with a normal fluid; (*c*) that 5 c.cm. should be completely precipitated in one hour by 1·7 c.cm. of a 1 per cent. solution of sodium chloride; and (*d*) that it should be neutral to 1 per cent. alizarin red in 5 per cent. alcohol.[2 3 4]

Types of Reaction.

Various types of reaction may occur. These fall into three groups—viz., paretic, luetic, and meningitic. These names were employed before the test had been widely applied in diseases other than syphilis. They must be accepted as arbitrary terms and not necessarily carrying any ætiological significance as their name might imply.

(1) *Paretic type of reaction.*—Complete precipitation of gold occurs in the first 3–6 tubes on standing for 24 hours, and the remaining tubes down to the 8th show varying degrees of purple.

(2) *Luetic type of reaction.*—Varying degrees of purple are found from the 2nd to the 6th or 7th tubes, but complete precipitation does not occur.

(3) *Meningitic type of reaction.*—The colour changes occur further down in the series, tubes 7 and 8 being chiefly affected, the tubes to the left of the middle line usually remaining unaltered.

The different colour changes occurring in the individual tubes may be indicated by numbers, viz.:—

5 represents a tube *in which complete coagulation* and precipitation of gold has occurred, leaving the supernatant fluid quite colourless.
4 represents a greyish-blue colour.
3 ,, deep blue ,,
2 ,, reddish-purple ,,
1 ,, bluish-red ,,
0 ,, tube without colour change.

Examination of the Cerebro-spinal Fluid in Disseminated Sclerosis.

Forty-one cases of disseminated sclerosis were examined. All save two gave a luetic or paretic type of reaction to colloidal gold. It is interesting to note that these two cases had been clinically diagnosed as arterio-sclerosis simulating disseminated sclerosis, in one case by Professor T. K. Monro, in the other by myself. Five cases gave a paretic curve, the remainder produced a luetic reaction. The average cell count was five, the type of cell a small lymphocyte. In every case the cerebro-spinal fluid was centrifugalised and examined by dark-ground illumination. In two cases doubtful, actively motile spirochætes were observed. Attempts to stain them were unsuccessful, and the result was accordingly regarded as negative. In all the other cases of this series dark-ground illumination yielded no result.

Protein content.—The Ross-Jones test was positive in 7 cases, or 17 per cent.

Wassermann reaction.—Positive in 9 cases. Positive in blood and cerebro-spinal fluid in 4 cases; positive in blood and negative in cerebro-spinal fluid in 2 cases; positive in cerebro-spinal fluid and negative in blood in 2 cases. In 1 case it was positive in cerebro-spinal fluid and the blood was not examined.

Diagnosis of Disseminated Sclerosis.

The recognition of this disease presents little difficulty if the diagnosis be limited to cases in which we can demonstrate spastic paraplegia, intention tremor, scanning speech, primary optic atrophy and nystagmus. By such a limitation, however, we would recognise only what is in reality the terminal stage of the disease, a stage which it has required months or years to reach and which possibly by no means all cases attain. Most clinicians would assent to a diagnosis of disseminated sclerosis in a case where all the above-mentioned signs were present with the exception of, say, optic atrophy or nystagmus. The question therefore arises as to how many and which of the cardinal signs are necessary to enable us to establish a diagnosis. Great stress has been laid by most writers on the extensor plantar reflex, but the only sign which I have found constantly present in the above series is the absence of the abdominal reflex, either unilaterally or bilaterally. It has therefore been considered advisable for the objects of this research to apply a provisional diagnosis of disseminated sclerosis to the following groups of cases:—

(1) Cases showing spastic paraplegia, absent abdominal reflexes, and one or more of the other classical signs of disseminated sclerosis. Thirty-three cases fall into this group.

(2) The primary lateral sclerosis or spastic paraplegia group with a negative Wassermann reaction, a positive colloidal gold reaction, absent abdominal reflexes, and the absence of any sign of other organic disease. Six cases fall into this group.

(3) Cases of spastic monoplegia giving a luetic curve to colloidal gold in the cerebro-spinal fluid, with a negative Wassermann reaction and no signs of other organic disease. Two cases in the series fall under this heading, and it is interesting to note that one of these was subsequently admitted with primary optic atrophy.

(4) Cases of primary optic atrophy with a negative Wassermann reaction in blood and cerebro-spinal fluid. Of these so far I have had no cases, but it is desired to emphasise the necessity of investigating carefully cases of so-called "idiopathic" optic atrophy. The colloidal gold reaction of such cases should be studied and the question of treatment carefully considered (vid. inf.).

Ætiology of Disseminated Sclerosis.

Until quite recently nothing has been known of the ætiology of this disease, which has always been regarded as incurable and fatal.[5] The statement is made by most writers on the subject that disseminated sclerosis is not due to syphilis, though this is denied by Jacobsohn.[6] There is no doubt that the great weight of clinical evidence is against a syphilitic basis for the disease. The bulk of the cases of disseminated sclerosis appear to arise in young and otherwise healthy adults with no signs or history of specific infection, congenital or acquired. The occasional occurrence of a positive Wassermann reaction may possibly be due to coexistence of the two diseases.

There have recently been circumstantial claims by continental writers to have reproduced disseminated sclerosis experimentally, and to have *demonstrated* a spirochætosis in the inoculated animals (Kuhn and Steiner[7]), and Siemerling[8] has discovered spirochætes in the brain of a patient who had died of the disease. Still more recently G. Schuster[9] has found fine spirochætes in the lower layers of the cortex in a case of disseminated sclerosis. There are, in addition, certain clinical phenomena which appear to me to be of interest when considered in the light of a spirochætal origin of this disease. In both neuro-syphilis and disseminated sclerosis primary optic atrophy occurs, and though the type of lesion is different in the two diseases the site of selection of the virus is the same. In both diseases transient ocular palsies, as shown by a history of diplopia, occur. In tabes this frequently goes on to permanent external ocular palsy, a phenomenon rarer in disseminated sclerosis, but present in two cases of my series. Head and Fearnside,[10] in their research on syphilis of the nervous system, state:—

> "*Of all the* root areas which appear in syphilis those from the seventh thoracic to the first lumbar are the most frequent. These roots carry the afferent paths from the liver, kidney, suprarenal, and testicle, organs above all others liable to be crowded with spirochætes."

With reference to this fact I would desire to emphasise the constant absence of the abdominal reflex in disseminated sclerosis; this reflex arises from segments ninth thoracic to first lumbar.

In view of all these facts it would appear that the time has now arrived when *spirochæticidal treatment* should be given a fair trial in disseminated sclerosis, more especially as recent research has proved that organic arsenical preparations reach the cerebro-spinal fluid in fair concentration.[11] Salvarsan was empirically employed with success in rat-bite fever before the discovery of the causative leptospira.

The form of treatment adopted in this investigation was on modern antispecific lines, and was commenced in December, 1919. The treatment comprised routine intravenous administration of novarsenobillon extending up to 20 or more injections. This was combined with the oral administration of biniodide of mercury and more recently with intramuscular injections of intramine. Severe reactions were rarely noted. Hyoscine was used with beneficial results in cases where the tremors and general nervousness were marked.

Eighteen cases coming under Group 1 have undergone complete courses of treatment. Nine have shown no improvement whatever. In the other nine cases some definite improvement has been noted. Of these one case (vid. inf.) showed apparent recovery, but this may have been due to one of the natural remissions of the disease which render the study of disseminated sclerosis so baffling a problem. Decrease in the spasticity of the legs, regain of bladder control where this has been previously partially lost, and increase in muscular power were the points chiefly noted. In Group 2 three cases were treated and all appeared greatly to benefit. These cases on admission had markedly spastic gait and could walk only with the help of two sticks. On discharge they could walk without support and their gait was apparently normal. One case in Group 3 was treated and showed great improvement as regards spasticity, gait, and muscular power, accompanied by a slight gain in the circumference of the limb. Patients subsequently re-examined have frequently complained of symptoms similar to the phenomena of intermittent claudication. They state that they can walk easily a certain distance, but complain of weakness and spasticity of the legs coming on suddenly and preventing them from going further without rest.

Modifications of the Colloidal Gold Reaction.

In 16 cases under treatment repeated examinations have been made of the cerebro-spinal fluid. In all modifications of the colloidal gold reaction have been found to occur. These may be summarised as follows. A paretic curve becomes luetic under neosalvarsan administration. The discoloration in the tubes giving a luetic curve becomes fainter, and the number of tubes involved becomes progressively less. In one case a completely negative result was ultimately obtained. Two examples of actual readings are appended:—

(1) C. R. Colloidal gold reading before treatment...	5 5 4 4 3 2 1 0 0 0 0
19 injections of 0·45 gr. N.A.B. were given; final colloidal gold reading as follows	3 4 4 4 1 0 0 0 0 0 0
(2) J. McM. Colloidal gold reading before treatment...	2 2 3 3 2 1 0 0 0 0 0
15 injections of 0·45 gr. N.A.B. were given; final colloidal gold reading	0 1 2 1 0 0 0 0 0 0 0

It is of interest to note that in the course of this investigation similar modifications of the colloidal gold reaction have been observed in a large series of cases of neuro-syphilis under neosalvarsan treatment.

The case referred to above, in which apparent recovery resulted, is as follows.

G. H., aged 23. Pensioner.—Admitted 12/1/20, complaining of stiffness and weakness of legs of two and a half years' duration.

History of onset: In the summer of 1917 he was capsized in a whaler and immersed for 10 minutes in the sea in cold weather. A few weeks later he complained of stiffness and weakness of the right leg on route marching. His previous health had been uniformly good, and his family history contained no fact of note. He stated he had never suffered from venereal disease, was moderate in his consumption of tobacco, and an abstainer from alcohol.

Condition on admission: A well-developed, well-nourished man of 23. His chief complaint was weakness and stiffness of his legs.

Central nervous system: Legs markedly spastic with considerable muscular weakness. Knee-jerks: right +++, left ++. Tendo Achillis jerks both +. Patellar clonus marked on right, could not be elicited on left. Plantar reflex left flexor, right doubtfully extensor. Epigastric and superficial abdominal reflexes absent. Arms: muscular power apparently unimpaired; supinator jerks +, other tendon reflexes normal. Organic reflexes normal. Eyes: pupils equal and react to light and accommodation. Consensual reaction present. Marked lateral nystagmus easily elicited; rotatory nystagmus present to a lesser degree; vertical nystagmus not elicited. O.E. left disc: distinct pallor of temporal half of disc; veins congested. Right disc: slight pallor of temporal half; nasal and inferior margins blurred.

Speech: No alteration from normal noted. Intention tremor present in both arms. Special senses: smell, taste, and hearing normal. No history of memory defect or other mental symptom. Sensory neurone: slight impairment of superficial tactile sensation over scattered areas in right leg; tactile sensation otherwise apparently normal. Pain and temperature sense normal. Muscle-joint sense normal. Stereognostic sense normal.

Cerebro-spinal fluid on admission: Fluid clear. Pressure normal. Cell count = 9. Ross-Jones test negative. Alcohol faint haze. Wassermann reaction: blood negative; c.s.f. negative.

Colloidal gold reaction: 2 3 3 3 3 1 0 0 0 0 0.

Treatment was commenced in February, 1920, and carried out on routine antispecific lines. It comprised 12 intravenous injections of 0·45 gr. N.A.B. given in series of four doses at seven-day intervals, with a period of two weeks between each series. In addition, mercurial inunction was carried out.

Colloidal gold reaction of cerebro-spinal fluid after treatment:—31/7/20: 0 0 0 0 0 0 0 0 0 0 0. (This is the only case in which a completely negative result has been obtained.)

Subsequent history: Patient subsequently reported for examination on 5/1/21. There was great improvement in his condition. The muscle tone of the legs was apparently normal. The gait appeared normal, and he stated he could walk a distance of about one and a half miles and would then suddenly complain of symptoms of fatigue and be unable to proceed further. There was very slight lateral nystagmus seen only on extreme deviation to the left and confined chiefly to the left eye. A very slight tremor at the end of a voluntary act could be elicited in the right hand only. The left abdominal reflex was weakly present and easily exhausted. The right was absent. No clonus could be elicited. The plantar reflexes were indefinite.

His general improvement was such that his pension had been stopped, and he had for several months been earning his living by continuous employment as an oil refiner—his pre-war occupation.

The following case is also of considerable interest:—

W. B., aged 22, patient of Dr. T. D. Laird, was sent into hospital 12/3/20 as a case of diabetes mellitus. He stated that his illness commenced in July, 1918, when he complained of thirst, progressive loss of weight, and marked weakness of both legs.

On admission: General nutrition fair; urine contained 3·5 per cent. sugar, urinary output 130 oz. The ferric chloride reaction was negative.

Central nervous system: Both legs markedly spastic. Knee-jerks ++. *Bilateral extensor plantar response.* Abdominal reflexes absent.

Organic reflexes: Patient gave history of occasional retention and incontinence of urine; bowel sphincter normal.

Eyes: Pupils equal and react normally. No external ocular palsy. No history of diplopia. No nystagmus. Optic fundi: O.E. discs paler than normal, and lamina cribrosa unduly distinct. Speech and special senses normal. No intention tremor.

Cerebro spinal fluid: 31/3/20. Fluid clear, pressure +. Cell count = 2. Type of cell small lymphocytes. Ross-Jones, alcohol and Nonne Apelt tests negative. Wassermann reaction of cerebro-spinal fluid negative, of blood negative.

Colloidal gold reaction: 2 3 3 3 2 2 1 0 0 0 0 (luetic reaction).

Progress of case: Starvation diet for 24 hours produced a fall in the sugar percentage from 3·5 to 0·45, and a week later, after 24 hours' starvation, the urine gave a negative reaction for sugar. On normal ward diet the sugar percentage varied from 3·5 to 5. In view of the spastic paraplegia, absence of abdominal reflexes, sphincter involvement, and early optic atrophy, a provisional diagnosis of disseminated sclerosis involving the fourth ventricle was made, and the patient was treated by mercurial inunction and intravenous injections of novarsenobillon (20 in all) and Graham's diabetic diet.

Result: A gradual but almost uninterrupted recovery was made. The cerebro-spinal fluid was subsequently re-examined on two occasions. The average cell count was 1, the protein tests and Wassermann reaction remained negative. Slight modification of the colloidal gold reaction was observed. Prior to treatment tubes 1–7 showed colour alterations (vid. sup.). On the conclusion of treatment only tubes 1–5 showed a reaction and the colour alterations were less marked, the readings being as follows: 1 2 2 2 1 0 0 0 0 0 0.

Clinical result: The sugar completely disappeared from the urine. The legs became much less spastic and the muscular power improved. The plantar reflexes were no longer constantly extensor. The abdominal reflexes remained absent.

On discharge (30/11/20) the patient could walk with an apparently normal gait without the help of a stick, and the urine had been free from sugar for over a month. I was subsequently informed (8/1/21) by Dr. Laird that the urine was still constantly free from sugar, and the patient stated that he was enjoying a practically normal diet and appeared to have regained his health.

Summary and Conclusion.

(1) The cerebro-spinal fluid picture in disseminated sclerosis is as follows: a normal cell count, a negative Wassermann reaction, a luetic or paretic reaction to colloidal gold, and in most cases (83 per cent.) a normal protein content.

(2) The absence of a positive Wassermann reaction in the great majority of cases and the absence of pleocytosis are in accordance with the view that this disease is not of syphilitic origin.

(3) On the supposition that the origin might be spirochætal treatment was carried out by spirochæticidal drugs. In practically every case under treatment modifications towards a negative result of the colloidal gold reaction were noted.

(4) As regards clinical effects of such treatment, no improvement resulted in advanced cases of the disease, but prolonged treatment produced amelioration of early cases, and in one or two instances the results were marked.

(5) With reference to early diagnosis, emphasis is laid on the evidence of the cerebro-spinal fluid picture and the absence of the abdominal reflex.

I am indebted to the Medical Research Council for defrayment of the expenses of this investigation. I also desire to express my thanks to Dr. Wilfrid H. Scott for help in connexion with the clinical work, and to Mr. J. A. W. McCluskie for assistance in the colloidal gold technique.

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ROYAL SURGICAL AID SOCIETY.—At the meeting of the committee held on Feb. 15th Mr. Samuel Watson, who has just retired from the offices of treasurer and chairman of committee, was presented with an illuminated address, recognising his services to the society. He has served it for 51 years, having joined first as a member of the committee in 1869, becoming a trustee in 1895, and having been chairman and treasurer since 1902.

ANALYSIS OF THE GASTRIC CONTENTS
OBTAINED BY THE FRACTIONAL METHOD.

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REPORT TO THE MEDICAL RESEARCH COUNCIL.

THE secretory and motor activities of the stomach are now being studied by a considerable number of investigators stimulated by the possibilities of the "fractional method" introduced by Rehfuss and Hawk.[1] It is desirable that the results obtained by different workers should be capable of interpretation by others in the light of their own findings. With the large number of methods of analysis available it is unfortunate that a standard technique has not yet been uniformly adopted. The purpose of this paper is to suggest simple yet accurate methods of analysis and to invite criticisms and suggestions from other workers in order to secure uniformity of analysis and expression of results.

The following points are discussed below: (1) the nature of the meal; (2) the method of expressing results; (3) the determination of "free" acidity; (4) the determination of "total" acidity; (5) the determination of total and mineral chlorides, and thus of the active and combined hydrochloric acid; (6) the determination of the enzymes present.

Nature of the Meal.

The end-points of the titrations are much sharper if a *colourless* filtrate can be obtained. For this reason in particular we urge the adoption of the oatmeal test breakfast as a standard. It is readily prepared according to the method suggested by J. A. Ryle[2]:—

> "Mix two tablespoonsful of breakfast oatmeal with one quart of water. Boil slowly down to one pint. Strain through muslin. Add salt to taste and give warm."

We do not recommend the addition of the salt, as the content of sodium chloride may well prove to be of great importance in connexion with the diagnosis of carcinoma. It is our custom to get the patient to swallow the tube ten minutes before taking the meal. This allows time for the subject to recover his composure. The amount withdrawn need not exceed 7 to 10 c.cm. at each interval, but it is advisable to withdraw 12 to 15 c.cm. at the end of the first hour if an estimation of total and mineral chlorides be desired. The best filter paper in our experience is Whatman's No. 1, 9 cm. diameter. Notes should be made as to the presence of blood, mucus, and bile.

Method of Expressing Results.

The usual method of expressing these in terms of c.cm. of 0·1 normal per cent. is most convenient, and, in our opinion, should be extended to the analysis of total and mineral chlorides as well as to those of free and total acid.

Determination of "Free" Acidity.

The first point to consider in this connexion is what we mean by "free hydrochloric acid." It is usually regarded as that part of the hydrochloric acid which is not combined with protein or any other potential base, and which is ionised to the same extent as it would be in simple aqueous solution; that is to say, that if we have "free" HCl present in gastric juice to the extent of 40 c.cm. of 0·1 N. HCl per cent., then by diluting 40 c.cm. of 0·1 N. HCl to 100 c.cm. with distilled water we shall obtain a solution of the same hydrogen-ion concentration as that of the gastric juice. If that is so, then the problem of the estimation of the free HCl of a specimen is practically the same as that of the determination of its hydrogen-ion concentration. For the effect of organic acids and of hydrochloric acid combined with protein on the hydrogen-ion concentration of the solution when the acidity is at all high is practically negligible.

It is probable that the usual method of determining "free" acidity is to add Töpfer's indicator (dimethylaminoazobenzene) to a measured sample and to titrate with standard (0·1 N.) soda until the pink tint disappears. It is then assumed that the soda added has only neutralised the "free" acid, and does not react with organic acids or with combined hydrochloric acid. This assumption is quite unwarranted. Töpfer's indicator changes from a pink to a yellow between the ranges of pH = 2·9 to pH = 4·0, and it is probable that most workers add soda until the reaction is about pH = 3·3, corresponding to a hydrogen-ion concentration of $5{\cdot}10^{-4}$.

Now suppose we are titrating a fluid from the stomach which actually has 50 c.cm. per cent. of free 0·1 N. HCl and which also contains a certain amount of hydrochloric combined with the peptones. If our definition is correct, the hydrogen-ion concentration will be the same as that of a simple solution of 50 c.cm. of 0·1 N. HCl in 100 c.cm.—i.e., the pH is about 1·33. If the gastric fluid be titrated with soda this does actually combine with the free hydrochloric acid until a point is reached when there is about 10 c.cm. of 0·1 N. free HCl present in 100 c.cm. of the mixture and the pH is about 2. But from this point onwards in the titration anomalous results are obtained. The power of the protein to combine with hydrochloric acid decreases as the hydrogen-ion concentration is lessened and we approach nearer to the iso-electric point of the protein. This naturally varies with the nature of the meal, the activity of the pepsin, and the duration of digestion, but is probably between pH = 4 and pH = 6. Also the mass of the free hydrochloric is now relatively small compared to that of the combined hydrochloric acid, so that from pH = 2 onwards the soda added partially neutralises the free HCl and partially the combined HCl. It follows that the result of titrating to Töpfer's indicator is a very imperfect guide of the actual amount of free HCl originally present. The higher the concentration of peptone the greater is the error, which may be as great as 40 per cent.

Günzberg's method of titrating with soda or by diluting with water until a reaction with a mixture of phloroglucin and vanillin is not obtained does seem to give very reliable results, but the method is tedious and difficult to apply when only about 2 c.cm. of the fluid can be spared for the analysis. The best indicator for the purpose is undoubtedly thymolsulphone-phthalein ("thymol-blue"), which was introduced by W. M. Clark and H. A. Lubs.[3] This has a double range. From pH. 1·2 to 2·8 it changes from red to yellow; it remains yellow from pH. 2·8 to 8·0 and from pH. 8·0 to 9·6 it changes from a green to a deep blue. Its great advantage is that it can be used with the same sample of gastric juice, first for the titration of free hydrochloric acid and then, by adding alkali until it goes blue, for the determination of total acidity. Clark and Lubs mention its applicability to stomach contents, but the method of using it was, we believe, first described by one of us.[4] The method recommended then was to titrate to pH. = 2·6, against a standard phthalate buffer solution, using the comparator described by S. W. Cole and H. Onslow.[5] This method has been used regularly by the students at the Biochemical Laboratory, Cambridge, during the past year, and by us in our earlier investigations of clinical material at Charing Cross Hospital.

A method involving the use of the same indicator was described last May by A. T. Shohl and J. H. King.[6] They determine the hydrogen-ion *concentration by the colorimetric* method against a series of solutions of known pH. These are prepared from 0·1 N. HCl and 0·1 N. KCl, according to the directions of Clark and Lubs.[3] From the pH thus found, the normality of the free hydrochloric acid present can be ascertained and so the number of c.cm. of 0·1 N. HCl per cent.

Our objections to the method are that it is not sufficiently accurate. The sensitivity of the indicator is by no means constant over the whole range. At pH = 1·4 the change in tint corresponding to a change of 0·1 pH is by no means easy to see, and yet this corresponds to a difference of about 10 c.cm. of 0·1 N. NaOH per cent. It is true that they recommend dilution with an equal volume of water *if the* sample be more acid than pH = 1·6, but by this procedure the probable error is multiplied by 2 or even by 4 and is still too large. Further, the effect of such a dilution on the electrolytical and hydrolytical dissociation of combined hydrochloric acid is, at present, largely a matter of conjecture. At the same time, we are of the opinion that the method is workable, and if dilution be made to the most sensitive point of the indicator good results are obtained.

As stated above, we originally titrated the gastric contents to a reaction of pH = 2·6, using thymol-blue as the indicator and marking the end-point by comparison with the colour of a phthalate – HCl buffer mixture of pH = 2·6 similarly treated with thymol-blue. The results obtained on mixtures of commercial peptone and *hydrochloric* acid when compared with those obtained by Günzberg's method were so close that we seemed justified in using it. We now find that the agreement was more or less accidental. We were using a very low content of peptone (0·2 per cent.) and titrating with a very dilute soda (0·03 N.). We failed to appreciate the significance of the considerable increase in volume of fluid, and made no allowance for it in our calculation. When the percentage of peptone is increased to what is normally found in the stomach contents the error is appreciable and is always such that the amount of free HCl apparently found by titration to pH = 2·6 is greater than that found by Günzberg's method.

The result of titrating mixtures of peptone and hydrochloric acid by different methods is presented in the table, which is only one from a series of similar experiments. In the case of the thymol-blue titrations 5 c.cm. of the various mixtures were treated with thymol-blue and titrated with 0·1 N. soda containing thymol-blue and prepared according to the directions given below. This was added until the tint of the mixture was judged to be the same as that of a solution of hydrochloric acid of known strength, also containing the same proportion of the indicator. The calculation of results is as follows: suppose 5 c.cm. of the mixture require x c.cm. of the 0·1 N. soda to bring the reaction to that of 0·01 N. HCl. Then 100 c.cm. would require 20 x c.cm. of 0·1 N. soda. The total volume is (100 + 20 x) c.cm., and since 100 c.cm. of 0·01 N. HCl requires 10 c.cm. of 0·1 N. soda to neutralise it then (100 + 20 x) c.cm. requires 10 + 2 x c.cm. of soda. So the total amount of 0·1 N. soda required for 100 c.cm. of the original solution is 10 + 22 x c.cm. and the free HCl is expressed as (10 + 22 x) c.cm. of 0·1 N. HCl per cent. Similar calculations hold good for other end points in this series. The figures under "Günzberg" and "Töpfer" were obtained by the usual technique of titration with 0·1 N. soda. "Total" acidity was obtained by titration with 0·1 N. soda containing thymol-blue, as described below:—

End-point of titration in c.cm. of 0·1 N. HCl per cent.	Thymol-blue.							Günzberg	Töpfer	Total acidity.
	30	25	20	15	10	5	2·5			
Corresponding pH	1·56	1·64	1·74	1·86	2·0	2·3	2·6	–	–	–
50 c.cm. 0·1 N. HCl—										
+ 50 c.cm. of water.	51	50	51	50	50	50	50	51	50	52
+ 50 c.cm. 0·4 peptone	45·5	47·5	45·5	45	44	45	45·5	44	49	53
+ 50 c.cm. 0·8 ..	38	39	38·5	40	38·5	40·5	42·5	39	47·2	55
+ 50 c.cm. 1·2 ..	32	33	31	32	32	34·5	37	32	44·6	58
+ 50 c.cm. 1·6 ..	—	—	25	27	27·5	30	24	27	42	60

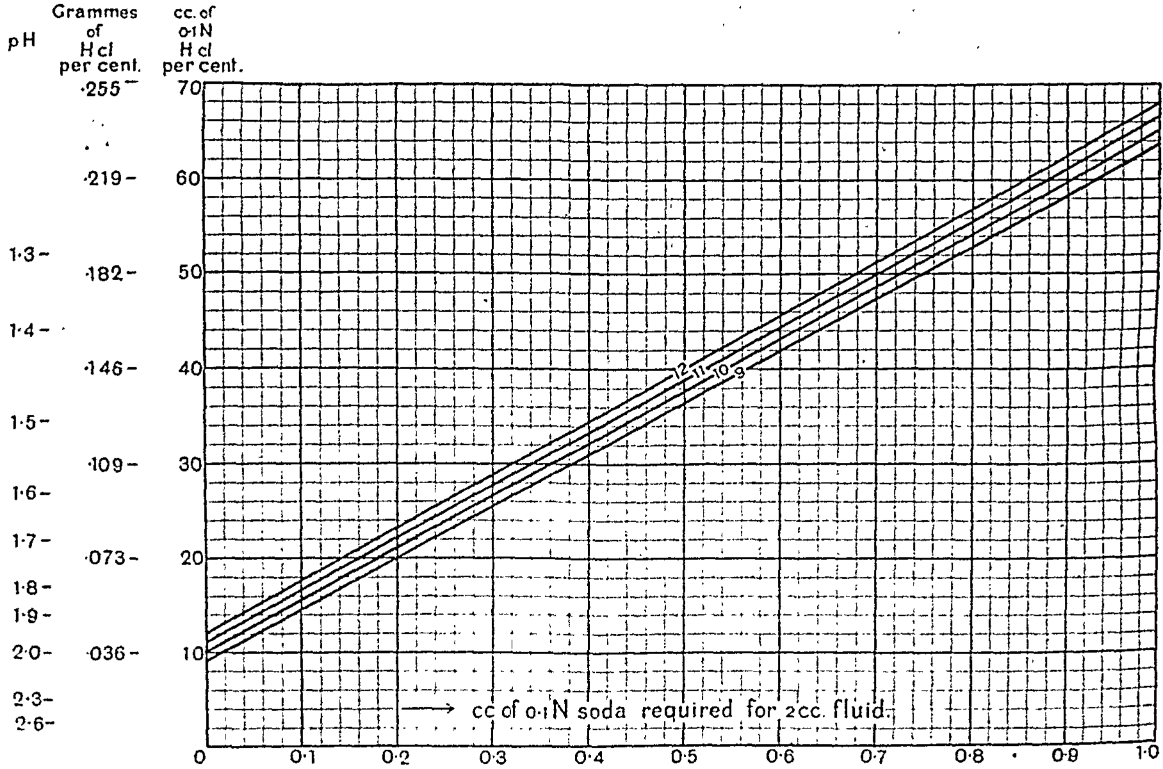

Chart for determination of free HCl.

It will be seen that the results of the thymol-blue titrations are fairly constant until pH = 2 is reached, but that further additions of soda are no measure of the amount of free HCl present, especially in the presence of any considerable amount of peptone. Töpfer's method is seen to give much too high a figure, the error being 11 per cent. in the presence of 0·2 per cent. peptone and 55 per cent. in the presence of 0·8 per cent. peptone. Günzberg's method gives astonishingly good results, which is in agreement with those who have compared it with the electrical method. Why this should be so is not very clear. Probably the increased concentration of peptones, &c., that takes place on evaporation with the reagent results in more of the HCl binding with the protein. So that a solution which in the cold has a hydrogen-ion concentration higher than that required for a positive reaction fails to give the test on evaporation.

The technique we have finally adopted is to treat 2 c.cm. of the clear filtrate with thymol-blue, and to titrate it with 0·1 N. soda containing thymol-blue from a microburette until the colour is the same as that of one of a series of standard solutions of hydrochloric acid which have been treated with the same proportion of the indicator. Knowing the volume of soda that has been used to bring the reaction to a given point, the original concentration of free acid is determined by calculation or from a curve. The end-points we have chosen are those of 0·012, 0·011, 0·010, and 0·009 N. HCl. These are selected from the fact that the indicator is very sensitive over this range, and that by titrating up to this point one gets a real measure of the free hydrochloric acid. Should the concentration of free HCl be less than 9 c.cm. of 0·1 N. per cent., subsidiary standards are readily prepared by dilution of those ready to hand. A further advantage of the method is that the same sample is subsequently titrated with the same soda for the estimation of total acidity.

Solutions and Apparatus Required.

(1) *Four Standard Acids*, 0·012 to 0·009 N. Measure 12, 11, 10 and 9 c.cm. respectively of 0·1 N. HCl into four labelled 100 c.cm. measuring flasks. Make the volumes up to the marks with distilled water and mix well.

(2) *Thymol-blue*, 0·1 per cent. aqueous solution. A stock 1·2 per cent. solution of the mono-sodium salt can be purchased. 10 c.cm. of this are diluted with 100 c.cm. of

distilled water and the colour noted. It should be a reddish orange. If it is blue, decinormal sulphuric acid should be cautiously added until the desired tint is obtained, and the volume then made up to 120 c.cm. The diluted solution is conveniently kept in a bottle fitted with a rubber cork through which passes a Dreyer's dropping pipette which is fitted with a rubber teat. In measuring the indicator it is essential to hold the pipette strictly vertical, and not to allow the drops to fall more rapidly than one per second.

(3) *Decinormal Soda containing Thymol-blue.*—For the estimation of total acidity it is desirable to work with CO_2 – free soda, which can be prepared according to the directions of Clark and Lubs.[8] A full account will be found in S. W. Cole's "Practical Physiological Chemistry."[7] If this is not available ordinary standard soda can be used. It is perfectly satisfactory for free HCl, but gives a rather evanescent end-point for total acidity. A stock solution of 0·2 N. is most convenient. Measure 25 c.cm. of this into a stoppered 50 c.cm. volumetric flask, add 50 drops of the 0·1 per cent. thymol-blue, and make up to the mark with cold, recently boiled, distilled water. Mix thoroughly and store in a dark cool cupboard when not in use.

(4) *A 2 c.cm. microburette* that is filled by suction has been designed by one of us (S. W. C.) and can be obtained from Messrs. Baird and Tatlock.

(5) *Test-tubes of the Same Internal Diameter.*—We use tubes 5 × ⅝ in., which are calibrated by noting the level reached after the addition of 10 c.cm. of water.

Method: Measure 3 c.cm. of the standard acids into four of the tubes, labelled 12, 11, 10, and 9 respectively. To each add three drops of the thymol-blue. Measure 2 c.cm. of the clear filtered gastric contents into another tube by means of an Ostwald pipette. Add two drops of the indicator. If any appreciable amount of free HCl is present a bright carmine colour is obtained. Titrate with the 0·1 N. NaOH until the colour is very slightly lighter than the "12" acid. Match the colour exactly with one of the remaining tubes, adding a trace more of the soda if necessary.

Calculation.—If x c.cm. be the volume of 0·1 N. soda required, the free HCl in c.cm. of 0·1 N. acid per cent. is 56 x + 12, 55·5 x + 11, 55 x + 10, and 54·5 x + 9 for the 12, 11, 10, and 9 tubes respectively.

These volumes are most conveniently read from the chart here given, which also shows the pH of the solution and the HCl in grammes per cent.

Should the free HCl be between 9 and 2·5 of 0·1 N. per cent., the amount is best found by diluting the standard acids with water, adding one drop of thymol-blue per c.cm. until the tint of the diluted acid is the same as that of the sample. The c.cm. of 0·1 N. acid per cent. is then readily determined by a simple calculation. Thus, if 3 c.cm. of the "9" acid + 2 c.cm. of distilled water matches the sample, then the acidity is 3/5 x 9 = 5·4.

Determination of "Total" Acidity.

The same 2 c.cm. sample of gastric fluid used for the estimation of free HCl is titrated with the 0·1 N. soda till the mixture turns blue. To obtain uniformity of results we titrate to a reaction of pH = 8·8. This can be prepared according to the directions of Clark and Lubs,[8] or can be purchased from Messrs. Baird and Tatlock or other agents. 3 c.cm. of this are measured into a tube similar to those previously used, and three drops of the indicator are added. The gastric fluid is then titrated with the 0·1 N. NaOH containing thymol-blue until the colour matches that of the standard. If the standard of pH = 8·8 is not available, the mixture should be titrated to a full blue. The calculation is obvious; the total volume of 0·1 N. soda used for the two titrations multiplied by 50 is the total acidity in terms of c.cm. of 0·1 N. acid per cent.

Determination of Total and Mineral Chlorides.

In the light of the work of G. Graham[9] the estimation of the ratio between active and mineral chlorides is of considerable importance in the diagnosis of carcinoma of the stomach. The time and attention required for the analysis is so great that it is not usually possible to attempt it on more than one or two fractions. As mentioned above, we usually withdraw rather more fluid at the 1 hour and 1¼ hour periods to give us a sufficient amount of material for analysis. The technique best adapted to the purpose is a modification of F. C. McLean and D. van Slyke's method,[10] for which the following reagents are required:—

(1) Standard silver nitrate 0·04 N. Dissolve 6·8 g. of pure fused silver nitrate in about 650 c.cm. of distilled water. Add 250 c.cm. of pure concentrated nitric acid (sp. gr. 1·42). Allow to stand for some time and then make the volume up to exactly one litre with distilled water—

1 c.cm. = 0·0046 g. HCl.

(2) Sodium citrate and nitrite mixture.

Crystalline sodium citrate ($Na_3C_6H_5O_7 + 5\frac{1}{2} H_2O$)	446 g.
Sodium nitrite	20 g.
Distilled water to make	1000 c.cm.

It is essential that the reagents be quite free from chlorides. We have obtained a few satisfactory samples of citrate, but the majority have to be recrystallised once or twice. The mixture is made by adding the solids to about 500 c.cm. of distilled water, dissolving by heating on the water-bath and making up to 1000 c.cm. with distilled water after cooling.

(3) Soluble starch 2 per cent. To 90 c.cm. of boiling distilled water add 2 g. of the starch suspended in 10 c.cm. of cold water. Stir and boil. Transfer to test-tubes, plug with cotton wool, and sterilise for 10 minutes in the steamer. A supply of the starch in good condition is thus always ready for use.

(4) A standardised solution of potassium iodide 0·02 N: Dissolve 3 g. of pure potassium iodide in distilled water and make the volume up to 1 litre. Mix thoroughly. Standardise this as follows. Measure 10 c.cm. of the silver solution into a small flask. Add 10 c.cm. of the citrate mixture and about 1 c.cm. of the soluble starch. Titrate with the iodide from a burette until a blue tint is obtained. With good quality reagents the end point is sharp to a single small drop, but a little experience is necessary to recognise it. The iodide has to be adjusted by dilution with water until 2 c.cm. of it correspond to 1 c.cm. of the silver. If x c.cm. are required for 10 c.cm. of silver add 5 (20 – x) c.cm. of water to every 100 c.cm. of the remainder.

Method for Mineral Chlorides.—Measure 2 c.cm. of the clear filtrate into a small, flat-bottomed, lipped silica crucible. Evaporate to complete dryness on a boiling water bath. Ignite over a Bunsen burner to a dull-red heat. Allow to cool, add about 10 c.cm. of distilled water, and cautiously heat to nearly boiling point by means of a small flame (micro-burner). Allow to cool. Rub up well with a small glass rod and transfer to a 50 c.cm. measuring flask. Extract twice more with successive portions of 10 c.cm. each of cold water. Add 5 c.cm. of the silver nitrate, make up to the mark with distilled water, and mix thoroughly. Filter through a dry 9 cm. No. 1 Whatman paper into a clean dry flask or boiling tube. Should the first portions of the filtrate come through cloudy they must be re-filtered. Measure 25 c.cm. of the clear filtrate into a small Erlenmayer flask, add 2·5 c.cm. of the citrate and 3 or 4 drops of the starch. Titrate with the iodide from a 5 c.cm. microburette until the first blue tint is obtained.

Method for Total Chlorides.—This is exactly the same as the above, but before starting the evaporation about 0·4 c.cm. of a saturated (20 per cent.) solution of sodium carbonate is added. If there is not enough filtrate available the 2 c.cm. that have been used for the estimation of total acidity can be taken, the tube being carefully washed out with small amounts of distilled water. In this latter case there is no necessity to add more than a single drop of the sodium carbonate.

Calculation of Results.—(5 – volume of iodide used) x 20 = c.cm. of 0·1 N. chloride per cent. Total chlorides less mineral chlorides gives the "active HCl" or "secreted chloride." This should correspond fairly closely with the total acidity, the latter being considerably greater in cases of hypoacidity where organic acids have been formed by fermentation. In a few cases the active HCl works out to be greater than the total acidity. This is probably due to the presence of a certain amount of ammonia, which volatilises away as ammonium chloride during the incineration of the residue for mineral chlorides. The mineral chlorides being thus too low, it follows that active HCl is too high. But in our experience this is a relatively rare event. Yet Schryver and Singer[12] only found the total acidity higher than the active HCl in 34 per cent. of their 125 cases.

According to Graham,[9] the ratio $\frac{\text{active HCl x 100}}{\text{mineral chlorides}}$ is very low in carcinoma and very high in gastric ulcer. As far as we have gone at present we are in complete agreement with him. It is obviously useless to take this ratio if there is any indication of a previous flow of alkaline material from the duodenum, or if the resting residuum of the stomach has not been removed before giving the meal.

Determination of the Enzymes Present.

In the present state of our knowledge it is probable that an estimation of pepsin is only of value in enabling us to distinguish between true achylia and the achlorhydria that may be seen in some cases of carcinoma. In true achylia the enzymes are absent, but in the few cases of gastric carcinoma in which we have found achlorhydria we have also found pepsin and rennin. Opinions as to the identity of gastric rennin are by no means unanimous, but it is our firm conviction that a milk-clotting enzyme distinguishable from pepsin is secreted by the adult human stomach. The evidence on which this opinion is based rests on the work described in Cole's "Practical Physiological Chemistry," sixth edition, p. 209. We are making a careful study of the stability and action of the enzymes and hope to publish the results in a later communication.

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THE SKIN AND ITS REACTIONS.[1]

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THE skin differs from all other organs in that it is on the surface of the body. This position necessarily carries with it certain duties which a surface organ alone can perform; these duties may be considered under two heads, as they are related to things occurring: (*a*) outside the body; and (*b*) inside the body.

(*a*) *Outside the body.*—Under this heading are four functions of the skin. (1) It receives all direct injuries from without, being thus the first line of defence; (2) it is the first tissue to be chilled or warmed by changes in external temperature, being thus the outpost for heat regulation; (3) it alone comes in contact with other bodies, welcome or unwelcome, being thus the intelligence department of the central nervous system, and through the latter is in close association with the sex organs; (4) it is the only tissue visible to others, and is therefore available for attracting or repelling them, or for evading them by disguise: here the protective and sex functions again come into association. In all these ways the skin is chiefly a receptive organ, and although it is intimately associated with certain inner organs the relationship is primarily from without inwards.

(*b*) *Inside the body.*—Under this heading the conditions are very different. If the skin formed a complete envelope to the body it would necessarily have the two vitally important domestic functions of absorbing nutriment and eliminating waste, and its relations with all internal organs would be very intimate; but it takes practically no part in the former process, and its action in the latter is confined almost entirely to elimination of a certain proportion of water and salts. Except as a heat-regulating mechanism the skin plays no obvious part in the general domestic metabolism of the internal organs. Regarded from a physiological standpoint, its importance as a receptive organ quite outweighs that relating to the domestic functions of the body.

Relation of Skin Diseases to Internal Disorders.

In considering the relation of skin diseases to internal disorders these points should, in my opinion, always be borne in mind: (1) That the skin is not merely a covering, but itself an important organ; (2) that its duties relate chiefly to events occurring outside the body; (3) that while some of these reactions are local processes in the skin, the bulk of them are controlled and regulated by the central nervous system, and are of the nature of reflex actions; (4) that like all other reflex actions they are capable of excitation from places other than the outside, and of being modified by the condition of the central nervous system resulting from changes in the internal organs. In this sense they must depend upon the condition of the body as a whole at any given time. Greater progress may result if we keep in view this individuality of the skin as an organ, and study more closely its reactions, than if we regard the skin as a kind of screen upon which the clinician views what is going on in the organs beneath.

I believe that many changes in the skin now attributed to internal disorders are capable of explanation as natural reactions of the skin to definite stimuli. Some of these, such as pigmentary changes, probably date back to remote periods, and are merely remains of functions once important, and now not only obsolete but actually inconvenient. There are, of course, many skin disorders which are obviously due to internal affections—for instance, the rashes of the exanthemata. But even here the individuality of the skin cannot be overlooked. We know that the rash of small-pox is due to a poison circulating in the whole body, but we do not believe that the liver or the spleen are simultaneously covered with papules which go through the well-known stages of the rash seen on the skin. All this is a reaction peculiar to the skin and not improbably modified by external conditions.[2] A list could easily be made of so-called skin diseases due to changes from within the body; it would include the exanthematous rashes, syphilides, herpes zoster, purpuric eruptions, &c.; such a list of agreed certainties would not be very long. It would also be easy to make a similar and rather longer list of affections certainly due to external causes, including scabies, pediculosis, tinea, impetigo contagiosa, burns, corns, &c.

There would still remain a considerable number of skin diseases about the origin of which opinions would probably differ; numerous common affections—among them many of the conditions once called eczema—would here be included. No doubt some of this uncertain group will one day be proved to arise from internal or external causes; meanwhile, in trying to ascertain the truth, the part which the skin itself plays must always be borne in mind, and it is to one aspect of these skin reactions that I shall limit my remarks.

Widespread Dermatitis Developing during Local Treatment.

We must all be painfully familiar with the fact that every now and then a patient who is being treated for some trivial local eruption—a varicose dermatitis of the leg or a sore place on the hand—suddenly and quite unexpectedly develops a widespread acute weeping dermatitis. Although the area around the original site is severely affected, yet the dermatitis is not limited to that area; it affects distant parts, with intervals of clear skin. There is usually a distinct rough symmetry about the eruption; if it is on one segment of one limb it appears on the corresponding segment of the other. It is also on corresponding surfaces of these segments. Often all four limbs and the face are involved. This sudden outbreak is usually attributed to some cause from within. The patient thinks it is due to something he has eaten; the doctor, according to his particular school of thought, speaks of suppressed gout or intestinal toxæmia, whilst both agree that the patient is probably overworked and run down and needs a rest. Inquiry will usually show that the outbreak has followed shortly after the application of some "new material" to the skin. This may have been ordered by the doctor; more commonly it has been surreptitiously bought at a chemist's or presented by a kindly fellow-sufferer. Sometimes this "new application" is so apparently harmless that it is difficult to convince oneself that it can be the cause; at other times it is a substance known to be "rather dangerous to sensitive skins." In other words, if my interpretation of these cases is correct, the acute outbreak does not depend solely upon the material applied, but also upon the susceptibility of the particular individual's neuro-cutaneous reaction to that particular material or type of material.

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[1] A paper read at a discussion of the Medical Society of London upon Skin Disease: Its Relation to Internal Disorder, held on Feb. 14th, 1921.

[2] Finsen's well-known method of preventing pustulation by keeping small-pox patients in a red room is here alluded to.

The conditions just described have certain points of resemblance to those found in dermatitis, due to a known irritant, such as primula obconica or phenylhydrazin, which are not universal irritants, as most people can handle them with safety. Yet in those whose skins are susceptible the violence and extent of the reaction far transcends the duration or extent of the contact. If a person susceptible to primula keeps away from it he will have no attacks of dermatitis. All this time he may be in excellent health in every way, but he remains susceptible. I have seen a case in which a lady successfully avoided contact with primula for 20 years, and then accidentally knocking over a vase of flowers in a friend's house, she hastily picked them up, only to find that one of them was a primula; in a few hours she was covered with an acute dermatitis. I think that this type of skin reaction to some particular kind of substance is more common than is generally recognised. Happily it is not present, and therefore cannot be called forth, in most people.

When first the phenomena of anaphylaxis were discovered there were so many features common to this and to the skin reactions here mentioned that the problem of skin idiosyncrasy seemed nearer solution. But there is obviously something more than the anaphylactic phenomena. Possibly there is some link connecting the two which time will make clear. I do not think that our knowledge of the defensive reactions of the skin is yet sufficient to carry this point further.

Acute Vesicular Dermatitis Induced by Wearing a Necklace.

The views I have expressed still lack definite experimental proof. The first step to such proof is to apply a known irritant to a limited area of the skin of a known susceptible and to produce a widespread acute dermatitis in remote areas of the skin. The difficulties of carrying out such an experiment are obviously numerous, but during the past year I met with almost the complete essentials, and the experiment was attempted. It did not succeed, but as the case presented some unusual features illustrating my point of view I shall briefly relate it.

The patient, a single woman, aged 31, came to consult me on Feb. 13th, 1920, complaining of a rash on the back of the neck. There was a transverse strip of acute vesicular dermatitis of considerable intensity extending across the nape of the neck. She asked if it could have been caused by an imitation pearl necklace, and gave me the following history: The necklace was given to her on Christmas Day, 1919. She wore it all that day from noon till bed-time, and put it on again first thing next morning. During the morning the neck began to burn and itch where the necklace was in contact; she took it off at once, and in a few hours there was an acute dermatitis which discharged freely for some days over the site, and did not disappear for three weeks. She did not put the necklace on again until the rash had disappeared, about the middle of January; she then wore it at a party from 6.30 to 9.30 P.M. Next morning the skin was irritable and the rash had appeared again in the same place. This also ran its course. The necklace was put away until Feb. 12th; then, expecting to meet the donor, she wore it at a ball from 7.30 till 11.30 P.M., and whilst still wearing it felt the irritation beginning. Next morning when I saw her the condition was as I have described above.

That the necklace produced the local dermatitis by contact with the unbroken skin was evident. There seemed no possibility of mechanical friction being the cause, as the pearls had a perfectly smooth surface. On examining an individual "pearl" the latter was found to consist of a thin hollow glass sphere with a small hole at each end of one axis; through these holes the pearls were strung on the thread. On attempting to slip the pearls along the thread it was found that they stuck, owing to the exudation of their contents. On crushing a pearl it was found to contain a wax-like material which, when warmed to body temperature, gave a greasy stain on filter paper.

It thus seems possible that the particular irritant in her case was not the smooth, solid surface of the pearl, but something put inside it to give the pearl-like appearance which exuded from the two holes on to the thread when warmed by the skin. This view seems to be confirmed by the history the patient gave of her previous skin experiences. She knew that certain greasy substances irritated her skin. Twelve years ago a well-known patent ointment, bought to apply to a sore nostril, produced a very severe and persistent inflammation over the whole of her nose and cheeks, which took two or three weeks to disappear. I may say I know this ointment as a frequent cause of severe dermatitis. Six years ago she sprained an ankle and applied "white oils," over which she put a dressing. In a short time an acute inflammation of the skin followed, extending up the front of the leg. She also volunteered the statement that some days later the front of the opposite leg, which she had not rubbed, became inflamed over a corresponding area, as she said, "in sympathy." This statement made me hope I should be able to produce a generalised outbreak. I persuaded the patient to come into hospital during her next vacation to undergo the following small experiment under observation:—

Experiment.—May 22nd, 1920, 11 A.M.: Necklace applied round left upper forearm. Bandaged over above and below. Skin at time normal. 8 P.M.: Itching in left forearm; about half an hour later a definite rash; patient slept well. 23rd, 11 A.M.: Punctate red rash forming transverse band about 3 inches wide across flexor surface of left forearm; it reached towards extensor surface on ulnar side, but no actual rash appeared on that surface. The rash became rapidly more irritable and painful during the rest of the day; she could not get to sleep at night, and at 3 A.M. on the 24th she requested that it might be removed on account of the intense discomfort; this was done. 24th, 10.30 A.M.: The affected area had become much wider and was uniformly inflamed, much swollen with numerous vesicles, and very tender and irritable. It now surrounded the arm in a complete ring, but was much wider and more intense on the flexor surface, like a signet ring. Calamine lotion was applied. 25th: Condition more advanced, swelling still acute, more extensive vesiculation running into large blisters and discharging freely. Gauze had been laid over it, and the removal of this caused much discomfort. H.B.F. applied. 26th: Patient slept well; slight itching; less swelling; vesicles less tense. Boric fomentations continued with G.P. tissue. 27th: About 4 P.M. irritation began for about 2 inches above upper edge of original area and extending over hollow of elbow. 28th: The new area is swollen—covered with vesicles. Original rash still very swollen and discharging. At her request lead lotion was applied without any G.P. tissue over it. 29th: The whole area very much better. 30th: She left hospital.

The experiment failed to produce a corresponding eruption in any part distant from the site of application of the irritant although extending much beyond area of contact. Whether it would have done so had the application of the necklace to the already irritated area been persisted in I cannot say, as the patient would not hear of such a thing. It must be admitted that in her case on no previous use of the necklace had there been a generalised outbreak; it had always remained local. There was, however, the history of patches occurring on both legs after applying oils to one only. But the obvious possibility of contact makes this of doubtful value to prove my point.

We have still to explain why this patient developed an acute localised dermatitis when the necklace was laid upon her forearm for a few hours. She has cut the necklace in two and given half to a friend who wears it with impunity. Mechanical friction is no explanation, because the patient wears without any discomfort another necklace made of solid beads. It is unnecessary to consider any internal disorder, for she is in active, robust health and works hard. The trouble must be in the reaction of her skin to this particular type of irritant. I hope that someone may be able to answer the questions I have raised, for I feel that until we have a clearer insight into these simpler reactions of the skin itself it is very difficult to form an estimate of the extent to which they are modified by internal disorders.

ROYAL PORTSMOUTH HOSPITAL.—The sum of £10,000 allocated to the Royal Portsmouth Hospital by the Mayor's War Memorial Fund Committee is to be utilised for erecting a new public entrance to the institution, and also for making several necessary internal alterations.

TWO CASES OF

CONGENITAL HYPERTROPHIC PYLORIC STENOSIS

SAVED BY EARLY OPERATION.

By W. G. MACDONALD, M.B., Ch.B. Glasg.

Congenital hypertrophic pyloric stenosis is generally considered to be a somewhat rare condition; but the frequency with which it is recognised by those who constantly watch for it, establishes the fact that it is relatively common. Since Beardsley, of Connecticut, U.S.A., described the malady there has been much debate concerning its ætiology and treatment. That it is congenital is almost[2] universally believed, although hyperplasia, hypertrophy due to spasm, and fœtal hyperadrenalism have been advanced as probable causes. The pathology has been definitely accepted. There is a hyperplasia of the sphincter pyloris and of the muscularis mucosa of two types: one, the more common, a massive avascular type, and the other, a small, hard, fusiform vascular type. Both are of cartilaginous hardness and constrict the pylorus to a greater or lesser degree. H. Tyrrell Gray and G. R. Pirie[1] show that an inhibition of pancreatic function is associated with the stenosis, a factor which is of great practical importance in the treatment of the disease.

Symptoms usually appear in the third or fourth week, sometimes within a few days of birth and occasionally in the early months of infancy. They are strikingly definite: (1) vomiting (propulsive or projectile type) of all food, (2) constipation, (3) wasting, (4) visible gastric peristalsis, and (5) a palpable pyloric tumour. If the condition is not relieved the child dies of starvation in a few weeks. The differential diagnosis between hypertrophic stenosis and pylorospasm is often difficult; clinical statistics are subject to individual error and unreliable. The presence or absence of a palpable pyloric tumour should decide the diagnosis.

The mortality in cases of congenital hypertrophic pyloric stenosis treated medically is very high.[3] In the United States the condition is regarded as a surgical emergency, and a series of 36 cases since 1905 shows a mortality of 13·8 per cent. Until April, 1918, the surgical mortality at Great Ormond-street Hospital was 100 per cent. Since then operation in "favourable or early" cases in a series of 11 shows a mortality of 9 per cent. In Britain it has been a repetition of the story of the medically treated appendix, with its heavy mortality.

There is a preponderance of evidence to show that the hypertrophic tumour is permanent.[4,7] Cases of stenosis which have been relieved by medical treatment are liable to relapse in later life when intercurrent disease gives rise to a recrudescence of symptoms. But notwithstanding the evidence, physicians of standing recommend that medical treatment should be tried for three weeks or so[6] before surgical measures are taken. Granted that the pyloric tumour is permanent, medical treatment by small predigested feeds, opium and chloral hydrate, and gastric lavage must be a laborious attempt to coax an already dilating stomach to undergo an hypertrophy sufficient to overcome the pyloric stenosis. In moderate degrees of hypertrophic stenosis this may be accomplished, but, as we have seen above, there is a risk of relapse in later life. From the surgical point of view it is astonishing that any infant should be expected to survive the shock of operative treatment after "three weeks or so" of constant vomiting, of starvation, of progressive deterioration of gastric mucosa, and of exhausting stomach lavage. The appalling mortality which follows when surgical treatment is delayed in order to try the effect of medical treatment compares most unfavourably with the light surgical mortality following early operation in the United States and at Great Ormond-street; and this comparison enforces the importance of increasing our knowledge by recording all cases.

The Cases Described.

The following are the first two cases treated at the West Herts Hospital; neither of them could be classified as a good operative risk according to the standards of those who treat congenital hypertrophic stenosis medically, nor could either of them be regarded as a case in which medical treatment was likely to be successfully carried out. There can be little doubt that early operation was the determining factor in their successful issue.

Case 1.—Michael M., born Sept. 4th, 1920, birth-weight 5 lb. His mother had an accidental hæmorrhage on August 19th; she lost a considerable amount and was treated by rest in bed until parturition. The child was jaundiced when born. He began to feed two days later, taking the breast well every two hours during the day and once in the night; seven feeds in 24 hours. The bowels moved each day and the stools were apparently of normal colour and consistence. At the end of the first week, weight had fallen to 4½ lb.; during the second and third weeks the birth-weight was reached though never exceeded.

In the middle of the third week the first evidence of gastro-intestinal trouble appeared, the stools becoming green in colour; and on Sept. 27th, 23 days after birth, projectile vomiting occurred after every feed. Constipation began on the 29th. Olive oil ʒi was given by mouth, and a green, small motion resulted. By the 30th there was absolute constipation, and on Oct. 1st the urine was scanty. The infant was seen by Dr. J. H. Addinsell late on Friday evening, and he found the abdomen distended and very difficult to examine. A saline enema was returned without fæces or flatus. Hot and cold swabs applied alternately to the epigastrium did not precipitate vomiting. Gastric peristalsis was not seen.

On the morning of Oct. 2nd we saw the infant in consultation. He was wizened, wrinkled, jaundiced, and obviously in pain; mouth and eyes were half open; fontanelle sunken; hands clenched; legs flexed on abdomen; abdomen rigid and distended; no visible peristalsis. Vomiting occurred during examination, unchanged food streamed from nose and mouth without apparent effort. The projectile character was lost owing to weakness. On vomiting, the abdominal muscles relaxed and an indistinct tumour was felt behind right rectus in the upper abdomen. The child weighed 4 lb. 6 oz.; his length was 18 inches.

He was admitted to the West Herts Hospital; operation was performed at 2 P.M. on the same day. The abdomen was opened through the upper right rectus. A hypertrophy of pylorus of the large avascular type resembling a decalcified bone bobbin was found. Ramstedt's operation was performed. The sero-muscular coats were split down to mucous membrane in the long axis of the tumour. In doing this the gastric mucosa was inadvertently holed, the wound admitting a fine probe. This wound was closed by one fine catgut suture. Some trouble was met with owing to prolapse of gut, but was fairly easily overcome. The abdomen was closed with three through-and-through sutures. Post-operative shock was combated by warmth, warm moist oxygen, and two-hourly enemata of normal saline ℥i. with glucose ♏ xl.

Case 2.—John D. S., born August 30th, 1920. Birth-weight 8 lb. His mother, a primipara, felt and was well during the whole period of pregnancy; the infant apparently gained in weight for 22 days; but on Sept. 21st he began to vomit after each feed, and on the 22nd vomiting was of projectile type. Constipation began on the 24th, and the bowel did not act until relieved by enema on the 27th, when the district nurse stated that the result was good. On the 30th an enema was given with little result, a few small scybalæ being passed. Projectile vomiting continued. It occurred as soon as food was taken, but occasionally at varying periods up to an hour and a half from the last feed. Glaxo, albumin water, and Allenburys food were tried. Dr. Addinsell, who was called on the morning of Oct. 8th, asked me to see the child with a view to operation.

Examination.—Weight was 6 lb. 7 oz., the length 21 inches. He was emaciated, his legs drawn up on a distended abdomen, his face wrinkled and expressive of pain, fontanelle sunken, skin shrivelled and without elasticity—a typical "Indian famine" picture. No phimosis or preputial adhesions. Visible gastric peristalsis was noted. With the baby lying on the left hand, face downwards, an indistinct tumour to the right of right rectus and under the liver could be palpated. The infant was admitted to the West Herts Hospital at midnight, Oct. 8th. A breast-feed was given and projectile vomiting occurred. Nutrient enemata of normal saline with glucose were given two-hourly until operation. Next morning a quantity of brownish fluid was vomited.

Operation was performed on Oct. 9th. Profiting by our experience in Case 1, a 2-inch incision was made through the upper right rectus exposing the convexity of the liver. On displacing the liver upwards the greatly dilated stomach ballooned through the incision. The pylorus was delivered and found to be of the small hard, fusiform vascular type. The only possible line of incision was along the continuation line of the lesser curvature of the stomach, and it was made by means of knife and blood dissection to normal stomach above and to the well-marked duodenal reduplication of mucosa below. Division of the sero-muscular coats was more difficult to accomplish in this case than in Case 1. The abdomen was closed by three through-and-through silkworm gut sutures.

After-treatment.—For the first 12 hours half-ounce feeds of glucose ♏ xl. and sod. bicarb. gr. x. with water by the mouth; glucose saline enemata were given every two hours. Thereafter small feeds up to the point of tolerance were given. More than half an ounce given at any one feed during the first week produced regurgitation of non-projectile type.

Comparison of Cases.

Weight.—Case 1: Four ounces were gained in the first week. The weight fluctuated until the fourteenth day and then steadily increased. Case 2: The weight remained stationary until the fifteenth day, when an increase at the rate of 1¾ ounces a day began.

Bowels.—Case 1: Bowels opened on the day following operation; but the stools did not become normal until *the fourth week after operation.* Case 2: *Bowel moved* on the second day and by the sixth day the stool was almost normal.

Temperature, rectal.—Case 1: Rose to 100° F. on the fourth day and was subnormal by the sixth day. Case 2: Rose to 101° F. at 2 A.M. on the morning following operation, and fell to subnormal by the evening of the same day. With increase of weight in both cases the temperature level rose slightly nearer the normal line. These temperatures are interesting, since they differ markedly from the clinical temperature chart published by Gray and Pirie, who show that a pyrexia ranging from 103° to 105°, falling to normal in four to five days, is usual after Ramstedt's operation. The difference in type we attribute to the state of the gastric mucosa at the time of the operation. Case 1 was operated on six days after the onset of vomiting, whereas Case 2 was operated on 19 days after onset, so that the consequently greater dilatation of stomach and the more unhealthy condition of the mucosa, shown by the emesis of brownish fluid on the morning of operation, are regarded as the causes of the modified pyrexia.

The immediate post-operative change for the better in the infants' appearance was very striking. The mother of Case 2, in commenting on it, remarked that even if the result were adverse she would never cease to be grateful for the relief that operation gave.

Anæsthetic.—The good judgment of the anæsthetist in his choice of anæsthetic and in its administration to such debilitated and unstable subjects is of extreme importance in the surgical treatment of congenital hypertrophic pyloric stenosis. In both cases cited above we were fortunate to have the experience and skill of Dr. Dudley W. Buxton.

Choice of Operation.

In Case 1 Ramstedt's operation was the only procedure possible, owing to the smallness and debility of the infant. In dealing with Case 2, the choice was influenced first by the quickness with which the operation could be performed, and secondly by the autopsy findings of Rachford, who noted that six months after a Ramstedt operation the pylorus showed no trace of tumour; and by *their confirmatory evidence in the* cases examined post mortem by Gray and Pirie. Subdermic infusions of saline and glucose were not given. An empty, healthy colon and rectum ought to absorb sufficient fluid to relieve thirst and to satisfy the tissues to the point of surgical safety. Moreover, the obvious dangers of infusion and the annoyance of operating through œdematous tissues were avoided. Diarrhœa appears to be one of the dangers incident to post-operative treatment, and therefore feeding must be carefully studied.

The dilated unhealthy stomach of a case treated medically for three weeks or so, no matter how conscientiously washed out, is a fruitful source of acid fermentation. The coexistent inhibition of the pancreatic function tends to further fermentation. Small amounts of predigested food are therefore necessary. Peptonised milk has been empirically advised by Hutchinson, Gray and Pirie, and others. We found, however, that even very small amounts of peptonised milk (dr.ii. to dr.iv.) were not well tolerated. In theory one would expect *a greater tendency to* diarrhœa with an acid food passing into the intestine unneutralised by the strongly alkaline pancreatic secretion. In practice we are confident that this is the case. In our cases the diet consisted of diluted Nestlé's milk predigested by papain (Martindale) and sod. bicarbonate, the result being an alkaline, non-irritating, non-septic, palatable food which was greedily taken and well tolerated. It might be argued that an alkaline food would tend to delay the re-establishment of pancreatic function, and that what is gained on the one hand is lost on the other; but this argument is clinically of little importance.

Conclusions.

1. That in view of the proof that the congenital tumour persists in adult life, medical treatment can merely relieve the condition and that only in a small percentage of cases.
2. That early surgical treatment is indicated in all cases where hypertrophic pyloric stenosis has been diagnosed.
3. That Ramstedt's operation appears to be the only procedure which restores the pylorus to a condition approaching the normal.
4. That the general practitioner accustomed to surgical technique can successfully perform Ramstedt's operation even in the most severe cases of pyloric stenosis.

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Boxmoor.

THE STANDARDISATION OF TUBERCULIN.

BY A. J. EAGLETON, M.D. LOND.

(*From the Wellcome Physiological Research Laboratories.*)

TUBERCULIN has at present three chief uses: (1) the testing of cattle for tuberculosis; (2) the diagnosis of tuberculosis in man; and (3) the treatment of tuberculosis in man. Tuberculin prepared in the usual way has often been found inefficient for (1) and (2), and inactive preparations have doubtless been used in treatment. The standardisation of such a drug is then of great importance; the object of this communication is to show the degree of accuracy with which it may be done.

The various methods of standardising tuberculins are based on Koch's original discovery that tuberculous animals show a characteristic reaction when injected with doses of tuberculin which are quite innocuous to the normal animal. The official Frankfort[1 2] test is essentially identical with that of Koch; a similar test is used in Vienna. The Bureau of Animal Industry, Washington, U.S.A.,[3] employs a slight modification of the original method. There is at present no official test in Great Britain.

In this paper is described the test as applied in this laboratory, with the difficulties presented and the degree of accuracy permitted by its use. The subcutaneous test, which is a modification of the Frankfort test, will first be considered. The improvements introduced in the intradermic and von Pirquet tests will then be reviewed. Finally, a résumé will be given of all tests carried out with the tuberculin which we employ as our standard.

Preliminary sensitisation.—A batch of guinea-pigs of approximately equal weight, and from 50 to 70 in number, is injected intramuscularly with a saline suspension of tubercle bacilli (1 mg. per c.cm.). Half a cubic centimetre is injected into the anterior and inner aspect of the right thigh, deep to the adductor muscles. The right inguinal region of the injected guinea-pigs is examined periodically for enlargement of the lymphatic glands; any animals that may die from extraneous causes are carefully searched for signs of infection. After about 21–30 days glandular enlargement will be appreciable; we can then proceed to the preliminary test, which is as follows.

1. *Subcutaneous Test.*

Into one animal of the batch 0·5 c.cm. of a tuberculin which has remained constant in value for a long period and is used as a "standard" is injected under the skin of the abdomen. If death occurs within 24 hours with typical lesions, then the main test can be undertaken. Should the animal survive, or should the post-mortem findings be atypical, then a further preliminary test must be made at a later date, and so on, until a typical death is obtained.

The main test consists in the comparison of a sample with the standard tuberculin. Doses of 0·5 c.cm., 0·25 c.cm., 0·1 c.cm., 0·05 c.cm. of each tuberculin are injected, and the lowest dose found that will produce a fatal result in 24 hours with typical post-mortem signs. At least two animals must be injected with the "minimal lethal dose." The following scheme will explain the procedure:—

Batch X., injected 0·5 mg. standard strain tubercle bacilli.

Preliminary Test.

25 days later	0·5 c.cm.	Standard tuberculin	S.
7 " "	0·5 c.cm.	" "	D. 2 days.
7 " "	0·5 c.cm.	" "	D.o.n.

Main Test.

C.cm.	Standard.	Sample A.	Sample B.	C.cm.	Standard.	Sample A.	Sample B.
0·5	D.o.n.	D.o.n.	S.	0·05	S.	S.	—
0·25	D.o.n.	D.o.n.	S.	0·05	S.	S.	—
0·1	D.o.n.	D.48 hs.	S.				
0·1	D.o.n.	S.	—	2·0	—	—	S.
0·1	D.o.n.	S.*	—	1·0	—	—	S.

S. = survived; D. = death; o.n. = overnight. * Seedy.

Sample A is just under standard strength, while sample B is useless. The minimal lethal dose of the standard varies with the batch of animals, as will be shown later; the samples can only be appraised by comparison with the standard on the same batch of animals. In other words, no absolute value can be given to any tuberculin as the reagent employed to test it is a variable. As much as 5 c.cm. of the standard has been injected into non-tuberculous guinea-pigs without giving rise to any result except the immediate irritation, due to the glycerine content of the inoculum.

The main difficulty in connexion with this test lies in the fact that different batches of animals vary in the time which they take to become sensitive to the tuberculin. It will be seen later that the individual members of a batch vary so little in sensitivity that it is rare to find any aberrant deaths or survivals when testing serial dilutions of tuberculins. The different batches, on the other hand, show variation, both in the length of time taken to become sensitive and in the degree of sensitivity attained, as judged by the minimal lethal dose of standard tuberculin.

The earliest period at which any batch is sensitive can only be found by a preliminary test as described above, and in some batches as many as five such tests have been negative. Again, if 0·5 c.cm. of standard kills one or two animals of a batch we have to inject lower doses to find the degree of sensitivity present; in this way many animals are wasted. In order to obviate this difficulty we tried both the von Pirquet and intracutaneous tests parallel with the subcutaneous test. As a result of many experiments we found a correlation between the three methods, as shown in the table (*vide infra*).

2. *The von Pirquet Test.*

Von Pirquet himself studied the cutaneous reaction of tuberculous guinea-pigs to tuberculin; he states that these animals are not very sensitive to the drug, and that a deeper scarification is necessary than that used for the test in human beings. Our experiments confirm this, but we found that when deep scarification was used the resulting trauma sometimes made the reactions difficult to read. We changed our method of scarification from two intersecting parallel lines to two and finally three parallel scratches ///, and the "three-scratch" test is the one we now employ. With this method the trauma is not sufficient to obscure the reaction, and well-graduated readings can be obtained with different dilutions of tuberculin on the same animal. Before the tests, a white area of the animal is deprived of hair by clipping and the application of a calcium sulphide paste, after which the area is washed with warm water and the animal thoroughly dried. The groups of three scratches are spaced out as far as possible. Different dilutions of the tuberculins are applied to the areas, and glycerine broth, ten times concentrated as in the preparation of the tuberculin, is used as a control. The reactions can be read in 24 hours, and have generally diminished by 48 hours.

3. *Intracutaneous Reaction.*

The intracutaneous reaction was first described in 1905 by Mantoux, Moussu, and Römer, and adopted later by Loewenstein, but is not used in any official laboratory.

The test consists in the injection of 0·1 c.cm. of diluted tuberculin into the skin of the shaven area. As in the von Pirquet test, we have always used a control of broth, but in this case diluted 1/10. The reactions cannot be read in 24 hours, taking three days to reach their maximum development. The control injection gives a transitory reaction, but this fades by the second or third day, while the different dilutions of tuberculin give rise to lesions of varying intensity. In the most marked, a central area of necrosis is surrounded by a bright red halo, the whole mounted on an œdematous disc with a sharply defined border. The slighter degrees are marked by diminishing necrosis until the end-point consists merely of a small raised disc; often, however, there is a sudden transition from a lesion showing necrosis to a completely negative reaction.

The von Pirquet and intracutaneous tests can be used for the standardisation of tuberculins, but hitherto we have always checked the results so obtained by the subcutaneous method. The skin reactions are, however, indispensable in experimental work, where we have a large number of samples made in different ways, where the available material is small, or where we must test for small traces of active principle. It should be pointed out that in all cases where the skin tests are used alone, a control and the standard must be included on the same animal as the samples under experiment. Slight individual variations occur in the members of a batch. These are due partly to the differences in the skin trauma, and partly to the fact that the skin reactions, being more delicate, detect variations which do not affect the subcutaneous test.

The value of the von Pirquet test as a guide to the sensitivity of a batch, and the comparison of the skin reactions with the subcutaneous test, are shown in the following table:—

Batch XV.

19/6/20.—0·5 mg. *B. tuberculosis* H12, injected intramuscularly into batch of animals.

8/7/20.—Von Pirquet test: standard tuberculin undiluted +, control −; 1/10 (+).

12/7/20.—Same animal as above, standard 0·5 c.cm., subcut. D.o.n.

15/7/20.—Von Pirquet:

	Tuberculin.		Broth.
	Standard.	Sample A.	Control.
Undiluted	++	+	−
1/5	(+)	−	
1/10	−	−	

23/7/20.—Von Pirquet:

	Standard.	Sample A.	Control.
Neat	++	+	−
1/5	++	(+)	
1/10	+	−	
1/20	?	−	

Intracutaneous (72 hours reading).

	Standard.	Sample A.	Control.
1/5		++	−
1/10		++	
1/15		++	
1/20		−	
1/50	++		

24/7/20.—Subcutaneous:
Standard 0·25 c.cm. D.o.n. Sample A 0·5 c.cm. D.o.n.
0·25 c.cm. S.

3/8/20.—Subcutaneous:
Standard 0·1 c.cm. D.o.n. Sample A 0·5 c.cm. D.o.n.

4/8/20.—Standard 0·05 c.cm. D.o.n. Sample A 0·5 c.cm. D.o.n.
0·05 c.cm. S.; seedy. 0·25 c.cm. S.

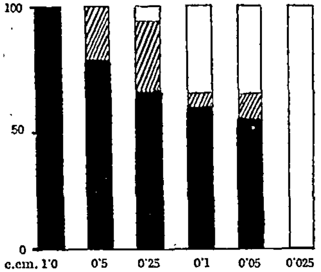
++ = Very strong. + = Strong. } Von Pirquet reaction.
(+) = Slight. − = Negative. }

4. *Constancy of Test.*

Since August, 1919, when our present standard was adopted, 13 different batches of animsls have been infected with a constant dose of the same culture. Of these animals 91 have received doses of standard ranging from 1·0 c.cm. to 0·025 c.cm. In only two cases were irregular results produced with animals of the same batch—that is, a low dose killed, while a higher dose was ineffective. The individual variation of members of the same batch gives an error then of just over 2 per cent.

The constancy of the test on all batches is shown in the diagram. It represents animals injected with tuberculin at least 30 days after infection. The tops of the black columns show the percentage of deaths at each dose. The tops of the shaded columns show the increased percentage of deaths since we have employed the von Pirquet test to indicate the dosage for subcutaneous inoculation.

Diagram showing Dose in Cubic Centimetres.



Dark columns show percentage of deaths at each dosage. Shaded columns show percentage improvement after adoption of von Pirquet reaction.

The following factors must be controlled if accurate results are to be obtained: (1) the same strain of tubercle bacillus must be used for injecting the animals; (2) the guinea-pigs should be about the same size; (3) all animals to be given injections of tuberculin should be examined and any sick ones discarded—no animal should be used unless the inguinal glands are palpable; (4) the von Pirquet test should be used to guide the dosage for subcutaneous injection.

The results show that tuberculins can be tested with a reasonable degree of constancy. They also show the value of the von Pirquet test as an adjunct to the subcutaneous test. It may, I think, also be claimed that the standard in use in this laboratory has been thoroughly tested and is suitable for this reaction. We have tested tuberculins made in 1889 and since that date, and many of the earliest samples are still potent. We are, however, at work on the exact standardisation of a purified, dried tuberculin, which may, if satisfactory, be used as a standard in future.

In conclusion, I have to thank Dr. Stanley Griffiths for his kindness in sending us our standard culture, and all my colleagues for criticism, suggestions, and help. Above all, I am indebted to Dr. R. A. O'Brien, who initiated this work and placed at my disposal his knowledge of the test derived from long experience.

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CZECHO-SLOVAK MEDICAL DELEGATES AT BRIGHTON.—The delegates of the Ministry of Health of Czecho-Slovakia, on their return from studying health methods in America as guests of the Rockefeller Foundation, visited Brighton on Feb. 15th. They were specially interested in its sanitary administration and its general health activities. Dr. Duncan Forbes, the medical officer of health, showed them his system of work, and visits were paid to the Sanatorium School Clinic and Tuberculosis Dispensary, and to the estate where a big housing scheme is in process of development.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A PROBABLE CASE OF CEREBRAL VENTRICULAR HÆMORRHAGE, ASSOCIATED WITH MARKED AND PERSISTENT CONVULSIONS.

BY E. J. PARRY, M.R.C.S., L.R.C.P. LOND.,

AND

O. K. WILLIAMSON, M.D. CANTAB., F.R.C.P. LOND.

THE following case is of interest on account of (1) the intensity and persistence of the convulsions, and (2) the diminution in the degree of unconsciousness followed by a relapse into complete coma.

At 11.30 P.M. on March 14th, 1920, Mr. Parry was summoned to see a gentleman, aged 45 years, who had just previously been seized with a fit whilst in a warm bath. Dr. Williamson was called in and arrived at 12.30 A.M. on the 15th. The patient was then practically unconscious, with insensitive conjunctivæ and pale, livid face. His condition of marked general tonic rigidity soon gave place to a general clonic spasm, left arm being flexed at the elbow, right arm extended with rolling and scratching movements of fingers of right hand. Lower extremities extended, the mouth slightly open, and tongue, which was clean, alternately protruded and retracted, the pupils equal and rather dilated. Pulse full, rather rapid, apparently not of high tension. Superficial arteries neither tortuous nor thickened. Heart normal, respiration stertorous. At one time the degree of unconsciousness became less marked and patient uttered inarticulate sounds. At about 1.30 A.M. the rigidity became much less marked, for the spasm which had alternately increased and diminished had by now lessened. The colour of the face was now better than it had been; about this time patient passed a very offensive motion. The pupils became normal in size; the respirations quieter, and at about 2.30 A.M., when both doctors left the house, the degree of unconsciousness certainly seemed to be less profound than it had been.

At 8 A.M., however, Mr. Parry found the patient to be completely unconscious, the left pupil minutely contracted, the right dilated; there was complete paralysis, and he died soon after 9 A.M.

The clinical picture at the time we left the house at the end of the first visit was that of a severe epileptic seizure, but the subsequent course puts a different interpretation upon the case. Any question of poison may be ruled out, and although perhaps uræmia cannot be absolutely excluded, the clinical course is best explained by a hæmorrhage from a branch of the middle cerebral artery, with rupture into the ventricle. A necropsy was not obtained. A history was obtained from the patient's wife that on three previous occasions, at intervals of about a year (the last time about a year before the fatal illness), attacks had occurred which the attending doctor considered to be epilepsy, and each of which necessitated a day's rest in bed.

A CASE OF DIAPHRAGMATIC HERNIA.

BY A. E. KEOWN, M.B. BELF.

CASES of this rare condition are reported from time to time in the literature. As a rule a portion of the stomach or intestines passes through the diaphragm into the left pleural cavity and symptoms follow which call for urgent operative interference.

Sapper M. W., 106th Co., R.E., was hit by a bullet in the left posterior axillary line below and to the outer side of the lower angle of the left scapula. This happened at Moquet Farm, Pozières, on the French front. He fell, and was carried to a station where he coughed up blood through most of the night. He was X rayed at Boulogne, and again at the Endell-street Hospital, where he lay five weeks, but no bullet was seen. After this there was constipation, and at times flatulence and hiccough. On August 14th, 1920, he came to me complaining of cramp-like pains beginning to left of umbilicus, and reaching nearly to left shoulder. He had had a restless night, and had vomited a bitter green fluid. He had been given an enema with some result. There was no retention of urine. Examination of the abdomen caused the pains to recur. There followed borborygmi, and the pain was easier. This sequence could be elicited and followed each time the abdomen was palpated. Temperature and pulse normal.

On the 15th the abdomen was distended and very prominent to the right of the umbilicus. The enemas were being returned uncoloured and all borborygmi had ceased. It was evident that a partial obstruction was now complete and he was sent into the Merthyr General Hospital. A high enema was given there but without result. He did not look very ill. The absence of vomiting and of an intestinal ladder seemed to indicate that the obstruction was in the large bowel.

On the 19th Mr. R. S. Ryce opened the abdomen through a median incision and the large intestine appeared, looking like liver and greatly distended. A rubber tube was tied in and it collapsed, permitting further examination. The colon was then found to leave the abdomen at its splenic flexure. The opening in the diaphragm was easily enough enlarged with the fingers and a portion of the bowel pulled down. There were firm adhesions that prevented the return of all the bowel; moreover, the patient's condition did not justify any further operative procedure, and the abdomen was closed. For a few days fæces were passed through the tube as well as per rectum, and then it was removed.

The patient, a blacksmith, has been warned that he will have to seek lighter work. He complains now at times of flatulence, and it is not improbable that another operation may be required to free the adhesions, return the prolapsed colon, and repair the diaphragm. To do this really well it seems to me imperative to resect at least two ribs and so get at the diaphragm from above. Mr. Ryce tells me that the opening in the diaphragm was circular and well to the left of the œsophagus, also that it was not connected with either arcuate ligament and that it was just such an opening as might have been made by a bullet.

Llwynwern, Glam.

TWO CASES OF RELAPSING FEVER.

BY ROBERT NIXON, M.B., CH.B. LIVERP.

THE following cases of spirochætal relapsing fever occurring in Liverpool are of interest in view of the large number of emigrants from Eastern Europe now passing through our ports:—

The patients, H. S. and B. S., two Roumanian boys, aged 15 and 11 respectively, were admitted to the City Hospital South, Liverpool, on Nov. 26th, 1920, from an emigrants' boarding-house with the diagnosis of measles. The history was as follows: They left Roumania on Nov. 9th, and arrived in Liverpool, via Prague and Hamburg, on Nov. 23rd. They were not deloused at Hamburg. Neither of the boys showed any signs of illness on the voyage, but the elder, H. S., complained of headache and malaise shortly after landing. The younger boy had appeared in normal health up to the time of admission to hospital. No rash had been noticed on either.

H. S. on admission had a temperature of 103° F. which rose the *following morning to 105°, accompanied by expectoration of about* an ounce of "rusty" sputum, and fell by crisis the same evening to 98°. Nothing abnormal could be found in the lungs and no tubercle bacilli or pneumococci in the sputum. The younger boy, B. S., appeared in normal health on admission. However, his temperature rose to 102° on Dec. 2nd, and the following day H. S.'s fever recurred, again accompanied by expectoration of "rusty" sputum. Blood smears taken on Dec. 4th showed in each case spirochætes throughout the field in large numbers, exceedingly thin and in length about three or four times the diameter of a red blood corpuscle. H. S.'s blood still showed spirochætes on Dec. 6th; but all subsequent smears from B. S. were negative.

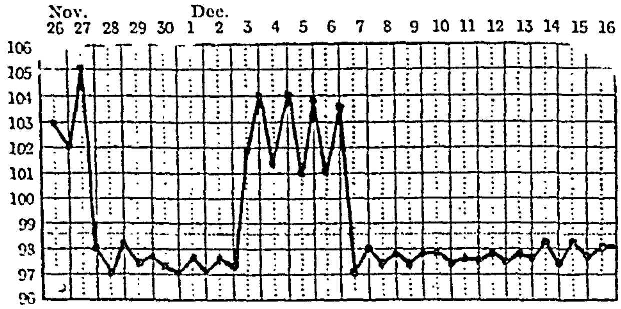

CHART 1.—H. S., aged 15.

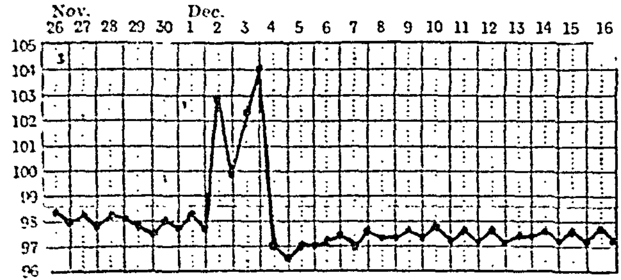

CHART 2.—B. S., aged 11.

Neither boy has had any relapse since Dec. 7th, and both were discharged from hospital in good health and apparently completely recovered.

Liverpool.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

SKIN DISEASE: ITS RELATION TO INTERNAL DISORDER.

A MEETING of this society was held on Feb. 14th, Sir FREDERICK W. MOTT being in the chair, when a discussion took place on this subject.

The opening papers, by Sir JAMES GALLOWAY and Professor ARTHUR HALL, are given in full in the front part of THE LANCET of last week and the present issue respectively.

Dr. E. W. GOODALL said that he based his remarks upon an experience derived solely from an acquaintance with

Skin Affections connected with Acute Infectious Diseases

of this country. The eruptions met with in the acute infectious diseases were acute and transient and variable, from a fleeting urticaria to a pustule which left a scar. The cutaneous phenomena of the acute infectious diseases were met with at different stages of an attack, but, as a rule, certain skin manifestations were met with at certain stages. They might be arranged in three groups: (1) the prodromal or initial rashes, (2) the eruptions characteristic of the exanthemata, and (3) the rashes of the post-acute or post-eruptive stage. There might be a certain amount of overlapping, but, broadly speaking, the rashes were found at these stages. Except in the case of small-pox the prodromal rashes were common to certain infectious diseases, and some of the prodromal rashes even of small-pox were common to other diseases. In the exanthemata the rashes of the eruptive stage were confined to each disease; the rash of scarlet fever did not replace that of measles, for instance, but these rashes might be produced by other causes.

With regard to the post-eruptive, post-acute stage rashes, these had also been termed "secondary" or "accidental" rashes. They occurred usually from one to four weeks from the beginning of the attack. They were common to all the infectious diseases with which he was acquainted and were either urticaria, macular and slightly papular erythema, or erythema marginatum. Although they were met with in all the infectious diseases they were relatively infrequent in each one of them. He thought that it would be granted at the present day that the cutaneous eruptions, whether special or common, of the infective diseases were not primary lesions, but were only one of many changes, visible or invisible, including more or less the whole body. The chief argument in support of this statement was the undoubted fact that a person might suffer from an attack, a serious attack, of most of the acute infectious exanthematous diseases without the presence of any exanthem whatever. The next question which arose was whether the skin lesion was due to changes in the structure or alteration in the functions of any particular internal organ. So far as he was aware, there was no evidence in favour of this view. It was a question of a general cell or tissue disorder. For many years past a great deal of work had been done on the question of infection. It would appear, however, that cutaneous eruptions of the erythematous class were not visible on the skin of the animals used for experiments. Indeed, it seemed to be difficult to affect most animals with the human infectious diseases, at any rate, in the same form as they assumed in man. Included in work which he mentioned was the experimental work on anaphylaxis and the clinical work on serum sickness. Nothing occurred in animals, however, which corresponded with ordinary serum sickness in man. He emphasised the fact that the rashes of serum sickness were always either urticaria, a morbilliform erythema, or erythema marginatum.

The question which he wished to discuss was whether the phenomena of serum sickness in man or of the anaphylactic rashes in animals threw any light upon the nature of an attack of an acute infectious disease in the human subject, and he wished to discuss the question chiefly in respect of the skin eruptions. There were some who held that an attack of an acute infectious disease was an anaphylactic reaction, and they would argue, in most instances, that an attack of serum sickness was also an anaphylactic reaction. In his opinion, this was not true of an attack of an acute infectious disease, nor was an attack of acute infectious disease brought about in the same way as an attack of serum sickness. He thought that observers had been led away by the presence of the latent period in both anaphylaxis and serum sickness, and of the rashes in the latter disease. This latent period happened to be of about the same length as the incubation period of certain of the acute infections, notably measles, small-pox, chicken-pox, enteric, and typhus. In other infections, however, it was much shorter, of only one to three or four days' duration, as in scarlet fever, diphtheria, and influenza. He had stated that the rash of serum sickness was always one of three rashes. If an attack of an acute infectious disease was of the same nature as serum sickness, and still more so if serum sickness was anaphylactic, these three rashes, or one or two of them, ought to be a leading symptom in an infectious disease. But it was notorious that the rashes of the exanthemata were different one from the other, that specific rashes were entirely absent from some of the acute infections, and that they might also be absent from not a few cases of the exanthemata themselves. Inasmuch as the same rashes occurred in the anaphylactic forms of serum sickness as occurred in the ordinary form, it might be concluded that the occurrence of the rash was evidence of protein poisoning. Experiments on animals led to the conclusion that in the same animal different proteins gave rise to the same anaphylactic symptoms. Therefore he concluded that the rashes of the acute exanthemata were not due to protein poisoning pure and simple. Whatever explanation might be offered of the means by which the symptoms of an attack of an acute infectious disease was brought about, that explanation must take into consideration account the special symptoms—for example, the specific rashes. It was generally admitted that the hypothetical anaphylatoxin that produced the lesions and symptoms of anaphylaxis was a protein-cleavage product, and he was prepared to admit that such a product was the cause of the symptoms of serum sickness. Serum sickness was a comparatively *simple illness compared with an attack of an* acute infectious disease. When bacteria entered the body and became disintegrated by the action of the defensive chemistry there might be liberation of the special toxins with *later* the formation of a protein-cleavage product (anaphylatoxin). The initial and specific symptoms, including the prodromal rashes and the specific rashes, were due to the action of the special toxin. It was a fact that secondary rashes were, like the serum rashes, always either urticaria, a *morbilliform* erythema, or erythema marginatum. He suggested that they represented the reaction to the anaphylatoxin. It might be asked how was this true for the infections diseases in which the bacteria do not invade the organisms but only their toxins, as diphtheria. He drew attention to what might happen after the injection of such a poison as novarsenobillon, a non-protein poison. It had been shown that an illness closely resembling serum sickness might occur 8 to 10 days after the first injection of the *drug.* The suggestion was that the drug (or toxin, in the case of a bacterial disease) acted on the proteins of the body in such a way as directly or indirectly to lead to the formation of a protein-cleavage product. In the post-acute stage of diphtheria, untreated with antitoxic serum, rashes, quite indistinguishable from serum rashes, were occasionally met with. His conclusion was that the symptoms of an attack of an acute infectious disease were due to two main causes—the special toxin and the protein-cleavage product common *to all* (anaphylatoxin). In some infections there were no very specific symptoms—for instance, in pyæmia and septicæmia—due to streptococci. Even in these diseases rashes were not infrequently met with, so-called septic rashes. They again were almost invariably erythema multiforme or erythema marginatum, with a predilection for the extremities, and especially their extensor surfaces. There were certain experimental and clinical reasons for supposing that within limits different *proteins* produced different symptoms. Dr. Gairdner Davidson had suggested that the three different serum rashes were each due to a particular protein—albumin, euglobulin, or pseudo-globulin, the three proteins of horse serum. The subject required further investigation. Even if this proved to be the case it would not militate against the general conclusion that the rashes of the acute infectious diseases were due to special changes produced by special toxins, and that the common changes were produced by a *common toxin.*

Dr. E. GRAHAM LITTLE said that the very title of the paper indicated a refreshing break away from the arid tradition chiefly due to the German school of dermatology with its important exponent, Hebra.

Hebra's view was very uncompromisingly expressed in his chapter on diagnosis, where he wrote: "For the recognition of a disease of the skin no other assistance is required than a knowledge of the objective *symptoms which* are visible on the body in each particular case. We do not attach any value whatever either to the history or to the subjective phenomena in investigating a cutaneous affection, for we ought to be guided in this matter only by those symptoms which are appreciable by the sight, the touch, or sometimes by the smell. These afford certain and infallible grounds for the establishment of a diagnosis, for they have their origin in the malady itself."

With this conception the views of Brocq, and the French school generally, were in the sharpest conflict; it was a real satisfaction to him to hear the much more philosophic conception of the French school supported so wholeheartedly. Brocq classified skin conditions in two great groups, one containing diseases which might be regarded as true entities, of which the parasitic were the leading type, and the other, a larger group which were envisaged as skin reactions conditioned by a variety of internal factors.

The modern conceptions of the *erythema group* had their origin in the work of a general physician, the late Sir William Osler. Attention was increasingly directed to hidden foci of sepsis, the teeth and the tonsils being regarded as especially suspect, but other foci should also be considered. He could recall a very persistent and baffling case of recurrent erythematous eruption which was, in the end, definitely proved to be occasioned by a septic cyst in the appendix, the removal of which brought about a complete cessation of the eruption. In the rare and formidable condition known as disseminated lupus erythematosus all the symptoms pointed to a systemic infection, the nature of which had hitherto eluded us. He was reluctant to accept a tuberculous causation of this disease, chiefly because of its excessive rarity in young children. In a large department for skin diseases in children he had never met with a single instance during 25 years, yet the statistics of the hospital showed that fully one-third of all the admissions were due to tuberculosis. As regards a streptococcal causation, he had recently had an opportunity of observing a very severe case with *Dr. W. H. Willcox, and their attention* was especially directed to tracing a streptococcus as a causative agent, but without success. Erythema nodosum was of particular interest, for recent investigation, especially by American workers, seemed to point strongly to an infective causation, and there were at least three candidates for this bacteriological rôle: (1) the diphtheroid organism demonstrated by Rosenow in 1915; (2) the tubercle bacillus; (3) a streptococcus. He had very seldom seen any *evidence to support* the view *held* by Stokes, for merging erythema nodosum with the tuberculides, and the apparent immunity conferred by an attack, the very curious sex differentiation, and again the infrequency in childhood, made this explanation difficult to accept.

In connexion with skin vessels he spoke of the "skin-capillary microscope," invented by Otfreid Muller, of Tübingen, by the aid of which the tissues of the skin were said to become visible to the level of the subpapillary plexus. Several German authors working with this instrument admitted that their researches went a long way to corroborate the older French theories of "diatheses."

He had recently seen a puzzling case of *herpes zoster* in a man of 60. Quite definite herpes zoster on the left side was accompanied by a very remarkable eruption, which had appeared simultaneously, of sporadic vesicles exactly like the herpetic lesions, but distributed very generally over the body and especially on the trunk. There were over 280 of these vesicles. It seemed possible that this was an instance of the association between herpes zoster and varicella, which had been a burning subject of late. His opinion of the case was that it was an instance of the so-called aberrant vesicles which were seen in herpes, but never, as far as he knew, in such abundance. There were neither fever nor constitutional illness of any degree, nor were there other cases of varicella in the house or family either before or after.

Dr. H. W. BARBER, *speaking of lupus erythematosus,* said that from a series of cases collected during the past two years strong evidence was obtained that a chronic infection by a *Streptococcus longus* was the most important factor in the causation. A certain number of patients with the disease showed the stigmata, which pointed to a massive tuberculous infection in early life, and cases had been published in which it was accompanied by active phthisis or even general tuberculosis. In none of his own cases had there been evidence of active tubercle.

Recently post-mortem results of two cases had been published by Cranston Low and Rutherford. In one there were old tuberculous foci but no evidence of active tuberculosis; in the other there was complete absence of any trace of tubercle. In both there was some evidence of acute infection with a *Streptococcus longus*, in one case from the mouth and bronchi, in the other probably from the tonsils. In all his own cases one or more septic foci had been present, from which a long chained streptococcus had always been obtained, sometimes in pure culture. Primary foci would seem to be usually, if not always, the teeth, the tonsils, and perhaps the nose and nasal sinuses;

the intestines and probably the lymph glands seemed to become secondary foci in long-standing cases. In a few cases, in which oral sepsis could be excluded, the tonsils were not considered septic at first examination; further examination, however, showed the presence of pent-up pus, and after enucleation they were found to be extremely septic. It was often very difficult to decide whether the tonsils were septic or not from clinical examination.

There was a close association between lupus erythematosus and rheumatoid arthritis. He had recently seen two cases of severe rheumatoid arthritis with lupus erythematosus, and a considerable number of his own cases of lupus erythematosus had shown definite rheumatoid changes in the joints, or complaint had been made of joint pains. In the acute form these two diseases might subside without leaving any trace; in the chronic form fibrotic changes occurred which led to scarring of the skin and deformity of the joints. With regard to the association of rheumatoid arthritis and streptococcal infection of the teeth and tonsils he instanced Mollison's series of cases of improvement or cure after tonsillectomy. Acute exacerbations of lupus erythematosus in chronic cases of the disease, with the development of widespread areas of erythema resembling erythema multiforme, and accompanied by pyrexia and joint pains, were often followed, after the subsidence of acute symptoms, by rapid involution of the chronic patches.

Speaking of the results of treatment, he said that early cases had recovered completely after the removal of septic foci. Chronic cases had shown gradual but progressive improvement after removal of foci and subsequent autogenous streptococcal vaccination, and some would probably eventually recover. In some cases the vaccine had caused so much local and general reaction that it had been discontinued, and a vaccine in which the organisms were killed at 70° C. was used instead, with promising results so far. Prognosis, as with rheumatoid arthritis, depended upon the length of time the eruption had been present. Removal of septic foci in early cases might suffice to cure; in chronic cases secondary infection of the intestines and lymphatic glands probably kept the disease active.

He had recently seen some cases of young people in which there was an association of *nævi with cirrhosis of the liver*. Three were girls under 20, and on the faces of all three there was an intense acneiform eruption accompanied by rosacea, together with numerous spider nævi. Nævi were also present elsewhere—e.g., on the arms. The appearance produced by the acneiform eruption and nævi was so striking that after seeing the first case it was possible to diagnose hepatic cirrhosis in the other two at a glance. Two of the girls died with ascites, and post-mortem examination revealed extensive cirrhosis. The fourth case was a small child of a few years old who had multiple spider nævi on the face, which were steadily increasing in number, and the liver was found to be very large.

Dr. H. G. ADAMSON said that at one period all skin eruptions were looked upon as the result of some general bodily disorder. They were regarded as the outward sign of some dyscrasia or diathesis. This idea still lingered in the popular view that all skin eruptions were eczemas due either to gout or to impurity of the blood. Even at the present time most medical men were inclined to attribute skin eruptions to some internal complaint, whereas the more we knew of them the more did we find that they were ascribable to purely external causes. Scabies and ringworm of the scalp were at no very distant date thought to be the result of some internal disorder. Many forms of eczema were now shown to be the result of external irritants, as in the various occupation eczemas, dermatitis due to hair-dyes, poisonous plants, &c. A quite recent example of this change of view was the recognition of the eczematoid ringworms of the extremities. The history of dermatology during the past 100 years was that of a continuous fight against this prejudice of attributing skin diseases to a hypothetical bodily disturbance.

The more accurately skin lesions had become described, the more clearly had a large number of distinct clinical types been recognised, each of which represented a distinct form of inflammatory reaction to some one specific harmful agent. Examples were the eruptions—i.e., the types of inflammatory reaction due to the staphylococcus, the streptococcus, the acne bacillus, the tubercle bacillus, the *Spirochæta pallida*, the various forms of mould fungus, actinomycosis, sporotrichosis, even to different varieties of ringworm fungus, and to different drugs and plants and chemical agents, each of which eruption was easily recognisable by the trained observer. Again, the eruption of the specific fevers were examples of characteristic reactions to specific microbes and were familiar to all. This being so, it seemed only reasonable to suppose that in the case of eruptions of unknown origin, each with its own distinctive features, we should look for a specific agent as the cause of each. It was not suggested that all these eruptions of unknown origin were due to external agents and that none of them bore any relation to internal disorders, for we knew that there were cases in which the eruption was due to a microbe brought to the skin by the blood stream, as in syphilis, some forms of lupus, and the specific fevers. But in such cases the eruption was not the result of the bodily illness, but a part of the complaint, in which the skin eruption represented an inflammatory reaction to the same microbes as caused the internal disorder. There was a third class of eruption due to a toxin brought to the skin by the blood stream and comprising the toxic erythemas, and dermatites of toxic origin. The term "toxic eruption" had been used for serum rashes, food rashes, and even drug rashes, after its first application to cases of generalised erythema reported after injections of old tuberculin and the use of antidiphtheritic serum. The idea had led to the suggestion that many eruptions of unknown origin, such as psoriasis, pemphigus, and lupus erythematosus, were caused by toxins the result of defective metabolism, toxins absorbed from the intestine, toxins due to altered internal gland secretion or the result of absorption from septic foci. Moreover, the conception of toxic dermatitis had led to the suggestion that eruptions due to general infections or general toxæmias were to be explained as phenomena of anaphylaxis or hypersensitiveness. Thus the eruptions of syphilis or the exanthemata might be regarded as cuti-reactions in a hypersensitised subject. Similarly, in the case of horse serum, foods, or drugs their eruptions might often be produced by minute quantities of the serum, food, or drug to which the patient had become hypersensitive. This acquired hypersensitiveness possibly helped to explain why the causes of many skin affections still eluded us, for the amount of toxin required to produce the eruption might be so minute as to be detected with difficulty.

What knowledge we had taught us to look for some one specific poison for each different type of eruption, and not to be content with a general hypothesis of endogenous toxins, altered internal gland secretion, or toxins from a septic focus. As an illustration erythema multiforme might be cited. We should expect to find the causative agent of this very characteristic eruption in some one specific microbe or toxin, which was responsible both for the internal symptoms and for the eruption on the skin. Epidemics of erythema multiforme and of Henoch's purpura occurred, together with similar symptoms, and it seemed possible that these two complaints were one disease due to the same causative agent.

There were few internal disorders which we could associate definitely with a skin eruption in the relation of cause and effect. Xanthoma diabeticorum, the pigmentation of Addison's disease, and some instances of alopecia and leucoderma associated with Graves's disease were all that could be named apart from such affections as herpes zoster, which seemed to be directly dependent upon organic nerve lesions. Although it was possible that other unexplained eruptions might be shown to be due to endogenous toxins from altered metabolism associated with visceral disease, this was, at present, merely a plausible hypothesis.

Dr. J. M. H. MACLEOD said that it seemed to him that just as the skin was an important and essential organ of the body, linked up directly or indirectly in its perfect functioning with every other organ, so any diseased condition of an organ, if it went on long enough, was liable to be associated with a disorder of the skin; and, on the other hand, any diseased condition of the skin, however local its ætiology, was liable to be influenced more or less profoundly by the general internal state. He would confine his remarks to the group of cutaneous affections in which a causal connexion could usually be established with some form of alimentary toxæmia—namely, urticaria and the so-called toxic erythemata, including the group known since Hebra's time as erythema multiforme.

Gastro-intestinal derangements resulting from improper diet had been blamed by certain observers as potent influences in the causation of eczema, and in certain quarters excessive meat-eating had been held to be responsible for the aggravation of psoriasis. These views were now no longer accepted. In infantile eczema it was rare to find the association of the skin affection with digestive disturbances sufficient to cause definite symptoms, such as vomiting and diarrhœa, and he did not remember ever having met with a primary attack of eczema in an adult which followed directly on a gastro-intestinal derangement. Urticarias and erythema multiforme were not now regarded as distinct diseases, but were looked upon as cutaneous reactions due to a variety of toxic irritants, and often associated with visceral disturbances, pain in the joints and muscles, coated tongue, fever, and other evidences of a general toxæmia.

In urticaria an attack might follow the ingestion of some article of food which was poisoned, or of some food in itself innocuous but acting harmfully owing to an individual susceptibility or to an inflamed state of the gastro-intestinal tract. It was frequently observed in connexion with chronic recurrent urticaria that the primary attack was the result of some gross error in diet, while subsequent attacks resulted from an acquired susceptibility, and were produced by small quantities of the same food or of some other usually harmless article of diet. This anaphylactic phenomenon suggested that the poisonous food substance called forth a response on the part of the organism with the production of antibodies for that special food, so that after a time a second dose, even minute in quantity, was so rapidly disintegrated by the antibodies that toxic heterogenous proteins were formed which caused the cutaneous lesions. These foreign proteins were as subtle as they were virulent, and so far had escaped detection in the blood. In some cases the antibodies themselves might become absorbed, and be responsible for the cutaneous lesions.

The manner in which the urticarial reaction was called forth was unknown, and it was still a matter for discussion whether it was an angio-neurotic phenomenon due to irritation of the vaso-motor apparatus, either centrally or peripherally, by the toxin, or was an acute inflammatory process due to the local action of toxins on the cutaneous blood-vessels. When it was remembered that toxic substances, such as morphine and peptone, could produce urticaria when injected into the skin of a dog even after division of the sympathetic nerve to the part or the removal of the sympathetic ganglion, the latter explanation seemed the more probable. It was corroborated also by the observation that the fluid in a wheal was rich in albumin and more in the nature of an inflammatory exudate than a simple transudation of serum such as might occur in an angio-neurotic process. That there was some other factor there could be no doubt, as the inflammatory basis alone was insufficient to explain factitious urticaria.

The lesions of the toxic erythema group were also symptomatic of a general toxæmia, and seemed to result from the action of some toxin on the cutaneous blood-vessels. It was difficult to explain why a certain food toxin might cause urticaria in one person and an erythematous or bullous lesion in another. It might be said that food toxins of a protein nature tended to cause reactions of an urticarial or erythematous type, while bacterial toxins were more liable to give rise to bullous or purpuric lesions.

The work which had been done recently in protein sensitisation, chiefly in America, might eventually throw light on this difficult subject. In the meantime, it seemed to him that our greatest hope lay along the line of physiological chemistry, with the discovery of toxic substances in the blood, which up to now had eluded detection.

Dr. H. MACCORMAC spoke of the external parasitic or exogenous eruptions, and pointed out that internal order or disorder had a definite relationship to these local infections.

It was well known that ringworm of the scalp ceased at puberty, although at this time we could detect no microscopical, chemical, or physical change in the hair or its surroundings. Nevertheless, some extraordinary alteration must have occurred in consequence of the establishment of certain internal secretions, which might be inhibitory, as in this case, or have an effect in the causation of the disease, as in acne vulgaris, which begins about puberty. From the pustules of acne could be obtained a staphylococcus, and in some cases almost dramatic results might be obtained in acne from the use of staphylococcal vaccines, but here the infection only has been notified. On the other hand, in bromide acne the infection was secondary, and depended upon preparation for it by a previous alteration of the tissues. As pointed out by Sabouraud, the masculine type of baldness was a condition which depended upon the different functions of sex, but it also depended upon local disease of the scalp, and could be modified by treatment. These observations supplied further evidence of a general or determining element in apparently local disease.

Referring to another general factor capable of influencing local cutaneous infections Dr. MacCormac said that the frequency of scurvy among the Eskimos was well known, but it was not so generally known that they were also liable to another deficiency disease called "kallak." This occurred in epidemics, and was characterised by intense itching, and by the appearances of pustules on the hands, elbows, buttocks, and other parts. It appeared when there was insufficient fresh seal-meat, or when the herring crop failed, and was cured when these foods were freely obtained; it was thought to be due to the lack of some fat-soluble vitamine, a belief supported by known facts.

ROYAL SOCIETY OF MEDICINE.

SECTION OF PATHOLOGY.

EXHIBITION OF SPECIMENS.

A MEETING of this section of the Royal Society of Medicine was held on Feb. 15th, Dr. J. C. G. LEDINGHAM, Vice-President, being in the chair.

Dr. MACKENZIE WALLIS gave a demonstration on Estimation of Sugar in the Blood.

Dr. A. E. GOW showed a specimen from a case of

Infective Endocarditis Complicated by Fat Necrosis.

The patient from whom this specimen was obtained was a distiller's carman, aged 37, who was admitted to hospital in June, 1920, suffering from subacute bacterial endocarditis.

The infecting organism was a minute Gram-negative bacillus, which was obtained on only two occasions by blood culture, and then under aerobic conditions in broth. All attempts to induce it to grow in subculture on solid media made by Dr. Gordon Mervyn and himself were unsuccessful. The organism was found in large numbers in films of the valvular vegetations post mortem. The leucocyte count was between 4000 and 5000 per c.mm. As is commonly seen in cases of infective endocarditis, the urinary output, except towards the end, was relatively high, averaging between 1600 and 2000 c.cm. in the 24 hours, and there was a remarkable constancy of the specific gravity of the 24-hour specimen of urine, which was independent of the quantity of urine passed. Albumin was always present, varying from a "faint trace" up to 0·225 per cent. (Esbach). Blood, except for one period of three weeks' duration, was practically a constant constituent of the urine, often in quantity sufficient to be appreciated by the naked eye. Post mortem both kidneys showed cloudy swelling and a slight degree of embolic focal nephritis, but were not extensively "flea bitten." The left kidney contained a small subcapsular infarct of some standing. Microscopically they showed a diffuse nephritis. Many of the Bowman's capsule spaces were dilated and the epithelium covering the tufts was swollen and proliferating and there was some adhesive glomerulitis with peri- and intra-glomerular fibrosis. Some glomeruli were transformed into fibrous hyaline masses. There were small areas of round-celled infiltration in the stroma of the cortex, the cells being chiefly plasma cells and lymphocytes. The smaller arteries showed marked arterio-sclerotic change.

Infarcts occurred in the skin, spleen, and kidney. (*a*) The skin: On admission, six weeks after the onset of symptoms, a few small purpuric spots were scattered about the body; in addition a maculo-papular erythematous rash was present on legs and trunk, being most marked on the front of the legs. On the abdomen both fading and fresh macules were present; this rash was of short duration and did not recur. No fresh petechial hæmorrhages were observed for nearly a month, when a crop appeared on the right side of the abdomen and back; after an interval of two months there was a fresh shower. During the last three weeks of his illness fresh petechiæ were found almost daily on the legs and forearms, and a day or two before death large subcutaneous hæmorrhages occurred on both thighs. Osler nodes also formed in the fingers. (*b*) The spleen: A splenic infarct occurred 22 weeks before death. On the day in question he vomited at 6 P.M., complained of sudden sharp pain in the left flank which lasted for five minutes, followed in half an hour by a rigor and temperature of 103·6° F. The next day loud friction was heard over the spleen. At the post-mortem examination three recent infarcts were found in the spleen in addition to one old one, the latter being the largest. It was limited by a well-marked capsule, the infarcted area was appreciably depressed below the surface level of the surrounding spleen, it was yellowish in colour and almost cheesy in consistence, but there was no macroscopic calcification. Sections of this old infarct showed complete necrosis and loss of structure; the area was enclosed in a thick, fibrous capsule in which were cells laden with golden-brown pigment granules. Calcification was beginning at the margin.

Diffuse fat necrosis was found involving the subperitoneal tissue of the anterior abdominal wall, mesentery, and omentum, and the perirenal and peripancreatic fat. There was no fat necrosis in mediastium. On the lower border of the pancreas, near the head, was a small area much softer to the touch than the firm gland surrounding it. This area was dark in colour and in its neighbourhood fat necrosis was most marked, the small white opaque patches being here confluent. At the time of the autopsy this was considered to be an infarct, but histological examination showed that the gland tissue was not involved, the fat necrosis being entirely extrapancreatic. Considerable dilatation of the ducts of the gland existed, but the actual cause of the necrosis had not been determined. Fat necrosis began, Dr. Gow believed, either on the thirteenth or twelfth day before death. Attacks of vomiting, with or without abdominal pain, occurred throughout the illness; in the early stages the attacks were infrequent, lasting a day or two, but towards the end they recurred at shorter intervals. On the twelfth day before death his condition appeared much worse and he became afebrile. He vomited in the morning and in the evening began to complain of a sharp pain in the epigastrium, which was increased by coughing, and there was a rise in pulse frequency from the nineties to 110 for six hours. From then onwards he went downhill rapidly; vomiting of large quantities of fluid took place at increasingly frequent intervals—thus on the eleventh day before death he brought up 700 c.cm. in five attacks, while on the fourth and third days he vomited 15 times, producing 2525 and 5350 c.cm. respectively.

The duration of the disease was 34 weeks. There was no history of rheumatic fever or other cause of endocarditis, which was, Dr. Gow believed, unusual in cases of infection with Pfeiffer-like organisms, but he had seen another example recently of an apparently primary influenzal endocarditis. Histological examination of the aortic cusp showed marked fibrotic thickening and the cusp was traversed by numerous blood-vessels containing an excess of polynuclear cells which also infiltrated the surrounding tissues. An old vegetation was extensively calcified, making it probable that he had previously suffered from endocarditis. The heart muscle showed advanced but patchy fatty degeneration, some brown atrophy, and perivascular fibrosis. Slight, but quite definite, clubbing of the fingers was noted on admission, six weeks after the onset, but did not increase appreciably up to the time of his death.

Influenzal Meningitis of the Spinal Cord.

Dr. T. H. G. **SHORE** showed a specimen of the spinal cord of an infant who died from meningitis.

The arachnoid space was filled with purulent exudate, mingled with which were areas of hæmorrhage; these did not appear to be additional to the pus, but rather the precursors of it, the infective process spreading in the effused blood. The inner surface of the dura was involved, and at the autopsy was adherent to the underlying structures, from which it had been separated afterwards in part only. Pfeiffer's bacillus was found in the cerebro-spinal fluid before death and cultivated from it. No other organism was present. There was purulent meningitis of the brain, mainly affecting the base, with ependymitis and distension of the ventricles with pus. The immediate cause of death was probably a hæmorrhage, which was found to occupy the left lateral ventricle and to have arisen from the choroid plexus. There was some purulent exudate in both middle ears, but this contained other organisms besides Pfeiffer's bacillus. The lung and air passages showed no abnormality. The child was a male infant of 10 months, breast fed, who fell out of bed three weeks before admission to hospital; afterwards he had not been well, occasionally vomiting and refusing his food. A week before he was seen the child became apathetic, took no notice of surroundings, but had no fits or further vomiting. There was high fever and pulse-rate, with irregular and rapid respiration, slight retraction of the head, and a fine tremor of the right hand. The blood was sterile.

Dr. **SHORE** also showed

The Right Knee-joint from a Case of Hæmophilia.

Hæmorrhage was present, and even after prolonged hardening in Kaiserling's fluid much of the effused blood was in a fluid state when the joint was opened. The various pouches of the joint were filled with blood, and the articular surfaces were stained by it. The synovial membrane appeared to be somewhat thickened, but histologically there was little abnormality. The cartilage of the upper end of the tibia was somewhat discoloured to a considerable depth at one point, but it was the point of attachment of one of the crucial ligaments; a similar condition was seen on the femur. The cut sections of the condyle of the femur and of the patella showed small cavities in the cartilage, some of which contained blood-vessels. The specimens were obtained from a male child, aged 4½ years, whose three brothers were healthy; all five of the maternal uncles died from hæmophilia. The boy was known for nearly four years to have had the disease, and had been in hospital on several occasions. The case had already been reported[1] by Vines, who was able to shorten the coagulation time of his blood by inducing anaphylaxis. He was brought to hospital last June, having bitten his tongue while cracking nuts with his teeth. Horse serum had no effect upon the hæmorrhage, but it was checked by a transfusion of 50 c.cm. of his father's blood. Bleeding started, however, from the operation wound and this, though small, led to his death.

Dr. **SHORE** also exhibited a specimen showing

Retrograde Extension of Carcinoma in Lymphatics.

The specimen was one of a coil of small intestine over the surface of which were several dilated lymphatic vessels; these appeared to be filled with chylous fluid, but were in reality solid. They were in direct communication with some lymphatic glands at the origin of the mesentery, which formed part of a large mass of retro-peritoneal glands surrounding the aorta and inferior vena cava and the head of the pancreas. The situation of the primary growth was not determined with certainty, but was probably in the stomach, where were several malignant ulcers and some submucous metastases. Other secondary deposits were found in the pulmonary glands and beneath the visceral pleura. Histologically the growths were spheroidal-celled carcinomata, and a section of the wall of the intestine showed growth in the subperitoneal and submucous lymphatics as well as in the lacteal vessels of the villi. There seemed no way of explaining this condition but to suppose that the carcinoma had grown backwards against the direction of the lymph flow. The specimen was removed post mortem from a man, aged 39, who was under the care of Mr. G. E. Gask, having come to hospital with ascites and constipation of five days' duration. He had had symptoms of dyspepsia for six months, and lately some vomiting and melæna. Exploratory laparotomy revealed the presence of growth and pseudochylous ascites. He died one month after he was first seen.

Dr. E. H. **KETTLE** showed specimens of: (1) a Congenital Sacral Teratoma; (2) a Primary Chancre of a Finger following Trauma.

SECTION OF ANÆSTHETICS.

A MEETING of this section of the Royal Society of Medicine was held on Feb. 4th, with Dr. H. J. **SHIRLEY**, the President, in the chair, when a paper was communicated by Dr. S. **ROWBOTHAM** and Dr. I. **MAGILL** on

Anæsthetics in the Plastic Surgery of the Face and Jaws.

The paper was based on 3000 cases at Queen's Hospital, Sidcup. After alluding to the physical and mental peculiarities of the type of patient and to the number of times each of them generally required an anæsthetic, the authors divided the cases into those in which the anæsthetist has control of the mouth and those in which he has only the nose at his disposal. In all cases the main difficulty is that of maintaining a proper air-way. When the mandible is altogether or largely missing a long blunt instrument is employed through the mouth to hold up the base of the tongue during induction. Technique was described rendering possible the use of nitrous oxide for induction in patients with broken or abnormal jaws. Intratracheal insufflation proved to be the most generally applicable method. The authors had devised means for employing gas and oxygen with this method, generally combining the gases with small amounts of ether. The methods of passing the catheter through the nose and guiding it into the larynx by specially devised instruments were described. Frequently dilatation of the nares by a series of tubes was required, and often a tube was used through each nostril. The use of nitrous oxide and oxygen, with or without the aid of local infiltration, was described in connexion with superficial flap operations. The necessary steps were described for avoiding chest complications, which are to be feared owing to the length of time required by most of the operations dealt with. These averaged one and three-quarter hours and were often over three hours. In 1700 cases there had been only four instances of bronchitis and two of pneumonia.

Discussion.

Mr. H. E. G. **BOYLE** feared that the dilatation of the nose, as described, was very likely to cause bleeding. His own experience of passing nasal tubes was that although one side of the nose was usually free it frequently happened that it was almost impossible to pass a second tube through the other nostril. He believed that colonic oil-ether anæsthesia was too uncertain for the class of case discussed and also that the long unconsciousness afterwards was a drawback. His present preference for these operations was a combination of gas and oxygen and C.E. mixture.

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[1] Quarterly Journal of Medicine, 1920.

Mr. G. **RAMSEY PHILLIPS** pointed out that a catheter passed through the nose could usually be guided into the larynx by altering the position of the patient's head, without using an instrument through the mouth.

Dr. W. J. **MCCARDIE** said that in a large experience of the kind of case dealt with by the authors he had used very simple methods. Nasal or oral intubation with "draw-over" inhalation from a mask or plain gauze had generally given good results. Nasal tubes should have a large lumen and be comparatively stiff. There were certain advantages in the use of chloroform for these cases, little oozing and quiet respiration and circulation.

Mr. L. **KIRKBY THOMAS** said that he induced with C.E. mixture from an open mask, passed a wide rubber tube down into the pharynx and packed this round with gauze and then passed the delivery catheter of a Junker's inhaler into the tube. The catheter was kept in position by pressure against a safety-pin transfixing the pharyngeal tube.

Dr. F. E. **SHIPWAY** considered intratracheal ether far superior to the older methods for these face operations. Nasal tubes frequently cause damage with considerable bleeding, and he believed that there was a risk of conveying septic infection if a catheter were passed through the nose into the trachea.

Mr. C. T. W. **HIRSCH** described a tap for allowing small portions of ether to be taken up when it is required to supplement gas and oxygen with this anæsthetic, and Mr. **ERIC GANDY** also spoke.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

AN ordinary meeting of this society was held on Feb. 18th at 1, Upper Montague-street, W.C., Dr. F. E. **FREMANTLE**, M.P., the President, being in the chair.

A portrait of Professor H. R. Kenwood, C.M.G., the ex-President, was presented to the society on behalf of the Metropolitan and Home Counties Branches. Its acceptance was asked by Dr. W. M. **WILLOUGHBY**, President of the former, and Dr. J. M. **CLEMENTS**, of the latter, and accepted by Dr. **FREMANTLE**. Professor Kenwood's great services during his two years' presidency were referred to with appreciation, especially in connexion with the reconstruction of the society and the formation of the various groups into which it is now divided. This was effected under Professor Kenwood's guidance with complete success. Twenty-four new members were elected at the meeting.

An address on

International Organisation and Public Health

was delivered by Dr. G. S. **BUCHANAN**, senior medical officer to the Ministry of Health, which appears in full in the front of our present issue.

The **PRESIDENT**, in expressing the unanimous thanks of the society to Dr. Buchanan, said that the nation was greatly indebted to the lecturer for his personal work as representative of this country in the international sphere. The address reminded them that their own interests, though infinitely wider than that of most of their fellow citizens, were narrow in comparison to the broader field which he had opened up to them.

Dr. T. H. C. **STEVENSON**, superintendent of statistics, General Register Office, speaking of the difficulties in overcoming the hidden differences in the nomenclature of death statistics in various countries, said that last year's international conference in Paris was an example of "how not to do it." It was hopeless to deal with such a subject by occasional large conferences lasting only a few days, and a smaller and permanent representative body was needed for the purpose. He asked Dr. Buchanan what he thought of the 12 days' quarantine imposed at New York for three cases of typhus.

Dr. W. **PERRIN NORRIS**, chief medical officer of the Australian Commonwealth Medical Bureau in London, said they had to break down barriers and realise the interdependence of all public health administrations, great and small. Uniformity in food legislation was greatly needed, and Dr. Norris referred to the fact that Norway had adopted laws in this connexion which had had their birth in one of the Australian States. The work did not concern only infectious disease. They had to think more of positive health—the joy in life—rather than of the mere absence of disease. What was wanted in international health relationships was, in Danton's phrase, honesty! honesty! honesty!

Dr. W. M. **WILLOUGHBY**, M.O.H., Port of London, spoke appreciatively of Dr. Buchanan's paper on the hitherto misty subject of international health agreements. All such agreements were in the end educational, and it must fall to a few nations to educate the others. The British regulations of 1907 in regard to cholera, yellow fever, and plague were far ahead of the conclusions of the international conference of 1912. The Americans were now reported as doing something which was medically unthinkable—the holding up of ships for a prolonged period in dealing with something (a few cases of typhus) quite within their control and dependent on a carrier on which they could put their finger, and which was not even microscopic. The risk even was not great enough to justify such measures. In some centres there was, of course, the possibility of danger, but this was practically obviated by being known. The experts could not have been in touch with the Government. Such matters should be left to the experts and not to the diplomats.

Dr. A. H. **BYGOTT**, M.O.H., West Suffolk, regretted that there was not more travel abroad on the part of British medical graduates. He referred to the lack of uniformity in the medical examination of emigrants in various ports, and expressed the opinion that they should not be allowed to embark at their home port unless they complied with the requirements of the country of their destination. Many ports had M.O.H.'s not specially qualified for the post. The port sanitary work in London was admirably done. The hygiene of ships was very defective, and much money and trouble would be saved to the shipping companies by an efficient and better-paid medical service on ships. More might be done for the treatment of venereal diseases on shipboard, especially irrigation for gonorrhœa.

At this stage the President left, and the chair was taken by Dr. C. **SANDERS**, M.O.H., West Ham.

Dr. C. **PORTER**, M.O.H., St. Marylebone, in thanking Dr. Buchanan, remarked that in future they would have to rely more and more on the port medical officers, who were doing a fine work.

Dr. **BUCHANAN**, in reply, thanked the meeting for their reception of his address, and said that he was glad of the opportunity, which he had not previously had, of describing to a medical or wider public the preliminary work which had been done in the establishment of an international health office. In regard to epidemic diseases, there ought to be direct interchange of information between health office and health office. When it passed through non-technical officials there was a tendency to suppression of facts which frightened them, and a good deal of existing difficulties were due to that. Such channels of communication ought to be short-circuited. He agreed with the remarks which had been made on the subject of the medical examination of emigrants, and also with Dr. Willoughby's point as to the need for the education of the smaller—and in some cases of the larger—countries.

NAVAL, MILITARY, AND AIR FORCE HYGIENE GROUP.

A MEETING of this group of the Society of Medical Officers of Health was held at the house of the society, 1, Upper Montague-street, on Feb. 4th, the President, Professor H. R. **KENWOOD**, being in the chair. Amongst those present were Sir **ROBERT HILL**, Director-General of the Naval Medical Department; Sir **JOHN GOODWIN**, Director-General of the Army Medical Service; Surgeon Rear-Admiral P. W. **BASSETT-SMITH**; and Brigadier-General W. W. O. **BEVERIDGE**, Director of Hygiene, War Office.

Lieutenant-Colonel J. **ROBERTSON** was elected a Vice-President and by-laws of the group were adopted.

The PRESIDENT, in introducing Surgeon Commander R. ST. G. S. BOND, Professor of Hygiene at the Royal Naval College, Woolwich, to read his paper on

Some Recent Improvements in Hygiene of the Royal Navy,

expressed on behalf of the group appreciation at the presence of the Directors-General of the Navy and Army.

Commander BOND said he particularly welcomed the formation of this group because it offered an opportunity to air the difficulties which beset naval hygiene from time to time and to receive criticism of our methods and suggestions from members whose wide experience in the military and civil health problems greatly qualifies them to offer.

Up to 1918 coöperation in hygienic matters was practically non-existent. The Naval Medical Service as a whole was a closed box to the outside world. There was no special health service. Within recent years, however, certain inducements and facilities have been offered to selected naval medical officers to obtain public health diplomas, and amongst these the establishment of a naval health service was the most important. The lecturer indicated the administrative procedure in detail and drew attention to the coöperation which now existed between the Naval Medical Service, on the one hand, and the Ministries of Health, Air, Agriculture, Shipping, &c., the War Office, medical officers of health, port sanitary authorities, &c., on the other hand.

After speaking of the importance of the department of civil engineers in the Service in regard to naval health and sanitary arrangements, Commander Bond went on to discuss the best methods of ventilating modern warships. The chief difficulty in this respect lay in the fact that fighting efficiency was the main object in the construction of the ship, and that ships might be sent to parts of the world where there are extremes of temperature. He said that the essentials of good ventilation in a ship were (1) the circulation of a sufficiency of fresh air; (2) the distribution of such air without creating draught; and (3) the maintenance of a suitable temperature. The conditions in a modern iron ship were like those in a bottle, through the neck of which fresh air had to gain access and foul air to escape. When a ship is in action the whole difficulty of ventilation is greatly increased, as in the supply of fresh air by artificial means poisonous gases may instead be supplied. This was a matter which was to receive further and urgent consideration.

Artificial ventilation in warships was carried out by three methods: (1) the plenum system; (3) the exhaust system; and (3) a combination of these two systems. The first was used for living spaces, a natural exhaust being trusted to. Fresh air was drawn through inlets or cowls and propelled by electric fans along steel tubes for distribution in the spaces or compartments requiring ventilation. The object was to introduce fresh air at the rate of 50 cubic feet per minute per man or 3000 cubic feet per hour. With a view to avoiding draughts, metal deflectors are placed in the trunks opposite each grating in the compartments, which by adjustment give a limited flow through each grating. When deflectors are fitted to a new ship a formula is used to make the adjustment so that a limited flow of air is directed to each outlet grating and no unpleasant draught is perceptible at more than a foot away, even when 100 cubic feet of air per minute are issuing from the grating. The maintenance of a suitable temperature was obtained by passing the cold air over thermo-tanks which were merely receptacles containing tubes through which steam passed under low pressure to warm and dry the air. A by-pass was fitted, in addition, to admit of cold air in certain proportions being mixed with the heated air. A suitable temperature is regarded as from 55° to 60° F. Such an arrangement required the closest supervision. No attempt had been made in tropical climates to supply cooled air. The exhaust system was applied exclusively to those places where great heat and vapour, foul odours, or dangerous gases were generated, whilst a combination of the systems was used for medical dressing-stations and operating rooms.

It was unfortunate that the Board of Construction did not have as one of its members the medical officer on the staff of the Medical Director-General whose duties were specifically connected with hygiene and the ventilation of ships in particular. He inspected ships only on completion, when frequently his suggestions for improvement were such as to be impracticable owing to structural difficulties. Regular observations on readings of the wet- and dry-bulb thermometer in the living spaces were taken and samples of air collected in special bottles for analysis at the R.N. laboratory at Greenwich. Any degree of CO_2 from 12 parts per 10,000 upwards indicated faulty ventilation.

In regard to accommodation 200 cubit feet has been fixed as the allowance per man, and whilst no special floor or deck space was fixed the spacing between hammock hooks must not be less than 20 inches. Formerly it was 16 inches, a condition which led to much overcrowding. In the old navy the diseases most prevalent were scurvy, small-pox, and dysentery. These had been overcome. Now they were chiefly respiratory infections. Modern conditions in a man-of-war might be said to increase this liability, and thus tuberculosis was our present-day scourge. In spite of the energetic steps which have been taken the incidence of tuberculosis in the navy still remained high and was the highest cause of invaliding out of the Service, although since the war this incidence happily has showed a marked tendency to decline.

The main preventive measures were careful physical examination on entry and early diagnosis of the disease. All men in ships were now weighed once a quarter. Men showing loss of weight or a deficiency in weight were subjected to careful examination. Suspected cases were sent to the larger hospitals, where every facility for diagnosis was at hand. Actual cases are transferred to huts in the hospital grounds conducted on the lines of a sanatorium, and later the cases are invalided out of the Service on full disability for a period of treatment in their local district. A combined Service sanatorium would prove a useful institution where discharged tuberculous men might be rendered fit to engage in the business of life subsequent to their service.

Discussion.

The PRESIDENT, in thanking the lecturer for his extremely interesting paper, referred to the birth of a Naval Health Service as marking a very important development in connexion with the health of the navy. The system of ventilation adopted was a completely scientific one, and he expected that valuable results would accrue therefrom.

Sir JOHN GOODWIN, like the President, was anxious to know whether the deflectors were in any way accessible to the men, since his experience was that ventilating shafts contained anything from a pair of socks to parakeets. To his knowledge there was an increased incidence of sickness on transports as compared with warships.

Sir ROBERT HILL was able to testify that the installation of naval health officers had created a fine liaison system between medical officers of health and the navy. During the war the question of poison gas or of the admission of T.N.T. into a ventilation system had to be taken into account, and one had to consider how much artificial ventilation one dared allow during an action.

General BEVERIDGE referred to the excessive overcrowding of the American transports. They lost 1 per cent. of their men from pneumonia, and a further 1 per cent. from men landed sick from the transports. During the influenza epidemic in the winter of 1918–19 every effort had been made to introduce greater space between the men on transports. Hitherto there had been as much space allotted as they would have had in their coffins. There ought to be a 30-inch distance between men's heads, and a superficial area of 13 sq. ft. The ventilation of dead ends was a great difficulty, and the method found to be most efficient were blowers which introduced air at floor-level. The speaker referred also to the different forms of apparatus used in ventilation, such as cowls and cowl shafts, windsails, and windscoops, and considered the use of the wet- and dry-bulb thermometer not only provided practically all that was wanted as regards the state of ventilation, but produced more reliable results. Three-quarters of infectious disease were due to respiratory transmission, which was one of the strongest arguments in favour of increased accommodation.

Surgeon Rear-Admiral BASSETT-SMITH considered that tuberculosis was of more importance than syphilis, and advocated the establishment of a Service sanatorium and the thorough examination of all men such as stokers and stewards who joined the Service later in life as a rule than the ordinary ratings.

Captain TATE also spoke and Commander BOND replied briefly.

The lecture was illustrated with diagrams and apparatus was exhibited.

Major W. N. W. KENNEDY, Town Hall, Croydon, is the honorary secretary, and will be glad to receive the names of intending members and to answer any communication.

LIVERPOOL MEDICAL INSTITUTION.

AT the last meeting of the Pathological Section, with Dr. J. E. GEMMELL, the President, in the chair, Mr. ROBERT KENNON read a paper on

TUMOURS OF THE PAROTID GLAND.

The material upon which the paper was based consisted of 124 parotid tumours removed at the Royal Infirmary, together with pathological reports and slides obtained from Professor E. E. Glynn and the private collections of Mr. R. Parker, Mr. F. T. Paul, and Mr. Thelwall Thomas. On analysis of this extensive material 91 cases were found to be adenomata, 27 carcinomata, and the remaining 6 sarcomata. In 38 cases of the adenomata after-histories had been obtained; 22 were alive and well, after an average period of 11 years; another had died without recurrence seven years after operation. Five had had recurrence. The tumour appeared most frequent in females; the age at onset averaged 30 years, the age at operation 37 years, giving an average delay of seven years before surgical aid was sought. There was a history of trauma in four cases. Pathologically Mr. Kennon considered the tumour to be an adenoma with mucinous degeneration, and later with regeneration as cartilage. There was no evidence to support a branchial or endotheliomatous origin of these tumours. Recurrence was shown to be due to insemination of the field of operation with fresh cells, which were found to be most healthy on the under side of the tumour and frequently split the capsule. The recurrence was immediate in five out of nine known dates, and averaged 1½ years; the second operation took place on the average after 5·5 years' delay. In three previous cases the subjects of recurrence had remained well for over five years. No evidence was obtained that operation hastens recurrence or shortens the life of a patient. Carcinoma of two types, the spheroidal and the cube-celled, were found; 35 per cent. of these originated in simple tumours. The malignant change in a simple tumour occurs more frequently in females about the age of 40. Pain, rapid growth, early fixation, and facial paralysis characterised these tumours. Lymphatic glands were involved late. Sarcoma, round and spindle-celled varieties occurred; one case traced died five years after the onset of the disease and two years after operation. Radium had beneficial effect on certain cases of simple origin.

BRISTOL MEDICO-CHIRURGICAL SOCIETY.

SHORTNESS OF BREATH.

A MEETING of this society was held on Feb. 9th, when a discussion on this subject was opened by Dr. L. E. V. EVERY-CLAYTON, the President. He gave a brief review of the physiology of respiration, and divided the causes of shortness of breath into inhibitions of respiratory movement, occlusion of air-passages, and changes in the composition or intrapulmonary circulation of the blood. He gave examples of each group and made a number of propositions to furnish a basis for discussion.

Dr. J. R. CHARLES demonstrated and explained Professor L. S. Fridericia's apparatus for measuring the carbon-dioxide content of the alveolar air. He showed that dyspnœa was caused whenever an increase of the circulating acids, volatile or otherwise, stimulated the respiratory centre to increased effort, and instanced the air-hunger of diabetic coma and of salicylate poisoning, as well as the dyspnœa accompanying muscular effort and provoked by excess of lactic acid. He drew attention to some of the discrepancies to be observed in pulmonary disease, where a small lesion, such as an infarct, might cause more dyspnœa than was often encountered in much grosser lesions of the lung.

Professor F. H. EDGEWORTH discriminated between subjective breathlessness and quickened respiration, and instanced "Cheyne-Stokes" breathing as a condition in which the patient had little or no discomfort. In pneumonia, with a respiration-rate of 40 per minute, there might be no subjective dyspnœa, but a patient with bronchiolitis breathing at the same speed would feel very short of breath. He also alluded to hysterical quickness of breathing.

Dr. J. O. SYMES mentioned some of the conditions in which it was difficult to explain the dyspnœa present, remarking that in cases of cardiac disease without murmurs it was apt to be a prominent symptom, and that in emphysema of the lungs it was often difficult to determine whether the shortness of breath was due to the emphysema itself or to the myocardial degeneration and the obesity which so often accompanied it. He also spoke of the dyspnœa of hyperthyroidism and of mediastinal tumour.

Dr. C. F. COOMBS gave a brief account of the origin of dyspnœa in cardiac disease, speaking particularly of conditions of deficient aeration due to right heart failure, and also summarised recent work on the part played by acidosis in the causation of "cardiac asthma" and allied disorders of respiration. He pointed out that even in the presence of organic disease of the heart the nervous element had to be considered.

Dr. R. G. GORDON said that he was impressed by the part played by the endocrine glands and the autonomic nervous system in the production of dyspnœa, and instanced the effect of emotion and of adrenalin in relieving asthma.

Dr. E. H. E. STACK asked how it was that children with evidence of acidosis might nevertheless be free from dyspnœa.

Dr. CECIL CLARKE spoke of the disproportionate dyspnœa of early tuberculosis of the lung, which he thought might be due to the action of bacterial toxins, a proposition which he supported by quoting the fact that pneumococcal infection of tissues other than the lung can quicken the respiration.

Dr. J. A. NIXON described his war experience of gunshot wounds of the chest. He showed that in these the dyspnœa was not proportional to the extent of lung injured or to the bulk of intrapleural extravasation. He showed that infection of the blood within the pleural cavity quickened respiration, and also gave examples to show that displacement of the mediastinum directly, and irritation of the pleura reflexly, had great influence on the degree of dyspnœa.

Dr. H. H. CARLETON confirmed, from his experiences in the artificial induction of pneumothorax, what had been said as to the importance of the pleural reflex.

Dr. O. H. WOODCOCK gave a brief account of a case of Hysterical Dyspnœa due to a psychoneurosis.

Dr. R. C. CLARKE said he had also noted that infection of the contents of a hæmothorax quickened the respiration.

The PRESIDENT, who had from time to time guided the discussion by interpolations, briefly summed up, congratulating the society on having brought forward so much that was interesting and instructive.

LONDON HOSPITAL MEDICAL SOCIETY.—Mr. Eardley Holland will give his address on Wednesday, March 9th, not on the 10th, as previously stated, his subject being, Cæsarean Section: the Modern Operation and its Modern Indications.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM: ANNUAL CONGRESS, 1921.—The next annual congress of the society will be held on May 5th, 6th, and 7th, at the Royal Society of Medicine, 1, Wimpole-street, London, W.1. The arrangements will be as follows: On Thursday, May 5th, in the morning, the President, Mr. J. Herbert Fisher, will deliver his opening address, to be followed by a paper by Mr. Maitland Ramsay on a Case of Cyclitis associated with Swelling of the Parotid Glands. In the afternoon a discussion on the Psychology of Vision in Health and Disease will be opened by Professor C. Spearman, F.R.S., and Sir F. W. Mott, and Mr. J. H. Parsons and Sir Robert Armstrong-Jones will speak. At 5 P.M. the Bowman Lecture will be delivered by Mr. E. Treacher Collins on Changes in the Visual Organs Correlated with the Adoption of Arboreal Life and the Assumption of the Erect Posture. Members will dine together in the evening. On Friday, May 6th, the morning session will be given up to a discussion on the Treatment of Manifest Concomitant Strabismus, to be opened by Mr. C. Worth and Mr. A. J. Ballantyne, followed by Mr. E. E. Maddox and Sir Arnold Lawson. In the afternoon a visit will be paid to St. Thomas's Hospital, which will be open for inspection. A Clinical Meeting will be held and members are invited to show cases of interest. At 8.30 P.M. Lieutenant-Colonel H. Herbert will read a paper on Results of the Iris-prolapse Operation for Glaucoma. The morning of Saturday, May 7th, will be devoted to a business meeting followed by papers. The optophone will be demonstrated in the Bowman Library during the Congress. Members desirous of offering communications, which must be typewritten, or of taking part in the discussions, are requested to communicate as soon as possible with Mr. F. A. Juler, 14, Portland-place, London, W.1.

Reviews and Notices of Books.

NOUVEAU TRAITÉ DE MÉDECINE.

Edited by G. H. ROGER, F. WIDAL, and P. J. TEISSIER. Fasc. I., Maladies Infectieuses. Paris: Masson et Cie. 1920. Pp. 482. Fr.35.

THE first volume of this treatise is a comprehensive French work on systematic medicine on the lines of the English work of Allbutt and Rolleston and the American Osler and McCrae. It is published under the general editorship of Professors Roger, Widal, and Teissier, supported by an influential committee of more than one hundred savants. Twenty-one volumes are contemplated, and, as the editors state in the preface, the work is intended to replace the well-known treatise of Charcot, Bouchard, and Brissaud, published in 1891. The scope of the work can be gauged, in general terms, by the "plan" given at the beginning of Vol. I. Starting with infective and parasitic diseases, an account of which is designed to occupy the first five volumes, the plan gives summaries of the contents of volumes dealing successively with intoxications, vitamines, disorders of metabolism and of the endocrine glands, diseases of the cardio-vascular, respiratory, digestive, urinary, and nervous systems; and concludes with a volume on the muscles, bones, and joints. In some cases two or more volumes are to be devoted to one section; for example, the diseases of the alimentary tract will occupy three volumes.

In the first three paragraphs of the preface the several editors have set before the readers high ideals. They point out that a great catastrophe has turned the world upside down and placed before the minds of modern physicians all manner of new problems. They aim at utilising the lessons of war in learning the further lessons of peace, and they appeal to the nations to coördinate their efforts in a great attempt to diminish human suffering. Professor Roger opens the description of the infective diseases with a short historical introduction of the subjects of infection, contagion, and auto-inoculation, sketching the progress which has taken place in the study of these problems, from the earliest times to the modern days of Koch and Pasteur.

The chapters of the first volume deal with various diseases produced by the following organisms: streptococcus, pneumococcus, staphylococcus, *Micrococcus tetragenus*, enterococcus, the influenza bacillus of Pfeiffer, the pneumobacillus of Friedländer, *B. psittacosis*, *B. proteus*, the organisms found associated with gas gangrene, meningococcus, and gonococcus. Brief bacteriological details, morbid histology, symptoms, signs, and treatment are all clearly and concisely set forth. The section on pneumonia and the pneumococcus must, however, be singled out for special notice. This portion of the book shows all those qualities of clear thinking and crisp, concise writing which are so characteristic a sign of the best French medical work, and Dr. P. Menetrier and Dr. H. Stevenin are to be congratulated on this part of the work. The chapter on the enterococcus should also prove valuable to English readers, as it is a subject on which our English text-books are distressingly vague and brief. The illustrations throughout the book are good, and some of the coloured plates reach a very high standard. References are given in footnotes. They are too few in number for a standard work of this kind, but as far as they go they are up to date and representative.

THE CARE OF HUMAN MACHINERY.

By R. M. WILSON, M.B., Ch.B. Oxford Medical Publications. London: Henry Frowde and Hodder and Stoughton. 1921. Pp. 238. 10s. 6d.

THIS book is composed largely of material which originally appeared in the Trade Supplement of the *Times*, where the articles condensed in clear language much that appeared during the past few years in Government publications. The author draws most of his facts from reports of the Health of Munition Workers Committee, the Industrial Fatigue Research Board, the Medical Research Council, the National Service Medical Boards, and the Factory Department, though he relies upon a few other sources. Readers unacquainted with these reports will be astonished to discover the lead which this country has taken up to the present in acquiring new knowledge, but, if they desire to read further on any subject, they will regret that the book contains no bibliography to guide them to the original sources of the knowledge—an unfortunate oversight.

An irrefutable case for factory medical officers is made out in the interests of health and efficiency and of a contented personnel and improved output. A works doctor, it is held, is a form of insurance that must soon become universal. Fatigue is discussed as the great enemy of output, health, pleasure, and joy in life—an enemy that must be kept at bay by one who understands it. Its every move must be watched and studied; but Dr. Wilson points out that so far the optimum working time for industry in general has not been determined with a sufficient degree of accuracy, still less is this the case for particular processes and individuals. Evidence is drawn from army recruiting data to prove that work is to-day making many a fit man unfit because the worker and his work are not suited. The plea may be entered that each industry should organise the health and efficiency of its workers, just as Sir Allan Smith has recently suggested that it should be responsible for its own unemployment. Its interest lies that way, for the unfit worker becomes easily fatigued and irritable; he cannot give of his best. Industry must recognise that the skilled worker is always of more value than a machine, and is worth taking care of.

Lost time is discussed by Dr. Wilson as one of the diseases of industrial life, and its extent is laid bare. Labour turnover, or "lost workers," is presented as the mortality of industry—a mortality as extensive as its cost is appalling. The need for determining both, so as to enable remedies to be applied, is adequately dealt with. The chapter on Ventilation and Output is one of the best in the book; it is up-to-date and points out how human activity is affected by "weather," which, within the workshop, can be controlled by ventilation. This matter, when our margin of safety in a health sense is low, can hardly be over-estimated. Variety, however, is needed, since rhythmical changes of air are more pleasant and stimulating than a steady, even flow. The claim is made that industrial management is intimately concerned with extra-factorial life, because "an employee who comes from a clean and wholesome house, where his meals can be properly prepared, and where his leisure can be spent advantageously, is manifestly a much better investment than one whose home is situated in a slum, whose food is ill-cooked and worse served, and whose leisure belongs for the most part to the local public-house."

Other matters, such as factory lighting, safety first, first aid, noise, and industrial welfare, are also discussed; but as the book is a summary and review of work done, it hardly lends itself to further condensation. We recommend it to our readers as a first primer of interest in itself and one which may induce them to look further into subjects of the greatest economic importance to all.

PRACTICAL MEDICINE SERIES.

Vol. III.: Eye, Ear, Nose and Throat Series. Chicago: The Year-Book Publishers. 1920. Pp. 382. $1.75.

THIS is one of a series of eight volumes of abstracts of medical and surgical literature. The third volume deals with the eye, under the editorship of Dr. Casey Wood, while the sections on the ear and nose and throat are edited respectively by *Drs. A. H. Andrews* and G. E. Shambaugh. The abstracts are mostly of articles published in American journals, but include a number of English and a few continental publications. The number of papers abstracted is very large; indeed, a smaller number and a more ruthless selection would perhaps have been of advantage. Short editorial comments have been added here and there, sometimes of rather a pedagogic nature; the labour of compilation must have been great, but it has been well repaid by the production of a volume of great interest and value, and we look forward to the regular appearance of this publication in future years.

THE CEREBRO-SPINAL FLUID.

Its Physiology and Pathology. By WILLIAM BOYD, Professor of Pathology, University of Manitoba; Pathologist, Winnipeg General Hospital. London and New York: Macmillan and Co. 1920. Pp. 176. 30s.

Professor Boyd prefaces a work which divides itself naturally into two parts, a purely scientific section and one which we may regard as clinical or empirical, with these happily chosen words:—

> "Any means which will facilitate the difficult diagnosis of diseases of the central nervous system is of value, and the cerebro-spinal fluid, which bathes its deepest recesses and washes the very nerve cells and fibres themselves, is in truth a mirror which reflects every change taking place in that system."

It is impossible to view the controversial subject of intrathecal therapy without taking into account the fact that there is a circulation of the cerebro-spinal fluid taking place in definite directions. As a result of injecting solutions containing easily visible particles it has been shown that circulation takes place upwards from the spinal sac to the lower cranial chamber, while the flow from the upper cranial chamber takes place in a downward direction. Further, there can be no doubt, as the author points out, that the fluid is a definite secretion of the choroid plexus or of the choroid gland, as Mott calls it. Not only is cerebro-spinal fluid a true secretion, but it is also absorbed along definite channels, among which the arachnoid villi must be mentioned. As with other secretions, the flow of cerebro-spinal fluid can be increased considerably by the injection of certain substances, chief among which are extracts of the choroid plexus and brain tissue. It is suggested that the function of the fluid is not purely mechanical, for its composition points to a nutritive rôle.

The clinical section of the book opens with a short discussion of lumbar puncture and its occasional harmful sequelæ. The fact that general paralytics never suffer from any symptoms either during or after lumbar puncture Professor Boyd explains by the marked excess of fluid present. It would, however, be more correct to attribute it to the general wasting of the brain, and possibly also to the dense dural adhesions which, as it were, suspend the brain from the cranial vault. He lays stress on the importance of the accurate determination of the fluid pressure, and recommends the apparatus used by Cassidy and Page for clinical purposes. In the description of routine laboratory tests no mention is made of the quantitative estimation of total protein, the dilution method for the rough estimation of protein excess, the cholin test, the Boveri test, or the Berlin blue reaction. With regard to the Wassermann reaction, sufficient stress is not laid upon the varieties of technique employed, nor on the fallacies arising if fluid is kept at room temperature or becomes contaminated. It is, moreover, regrettable that the many chemical tests are not critically discussed, and also that the practical difficulties encountered are not dealt with.

In the section of the book devoted to a discussion of the pathological fluid findings in diseases involving the central nervous system, Professor Boyd mentions that there may be a pleocytosis in cases of cerebral tumour, especially when the meninges are involved. The use of the sugar content is stated to be the chief differentiating point between acute anterior poliomyelitis and tuberculous meningitis; in the latter disease it is usually normal, while Professor Boyd states that in anterior poliomyelitis it is not reduced. Many will disagree with the statement that only 30 per cent. of cases of cerebro-spinal syphilis give a positive Wassermann reaction in the fluid, and that 70 per cent. of tabetics give a positive reaction in the blood. Professor Boyd is an enthusiast on intrathecal therapy. In the therapeutic section he states that infantile convulsions may often be more quickly relieved by lumbar puncture than by any other treatment. He quotes cases of cures of tuberculous meningitis by intrathecal tuberculin injections and of pneumococcal meningitis by ethylhydrocuprein. He gives in detail the modern treatment of neurosyphilis.

This book, taken as a whole, is a pleasantly written summary of the more important aspects of our knowledge of the cerebro-spinal fluid, which will appeal less to the laboratory worker than to the general physician.

ON BONE FORMATION.

Its Relation to Tension and Pressure. By Dr. MURK JANSEN, O.B.E., Lecturer on Orthopædic Surgery in the University of Leiden (Holland). Manchester: University Press. 1921. Pp. 114. 20s.

FOR more than half a century the views of Meyer and Culmann as to the effect of pressure and tension on formation of bone have been passively taken, and, within the last 30 years, what is known as Wolff's law, which expresses the same belief in precise terms and within implied limits, has been accepted also without serious question by anatomists, who have in general let it go, so to speak, by default. Yet objections have been raised from time to time to the acceptance of this "law," and these have come largely from orthopædic clinicians who could not reconcile it with their findings in practice. This book is the most recent declaration of the unsatisfied, for Dr. Murk Jansen holds strongly that functional pressure is an important factor in bone formation, while tension has no power in this direction, and he considers it necessary to postulate other factors which—for want of a better word—may be termed "purposive." In developing his main thesis the author has, in our opinion, certainly demonstrated that tension can have little or nothing to do with bone formation. He illustrates his point with beautiful photographs of very happy sections, not confining his attention (as did Wolff) to the neck of the femur, although his demonstrations of the conditions in coxa vara are among the most striking of his evidences. We cannot say that we think all his examples or all the explanations advanced are of the same value—Albert's "radiants" from the intercondylar fossa are extremely suggestive of crucial tension and call for more convincing treatment than Dr. Jansen's if the effect of tension is to be eliminated. Again, the reader of his exposition of pressures in joints may have an occasional feeling that the author's enthusiasm leads him to make less of the points on the other side than they really deserve. But, notwithstanding these weak spots, we cannot help feeling that Dr. Jansen has presented an excellent and almost convincing argument for his side of the question, and those who are not to be convinced will at any rate derive much interest and information from his clearly written pages. The printing is large and clear, and the get-up of the book as a whole reflects credit on its producers, as well as on its author, who is to be congratulated on a courageous attempt to reform loosely-held beliefs.

ORGANIC MEDICINAL CHEMICALS, SYNTHETIC AND NATURAL.

By M. BARROWCLIFF, M.B.E., F.I.C., and FRANCIS H. CARR, C.B.E., F.I.C. London: Baillière, Tindall, and Cox. 1921. Pp. xii. + 331. 15s.

THIS is one of a series of handbooks, edited by Dr. S. Rideal, each of which is intended to give a comprehensive survey of some branch of industrial chemistry. The preparation of the volume before us has been entrusted to two chemists who are able to speak authoritatively on both the industrial and laboratory aspects of their subject, although the former naturally takes the more prominent place. Practical details are given for the preparation of all the more important medicinal organic chemicals, some account of the underlying theory being added where necessary. Numerous illustrations of chemical plant are included and the citation of literature is very complete. The British fine chemical industry earned the thanks of the nation for the manner in which it succeeded in supplying all essential synthetic chemicals during the war. The quality of these products is excellent, but the manufactures in many cases have not yet been established on a commercial basis as regards maximum yields and minimum costs of production generally. These are matters of great national importance and, as the authors point out, perfection can only be attained by zealous work on the part of those with knowledge. University-trained men are handicapped in chemical works, as a rule, by their lack of information on current industrial conditions; this book should be cordially welcomed as helping to bridge the gap between college and factory.

EINFACHES PHARMAKOLOGISCHES PRAKTIKUM FÜR MEDIZINER.

Von R. MAGNUS, Professor der Pharmakologie in Utrecht. Berlin: Verlag von Julius Springer. 1921. Mit 14 Abbildungen. Pp. 51. M.17.

THIS little book should be found useful by those who have to arrange courses of laboratory instruction in pharmacology. Directions are given for 20 sessions; 14 of these are devoted to practical exercises to be carried out by the students themselves, consisting chiefly of work on the frog and experiments illustrating some of the chemical aspects of the subject. The remaining six sessions take the form of demonstrations selected to illustrate experimental methods as applied to warm-blooded animals. The use of complicated appliances is avoided as far as possible, and the work is planned so as to make the best use of the time available. Details of all the apparatus and reagents needed are given, and the interleaving with blank pages adds to the use of the work.

PATHOLOGY.

A Text-book of Pathology. Second edition. By W. G. MCCALLUM, Professor of Pathology and Bacteriology, Johns Hopkins University, Baltimore. London and Philadelphia: W. B. Saunders Company. 1920. Pp. 1155. 45*s.*

Aids to Pathology. Fourth edition. By HARRY CAMPBELL, M.D., B.S., F.R.C.P. London: Baillière, Tindall, and Cox. 1920. Pp. 248. 4*s.* 6*d.*

CONSIDERED only as a student's manual, Professor McCallum's text-book has obvious disadvantages. It makes no claim to being a complete work of reference; many important conditions are omitted altogether, and there is a certain lack of balance in the space allotted to several of the commoner pathological processes. Moreover, the arrangement of the subjects is unconventional, and the student who wishes to read up the pathology of any individual organ may find the information he desires scattered through the book in half a dozen different chapters. Nevertheless, the success of the work was immediate. It has been reprinted several times, and now, four years after publication, we have the second edition. The explanation, of course, is not far to seek. Professor McCallum holds definite views which he elaborates in a logical and convincing manner. The result is a work which bears on every page the stamp of the author's individuality. We feel that he is teaching from his personal experience, and the suggestion of a compilation which is so often discernible in text-books of this size is altogether lacking. In this edition certain sections have been revised or rewritten in the light of the progress of the last few years, and several new illustrations have been added, but the plan of the work remains the same.

Dr. Harry Campbell's little book would seem to have an established vogue in student circles, and we can imagine that it is a useful aid to a qualifying examination. Indeed, the very fact that it is written by a clinician enhances its value as a guide in preparation for those ordeals which are conducted without the assistance of a professional pathologist. This edition has been slightly increased in size and has been brought up to date, though here and there an old-world flavour is still discernible. It is stated, for example, that the "hobnails" of the cirrhotic liver are portions of liver substance which have been thrust out by the contraction of fibrous tissue. And the information, on page 87, that at the growing border of a sarcoma there is a great excess of small round cells which advance in all directions, absorbing the normal tissues (histolysis) in the immediate vicinity, leaves us plunged in thought.

JOURNALS.

British Journal of Ophthalmology. October to December, 1920.—The October number is occupied by the papers read at the Oxford Ophthalmological Congress last summer on Perimetric Methods and the discussion that followed. The subject has received a great impetus since the importance of small scotomata adjacent to the blind spot in the diagnosis of incipient glaucoma has been realised, and the relative advantages of various different instruments were set forth. The same subject overflows into the November number but cannot be regarded yet as closed. At least two new instruments for the purpose have been submitted to the members of the Section of Ophthalmology of the Royal Society of Medicine during the last few months.—The subject of Colour Vision is dealt with in the November issue by Dr. F. W. Edridge-Green, who returns to the charges in his controversy with Mr. J. H. Parsons, and in the next issue Sir George Berry criticises the Young-Helmholtz theory from an independent standpoint.—These numbers also contain articles by Dr. A. W. Stirling, who maintains that the axis of astigmatism tends to shift with advancing age; by Dr. J. A. Wilson on the subject of Cinematograph Eye Irritation; by Mr. M. S. Mayou and Mr. H. Neame on the injuries to the eyes of fishes by the tar-pollution of rivers; and by Mr. H. Herbert, who describes his latest operation for glaucoma, which he terms the "small flap sclerotomy."

Journal of Laryngology and Otology. February, 1921. Vol. XXXVI., No. 2.—This number contains the second and final part of a review, by Mr. Irwin Moore, of all the recorded cases, 73 in number, of angeioma of the larynx. Spontaneous hæmorrhage occurred in 12 cases, but was never fatal; of 32 cases on which intralaryngeal operations were performed bleeding was considerable or severe in 25, but was unimportant in the 7 cases treated by thyro-fissure. An article by S. H. Mygind, of Copenhagen, deals with the occurrence of head-nystagmus in human beings; this symptom, a common result of vestibular irritation in birds and some mammals, is of the greatest rarity in man, but Mygind obtained the phenomenon in 78 per cent. of infants between the ages of one and eight months, and considers that it disappears at a later age as a result of a reflex tendency to fixation of the head originating in the cerebellum. The new editors of this Journal are Dr. Logan Turner and Dr. J. S. Fraser, of Edinburgh, and it is now published by Messrs. Oliver and Boyd, Edinburgh.

Journal of the Royal Army Medical Corps.—In the issue for January there is an article on Anoxæmia in Acute Gas Poisoning by J. Barcroft, C.B.E., F.R.S., in which it is pointed out that the pathological condition is a more or less complete oxygen-starvation of the tissues and organs, and that this may develop in three forms—the anoxic type, where, though there is plenty of hæmoglobin, the oxygen pressure is low; the anæmic type, where there is too little effective hæmoglobin, perhaps because too much has been changed into methæmoglobin or carboxyhæmoglobin; and the stagnant type, in which the blood, indeed, may be normal, but too little is delivered to the tissues. His experiments were made on goats, which endure having blood taken by aspiration from either ventricle as required for chemical examination. The arterial blood of a goat is generally oxygenated up to 90 or 100 per cent. of saturation, while the venous blood contains only half as much. The goats were given phosgene to breathe, and became "gassed." Oxygen may be used to cure them; there is one sign, cyanosis, that calls for oxygen, and there is one clinical rule, oxygen being always valuable, and in war precious—Do not use oxygen in gas-poisoning unless the patient is cyanosed. When the oxygen pressure in the blood falls below 90 per cent., headache occurs, vision is impaired, sleep is difficult, work is impossible, and voluntary movement may kill the patient, especially sudden movement. Thus an officer, gassed, died at once when, being unexpectedly shelled, he jumped for the shelter of a dug-out. The condition, to begin with is anoxic anoxæmia, but death follows by failure of the circulation, vagus stimulation, lack of vaso-motor tone, perhaps brain failure. A goat which fought hard against anoxæmia breathed more rapidly for hours, doubling thus its pulmonary ventilation, and its venous blood became more oxygenated and redder, the circulation also becoming more rapid. This all put so much strain on the goat that after 20 hours it became exhausted, its respiration and circulation failed, its blood became black, and a condition of stagnant anoxæmia was established. The cyanosis of the early stage is plum-coloured while the systems can react; when the circulation has failed the cyanosis is grey. In either of these conditions oxygen may yet restore function. The treatment for anoxæmia is, in the first place, rest and warmth; secondly, oxygen; and, thirdly, intravenous injection of saline solution, which replaces the liquid lost in developing œdema of the lungs and re-establishes blood pressure; bleeding may also be required to reduce pressure raised on the right side of the heart.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 26, 1921.

Practice Abroad.

THE issue by the General Medical Council of a new edition of their valuable report[1] on the conditions under which medical and dental practitioners registered here may practise abroad throws light on a subject of personal interest to all practitioners who are not satisfied with the circumstances of British practice. To the man or woman who has just completed his medical studies his diploma offers the opportunity of travel and adventure in a very high degree. It is only necessary to turn to the 1921 edition of the Medical Directory, with its 334 columns of practitioners resident abroad, to see how the lure of the distant and the unfamiliar has worked in our profession. Armed with a certificate of registration from the General Medical Council one may go all over the world without further formality. British Dominions and Crown Colonies, with slight exception, admit the registered diplomate to practise without further examination. This immense freedom is equally open to those who have obtained the high qualifications demanded by the registering bodies in Australia, Canada, Ceylon, Hong Kong, India, Malta, Newfoundland, New Zealand, and Straits Settlements, and whose names appear in the Colonial List at the end of the Medical Register. It is not generally known that to be inscribed on this list carries precisely the same rights and privileges as a place on the general register. Although it would require an Act of Parliament to do so, we think it would be in the best interests of medicine throughout the Empire were this list merged in the main register. Beyond this, medical practice is fenced about with an ever-increasing wall of additional examinations and other formalities. The several States of North America have not yet been able to agree on the degree of reciprocity among themselves, much less with their English-speaking brethren; repetition of all or any of the series of qualifying examinations may be required of the candidate. There are now two foreign countries, Italy and Japan, which reciprocate with us in the sense that our duly qualified practitioners can practise there and theirs here, without let or hindrance. Reciprocity with Belgium, which was found to be a useful war measure, lapsed at the end of last year without, of course, penalising those who had already taken advantage of it.

Going further afield into actually foreign lands it may perhaps be inquired why the Englishman should desire to practise in any country other than his own and among the subjects of other nationality; should he desire so to do, it is perhaps reasonable for him to be forced to obtain the same familiarity with the habits, manners, customs, superstitions, and diseases of the country as a native would do during his ordinary course of medical study. The matter is quite otherwise if his intention is to practise solely among his fellow-countrymen. France and Switzerland are, however, unwilling to allow a foreigner to treat his own countrymen resident or visiting in their country unless he has obtained what amounts to a very difficult supplementary qualification. In Switzerland we gather that the penalty for a first infringement of this rule is a heavy fine, and on repetition of the offence a similar fine, with expulsion from the country. It would not merely be a friendly act, but could hardly fail to turn to the advantage of any country to allow other nationals resident within its borders to be cared for by medical men and women of their own nationality. Even pre-war Germany made no difficulty in this regard, and English and Americans visiting Nauheim or Langelschwalbach could freely consult English or American doctors. It might be seemly for an English colony in a foreign resort to advertise for and appoint its own medical adviser. A classified list of registered practitioners resident abroad, affords material from which the relative popularity of the various localities may be gauged. In general it may be fair to assume that the number of names recorded for any district or country is the quotient of the desirability of practice in that country divided by the difficulties imposed upon the would-be practitioner.

For instance, the General Medical Council reports no restrictions on practice in Abyssinia or in the Cayman Islands, while in Siam there are no laws whatever relating to the practice of medicine or dentistry; but there are apparently few practitioners in these parts. On the other hand, the attractions of practice in Switzerland and certain parts of France and Spain are undoubtedly very great, while the number of British diplomates practising there is strikingly small. In France, although the restrictions were temporarily waived for certain practitioners during the war—it is common knowledge that a large part of civilian practice behind the war zones in France was at one time in the hands of English or Americans—examinations must be passed in French and in the same subjects as are required of French students; in Switzerland even the matriculation examination itself must be taken, an exploit which involves intimate knowledge of all high-school subjects in one of the languages current in Central Europe. The number of names in a classified local list would become smaller still on minute analysis, for some are those of British diplomates who reside abroad without the right or intention to practise there, and others are of foreigners who have had the enterprise to round off their own qualifications with the diploma of the Conjoint Examining Board. The actual position of British practice on the mainland of Europe in the year just preceding the war may be best assessed by a study of the classified list of members of the Continental Anglo-American Medical Society, which was founded in 1889 to serve as a bond of union between the British and American practitioners established on the Continent of Europe and in Northern Africa, and of which Dr. ROBERT TURNER of Paris latterly was honorary secretary. We hope to see a revival of this useful fraternity.

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[1] Published and sold for the General Medical Council by Constable and Co., Ltd., 10, Orange-street, London, W.C. Price 2s. 6d., post free (U.K.) 2s. 9d.

The Ætiology of Encephalitis Lethargica.

THE interest, mingled with alarm, felt by the general public in the new and strange malady, first described by VON ECONOMO[1] and now universally called encephalitis lethargica, or popularly "sleepy sickness," is reflected in our daily press in the shape of frequent paragraphs and articles on the subject. Official notes and statistics, issued by the Ministry of Health, have served to allay the alarm of the timid and apprehensive and have indicated to the general public that investigations into the cause of the disease are proceeding here and abroad. Bacteriologists in this country, in America, and in France have now settled definitely that encephalitis lethargica is due to a filtrable virus and that the disease is communicable to the rabbit, the guinea-pig, and less easily to the monkey. In America the research has advanced rather more rapidly than here and in France. LOEWE and STRAUSS, in a number of communications in the *Journal of Infectious Diseases* and elsewhere, and recently THALHIMER in the February number of the *Archives of Neurology and Psychiatry*, have given an account of their work which is of the highest importance. Like MCINTOSH and TURNBULL in England, and LEVADITI and his collaborators in France, they have shown that intracerebral inoculations into susceptible animals of emulsions of the cerebral lesions of cases are followed by a fatal illness which resembles the human disease. They have found, also, that blood, cerebro-spinal fluid, Berkefeld filtrates of nasal washings and filtrates of emulsions of the naso-pharyngeal mucous membrane removed at necropsy, all contain the virus. Further, they have cultivated the virus in ascitic fluid containing fresh tissue and have been able to infect rabbits with remote subcultures. The organism is described as resembling closely the "globoid bodies" recovered by FLEXNER and NOGUCHI from cases of poliomyelitis; it is a spherical body of uniform size, certainly less than 1 μ in diameter, since it passes through a filter which retains organisms of this size; it occurs singly or in pairs, sometimes in chains and groups, and is stained violet-blue by long treatment with methylene-blue and purple with Giemsa's stain. The organism is seen quite distinctly under an oil-immersion lens, and can be distinguished by its sharper outlines from the amorphous material derived from the culture-medium. Control cultures made from a wide range of material have failed to show the same organism. It appears, therefore, that the microbe of the disease has been not merely recognised, but has been cultivated.

A full account of the prolonged investigations of C. LEVADITI and P. HARVIER appears in the December issue of the *Annales de l'Institut Pasteur*. In this paper the authors deal in detail with the whole subject: the pathological anatomy of the disease as it occurs in man, and as it may be caused to occur in rabbits; the experimental study of the disease; and the bearing of the results on epidemiology and possible prophylaxis are all discussed. LEVADITI shows that the rabbit is much more susceptible to the disease than other laboratory animals. He has been able to obtain a virus fixe with which monkeys and guinea-pigs may be infected. Some of his results are not in agreement with the observations of the American authors quoted. He has not been able, for example, to recover the virus from the blood or cerebro-spinal fluid or from the naso-pharyngeal secretions; further, he has been able to infect animals only by intracranial, intra-ocular, and intratesticular injections; subcutaneous, intravenous, and intraperitoneal injections always failed. Attempts to cultivate the virus were also unsuccessful, but too much emphasis should not be laid on differences like these in work so difficult. LEVADITI and HARVIER have found a variation in virulence between different strains of the virus, and have concluded from this fact, and upon general grounds, that abortive and very mild cases occur and that probably carriers are responsible for the spread of the disease. No definite evidence has yet been obtained, however, to show that healthy persons may carry the organism. The search would naturally begin with an examination of the nasopharynx, and in this connexion some of LEVADITI'S experiments are of direct importance. He finds that the virus is unable to traverse the uninjured nasal mucous membrane of the rabbit; when, however, the mucous membrane is damaged, either by scarification or by other means, such as the application of croton oil, the applied virus is not kept back and the animal succumbs to encephalitis lethargica. The mode of spread of the disease and the mechanism of infection appear, therefore, to be the same as in epidemic poliomyelitis.

This brings us to a point of great importance which has been satisfactorily disposed of both by LEVADITI and HARVIER and by AMOSS in the current number of the *Journal of Experimental Medicine*—namely, the relationship between poliomyelitis and encephalitis lethargica. The similarities between these two diseases are obvious and have been pointed out by many writers, but there are authors who suggest also that they have a common ætiology. What this means precisely it is a little difficult to say; the phrase would require careful dissection in the light of modern work on infection. But if we take the usual meaning and assume that by "common ætiology" is meant the same causal organism, it would seem a great misfortune if such a view came to prevail without better evidence than exists at the present time. The most definite and certain facts already acquired are against such a view. The virus of poliomyelitis is very pathogenic to monkeys and practically not at all to rabbits and guinea-pigs; the reverse is the case for encephalitis lethargica. The lesions of the former disease are found in the spinal cord; of the latter, in the brain. Immunity experiments afford conclusive evidence against the view. The seasonal incidence of poliomyelitis is summer and autumn; of encephalitis lethargica, winter. These facts alone are sufficient to separate the two diseases. They both belong to the same group, however, to which may be added rabies. In all these diseases the virus is filtrable and has an elective affinity for the nervous system; their study forms one of the most fascinating branches of medical science.

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[1] Von Economo Encephalitis Lethargica, Wien. klin. Woch., 1917, No. 30, p. 581.

The Dentists Bill.

A BILL to amend the Dentists Act, 1878, and the provisions of the Medical Act, 1886, as they affected previous legislation, was presented by Dr. ADDISON just before Christmas, and may come up for discussion in the House of Commons shortly. The object of the Bill is to prohibit the practice of dentistry by unregistered persons, and with this end in view it is proposed to constitute a Dental Board under whose administration a complete Register of the dental profession will be kept, great additions to the existing Register being made. The duty of the Board and the Registrar will be to maintain the Dentists Register, on which will be found the names of those registered under the Act of 1878, and a large body of persons who may establish a right to be admitted to the new roll. This right is defined in Clause 3 of the Act, which explains that the following persons will be included. First, all those who for five years immediately preceding the commencement of the Act have been engaged in dentistry in this country as their principal means of livelihood, or have been admitted to membership of the Incorporated Dental Society not less than one year before the commencement of the Act. Certificates of good character and of attainment to the age of 23 years will be required. Secondly, dental mechanics having similar qualifications can be admitted to the roll with the additional proviso that within two years from the commencement of the Act they must pass a prescribed examination in dental mechanics, and within ten years undergo prescribed training and examination. Thirdly, persons who within two years from the commencement of the Act pass the prescribed examination in dentistry, having been previously engaged in its practice as a principal means of livelihood. Fourthly, duly registered pharmaceutical chemists, or chemists and druggists, who can show that immediately before the commencement of the Act they had been in substantial practice as dentists and dental operators. These may be enrolled as dentists, but if they desire to practise they must give an undertaking to cease practice as chemists and druggists. Lastly, the Board can dispense with all these requirements in the case of persons whose services with His Majesty's forces have made compliance with them impossible, while it goes without saying that nothing in the Bill proposes to prevent the practice of dentistry by duly qualified medical practitioners. Dental companies are legitimised in the practice of dentistry if all the directors, managers, and operating staff are registered. It will be seen that the Bill presents many features which the qualified dentist on the present Register is sure to resent, so that it will be necessary for the Ministry of Health to defend the proposals by showing clearly where the public interest lies.

DONATIONS AND BEQUESTS.—Under the will of the late Mr. Jesse Howarth, of Manchester, the testator bequeaths to the Victoria University of Manchester £30,000 for the extension of the Jesse Howarth building of the Manchester Museum, and £15,000 to Henshaw's Blind Asylum, Old Trafford. The testator during his lifetime transferred to the Public Trustee £25,000 for the Manchester and Salford Hospital Sunday Fund. After the above and other deductions the residue of the estate, which amounted to £288,237 net, is given in trust for such charitable institutions or objects as the trustees shall direct.

Annotations.

"Ne quid nimis."

THE COLLECTIVE VOICE OF MEDICINE.

ADDRESSING sundry deputations last November Dr. Addison complained of the number of bodies that approached him claiming to be representative of the medical profession, and asked to be referred to some one body competent to speak on matters of policy affecting the profession as a whole. The supplement to the last issue of the *British Medical Journal* contains a memorandum in which it is stated that the Association has invited certain medical bodies to coöperate with it in constituting a body to satisfy the requirements of the Minister of Health. This body is to represent and be responsible to its constituents alone; it is to be concerned primarily with medical politics rather than scientific matters; it is to represent the views of the medical profession alone and their interests rather than that of the community. Some of the organised bodies mentioned in the memorandum are the Society of Medical Officers of Health, the Medical Women's Federation, the Poor-law Medical Officers' Association, the Medico-Psychological Association, and the Association of Certifying Factory Surgeons. After the adhesion of these the Royal Colleges are to be formally approached.

Apropos of this memorandum the Federation of Medical and Allied Societies has itself issued a memorandum on the collective representation of medical opinion which takes up the position that no one existing body ever can represent the medical profession, while in a federation of bodies each may retain its individuality and find adequate representation of its views. Formerly there were numerous bodies interested in the political aspects of medical and allied practice. Now, owing to the efforts of the Federation, this number has been greatly reduced, and while the Federation does not claim to be the body to represent the medical profession, it does claim to be a necessary and valuable contribution to the constitution of such a body. Confusion cannot occur between public and domestic interests, as the Federation exists only to guide public opinion, and is remote from the internal affairs of its constituents. Many medical questions having collateral interests involving the dental, pharmaceutical, or nursing professions, representatives of these are included in the Federation to make their views readily available in forming a collective opinion on broad principles of health administration.

Collective medical opinion should be based on some adequate expression of the voice of medicine locally. It may be recalled that provision was made in the National Insurance Act of 1911 for the formation of local medical committees in counties, county boroughs, and other areas large enough to have a separate insurance committee. The Insurance Commissioners having satisfied themselves that such a medical committee was properly representative of the duly qualified medical practitioners in the area, it became the recognised body to be consulted by the Insurance Committee on all questions affecting the administration of medical benefit. There was a reluctance on the part of the medical profession in general to coöperate in setting up these representative committees, and as a consequence the amending Act of 1913 made allowance for committees representative of panel doctors alone, with the duty assigned to them of ascertaining the opinions and wishes of the practitioners who entered into agreement with the insurance committees for the treatment of insured persons. In any area where no local medical committee had been set up under the 1911 Act, such a panel committee might be recognised as the local medical committee for the area. Local medical committees which are thus statutory under the Insurance Acts could easily be made representative of all sections of the profession, and it is quite certain that in any new scheme of organisation the local medical committee will be a very important body. Medical organisations of whatever kind could and should influence local medical opinion through these local committees. A natural step would then be for these local committees to elect a central executive to confer with the central government. The fault fairly found against the great central organisations as they exist is that they seldom get together for the discussion of medical politics from the point of view of the public and of the profession collectively.

TREATMENT OF HYPERTROPHIED TONSILS WITH X RAYS.

SOME workers in the laboratories of the Rockefeller Institute for Medical Research (J. B. Murphy, W. D. Witherbee, S. L. Craig, R. G. Hussey, and E. Sturm) have described[1] a new method of treatment of hypertrophied tonsils. Early in the study of the effects of the X rays it was noted that lymphoid tissue was easily affected. Long exposures in animals almost completely destroyed the lymphoid tissue along with the circulating lymphocytes. This led to the use of the rays in leukæmia and for reducing enlarged spleens in other diseases. In the Rockefeller laboratories it has been shown that the lymphoid tissue is much more susceptible than the other tissues, and that the major part of it can be destroyed without appreciable damage to the latter. This in its turn suggested the use of the rays for reducing enlarged tonsils without interfering with drainage of the crypts, thus clearing up those focal infections on the connexion of which with disease in other organs so much emphasis has recently been laid. The following was the technique. The spark-gap, measured between points, was 8 in. The distance from the target to the exposed skin was 10 in. The current was 5 milliampères. The time of exposure varied from 3 to 7 minutes, according to age. A filter of 3 mm. of aluminium was used. The approximate dose was from 1 to 1¾ skin units. The patient was placed on a table so that the rays entered under the angle of the jaw and penetrated to the tonsil. The area exposed on each side was about 3 square inches, the surrounding parts being protected by heavy sheet-lead. For young children a special board was used with retaining straps. Forty-six patients of ages ranging from 3½ to 45 years were treated, all showing more or less hypertrophy of the tonsils and disease of surrounding tissues. None was treated when there was evidence of acute infection. In some cases there were deep crypts, a ragged surface, and purulent, muco-purulent, or cheesy exudation. In all but four cases marked improvement in the tonsils followed. In the majority two weeks after the exposure distinct shrinkage was noted, and this continued for one to two months. During this period of atrophy the crypts opened and drained, and in all but a few the exudation disappeared and the surface of the tonsils became smooth, pale, and healthy. Excepting 4 cases, no exudation could be forced out at the end of the period of observation. Later examination showed the edges of the crypts to be inverted, and in a number of cases white bands like scar-tissue were seen on the surface. Other lymphoid deposits in the throat, commonly small nodules on the pillars of the fauces and masses posterior to the pillars, disappeared. Some of the patients suffered also from large masses of adenoids, for which a dose of the X rays, similar to that used for the tonsils, was given. The result was not so satisfactory, though in a number of cases decided shrinkage was noted. The inferior result was probably due to the fact that the dose received by the adenoids after passage through the bony structures of the head was small. Probably with a more suitable portal of entry better results would be obtained. An interesting bacteriological effect was that, while the common organisms of the throat were unaffected, of 36 cases showing the hæmolytic streptococcus and staphylococcus 20 became free from these organisms by the fourth week after treatment. This is attributed not to the direct action of the rays on the organisms, but to drainage of the tonsillar crypts brought about by the atrophy. In this series of cases only one patient received more than one exposure. In future cases further exposures could be given for relapse or other reason. The dose is smaller than that used in the treatment of ringworm of the scalp, the safety of which has recently been demonstrated in our columns. Further experience of the treatment is desirable to establish its position, but the results so far obtained by American workers are encouraging.

THE PICPUS QUARTER IN PARIS.

THE Picpus quarter, in which the Paris Municipal Council propose to build three new streets of tenement houses, lies between the Cours de Vincennes and the Avenue Daumesnil, in the XII. arrondissement, a somewhat sordid business district on the right bank, bordered by the Bois de Vincennes. Travellers on their way south who pass through the western corner of this arrondissement to reach the Gare de Lyon only see the comparatively modern streets. But a short distance from the Avenue Daumesnil and the rue de Lyon, which boasts a mere 74-year existence, there are almost as many links with the past to be found as in the Marais quarter. A Paris correspondent writes us the following account of the district, where demolition in the cause of health will be welcomed by the sanitarian but deplored by the archæologist.

"The name Picpus dates from Rabelaisian days and has a medical interest that may have amused the curé of Meudon. About 1550 a sudden epidemic of swellings, resembling those caused by flea-bites, covered the arms of the women and children in Paris. A monk invented an antidote in the form of a 'perfumed liqueur,' which sounds more pleasant than most of the drugs of the period, and gained for himself the sobriquet of the Père Pique Pusse. From the individual the name spread to the convent of the Reformed Penitents of the Third Order of St. Francis, and when, at the beginning of the next century Jeanne de Saulx, the widow of René de Rochechouart, Comte de Mortemart, gave the land and buildings for the monks to establish themselves in this quarter, the name Piquepusse, Picpuce, Picpus, clung to the whole locality. The story is told by all the old chroniclers of the history of Paris, but the Marquis de Rochegude, in his interesting 'Promenades dans toutes les rues de Paris' cynically remarks, 'It is more probable that this curious name of Picpus, which appeared at the end of the fifteenth century, is a corruption of the name of a householder.' At No. 61, rue de Picpus, may still be found the remains of one of the three doors of the Convent of the Third Order of St. Francis, built in 1611 on the site of a hermitage belonging to the Capuchin monks under Charles XI. Louis XIII., when he laid the foundation-stone of the chapel, gave the convent the status of a royal house, and it became the headquarters of the Franciscan Order in France. Cardinal Duperron, who persuaded Henri IV. that Paris was worth a mass, was buried in the chapel after leaving his valuable library to the monks. The present No. 42 belonged to the great Convent des Dames de Ste. Clotilde, whose property extended as far as the rue de Reuilly. The house formerly belonged to the Franciscans, and was used by the various ambassadors of the Catholic powers as a halting place before their state entry into Paris, which usually took place on a Sunday. The quarter is full of the remains of the great religious houses. Tubeuf, Anne of Austria's Finance Minister, brought from Rheims the chanoinesses of Notre-Dame-de-la-Victoire-de-Lepante, and for 150 years they celebrated every 7th of October in the buildings now numbered 37–41 the victory gained in 1572 in the Gulf of Lepanto by Don Juan of Austria over the Turks. But the most poignant memory of by-gone days is attached to No. 35, rue de Picpus, the Oratoire which served as a chapel for the convent of the nuns of the Sacred Heart of Jesus and of Mary, called the nuns of the Perpetual Adoration, the establishment described by Victor Hugo in 'Les Miserables.' At the end of the convent garden may be found the small enclosure, now called the Picpus cemetery, where were buried, heaped in a common ditch the prince and the pauper alike, the 1340 victims guillotined in 1793 on the Place du Trône-Renversé, now Place de la Nation. Among them were André Chenier, Prince Jules de Rohan, Madame de St. Amaranthe and her daughter, the Duchesse d'Ayen, the Prince de Salm Kyrburg, &c. The exact position of the ditch was indicated by a poor workgirl, Mademoiselle Paris, whose father and brother had been buried there. In 1804 the families of the victims were authorised to bury their dead in the adjoining ground and ten years later the names were engraved and the cemetery enlarged. It is owing to the fact that his wife was a daughter of the Duc d'Ayen that Lafayette was buried there.

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[1] Journal of the American Medical Association, Jan. 22nd.

There are more cheerful souvenirs to be found in both the rue de Picpus and the rue de Reuilly. In the former Henri VI. once possessed one of his innumerable 'rendezvous de chasse' and both Ninon de Lenclos and Mademoiselle Clairon had country villas in the rue de Picpus, where ten years ago one could still see an inscription of Louis XV. on the wall at the corner of the rue Lamblardie. The rue de Reuilly goes back to Merovingian days when a royal chateau was built at 'Romiliacum.' Dagobert lived there, and married and unmarried himself with an ease that caused one old chronicler to call the place 'une sorte de harem.' On the ruins of this chateau Colbert installed a glass factory; to-day the place is occupied by an infantry barracks. Dagobert's Prime Minister, St. Eloi, is remembered in the street by the church, built on the site of his palace, that is said to contain his bones. In the Cour St. Eloi near by was the country house of the Marquise de Brinvilliers, the famous poisoner of Louis XIV.'s day. A few years ago, at No. 11, there existed a curious wine-shop called the Brasserie de l'Hortensia that is supposed to date from 1620. In 1793 it belonged to Santerre, chief of the Garde National de Paris, and it was here that the only two prisoners found in the Bastille were conducted when the fortress fell, one of them an old madman, and the other, Tavernier, a criminal, equally mad. There are many charming old-world gardens concealed by the high walls of the Picpus quarter. One of the most spacious belongs to the order of Protestant deaconnesses who for many years have conducted an excellent nursing home at No. 95, rue de Reuilly. The work they have done among the poor in the district will make them welcome the new scheme for the erection of up-to-date workmen's tenements, even if the pickaxe of the 'démolisseur' destroys some of the historical relics of the Picpus quarter."

PSEUDO-SYRINGOMYELIA AND CHRONIC POLIOMYELITIS.

AN interesting case bearing on the pathological anatomy of syringomyelia has lately been published by Dr. F. Giannuli, of the Santa Maria Asylum at Rome.[1] The patient, aged 64, was admitted for a sensory aphasia with a history that since the age of 30 he had suffered from a form of progressive muscular atrophy of the Aran-Duchenne type. When Duchenne described this form of muscular atrophy he considered it a specific entity always caused by identical lesions, but he subsequently noticed that the syndrome might result from diverse causes and not only from chronic anterior poliomyelitis. Many muscular atrophies of this type have shown symptoms of syringomyelia, some are associated with cervical pachymeningitis, others with amyotrophic lateral sclerosis, while others again are the expression of a syphilitic spinal meningomyelitis or of other pathological conditions of nerves and cord. The symptoms present in Dr. Giannuli's case were those of a classical symmetrical muscular atrophy of radicular type in the four limbs, with marked reaction of degeneration. The atrophy in the upper extremities involved also the shoulder girdle, and there were also present bilateral "main de cadavre" and symmetrical atrophy of the lower extremities with equino-varus. Tendon reflexes in the arms and patellar reflex were abolished, while the Achilles jerk was only obtained with difficulty. While there was a general diminution of sensation, the dissociated sensory disturbances of true syringomyelia were not obvious. The autopsy disclosed a form of very chronic poliomyelitis, which had lasted 40 years, characterised by a mesodermic hypertrophic inflammatory process, with hæmorrhages, extravasations, thrombi, and ischæmic medullary foci in the grey matter and secondary atrophic degeneration of the cells and nerve fibres. The ependyma of the central canal did not take part in this inflammatory process. The presence of many medullary cavities and fissures in the nerve tissue at first sight would lead to the contention that the condition was a variety of syringomyelia, but the *evident inflammatory character* of the histological processes points rather to the conclusion that it was a variety of chronic poliomyelitis. The symptoms produced by these lesions were therefore those of a progressive muscular atrophy of the Aran-Duchenne type, associated with general sensory disturbance. Dr. Giannuli considers that the presence of cavities in the medulla does not of itself constitute syringomyelia, which has a specific pathological anatomy and syndrome of its own, and that cases such as he has described should be differentiated from true or gliomatous syringomyelia to form a class of pseudo-syringomyelias, the result of very chronic poliomyelitis or sclerosing myelitic processes.

MARRIAGE OF SYPHILITIC WOMEN.

WHEN should a woman who has been infected with syphilis be allowed to marry and to bear children? The commission recently appointed by the Société Française de Dermatologie et Syphiligraphie, in reporting on the subject of marriage and syphilis, made a series of recommendations to suit varying conditions of infection, but, generally speaking, they amount to a rule that two years elapse between disappearance of all symptoms and marriage. Dr. Lacapère pointed out at the special session, when this report was considered, that a distinction had not been made between the two sexes. He considered that the general rule was too severe in the case of men, and not severe enough in the case of women. He pointed out that the commission had lent support to the generally held doctrine that congenital syphilitic symptoms are only found when the mother has been contaminated, and he believed that many debilitated children who succumb to childish infections owe their lack of resistance to an infection with the *Spirochæta pallida*, which does not cause clinical manifestations. In France—and the same is true of most European countries to-day—the war has left a large excess of females in the marriageable population. Society can therefore afford to be more stringent in enforcing celibacy on women than on men. The distinction, though not generally emphasised, has been clearly enunciated by both English and French clinicians for many years. C. F. Marshall quotes no less an authority than Jonathan Hutchinson as having said as recently as in June, 1906, "with reference to marriage, if the treatment has been continued for two years from the date of the chancre a man may safely marry, but a much longer period is necessary for a woman." Marshall himself considers that a woman should not marry within two years of the disappearance of all symptoms. H. Gougerot, the eminent French syphilologist, considers double this period to be a minimum. J. E. R. McDonagh is probably nearest the mark when he says "if a woman has had syphilis ...... however drastic the treatment has been there is always a risk that her children will be syphilitic." Syphilis in women is not often recognised in the primary stage, and once the infection has become generalised the danger of its transmissibility to the fœtus can probably never be averted. It has been shown, however, that syphilitic mothers may bear perfectly healthy children if they are properly treated with antisyphilitic remedies during the months of pregnancy, and the wisest advice a physician can give to such a woman who is bent on matrimony is that during her first and every subsequent pregnancy she must attend a venereal clinic for regular treatment and advice.

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[1] Il Policlinico, Medical Section, Dec. 1st, 1920.

AFTER-CARE IN TUBERCULOSIS.

IN a memorandum recently issued by the Tuberculosis Group of the Society of Medical Officers of Health recommendations are made for the improvement of the tuberculosis campaign in general and after-care in particular. It is evident that this memorandum has been drawn up by persons closely in touch with the present organisation and keenly alive to its many flaws. Special attention is drawn to the need for adequate after-care, the neglect of which in the past has done so much to stultify the results of sanatorium treatment. Until after-care has been organised on thorough and comprehensive lines no satisfactory results from the tuberculosis campaign can be anticipated. The patient who returns from a sanatorium is seldom fit for whole-time work; he requires longer hours of rest and shorter hours of work than his fellows, and, as the memorandum puts it, "Suitable holidays for the tuberculous after periods of strain, such as apparently slight intercurrent illnesses, are essential to maintain them in health, and an annual holiday of three weeks is a necessity." Hitherto money has been found for sanatoriums and dispensaries, whereas little has been available for after-care and consolidation of the sanatorium "cure." Yet it is essential that the discharged patient should be subsidised for a considerable time, and re-establishment of the tuberculous as useful citizens can only be accomplished in their homes by a well-organised system of after-care. Accordingly, the memorandum recommends the establishment of an experimental local workshop in London where, under the necessary supervision, returned tuberculous persons would be employed on a part-time system, but on full wages, pending the time that they could again take their place as able-bodied workers. By this experiment much valuable information could be gained, and if the scheme proved workable vast sums, which might otherwise be expended on colonies and village settlements, could be saved. An attractive feature of this scheme is the recognition of the fact that the tuberculous, like other human beings, cling to their home surroundings and detest the uprooting which segregation in distant settlements implies. Another recommendation put forward in this memorandum concerns the administration of after-care funds. "This can only be done satisfactorily by a committee composed of persons directly interested in the welfare of the patients." The secretary to such a committee should usually be the clerk of the dispensary, who has access to most of the necessary knowledge, and Friendly Societies, trades-unions, relief organisations, local councils, boards of guardians, panel practitioners, chemists, and religious bodies of every denomination should be represented. Undoubtedly such an organisation operating in every district would soon amply justify its existence, and would do much to fill the gap at present painfully evident in the tuberculosis campaign. We commend this thoughtful memorandum to the attention of our rulers, especially in view of the Tuberculosis Bill which is likely shortly to be presented to the House of Commons for its consideration.

ACUTE ARTHRITIS IN INFANTS.

Dr. Elmer Johnson,[1] who has made a statistical study of 73 consecutive cases of acute arthritis at the Babies' Hospital, New York, remarks that invasion of the joints and periarticular tissues by pyogenic organisms is by no means rare in infants. The inflammation of the joint is usually secondary to inflammation of the epiphysis, but in many instances the inflammation spreads from the epiphysis to the periarticular tissue without affecting the joint proper. In most cases the source of infection cannot be determined. In the present series only 32 gave a history or showed evidence of a focal lesion. Pneumonia had occurred in 10 cases, umbilical infection in 4, furunculosis in 3, cerebro-spinal fever, cervical adenitis, vaginitis, ophthalmia and infected wounds in 2 each, and otitis media, scarlet fever, and breast abscess in the mother in 1 each. Forty-six of the patients were males and 27 females. The age distribution showed that the younger the child the greater was the susceptibility to purulent arthritis. Fifty-three per cent. of the series were under 6 months of age, and 74 per cent. were under 1 year. The 12 infants who were aged 1 month or under had probably been infected at birth. Though only 4 presented omphalitis on admission, Dr. Johnson suggests that bacteria may have entered the blood-stream through injuries to the mucous membrane of the mouth or by trauma from forceps. Forty-two per cent. of the children had only one joint affected, 25 per cent. had two joints affected, and 33 per cent. had more than two joints affected; 95½ per cent. of the affected joints were in the extremities. The micro-organisms causing the infection were isolated from the joints in 47 cases—namely, streptococcus in 18 cases, pneumococcus in 14, gonococcus in 7, staphylococcus in 3, *B. influenzæ* in 3, and *B. coli* and meningococcus in 1 case each. As usual, the streptococcus and gonococcus appeared to be more prone to affect multiple joints, while the pneumococcus was limited to one or two joints. Out of 19 cases in which the blood was examined the cultures proved sterile in 10, while of the 9 with a positive growth 4 showed streptococcus, 3 pneumococcus, 1 *B. influenzæ*, and 1 staphylococcus. Forty per cent. of the negative blood cultures were in children who showed no organisms in the joints, while in the positive cultures only 22 per cent. had no organisms in the lesions. In other words, there was more likely to be a positive blood culture when organisms were found in the joints. The prognosis of acute arthritis in infants is not very hopeful. Fifty-three per cent. of the present series died in hospital, 9 per cent. were discharged unimproved, and 38 per cent. were reported entirely well or greatly improved. The outlook becomes considerably better with increasing age, the high mortality among babies being mainly due to the difficulty of feeding them.

THE SPAHLINGER SERUM.

LAST week we briefly indicated the stage to which useful knowledge of the Spahlinger serum for tuberculosis had reached, concluding that it was well to await further enlightenment before passing judgment on the alleged remedy. Dr. Addison, speaking at Exeter on Feb. 18th, took occasion to correct the current report that a special medical officer of the Ministry of Health had been sent to Geneva to investigate this cure. No supply of the serum is at present available for investigation in this country, and there is nothing except statement and counter-statement on which to work. The evidence obtained from such amounts of the serum as were obtained for hospital practice was of a conflicting character and obviously excludes any claim made on behalf of the serum to be a panacea for all forms of tubercle. It is not good for any remedy, particularly a complicated remedy for a subtle disease, to be worked out in the limelight.

FATAL HÆMORRHAGE AFTER TONSILLECTOMY.

IN THE LANCET last week in the Proceedings of the Section of Laryngology of the Royal Society of Medicine, there is a report by Dr. McLeod of two cases in which death resulted from hæmorrhage following the operation of removal of the tonsils. Both patients were children, and in both death occurred within 24 hours. In the first case the sequence of events was that which is probably the usual one in these unfortunate cases: the child was apparently quite well until 4.30 in the afternoon, when she began to vomit blood; the correct procedures were taken, including suture of the faucial pillars, and left the patient improving and without bleeding, but she collapsed and died suddenly at 3 A.M. In such a case it is probable that hæmorrhage was occurring throughout the day, but the blood was swallowed and did not attract the nurse's attention; and this emphasises the importance of trying to avoid this "concealed hæmorrhage" by keeping the patient in the semi-prone position. Dr. McLeod is to be greatly commended for his courage in reporting these two cases, for fatalities due to this operation are nothing less than lamentable tragedies, and the more light thrown on their occurrence the better the prospect of their prevention. These occasional fatalities must not, however, be allowed to bias our judgment of the value of the operation, which remains an extremely safe one. In the discussion following Dr. McLeod's paper one speaker referred to five deaths in 14,700 cases, and this is probably in excess of the average, as far as deaths from hæmorrhage are concerned, for Mr. J. Milne Dickie[1] reported two deaths in 7133 operations at the Edinburgh Royal Infirmary, but neither from hæmorrhage.

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[1] American Journal of Diseases of Children, February, 1921.

AN AGREED REPORT ON VENEREAL DISEASE.

THE issue by the Birth-rate Commission of a special report[2] on venereal disease is an event of some importance. The Committee which took evidence and drew up this report included eminent medical men and women in general and special practice, with five representatives of organised religious bodies. Over this Committee the Bishop of Birmingham presided, and the Rev. James Marchant, LL.D., kept the protocol. All 19 members have put their names to a report of some 20 pages which covers both medical and moral aspects of the venereal question. Four notes of reservation, signed by individuals or groups of members, show an imperfect agreement on certain points, but what is far more striking is the unanimous statement of the case in general, which is proof positive of a far larger measure of agreement than would be gathered from a study of recent controversies. Nor has this general assent been reached by easy avoidance of controversial points, for the minutes of evidence which appear in full are absolutely frank. The National Council of Public Morals, under the auspices of which the report appears, may be congratulated on having carried through a difficult task wisely and well.

BIOLOGICAL CONTROL OF DRUGS.

THE Departmental Committee, appointed by the Minister of Health last April[3] to consider the effective control of therapeutic substances which cannot be tested by direct chemical means, has brought in its report. (In passing it may be remarked that a useful and business-like piece of work has cost the country only £182.) The witnesses examined included the President of the General Medical Council, the senior warden of the Apothecaries' Society, pharmacologists, bacteriologists, and chemists holding official position, and representatives of the firms manufacturing therapeutic products. The report is a unanimous one signed by its five members, Sir Mackenzie Chalmers (chairman), Dr. H. H. Dale, F.R.S., Mr. A. B. Maclachlan, Dr. G. F. McCleary, and Dr. C. J. Martin, F.R.S. The committee recommends that therapeutic substances which cannot be tested adequately by chemical means should be subject to supervision and control, the controlling authority to be the Lord President of the Council, the Minister of Health, the Secretary for Scotland, and the Chief Secretary for Ireland, assisted by an Advisory Committee nominated partly by these, partly by the Naval and Military Authorities, the General Medical Council and Medical Research Council, and the Pharmaceutical Society. They suggest a central laboratory under Government control, wherein standards would be prepared and maintained by which to test samples of products issued for sale, the Research Council to be responsible for this work, and the manufacturers themselves retaining responsibility for securing that their products conform with the standards laid down. Power is to be taken to inspect premises where the substances are made, whether in the United Kingdom or abroad, and to supervise the successive processes in manufacture. An appendix to the report outlines a Bill to give these recommendations legal force. A section of the daily press, which completely misinterpreted the purpose of the Committee on its appointment, has hastened to discredit the very reasonable recommendations of this report.

THE fifth report of the Joint War Finance Committee of the British Red Cross Society and the Order of St. John, just issued at the price of 1s., covers the period from Oct. 20th, 1918, to June 30th, 1920, together with a summary of the financial operations from Oct. 20th, 1914. Inasmuch as a general report on the entire war work of the Red Cross will be published in the spring, any detailed analysis is deferred until its appearance. Of the total receipts amounting to £21,885,000, the sum of £2,053,000 was paid out for the transport of wounded; £2,928,000 for hospitals, not including local expenditure on the auxiliary home hospitals; £5,017,000 for stores; £5,148,000 for prisoners of war; and £2,718,000 for post-war schemes for sick and disabled ex-Service men and kindred objects, leaving a surplus on June 30th last of £1,827,000. Claims upon this surplus on behalf of the wounded will continue for a long time, and the Joint Committee foreshadows the development of a scheme throughout the country for the benefit of disabled ex-Service men.

VENEREAL DISEASE IN THE FAR EAST.

THE Commission appointed by the National Council for Combating Venereal Diseases and sent out to the Far East under the ægis of the Colonial Office has just completed a strenuous campaign in Shanghai, where the Commission arrived early in December.

The campaign opened with a representative Conference convened by the Shanghai Municipal Council, when addresses given by Dr. Rupert Hallam and Mrs. C. Neville Rolfe received much attention. In the course of her speech Mrs. Rolfe gave a brief account of the visit of the Commission to Japan, where military examinations of all youths of 20 give some clue to the health conditions. In one province where the licensing of prostitutes was abolished 35 years ago the incidence of venereal disease was about 15 per 1000 in 1911, whereas in every other district the figures were 35 to 47 per 1000. During their brief stay in Shanghai the members of the Commission held educational conferences for heads and teaching staffs of schools, a series of medical conferences with local and visiting doctors, showed "Damaged Goods" on the film, and organised a general public meeting for foreigners resident in Shanghai. Full facilities were given for the visiting of all institutions under the control of the Municipal Council, and during the Commission's stay various hospitals, prisons, licensed quarters, and clubs were inspected. The Commissioners formulated their recommendations in a report presented to the Special Joint Session of the Municipal Watch and Health Advisory Committees. This report, which was published in the *Municipal Gazette*, urged that facilities for the free diagnosis and treatment of venereal disease should be provided by the Municipal Council; that their health and educational departments in coöperation with voluntary organisations should secure the education of the public with regard to venereal disease, and that all possible steps should be taken to suppress prostitution. It is hoped that as a result of the campaign much of the programme recommended by the Commissioners will be carried out, and that in any case the appointment of a V.D. officer and the provision of free treatment for seafarers will be considered in the immediate future.

Much interest was shown by the lay public in the aims of the Commission, and any measures instituted by the Municipal Council on the lines suggested will receive a considerable amount of local support.

MANCHESTER ROYAL INFIRMARY: X RAY AND ELECTRICAL DEPARTMENT.—A series of seven plaster models, made from X ray observations, and showing the normal stomach and the effect of posture upon its shape, have been prepared at this department and placed on exhibition in the Museum of the Royal College of Surgeons of England.

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[1] Journal of Laryngology, April, 1914, p. 184.

[2] Report on the Prevention of Venereal Disease. London: Williams and Norgate. 1921. Price 21s.

[3] See THE LANCET, 1920, i., 974, 1022.

MEDICAL EDUCATION IN CHINA.

A well-attended meeting was held on Feb. 21st at the house of the Royal Society of Medicine, 1, Wimpole-street, London, W., Sir DONALD MACALISTER presiding, to promote the advance of medical education in China.

Sir DONALD MACALISTER, in introducing Dr. Harold Balme, of the Shantung Christian University, said that he welcomed the opportunity of congratulating those who had made such wonderful progress in such a short time in medical education in China. Its future depended on the degree of support that the Western world was ready to supply.

Dr. BALME then gave his address:—

He said that prior to the beginning of the nineteenth century the study of medicine in every part of the world was hampered by the lack of a sound scientific basis, with the result that knowledge of the processes of health and of disease in the human body was the combination of many elements in which philosophy, superstition, and fantastic theory all claimed a part. The great contribution which the nineteenth century had made to the study of medicine might be described as a struggle for two dominating ideals—the determination to secure exact scientific truth in the investigation and treatment of disease, and the conception of trusteeship in relation both to medical knowledge and to the care of the sick.

We were accustomed to say that the doctrine of mandates, as at present understood, was a direct product of those newer ideas of international responsibility which had found their expression in the League of Nations. But whilst this might be true as regards the application of such a doctrine to countries, it had a much earlier birth in respect to individuals. It sprang into being on the first occasion that a physician taught that all medical discovery, and all knowledge as to the causation and treatment of disease, were the common heritage of every practitioner of medicine, and not the private monopoly of the discoverer himself. And when one began to consider what had been the results of that teaching—particularly when one viewed it against the background of countries where no such doctrine was taught—its immense effect upon the advance of medicine at once became apparent.

Visitors to China during last century again and again expressed their astonishment at the absence of any system of medical education or of hospitals, and at the lack of examinations or other restrictive qualifications safeguarding the practice of medicine. It was probably well known to all that for several centuries Chinese medical text-books had been accurately describing the symptoms of many diseases commonly met with in the country, whilst the great Chinese Pharmacopœia, compiled nearly 700 years ago, contained a number of drugs now universally used, whose action was already thoroughly understood in China at that time. But the difficulties which prevented any attempt at human dissection, and the lack of intimate acquaintance with physical science, restricted the Chinese physician to philosophic speculation and empirical observation; whilst the fact that anyone was at liberty to style himself a doctor naturally prevented the building up of a professional spirit or the development of a sense of trusteeship.

Dr. Balme then gave a historical survey of the introduction of Western medicine into China by the mission schools. Though the first voluntary hospital was opened by Thomas Colledge, a surgeon of the East India Company, in 1827, it was not till 1881 that the first Chinese medical college was established. Thereafter other small medical schools came into existence, mainly as a development of those classes for student-assistants which had been started, at first slowly and later in such numbers, in connexion with various mission hospitals. At the Biennial Conference of the China Medical Missionary Association, held in 1913, a resolution was passed urging that no further medical colleges be established until those then in existence—eight for men students and three for women students—were made efficient. And there were many who realised that even that number was beyond the power of the missions to render effective.

Meantime there came into existence a body of Chinese medical men who had received their training on modern lines, mostly in Europe and America, and who subsequently formed themselves into a National Medical Association of China. The leader of this group—Dr. Wu Lien-teh, better known in this country as Dr. G. L. Tuck—urged the Government to establish modern standards of medical education, outlining a suggested syllabus for the purpose. At the same time various of the provincial governments began to show interest in this work, and other organisations interested in the progress of China began to take a share in the work of medical education. At last, during 1914 and 1915, the Rockefeller Foundation of New York sent out two influential commissions to China, and as a result of their recommendations entered into negotiations with the London Missionary Society by which they have taken over the complete financial responsibility of the Peking Union Medical College. They are rebuilding the medical school and hospital at an expense of not far short of 2 million pounds. A large staff of expert teachers has been appointed, mostly from the United States, but also including a few men from this country; and every effort is being made to ensure that each department will be adequately equipped.

Since in this school the English language is the medium of instruction, the Council on Medical Education of the China Medical Missionary Association requested the Rockefeller Foundation to assist in the support of at least one medical school teaching in Chinese, and expressing the opinion that the school most suitable for such development was the one situated at Tsinan, the capital of Shantung province. They further urged that all missions interested in the advance of medical education, through the medium of Chinese, in the great Mandarin-speaking area of East and Central China, should concentrate their forces in the development and support of such a school. This school had now absorbed the schools at Nanking and Hankow, and the three junior classes formerly under instruction at the Union Medical College, Peking, and the Rockefeller Foundation had made a grant of over £30,000, since extended, towards the cost of additional buildings and equipment at Tsinan.

The Council of Medical Education of the China Medical Missionary Association had outlined a two-year course of pre-medical instruction, to be taken before the five-year medical course. This minimum of two years pre-medical work in the laboratory sciences was now being required at Peking, Tsinan, Changsha, and Shanghai. In this and in the extension of the curriculum of trained nurses in over 50 registered training schools to four years, China might claim to be ahead even of this country. Dr. Balme referred to the good work accomplished by the Chinese Anti-plague Bureau and to the sympathetic attitude of the Chinese Government towards the development of medical education, and concluded by explaining the financial and other difficulties confronting medical schools in China and appealing for the sympathy, encouragement, and support of the profession in this country.

Sir ALFRED PEARCE GOULD, after thanking Dr. Balme for his most interesting address, congratulated him on the excellent work he and his co-workers are doing, and proposed that the following resolution be put to the meeting:—

"Having heard with pleasure of the sympathetic interest of the Chinese Government in the development of modern medicine in China, and of the steps which have already been taken by British and American medical practitioners to coöperate with the Chinese in the establishment of medical schools in which the highest standards are set, this meeting of members of the British medical profession desires to place on record an expression of its sympathy with this effort, and its willingness to promote in every way possible the advance of medical education in China."

The resolution was seconded by Colonel W. MCADAM ECCLES and was passed unanimously.

In answer to a question by Colonel ECCLES as to how the profession in this country could give help, other than financial help, Dr. BALME said that the workers in China had great need of sympathy and of the knowledge that medical men in this country took some interest in their work. Besides financial aid, help in recruiting suitable men for posts as they became vacant was of great value. A high standard of professors was required. He asked Professor Earle, of Hong-Kong, to help him to answer this question.

Professor H. G. EARLE endorsed Dr. Balme's remarks on the stultifying effect of a sense of isolation on teachers of medicine in remote areas, and explained that the stimulus afforded by the generosity of the Rockefeller Foundation was not limited to the money received from them. For example, in Hong-Kong they had felt the stimulus though they had had no financial help, all the special buildings having been erected from money given by Chinese residents in the neighbourhood. Professor Earle considered that the most valuable help could be rendered by granting full post-graduate facilities to Chinese medical men. His advice to the Chinese student was to graduate in his own country and then to proceed to Europe or America and complete his medical education by this means.

Dr. **LOUIS SAMBON** reminded the meeting of the possible value of the ancient Chinese medical knowledge, and urged that it should be studied before it died out.

A vote of thanks to Sir Donald MacAlister, proposed by Dr. **MARY SCHARLIEB** and seconded by Sir **JOHN JORDAN**, closed the proceedings.

MEDICINE AND THE LAW.

The Assets of the Approved Societies.

Dr. Addison has made an important statement with regard to the result of the inquiry now proceeding into the assets of Approved Societies, with a view to their judicious expenditure on new forms of benefit to the contributors. From the valuations completed it can reasonably be anticipated that the total of the surplus of all the societies approved under the Health Insurance Acts will be found to exceed their liabilities by at least £8,000,000. It is proposed to treat this very satisfactory condition of things as largely due to the contributions of members insured prior to the end of 1918, and for the present, at any rate, to confine to them participation in such new benefits as their societies may decide upon. With this principle it is understood the societies generally have concurred, and they have also adopted the wise resolve not to distribute the funds at their disposal in the form of increased cash benefits. The proposals made include contribution to the funds of voluntary hospitals treating members, the provision of accommodation in suitable convalescent homes, the provision of dental and optical treatment, with the meeting of expenses arising out of these, such as the purchase of glasses. The obtaining for members of the service of nurses and of medical attendance for families and dependents was also mentioned by Dr. Addison, who rightly laid stress upon the merits of the first three suggestions enumerated above. He was able to state, moreover, that the recent raising of contributions, with an accompanying increase of benefits, had been generally accepted without opposition and acquiesced in. It is proposed that the additional benefits referred to shall begin in all societies next July, and the actuarial calculations now made should render further valuation for a similar purpose unnecessary for five years.

The Importance of X Ray Examination.

A general inspector of the Ministry of Health held recently a public inquiry into charges brought by the Norwich board of guardians against the medical officer of the Poor-law infirmary in respect of alleged lack of proper care in treating an inmate. The man had slipped and injured his leg, which became swollen and painful. An important point to be determined at the inquiry was whether there had been failure to recognise the leg as fractured by the fall and to treat it properly. There was also for consideration the question whether the patient was rightly removed to a lunatic ward, and whether the removal took place in a proper manner, having in view the fact that his leg might have been recently fractured, while the removal was effected in an ordinary carrying chair. Some conflicting medical evidence was given on these subjects. The death of the patient has taken place, and an inquest must be taken as having disposed of such issues as are indicated above. As the result of post-mortem examination medical evidence was given that there had been a fracture of the neck of the femur, but that appearances proved conclusively that this must have taken place some years before death, the recent fall having had no apparent result beyond a bruise or sprain of the hip. The medical witness stated further that deceased, in his opinion, had been properly treated. The coroner held that, so far as his duties were concerned, this made the case clear. He refused to adjourn the inquest, and found a verdict of "Death from natural causes." Apparently much trouble and anxiety to the medical man, whose professional competence was impugned, would have been spared, as well as expense to the guardians, if a recommendation of the former that an X ray apparatus should be provided for the infirmary had been accepted by the guardians.

Copeland v. Orr.

Dr. T. Orr is to be congratulated on the result of his appeal in the action for slander brought against him by Mrs. Copeland, formerly sanitary inspector and health visitor under the Ealing Town Council. The alleged defamation arose out of an unfavourable report on the plaintiff's performance of her duties made by Dr. Orr as medical officer of health at a meeting of a committee of the council. Privilege was pleaded, but Mr. Justice Roche at the trial held that there was sufficient evidence of malice to justify the case being left to the jury, who found for the plaintiff with £25 damages, for which judgment was given. The Court of Appeal has now set aside Mr. Justice Roche's judgment and entered judgment for the defendant, holding in effect that evidence that the defendant had frequently found fault personally with the plaintiff with regard to her work did not constitute evidence of malice on his part. Lord Justice Bankes pointed out that if the verdict were allowed to stand a subordinate who was censured in respect of defective work, and then reported upon to superior authority in a communication which otherwise would be held privileged, would be able to rely upon the previous fault-finding as evidence of malice.

A Massage Establishment Closed.

Mr. Chester Jones recently dismissed the appeal of Mary Frances Nolan against the refusal of the London County Council to grant her a licence to carry on a massage establishment at an address in Jermyn-street. None will question the magistrate's decision who regards massage as a form of treatment to be prescribed by a medical practitioner in suitable cases, and to be carried out according to his directions by persons who have qualified for the purpose by an adequate course of training. Establishments conducted by young women masquerading as nurses under fancy names are no doubt often sources of temptation to the immoral and of danger to persons who may enter them with no intention to indulge in immorality. The question is how to obtain evidence in cases where undesirable practices are believed to go on under the pretext of massage. In the appeal before Mr. Chester Jones at Bow-street two young men were called who were sent expressly as detectives to collect evidence, and who had gone through the process of so-called massage in a manner which they described in court. The learned magistrate expressed himself as strongly disapproving of evidence so obtained. He said in court that men who were willing, for payment, to go round to massage establishments to see whether their sexual feelings were aroused were not "very nice men," and that their evidence ought to be looked at carefully. "He did not quite understand the mentality of those who employed men on such a task." That the evidence of such witnesses, and, indeed, of all witnesses, should be scrutinised carefully none will deny. What evidence, however, would Mr. Chester Jones wish to see substituted for it? It is to be regretted that sometimes in civil life as in military matters the employment of detectives or "spies" is necessary. Persons frequenting massage establishments for immoral purposes are not likely to come forward and denounce them, and might not be believed if they did. Respectable persons lured into them are not much more likely to tender their evidence. To take an adjoining room and bore a hole through a partition or wall is generally quite impracticable. Hearsay stories might easily be obtained, but would not be received as evidence. A suggestion by the magistrate as to what he would regard as satisfactory proof of the undesirable quality of a particular establishment would have no doubt been welcomed by the London County Council.

Distributors of Cocaine.

A man calling himself Frank Simmonds, or Russell, 32 years of age, has been sent to prison for six months by Mr. d'Eyncourt, at Marylebone police-court, for having cocaine in his possession without authority. It was stated by a detective that in last September a large quantity of cocaine had been found in a flat rented the prisoner, one bottle containing 214 gr. He had arrested on Jan. 9th with a woman who next been sentenced to three months' imprisonment, but he had had to be kept in the infirmary for some time before being brought before the magistrate. The police had had great difficulty in arresting him, as he had been living at as many as 50 different addresses. The traffic done by the prisoner was in the West End. The extensive demand for cocaine in the West End of London, and the high prices obtainable for it, are to be noted in the reports of many trials. Mr. d'Eyncourt had four men before him at Marylebone in last October, charged with the same offence as Simmonds, when he sentenced two to two months' imprisonment in the second division, and bound two of them over. It is to be hoped that the longer sentence inflicted in the present case may tend to deter others, but it is evident that the high profit to be realised upon wares so easily carried and concealed render the suppression of the trade difficult. That Simmonds had money at his command can be inferred from the way in which he was able to baffle the police by changing his abode.

Since the sentence on Simmonds Carlo Ivaldi, a young Italian, has been sentenced to six months' imprisonment and deportation; he had in his possession more than 7000 grains of cocaine.

Alleged Bogus Doctor.

In THE LANCET of Feb. 5th attention was drawn to a woman calling herself Margaret Crawford (or Margaret de Lancy Williams), whose arrest was sought on a warrant by the police for alleged offences against the Medical Act, 1858. This woman was arrested in Dublin on Feb. 10th, and brought before Mr. D'Eyncourt at Marylebone police-court on Feb. 18th to answer four summonses preferred by the Medical Defence Union, Ltd., of falsely pretending to be a general medical practitioner in August and September last, and of falsely using the title of Bachelor of Medicine on three death certificates. The accused pleaded guilty and was fined £20, with 5 guineas costs, for each of the offences.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Increased Fees at Scottish Universities.

THE four Scottish Universities have had under consideration the necessity for increasing their fees in order to meet the greatly enhanced cost of services and upkeep. Draft ordinances are at present passing through their various stages in each university to enable this to be done. On Feb. 14th the General Council of Edinburgh University approved of an increase in the matriculation fee from one guinea to two guineas, and of the examination fees of from 33 to 50 per cent. It was agreed that the proposed increase should not be applied retrospectively to degree examinations which a student had already passed. An ordinance was also approved increasing the basis of assessment for the purpose of ascertaining the pensions of professors and principals. The question of superannuation of university staffs was also raised, and it was intimated that the four Universities had joined in endeavouring to have a Bill introduced giving them powers to deal with the whole problem. They hoped the measure would give power to establish an age-limit for professors and principals, and that it would enable them to homologate the professorial pensions with those of the lecturers and other members of the staff. A meeting of the University Court held the same day approved of the above draft ordinances. The Court also approved of increased fees in all the faculties, and directed that they should become operative from the commencement of the ensuing summer term.

"Carriers" of Disease.

The Scottish Board of Health have issued a circular letter to local authorities stating that they have had under consideration the spread of infectious diseases by means of "carriers" and the powers of local authorities to deal with such cases. They have accordingly, in terms of the Public Health (Scotland) Act, 1897, drawn up regulations giving the local authority power to deal with any "carrier" of infectious disease in the same manner as if he actually suffered from the disease. Before any person is to be deemed a "carrier" he must, however, be certified as such by a medical officer of health and also by another registered medical practitioner, such certificate to have effect for a period not exceeding three months. Further examinations may be made at any time, and the carrier may demand re-examination during the currency of a certificate. These regulations come into force on March 1st, 1921. The Board have also under discussion the question of special treatment in special classes of carriers, with a view to rendering restraint of the carrier unnecessary. They are also in communication with the Medical Research Council regarding the problem of enteric carriers.

Consultative Council's Scheme for a National Medical Service.

The "Scheme of Medical Service for Scotland," proposed by the Consultative Council, has met with much adverse criticism. Amongst the public objection is taken chiefly because of experience of the working of the National Health Insurance Act, and reluctance is widely expressed at extension of its "benefits" and the ignoring of the question of expense. Amongst the profession the proposal meets with opposition for the same reasons, and also because of the attitude which, it is held, is maintained towards practitioners. Many of the clauses, it is said, assume the hopeless incompetence of the general practitioner at a time when the universities and the medical corporations have raised the standard of medical education to an unprecedentedly high level. The assumption is inconsistent with the experience of medical practice before the days of the Insurance Act. If conditions have altered, State interference must be held responsible say the critics.

Edinburgh University Extensions.

The first meeting of the general committee in connexion with the extension scheme of the University, and the appeal for £500,000 to meet the cost, was held on Feb. 18th, Principal Sir Alfred Ewing, K.C.B., presiding. Letters commending the appeal were read from Mr. A. J. Balfour (Chancellor of the University), Mr. Lloyd George (Lord Rector), and Sir Henry Craik, M.P. Sir Alfred Ewing made an introductory statement, pointing out that there were essentially two sides of University finance—the question of current expenditure, which had recently increased enormously, and of capital outlay. The present appeal was to meet the latter. From time to time there came a crisis in the history of any university, when its material shell became too small for the organism inside it. Fifty years ago they had had such a crisis, with the result that the new buildings had been erected, and thanks to that the Edinburgh Medical School had maintained its proud and unique position. Another crisis was upon them again. In some departments the buildings and equipment were wholly inadequate, as there were now in the University about 5000 undergraduates compared with about 3000 in the old days. At present applications from many well qualified to undertake research had to be declined for lack of room. They were appealing not only on sentimental grounds, but also because of the practical work of recognised value which the universities could do for the country, and which could be done only by them. He hoped the universities would long retain their independent position, but they could only do so if their friends assisted them in times of need. The Chancellor of the Exchequer had said that grants would largely depend upon the efforts made by individual universities and the response to them. They were making their effort now. It was not a good time, but they were obliged to do it. He appealed not only to Edinburgh, but to the sons of the University everywhere. Intimation of subscriptions amounting to about £20,000 was made. Lord Provost Chesser and others spoke in support of the scheme, and an influential committee was appointed for its furtherance.

Feb. 21st.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Doctors as Detectives.

AN Order in the following terms has recently been served on the secretaries of the several general hospitals in Dublin:—

> To the Secretary, ... Hospital.
>
> By virtue of the powers conferred on me under *Regulation 53 of* the Restoration of Order in Ireland, Regulation 1, the undersigned, being a Competent Military Authority under the said regulations, do hereby order you, the secretary, being the person in charge of the .... hospital, to furnish to me (in writing) the names and descriptions of all persons admitted to your hospital who are or are suspected to be suffering from wounds caused by bullets, gunfire, or other explosives, together with such particulars and information concerning them as may be within your knowledge. Such information is to be furnished by you daily to me at Headquarters, Dublin District, Lower Castle Yard, Dublin. Failure to comply with this Order will render you liable to be proceeded against for an offence against the Restoration of Order in Ireland Regulations.
>
> ———, Colonel Commandant,
> Commanding Dublin District,
> Competent Military Authority,
> Lower Castle Yard, Dublin.

A similar Order was subsequently served on the medical officers of various workhouse hospitals throughout the country. As might be expected, the Order has caused a good deal of discussion among the medical men affected. It is recognised that it is the fixed ethical practice of the medical profession that a medical man is not at liberty to disclose information concerning his patient of which he has become possessed in virtue of his professional position toward the patient. It is true that he has no privilege in point of law and that if produced as a witness in court he must answer such questions as he is ordered by the judge, or be willing to be punished for contempt. The present Order goes much further than this. It does not insist that a medical man should give true and full evidence when called on, but that he should of his own motion inform the authorities of the condition of certain of his patients. It is, no doubt, the duty of all good citizens to do what they can, both to prevent crime and to aid the authorities in detecting it, but it is pointed out that one can hardly find a precedent for the imposition on medical men as a special duty that they should act as detectives in the course of their professional work. This is the view of the Order taken generally by the medical profession in Ireland. Apart from the ethical question involved, obedience to the Order would in certain areas of Ireland expose a medical man to grave danger. Up to the present, medical men have performed their professional duties in Ireland without considering any question other than the need for their services. They have attended the sick and wounded regardless of politics or nationality, and on the whole they have enjoyed a certain immunity while doing so. It would be very unfortunate if the military authorities were to press on the medical profession as a whole a line of action which would be regarded as unprofessional. Under the circumstances, I am glad to learn that certain Fellows of the Royal College of Surgeons, feeling the difficulty of their position, have sought advice and aid from the Council of the College. The Council may be trusted to make suitable representations to the military authorities, and it is to be hoped that the latter may see their way to withdraw or cancel an order which is certainly irritating to the profession and likely to be ineffective.

CITY OF LONDON AND EAST LONDON DISPENSARY.—The report and balance-sheet, which will be submitted to the annual meeting of governors of this institution at the Dispensary, 40, Wilson-street, Finsbury-square, on March 1st, shows a satisfactory year's working. The objects of the institution are to supply medical and surgical advice, with medicines, to the poor and destitute; the attendances during the year 1920 were the highest on record, being 161,616. 971 patients received gratuitous care, the others made some weekly payment. Donations and subscriptions amounted to £107 8*s*., including a sum of £22 4*s*. 6*d*. placed in the dispensary box by the patients; they may be sent to Messrs. Barclays Bank, Ltd., 54, Lombard-street, London, E.C. 3, or to the secretary of the institution, 53, Lombard-street.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Compulsory Typhoid Vaccination.

THERE is in France a movement in favour of compulsory vaccination against typhoid fever, more especially in the event of epidemics. Proposals have also been made to institute compulsory vaccination in districts where sporadic cases are frequently notified. At two of the recent meetings of the Académie de Médecine MM. A. Chauffard, C. Achard, H. Vincent, and Léon Bernard have urged the need for a campaign in this direction. Mons. Bernard recalled a previous communication in which he pointed out that by a mere decree compulsory vaccination against typhoid fever, such as that existing in the army, would be applicable to the civilian population in case of an epidemic. Mons. Bernard was of opinion that it would be difficult to determine by law the age at which such vaccination ought to take place. Mons. Chauffard proposed the age of 15, whereas Mons. Vincent was in favour of vaccination even amongst children. Finally, a committee was formed to study the questions involved, the members of which are MM. A. Chauffard, Léon Bernard, F. Widal, and H. Vincent.

Post-graduate Courses in Paris.

A course in dermatology and venereal diseases, under the direction of Professor Jeanselme, will be held in April, May, and June, beginning on April 11th, at the Hôpital Saint Louis. Lectures will be given from 1.30 to 4 P.M., and the mornings will be devoted to clinical teaching, laboratory work, &c. The fee payable will be Fr.150 for the course, and a certificate will be issued to those who have attended it. Further information may be obtained from Mons. Marcel Bloch, Chef de Laboratoire à la Faculté, Hôpital Saint Louis, 40, rue Bichat (10e), Paris.

A three months' course in electro-therapeutics, radiology, and radium-therapy will be held under the auspices of La Société des Médecins-Chefs des Laboratoires de Radiologie et d'Électro-Radiothérapie des Hôpitaux de Paris, beginning on April 11th. Lectures will be held daily at 6 P.M., and demonstrations in the mornings. The course is free to medical practitioners. Further information can be obtained from Dr. Mahar, Hôpital Trousseau, 158, Avenue du Général-Michel-Bizot, Paris (XIIe).

Modification of the Internat Competition.

There are some 300 house physicians and house surgeons, the so-called internes, on duty in the various Paris hospitals. These Internes des Hôpitaux de Paris, to give their qualification in full, are selected from senior medical students, who can attain to such a post before being registered as medical practitioners. Competitive examination takes place every year amongst those students who have already obtained by competition the grade of Externe des Hôpitaux. The "Concours de l'Internat" takes place annually in October. The candidates number a few hundred, from whom the first 60 are selected as internes and hold this post for four years. Every year each interne becomes assistant to a different chef-de-service, who may be a surgeon or a visiting physician to the same hospital or a different one. Internes are able to choose the post desired according to their precedence in classification. Candidates are asked to write a two hours' paper on anatomy and one on medicine or surgery, and are required to read their own papers before juries composed of ten surgeons and physicians. Some 200 candidates are selected from this preliminary competition and are then subjected to oral tests from which 60 emerge triumphant, being made Internes Titulaires with the privilege of becoming a resident at any of the Paris hospitals under the administration of the Assistance Publique. About 100 others are made Internes Provisoires, and are entitled to compete again the following year. A number of physicians and surgeons are of opinion that the form of the competition should be revised. It is proposed that an eliminating examination should be held in July, consisting of a paper on anatomy, and a second competition should take place in October, consisting of three papers on anatomy, medicine, and surgery. In these parts of the competition the names of the candidates would not be disclosed to the examiners. An oral competition on the lines of the second part of the present internat would complete the ordeals. Apart from this suggestion, which seems to be the most in favour, there have been other reforms suggested, but the authorities have not yet come to a definite decision on the matter.

The Budget of the Assistance Publique.

The Administration Générale de l'Assistance Publique, which involves the management of nearly all the hospitals in Paris, has been granted a budget of Fr.228,486,330 by the authorities of the Conseil Municipal de Paris, in accordance with the conclusions of the committee of management. The present chairman, known as Directeur-Général de l'Administration de l'Assistance Publique, is Mon. Louis Mourier, formerly Sous-Secrétaire d'État au Service de Santé Militaire, who succeeded Mons. G. Mesureur on his retirement in November last.

New Wing to the American Hospital in Paris.

A committee has been formed in order to deal with suggestions for improvements at the American Hospital in Paris, which is to have a new wing. The cost will amount to $400,000. There are now 32 beds in the hospital, and it is intended to increase this number to 100.

A Surgical Member of the Académie des Sciences.

The election of a surgeon to replace the late Professor F. Guyon as Membre Titulaire de l'Académie des Sciences has aroused much interest. The names of the following surgeons had been suggested: MM. Pierre Delbet, J.-L. Faure, E. Hartmann, F. Legueu, T. Tuffier, and Pierre Bazy, and it is the latter who has been selected for the honour.

Feb. 16th.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Outbreak of Exanthematic Typhus.

AN attack of typhus exanthematicus has recently occurred in the city and has not yet been suppressed. Sixteen of a party of 21 foreign artists arriving here after a tedious journey from Odessa were taken ill almost simultaneously and brought to the isolation hospital; soon afterwards another group of nine persons, also late arrivals from South-Eastern Europe, were discovered suffering from the same disease; and a few days later seven more cases were discovered. This last group also consisted of foreigners from various countries, having no connexion whatever with the first two groups of patients. Four persons have died up to date; all necessary precautions have been taken to prevent a spread of the infection. During the war the city was comparatively free from typhus; an occasional case was found amongst the soldiers, but rapid control of such small foci was always established, thanks to the excellent work of the disinfecting group of the sanitary staff. As the population is almost completely free from lice, infection hardly ever took place.

Precarious Position of General Practitioners in Vienna.

At a meeting of the Vienna Organisation of Practitioners, not intended for public notice, the critical position of a large percentage of the doctors in Vienna was discussed. Apart from a comparatively small number of specialists and surgeons, medical men can hardly contrive to earn a living. The Krankenkassen doctors have recently succeeded in forcing the insurance clubs to pay them substantially increased fees, but they have lost nearly all their private practices. The population is itself so impoverished that people cannot afford to pay the comparatively high fees of a private doctor during a long illness. The family doctor is rapidly disappearing, for his middle-class patients are forced to apply to hospitals or out-patient departments and renounce all ideas of comfort during illness. Servants are now so expensive that many doctors have to do without them, taking their meals with their families in the "war kitchens" where the food supplied is below the usually recognised standard of quality. It is impossible for the doctor to buy new clothes or keep a carriage, and an increase of the rate of fees is no longer feasible. The medical organisation is working hard to assist men whose position would otherwise be quite untenable.

The Biological Society of Vienna.

At a recent meeting of the Biological Society of Vienna the problem of the interstitial cells of the sexual glands was discussed. Professor E. Steinach's experiments led him to declare that by causing a proliferation of these cells rejuvenation of the organism can be produced in a marked degree. Professor J. Kyrle stated his opinion that the interstitial cells do not directly produce the secondary sexual symptoms, but augment the action of the specific generative cells. Steinach's operation causes a marked change in the circulation and metabolism in the testicles, thus producing an increase of the interstitial cells. Professor Steinach said that he was not the originator of the method, but that he had continued the work of other men. He showed rats and specimens of rat testicles and ovaries which had been subjected to his operation. Amongst them were four rats of one family—a normal masculine rat, a normal sister, a castrated sister, and another castrated sister in whose body a testicle had been implanted. The last had the external appearance of a powerful male rat. Histological examination of the implanted testicle showed that the specific glandular cells disappear, whilst the interstitial cells become hypertrophied. This fact, Professor Steinach maintained, shows that the appearance of male characteristics in a previously female organism is due to the interstitial cells. Professor J. Tandler remarked that the duration of the rejuvenating effect in man was still unknown, and that the results of animal experiments are not simply applicable to human physiology; therefore he was opposed to the operation on man. Professor G. Holzknecht said that the method of rejuvenation by means of X rays was in no way deleterious, as far as is known at present. In a large number of cases exposed for various reasons to Rontgen rays within the last 20 years neither in men nor women had any bad effect been observed; nor amongst the numerous physicians and X ray assistants who within the last 15 years had, no doubt, occasionally been exposed in such a way that their sexual glands were influenced had a single case of "hyper-hormonisation" been observed. The first and principal proposition of Professor Steinach—"sexual hormones are specific for the sex"—was, in the opinion of Professor Holzknecht, proved, and this was the basis of Steinach's teaching. Professor Lichtenstern said that by introducing the method of transplantation into therapeutics it had become possible to treat such hitherto refractory conditions as eunuchoidism and homosexualism. He was the first man in this country to ligate the vas deferens, not as an experiment, but from precise surgical indications. As no ill-effects were noted after the lapse of one year he carefully selected cases of precocious senility and adopted the ligation with the idea of obtaining similar results to those of the rat experiment. The cases were kept under observation for from two to two and a half years; no untoward effect had yet been observed. In females surgical castration was not adopted; massive doses of X rays were given, producing interstitial inflammation of the glandular tissue. The favourable effects noted in former years after X ray treatment of myomatous conditions of the uterus were, in Professor Lichtenstern's opinion, due to this cause.

Feb. 14th.

LITERARY INTELLIGENCE.—Messrs. Oliver and Boyd announce the early publication of the University of Edinburgh "Roll of Honour," 1914-1919, edited by Major John E. Mackenzie.—Messrs. Cassell and Co., Ltd., announce the forthcoming publication of the seventh edition of Sir Patrick Manson's "Tropical Diseases."

Public Health.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

CITY OF LONDON.

OWING to the exigencies of war Dr. W. J. Howarth's annual report for 1919 is practically the first report of its kind presented by him during his seven years' tenure of office to the Lord Mayor, Aldermen, and Commons of the Corporation of London. Previous summaries have consisted of abbreviated tabulations of statistics and scant references to the work done during the year. In Dr. Howarth's view, the annual report of a medical officer of health should be a document in which not only results and records are set out, but in which this officer is able to bring to the notice of his authority the arguments for and against current proposals, and in which he is permitted reasonable latitude to state his own views thereon. An expression of opinion of this character does not necessarily commit the authority, but it furnishes members with information to enable them to consider the situation and partially to be in a position to criticise, vary, or support the policy which the medical officer of health may subsequently submit for consideration or adoption.

In the case of the City of London this requirement is as necessary as in other districts, for although the resident population has decreased to practically insignificant numbers it occupies the position of an authority which has a tradition behind it, centuries old, of interest in all matters which concern the welfare of the inhabitants of this country in general and those of its citizens in particular. If ever the Corporation were to take the view that its responsibilities were limited to safeguarding the health of the few thousands of resident inhabitants, its interest and action in public health affairs will then approach the parochial. Fortunately, there is neither indication nor danger of this state of affairs developing, for the Corporation continues to take the keenest interest not only in the night population, but in the welfare of those who return daily to the square mile which constitutes the City to earn their livelihood. It must be acceded that in many matters relating to later developments in State medicine the direct interest of the City is slight. These developments more and more emphasise the fact that the individual unit must play an important part if future improvement is to result. In this connexion the influence of the Corporation can be most effective. The very freedom of the City from direct interest enables it to give a decision on policy which is free from suspicion of ulterior motive. Its judgments become those of a body influenced only by the consideration of what is most advantageous to the many. Historical records show that from the earliest days of this country's development the City interested itself not only in public health matters but also in curative medicine and in organisations of direct professional concern. The letter-books of the Corporation, which continue to be issued at intervals, throughout their pages illustrate instances of the Aldermen and Court of Common Council exercising authority. Preventive measures adopted in the City during the plague period have proved the basis of many modern developments. Interest in the medical treatment of the poor was shown when the Corporation undertook responsibility for the administration of St. Bartholomew's Hospital in the sixteenth century, and the development of the controlling colleges of both physicians and surgeons have followed the interest which the Corporation took in the profession at the instance of members of the early guilds.

Dr. Howarth might, in our opinion, have added to this brief account of the City's activities in health matters the fact that Sir John Simon, who subsequently became medical officer to the Privy Council and Local Government Board, and who laid the foundation of our modern system of public health administration, was the first medical officer of health of the City of London, having been appointed by the Corporation in the year 1848.

Dr. Howarth's object in referring to these matters is to direct attention to what would appear to him to be the unfortunate effect of any interference with the autonomy of the Corporation which might cripple its initiative, or subordinate its authority. Whatever developments result in public health administration in London, and such are undoubtedly necessary, he is satisfied that the City may advantageously be left as a separate authority subject only to the controlling power of the Ministry of Health. We entirely agree with Dr. Howarth's contention and we hope that the Corporation of the City of London will be left to manage its own affairs, which it has always shown itself eminently capable of doing.

Dr. Howarth makes some interesting remarks on the important subject of medical treatment in general.

He points out that increased responsibility for medical treatment is being placed upon the public health authorities, and alludes to Sir George Newman's valuable report on the principles to be observed in coördinating the two great divisions of medicine—namely, preventive and curative. The first result of this report has been the reference to the Consultative Council on Medical and Allied Services under the chairmanship of Lord Dawson, "to consider and make recommendations as to the scheme or schemes requisite for the systematic provision of such forms of medical and allied services as should be available for the inhabitants of a given area." This committee has now reported to the Ministry of Health, and the resulting document is of considerable interest. It was hardly to be expected that any strikingly original idea would be put forward, and its great use lies in the fact that it has considered all existing suggestions and has selected the best elements in these, and with additions has framed an ideal scheme outlining the final organisation which should be aimed at to secure that the best medical treatment shall be available for persons requiring it. Criticism of the report is unnecessary since it suggests that it only deals with principles. On broad lines it is acceptable, but it would appear to lack the practical touch, and expense alone would prevent any attempt to put the scheme into immediate operation, though the time has now arrived when the important aspect of progressive development should be considered.

It is, of course, essential that medical treatment shall be so coördinated that the many specialised branches of treatment may form one piece of smooth running administrative machinery, but if the machinery provided is to be of the greatest service, it is equally necessary that the means which will ensure the masses availing themselves of the facilities shall also exist. Future organisation must be such that will encourage cases of early illness to come under treatment in the more certain remediable stages, and, if treatment is to be the helpmate of prevention, the medical practitioner must be educated in the fuller appreciation and the real import of early symptoms, and also in drawing conclusions from the nature of the illnesses which are observed in the group of patients for which he is responsible.

Dr. Howarth suggests that consideration should be given to the following points: What is the most practical method which will ensure that persons will seek medical treatment early, or that incipient disease will be recognised at an earlier date than is now the case? Ought the principles of National Insurance to be extended, and, if so, to what extent, and how should the cost of such extended facilities be met? How can the poor, who are now included in the Insurance scheme, be brought into a scheme of national treatment and still remain free from the stigma of pauperisation and free from risk of involvement in invidious distinctions? How can the activities, knowledge, and experience of general practitioners be best utilised in preventive work? How can existing institutions be adapted to help in the development of the system? Can existing local authorities be vested with the power of providing national treatment, and the medical profession, which is so intimately concerned in this work, be given a share of the responsibility?

Other suggestions could be introduced, but these appear to Dr. Howarth to be of the most pressing importance, and any practical scheme using existing machinery modified and extended as the circumstances seem to require, is the immediate essential. Alteration in the matter of the treatment of the indigent poor, which is at the present time undertaken by the Poor-law authorities, appears to Dr. Howarth to be premature and undesirable until the details of future development have been considered and decided upon. Variations, whatever they may be, should be on lines which will ensure that they fit in the new programme. If they do not, radical change will again be necessary in the near future. It has been suggested that the visitation of sick poor by the staff of the medical officer of health should be undertaken. This, in Dr. Howarth's opinion, would be a duty which is outside the scope of the medical officer's functions. These are mainly administrative, and, even if the proposal were put into effect as a temporary measure, there would still be the sentimental objection which attaches to charitable relief, and that objection would exist so long as an individual requiring relief is singled out for special consideration. With the extension of National Insurance it does not seem an improbable proposition to provide for the poor, as well as for those who are able to pay weekly contributions.

URBAN VITAL STATISTICS.

(Week ended Feb. 19th, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18½ million persons, the annual rate of mortality, which had been 12·3, 13·1 and 14·0 in the three preceding weeks, further rose to 15·4 per 1000. In London, with a population of 4½ million persons, the death-rate was 14·2, or 1·0 per 1000 above that recorded in the previous week, while among the remaining towns the rates ranged from 7·5 in Wimbledon, 8·3 in East Ham, and 8·5 in Lincoln, to 22·8 in Sunderland, and 23·7 in Bournemouth and in Dewsbury. The principal epidemic diseases caused 239 deaths, which corresponded to an annual rate of 0·7 per 1000, and comprised 78 from infantile diarrhœa, 65 from diphtheria, 47 from whooping-cough, 26 from measles, 21 from scarlet fever, and 2 from enteric fever. Measles caused a death-rate of 2·4 in Middlesbrough, and whooping-cough of 2·0 in Warrington. There were 3919 cases of scarlet fever and 2808 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 3945 and 2770 respectively at the end of the previous week. During the week ended Feb. 12th 16 cases of encephalitis lethargica were notified in the County of London, and comprised 2 each in Hackney, Islington, Lewisham, and Stepney, and 1 each in Battersea, Finsbury, Greenwich, Hammersmith, Kensington, Poplar, St. Pancras, and Southwark. The causes of 33 of the 5488 deaths in the 96 towns were uncertified, of which 7 were registered in Birmingham, and 3 each in London and Middlesbrough.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 16·3, 14·9, and 17·4 in the three preceding weeks, rose to 18·2 per 1000. The 394 deaths in Glasgow corresponded to an annual rate of 18·7 per 1000, and included 36 from whooping-cough, 7 each from diphtheria and infantile diarrhœa, and 1 each from measles and scarlet fever. The 143 deaths in Edinburgh were equal to a rate of 16·7 per 1000, and included 5 from measles, 2 each from scarlet fever and infantile diarrhœa, and 1 each from diphtheria and whooping-cough. A fatal case of small-pox was registered in Kirkcaldy.

Irish Towns.—The 148 deaths in Dublin corresponded to an annual rate of 18·2, or 0·7 per 1000 below that recorded in the previous week, and included 2 from infantile diarrhœa and 1 from diphtheria. The 149 deaths in Belfast were equal to a rate of 18·5 per 1000, and included 13 from whooping-cough and 2 from infantile diarrhœa.

Obituary.

WILLIAM ODLING, M.B. LOND., F.R.C.P. LOND., PH.D. LEYDEN, F.R.S.,

LATE WAYNFLETE PROFESSOR OF CHEMISTRY, OXFORD.

William Odling, who died at Oxford on Feb. 17th in his ninety-first year, was a well-qualified member of the medical profession, although his fame as a chemist was greater. The son of a surgeon, he was born in London in 1829, and subsequently studied medicine at Guy's Hospital, graduating M.B. at the University of London in 1851. After qualifying he went to Paris, where he became a pupil of Gerhardt, the Strassburg chemist whose influence largely determined his later studies. On his return to England he was appointed director of the chemical laboratory at Guy's Hospital, and in 1863 lecturer in the same subject at St. Bartholomew's Hospital. He became a Fellow of the Royal College of Physicians of London in 1859. In 1868 Odling was appointed Fullerian Professor of Chemistry at the Royal Institution in succession to Faraday, holding the post for four years, and succeeding Professor Benjamin Brodie in the Waynflete chair of chemistry at Oxford. Here he spent the remainder of a long life until his retirement in 1912. Odling contributed much to the literature of his specialty; it was he who suggested the use of the terms "monad," "dyad" &c., in connexion with the valencies of chemical elements. His popular exposition of chemical processes and experiments charmed the boyhood of many of the present generation. The effect of a medical training on his chemical work is shown in the attention which he devoted to such subjects as the chemistry of bread-making, the purification of rivers, and the analysis of drinking water.

Correspondence.

"Audi alteram partem."

REFERRED PAIN.

To the Editor of THE LANCET.

SIR,—The discussion in your columns on referred pain is very interesting, especially Dr. J. A. Ryle's remarks on the variation of hyperæsthetic areas with the presence or intensity of the pain. Personally I admit I have not been sufficiently alive to this variation. In cases of ulcer of the stomach or duodenum in hospital the patients usually have been set at rest, diet regulated, and so on, by the resident staff before they come under examination before a class; then the teacher finds, accordingly, that the percentage of paræsthetic phenomena is low. The same variation applies in angina pectoris, at any rate in single consultations, as attacks may not have occurred recently. The family physician has more opportunity of observing the attacks and their epiphenomena. Time after time I have looked for them in vain, although I may have been assured by the patient or his doctor of their incidental appearance.

But this is by the way. I write more definitely to carry forward the interesting observation of the arousing or increasing of pain about an ulcer by distension of the stomach. I think none of your correspondents has quoted the experiments and conclusions of Dr. H. K. Anderson, the Master of Caius, on this side of the inquiry. I have given a fairly full account of Anderson's hypothesis in my book on "Arterial Disease." It is shortly as follows:—All sensation is cutaneous. In the course of evolution the viscera are formed by introversion, packing inwards, of the surface, so that, however involved, each viscus has still its portion of under-skin carried in with it. These portions we call the investments, or capsules, of the several viscera, such as pleura, pericardium, peritoneum, and so forth. In my book I use this hypothesis to explain certain phenomena of angina pectoris, pains that arise most frequently in the investments of the aorta. These cutaneous investments of the viscera carry with them their sensory end-organs, Pacinian bodies, &c. If this be so, and in this the histologists (Dogiel and others) are agreed, we should expect to find, as we do find, these end-organs, not in the parenchyma, but in the investment of the organ observed. It is true, therefore, that, speaking generally, the viscera are insensitive in their substance, but are sensitive, often exquisitively sensitive, in their capsules. Hence, for instance, the pain on distension of the stomach—the investment is put on the stretch. The bowel again is insensitive so long as the mesentery is not put on the stretch, but, drag on this cutaneous investment, and pain awakens. Pains, then, are referred not from the viscus but from its overcoat. Many a local disease remains painless so long as such an investment is not irritated or pulled upon. So far I venture to demur to Dr. A. F. Hurst's axiom that "the viscera themselves are sensitive" (p. 348, col. 2). The heart, let me say, is in its substance insensitive, and the pericardium is so continually subject to changes of diameter as to be less sensitive to drag than, say, the mesentery; but when the pericardium is sharply stretched beyond its mean—as, e.g., by a coronary embolism—acute pain may arise. Morphologically, then, all sensations are cutaneous in seat, whether directly visceral or referred; whether they originate in the implicated skin and end-organs—as we see profusely (say) in the mesentery, or in the investment of the aorta, and so on—or directly on that actual surface which only we are accustomed to call the skin. When an irritant affects the investment of a viscus the pain is already cutaneous, but, as in the inpacking, the surfaces are distorted, the corresponding layer of outside skin has often been drawn away from the underpart of it which is still attached to the viscus affected.

I am, Sir, yours faithfully,

Cambridge, Feb 19th, 1921.

CLIFFORD ALLBUTT.

X RAY TREATMENT OF RINGWORM.

To the Editor of THE LANCET.

SIR,—I am of the opinion that the warning and recommendation of the Medical Defence Union (THE LANCET, Jan. 1st, p. 48) is an unnecessary one. In the first place, workers of X ray treatment for ringworm have already gone through the mill of prejudice and fear from parents who had heard of dire results, in days not long since passed, when the skeleton of "burnt heads" and "no hair" was put forward—with, undoubtedly, some reason—owing to unfortunate results obtained by early workers in producing permanent alopecias. Unfortunately, rumours of this kind are always exaggerated as they go from one parent to another. Some of the tales related by parents to me some six or seven years ago would have been sufficient, if really credited, to have produced hair-raising results without the application of X rays to both "operator" and "operated on."

At the present time I am happy to say that, after having treated over 800 cases without a single failure, it is now quite a different tale, and that parents may almost be said to be clamouring for X ray treatment rather than go on for months with drug treatment. True, there are some cases, but a very small number, who from idiosyncrasy develop a definite reaction and suffer from erythema, or even a slight pustular eruption, as the result of X ray application, but under appropriate remedies these quickly subside and the resulting growth of the hair is in no way retarded or diminished; in fact, I am of the opinion that as a result of the increased supply of blood during this period to the hair follicles, that the growth is often more rapid. Then why raise the voice of the general practitioner in warning parents against such trivial occurrences, or even raise the suspicion of the general practitioner himself, who, in most cases, is not cognisant of the pros and cons of the working of X ray treatment for ringworm?

800 cases means 4000 exposures, the carrying out of each exposure means a separate operation necessitating the maximum attention to detail. As Dr. W. Mitchell, of Bradford, says, the X ray treatment of tinea tonsurans is the most exact and exacting form of treatment there is. I would go further and say it is also most tedious and monotonous, varied only by the extra burden of a fractious child. I work also with a small milliampèrage (0·5 m.a.) with current 80 volts 5 amperes. In all cases the whole head is epilated by the Kienboch method with a light tungsten target tube, the five exposures being checked by Sabouraud and Noire's pastilles. After-treatment needs great care, and although Dr. C. W. Hutt considers it necessary in 1 out of 10, I make every child attend regularly for a fortnight to have the necessary stumps epilated by the school nurses to ensure that no form of infection is left. Some children are fit to return to school at the end of three weeks, the general average is, however, about 28 days.

In my opinion the essential points for success in the Kienboch method of treatment are to direct each irradiation at right angles to the direction of irradiation of adjacent areas and to aim not at a point in the centre of the vertex of the lower occiput or of the side of the scalp, but toward the outer margin of these areas, so that half the dose goes on to the scalp and half on to the shield protecting the face and the neck. If these precautions be taken there is no risk of over-exposure at the overlapping margins of the rayed areas. In practice the dosage works out so nicely that every part receives an equal amount and depilation is total and complete without anywhere a sign of over- or under-exposure.

The chief causes of failure are: (1) Under-exposure, so that an imperfect defluvium of the hair takes place and infected hairs are left; (2) omission of a focus of disease in the exposure; (3) insufficient thoroughness in the after-treatment. With recent methods of treatment and ordinary care there should be no failures.

I am, Sir, yours faithfully,
VICTOR J. BLAKE, M.B., B.S. Lond.

Portsmouth, Feb. 8th, 1921.

THE FINE CHEMICAL INDUSTRY.

To the Editor of THE LANCET.

SIR,—We, the undersigned, makers of fine chemicals, extended our research and manufacturing plant at the urgent appeal of the State during the tremendous years that followed 1914 in order to secure those essential products of science without which victory could not be attained. The full record of wartime achievements in the sphere of fine chemicals would read like a romance were the full history disclosed. This key industry is now endangered, and unemployment is rife in it, owing to the flood of imports from abroad which, among other circumstances, the present condition of the exchanges makes devastatingly possible.

We desire to submit to public knowledge the following facts:—

1. The application of chemical science to industry is a necessary factor for the preservation of our world position in commerce. It is also true to say not only that the chemist and the laboratory are in the first line of national defence, but are pivotal in the development of our industrial and commercial resources and wealth.

2. At very considerable cost essential plant was erected during the war years, and all of it can now be put to peaceful purposes for the continuance in this country of a fine chemical industry not inferior to Germany's. But under the present unfair economic circumstances this plant must become idle and useless unless the State takes measures for its safeguarding.

3. The *Fine Chemical Industry, mobilised and expanded* in the hour of the nation's needs, provided during the war—to give a few examples—(*a*) essential medicinal preparations for naval, military, and civilian hospitals; (*b*) the higher forms of explosives and gases; (*c*) photographic chemicals for aerial use; (*d*) research chemicals, without which the development of many new industrial processes would have *been impossible.*

4. British science is no whit inferior to that of competing nations, nor are British chemical manufactures inferior in quality.

We feel it is our bounden public duty to make known to the country the national importance of an industry which is indeed a key to the unlocking of many doors of economic wealth in the future.

We are, Sir, yours faithfully,
STAFFORD ALLEN AND SONS, Ltd.; A. BOAKE, ROBERTS AND CO., Ltd.; BOOTS PURE DRUG CO., Ltd.; BRITISH CELLULOSE AND CHEMICAL MFG. CO., Ltd.; BRITISH CYANIDES CO., Ltd.; BRITISH DRUG HOUSES, Ltd.; BRITISH VEGETABLE PRODUCTS, Ltd.; BURROUGHS, WELLCOME AND CO.; W. J. BUSH AND CO., Ltd.; J. M. COLLETT AND CO., Ltd.; EVANS, SONS, LESCHER AND WEBB, Ltd.; GRAYS DYES AND CHEMICAL WORKS; HOPKIN AND WILLIAMS, Ltd.; HOWARDS AND SONS, Ltd.; JOHNSON AND SONS, Mfg. Chemists, Ltd.; LONDON CHEMICAL WORKS, Ltd.; MAY AND BAKER, Ltd.; THOS. MORSON AND SON, Ltd.; PIERSON, MORRELL AND CO., Ltd.

Feb. 19th, 1921.

THE OPERATIVE TREATMENT OF PROLAPSE.

To the Editor of THE LANCET.

SIR,—In reply to Mr. J. P. Lockhart-Mummery's letter in your issue of Feb. 19th I did not advocate the use of "paraffin wax injections" in a general sense, but only the "submucous *injection of paraffin wax*," as described by me in THE LANCET, 1901, vol. ii., p. 759. This may sound egotistical, but it is the attention to detail that makes all the difference. Consideration for your space will not permit me to reproduce the technique here, but the most essential points are that the paraffin is injected into the submucous layer only at a temperature just above its melting point, so that it solidifies at once and does not travel, while the prolapse is still outside the anus, and so as to constitute separate nodules arranged circumferentially around the rectum in definite tiers. With these precautions I fail to see how a "tunnel stricture" could result; probably in the case he mentions the wax had been introduced in too fluid a state and had completely surrounded the rectum in a continuous sheet. At any rate, I have never seen any sign of stricture in any of the 29 cases I have treated by this method, and the only trouble of any kind has been slight suppuration of the wound of the plastic portion of the procedure in two of the cases; in one of these some particles of wax were discharged from the lowest tier, but without detriment to the ultimate result. From letters received from time to time from surgeons who have followed the details of my technique I know that others, besides myself, can obtain good results. Within the last month I have received two such letters, from Mr. A. H. Godson, F.R.C.S. Eng., of Oldham, and Dr. G. A. Robinson, of Nottingham, each reporting a recent success. I do not know the details of their cases, but Dr. Robinson describes the success in his patient as amazing."

However, I have never considered nor advocated my method as an ideal procedure; I merely state that results can be obtained with it at least as successful, both immediately and remotely, as those by any other published method, and that with a very much simpler and shorter after-treatment. Like Mr. Lockhart-Mummery, I would much prefer to dispense with the introduction of any foreign body into the tissues, and have therefore tried other methods, including that of Moschowitz, as I mentioned in my previous letter—a method which appeals to me strongly as being far more scientifically designed than either Mr. Lockhart-Mummery's method or my own—but with inferior results. I have not tried Mr. Lockhart-Mummery's method, as one feels rather shouldered off from an operation of which the author says, "sepsis later is almost certain to occur ...... and is, in fact, desirable." I can imagine that the aid of sepsis, once invoked, might prove at least as difficult to control and as fraught with ultimate dangers as that of paraffin wax. I am the more disposed to give it a trial, however, since it would appear, from Mr. Aslett Baldwin's remarks in the discussion following the reading of Mr. Lockhart-Mummery's paper, that by the use of gauze soaked in 1 in 1000 proflavine solution this can be prevented and the after-treatment simplified.

From Mr. Lockhart-Mummery's silence on the point I presume he now admits that his analogy of his operation to the radical cure of hernia was not conceived in his happiest vein.—I am, Sir, yours faithfully,

Manchester, Feb. 20th, 1921. ARTHUR H. BURGESS.

AS OTHERS SEE US.

To the Editor of THE LANCET.

SIR,—Since medical practice came within the sphere of politics, no one who mixes much with ordinary people can doubt that the status of the general practitioner has steadily declined. And the interesting question arises: Is this an early symptom, indicating the onset of a disease, whose more serious manifestations may be prevented by a little timely attention to moral hygiene; or is it a physical sign, indicating that appreciable structural changes have already taken place, for which the best that can be done is but of the nature of a palliative, or of a valetudinarian regimen calculated to preserve a long period of invalidism before the final collapse? Another interesting question is *this*: Has the disease, whatever it is, but lately appeared; or is it merely that new instruments of precision have made its diagnosis easier and more obvious?

First of all, then, what has happened to our status since 1913? We have always had hostile critics who mistrusted our alleged skill and knowledge, as well as our assumption of philanthropy. But these critics were numerically few. The generality of people took us pretty much at our own more complacent valuation, and attributed to us not only knowledge which we all know to be a grotesquely excessive estimate, but a public and self-sacrificing spirit beyond that attributed to any other class of men. Now, it is an undoubted fact, at last recognised even by our educationalists, that a man, woman, or child tends to live up or down to his reputation. Give a dog a bad name and he will soon deserve it. Admiration often breeds many of those qualities which evoke admiration. Gratitude breeds generosity. Praise often breeds nobility. And I think it can fairly be said that, although the average doctor was, as he is to-day, just an average man, and although, naturally, among so many thousands of average men were to be found the usual proportion of the sordid, the unimaginative, the inherently vulgar, the men whose only notion of successful living was that of the constitutional "wrong 'uns" of society, based on the rule, "Get all you can; give as little as you can"—what we may call the Cad's Code; yet, among the rest, most men took a personal pride in justifying, to a greater or less extent, the popular estimation of the doctor's moral code. Of course, one need not be much of a cynic to realise that many manifestations of apparent public spirit and generosity were not entirely of æsthetic or altruistic origin. But there certainly was a very large element of genuine honour, genuine professional pride, of desire to "play the game." The tradition of the Hippocratic oath still had some potency.

I am not in a position to state what is the present general view of the doctor's standard of conduct among the middle classes, but among the wage-earning classes opinion has entirely changed. To an increasing extent the doctor is regarded as a tradesman in the worst sense. Unless there is overwhelming individual evidence to the contrary, it is apt to be taken for granted that the general practitioner—which term is now almost synonymous with panel practitioner—is the sort of man I have described above as the decadent exception, the man whom we can justly characterise as the Cad in Medicine. Is the working man right in his estimate? If not, to what is his change of opinion due? Unless we analyse the symptom, trace its causation and deal with it, it is pretty certain that, whether or not it is true at this moment, it will, by the mere force of suggestion, shortly become true.

I have taken a good deal of trouble to find out what are the facts on which the working-class view of the doctor and the doctor's code is based; and I have been driven to the conclusion that his judgment has some basis in real and actual facts—facts indicating morbid change. I believe that, to some extent, an actual change has occurred in the doctor's morale and its manifestations. In spite of its many good points and beneficent potentialities, the Insurance Act has not, on the whole, altered for the good the attitude of the average practitioner towards his work and towards his patients. On the contrary, it has tended to materialise it. I do not believe that this was inevitable or inherent in the scheme itself, but actually, owing to concomitant circumstances, it has so worked out.

But this real change has not, so far, been sufficiently great or general to account, by itself, for the much greater change in public opinion. There has, beyond doubt, been an increasing number of men, who, having discovered that under the panel system it was possible to get a substantial income in return for a minimum of indifferent service, have taken advantage of that discovery to play the parasite on their fellow men. But the majority of practitioners have still been mainly influenced by the traditional code, combined with such modicum of the artistic spirit, the impulse to efficient self-expression, as they happened to embody. In other words, whilst keen on getting as much money as they could, they have been little less keen on doing their work as well as they could. Such men, I believe, make up the bulk of our profession; as I believe, in spiritual essence, they make up the bulk of our countrymen.

What, then, is the additional factor responsible for the increasing loss of good repute which we have suffered? It is needful only to have attended almost any of the meetings (other than purely scientific ones) called by members of our profession within the last few years, or to have read the letters and articles on what we may call medical politics contributed to various organs of medical opinion—especially those uninfluenced by old traditions—to understand and to realise how the change has been brought about. The incessant talk about money, and the almost complete absence of any expression implying a realisation of the responsibilities and sacredness of our craft or of our duties in utilising for the public welfare the special knowledge with which we have been entrusted, have done their work. In other words, we have again been taken at our own valuation. We are increasingly regarded by the wage-earning classes much in the same way as, justly or unjustly, the more prejudiced sections of the middle-class regarded the miners during their recent strike. So far as our public expressions have gone, we have taken up the line, which, quite excusably, however mistakenly, has been adopted by those who, with considerable justice, regard themselves as the economic victims of our industrial system. And we cannot plead their excuse. We may have our grievances against society, but they *are trivial. It is only needful to devote five minutes'* study to the national income and to the average available dividend, and to compare them with the average doctor's income, to realise that, so far from being economic victims, we are among the luckier grades of the privileged.

Such grievances as we have, let us try to get remedied by all means. But for Heaven's sake let us utilise our pseudo-scientific education in cultivating some sense of proportion. Our chief professional ethic should be directed to the maintenance of the purity of our professional code, and to the devising of the most effective social mechanisms to assist us in functioning *adequately. Of course, if our material existence is in* danger, and consequently abnormally intrudes on our attention, we cannot function properly. And many workers are in such a position. They, excusably, talk about little else than getting their wages raised. It is the merest humbug to pretend that we are in any such position.

It is high time that the great silent mass of the profession asserted itself, and took steps to demonstrate to the public that a doctor is something more than a grouser; that we are not just profiteers, prepared to use our monopolist position in order to hold the community to ransom; that it is from honest motives that *we feel a man's pulse with our right hand, not merely* to hold his attention while we pick his pocket with our left. It is high time also that the ethical committees of the profession woke up and realised what is at stake. It should not be such bodies as lay insurance committees that the slackers and parasites of our profession should fear, but the condemnation and practical ostracism of all that is decent, scientific, artistic, honest, and public-spirited within our own ranks. And I am firmly con*vinced that these characteristics still mark* the great majority of English practitioners, unobtrusive and unvocal though they are.

I am, Sir, yours faithfully,

Harford-street, Stepney, Feb. 19th, 1921. HARRY ROBERTS.

THE SEPARATION OF PRESCRIBING AND DISPENSING.

To the Editor of THE LANCET.

SIR,—The communication by Mr. H. C. Richards under this heading, which appeared *in THE LANCET* of Feb. 5th, invites comment. Mr. Richards states that "the pharmacist is primarily licensed to keep open shop for the retailing and dispensing of poisons *only*, whereas the apothecary's assistant is a qualified dispenser of all substances used in medicine—*poisons or otherwise*" (the italics are mine). From which the inference might be drawn that the apothecary's assistant is legally qualified to dispense, but the pharmacist, legally, should *limit his dispensing* to poisonous substances.

As a matter both of fact and (unfortunately) of law, anyone may *dispense* any drugs, but must not *sell* any poisons which are at present included in the schedules *of the* Pharmacy Act, or may be in future added to those schedules, on the instance of the Council of the Pharmaceutical Society and approved by the Privy Council. The apothecary's assistant, as far as the dispensing of drugs *is concerned, is precisely* on the same footing as the herbalist or the grocer. The Society of Apothecaries has authority to give a certificate to persons to act as dispensers to apothecaries only. As regards other dispensing, it has no powers not possessed by any trades-union.

The Pharmaceutical Society enjoys statutory authority to issue certificates of qualification for the practice of pharmacy in open shops. Its standard of efficiency is high, and is recognised as such in dispensaries, infirmaries, and hospitals throughout the country.

I am, Sir, yours faithfully,

J. O. BRAITHWAITE,

Editor of the "Year-book of Pharmacy."

Chingford, Feb. 15th, 1921.

*** We have received other letters in the same sense.—ED. L.

DURATION OF THE VENTRICULAR COMPLEX.

To the Editor of THE LANCET.

SIR,—In your issue of Sept. 4th, 1920, Dr. H. Wallace Jones, of Liverpool, published a very interesting note on a case in which an electrocardiograph was taken 12 hours after spontaneous respiration had ceased. The author states that the tracing shows normal rhythm, with some lengthening of the ventricular complex. I should like to point out that the lengthening of the complex is very considerable, and that this is a very uncommon and a very interesting phenomenon. In Dr. Jones's tracing the rhythm of the pulse is 52, and the duration of the ventricular complex about 0·55 sec. Normally, the duration of the complex with this *rhythm of pulse would be 0·40* sec., with a standard deviation of 0·015 sec.[1] In pathological cases lengthening is sometimes seen, but I do not think that such a considerable prolongation as in Dr. Jones's case has been seen before.

I am, Sir, yours faithfully,

L. S. FRIDERICIA, M.D.,

Professor of Hygiene at the University of Copenhagen.

Feb. 18th, 1921.

THE TREATMENT OF DIPHTHERIA CARRIERS.

To the Editor of THE LANCET.

SIR,—I regret the delay in replying to Dr. J. L. Brownlie's letter published in your issue of Dec. 11th, 1920, and referring to an article (THE LANCET, 1920, ii., 994) by Dr. A. R. Fraser and myself on the treatment of diphtheria carriers. As Dr. Fraser is in South Africa and I wished to have his views first, this delay was unavoidable.

We feel we have excellent reasons for preserving the distinction between "carriers" and "positive throats." The definition we gave of a "carrier" is a general one; examined critically it includes our "positive throats." Later we drew our rough line of distinction. In doing so we had no intention of taking a liberty. The term "carrier" and its meaning are now well known to many of the laity, and a "carrier" is regarded by not a few as one who ought to be kept segregated, like a leper. They may be right in some cases; they would be wrong in others, and in such cases great hardship results to the individual labelled a "carrier." We have personal knowledge of such sad cases. Further, not all the throats diagnosed in practice and in hospitals as positive are proved to have present virulent Klebs-Löffler bacilli. For these and other reasons we feel strongly that we must have absolute proof of the long persistence of virulent organisms before we apply the term "carrier" to an individual. For the many others who have presumably infective throats we had to find another term, and we choose to call such "positive throats."

We trust we have satisfied Dr. Brownlie as to our views and intentions without further discussing the matter in his letter. Our general aim is the same—to show, if possible, that the outlook for the "carrier" (even in the worst sense of the term) is by no means hopeless, as many appear to believe, especially American writers.

I am, Sir, yours faithfully,

A. G. B. DUNCAN,

Assistant M.O.H., Hull.

Feb. 21st, 1921.

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[1] Acta Medica Scandinavica, vol. liii., 1920, p. 469.

QUININE TREATMENT OF MALARIA.

To the Editor of THE LANCET.

SIR,—Will you allow me to rectify an omission in my paper on the Treatment of Malaria by Quinine, which appeared in your issue of Feb. 12th? The last sentence—"This aspect of the question ......"—was borrowed without acknowledgment from a paper by Lieutenant-Colonel J. W. Cornwall, I.M.S., read before the Indian Science Congress of 1919, and is contained in the proceedings of that Congress published in a special number of the *Indian Journal of Medical Research*, p. 88. I much regret the omission.

I am, Sir, yours faithfully,
P. HEHIR.

Westward Ho! Feb. 16th, 1921.

Medical News.

UNIVERSITY OF CAMBRIDGE: DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.—The Special Board for Medicine, on the recommendation of the Committee on Medical Radiology and Electrology, has approved the grant of the Diploma in Medical Radiology and Electrology to Drs. J. E. A. Lynham, A. E. H. Pinch, W. J. Turrell, A. E. Barclay, and F. Hernaman-Johnson.

UNIVERSITY OF BRISTOL.—At examinations held recently the following candidates were successful:—

EXAMINATION FOR DEGREE OF M.D.

Adolph Reeve Heber.

FINAL EXAMINATION FOR DEGREES OF M.B., CH.B.

Part II. (completing examination).—William Harris Royal and Majorie Wadsworth (first-class honours).

Part I. only (including Forensic Medicine and Toxicology).—William Austin Jackman and Percy Phillips.

Part I. only.—Phyllis Beames, Macdonald Critchley, John Rukin Duerden, Winifred Grace Nott, John Augustin Prichard, William Kenneth Armstrong Richards, and Victoria Sophia Tryon

FINAL EXAMINATION FOR DIPLOMA IN DENTAL SURGERY.

Norman Henry Bodenham.

EXAMINATION FOR DIPLOMA IN PUBLIC HEALTH.

Part II. (completing examination).—Frederick Vaudrey Cant, Allan Dumbreck Fraser, and Geoffrey Commeline Williams.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—The Morison lectures will be delivered by Sir Frederick Mott, F.R.S., in the Hall of the College, 9, Queen-street, Edinburgh, at 5 P.M., on March 7th, 9th, and 11. The subject will be the Psychopathology of Puberty and Adolescence, and each lecture will be illustrated by drawings and lantern slide demonstrations.

LONDON HOSPITAL MEDICAL COLLEGE (*University of London*).—A course of 12 lecture-demonstrations on Gonorrhœa will be given by Mr. E. R. Townley Clarkson and Dr. A. Malcolm Simpson (chief assistant to the genito-urinary department of the hospital), on Tuesdays and Thursdays (men), and Wednesdays and Fridays (women), at 4.30 P.M. The course is intended for senior students of the hospital and for medical practitioners, who are invited to attend.

MEDICAL SOCIETY OF LONDON.—A meeting will be held at 11, Chandos-street, Cavendish-square, London, W., on Monday, Feb. 28th, at 8.30 P.M. A discussion on the Chemical Estimation of Gastric Function will be introduced by Dr. J. H. Ryffel and Dr. J. A. Ryle. Dr. T. I. Bennett, Dr. R. L. M. Wallis, Mr. E. C. Dodds, Dr. G. Graham, Dr. C. Bolton, Dr. R. Hutchinson, and Dr. W. H. Willcox will be among the speakers.

ROYAL INSTITUTION.—On Saturday next, March 5th, at 3 o'clock, Sir Ernest Rutherford will deliver the first of a course of three lectures at the Royal Institution on Electricity and Matter, and on Thursday, March 10th, Dr. G. C. Simpson, director of the Meteorological Office, commences a course of two lectures on the Meteorology of the Antarctic. The Friday evening discourse on March 11th will be delivered by Dr. J. Freeman on Medical Idiosyncrasies.

INDUSTRIAL WELFARE CONFERENCE.—The Industrial Welfare Society is arranging a conference to be held at the Mansion House on March 2nd. The Lord Mayor will preside, and the speakers will include the Duke of York, the Right Hon. E. Short, M.P., the Right Hon. H. A. L. Fisher, M.P., the Right Hon. J. R. Clynes, M.P., Alderman Sir Charles C. Wakefield, and Sir William H. Ellis, D.Sc.

DR. O. K. Williamson, who was recently appointed to the Chair of Medicine at University College, Johannesburg, does not take up his new duties until February, 1922, and will not be leaving England before the end of the present year.

TUBERCULOSIS SOCIETY OF GREAT BRITAIN AND IRELAND.—A meeting of this society will be held at the Margaret-street Hospital, London, W., on Monday, Feb. 28th, at 7.30 P.M., when Dr. W. Gordon will read a paper on Rain-bearing Winds and Tuberculosis.

THE RE-EDUCATION OF THE DISABLED.—A lecture on this subject will be given by Captain J. Manclark Hollis, secretary to the Village Centres Council, on Wednesday, March 2nd, at 8 P.M., at the house of the Royal Society of Arts, John-street, Adelphi, London, W.C.

THE Royal Faculty of Physicians and Surgeons, Glasgow, has recently sustained a loss in the death of its secretary and librarian, Mr. Alexander Duncan, B.A., LL.D., who died on Feb. 14th. Mr. Duncan, who had held his appointment for over 55 years, had an all-round knowledge of medical literature. He devoted much time to the preparation of a catalogue of the extensive medical library under his supervision and was the author of a serviceable history of the medical profession in the West of Scotland.

ROYAL STATISTICAL SOCIETY.—The council will, in November, 1921, award the Frances Wood Memorial Prize, value £30, *for the best investigation of any problem* dealing with the economic or social conditions of the wage-earning classes. The subject is to be chosen by the competitor and is to be treated on statistical lines. Essays must be sent, not later than July 1st next, to the Honorary Secretaries of the Royal Statistical Society, 9, Adelphi-terrace, London, W.C. 2, from whom further information may be obtained.

TAVISTOCK CLINIC FOR FUNCTIONAL NERVE CASES. The second of a course of five lectures on Analytical Psychology will be given by Dr. Maurice Nicoll on Monday, Feb. 28th, at 5.15 P.M. A course of ten lectures on Elementary Psychotherapy will be given by Dr. H. Crichton Miller on Fridays, at 5.15 P.M., beginning May 6th. The fees for each course are: medical practitioners, £2 2*s.*, medical students, £1 1*s.*, and tickets should be taken in advance from the honorary lecture secretary at the clinic, 51, Tavistock-square, London, W.C. 1.

THE Institut Français du Royaume Uni will be opened at 1–7, Cromwell-gardens, S.W., on Saturday next, Feb. 26th, at 3 o'clock, under the presidency of the French Ambassador, the Comte de Saint Aulaire. The French Minister of Education, M. Léon Bérard, will represent his Government, and the English Board of Education and the London County Council will also be represented. Three delegates are expected from the Paris Municipal Council and from the University of Paris. Among the latter will be Mons. Appel, the Rector of the University, and Mons. Henri Bergson. The Rector of the University of Lille is also expected to be present, that University being the parent of the movement.

FEDERATION OF MEDICAL AND ALLIED SOCIETIES. A meeting of the Executive Council was held on Feb. 15th at 11, Chandos-street, London, W. Two letters from the Minister of Health were read stating his gratification at the work already accomplished by the Federation, and reaffirming his view that such a body should represent, not its own interests primarily, but the wider interests of the nation. The council then considered the new regulations drafted by the Secretary of State under Section 7 of the Dangerous Drugs Act, 1920. The Pharmaceutical Society of Great Britain pointed out that certain clauses of the Bill affecting its members were unworkable and that the time allowed for their consideration and the representation of views had been inadequate. Pending the receipt of the views of the constituent bodies in the Federation a letter had been sent by the council to the Under Secretary of State on Feb. 9th asking for an extension of the period provided for the representation of the views of interested bodies. The Under Secretary replied that he would gladly receive representations from the Federation, and hoped they would be made at an early date. A letter was also received on this matter from Captain W. E. Elliot, M.P., secretary of the Medical Committee of the House of Commons. The interests of the insured person in connexion with the new medical record cards were further considered. Dr. H. J. Cardale, representing the Association of Panel Committees in the Federation, showed the cards and fully explained the method of using them. The meeting was of opinion that the principle of keeping such records could not be condemned, and that six months' trial of the actual cards issued would demonstrate their value or their faults.

ON the recommendation of the Minister of Health, the King has appointed Mrs. Ellen Frances Pinsent to be a Commissioner of the Board of Control to fill the vacancy caused by the retirement of Miss Mary Dendy.

League of Red Cross Societies.—The third annual meeting of the board of governors will be held in Geneva on March 28th. The members of the board for this year are as follows: Mr. Henry P. Davison, American Red Cross, chairman; Hon. Sir Arthur Stanley, British Red Cross; Mons. de la Boulinière, French Red Cross; Count Giuseppe Frascara, Senator, Italian Red Cross; Professor Arata Ninagawa, Japanese Red Cross; Count de Pena Ramiro, Spanish Red Cross; Dr. F. Block, Swedish Red Cross; Dr. M. Calmon du Pin e Almeida, Brazilian Red Cross; Colonel C. Bohny, Swiss Red Cross; Dr. E. Andreae, Argentine Red Cross; Dr. A. Depage, Senator, Belgian Red Cross; the Viscountess Novar, Australian Red Cross; Dr. F. Svendsen, Danish Red Cross; Dr. Yevrem Jouyovitch, Serbian Red Cross; Sir David Henderson, director-general, vice-chairman; Professor William E. Rappard, secretary-general. The General Medical Department of the League will be in charge of Professor C. E. A. Winslow, who has five months' leave of absence from Yale University. He is now in Geneva.

Royal Free Hospital: Professorial Unit.—Professor A. Louise McIlroy, whose appointment to direct the new obstetrical and gynæcological unit at the Royal Free Hospital, London, was announced in our last issue, was educated at the Universities of Glasgow, London, Berlin, Vienna, and Paris, and holds the diploma in midwifery of the Rotunda Hospital, Dublin. She has occupied appointments as assistant surgeon at the Glasgow Female Lock Hospital, district obstetric physician in charge of the West End Branch of the Glasgow Royal Maternity Hospital, assistant gynæcological surgeon at the Royal Samaritan Hospital, Glasgow, and senior assistant to the Muirhead Professor of Obstetrics and Gynæcology at the University of Glasgow. From 1915 to 1919 she was surgeon-in-charge of the Girton and Newnham unit of the Scottish Women's Hospitals for Foreign Service, which was stationed at Salonika and Belgrade. Since 1919 she has been gynæcological specialist in the 82nd General Hospital at Constantinople, in which she acted as surgical specialist during the absence of the senior surgeon. The unit of which Professor McIlroy will have charge contains 68 beds, of which 35 are in the Royal Free Hospital in Gray's Inn-road and 33 in the Marlborough Maternity Block, Endsleigh-street. All the wards are small, containing from two to ten beds. It is intended to receive not only patients who pay nothing for maintenance and treatment, but also patients who can pay up to £4 a week to cover the cost of maintenance. The professor will be assisted by first and second assistants, both of whom will be giving full time to the work of the unit. In addition there will be the registrar of the unit and three house physicians.

Aberdeen Royal Infirmary and Lunatic Asylum. The annual meeting of the corporation of the Royal Infirmary and Lunatic Asylum was held at the infirmary on Feb. 9th, Lord Provost Meff presiding. The chairman pointed out that annual donations had increased by £6200, but that costs were still exceptionally high. If the general public wished to keep the infirmary off the rates they must subscribe generously towards its maintenance. Mr. George Davidson, chairman of the infirmary board, submitted the infirmary annual report and moved its adoption. It was recorded that 55 per cent. of the in-patients came from the city and 45 per cent. from the county. He chronicled the equipment of a new pathological laboratory and the development of the scheme for the treatment of venereal disease, also the completion of the nurses' home at Albyn-terrace and the installation of electric light and central heating at the Cults Convalescent Hospital. An important discussion then took place on the question of demanding payment from patients treated at the infirmary in order to place the institution on a sound financial basis. A motion to submit to the directorate for their consideration the question of reserving a portion of the hospital for paying patients, or of requiring payment from all above a certain income, was withdrawn after some discussion. Mr. Andrew Davidson, chairman of the asylum board, submitted the annual report of the asylum. He explained that the deficit of £8000 on the year's working was caused by the fact that they had to fix their charges on the parish council and on private individuals a long time in advance, and the increases in cost had been out of all proportion to that anticipated. The directors had considered the question of establishing some sort of a clinic, apart from the asylum, where patients could be treated in the early stages of mental trouble. They were advised, however, that the fact of such a clinic being managed by the directors of the asylum would diminish its chances of success. It seemed to him, however, that there was an opening for some independent person to start a clinic of this kind.

Inter-Departmental Committee on Patents.—This Committee has been established by the Privy Council, with the following terms of reference:—

(1) To consider the methods of dealing with inventions made by workers aided or maintained from public funds, whether such workers be engaged (*a*) as research workers, or (*b*) in some other technical capacity, so as to give a fair reward to the inventor and thus encourage further effort, to secure the utilisation in industry of suitable inventions, and to protect the national interest; and

(2) to outline a course of procedure in respect of inventions arising out of State aided or supported work, which shall further these aims and be suitable for adoption by all Government Departments concerned.

As at present constituted, the Committee consists of the following members:—

Mr. Kenneth Lee, LL.D. (Chairman); Mr. W. St. D. Jenkins, C.B.E., Admiralty Director of Contracts; Mr. F. E. Smith, O.B.E., F.R.S., Admiralty, Director of Scientific Research; Air Vice-Marshal Sir E. L. Ellington, K.C.B., C.M.G., C.B.E., Air Ministry. Director-General of Supply and Research; Mr. H. W. W. McAnally, C.B., Air Ministry, Assistant Secretary; Mr. P. W. L. Ashley, C.B., Board of Trade, Assistant Secretary, Industries and Manufactures Department; Colonel W. H. D. Clark, O.B.E., Board of Trade, Assistant Comptroller of the Patent Office; Sir H. Frank Heath K.C.B., Department of Scientific and Industrial Research, Secretary; Mr. A. J. Stubbs, M.Inst.C.E., M.I.E.E., General Post Office, Assistant Engineer-in-Chief; Mr. H. H. Dale, C.B.E., M.D., F.R.S., Medical Research Council, Head of Department of Biochemistry and Pharmacology; Mr. W. J. Coombes, Ministry of Munitions; Lieutenant-Colonel P. K. Lewes, C.M.G., D.S.O., R.A., War Office, Assistant Director of Artillery; Mr. P. Tindal Robertson, Barrister-at-Law, Royal Commission on Awards to Inventors, Secretary; Sir R. A. Gregory, F.R.A.S., Editor of *Nature;* Mr. D. M. Kerly, K.C.; Sir Charles A. Parsons, K.C.B., LL.D., D.Sc., F.R.S.

The Secretary to the Committee is Mr. A. Abbott, to whom all communications should be addressed at 16 and 18, Old Queen-street, Westminster, London, S.W.1.

Union of Medical Practitioners: Leicester Subdivision.—At the annual meeting held on Feb. 10th the following officers were elected for the ensuing year: Chairman, Dr. A. M. Crosfield; vice-chairman, Dr. G. H. Crofts; treasurer, Dr. Astley V. Clarke; honorary secretary, Dr. W. Moffat Holmes. The annual report states that the scheme of collective locum tenencies for the summer holidays, inaugurated during 1919, was successfully continued during last summer. Twenty doctors availed themselves of the facilities afforded by the scheme, and contributed £275 5*s.* to the pool. The expenses amounted to £4 2*s.* 8*d.*, being cost of books, posters, stationery, &c., leaving £271 2*s.* 4*d.* for distribution amongst the practitioners who attended patients under the scheme. The scheme for collective locum tenencies during sickness or short absences initiated in the early part of last year had been continued, and was now in operation. It had proved very useful in several cases. At the annual meeting of this subdivision held in February last year it was resolved "that use should be made of the Public Medical Service Rooms, East Bond-street, for the purpose of a club for the medical men of Leicester and Leicestershire." Effect was given to this resolution, and alterations were made and billiard, reading, and writing rooms provided. The committee had had under consideration the matter of school certificates, and had reaffirmed the resolution that school certificates for children attending elementary schools should not be provided by medical practitioners, except where paid for by the education authority. Representations had been made to the Ministry of Health Committee of the B.M.A. claiming that where the Ministry undertakes the partial support of existing hospitals or establishes fresh ones, men who have taken the trouble to obtain the higher degrees or diplomas, or who who have had considerable special experience during the war, should have an opportunity of being appointed to the staffs of these hospitals.

Leicester Public Medical Service.—A meeting was held on Feb. 10th, when the report of the board of management was read. The report recorded the numbers of subscribers to the various sections of the service: in the first half of 1920 these amounted in all to 39,883, and in the second half to 39,139. In addition over 12,0 0 State insured members of the friendly societies were paid for through the service. The rate per capita paid to "acting members" of the Service showed a substantial advance. The board had continued the arrangement whereby free medical treatment was provided for the uninsured blind of Leicester, under the care of the Institution for the Welfare of the Blind, the members of the Cripples' Guild, and the Wycliffe Society for helping the Blind. The Education Committee had continued the arrangement with the board for the school clinic work to be carried on at the Central Dispensary, and the following number of new cases, in addition to many others, received treatment during the year: vision, 778; nose, ear and throat, 843; teeth, 3529. The board had again entered into an arrangement with the Leicester Guardians for the dispensing of the necessary medicines for the outdoor sick poor. Arrangements had been made with the Ministry of Health for the use of a consulting-room at the Central Dispensary, for the examination by the regional medical officer of certain patients insured under the National Insurance Act. A proposal that it might be advantageous to members of the service if arrangements were made for them to obtain drugs, &c., through the Public Medical Service had been carefully considered by the Finance and General Purposes Committee, who recommended that the proposal be adopted. Several members had availed themselves of the arrangement, the accounts up to the end of the year amounting to £46 11*s.* 4*d.* In connexion with the agreement between the Public Medical Service and the Foresters and Oddfellows Medical Associations the board directed the special attention of "acting members" to the following clause respecting voluntary subscribers, with particular reference to the exception in cases of emergency:—

> "They do not bind themselves to make visits between 8 P.M. and 9 A.M. in response to calls received within these hours, nor to make special visits in the day-time unless notice has been given before half-past nine o'clock in the morning. For visits made at the member's request under any of the conditions specified a charge of 3*s.* 6*d.* will be made, *except in cases of emergency.*"

CENTRAL COUNCIL FOR DISTRICT NURSING IN LONDON.—The annual meeting of the council will be held at the offices of the Metropolitan Asylums Board, Embankment, London, E.C., at 2.30 P.M., on Monday, Feb. 28th, when the provision of home nursing for persons of limited means will come up for consideration.

LONDON SCHOOL OF TROPICAL MEDICINE: RESEARCH EXPEDITION TO BRITISH GUIANA.—Some time ago the Colonial Office was requested by the Government of British Guiana to investigate the subject of filariasis, a disease affecting at least 50 per cent. of the population of that country. The matter was referred to the London School of Tropical Medicine, which unfortunately could not at that time spare funds for the purpose, in view of the claims of expedition to the Pacific Islands to test the salvarsan compounds in their action on filarial disease. The Pacific Expedition having returned, and a second request having been received from the Colonial Office to look into the importance of endemic filariasis in British Guiana, alleged by Dr. F. G. Rose to be very urgent, an expedition was organised and financed by the School under the able leadership of Professor R. T. Leiper, who will be supported by a strong body of assistants, with Dr. G. M. Vevers as chief of the helminthological department and Dr. John Anderson to conduct researches upon the therapeutic and pathological aspects of the disease. The whole subject of filariasis will be investigated on the spot, especially with a view to devising measures for prevention and effective treatment of the developed disease. The lines to be followed will be those already found so successful in bilharziasis, different metals being tested as to their therapeutic value in filariasis. The expedition, we learn, starts this week.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the Committee held on Feb. 8th 17 cases were considered and £245 voted to 15. The following is a summary of some of the cases relieved:—

M.R.C.S.E., aged 80. Married, practised in London. Suffers from facial neuritis following paralysis. Dependent on daughter, who supplements her income by taking paying guests. Applicant receives the old-age pension. Voted £13.—M.B., C.M. Edin., aged 67, married. Was a temporary assistant medical officer at a mental hospital. Asks for help to meet expenses. Step-daughter, aged 45, dependent owing to being deaf since birth. A married daughter, a war widow, gives help occasionally. Wife takes boarders to supplement income. Has had to sell furniture to make ends meet, and within the last 12 months has paid off £100 for debts. Rent and rates, £69 per annum, amount owing £36. Voted £26 in 12 instalments.—Daughter, aged 48, of M.R.C.S. Eng. who was a surgeon-major in India and died in 1881. Applicant suffers from bad health owing to munition work during the war. She lives with her sister, and they both receive a pension from the India Office of £56 and a present from friends of £12. Their furnished cottage costs 12*s.* 6*d.* per week. Voted £10 in two instalments and a special grant of £10.—Widow, aged 36, of M.R.C.S. Eng. who practised at Rocking and died in 1919. Applicant having two delicate young children, took a house as a nursing home for child patients, but receipts do not cover expenses, and she has had to draw on her capital, the money realised by sale of late husband's practice. Her husband had five older children by his first marriage. Owns house, but it is mortgaged. Voted £20.—Daughter, aged 70, of M.R.C.S. who practised in Wiltshire and died in 1878. Applicant used to receive £100 per annum from friends, but this sum is no longer available, and her niece who looked after her has now to help her own aged mother. Old-age pension is being applied for. Voted £26 in four instalments.—Widow, aged 44, of M.B., C.M. Glasg. who practised at Hartley and died in 1909. Applicant left with three children. She acts as a companion-help at £60 per annum. Her eldest son is self-supporting, but she has to pay part of board for second boy, aged 17, who is apprenticed to the engineering; wages 19*s.* per week. Asks for help to meet expenses. Voted £20 in four instalments.—Daughter, aged 47, of M.R.C.S. Eng. who practised at Lincoln and died in 1908. Owing to ill-health she is entirely dependent on her mother, who receives a pension from the Fund. Relieved once, January, 1920, £12 in 12 instalments. Voted £12 in 12 instalments.—Widow, aged 54, of L.S.A. Lond. who practised at Cambridge Heath and died in 1911. Applicant has a cottage in Cornwall and earns money by taking boarders and tea-gardens, but owing to bad weather has been unable to meet expenses. Applicant has to find £2 per week for eldest son, who holds a scholarship of £30 at a mining school, and her younger son is an apprentice at 3*s.* 6*d.* per week. Rent and rates £12 per annum, and assurance for self and two sons £18 per annum. Relieved four times, £35; last time January, 1919, £10. Voted £10.

Subscriptions may be sent to the honorary treasurer, Sir Charters J. Symonds, C.B., F.R.C.S., at 11, Chandos-street, Cavendish-square, London, W. 1.

PSYCHOLOGICAL MEDICINE.—The third course of lectures and practical instruction for a diploma of psychological medicine will begin at the Maudsley Hospital on April 5th, when Sir Frederick Mott, F.R.S., will give the first of eight lectures on the Anatomy of the Nervous System. These lectures will be held on Tuesdays, at 2.30 P.M. Dr. F. Golla will give eight lectures on the Physiology of the Nervous System on Fridays, at 2.30 P.M., commencing on April 8th; and on Thursdays, at 2.30 P.M., Dr. Henry Devine will give eight lectures on Psychology, beginning on April 7th. Practical instruction and demonstrations will be given in connexion with these three courses of lectures. The second part of the course for the diploma will be held in October and details will be announced later. The fee for the whole course is £15 15*s.*, for either part separately £10 10*s.* The fee for a single series of lectures in Part I. is £4 4*s.* Inquiries should be addressed to the Director of the Pathological Laboratory, Maudsley Hospital, Denmark Hill, London, S.E.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. A. Abrahams, Lond.; Mr. E. A. Armstrong, Lond.; Association of British Chemical Manufacturers, Lond.; Sir Clifford Allbutt, Cambridge; Dr. K. Adams, Glasgow; Mr. R. J. Albery, Lond.; Agriculture, Dept. of, Ottawa.

B.—Mrs. C. Brereton, Lond.; Prof. C. W. G. Bryan, Lond.; Mr. H. Barwell, Lond.; Dr. J. Blomfield, Lond.; Mr. J. O. Braithwaite, Lond.; Messrs. J. Bell and Croyden, Lond., Managing Director of; Board of Trade, Lond.; Dr. H. H. Bashford, Lond.; Dr. Buchanan, Glasgow; Dr. C. Bolduan, Washington; Board of Control, Lond., Sec. of; Dr. J. Brown, Lond.; Dr. A. H. Burgess, Manchester; Dr. A. E. Barclay, Manchester; British Thomson-Houston Co., Lond.; Sir G. T. Beatson, Glasgow; Mrs. E. Bartrip, Harrow-on-the-Hill.

C.—Mr. J. M. Campbell, Glasgow; Dr. H. P. Cholmeley, Forest Row; City of London and East London Dispensary, Sec. of; Dr. J. B. Christopherson, Lond.; Clerical, Medical, and General Life Insurance Society, Lond.; Dr. R. Cannon, Miramar, Chili; Dr. C. Coombs, Bristol; Prof. E. L. Collis, Cardiff; Col. R. B. Campbell, Aldershot; Messrs. Cassell and Co., Lond.

D.—Mr. H. A. Dupré, Ottawa; Mr. H. Dickinson, Lond.; Dr. A. G. B. Duncan, Hull.

F.—Dr. L. S. Fridericia, Copenhagen; Dr. E. R. Fothergill, Hove; Faculté de Médecine de Paris.

G.—Dr. W. E. Gye, Lond.

H.—Mr. F. A. Hocking, Lond.; Dr. C. T. W. Hirsch, Lond.; Dr. A. K. Henry, Dublin; Prof. I. Holmgren, Stockholm; Dr. S. Herbert, Manchester; Maj.-Gen. Sir P. Hehir, I.M.S. (retd.), Westward Ho'; Dr. F. S. D. Hogg, Rickmansworth; Prof. W. Hall, Bristol; Mr. N. A. Humphreys, East Liss; Prof. F. G. Hopkins, Cambridge; Mr J. R. Hill, Edinburgh; Harrogate Corporation Baths, General Manager of.

I.—Dr. J. M. Irwin, Bracknell; Insurance Committee for the County of London.

J.—*Journal of Industrial Welfare*, Lond.; Johns Hopkins Press, Baltimore.

K.—Dr W. N. W. Kennedy, Croydon.

L.—London Hospital Medical College; London Hospital Medical Society, Hon. Sec. of; Lord Mayor of London; Miss A. Lester-Garland, Lond.

M.—Dr. P. H. Manson-Bahr, Lond.; Dr. T. H. Morse, Deal; Dr. W. St. C. McClure, Manchester; Ministry of Health, Lond.; Metropolitan Asylums Board, Lond.; Dr. M. Manson, Hensingham; Medical Society of London; Sir F. Mott, Lond.; Lt.-Col. R. McCarrison, Oxford; Dr. J. Mennell, Lond.

N.—National Council for Combating Venereal Diseases, Lond.; National Drug and Chemical Union, Lond., Gen. Sec. of.

O.—Messrs. Oliver and Boyd, Edinburgh; Officers' Families Fund, Lond.

P.—Panel Committee for the County of London; Dr. R. Picken, Glasgow; Mr. V. G. Plarr, Lond.; Dr. K. B. Pinson, Manchester; Dr. W. A. Potts, Edgbaston; Dr. J. T. Peters, The Hague; Prof. H. Platt, Manchester; Miss M. Price, Vienna; Dr. R. H. A. Plimmer, Aberdeen.

R.—Dr. R. J. Rowlette, Dublin; Mr. H. Rundle, Southsea; Royal Society, Lond., Asst. Sec. of; Prof. A. J. H. Russell, Madras; Dr. H. Roberts, Lond.; Royal Institution of Great Britain, Lond.; Royal Statistical Society, Lond.; Royal College of Physicians, Edinburgh, President and Fellows of; Royal Society of Arts, Lond.

S.—Société des Médecins Chefs de Laboratoire de Radiologie et d'Electro-Radiothérapie, Paris; Major M. Sinclair, R.A.M.C., Netley; St. Mary's Hospitals, Manchester, Sec. of; Dr. S. W. Swindells, Great Grimsby; Miss W. Stephens, Lond.

T.—Dr. J. Tatham, Oxted; Tuberculosis Society of Great Britain and Ireland, Lond., Hon. Sec. of.

U.—University of London, Principal Officer of.

W.—Messrs. Willows, Francis, Butler, and Thompson, Lond.; Dr. O. Wilberforce, Lond.; Workers' Educational Union, Lond.; West London Post-Graduate College; Dr. K. M. Walker, Lond.; Dr. O. E. Williamson, Lond.; Mr. A. R. Walker, Lond.; Dr. E. Ward, Paignton; Dr. J. W. T. Walker, Lond.; Dr. J. Watt, Sutton.

Communications relating to the editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C.2.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Medical Record Cards.

A MEETING of the Medical Committee of the House of Commons was held on Monday, Feb. 21st, at Westminster, to consider the question of the new medical record cards issued by the Ministry of Health to panel practitioners. Lieutenant-Colonel **NATHAN RAW** presided. The meeting passed two resolutions, one to the effect that the principle of keeping a record was likely to result in permanent advantage to the insured person; and the second stating that the most jealous regard should be maintained for professional secrecy, which ought not to be infringed. It was decided that a question should be addressed to Dr. **ADDISON**, the Minister of Health, on the point whether the records could be called for in a court of law.

HOUSE OF LORDS.

THURSDAY, FEB. 17TH.

Chinese Flour and Dermatitis.

REPLYING to Lord **HARRIS**, the Earl of **CRAWFORD** (Chancellor of the Duchy of Lancaster) said that it had been very widely alleged that the Chinese flour which the Government had purchased was poisonous. It was suggested that it produced dermatitis, and it was even suggested that it was the cause of sleeping sickness—a complaint which originated, he believed, in about the only portion of this hemisphere to which Chinese breadstuffs had never penetrated. They might as well say that Chinese flour was answerable for housemaid's knee or any other conceivable ailment. The total quantity of Chinese flour that they had bought was less than 2 per cent. of our consumption. This flour was being consumed all over Europe. Analyses of it had been made for the Flour Mills Control Committee by public analysts by authoritative persons, and in every case the certificate of origin guaranteeing that the flour was made of pure wheat had been confirmed. The Ministry of Health, seeing these reports about sleeping sickness and dermatitis and so on, naturally interested themselves in the subject. A number of samples of the flour were taken and subjected to the most minute microscopic and chemical tests. The Ministry reported that the flour was good, perfectly free from all mineral impurities, and it was wholesome, sound, sweet, and normal. It had also been alleged that in the neighbourhood of Finsbury Park, London, a large number of people were suffering from dermatitis, brought about by the consumption of Chinese flour in the form of bread. The allegation was made by a medical man whose name was given, that 200, or it might have been more, of his patients were suffering from dermatitis from this cause. The Ministry of Health selected a dermatologist of distinction, who, he presumed, understood dermatitis, and who went down to the neighbourhood of Finsbury Park and saw the patients of this doctor. The dermatologist had reported that the cases examined were suffering from scabies, commonly known as the itch, a parasitic disease which could not be associated with the ingestion of any article of food. He (Lord Crawford) presumed that while these wretched patients had been suffering from this nasty complaint they had been continuing to receive treatment for some digestive trouble. The public ought not to be misled by sensational reports of this character. The real fact was that at the present moment Great Britain had got the best bread in Europe, and if his information was correct the cheapest bread in Europe as well.

HOUSE OF COMMONS.

THURSDAY, FEB. 17TH.

Pension Award Statistics.

Mr. **RENDALL** asked the Minister of Pensions whether he had published or would publish statistics tabulating pension cases and showing the numbers of pensions increased and decreased per annum and the reasons for the alterations made, the number of cases in which medical boards were overruled by the awards branch, the number of pensions stopped, and the number of claims unsuccessfully made for pensions.—Mr. **MACPHERSON** replied: During the six months ending Jan. 31st, 1921, 525,000 men were re-examined by medical boards for renewal or termination of pension, with the following results: Pensions increased, 42,600; pensions unaltered, 219,650; pensions reduced, 193,850; pensions terminated but gratuities awarded, 26,000; no further award, 13,900. During the same period 84,000 first claims were considered, and in 60,000 of these cases pension or gratuity was awarded. In reply to the second part of the question I stated that the percentage degree of disablement, on which the amount of pension is based, is in all cases determined by medical boards, whose opinion cannot be overruled by any official of this Ministry.

Pension Scale for Limb Injuries.

Mr. **RENDALL** asked the Minister of Pensions whether he was aware that the pension scale for limb injuries, which gave a stated sum as compensation for the limb lost, ignored the pensioner's general health, which might be shattered or gravely injured by the injuries that caused the loss of the limb; and what course he had taken or proposed to take to deal with this problem.—Mr. **MACPHERSON** replied: The scale contained in the First Schedule of the Royal Warrant is designed to compensate merely for the specific injuries there stated. In the actual award of pension, however, due allowance is made for any concomitant loss of health, the amount of pension being based on the total extent of disablement due to, or aggravated by, service.

Regulations under Dangerous Drugs Act.

Mr. **JOSEPH JOHNSTONE** asked the Secretary for the Home Department whether he was aware that the Draft Regulations under the Dangerous Drugs Act, 1920, were causing dissatisfaction and alarm to registered pharmacists and dispensing chemists; whether the Pharmaceutical Society of Great Britain had protested against the Regulations being further proceeded with until the whole situation had been considered by the Government Department in consultation with the Pharmaceutical Society; whether these Draft Regulations superseded the Pharmacy Acts, interfered with the reasonable liberties of the people, and involved details leading to unjustifiable expenditure; and whether he would consider the advisability of suspending the Regulations meanwhile with a view to their amendment and adjustment.—Mr. **TREVELYAN THOMSON** asked the Home Secretary if he could see his way to withdraw the Draft Regulations issued under Section 3 of the Dangerous Drugs Act, 1920, which were considered unworkable in their present form by those who would have to carry them out; and would he consult the representatives of the pharmaceutical societies in the redrafting of these Regulations so that the objects of the Act might be achieved with the minimum instead of the maximum of inconvenience to the public.—Lieutenant-Colonel **WALTER GUINNESS** asked the Home Secretary whether the new Regulations would be withdrawn and redrafted in view of the overwhelming opinion among medical practitioners that in their present form they were unnecessarily irksome, totally impracticable, and likely only to encourage the desire for dangerous drugs by notifying patients by means of a label whenever medicines contained morphine and other narcotics.—Mr. **CLOUGH** asked the Home Secretary whether he had received protests from the medical profession against the new Regulations on the ground that they would not only be useless and expensive but a source of danger; and whether he would again investigate the whole matter before enforcing these Regulations.—Sir **HARRY HOPE** asked the Home Secretary whether, in view of the strong feeling against the Dangerous Drugs Act, he would open an inquiry with the object of removing some of the hardships which the Act would entail.—Major Sir **BERTRAM FALLE** asked the Home Secretary if his attention had been called to the widepread objection to the new Regulations, and if he could make any statement.—Sir **THOMAS BRAMSDON** asked the Home Secretary if in formulating the Draft Regulations for the scale, prescribing, dispensing, and distribution of cocaine, ecgonine, morphine, heroin, and opium (medicinal), the British Medical Association, which represented and spoke for over 22,000 medical men, were not consulted; if he was aware that the proposed Draft Regulations were regarded by medical practitioners throughout the kingdom as impracticable; that if Clause 13 of the proposed Regulations be strictly carried out it would be impossible for medical men to obtain those drugs from wholesale chemists by train or through the post; and that, however urgently needed, it would be impossible for a doctor to obtain these drugs by a telephone message; and if he was prepared to submit the Regulations for consideration and amendment to a committee composed of representatives of the Home Office, the Ministry of Health, the British Medical Association, and the Pharmaceutical Society as well as the Veterinary Surgeons, as representing all the interests concerned in dealing with these drugs.—Lieutenant-Colonel Sir **JOHN HOPE** asked the Minister of Health whether the Regulations under the Dangerous Drugs Act, 1920, would prevent farmers and other horse-owners keeping colic draughts containing opium, the administering of which in cases of emergency often saved the lives of animals, especially where it was impossible to get veterinary aid quickly.—Lieutenant-Colonel **HURST** asked the Minister of Health whether he consulted the British Medical Association or the Pharmaceutical Society before issuing Draft Regulations on Jan. 7th last under the Dangerous Drugs Act; whether he was aware that transactions in morphia, cocaine, heroin, opium, and ecgonine represented roughly half the dispensing practice of a doctor, and that the records of such transactions required by the Regulations must be a burden upon all doctors in dispensing practice; and whether he would now reconsider this question having regard to professional opinion.

Sir John Baird (Under Secretary for the Home Department) replied: With the permission of the House I will make a statement covering all these questions. In the first place I desire to make it clear that the Regulations are at present in draft only, and will not come into operation until they have been formally made. They are issued first in draft for the express purpose of giving all parties interested the opportunity of expressing their views before they are finally made. The criticisms that have been directed against the Department for not having consulted this body or that before issuing the Regulations are, I think, therefore a little misplaced. Representations have been received from a number of bodies, and these are being carefully considered. Many of the objections are based on a misapprehension of the meaning of the Regulations, as, for instance, the objection to Regulation 13 referred to by Sir T. Bramsdon; and where necessary the wording of the Regulations will be amended so as to make the meaning perfectly clear. Apart from these a number of important points have been raised, and these are being, or will be, discussed with the representatives of the interests concerned. As regards the application of the Regulations to agriculture, my right honourable friend is in consultation with the Ministry of Agriculture. I may remind the House that the Regulations are proposed in order to carry out the obligations which the Government have undertaken by the International Opium Convention and the Treaty of Versailles to confine the use of the drugs in question to medical and other legitimate uses. Parliament gave express powers for the purpose in the Dangerous Drugs Act of last session. I imagine that the need for additional restrictions in view of the prevalence of the drug habit will be generally admitted. At the same time, it is not my right honourable friend's desire or intention to impose any restrictions beyond what are absolutely necessary to effect the purpose, and he hopes he may be able to meet, to a very large extent, the views which have been submitted to him. When the Regulations are finally made they will be laid before Parliament, and Parliament will have an opportunity of discussing them if it so desires.

Colonel Greig: Is it not a fact that these *Draft Regulations* have been published in accordance with an Act of Parliament which has been on the Statute Book for the last 20 years—the Rules Publication Act—in order that anyone may object or comment as he thinks fit?—Mr. Thomson: Are we to understand that the Home Secretary will receive a deputation from these various societies, and discuss with them the points that have been raised?—Sir J. Baird: The Home Secretary has already agreed to receive a deputation.—Mr. Raffan: Will the Rules become operative before the discussion which has been promised takes place in this House, or will the Minister be guided by the views of Members of this House before the Regulations assume their final form?—Sir J. Baird: The position is that the Rules have to lie on the Table of the House for 21 days, and during that period a Member of this or the other House can move an Address to the King objecting to them. It does not lie with the Government or the Minister to find time.—Mr. Raffan: They do not become operative for 21 days?—Sir J. Baird: No. —Sir D. Maclean: When does the honourable baronet think that these Regulations will be laid? Will it be in the course of the next month?—Sir J. Baird: Yes, I think certainly in the course of the next month. The matter is rather urgent, because in the event of the Treaty with Turkey being ratified the Regulations under which we can now exercise restrictions on opium and cocaine will lapse, and unless there is something to put in their place a deplorable state of affairs will be created. I am afraid I cannot give an absolute date when these Regulations will be laid or when the discussion with bodies affected will take place.—Sir J. D. Rees: Is the honourable baronet aware that these Draft Regulations are viewed with consternation by the people concerned? Is it really contemplated that the few supermen of the League of Nations are to worry every underdog about every matter like this? Will my honourable friend represent to the Home Secretary the intense unpopularity of these Regulations, which are utterly unjustifiable?—Sir J. Baird: I think my right honourable friend is aware that a certain amount of unpopularity has been aroused by them. He is doing his best to meet the objections so far as he legitimately can, having regard to our international obligations.—Mr. Acland: Is it not a fact that the International Opium Agreement was come to before the League of Nations was born or thought of?—Sir J. Baird: That is perfectly true.—Sir H. Craik: Is the honourable baronet aware that the opportunities of discussing an Order laid on the Table of the House are absolutely illusory unless the Government give time for it?—Sir J. Baird: I will not presume to argue a matter of that sort with the right honourable gentleman who has had much more experience than I have, but I believe he is in error. The Government has nothing to do with it; the House has the right to discuss the matter on any day.

Health Insurance Arrears.

Mr. William Thorne asked the Minister of Labour if he was aware that many workpeople were falling into arrears with their health insurance contributions in consequence of widespread unemployment; whether he could arrange for the labour exchange officials to be empowered to place stamps upon the cards; or whether the arrears could be remitted altogether during the present period of distress.—Dr. Macnamara replied: The out-of-work donation scheme provides for the payment by the Ministry of Labour of the health insurance contributions of persons receiving donation whilst unemployed. There is no corresponding provision in the Unemployment Insurance Act, 1920, and to pay the health contributions of persons receiving unemployment benefit would require statutory authority. The question whether arrears of health contributions could be remitted entirely during the present industrial depression is one which should be addressed to the Minister of Health.

Milk and Dairies Bill.

Mr. Swan asked the Minister of Health if he would state when it was proposed to proceed with the Milk and Dairies Bill.—Dr. Addison replied: It is not at present proposed to reintroduce the Milk and Dairies Bill during the present session.

FRIDAY, FEB. 18TH.

Dogs Protection Bill.

Sir F. Banbury introduced a Bill "to prohibit the vivisection of dogs," which was supported by Sir John Butcher, Colonel Burn, and Mr. Joseph Green. The Bill was read a first time and the second reading is down for Tuesday, April 12th.

MONDAY, FEB. 21ST.

Medical Record Cards.

Sir J. D. Rees asked the Minister of Health whether the new record cards had been dropped in view of the almost universal objection entertained to this development of social reform.—Dr. Addison replied: No, Sir. I am unaware of any grounds for the statement in the honourable Member's question that there is almost universal objection to the insurance medical record cards. From about 10,000 Approved Societies and branches I have five protests only; out of 150 Panel Committees (representing insurance practitioners), five representations mainly on points of detail; while from the Insurance Committees (which administer medical benefit in every county and county borough) I have received no protest whatever. On the contrary, one large Insurance Committee which had before it a resolution disapproving of the new medical cards, rejected the resolution by 21 votes to 2. In these circumstances, I fear that the honourable Member has been gravely misinformed.

Captain Sir Douglas Hall asked the Minister of Health if he would state what was the estimated cost per annum of the new medical records for insurance patients; and whether it approximated to the statement made by the local Medical and Panel Committee of the county palatine of Chester that, according to its information, the cost of the initial issue would run the London Hospital a year.—Dr. Addison replied: The annual cost of the records will be a small sum and certainly considerably less than that of the *old medical record cards and doctors' register cards*, both of which will be replaced by the single new permanent record card. With regard to the last statement in the question, the cost of running the London Hospital in 1919 was £221,000, whilst the total initial cost to Insurance Committees, a charge which will not recur, for filling in and sending the record cards to all the practitioners in England and Wales was estimated to cost £19,000.—Sir Douglas Hall also asked the Minister of Health whether already, under the new system of medical records of insured patients, there had been cases of patients foregoing their benefits and incurring the expense of a private doctor rather than submit to a record of their complaints being made by the panel doctor on the record cards?—Dr. Addison replied: I understand that allegations to the effect stated in the question have been made in some two or three cases only out of the millions of insured persons. I may add that the fact that medical men, Approved Societies, and Insurance Committees, as well as insured persons having first-hand knowledge of these matters, have remained quite unmoved by the recent agitation is convincing proof of its unreal character.

Maintenance of Patients in Mental Hospitals.

Mr. Finney asked the Minister of Health whether his attention had been drawn to a resolution of a meeting of Poor-law guardians of the Wolstanton and Burslem union, Staffordshire, calling attention to the increasing charges on the rates and with *special reference to the recent increase* for the charge in the maintenance of patients in the mental hospital from 28*s.* to 35*s.* per week, and to the fact that the Exchequer contributions, as fixed under the Local Government Act, 1888, remained the same, and the grant, notwithstanding the enhanced cost of maintenance, for patients in mental hospitals still remained at 4*s.* per week per patient, which grant of 4*s.* was fixed originally when the average cost of maintenance would be from 8*s.* to 9*s.* whereas it was now four times the amount, and in addition the establishment and other charges included in the precepts received by guardians from county councils increased considerably the amount of 35*s.* weekly, and protesting most strongly against these increasing burdens without some adequate or comparative increase in the amount of the grants allowed, and pressing that some definite action be taken by the Government to make some recompense and appease the indignation caused by such increasing charges on the rates; and whether he could indicate the intentions of the Government respecting the same.—Dr. ADDISON replied: I have received a copy of this resolution. As I stated in reply to numerous questions asked last session on this subject, it would not be practicable, in view of the contemplated reform of the Poor-law, to deal with this particular matter at the present time.

The Dentists Bill.

Mr. WATERSON asked the Minister of Health if he could state if it was the intention of the Government to proceed with the Dentists Bill.—Dr. ADDISON replied: I hope to be able to give a definite answer to this question this day fortnight.

Import of Salicylic Acid.

Major BARNES asked the President of the Board of Trade if an import licence for two hundredweights of salicylic acid (B.P.) required for the purpose of making medicated ointment had been refused; and if he would say in the manufacture of what dyestuffs, colours, or colouring matters salicylic acid (B.P.) was used.—Sir PHILIP LLOYD-GREAME replied: I understand from the Dyestuffs Advisory Licensing Committee that the applicants in the case referred to are being informed that, if they can satisfy the Committee that the consignment is of B.P. quality and is to be used solely for medicinal purposes, and will undertake to produce proof, if required later, that it has been so used, the Committee will be prepared to reconsider their decision.

Testing Thermometers.

Sir HERBERT NIELD asked the Parliamentary Secretary to the Ministry of Munitions whether the control and testing of thermometers formerly performed at the National Physical Laboratory and taken over by the Ministry during the war was still retained by the Ministry; if so, how many persons were engaged upon such work and at what cost; whether the work constituted a separate department and how long it was proposed to continue it; and what reason could be assigned by him for not re-transferring the work to the National Physical Laboratory.—Sir PHILIP LLOYD-GREAME (Parliamentary Secretary to the Board of Trade) replied: With regard to the first part of the question, the testing of thermometers of all kinds has always been undertaken by the National Physical Laboratory since before the war on payment of a fee. The Ministry of Munitions issued an Order in October, 1918, *for the administration of which* the Board of Trade is now responsible, making the testing of clinical thermometers compulsory. This testing, as required by the Order, is performed by the National Physical Laboratory. The remainder of the question, therefore, does not arise.

Scottish Doctors and Telephone Charges.

Mr. ALEXANDER SHAW asked the Postmaster-General whether he was aware of the hardship to medical men in various localities in Scotland who were being called upon to pay twice the previous cost or more for telephone service and were unable to bear this addition to the costs of carrying on their practice; and whether he was prepared to take any action in the matter.—Mr. ILLINGWORTH replied: I regret that a preferential tariff for the medical profession at the expense of other classes of subscribers cannot be justified, but as medical men usually originate comparatively few calls it is unlikely that the new rates will, save in exceptional cases, add as much as 100 per cent. to the cost of the service.

WEDNESDAY, FEB. 23RD.

Professional Secrecy.

Lieutenant-Colonel FREMANTLE asked the Minister of Health whether, prior to directing medical practitioners under the National Health Insurance Act to place certain confidential entries on medical history cards, he had consulted, or would consult, the law officers of the Crown as to whether the practitioners would be guilty of violation of secrecy and be liable to actions for libel if such entries were entrusted by them to private secretaries, in accordance with their usual practice.—Dr. ADDISON *replied: I am advised that in the circumstances* mentioned it is in the highest degree unlikely that there would be any cause of action against the doctor, unless he were shown to have been actuated by malice. The general question as to the position in the law of medical secrecy was submitted by me to the Lord Chancellor in June last year, and the matter which raises very important issues is being considered.

Colonel FREMANTLE asked the Minister of Health if he had obtained or would obtain the opinion of the Law Officers of the Crown as to whether subpœnas may be granted compelling the production of medical history cards in legal proceedings; and whether panel practitioners concerned in their preparation may be called upon to support the statements therein made.—Dr. ADDISON replied: I am advised that though a person may be compelled by means of a Subpœna Duces Tecum to bring any document, private or otherwise, to the court, the document itself does not thereby become admissible in evidence. A record card is, I am advised, not evidence of the facts stated in it, and, if it is desired to prove them, this must be done in the ordinary way—viz., by the oral evidence of the doctor himself.

Appointments.

Certifying Surgeons under the Factory and Workshops Acts: MCDOUGALL, D., M.B., Ch.B. Glasg. (Kilbride); ROBERTSON, I. M., M.B., Ch.B. Glasg. (Strichen).

Vacancies.

For further information refer to the advertisement columns.

Beckenham Education Committee—Dental O. £500.
Belgrave Hospital for Children, Clapham-road, S.W.—H.P. and H.S. £100.
Birmingham General Hospital.—Res. Anæsth., H.S., Obstet. H.S. £100. Also H.S. to Skin and Venereal Depts. £125.
Bootle County Borough.—Tuberc. O. and Deputy M.O.H. £750.
Bradford Royal Infirmary.—Two H.S.'s. £200. Also H.P. £200.
Bristol City and County.—Asst. Tuberc. O. £603 12*s.* 5*d.*
Bristol, Cossham Memorial Hospital, Kingsland.—H.S. £200.
Bristol General Hospital.—H.P.'s, H.S.'s, Cas. H.S. and Obstet. O. £175.
Bristol Royal Hospital for Sick Children and Women.—H.S. and H.P. £150 each.
Cairo, Egyptian Government School of Medicine.—Two Professorships of Ophthalmology. British, L.E.600. Egyptian, L.E.500.
Cardiff, King Edward VII. Hospital.—H.S. £200.
City of London Union, 2a, Bow-road, E.—M.O. £900.
Derby, Derbyshire Royal Infirmary.—Ophth. H.S. £200.
Dewsbury and District General Infirmary.—H.S. £250.
Dorchester, Dorset Mental Hospital, Herrison.—Second Asst. M.O. £400.
Ealing Borough.—Asst. M.O.H. £500.
Eastern Dispensary, Leman-street, E.—P. and Ophthal. S.
East Sussex County Council, Darvell Bank Sanatorium.—Med. Supt. £750.
Evelina Hospital for Children, Southwark, S.E.—H.P. £160.
Exeter City.—Asst. M.O.H. and Asst. Sch. M.O. £500.
Exeter, Royal Devon and Exeter Hospital.—H.P. £150.
Greenwich, "Dreadnought" Hospital.—H.S. £150.
Herefordshire General Hospital.—H.S. £200.
Hull Royal Infirmary.—Asst. H.S. £150.
Kent County Mental Hospital, Chartham, near Canterbury.—Jun. Asst. (Third) M.O. £350.
Leeds Public Dispensary.—Hon. Radiologist.
Liverpool, David Lewis Northern Hospital.—Two H.P.'s. Three H.S.'s. £120.
Liverpool Maternity Hospital and Ladies' Charity.—Hon. S.
Liverpool Royal Children's Hospital, Myrtle-street.—Two Res. H.P.'s and Two Res. H.S.'s. £90. Hon. S. and Hon. Asst. P.
Liverpool Royal Infirmary.—Hon. S.
Liverpool, Royal Southern Hospital.—Two H.P.'s and Three H.S.'s. £100.
London County Mental Hospitals.—Clin. Assts. £200.
London Homœopathic Hospital, Great Ormond-street and Queen's-square, Bloomsbury, W.C.—Asst. S.
Manchester, Ancoats Hospital.—Hon. S.
Manchester Babies' Hospital, Slade Lane, Manchester.—Res. M.O. £150.
Manchester Royal Infirmary, Central Branch, Roby-street, Manchester.—Asst. M.O. £100.
Margate, Royal Sea Bathing Hospital for Surgical Tuberculosis.—Female S. £200.
Middlesex Hospital.—H.S.
Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—P., Gynæc., and Dent. S.
Newark Hospital and Dispensary.—Res. H.S. £200.
Newcastle-upon-Tyne, Hospital for Sick Children.—Hon. Asst. S.
Northampton, County Mental Hospital, Berry Wood.—Sen. Asst. M.O. £300. Also Jun. Asst. M.O. £210.
North Riding of Yorkshire County Council Education Committee.—Two Asst. Sch. M.O.'s. £500 each.
Nottingham General Hospital.—H.S. £200.
Poole, Borough and Port of.—M.O.H., Med. Supt. of Isolation Hospitals, and Sch. M.O. £710.
Prestwick, Biggart Convalescent Home.—Visiting P.

Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Asst. Res. M.O. £60. Also Dist. Res. M.O. £80.

Queen Mary's Hospital for the East End, Stratford, E.—H.S. and H.P. £150 each.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. P.'s.

Rochester, Kent, St. Bartholomew's Hospital.—Res. H.S. £250.

Royal Air Force, Air Ministry, Kingsway, W.C.—M.O.'s.

Royal Eye Hospital, St. George's-circus, Southwark, S.E.—Refractionist. 100 guineas.

Royal Free Hospital, Gray's Inn-road, W.C.—Two Female Asst. M.O.'s. 1 guinea per session.

St. Pancras Dispensary, 39, Oakley-square, N.W.—Hon. P.

Salisbury General Infirmary.—H.S. £200.

Sheffield Royal Hospital.—Res. Surg. O. £250. Asst. Cas O. £150.

Sheffield Royal Infirmary.—Asst. Cas. O. £150

South Shields, Ingham Infirmary and South Shields and Westoe Dispensary.—Sen. H.S. £225.

Stroud General Hospital.—H.S. £200.

Sunderland Children's Hospital.—Female Jun. Res. M.O. £150.

Throat Hospital, Golden-square, W.—Res. H.S. £100.

Tooting Bec Mental Hospital, Tooting, S.W.—Jun. M.O. £515 6s.

Tunbridge Wells General Hospital.—H.S. £160.

Tyne Port Sanitary Authority.—Asst. M.O.H. £750.

Western Ophthalmic Hospital, Marylebone-road, N.W.—Non-Res. H.S. £150.

West London Hospital, Hammersmith-road, W.—H.P. and Two H.S.'s. £50. Also Asst. Anæsth.

Wigan County Borough.—M.O.H. £850.

Wigan Infirmary.—Hon. P. and Asst. Hon. P.

Wilts County Council.—Female Asst. County M.O.H. and Asst. Sch. Med. Inspec. £500.

Wolverhampton and Staffordshire General Hospital.—Hon. Specialist Ear, Nose, and Throat Dept. Also Res. Cas. S. £300.

York Dispensary.—Res. M.O. £250.

York Retreat.—Med. Supt. £800-£1000.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for a Certifying Surgeons under the Factory and Workshops Acts at Hammersmith, Allendale, Eccles, Kirkby Lonsdale, Shap, and at Colne.

THE Secretary of State for the Home Department gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for the Sheriffdom of the Lothians and Peebles. Applications should be addressed to the Private Secretary, Scottish Office, Whitehall, S.W.1, and should reach him not later than March 16th.

Births, Marriages, and Deaths.

BIRTHS.

CUNNINGHAM.—On Feb. 16th, at Chesham, Bucks, the wife of F. H. Lester Cunningham, M.C., M.B., B.S. Lond., of a daughter.

HALLETT.—On Feb. 11th, at Eltham-road, Lee, S.E., the wife of Denys B. I. Hallett, M.A., M.B., B Ch. Oxon., of a son.

NIXEY.—On Feb. 20th, at St. John's-hill, S.W., the wife of E. F. W. Nixey, M.B., of a daughter.

SCOTT.—On Feb. 13th, at Sussex-square, Brighton, the wife of Dr. Evelyn D. Scott, of a daughter.

MARRIAGES.

RICHARDS—OLIVIER.—On Dec. 21st, 1920, at St. Martin's-in-the Fields, by the Rev. Dr. Oxford, M.D., William Arthur Richards, M.B., B.S. Lond., to Noel Olivier, M.B., B.S. Lond.

VINTER—PENOYRE.—On Feb. 19th, at St. George's, Bloomsbury, Noel Sydney Bailey Vinter, M.B., B.S., to Alice Dorothy, eldest daughter of the Rev. Prebendary Stallard Penoyre, Rector of Stockton, Worcester.

DEATHS.

CULLEN.—At the British Station Hospital, Jhansi, United Provinces, India, on Jan. 16th, 1921, Dr. J. A. W. Cullen, B A., M.B., B.Ch., B.A.O., District Surgeon, Great Indian Peninsula Railway.

GAMLEN.—On Feb. 18th, at Dawlish, from blood poisoning, Captain Robert Long Gamlen, M.D., B.C., D.P.H. (I.M.S., retired), in his 40th year.

TARBET.—On Feb. 15th, at Swansea, Peter Rowly Tarbet, M.R.C.S., L.R.C.P.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Friday, Feb. 25th.

CLINICAL SECTION
SECTION OF MEDICINE } at 8.30 P.M.
SECTION OF SURGERY

Adjourned Discussion:

On "The Medical and Surgical Treatment of Graves' Disease" to be reopened by Mr. Donald Armour, followed by Dr. J. M. H. Campbell, Mr. W. H. C. Romanis, Mr. A. J. Walton, Professor Earle, and others.

Monday, Feb. 28th.

SECTION OF ODONTOLOGY: at 8 P.M.

Paper:

Mr. W. W. James: Some Clinical Cases associated with Dental Infection.

Casual Communication:

Mr. P. Cole: Condition of Two Pedicle Bone Grafts Two Years after Operation (illustrated by X Ray Photographs).

Tuesday, March 1st.

SECTION OF SURGERY: SUBSECTION OF ORTHOPÆDICS: at 5.30 P.M. (Cases at 5 P.M.)

Discussion:

On "Recurrent Dislocations (Shoulder, Patella, &c.) and their Treatment," to be opened by

The President (Mr. Laming Evans): On Recurrent Dislocations of the Shoulder.

Mr. W. Rowley Bristow: On Recurrent Dislocations of the Patella.

Cases: The following will be shown by—

The President: (1) Recurrent Dislocation of Shoulder; (2) Recurrent Dislocation of Patella.

Mr. T. H. Openshaw: Recurrent Dislocation of Shoulder.

Mr. O. L. Addison: Recurrent Dislocation of Patella.

Mr. W. Rowley Bristow: (1) Recurrent Dislocation of Shoulder (Bilateral); (2) Two Cases of Recurrent Dislocation of Patella.

Mr. H. A. T. Fairbank: Recurrent Bilateral Subluxation of Shoulder.

SECTION OF PATHOLOGY: at 8.30 P.M.

LABORATORY MEETING at the Bacteriological Department of Guy's Hospital, S.E.

Demonstrations:

Dr. E. P. Poulton: (1) Modification of Van Slyke's Method of Measuring Oxygen in Blood; (2) Method of obtaining Alveolar Air Samples in Untrained Persons.

Wednesday, March 2nd.

SECTION OF SURGERY: at 5.30 P.M.

Demonstration (illustrated by means of the epidiascope):

Mr. Edred M. Corner: Items of General Surgical Importance (the Fate of Silk, Nerve Regeneration, and Internal Scars) from a Surgical Backwater (Amputations).

At 4.30 P.M.:

Pathological Specimens from the Royal College of Surgeons and the St. Thomas's Hospital Museums, Skiagraphic Plates, Prints, and Illustrations will be on view.

Thursday, March 3rd.

SECTION OF OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.

Specimens:

Dr. Russell Andrews: (1) Two Cases of Sarcoma of the Uterus; (2) Lipomatosis of Stroma of a Uterine Fibromyoma.

Papers:

Dr. Geoffrey Evans: A Study of the Condition of the Arteries in a Uterus Removed 24 Days after Delivery.

Dr. Alec Bourne: Puerperal Salpingo-peritonitis.

Friday, March 4th.

SECTION OF LARYNGOLOGY: at 4 P.M.

Cases will be shown by Sir James Dundas-Grant and others.

SECTION OF ANÆSTHETICS: at 8.30 P.M.

Paper:

Mr. Raymond Apperly: The Importance of the Examination by the Anæsthetist of the Patient previous to Anæsthesia.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Feb. 28th.—8.30 P.M., Discussion on the Chemical Estimation of Gastric Function, introduced by Dr. J. H. Ryffel. Followed by Dr. J. A. Ryle, Dr. T. I. Bennett, Dr. R. L. M. Wallis, Mr. E. C. Dodds, Dr. G. Graham, Dr. C. Bolton, Dr. R. Hutchinson, and Dr. W. H. Willcox.

TUBERCULOSIS SOCIETY OF GREAT BRITAIN AND IRELAND, at Margaret-street Hospital, W.

MONDAY, Feb. 28th.—7.30 P.M., Paper:—Dr. W. Gordon: Rain-bearing Winds and Tuberculosis.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

WEDNESDAY, March 2nd.—8 P.M., Lecture:—Capt. J. M. Hollis: The Re-education of the Disabled.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, Feb. 28th.—2 P.M., Mr. Baldwin: Demonstration of Cases (Surgical Wards). Dr. Morton: X Ray Department. Dr. S. Pinchin: Medical Out-patients. 5 P.M., Lecture:—Dr. G. Stewart: General Paralysis of the Insane.

TUESDAY.—2 P.M., Dr. Burnford: Medical Out-patients. Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Skin Department. 5 P.M., Lecture:—Mr. T. Gray: Surgical Disorders of the Stomach and Duodenum.

WEDNESDAY.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 2 P.M., Dr. Owen: Medical Out-patients. Mr. Gibb: Eye Department. 5 P.M., Lecture:—Mr. D. Armour: Physical Signs and Diagnosis of Abdominal Tumours.

THURSDAY.—10.30 A.M., Dr. Simson: Gynæcological Demonstration. 2 P.M., Mr. B. Harman: Eye Department. Mr. D. Armour: Operations. 5 P.M., Special Lecture:—Sir Archibald Garrod: The Interaction of the Glands of Internal Secretion (open to all medical practitioners).

FRIDAY.—10 A.M., Mr. D. Buxton: Dental Department. Dr. McDougal: Electrical Department. 2.30 P.M., Dr. Pritchard: Visit to Medical Wards. 5 P.M., Lecture:—Mr. Addison: Early Hip Disease.

SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Dr. Owen: Medical Out-patients.

Daily:—10 A.M. Ward Visits. 2 P.M., In-patient, Out-patient Clinics and Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Feb. 28th.—10 A.M., Mr. W. E. Tanner: Surgical Out-patients. 2 P.M., Dr. A. J. Whiting: Medical In-patients. 2.30 P.M., Mr. E. Gillespie: Surgical Operations. Mr. J. B. Banister: Gynæcological Out-patients. Dr. J. B. Alexander: Medical Out-patients. 4.30 P.M., Lecture:—Mr. J. B. Banister: Pyelitis in Pregnancy. 6 P.M., Dr. F. L. Provis and Mr. T. H. C. Benians: Venereal Department.

TUESDAY.—9.45 A.M., Lieut.-Col. R. H. Elliot and Mr. N. Fleming: Eye Operations. 2.30 P.M., Mr. H. W. Carson: Surgical Operations. Mr. C. H. Hayton: Diseases of the Throat, Nose, and Ear. Dr. Metcalfe: X Ray Department. 3 P.M., Clinical Demonstration:—Mr. J. Howell Evans: Selected Surgical Cases. 5.30 P.M., Dr. C. E. Sundell: Children In-patients.

WEDNESDAY.—2 P.M., Mr. C. H. Hayton: Throat Operations. 2.30 P.M., Dr. W. J. Oliver: Skin Department. Dr. J. B. Alexander: Medical Out-patients. 3 P.M., Clinical Demonstration:—Dr. W. J. Oliver: Cases of Skin Disease. 5 P.M., Dr. Provis and Mr. Benians: Venereal Department.

THURSDAY.—2.30 P.M., Mr. N. Fleming: Eye Out-patients. Dr. A. J. Whiting: Medical Out-patients. Mr. H. W. Carson: *Surgical Out-patients. Mr. J. B. Banister: Gynæcological* Operations. Dr. J. Metcalfe: X Ray Department. 3 P.M., Clinical Lecture:—Dr. F. L. Provis: The Modern Treatment of Syphilis.

FRIDAY.—2 P.M., Mr. Howell Evans: Surgical Operations. 2.30 P.M., Dr. C. E. Sundell: Children Out-patients. Mr. E. Gillespie: Surgical Out-patients. 3 P.M., Clinical Demonstration:—Mr. E. Gillespie: Selected Surgical Cases. 5 P.M., Dr. Provis and Mr. Benians: Venereal Department.

SATURDAY.—3 P.M., Mr. H. W. Carson: Surgical In-patients.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, W.C. 1.

MEDICAL SCHOOL.

MONDAY, Feb. 28th.—2 P.M., Out-patient Clinic: Dr. Collier. 3.30 P.M., Lecture:—Dr. Kinnier Wilson: Functional Nervous Disease and its Treatment.

TUESDAY, March 1st.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Mr. Armour: Cervical Ribs, *their Symptoms and Treatment.*

THURSDAY, March 3rd.—2 P.M., Out-patient Clinic: Dr. Farquhar Buzzard. 3.30 P.M., Lecture:—Dr. Gordon Holmes: Muscular Atrophies. (I.)

FRIDAY, March 4th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Dr. Tooth: Lecture Room. Demonstration of Cases.

Fee for Post-Graduate Course £7 7*s*. C. M. HINDS HOWELL, Dean.

MIDDLESEX HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON).

MONDAY, Feb. 28th, AND THURSDAY.—3 P.M., Emeritus Lectures:—Dr. W. McC. Wanklyn: The Future of the Medical Profession.

FRIDAY.—3 P.M., Sir Richard Douglas Powell: The Ætiology of Phthisis.

KING'S COLLEGE (DEPARTMENT OF SCIENCE), Strand.

Nine Lectures on Problems of Modern Science.

WEDNESDAY, March 2nd.—5.15 P.M., Lecture (VII.):—Dr. R. R. Gates: Botany.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, March 3rd.—4 P.M., Lecture:—Dr. A. M. H. Gray: Itching in Children. (Cases will be shown.)

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W.

MONDAY, Feb. 28th.—5.30 P.M., Post-Graduate Lecture:—Dr. R. O. Moon: Arterio-Sclerosis.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

THURSDAY, March 3rd.—6 P.M., Chesterfield Lecture:—Dr. W. Griffith: The Skin Eruptions of Syphilis.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

TUESDAY, March 1st.—3 P.M., Lecture:—Prof. A. Keith: Darwin's Theory of Man's Origin.

SATURDAY.—3 P.M., Lecture (I.): Sir Ernest Rutherford: Electricity and Matter.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

TUESDAY, March 1st.—4.30 P.M., Lecture:—Dr. C. H. Melland: The Significance of the Various Signs and Symptoms of Heart Disease.

SALFORD ROYAL HOSPITAL AND ANCOATS HOSPITAL POST-GRADUATE DEMONSTRATIONS, at the two Hospitals alternately.

THURSDAY, March 3rd.—4.30 P.M., Dr. Gibson: Seborrhœic Dermatitis. (At Salford Royal Hospital.)

ST. MARY'S HOSPITALS, MANCHESTER, POST-GRADUATE LECTURE, at Whitworth-street West Branch.

FRIDAY, March 4th.—4.30 P.M., Dr. Dougal: The Diagnosis and Treatment of Tumours complicating Labour, Pregnancy, and the Puerperium.

MANCHESTER BABIES' HOSPITAL.

Post-Graduate Lectures and Demonstrations in the Onward Buildings, Deansgate, or at the Hospital, Slade-lane.

SATURDAY, March 5th.—3.30 P.M., Dr. Hickling: Rickets. (At the Babies' Hospital.)

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Cmdr. A. F. Harper is placed on Retired List.

ROYAL ARMY MEDICAL CORPS.

Major T. H. Gibbon retains the temporary rank of Lieutenant-Colonel whilst specially employed.

C. B. Dyson (late Captain, Special Reserve) and R. T. G. Aickin (late temporary Captain) to be temporary Captains.

Temp. Capt. S. A. McClintock to be temporary Major whilst specially employed.

TERRITORIAL FORCE.

Lieut.-Cols. J. B. Berry (on account of ill-health) and P. R. Ash relinquish their commissions and retain the rank of Lieutenant-Colonel.

Surg.-Major R. L. Fitz-Gerald, from 5th Battalion, East Lancashire Regiment, to be Major.

Major N. Maclaren to be Lieutenant-Colonel and command 1st Western Casualty Clearing Station.

Capt. D. G. Rice-Oxley to be Lieutenant-Colonel and command 1st London (City of London) Field Ambulance.

Capts. W. Bowater, C. H. S. Redmond, and G. B. Gill to be Majors.

Capt. H. L. Garson (late R.A.M.C., S.R.) to be Captain.

BOOKS, ETC., RECEIVED.

ALLEN, GEORGE, AND UNWIN, LTD., London.

A Young Girl's Diary. Prefaced with a letter by Sigmund Freud. Translated by Eden and Cedar Paul. Pp. 272. 12*s*. 6*d*.

BAILLIÈRE, TINDALL, AND COX, London.

The Sphygmometer: Its Value in Practical Medicine. By W. Russell, M.D. Pp. 145. 7*s*. 6*d*.

BELL, G., AND SONS, London.

The Girl. By Katharine C. Dewar, M.A., Secretary of the Glasgow Council of Juvenile Organisations. Pp. 191. 6*s*.

First Course in General Science. By F. D. Barber, A.M., and Others. Pp. 608. 9*s*.

Introduction to Zoology, for Medical Students. By C. H. O'Donoghue, D.Sc. Pp. 501. 16*s*.

Dual Evolution: Being Outlines in a Theory which is Thought to Reconcile Idealism and Realism from the View-point of Humanism. By J. O'Callaghan. Pp. 259. 12*s*.

BLACK, A. AND C., LTD., London.

Manual of Medical Jurisprudence and Toxicology. By W. G. Aitchison Robertson, M.D. 4th ed. Pp. 414. 12*s*. 6*d*. net.

Manual of Public Health. By W. G. Aitchison Robertson, M.D. 4th ed. Pp. 260. 10*s*. 6*d*., net.

CHURCHILL, J. AND A., London.

Introduction to Qualitative Chemical Analysis. By Th. W. Fresenius. 17th ed. of the original work by C. R. Fresenius. Translated by C. A. Mitchell, F.I.C. Pp. 954. 35*s*.

JOURNAL OF COMPARATIVE LEGISLATION, Elm Court, Temple, London.

Death Certification. By Professor J. G. Glaister, M.D. Pp. 18. 2*s*.

KIMPTON, HENRY, London.

Psychopathology. By E. J. Kempf, M.D. Pp. 762. 63*s*.

LIPPINCOTT, J. B., COMPANY, London and Philadelphia.

Standard Method of Testing Juvenile Mentality by the Binet Scale and Porteus Scale of Performance. Tests by N. J. Melville, with Introduction by W. Healy, M.D. 2nd ed. Pp. 162. 12*s*. 6*d*.

A Manual of Veterinary Physiology. By Major-General Sir F. Smith, K.C.M.G., C.B. 5th ed. Pp. 892. 31*s*. 6*d*.

LIVINGSTONE, E. AND S., Edinburgh.

Anatomy of the Brain and Spinal Cord. By J. R. Whitaker, M.B. Lond. 5th ed. Pp. 262. 12*s*. 6*d*.

LONGMANS, GREEN, AND CO., London.

A Dictionary of Applied Chemistry. By Sir E. Thorpe, F.R.S. Revised and enlarged edition. Vol. I. Pp. 752 (A-Calcium). 60*s*.

MALOINE, A., ET FILS, Paris.

Traité de Pathologie Médicale et de Thérapeutique Appliquée. Publié sous la direction de Emile Sergent, L. Ribadeau-Dumas, et L. Babonneix.

Tuberculose. Vol. I. Pp. 379. Fr.20. Vol. II. Pp. 811. Fr.35.

UNWIN, T. FISHER, LTD., London.

The Islanders of the Pacific: or, The Children of the Sun. By Lieutenant-Colonel T. R. St.-Johnston, late District Commissioner of the Lau Islands, Fiji. Pp. 307. 25*s*.

URBAN AND SCHWARZENBERG, Berlin and Vienna.

Die specifische Percutanbehandlung der Tuberkulose mit dem Petruschkyschen Tuberkulinliniment. Von Dr. Felix Grobmann. Mit einem Geleitwort von Prof. Dr. J. Petruschky. Pp. 76. M.12.

WATKINS, J. M., London.

The Psychic Structures at the Goligher Circle. By W. J. Crawford, D.Sc. Pp. 151 and plates. 10*s*. 6*d*.

Notes, Short Comments, and Answers to Correspondents.

SIR ASTLEY COOPER.

Sir Charters Symonds's Hunterian Oration, which we published last week, recalls the fact that the place of honour in the first issue of THE LANCET, dated Oct. 5th, 1823, was occupied by a report of one of Sir Astley Cooper's surgical lectures given at St. Thomas's Hospital. A paragraph introductory to the report gives some idea of the surgeon's popularity.

> At half-past seven the theatre was crowded in every part by upwards of four hundred students of the most respectable description; in fact, we never before witnessed so genteel a surgical class; the sight was most pleasing, for they all appeared gentlemen of cultivated manners and good education.

Sir Astley Cooper was then at the height of his fame; his wealth, social position, and charm of manner were added to an unrivalled surgical reputation, the latter being the result of a good memory, a vast professional experience, and a singular power of inspiring confidence in patient and student alike. He was an indefatigable dissector, and his connexion with the resurrection men only served to increase his fame in the public eye—a fame, perhaps, unrivalled before or since. His attitude towards the publicity accorded to his work by the printing of his hospital lectures—a procedure then entirely without precedent—seems at first to have wavered between wounded dignity and well-founded professional pride; in the course of his first official reference to the matter he delivered himself to his students as follows:—

> Though I did not regard the publication of my lectures I felt myself disgraced and degraded by my name for ever appearing in the diurnal press. Not a paper could I see but my name flourished in it in some form or other. This looked so much like quackery, so much like puffing, that I am unable to describe to you how much it annoyed me. Although the publication of my lectures exposes me to the critical ordeal of my professional brethren, yet I fear it not; I care not who may be made acquainted with the doctrines I advance, the instructions I give, the principles I inculcate, while in this theatre. Therefore I am perfectly indifferent as to who publishes them, and equally indifferent as to who may be made acquainted with them.

He had previously moved for an injunction to restrain further publication, but arrived at a somewhat ingenuous agreement whereby his lectures continued to appear without mention of his name. This compact was loyally kept on both sides; in the welter of legal proceedings which followed the printing of lectures by some of his colleagues Sir Astley Cooper took no part, although as the struggle for simple publicity developed into an agitation for widespread reform his own name was frequently and not unjustly spoken in connexion with the charges of nepotism levelled against the administrators of the London hospitals.

The great surgeon was a man of wide sympathies. In his youth, and as a result of the influence of Henry Cline, he developed an interest in democratic principles, but abandoned this peculiarity before it interfered with his career. Another of his experimental interests was the care of animals; he bought lame or ill-fed horses cheaply in Smithfield and doctored them at his own farm, often with great success. He had considerable self-knowledge, but did himself injustice when he claimed to have been "a good anatomist, but never ...... a good operator where delicacy was required." He was not a genius; his works are not classics, being defective in references to the writings of others, but they bear witness to his great and abiding love for his profession. His statue by Baily stands near the southern entrance of St. Paul's Cathedral; an excellent portrait of him by Lawrence is in the Royal College of Surgeons of England; and the triennial prize of £300 further commemorates the name of one of the principal figures of British surgery.

COLONIAL HEALTH REPORTS.

Gibraltar.—The estimated civil population in the city and harbour on Dec. 31st, 1919, was 17,773, as compared with 19,586 at the census of 1911. The birth-rate in 1919 was 24·81 per 1000 and the death-rate 19·82. The number of patients admitted to the Colonial Hospital was 1499, and there were 74 deaths. The number of out-patients was 7403. 510 surgical operations were performed, the number of deaths after the operation (13) being unusually small. In the Small-pox Hospital—an isolated building outside the town—22 cases of small-pox and one case of typhus fever were treated during the year. There were four deaths from small-pox. A sum of £2100 was expended from Colonial Government funds on the Tuberculosis Relief and Destitute Sick Poor Scheme, which is administered by the Sanitary Commissioners. The attendance at the Tuberculosis Dispensary was, on the whole, poor, but some 500 visits were paid to patients in their own homes. Six families have been provided with free quarters in the Sanitary Commissioners' Home, and 22 destitute men and 6 destitute women suffering from tuberculosis or other diseases were accommodated and fed. The daily average number of inmates of the Lunatic Asylum was 29·29. The total rainfall in 1919 was 37·7 inches, as compared with 36·73 inches in 1918.

Malta.—The civil population on April 1st, 1920, was estimated at 224,859, an increase of 204 on the previous year. The birth-rate for 1919-20 was 31·69 per 1000 and the death-rate 20·39. These figures compare with an average birth-rate of 31·8 and death-rate of 22·89 per 1000 for the past 10 years. The death-rate among children under 12 months was 220·42 per 1000 births, as against 244·60 in the previous year. The death-rate of children under five years was 84·95 per 1000 of the population at that age, as compared with 107·06 in 1918-19. There were 2038 marriages, as compared with 1642 in the previous 12 months. The death-rate from notifiable infectious diseases fell from 6·28 in 1918-19 to 2·56 in 1919-20, and the general state of health in the Islands may be regarded as satisfactory. Rigorous sanitary measures have succeeded in preventing the introduction of dangerous contagious diseases, such as plague, typhus, &c., and small-pox infection whenever introduced has been effectively checked. Endemic fevers have been prevalent, but mortality has been moderate. There were 110 cases of malaria. In 90 of these the disease was contracted elsewhere. The remaining 20 occurred during September–November in one locality in the vicinity of the Salt Pans at Is-Salini, and there is reason to believe that the infection was of local origin. The symptoms were those of benign tertian fever. Measures to improve the drainage at this place were undertaken, and there was no recurrence of the disease during the year. 3722 persons were successfully vaccinated during the year. The number of patients admitted into the hospitals of Malta and Gozo in 1919-20 was 3882. In addition to these 133,030 persons were attended by the district medical officers at the Government dispensaries or at their own residences. In the Lunatic Asylum there were 776 patients on March 31st, 1920, and the number of deaths in the year ending that date was 40. The inmates of the Leper Hospital on March 31st, 1920, numbered 84. The highest temperature in the shade was 100° F. at Casal Lia on July 13th, 1919, and the lowest 38·0° at Casal Zeitun on Dec. 27th. The mean temperature for the year was 64·8°. The total mean rainfall for the period April, 1919, to March, 1920, was 15·30 inches, or 5·4 inches less than that of 1918-19.

EXCESSIVE MOISTURE IN MARGARINE.

A LARGE firm of margarine importers of London and Manchester were fined £50 and 10 guineas costs at Salford for importing margarine containing an excessive quantity of moisture. The analysis showed that the samples taken by the Customs and Excise authorities contained 16·8 and 16·7 per cent. of moisture respectively, whereas the Sale of Food Act, 1899, as amended by the Butter and Margarine Act, 1907, allows only up to 16 per cent. of moisture in margarine. The margarine was made in Holland in factories over which the defendant firm had no direct control.

POST-WAR INCIDENCE OF TYPHOID FEVER.

A COMMUNICATION made by Dr. A. Chauffard to the *Académie de Médecine* at its session on Jan. 18th last, and quoted this week by our Paris correspondent, gives striking evidence of the efficacy of antityphoid inoculation practised on such a large scale during the war. The figures in this communication were derived from the statistics of the admissions to the Saint-Antoine Hospital. The statistics for the pre-war period 1912–13 are compared with those for the years 1918, 1919, and 1920. In the first period 27·5 per cent. of the males admitted were under 20 years of age, 72·5 per cent. over that age. In the second period 90 per cent. were under the age of 20, and only 10 per cent. were over that age. A convenient control test is supplied by the admissions of females, who were naturally not affected by the war-time inoculations. In this case the rates were 19 and 81 for the first period, 24·5 and 75·5 for the second. The numbers dealt with (in all 21 men and 65 women) are unfortunately too small to make the observations conclusive, but they are sufficiently important to justify further research along the same lines, and should such research confirm these results a strong case will be made out for general prophylactic inoculation of the civil population.

Erratum.—For "tabloids of alucol" on p. 172, col. 1, THE LANCET, Jan. 22nd, 1921, read "*tablets* of alucol."

E. F.—Dr. Addison recently stated in the House of Commons that after full consideration the Government had decided not to ratify the Washington Maternity Convention of December, 1919.

LIBRAR

The Arris and Gale Lecture

ON THE

CAUSE AND PREVENTION OF MYOPIA.

Delivered before the Royal College of Surgeons of England on Feb. 16th,

BY F. W. EDRIDGE-GREEN, C.B.E., M.D. DURH., F.R.C.S. ENG.,

SPECIAL EXAMINER AND ADVISER TO THE BOARD OF TRADE ON COLOUR VISION AND EYESIGHT.

WE are only concerned here with acquired myopia, and not with that due to a congenital defect, in which the axis of the eye is longer than normal, or with that due to increased refraction of the media. These causes are very rare in comparison with the acquired defect, in which, through elongation of the eyeball, the antero-posterior axis is increased and myopia induced, because the images of external objects are formed in front of the retina, a concave lens being required to bring the images on the retina.

The point to be specially considered is the production of this elongation. The older authorities favoured the view that the convergence of the eyes for near work caused pressure upon the eyeball, and in some way its elongation.

> "A tendency to myopia is caused by prolonged reading and near work."[1]
>
> "While no one doubts that near work produces near sight, observers have not been able to agree as to how it does it."[2]

Opinion is now undergoing change.

> "The theory that myopia is due to close work, aggravated by town life and badly lighted rooms, is gradually giving ground before statistics."
>
> "Arnold Lawson showed 5 per cent. higher myopia in the better lighted and ventilated school of Aldenham and St. Jude's schools."[3]
>
> "We believe that myopia is neither originated nor increased by near work."[4]

Ernest Thompson[5] gives the following figures on the incidence of myopia in Lanarkshire: urban districts, 17 per cent.; rural districts, 20·5 per cent.; mining, agricultural, and manufacturing districts, 26 per cent.

Myopia and Close Work.

Now, do facts support the hypothesis of myopia being caused by close work? Quite apart from mechanical difficulties which the convergence hypothesis presents, we find that in convergence excess, as in convergent strabismus or internal squint, myopia is not produced, and convergent strabismus is almost exclusively found in hypermetropic eyes. The detailed examination of some thousands of cases of myopia fail to convince me that in a single case myopia had been either caused or increased by the use of the eyes for near work. The requirements of the late war brought before ophthalmic surgeons connected with medical boards numerous cases of defective vision in men who had never consulted anyone for it or attended an eye hospital.

The argument is freely used that as few of the labouring classes are seen to be wearing glasses, their sight must be better than those of the professional classes. This argument is a very fallacious one, as it does not follow that because a man does not wear glasses he does not require them. The same argument applies to women, many of whom, though short-sighted, refuse to wear glasses. There is a great prejudice against wearing glasses among the labouring classes; they will not wear them if they can possibly avoid doing so. A barrister will wear glasses for the correction of a trivial defect—as, for instance, 0·25 dioptre of myopic astigmatism, whereas a dock-labourer with very high myopia of −25 dioptres will not wear them, and does not even feel the need of them. Again, many children become myopic without having used their eyes particularly for near work, especially when very young. It is very doubtful whether the use of the eyes for near work has anything to do with the production of myopia, and certainly nothing has been definitely proved. Even when the selected occupations have been given—compositor, lithographer, &c.—it will be found that the myopia was not contracted in their occupations, but that the occupation was selected because of short sight.

Causes of Myopia.

1. *Predisposing causes.*—The most common cause of myopia given by many writers is heredity, myopic parents being liable to have myopic children. This is only equivalent to stating that like breeds like, no intimation of the hereditary defect being stated. This may be a special weakness of the sclerotic to give way under pressure or to become affected by certain diseases. Again, the anatomical arrangements for preventing the distension of the eye may be defective. Rayner Batten[6] is of opinion that myopia is associated with high arterial tension in the young.

2. *Exciting causes.*—The first directly exciting causes of myopia are certain diseases, as measles, whooping-cough, and bronchitis. Whilst whooping-cough and bronchitis may produce their effects by an intermittent increase of intra-ocular pressure, measles may do this through diseases of the respiratory passages, or it may be that in measles a specific action is exerted on the sclerotic causing it to soften. The influence of measles in causing myopia is very clear and definite, and accounts for a large number of cases of non-progressive myopia. A boy may be wicket-keeper at his school and find on his return to school after an attack of measles that he has to give up cricket, not being able to see the ball at all. Numerous myopic persons were asked when the myopia was first noticed, if any increase were noticed at any time, and the occupation before, during, and after the onset or increase of myopia. It was then found that the onset or increase of myopia was associated definitely with certain occupations—namely, those involving heavy lifting in a stooping position, particularly in those who appear to take no other exercise, as, for instance, carters, who have at intervals to carry heavy weights. A boy will state that he had no trouble with his eyes until after he had left school; but in his employment, where he had continually to lift heavy boxes, he began to get more and more short-sighted. Then he will complain of a feeling of great tension in the eyes and headache after much lifting. The ordinarily given causes of myopia cannot apply in a large number of cases, as, for instance, porters, carmen, and those who do not use their eyes for near work. Again, in many of those having a sedentary occupation the form of exercise selected will be found to be one which would act in the way described, namely, boxing, wrestling, cycling, rowing, or digging. Coughing also appears to be a potent cause. A boy will state that there was nothing wrong with his eyes until he had a very bad attack of bronchitis; immediately on returning to school the master noticed that he was short-sighted and sent him to a doctor to be examined, and he was found to be myopic.

When anyone tries to lift a heavy box which is at the limit of his strength he experiences a great feeling of tension in the eyes; the fact that the intra-ocular tension has risen can be ascertained by palpating the eyes with the fingers. There is also a feeling as if fluid had been forced back into the eyes. When the eyes are closed in the dark a succession of violet-coloured circles appear to proceed from the periphery to the centre of the field of vision, break up, and then disappear. This appears to be due to a circulation of fluid in the inter-retinal space, that is to say, the space between the external limiting membrane of the retina and the pigment cells, in which the free ends of the rods and cones are situated. When a strong effort is made in the manner already described not only is this flow arrested, but a wave appears to pass outwards from the centre to the periphery accompanied by points of light.

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[1] Jessop: Ophth. Surg. and Med., p. 434.

[2] Duane's translation of Fuchs, p. 765.

[3] American Encyclop. of Ophthal.

[4] Leader: Brit. Med. Jour., Sept. 27th, 1919, p. 420.

[5] British Journal of Ophthalmology, July, 1919.

[6] THE LANCET, 1891, i., pp. 980, 1035; Ophth. Rev., 1892, p. 1.

Mechanism in the Production of Myopia.

The eye is an organ which possesses only a slight degree of distensibility; it is kept distended by the intra-ocular pressure, which by the laws of hydrostatics is equal upon every part of the inner surface of the sclerotic and cornea. The elastic tension of the sclerotic is of great importance; only when the sclerotic is not strong enough to resist the internal pressure upon it does it stretch and produce myopia. The posterior portion of the sclerotic is a weak spot, just like the inguinal ring, which will give way on undue pressure. This is particularly likely to occur when the eye is soft and growing, but under great stress appears to occur at almost any age. The ophthalmic artery, a branch of the internal carotid, enters the orbit through the optic foramen, where it lies below and lateral to the optic nerve. Both the artery and vein of the retina pass to it through the optic nerve. The superior and inferior ophthalmic veins, either separately or united in one trunk, leave the orbit through the superior orbital fissure and empty into the cavernous sinus. The lymph passages of the eye are divided into anterior and posterior. The lymph of the anterior and posterior chambers enters Schlemm's canal, and through it the anterior ciliary veins, with which it is in direct communication. The posterior lymph passages are the hyaloid canal, which has its outlet in the lymph spaces of the optic nerve, and the perichoroidal space, which finds its outlet with the vessels that pass through the sclera, especially the venæ vorticosæ; there is also the inter-retinal space, where are situated the free ends of the rods and cones of the retina, which also communicates with the lymph spaces of the optic nerve.

Priestley Smith[7] states that very little lymph escaped by the posterior channels in his experiments, but as these were made on dead eyes there was cessation of activity in the very important inter-retinal and choroidal regions. The intra-ocular pressure varies with the arterial pressure, but Henderson and Starling[8] showed that there was a control mechanism of considerable efficiency for regulating the intra-ocular pressure. Whereas the arterial pressure varied between 70 and 180 mm. of mercury in the experiments which were made, the intra-ocular pressure only varied between 23 and 40 mm. Hill and Flack[9] find that the pressure of the aqueous fluid depends primarily on the secretion pressure. The secretory cells regulate its amount, the capillary venous pressure adjusts itself to the secretion pressure, needing to be, and being, only the least degree above it in order that the circulation may continue. Obstruction of the venous return raises the capillary-venous pressure and the pressure of the aqueous fluid rises equally with the capillary-venous pressure, the capillaries being supported by the counterbalancing pressure of the aqueous fluid. Rise of arterial pressure, if it raises the capillary-venous pressure in the eye, causes a corresponding rise of aqueous fluid pressure; here again the fluid pressure counterbalances that in the capillaries. If the aqueous pressure be raised by injecting fluid under a higher pressure into the eye the capillary-venous pressure rises *pari passu* until the arterial pressure is reached; the circulation then stops, the vessels being compressed.

If the aqueous fluid be allowed to escape and the belly be squeezed, the capillary-venous vessels in the iris burst and hæmorrhage takes place into the anterior chamber, because the aqueous pressure no longer counterbalances the capillary-venous pressure. Filtration of aqueous fluid does not occur, because the pressure of the aqueous and the capillary-venous pressure are practically the same. Hill has recently measured the normal capillary pressure and finds it to be about 1·3 cm. of water. It will be noticed that the intra-ocular pressure rises both when the arterial pressure is increased and when the capillary-venous pressure is increased. Whether the eye will stretch or not when both occur together depends upon the power of the sclerotic to resist the increased pressure. When this is sufficient, myopia will not be produced. Any supposed increase of pressure caused by the muscles of the eye in convergence is very trivial compared with that caused by lifting a heavy weight.

Detachment of the Retina.

The retina corresponds to a membrane in a hydrodynamic system; it is attached only at the optic nerve and ora serrata. The choroidal vessels, lymphatics, and veins, and the important inter-retinal space, are separated by it from the vitreous. When fluid is forced into the inter-retinal space or choroidal spaces, it will detach the retina if the anterior pressure be less than the posterior pressure, so that fluid can escape by the anterior outlets. If the anterior pressure be equal to the posterior pressure, then the retina will be supported, and the only part to stretch will be the sclerotic; myopia will thus be produced, if its elasticity be insufficient to enable it to regain its former position. It will be noticed on examining a myopic eye that the enlargement corresponds to the posterior portion behind the retina. The pressure in the arteries, veins, and capillaries is always higher than the intra-ocular pressure and any adjustment by the secretory cells (or by filtration, if that hypothesis be preferred) cannot be effected instantaneously.

Compression of the Eyeball during Effort.

We can take as typical of effort causing myopia the case of a man trying to lift a heavy weight from the ground. His breath is held and the veins of his neck are seen to stand out, showing the obstruction to the flow of blood to the heart; this obstruction is aided by gravity. The remarks of Bell[10] are interesting in this connexion. He states with regard to the protective action of the orbicularis:—

> "During every violent act of expiration, whether in hearty laughter, weeping, coughing, or sneezing, the eyeball is firmly compressed by the fibres of the orbicularis, and this is a provision for supporting and defending the vascular system of the interior of the eye from a retrograde impulse communicated to the blood in the veins at that time. When we contract the chest and expel the air there is retardation of the blood in the veins of the neck and head, and in the more powerful acts of expulsion the blood not only distends the vessels, but is even regurgitated into the minute branches. Were the eye not properly compressed at that time, and a resistance given to the shock, irreparable injury might be inflicted on the delicate textures of the interior of the eye. If we separate the eyelids of a child to examine the eye while it cries and struggles with passion, by taking off the natural support to the vascular system of the eye, and means of guarding it against the rush of blood then occurring, the conjunctiva becomes suddenly filled with blood and the eyelids everted."

Darwin[11] makes several allusions to these remarks by Bell, and expresses surprise at not finding that men closed their eyes when lifting heavy weights. As a matter of fact, many people do close their eyes when making a severe effort of this kind.

It will be noticed that in lifting or coughing the heart beats more quickly and the arterial pressure is raised, thus increasing the intra-ocular pressure; there is back pressure on the veins and lymphatic outlets, which also raises the intra-ocular pressure; the eye being situated between these two pressures, the resistance of the sclerotic is opposed to the resultant increased internal pressure. The conditions are quite different from those existing in glaucoma, where pressure is more or less constant; in coughing, on the other hand, the pressure is intermittent, and, as in lifting, the lamina cribrosa is supported by the fluid pressure in the lymphatic spaces in the optic nerve. In lifting, the primary cause of increase of pressure is circulatory, which is not the case in glaucoma. The obstruction to the posterior lymphatic channels appears to be the chief cause in the production of myopia.

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[7] Ophthalmic Review, July, 1888, p. 197.

[8] The Influence of Changes in the Intra-ocular Circulation on the Intra-ocular Pressure, Jour. of Phys., vol. xxxi., 5, 1904, p. 305. The Factors which Determine the Production of Intra-ocular Fluid, Proceedings Roy. Soc., B, vol. lxxvii., 1906, p. 294.

[9] The Relation Between Capillary Pressure and Secretion, Proceedings Roy. Soc., B, vol. lxxxv., 1912.

[10] Anatomy of Expression, 1847, p. 105.

[11] Expression of the Emotions, 1872.

Production of Myopia by Various Means.

The following case illustrates the production of myopia: A man staying at a farm had to help to hold a bull which had become wild, and he had to exert his strength to the utmost; he ruptured himself, became myopic to a low degree and blind in one eye through detachment of the retina in the one afternoon; he stated that he had previously very good sight. Though such a disastrous result is fortunately very rare, this case admirably illustrates the causation of myopia, and had the increase been very slight might easily have passed unnoticed.

When it is considered that an increase of 1 mm. in the antero-posterior axis of the eye corresponds to three dioptres of myopia, it will be seen that very little stretching is necessary in order to produce a perceptible amount of myopia. Numerous cases could be given of myopia and detachment of the retina through whooping-cough. A young musician with low myopia, in indifferent health, was advised to take a rest and spend a year on a farm. He found that digging caused him great pain in the eyes, headache, and bleeding at the nose. His myopia rapidly increased, although he had no previous discomfort with his eyes in musical work.

Prevention of Myopia.

The recommendations which have been made by ophthalmic surgeons—namely, to avoid reading and writing in a stooping position, good lighting, ventilation, and other hygienic conditions—are advisable, but they do not seem to produce much effect in the prevention of myopia. Many myopes have the strongest objection to reading or writing in a stooping position. In diseases which produce myopia, such as measles and whooping-cough, special care should be taken of the eyes, particularly in those with a hereditary tendency to myopia. In measles the light should be arranged so that the child does not point its eyes downwards, and the head should be raised as much as possible. During convalescence exercises should be carefully regulated; those forms which raise intra-ocular pressure, particularly when associated with back pressure, should be avoided. It is probable that the sclerotic, like other parts of the body, can be strengthened by suitable exercises.

In the training of children in whom the eye is growing, when the coats of the eye are much softer than in the adult, those exercises which cause pressure and lead to myopia should be avoided. For instance, that exercise in which the child is prone and raises itself up and down on its hands, with its eyes pointing downwards, should be abolished. The student who takes his exercise very intermittently should particularly avoid those forms which produce increased tension in the eye, such, for instance, as riding up steep hills and bending forward when cycling, using dumb-bells and lifting heavy weights. If a rapid increase in the myopia in a short-sighted person is coincident with his cycling, the latter activity had better be given up.

Any occupation which involves heavy lifting is not suitable for a myopic. It is particularly in those who have sedentary occupations, who are not in fit physical condition, and who have a hereditary tendency to myopia, that these forms of exercise should be avoided. Careful regulation of exercises, especially in the debilitated, is necessary. There are exercises very easy for some children which can only be accomplished with great strain by others. If, for instance, a child can only with the greatest difficulty and pain in the abdomen raise itself on a bar, that exercise should be forbidden it. Exercises found to cause a feeling of pain and tension in the eyes in the child or adult should be strictly forbidden.

In conclusion, all exercises should be performed as far as possible in the erect position, with the eyes pointing forwards. The ordinary games and sports, like cricket, tennis, running, and archery, are beneficial, and do not cause myopia. Standing erect and swinging light Indian clubs is a very useful form of exercise for people with sedentary occupations. Boxing is not suitable for them; many boxers develop myopia. In myopic children special exercises can be devised so that every muscle may be developed without causing an increase in the myopia.

SOME
SEQUELS OF CONGENITAL SYPHILIS.*

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IN opening a discussion on the diagnosis and treatment of congenital syphilis the ground to be covered is so wide that my remarks must be confined almost entirely to diagnosis, and further, omitting any reference to the more familiar manifestations, I would suggest the following points for your consideration:—

(A) The limits of the Wassermann reaction as a means of diagnosis.

(B) The influence of congenital syphilis (1) in favouring the onset of other infections; (2) in leading to changes in the endocrine glands and so indirectly to syndromes which are not necessarily specific; (3) in relation to diseases or syndromes which are not generally regarded as due to syphilis and are not obviously secondary to lesions of the endocrine glands.

(A) *The Limits of the Wassermann Reaction as a Means of Diagnosis.*

The Wassermann reaction is of course of the greatest importance in the diagnosis of congenital syphilis. McIntosh and Fildes[1] point out that a positive reaction at birth does not certainly imply the presence of syphilis, since, according to Boas, the reacting substance may have passed from the mother to the child in utero; otherwise, with certain exceptions, which hardly come into practical politics, a positive Wassermann reaction indicates the presence of living spirochætes and the need for antisyphilitic treatment. But the converse does not hold good, for the exceptions are both more numerous and real, and the practical question is in what circumstances should we hesitate to accept a negative Wassermann reaction as evidence that syphilitic infection is absent and that antiluetic treatment is entirely unnecessary? In the first place, it will be remembered that the Wassermann reaction may be negative for some weeks in a new-born infant and then become positive, just as in acquired syphilis the reaction does not become positive until about six weeks after infection. In the second place, the reaction tends to become negative about puberty, and the disappearance of a positive reaction does not mean that the patient's body is free from spirochætes; Warthin[2] has proved that spirochætes are present in a considerable proportion of patients with a negative Wassermann reaction during life, and believes that many of these are congenital in origin. At the Bellevue Hospital, New York, Symmers, Darlington, and Bittman[3] found that the Wassermann reaction was negative in 31 to 56 per cent., according to the antigen employed, of cases showing characteristic syphilitic lesion at necropsy; many of these, however, may have been obsolete. To determine in a given case whether a negative Wassermann reaction means that the infection has entirely died out or is merely latent and not causing the production of antibodies, a provocative injection of neo-salvarsan is often appealed to; and a point on which further information and discussion may be welcomed is how far this test, when the reaction becomes positive, should be relied on. Is the dose of salvarsan truly provocative, or is the interpretation of a latent Wassermann reaction in some way erroneous? The observations of Strickler, Musson, and Sidlick,[4] that intravenous injections of salvarsan into non-syphilitic patients with a previously negative Wassermann reaction are followed in more than half the cases by a positive reaction, suggest that there may be a fallacy in the conception of the provocative dose.

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* Being introductory to a discussion on the Diagnosis and Treatment of Congenital Syphilis at a meeting of the Section for the Study of Disease in Children, Royal Society of Medicine, on Feb. 25th, 1921.

[1] McIntosh and Fildes: Syphilis from the Modern Standpoint, p. 141, 1911.

[2] Warthin, A. S.: Amer. Jour. Med. Sc., Phila, 1916, cliii., 503.

[3] D. Symmers, C. G. Darlington, and H. Bittman: Jour. Amer. Med. Assoc., Chicago, 1918, lxx., 279.

[4] Strickler, Musson, and Sidlick: Jour. Amer. Med. Assoc., 1920, lxxv., 1488.

Syphilitic infection after severely damaging an organ may die down or out, and although its past effects are obvious it is no longer the active factor, for the symptoms depend on changes which are now more or less stationary. In such cases if the Wassermann reaction is negative, it might be logically argued that antisyphilitic treatment is unnecessary, therapeutic measures being needed to counteract the effect of the lesions originally due to syphilis but now responsible for the dystrophies. The conditions thus referred to are insufficiency of the glands of internal secretion and of the blood-forming organs. But is a negative Wassermann reaction of the blood to be regarded as final evidence that antisyphilitic treatment is quite unnecessary and that the possibility of further activity of spirochætes, possibly in the endocrine glands already affected, can be ignored? There are cases with the stigmata of congenital syphilis and a negative Wassermann reaction in which dystrophies and other lesions are cured by antisyphilitic treatment.

In an article on congenital syphilis in orthopædic clinics Roberts[5] records 226 cases of very various kinds, especially arthritis simulating tuberculous infection, all of which presented some evidence of congenital syphilis and responded to antisyphilitic treatment. The Wassermann reaction, however, was carried out in only 47 of the bone and joint cases, but negative results were obtained in cases with a positive family history and in some which recovered under mercury and iodide of potassium.

It therefore appears that at the present time it is impossible to accept as absolute the proposition that in the presence of syphilitic stigmata a negative blood Wassermann eliminates the possibility of existing syphilitic infection.

It is, of course, well recognised that in cerebro-spinal syphilis the Wassermann though positive in the cerebro-spinal fluid may be negative in the blood; it may be mentioned here that from examination of 214 infants and children with congenital syphilis Jeans[6] has shown that the cerebro-spinal fluid shows evidence of infection of the central nervous system in 33 per cent., or as frequently as in acquired syphilis; but in only one instance was the Wassermann reaction positive in the cerebro-spinal fluid and negative in the blood. It would be interesting to have further information about the Wassermann reaction in the cerebro-spinal fluid, as well as in the blood in cases of syphilitic disease of the pituitary. It seems reasonable to believe that syphilis of this intracranial endocrine gland might be associated with a positive reaction in the cerebro-spinal fluid and a negative reaction in the blood, and that the syphilitic origin of some cases of pituitary dystrophies, such as Fröhlich's adiposo-genital syndrome, some forms of obesity, gigantism, and diabetes insipidus, may be missed if the blood Wassermann only is investigated.

In dystrophies which may be due, in a secondary and delayed manner, to the effects of syphilis, but may equally be a legacy from the influence of other infections, on the pituitary, thyroid, testes, or other endocrine glands, the presence of a positive Wassermann reaction in the blood would be a very definite indication for antisyphilitic treatment, though it should not put into the background the obvious need for pituitary, thyroid, or some other or combined form of endocrine medication in addition. And in the absence of a positive blood Wassermann reaction the presence of stigmata of congenital syphilis should point to the advisability of antisyphilitic treatment, as was the custom in the pre-Wassermann days. But when there is an absence of these stigmata and the Wassermann reaction in the blood is negative, even after a provocative dose, does this mean that the participation of syphilis can always be so absolutely ruled out that antiluetic treatment is as unnecessary as it might appear to be illogical? Or is it better to take the view that in the absence of any evidence from the history or from physical examination of a past infection of another kind, such as severe enteric, measles, or scarlet fever, antisyphilitic treatment should be tried both with the object of benefiting the patient and as a therapeutic test to determine whether or not syphilis is in some degree responsible for the dystrophy. But it should be borne in mind that this appeal to the therapeutic test is not devoid of fallacy, for quite apart from their antisyphilitic effect the drugs may improve the patient's condition; iodides stimulate the thyroid, and so would counteract hypothyroidism however induced, and arsenic is a powerful tonic, especially to the blood-forming organs.

(B) *The Influence of Syphilis.*

(1) *Congenital syphilis as a disposing factor to other infections.*—It is important to bear this factor in mind, for otherwise in making a diagnosis the exciting cause —for example, a streptococcic or pneumococcic infection—when established may entirely put into the shade the disposing factor of congenital syphilis. An acute infection falling on a liver with the unicellular cirrhosis of congenital syphilis may imitate acute yellow atrophy. Hæmorrhagic disease of new-born infants may probably be due to several infections, and as the treatment by adrenalin is often beneficial, and as the adrenals are usually severely affected in these cases, it is not improbable that there is an acute infective adrenal insufficiency. Infants with congenital syphilis may be attacked—the term syphilis hæmorrhagica neonatorum has indeed been employed—and the adrenals are very frequently—next after the liver, it is stated—invaded by the spirochæte in congenital syphilis. Hence syphilis may reasonably be regarded as a disposing factor. But from its rarity hæmorrhagic disease of the new-born would appear to require some factor other than congenital syphilis, and it seems probable that this is bacterial infection for which the spirochætal invasion prepares the way. It is not, however, suggested that congenital syphilis usually underlies hæmorrhagic disease of the new-born.

Syphilis, by reducing resistance, paves the way to secondary infections of a chronic character, and so renders the treatment of the resulting disease more complex. Tuberculosis of lymphatic glands in a syphilitic subject may thus be explained, and perhaps also by the additional factor of hypothyroidism of syphilitic origin. Cases of this mixed infection have possibly often been unconsciously benefited by the old-fashioned application of tincture of iodine. The combination of pulmonary tuberculosis and syphilis concerns the acquired much more than the inherited disease.

(2) *The influence of syphilis in leading to lesions of the endocrine glands, and so indirectly to syndromes which are not necessarily specific.*—Opinion as to the importance of endocrine infections in the malnutrition, infantilism, and senilism seen in congenital syphilis is gaining ground. It would, indeed, be remarkable if the ductless glands escaped syphilisation. In most instances several of them are probably affected, and it must be remembered that when one endocrine gland is damaged the others tend to undergo change, and in the presence of a polyglandular insufficiency an exact diagnosis becomes more difficult. The adrenals, pituitary, and testes are the endocrine glands most often structurally damaged in congenital syphilis. Addison's disease, however, is very rarely thus caused; though no doubt minor degrees of adrenal insufficiency, or Addisonism as the French call it, as shown by want of vigour and muscular power, low blood pressure, and some pigmentation of the skin, would be not uncommonly noted if specially looked for. The pituitary, which may be invaded by continuity in syphilitic meningitis as well as by hæmic infection, appears to be more often affected in congenital than in acquired syphilis. Fröhlich's adiposo-genital dystrophy, adiposity, diabetes insipidus, and infantilism, may thus be explained: further, it may be pointed out that at a meeting of this section some four years ago Dr. F. Langmead[7] quoted three recent examples of pituitary insufficiency in congenital syphilis. Hypopituitarism probably also plays

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[5] Roberts: Amer. Jour. Syphilis, 1919, iii., 557.

[6] Jeans, P. C.: Amer. Jour. Child. Dis., Chicago, 1919, xviii., 173.

[7] Langmead: Proc. Roy. Soc. Med., 1916–17, x. (Child. sect.), 25.

a part in a number of polyglandular syndromes; but the pituitary is only one of the endocrine glands deficiency of which is concerned with the causation of infantilism.

The condition of the testes in congenital syphilis has recently been investigated by Sir Frederick Mott,[8] who strongly suggests that not only may they be invaded by the spironeme but that chronic spirochætal intoxication may depress their vital energy. Infantilism is common in congenital syphilis, may be associated with juvenile general paralysis of the insane, and is correlated with the disappearance of the interstitial cells of the testes. The thyroid is not so often attacked by congenital syphilis as is the pituitary, and myxœdema is rare in children with congenital syphilis. Slighter degrees of thyroid insufficiency are not so uncommon. In a few instances exophthalmic goitre has been ascribed to disordered thyroid activity caused by congenital syphilis —for example, Hutinel and Stévenin[9] refer to a case improved by injections of perchloride of mercury and adrenalin.

The group of cases of *diabetes insipidus associated with infantilism* may well be regarded as a polyglandular syndrome, the diabetes insipidus being due to insufficiency of the pars intermedia and posterior lobe of the pituitary, and the infantilism either to the same lesion or to damage done to the interstitial cells of the testis, or possibly to implication of other endocrine glands. The occurrence of diabetes insipidus as a result of syphilis is well known, and its improvement after antisyphilitic treatment has been recorded (Schulmann and Desoutter[10]). It would be interesting to know what proportion of the cases of pluriglandular insufficiency causing diabetes insipidus and infantilism are due to congenital syphilis. As Parkes Weber[11] points out, two groups of polyuria in children may be recognised, viz.: (1) diabetes insipidus (without renal disease) associated with infantilism, which is less rare than (2) polyuria due to chronic interstitial nephritis with some degree of infantilism (more recently called renal dwarfism).

Obesity of endocrine origin is a complicated problem, for it may be associated with insufficiency of several individual glands or be pluriglandular in origin. Fröhlich's adiposo-genital dystrophy has been referred to as a manifestation of hypopituitarism, thyroid obesity is familiar, and so also is that due to insufficiency of the genital glands. Cushing[12] in 1912 considered the hypopituitary form to be the most frequent. These insufficiencies may be due to various factors, and among the infections congenital syphilis must be remembered. Lipodystrophic progressiva is thought to be an endocrine affection (F. P. Weber[13]), but except that thyroid medication has proved unsuccessful, and that it mainly attacks females, there does not appear to be any evidence as to the glands involved. In the 21 cases quoted by Parkes Weber the Wassermann reaction is mentioned in one instance only, in the daughter of a syphilitic father, and then was negative.

Another problem of even greater difficulty is how far, if at all, by impairing the activity of those endocrine glands—the pituitary, thyroid, parathyroid, and the thymus—that influence skeletal growth, congenital syphilis may be responsible for certain obscure diseases of bone, such as achondroplasia, osteogenesis imperfecta, oxycephaly, and cleido-cranial dysostosis. For in the first place there is but little proof that in these diseases the skeletal changes depend on endocrine disorder, though Baumel and Margarot[14] suggested that the first two are due to partial insufficiency of the anterior lobe of the pituitary; and in the second place the association of these diseases with congenital syphilis has been very seldom noted. Although the pancreas may show a diffuse syphilitic infiltration in congenital syphilis, it is remarkable that diabetes mellitus is extremely seldom, if ever, established as a sequel. It is true that the islands of Langerhans are not involved, but it would not have been surprising had they subsequently become affected. It has been urged by Hutinel that endocrine disorders due to syphilis in one generation may lead to dystrophies in the next generation, but in this event it would appear that syphilitic infection is not necessarily transmitted as well, and antisyphilitic treatment is therefore not required.

(3) *The influence of congenital syphilis in relation to various deseases which are not generally regarded as due to syphilis, and are not obviously due to lesions of the endocrine glands.*—The consideration of the diseases in this group chiefly bears on the estimation of the wide influence of syphilis and the need for early and preventive treatment, for though antisyphilitic treatment of the conditions when established may prevent further progress, a cure is beyond expectation.

Chronic interstitial nephritis in early life.—In pre-Wassermann days this condition was thought to be more closely related to congenital syphilis than it is now, though it was never regarded as solely due to this cause. Guthrie[15] (1897), Payne[16] (1900), and Sawyer[17] (1906), all supported the view that congenital syphilis was a cause of chronic interstitial nephritis. Nettleship[18] pointed out that both interstitial keratitis and chronic interstitial nephritis were commoner in girls than in boys, whereas taking 130 cases of chronic parenchymatous nephritis under the age of 13 years the incidence in boys (54 per cent.) was only slightly higher than in girls (46 per cent.); he therefore raised the question whether the female excess of chronic interstitial nephritis could be due to a larger number of girls born with syphilis. There are several ways in which congenital syphilis might be thought to lead to chronic interstitial nephritis: (*a*) The diffuse small-celled infiltration might either advance to fibrosis or while disappearing leave behind a diminished resistance which, as in the case of the liver, would enable other factors to act at a great advantage in inducing interstitial change. (*b*) The widespread arterial change due to congenital syphilis, which in extreme cases may obliterate the pulse in the limbs, might produce an arterio-sclerotic kidney. (*c*) Indirectly, by damaging the thyroid and possibly other glands of internal secretion, congenital syphilis might, after it had died out so that the Wassermann reaction had become negative, cause so much metabolic disturbance as to lead to chronic interstitial nephritis. This is perhaps rather a vague and speculative pathology, but it seems to have a bearing on the cases of renal infantilism or dwarfism associated with bony changes, described by Morley Fletcher,[19] Miller,[20] Parsons,[21] Barber,[22] D. H. Paterson,[23] and others. In these cases the Wassermann reaction in the blood was negative and so syphilis could not logically be incriminated; it is, however, possible that in some instances it may indirectly, as suggested above, have been the starting point of the renal and bone lesions, mainly through its effects on the thyroid, parathyroids, and pituitary, and of the infantilism, partly at any rate, by changes in the interstitial cells of the testes.

If there is any reason to regard a case of renal disease as syphilitic, mercurial treatment should, if employed at all, be very carefully watched, as it is often badly borne; it is indeed recommended that salvarsan preparations should be used instead.

Multilobular or *portal cirrhosis* in young children may no doubt be due to various causes other than syphilis. In the familial disease progressive lenticular degeneration S. A. K. Wilson rejected syphilis, though Homén and Yokoyama and Fischer took the opposite view. Other cases may be due to the poisons of infectious diseases, or to dietetic errors or precocious alcoholism. There certainly are cases of children with stigmata of congenital syphilis whose livers show ordinary portal cirrhosis, and in these the view may be taken that the diffuse intercellular cirrhosis has disappeared, but left behind it some vulnerability or diminished resistance of the liver, so that factors causing cirrhosis will readily produce this effect. In other words, that the cirrhosis is parasyphilitic in the sense that tabes and general paralysis of the insane were thought to be until they were shown to be due to the presence of spirochætes and examples of parenchymatous syphilis. I do not know of any demonstration of the *Spirochæta pallida* in the liver of portal cirrhosis in children, and the question arises whether or not in the absence of a positive Wassermann reaction in the blood anti-syphilitic treatment is advisable. There are two minor arguments in favour of adopting this course (1) since the advent of the Wassermann reaction the high incidence of a positive result in the cirrhosis of adults has suggested that ordinary portal cirrhosis may be a result of syphilitic infection (Symmers,[24] Letulle); and (2) that in the past a number of cases regarded as cirrhosis have recovered after antisyphilitic treatment; although this result is often regarded as evidence that the diagnosis of cirrhosis was wrong and that there really was gummatous disease of the liver, it is possible that the treatment arrested the progress of a true syphilitic portal cirrhosis. Hanot's hypertrophic biliary cirrhosis is so rare that its existence, apart from aberrant forms of portal cirrhosis, has aroused a good deal of criticism. Congenital syphilitic disease of the liver and spleen can undoubtedly imitate its clinical manifestations, but a question for discussion is whether by symbiosis or merely by weakening the vital resistance congenital syphilis may be responsible for some of the cases.

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[9] Hutinel et Stévenin: Arch. des mal. des enf., Paris, 1920, xxiii., 150.

[10] Schulmann et Desoutter: Rev. de méd., Paris, 1920, xxxvii., 441.

[11] Weber, F. P.: Brit. Jour. Child. Dis., 1912, ix., 211.

[12] Cushing: The Pituitary Body and its Disorders, p. 258, 1912.

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[14] Baumel et Margarot: Nouv. iconogr. de la Salpêt., Paris, 1918, xxvi., 202.

[15] Guthrie, L. G.: THE LANCET, 1897, i., 585.

[16] Payne, J. F.: Trans. Path. Soc., London, 1900, li., 306.

[17] Sawyer, J. F. H.: St. Thomas's Hosp. Rep., 1906, N.S. xxxv., 459.

[18] Nettleship, E.: Rep. Roy. Lond. Ophth. Hosp., 1906, xvi., 1.

[19] Morley Fletcher: Proc. Roy. Soc. Med., 1911 (Sect. Dis. Child.), iv., 95.

[20] Miller, R. H.: Proc. Roy. Soc. Med., 1912 (Sect. Dis. Child.), v., 28.

[21] Parsons, L.: Brit. Med. Jour., 1911, ii., 431.

[22] Barber, H.: THE LANCET, 1914, i., 142; 1920, i., 18.

[23] Paterson, D. H.: Proc. Roy. Soc. Med., 1920, xiii. (Sect. Dis. Child.), 107.

Chronic peritonitis.—Just as Letulle[25] brings forward evidence, mainly from a positive Wassermann reaction, that chronic peritonitis is frequently due to acquired syphilis, so Castex and Dell Valle[26] argue that chronic pericolitis with adhesions and peri-enteritis causing chronic abdominal symptoms or the condition described by Lane, Jackson, and Wilms is a late result of congenital syphilis, and they report cases responding to antisyphilitic treatment mainly by mercury. The pathogeny is described as complex and due to several factors; there may be defects in the intestinal walls developmental and due to endocrine glands, especially the thyroid, and in addition the adrenals damaged by syphilis, and further, the endocrine defects may through the nervous system cause intestinal stasis and so colitis and pericolitis. Chronic perivisceritis was previously regarded by the French school as syphilitic.

Anæmia.—By its effect on the blood-forming organs, in addition to its apparently hæmolytic influence, syphilis is a potent cause of anæmia in early life, and probably many forms may thus be produced. Syphilis, however, should be regarded as one only of the factors in infantile anæmia and not as an exclusive cause of any one form. Hutinel and Stévenin regard von Jaksch's anæmia pseudo-leukæmica infantum as usually, if not entirely, due to congenital syphilis, but this view would appear to be extreme. In a few cases congenital hæmolytic jaundice is associated with syphilis, and a causal relation is suggested by the known association of paroxysmal hæmoglobinuria and syphilis.

Mitral stenosis has been thought to be a malformation due to the influence of congenital syphilis, but it might also be argued that it is due to chronic endocarditis comparable to the obliterating endarteritis sometimes seen to an extreme degree in late congenital syphilis. Cowan and Fleming[27] have made out a good case for the syphilitic origin of, at any rate, some examples of combined mitral stenosis and granular kidneys. Queyrat[28] describes absence of the xiphoid appendix of the sternum as a sign of congenital syphilis and notes its frequent association with pure mitral stenosis.

Rickets.—Parrot's view that rickets is entirely due to congenital syphilis has never been accepted in this country, and at the present time is particularly, in the light of work on vitamines, unlikely to receive support; but in France it has been sustained with modifications. A. Fournier regarded rickets as a parasyphilitic affection and disposed to by syphilis, and Marfan considers that syphilis is a factor but not an exclusive factor, and gives the following characteristics of syphilitic rickets: (1) onset within four months of birth; (2) prominence of the cranial lesions, craniotabes, natiform skull, dilated veins; (3) well-marked anæmia; (4) chronic splenic enlargement. Hutinel and Stévenin associate severe rickets accompanied by anæmia with syphilis, and bring in endocrine affections as the connecting link between congenital syphilis and rickets. Thus, syphilis, by its influence on the endocrine glands and the viscera, modifies nutrition, damages the skeleton, and sensitises the bones to the true exciting factors of rickets.

Congenital malformations may occur in the subjects of congenital syphilis, and the question arises how far the intra-uterine activity of congenital syphilis is a cause of these defects. That it is not an exclusive cause everyone would agree, but it is possible that in this country the causal factor of congenital syphilis has been underestimated. Edmond Fournier[29] describes a large number of malformations in congenital syphilis.

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[25] Letulle: Presse méd., Paris, 1918, 477.

[26] Castex and Del Valle: Surg., Gyn., and Obst., 1920, xxxi., 160.

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[28] Queyrat: Bull. et mém. Soc. méd. des hôp. de Par., 1919, 3e sér., xliii., 1015.

[29] Fournier, E.: L'Hérédo-syphilis tardive, 1907.

NUTRITION IN VIENNA:

A STUDY OF THE FOOD-SUPPLY AND STATE OF NUTRITION OF THE WORKING CLASSES IN VIENNA.

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AND
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EVERYONE is aware that since the later years of the war the food-supply of Vienna has been inadequate for the population, and that the lower and middle classes are suffering from under-nutrition. But so far no attempt has been made to estimate the extent of this under-nutrition. Probably the most satisfactory method is to determine the energy value of the diets of various classes and to correlate this with the rate of growth of children. The present paper is an attempt to do this as regards the working classes.

It has been found, by definite measurements, that every individual expends daily a certain amount of energy in carrying on the vital processes essential to the continuance of life. In the case of a man at rest in bed, this is equivalent to about 1700 calories per day. This is his basal metabolism. Benedict has shown that in conditions of under-nutrition it may be decreased some 30 per cent., and it may, therefore, be possible for life to be maintained by a resting man on some 1200 calories per day. The performance of any muscular work, even that of sitting in a chair for, say, 16 hours, increases the expenditure of energy roughly to 2200 calories, while for 8 hours in bed, 14 hours in a chair, and 2 hours of moderate exercise an expenditure of 2500 calories is required—about 800 above the basal metabolism. In the child energy is also required for growth. The requirements for basal metabolism and for growth are fairly constant for any particular age, but those for muscular work vary enormously, depending upon the activity of the individual and upon the work done.

In the child more energy is required per unit of weight than in the adult, but the smaller size of body demands less total expenditure; and it is possible to express the energy expenditure of children of different ages in fractions of those of a man of normal size. The requirements of a family or community may thus be stated as those of so many men. The energy required is supplied in the food, and its energy value may be determined by the calorimeter. The gross energy of the food is not all available, some 10 per cent. being lost in the process of digestion; so that the supply in the food eaten should exceed the net requirements by this amount. It is generally accepted that the energy allowance of family diets should be equivalent to 3000 calories per man per day, and among the labouring classes in this country such a supply is generally obtained.

Method of Investigation.

To undertake the present investigation one of us (M. G.) was seconded from her work in Glasgow under the Medical Research Council, and, through the kindness of the Friends' Relief Mission, was enabled to make a detailed study of the diets of 49 families of the poorer classes in Vienna. These included 253 individuals —49 men, 65 women, and 139 children under 14 years. These studies were carried out by the methods devised by Atwater, used extensively in America, and employed in this country for the study of the dietaries of the labouring classes in Edinburgh and Glasgow. A description of the method will be found in Professor Noel Paton's Introduction to Miss Lindsay's Report on the Food of the Glasgow Labouring Classes in 1911. One of us (M. F.) is responsible for working up the results so obtained; the other (M. G.), in making the investigations, also weighed and measured the children in nearly every family, and usually ascertained the heights of the parents.

Owing to the prevalence of rickets in Vienna, the opportunity presented itself for making comparative studies of the diets of families containing children suffering from this disease, and of those with children free from the condition.

The points dealt with are: (1) the energy intake of the diet; (2) the height and weight of the children; (3) the income and expenditure upon food; (4) the composition of the diets—i.e., the actual foodstuffs used; (5) the nature and extent of the Mission help; and (6) rickets—a comparison of the two sets of dietaries.

1. *Energy Intake of the Diet.*

In determining the energy value of the food eaten Atwater's analyses were generally used. For meat the analyses of lean or "very lean" meats were selected. The results in all probability are too high, since the cattle are very emaciated, and the flour, milled to a high grade, is of bad quality. Lusk's coefficients were used in calculating the "man-value" of the families as follows:—

Man	1·0	Child, 10-13...	0·83
Woman	0·83	Child, 6-10...	0·6
Boys, 13-20	1·0	Child under 6	0·5
Girls, 13-20	0·83		

Using these coefficients the average dietary yield expressed as per man per day of all the families was:—

Energy	2064 calories.
Protein—(a) total...	64·0 g.
" (b) from animal sources	5·3 g.
Fat	40·2 g.

Since margarine was the chief source of fat it is impossible to give the amounts of fat from animal and vegetable sources. The above dietary yield is equivalent to a supply of *available* energy of about 1860 calories, an amount insufficient to meet the energy requirements of a man doing practically no muscular work, even upon the reduced basal metabolism of under-nutrition.

The variations are naturally very great alike in energy value, in proteins, and in fat. The energy value varies from 1269 to 3746 calories, or, leaving out two diets which are more than 600 calories greater than the others, from 1269 to 2941 calories; the protein intake from 38·7 to 114·7 g., and the fat intake from 12·4 to 79·6 g. per man per day. The most generous diet is that procured by a German family. It is more varied than any of the others, including fresh milk, pork, and sugar, in addition to the usual bread, vegetables, cocoa, and margarine. The other dietary over 3000 calories is made up of few foodstuffs, but these in generous amounts. Of the family having the lowest diet little information is available, but both parents are described as careless, lazy, and very undernourished. The only child (2½ years) is very deformed by rickets and not yet walking. As most of the fat consumed comes from relief agencies the extremes of fat intake show that unusually large or unusually small amounts of margarine had been received from them. The family having only 12·4 g. of fat per man per day had received only one Mission ration, among a family of five, while the family having 79·6 g. per man per day had three rations for two persons, and the amount is quite exceptionally high.

The detailed information regarding energy intake, &c., is contained in Table I.:—

TABLE I.—*Investigation of Working-class Families in Vienna*
Calculated as per man per day.

A.—WITH RICKETS.

No.	Persons in family. Adult. M.	Persons in family. Adult. F.	Persons in family. Under 14.	Father's occupation.	Income in kronen per week.	% of income spent on food.	Particulars of diet. Calories per man per day.	Particulars of diet. Protein in grms. Total.	Particulars of diet. Protein in grms. Animal.	Particulars of diet. Fat in grms.
1	1	1	1	Dustman.	400	—	1269	43·0	1·6	26·3
2	1	1	6	Cabinet maker.	650	—	1585	63·2	0·7	42·9
3	1	1	3	Pottery painter.	500	—	1506	46·8	0·6	38·2
4	—	1	2	Army.	250	—	1813	55·0	1·8	65·4
5	1	1	4	No work.	300	—	1801	60·0	1·2	46·0
6	1	1	2	—	300	—	1846	54·6	1·2	42·4
7	—	1	3	No work.	350	—	1665	54·6	—	47·7
8	1	1	2	Carpenter.	500	—	1986	64·0	2·4	53·0
9	1	2	4	Out of work.	550	—	1344	44·0	1·4	25·7
10	1	1	1	Lamplighter.	560	—	2158	68·4	2·3	43·5
11	1	1	1	No work.	200	—	1542	50·3	—	23·0
12	—	2	1	Deceased.	350	—	1432	47·9	1·3	32·6
13	1	1	2	Out of work.	None	—	1554	53·8	—	26·8
18	2	2	2	Hawker.	600	63	1810	60·0	2·2	27·5
20	1	1	1	Carpenter.	600	—	2166	76·3	5·6	25·1
21	2	3	5	Mason.	1400	47	2338	55·8	—	55·8
24	1	1	3	Street cleaner.	700	—	2596	79·4	9·6	52·4
26	1	1	2	Paper factory.	275	100	1515	43·3	12·2	54·3
27	1	1	5	Shoemaker.	750	80	1990	54·3	13·7	47·8
28	1	1	2	Coachman.	500	62	2151	56·4	15·1	59·0
29	—	2	2	Deceased.	195	78	2235	63·0	6·7	47·4
48	1	2	4	Carpenter.	300	89	1603	55·2	2·2	39·0
36	1	1	3	Leatherworker.	450	64	1456	43·4	3·3	12·4
38	2	2	4	Builder.	750	76	2432	78·5	4·7	34·7
37	1	1	2	Paper factory.	400	84	1918	57·5	10·4	36·0
45	—	1	1	Electrician.	160	107	2143	49·8	7·0	79·6
40	1	1	3	Waiter.	350	68	2178	69·0	0·1	23·4
32	—	1	2	—	200	77	1782	64·8	—	55·2
34	2	2	1	Tram conductor.	550	72	2841	82·0	7·5	42·1
				Average	451	76	1885	58·4	4·0	41·5
B.—WITHOUT RICKETS.										
14	1	1	4	Clerk.	600	—	1712	49·6	11·2	40·7
15	1	1	1	Tram conductor.	350	—	1754	64·4	0·5	25·1
16	1	1	2	Carpenter.	250	—	1690	57·0	0·9	23·1
17	1	1	1	Musician.	650	63	2922	113·7	—	39·5
46	1	1	6	Taxi-driver.	500	87	2600	81·3	6·0	45·8
41	1	1	4	Cobbler.	500	77	2389	63·8	2·7	48·4
44	1	1	2	Ivory carver.	550	60	2071	68·3	20·6	40·7
47	—	3	1	Deceased.	600	69	2136	60·7	4·7	18·7
49	2	2	2	Gardener.	800	59	2512	64·3	1·4	31·9
35	1	1	2	Paper factory.	400	60	1837	38·7	3·8	18·4
43	1	1	1	Leather worker.	400	80	2664	87·8	10·4	31·6
39	2	3	2	Post office.	600	59	2000	54·7	9·4	26·3
19	1	2	1	Out of work.	350	27	1883	62·8	1·1	36·5
22	1	1	1	Painter.	550	62	3572	95·6	4·8	51·7
23	1	1	2	Out of work.	200	100	2394	74·6	8·3	52·6
25	1	2	1	Army.	314	64	3746	107·0	20·6	64·2
30	1	1	5	Carter.	780	73	2944	114·2	11·8	52·2
31	2	1	2	Out of work.	700	64	1551	45·6	11·1	53·2
33	1	1	2	Clerk.	500	72	2177	70·6	16·8	45·6
42	1	1	3	Clerk.	175	66	1842	56·9	0·5	30·8
				Average	488	67	2325	71·6	7·3	38·8
				Average of 49 families ...	466	71	2065	64·0	5·3	40·2

2. *Height and Weight.*

The Viennese, being chiefly of Teutonic origin, belong to one of the taller of the European races. In the families investigated the father's height, ascertained in 27 cases, averaged 2·4 per cent., and the mother's height, from 41 cases, averaged 3 per cent. above the standard of the Anthropometric Committee of the British Association. Since the height of the parents approximated so closely to the British standard, it has been used to measure the growth and state of nutrition of the children. The results have been embodied in Table II.

TABLE II.—*Average Height and Weight of Viennese Children at Different Ages, compared with the British Anthropometric Standard Average (Sexes Combined).*

Age in years.	No. of children.	Weight.		Height.	
		Pounds.	Percentage under anthropo. average.	Inches.	Percentage under anthropo. average.
1- 2	7	19·6	14·8	28·5	6·6
2- 3	12	20·9	23·7	28·5	13·6
3- 4	11	21·9	29·6	30·68	15·8
4- 5	13	29·4	16·0	34·0	11·2
5- 6	14	33·7	12·8	36·21	11·5
6- 7	11	37·5	10·7	38·82	11·2
7- 8	10	39·7	14·6	43·4	4·0
8- 9	6	42·5	15·8	47·2	+0·9
9-10	8	49·8	9·3	48·69	1·0
10-11	7	50·8	17·4	50·79	1·7
11-12	—	—	—	—	—
12-13	9	62·2	14·8	53·89	2·6
13-14	5	69·6	14·1	56·1	2·0

In spite of the small numbers under each year the average percentage deficiency shows less variation than might have been expected. Taking the figures in longer periods, they give the following results :—

	Average percentage deficiency in weight.
Under 2 years (17)	15·6*
2 to 3 years (23)	26·5
4 to 9 years (62)	13·2
10 to 13 years (21)	15·5

* Including infants under 1 year not included in last table.

Comparing those between 5 and 11 with the children from one-roomed homes in Glasgow, they are at least 3½ lb. lighter.

The insufficient diet is thus associated with marked decrease in growth, the deficiency of weight, as usual, being more marked than that of height. Both height and weight are most markedly below the normal up to the age of 4 years. This is to be expected, since the normal increment during these years is greater than it is at any age up to 11 or 12 years, and the percentage increase is greater than at any subsequent period. The children of 2 and 3 years have suffered more than the infants. This is probably due to the latter having been generally breast-fed, while during succeeding years the lack of cow's milk has been most acutely felt.

The problem is—How do these children manage to grow? The diet generally allowed to children yields ample energy, not merely for basal metabolism and growth, but also for muscular exercise, which in the case of an active child may more than double the basal metabolism. Under-nutrition may not only lower the basal metabolism, but may be accompanied by decreased activity, so that the energy required for growth may still be obtained from an inadequate diet.

3. *Income and Expenditure.*

The average income of the 49 families was 466 kronen per week. Comparing the relative cost of living in Vienna and in Britain, this is equivalent to only about 12 or 13 shillings. The greater part of the income was, of course, spent on food. In 31 families, in which a detailed study was made of the expenditure, 71·2 per cent. went on food. Rents are very low, only amounting to 3·9 per cent. of the income. On the other hand, coal, wood, and petroleum are almost prohibitive in price, coal costing anything up to 6 kronen per kilo, and matches costing most families more than rent. Heating and lighting accounted for 19·7 per cent. of income. These four items of expenditure—food, rent, light, and heat—thus averaged 94·8 per cent. of income. The remainder is totally inadequate to provide for other necessities. Cloth, whether for wearing apparel or hospital bandages, is exceedingly scarce and consequently very expensive. Most of the children in the families visited were poorly and insufficiently clad.

4. *Nature of the Food Material Consumed.*

While there is an all-round shortage of food materials, meat, fats, sugar, and milk are almost unobtainable. Most of the budgets included a small amount, about 125 g. of pork, horsemeat, or sausage during the week of study, and only ten had fresh milk, though most procured condensed milk from the Friends' Relief Mission. The following is a typical diet for one week:—

Family E.—Father, Mother, Girl (4 Years), Boy (3 Years).

Income 200 kronen, plus 100 kronen from sale of a table= 300 kronen.

	Food.	Weight in grms.	Calories.	Cost in kronen.		Food.	Weight in grms.	Calories.	Cost in kronen.
A	Potatoes ...	7000	29280	100	B	Rice	500	9400	128
	Flour	2000		25		Condensed milk (unsweetened)	1642		
	Margarine..	100		10		Margarine...	250		
	Marrow ...	1000		8		Cocoa	200		
	Cabbage ...	500		2		Flour	500		
	Lettuce ...	1000		4					
	Bread... ...	6000		36					
						Total			313

A = Purchased in the market.
B = Supplied by the Friends' Relief Mission.

In addition to this two of the family had a free meal each day from the Dutch Mission. This was approximately equal to an additional 8000 calories—in all, 46,680.

5. *Nature and Extent of Help Given by Relief Agencies.*

In the budget just quoted rice, condensed milk, margarine, cocoa, and flour constitute two rations from the Friends' Relief Mission. The food composing this ration varies a little from week to week, but is practically constant in energy value—about 4700 calories. The price charged for each ration was 68 kronen, but in exceptional cases it is either given gratis or at a reduced cost. This ration may be purchased for each child in a family, but more than two rations for three children were rarely purchased.

A number of the families had food from the American or Dutch Missions instead of, or in addition to, the Friends' ration; this takes the form of a daily meal, of energy value approximately 670 calories, which was included in calculating the energy value of the diets.

Without the help of the relief agencies the diet of most of the families would have been poorer by 500 or 600 calories per man per day, averaging only about 1574 calories, and would have lacked almost entirely milk, sugar, and fats.

6. *Rickets.*

In 29 of the 49 families some at least of the children had rickets. The older children in some cases must have suffered from it before the war, as they show the characteristic deformities and were late in learning to walk. In most of the families, however, it is said to have developed within the last year or two. In every family with rickets the younger members had the disease at the active stage. Many of them presented marked deformity.

In Table I. the results of the investigation have been averaged in two groups, according to the presence or absence of rickets. The energy value of the diet of the families with rickets is 440 calories per man per day below that of those without it. The protein intake is 13·2 g. less. The families without rickets had, on the average, 3·3 g. per man per day more of protein from animal sources than the others. The difference between the two sets is mainly due to a greater shortage of flour, bread, and vegetables in the diets of the families with rickets. There was little difference in the average amount of fat consumed. A few of the children with rickets were having cod-liver oil from the Friends' Mission, but not in sufficient amount to make any appreciable difference upon the average.

Conclusion.

These studies show how very inadequate is the diet of the working classes in Vienna at the present time. Were it not for the generosity and devotion of the Society of Friends and the American and Dutch Missions, their condition would be one of actual starvation. It is hopeless to expect from a population on such diets the initiative and vigour by which alone the country can be saved from ruin.

We desire to express our sincere thanks to the Society of Friends' Relief Mission who have made this investigation possible and have helped in every way. We would also thank Professor Noël Paton for assistance in the preparation of the paper, and Miss Tully, who has aided us in drawing up tables and in working out results. We have further to acknowledge our indebtedness to the Medical Research Council for enabling one of us (M. G.) to carry on these investigations.

We hope to deal in a future paper with the dietary conditions of middle-class families in Vienna and with those of the rural population in the neighbourhood of the city.

THE BACTERIOLOGICAL INVESTIGATION OF A CASE OF PLAGUE.

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AND
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THE occurrence of plague in a patient who resided within about a quarter of a mile of the docks, but had no connexion with shipping or sailors, is unusual. The locality in which she resided has been free from plague both before and after her infection. On account of the rarity of this disease in such a subject, it has been thought advisable to record not only the clinical findings but also the bacteriological investigations which definitely proved the disease to be bubonic plague.

A female, aged 25, was admitted to Sir Patrick Dun's Hospital, Dublin, on Oct. 12th, 1920, with a swelling in the groin, about the size of a walnut, and a history of intense pain in that region for three days. Her temperature on admission was 104° F. and she appeared to be very seriously ill. Sir Arthur Ball removed the gland which was the cause of the swelling, and sent it for bacteriological examination to one of us (V. M. S.), by whom a tentative diagnosis of plague was made. The diagnosis was definitely confirmed a week later.

The patient then came under the care of Dr. H. Drury. Her temperature remained elevated (103° to 104·4° F.) until the sixth day of the disease, when it commenced to fall steadily, but subsequently rose again on the eleventh day. Two days later it became normal. The patient made a good recovery and was discharged from hospital on the fortieth day from the beginning of her illness.

Plague Bacillus in its Various Forms, as seen in Direct Films and after Culture.

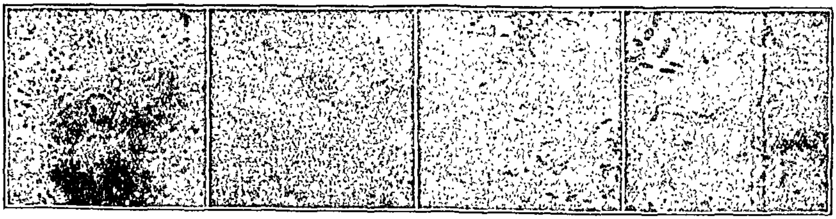

FIG. 1.—Smear from patient's gland.

FIG. 2.—Smear from guinea-pig's gland.

FIG. 3.—24-hour agar culture.

FIG. 4.—Involution forms, 72-hour culture on salt agar.

Appearance of the patient's gland.—The gland, which measured 1¼ by 1 in., was very hæmorrhagic. Films made from scrapings taken from it revealed enormous numbers of bacilli, the characteristics of which will be described later. Sections of the gland showed congestion and hæmorrhages, with some necrosis. In every part the same bacilli were present in large numbers.

Cultural characteristics of the organism isolated from the gland.—The original cultures from the gland were made on blood-agar plates. At the end of 24 hours very minute colonies, scarcely visible to the naked eye, had appeared. After 48 hours' growth the colonies measured about 0·5 mm. in diameter. The colonies were circular and raised; their surface was smooth and shining; they were of a greyish-white colour when seen by reflected light; by transmitted light they appeared slightly granular and opaque in the centre; their margins, seen with a lens, were almost transparent and had a wavy edge. Subcultures attempted from the original plates on trypagar without the addition of blood were, with one exception, unsuccessful, but a good growth was obtained on blood agar. Subsequent subcultures were uniformly successful on trypagar without blood. On agar slopes the organism gave a thick, opaque, smooth, and moist growth of a greyish-white colour. The culture was sticky and tenacious when touched with a platinum loop. On broth the organism grew slowly and formed a granular deposit at the bottom of the tube, leaving the upper part clear. On litmus milk after four days a slight acidity was produced. Gelatin was nót liquefied.

Microscopic Appearance of the Organism.

Films made from scrapings of the patient's gland showed very large numbers of short, plump, Gram-negative bacilli with rounded ends (Fig. 1). Their average size was 2·5 by 1·7 μ, and they therefore appeared almost like oval cocci. A few longer forms were also present. The most striking feature about the bacilli was that their bodies were lightly stained, with dark staining dots at either end. The bacilli in young culture (24 hours old) resembled those present in the gland fairly closely, but for the most part they were slightly longer and less plump (Fig. 3). After 48 hours' growth the bacilli appeared definitely longer and thinner, and a few quite long forms, 10 to 12 μ, were present. Polar staining was never so well marked in the bacilli from cultures as in those from the gland, but it could almost always be demonstrated. In broth culture the bacilli were only slightly longer than those from the gland. They occurred in chains of four or five members, but a few longer chains of about ten bacilli were seen. On salt agar (3 per cent. of salt) in 24 hours the bacilli were considerably larger than on plain agar. After three days' growth involution forms, oval, globular, and pyriform bodies, which took stain badly, were seen (Fig. 4). These were very much larger than the bacilli grown on other media. The organism was non-motile and spores were not present.

Experiments on Animals.

A guinea-pig was inoculated, intraperitoneally, with a culture of the bacillus. As the animal appeared to be very sick it was killed at the end of 48 hours. There was a general subcutaneous œdema of a gelatinous appearance. General peritonitis was present, and the pus from the peritoneal cavity was sticky and could be pulled out in long threads. Microscopically this pus was found to contain large numbers of bacilli resembling those found in the patient's gland but slightly longer (Fig. 2). Cultures made from the peritoneal pus and from the spleen gave an organism identical with that already described.

A second guinea-pig, inoculated subcutaneously near the knee with an emulsion of the patient's gland, died on the seventh day. A general œdema with areas of congestion was present. There was, in the inguinal region on the inoculated side, an enormous mass of enlarged glands surrounded by an area of congestion with hæmorrhages. The other glands of the body were enlarged, but not so markedly. The spleen was about four times the normal size and was studded with small white nodules about 0·5 mm. in diameter. The lungs were congested. Films made from the enlarged glands and from the spleen showed bacilli resembling very closely those present in the gland removed from the patient. The same bacillus was found in cultures made from the affected glands, the spleen, and the heart blood.

The hair on the abdomen of a third guinea-pig was shav
and a small amount of the culture of the bacillus was
on the shaved area. This animal died on the nith
The skin where the culture had been rubbed was re

rough, and there was an area of congestion with some hæmorrhages underlying it. There was a general, subcutaneous, hæmorrhagic, and gelatinous œdema. The hæmorrhages were most common in the region of the inguinal glands, which were enlarged and congested. Films made from these glands showed that they were packed with bacilli, identical in microscopic characteristics with those already described. Cultures made from the glands, the spleen, and the blood all gave growth of the same organism.

Blood Culture.

A culture of the patient's blood was made on the seventh day of the disease and a growth of the organism described above was obtained. Films made at the same time were examined, but no bacilli were found in them. Positive blood cultures are rare in plague, except in those cases which are very severe and which usually have a fatal termination.

Agglutination.

The patient's serum was tested on the seventh day of her illness to ascertain if agglutinin for *B. pestis* was present. The organism used was one obtained from the National Collection of Type Cultures, and was marked "Strain—Parel." No agglutination occurred in a dilution of 1/10. On the fortieth day a further test was made. It was then found that the patient's serum agglutinated both the type strain of *B. pestis* and the homologous organism to the same degree. With both complete agglutination was present in a dilution of 1/20, but was absent in a dilution of 1/40. The macroscopic method was used, and the tubes were incubated in a water-bath at 55° C. for four hours.

Remarks.

There can be no doubt that the organism was a true *B. pestis* and that the patient was suffering from bubonic plague. The method of infection is unknown. Both the municipal and port sanitary authorities failed to find any unusual mortality among rats. A number of rats were killed and sent to us for examination, but all were healthy. The fact that the patient owned a cat which alternately went on hunting expeditions and slept on her bed, may possibly be a link in the chain of infection. Nearly five months have now elapsed since the occurrence of this case, and no further cases have been recorded.

We have to thank Professor Adrian Stokes for the micro-photographs which accompany this paper.

THE INFLUENCE OF AERATION ON THE STABILITY OF THE ANTISCORBUTIC FACTOR.

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THIS preliminary note describes the results obtained from some experiments instituted with the object of studying the influence of air on the antiscorbutic factor at ordinary temperature as well as at 100°C. The inquiry was pursued as an outcome from observations made that ozone inactivated this and the fat-soluble factors at ordinary temperature. The experiments revealed that bubbling air at ordinary temperature through an antiscorbutic solution inactivated it. It was found, on the other hand, that on boiling an active solution for two hours in an atmosphere of CO_2 no marked diminution in the activity could be recorded, whilst on boiling a similar solution for one hour during which time air was bubbled through almost the entire activity was lost.

These results are in conformity with the observations made by Delf (1920).[1] Miss Delf found that quite marked antiscorbutic potency was retained by orange-juice and swede-juice heated for some time at temperatures above 100° C., and she suggested that the destruction may have been affected directly either by retarded oxidation (the juice having been heated in an autoclave) or indirectly by the production of stabilising bodies. My experiments seem to point to the fact that the former is the more likely explanation for this somewhat unexpected stability observed by her in the case of the juices.

As a source for the antiscorbutic factor lemon-juice from which the organic acids were removed by precipitation with calcium carbonate was employed. The minimum dose of this solution for the guinea-pig is about 1½–2 c.cm. When air was aspirated through such a solution for 12 hours at laboratory temperature daily doses of 3 c.cm. and 5 c.cm. were insufficient to prevent, but delayed very slightly, scurvy in guinea-pigs, whilst 7 c.cm. was found to be inadequate to promote normal growth. Daily doses of 1½ c.cm., 3 c.cm., and 6 c.cm. of the decitrated juice which was boiled for one hour and through which air was bubbled during the boiling were insufficient to prevent or to delay to any very marked degree the onset of scurvy in the animals. From the administration of daily doses of 1·5 c.cm., 4 c.cm., and 6 c.cm. of the juice boiled in an atmosphere of CO_2 for two hours no inactivation which would become manifest by our present technique could be established.

It is of interest to note that the behaviour of the antiscorbutic factor towards heat and aeration is very similar to that of the fat-soluble factor. The antineuritic factor, however, seems to be more stable towards oxidation. Results obtained by exposing the antineuritic factor to ozone show that it is only affected, if at all, to an extremely small extent by that treatment.

All the data available in connexion with the behaviour of the antiscorbutic and the fat-soluble factors at high temperatures will have to be reconsidered in view of the latest results obtained as regards their great tendency to be inactivated on aeration, especially when heated.

I am indebted to Professor Sensho Hata for help in some of the experiments of this inquiry.

The expenses of this research were defrayed from a grant made by the Medical Research Council, to whom my thanks are due.

MENTAL TESTS.[1]

BY W. A. POTTS, M.A., M.D. EDIN. & BIRM.,

MEDICAL OFFICER TO THE BIRMINGHAM COMMITTEE FOR THE CAR
OF THE MENTALLY DEFECTIVE; PSYCHOLOGICAL EXPERT TO
THE BIRMINGHAM JUSTICES.

THE passing of the Mental Deficiency Act in 1913 put us ahead of every other country in practical arrangements for dealing with mental defect. The application of that Act, however, leaves much to be desired, while we are a little backward in some of the scientific work connected with it. For instance, the subject of mental tests has received but scant notice in most of our recent books, while for our test material we still have to send to Chicago. It is true that important investigations with tests have been carried out by Dr. A. R. Abelson and Mr. Cyril Burt, and recently Dr. W. B. Drummond, Mr. Ballard, and others, but as a rule the subject has been shelved. Possibly some of the tests I shall mention are crude and imperfect, but when modified they will be very valuable. In diagnosing mental capacity mental tests should be to the psychologist what the stethoscope, hæmocytometer, sphygmomanometer, and other instruments of precision are to the clinical physician; the man of experience with keen intuition can sometimes dispense with them, but even he will often find they shorten his labour, give him more definite information, and sometimes further insight. Just as the ordinary clinical instruments may fail when we need their help most, so mental tests may disappoint us in our most difficult case; but in the other 99 per cent. they are a real help. The subject opens up a vast vista of possibilities; already there are tests for vocations and particular kinds of work, and even for morals. As a matter of fact I have found moral tests distinctly useful in dealing with abnormal conduct. The psychologist, the criminologist, the educationist and all those who organise or profit by the labour of others can scarcely afford to dispense with tests. Experiments by large firms in America have shown the importance of properly arranged tests not only in selecting employees, but also in placing them straight away in those departments where they can be most useful.

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[1] Delf (1920), Biochem. Journ., xiv., 211.

[1] Paper read at the Section of Psychiatry of the Royal Society of Medicine on Feb. 8th, 1921.

Mental tests are particularly useful in criminal work. It is true that there is no perfect set of tests for mental deficiency available; the final decision must be the judgment of the expert examiner; this is based largely in the extreme case on the conduct and mode of life of the prisoner, which must not only be abnormal, but abnormal in a manner characteristic of mental defect. Yet the legal mind finds it difficult to realise that the mental defective, particularly the high-grade one, may have nothing abnormal in his appearance, or even in his manner and conversation at an ordinary interview. It is therefore an advantage for the medical-psychologist to be able to say that in addition to his opinion based on an observation of the accused and a study of his records, he can state that the prisoner, when submitted to one series after another of mental tests which can be accomplished by ordinary people, failed, and revealed that he had a degree of intelligence only equal to that of an average child of say 8 years and 3 months. In some cases it is not failure or success in a particular test which impresses us so much as the method of approaching and carrying it out, or the degree of satisfaction with the result. The intelligent man who fails in a simple test may say at once, "What a fool I am," but the defective will often start arguing that he is right, or else smile the beautiful bland smile of absolute ignorance.

Mental Tests in the American Army.

One of the strongest arguments for tests comes from the American Army. Dr. V. V. Anderson, of the Municipal Court at Boston, U.S.A., first states that 10 per cent. of all civilian prisoners are mentally defective, and that those 10 per cent. are responsible for 50 per cent. of all crime. When the Americans came into the war they decided to raise an army of 3,000,000 men. On inquiry into the arrangements necessary for an army of that size, they were informed that experience in previous wars showed that provision must be made in military prisons for 50,000 cases. It occurred, however, to their psychologists that this number might be reduced if all recruits were given a special examination with the object of excluding mental defectives. This was done, with the result that there never were as many as 5000 cases in the American military prisons, or less than one-tenth of the number they expected to have. The American psychologists, however, did more than that. They extended their examination so that they analysed the intellectual capacity of the men, and so could estimate what work they were fit for in the army. Having previously found out what amount of intelligence was necessary for any particular line, they were able to point out the man best suited for promotion to commissioned work, or for undertaking work requiring special skill. They also saw that each unit had an adequate number of men with more than average intelligence, instead of allowing an accumulation of such men in one place, with a corresponding lack of capable men elsewhere. Not only did they make the best use of their good material and prevent the bad from being a handicap, but they actually made use of many of their defectives by enrolling them in labour battalions and putting them to simple tasks which they could do as well as any one else. The story recorded in "Mental Tests in the American Army, by Yoakum and Yerkes" is a marked contrast to the haphazard method adopted by our War Office, who at the beginning of the war had in the trenches highly trained mechanics, urgently required for skilled work at home, whose loss never could have been made good had there not been a reserve in America, and had not the United States recognised that they must not risk their technical experts. Of course, the methods of examination for our army were much more satisfactory towards the end of the war. In the case of the Flying Corps, at all events, the examination for admission was thorough and satisfactory. The Americans claim that the example of their army in the war must not be forgotten, because not only will the country which studies what particular qualities are required for each bit of army work, and then devises tests by which those qualities may be recognised, have an army far superior to any other in the next war, but in the industrial war of the near future that nation will have a corresponding advantage which first estimates the capacities required in any particular place, and then puts there only those who have those capacities, and does not call on the less intelligent to do work they never can accomplish. Many of the American army tests are open to criticism, so it is important to remember that the mental age was first estimated by the Terman Revision or Point-Yerkes scale, and that the other tests were often only used to elicit capacity for special kinds of work. One obvious criticism is that other factors, such as temperament and health, must also be taken into account. There are no tests for temperament yet, but that is no reason why they should not be discovered. We have made a start with morals, and even now health and other important factors besides intellect can be graded more or less satisfactorily. No system will ever meet every case, but in the mass the possibility of error is small. An important matter is to make sure the person examined does his best. As regards the actual tests, I shall only explain and demonstrate a few with the object of showing some of the different lines available for investigation.

The Graded Tests of Binet and Simon.

The first really useful set of tests we owe to Binet and Simon, who produced their original series of graded tests in 1908, and revised them in 1911. These tests enable a rapid psychological analysis to be made of certain capacities, so that the degree of intelligence may be estimated. Their great value depends upon the fact that they are arranged in a series according to age, and also that each response is either a pass or a failure. For each year of life from 3 to 10, and again, for 12, 14, and 16, there are four or five questions or tasks. These are so arranged that an average child can just pass those for his own age, but not those for later years. In actual practice it may be found that a child can accomplish some of the tests for years above that in which he has passed all. In this case his mental age is recorded as that for which he passes all the tests, with the addition of so many months, according to the number of tests for the particular year, for each one he can pass in those for higher years. These additions as a rule do not amount to much; the greatest irregularity occurs in the case of epileptics and moral imbeciles, and is, to some extent, pathognomonic of those conditions. For instance, a mentally defective epileptic youth of 18, who could not read, passed all the tests (Terman Revision) for year 6, four for year 7, five for year 8, three for year 9, three for year 10, and almost succeeded in one for year 12. His mental age was, therefore, 8½ years. Mental defect is considered to be backwardness to the extent of two years or more in a child under 9 years of age, and three years or more if over 9. It is generally agreed that a mental age of 7 years or less constitutes an imbecile.

Revisions and Modifications.

An enormous amount of work has been done on these lines, particularly in America. It was soon found that the tests were not perfect, and required modifications, especially for English children. The first revision—one that has been and is still extensively used—was put forward by Dr. H. H. Goddard, who restandardised the tests. The Yerkes-Bridges "Point Scale" altered the scoring and added new questions. Then came Professor Terman's Stanford Revision, which, in my opinion, is the best now available. In order to use these tests properly it is necessary to get Professor Stanford's book and carefully study the directions given in connexion with individual tests. If this is done, anyone who can get on with children and is able to put them at their ease can, with care and practice, learn how to conduct the examination satisfactorily. As a rule children must be encouraged in every possible way during the examination and told they are doing well;

but sometimes, as in the test with the pictures, this must not be done, because it would have the effect of making the child think his reply in regard to the first picture was quite satisfactory, when really it was not. He might, therefore, not give a better reply in the case of the two other pictures, although well able to do so.

The most recent criticism was made in the *Training School Bulletin* for March and April, 1920, by S. D. Porteous, who deals with the Terman Revision, and incidentally gives a list of the eight tests in which defectives most frequently fail. He, however, uses these eight tests as a means of confirmatory diagnosis in doubtful cases, on the grounds that if the subject shows the characteristic failures of defectives the presumption of feeble-mindedness is thereby increased. At the same time he makes this a rough-and-ready test for mental age by allowing one year for each success, beginning to count from six. Thus one success makes it six years, two successes seven years, and so on. The actual tests selected by Dr. Porteous are Test 3 for year five, Test 2 for year seven, Test 1 for year eight, Tests 2 and 4 for year nine, Tests 3 and 6 for year ten, and Test 1 for year 12.

The Intelligence Quotient.

In connexion with the mental age the term "intelligence quotient" (often designated I.Q.) is frequently used; this is the ratio of mental age to chronological age. Thus a child of 10 with a mental age of 10 is normal, and has an intelligence quotient of 1·0; but if his mental age is only 7, his intelligence quotient is 0·7. Intelligence quotients appear to remain fairly constant and therefore give a valuable guide. If a 4 years old child has a mental age of 3 his intelligence quotient is 0·75, and at 16 he will probably have a mental age of 12.

> "The age at which intelligence reaches its maximum is the age at which there is no further growth of such abilities as those of memorising, of concentrating attention, learning or reasoning about new topics. It is certain that for the average individual this age is below 20. He may go on acquiring knowledge and wisdom all his life, but he works always with the same mental tools."

There is considerable variation, but probably on the average the maximum intelligence is reached at the age of 16.

A useful test is the Heilbronner test. This consists of a number of little cards in sets of three to seven, usually six. The first of each set shows the basic plan in the construction of some well-known object, such as a bicycle, a telephone, or a windmill; each succeeding card in a series shows a further stage in the setting up of the object, which, of course, it more closely resembles. The series is so arranged that any intelligent person can recognise each object, if not on the first card of the series, at any rate well before the final stage is reached. Cards for this test, like many other tests to be presently described, can be obtained from the C. H. Stoelting Company, 113, North Green-street, Chicago, U.S.A.

A Few Examples of Tests Devised by Healy.

Recently the recognition of the importance of individual examination and treatment in criminal work, as well as in educational, has done much to stimulate research. The outstanding investigator in this department is Dr. William Healy, who was formerly medical examiner in the Courts of Chicago, but has recently undertaken similar work in Washington. His book, "The Individual Delinquent," published in 1915 in London by Heinemann, is of outstanding importance. In this book many tests are described, of which the following are specially useful.

Picture form board.—This is a picture of a horse and colt in a field with some fowls. Eleven small pieces are cut out and can be removed from the board. "This test is to give interest and to get a first general measure of the individual." "At about 7 years of age any normal child should be able to do it in its entirety." "A young child will accomplish the task in a little over three minutes, while a bright child of 11 can often do it in less than two minutes."

Construction test "B."—This is a plain, rectangular piece of wood from which 11 pieces of varying size and shape can be removed. The test is to replace them correctly. Most normal offenders of 12 do this in from one to three minutes; the important point, however, in connexion with this test is the method of accomplishing it. What we want to see is "the attitude of planning as put over against taking the chances on trial and error, and particularly as against the repetition of impossibilities. This—namely, the ability to profit by experience—is registered with certainty in the number of moves made. Errors to the extent of 10 or 15 indicate little, but beyond that there is carelessness or actual inability to think out the situation. There are 11 pieces to put in; thus normally the task should be done in at least 26 moves. Occasionally a slap-dash method done by a bright person involves more moves, but only seldom. It should be remembered that a planful attack may be very slow." I have found this test helpful in forming an estimate of manual capacity. If a defective child does it rapidly and easily I always endeavour, if possible, to keep him outside an institution and let him try ordinary work.

Puzzle-box.—This is a square wooden box, the inside of which can be seen through a window in the lid. The lid is secured by a clasp fitting over an eye, through which is passed a staple kept taut by a ring attached to a cord, which passes into the box through a circular opening in the side. Inside the box this cord is kept taut by an arrangement of three other cords and rings passing over fixed metal supports, one cord passing through an opening in the side to be fixed elsewhere. A buttonhook is supplied, and by its use one of the rings can be slipped off its peg, and then by a series of moves the staple is freed and the box can be opened. "It is an example of a concrete problem to be reasoned out from perceived relationships; each step in the solution—namely, opening the box—is plainly visible." "Nearly all of our offenders above 12 who have ordinary ability can open this box well inside of ten minutes." The important point to observe is whether the correct steps are interspersed with errors; this should not be. This test is much more suitable for boys than girls. It is really a test of capacity for planning.

"*Aussage" or testimony test.*—This is a test of the ability to recall a scene that has been presented. The scene depicted is a butcher's shop, in which the butcher, standing with an upraised knife, is just going to cut off some of a string of sausages for a woman customer, who has a little girl and a dog with her. There are several other objects in the picture. "A bright child of 8 can give a good account of this, bringing out most points on cross-questioning, at at rate. A *good* account is 12 or 15 items on free recital, and eight or ten more on inquiry. A *bad* record is more than two or three errors, or acceptance of more than two suggestions."

Pictorial completion test.—This is a rectangular wooden board with pictures painted on it of several obvious situations, such as that of a boy who has just broken a window in a hut by throwing stones, while an old man standing by is pointing to the broken glass on the ground. The other incidents depicted include a little girl, whose hat has been blown off by the wind; a cart, the wheel of which has come off; a boy running away from a dog, and two boys playing with a football. Ten small squares, all of the same size, can be removed from the board. A number of alternative squares of the same size, and depicting either blanks or objects which would only appear to a person of low intelligence as suitable for filling in, are provided. The squares are removed from the board and then mixed with the alternative squares; the task is to replace the proper ones. In my experience this pictorial completion test sometimes gives important indications of moral failings and other poor capacities; but some moral imbeciles, especially those of the verbalistic type, come out well in this test, although they may fail badly with an apparently simpler one, such as the construction test "B."

Both the pictorial completion and the testimony test give some idea of the suggestibility of the person who is being examined. A more definite test of suggestibility is the line-copying test.

> "The subject is shown, one at a time, a series of lines printed on cards. The first three form a series of regularly increasing lengths; the remainder all have the same length as the third line. The subject is asked merely to reproduce the length of each line by drawing it on paper. The marked and regular increase in length of the first three serves as a suggestion that the increase will continue throughout the series, so that the subject may continue to increase the length of his copies long after the increase in length of the lines presented to him has stopped."

Moral Tests.

For this purpose Dr. Healy has a reaction test; this is in the form of the printed statement of two difficult situations, in each of which the question is what is the right course to take.

Dr. Guy G. Fernald, resident physician at the Massachusetts Reformatory, Concord, has also devised useful differentiating tests for the defective delinquent. He uses a series of 12 tests, which include some of those already described, and a set of ten questions, making up an "ethical perception test." There is also an ethical discrimination test, which consists of a list of ten offences, to be arranged in order of their gravity. The offences are:—

1. To take two or three apples from another man's orchard.
2. To take a cent from a blind man's cup.
3. To break windows for fun.
4. To throw hot water on a cat or in any other way cause it to suffer needlessly.
5. To break into a building to rob it.
6. To take money as "graft" or "rake off" when you are a city or Government official.
7. To try to kill yourself.
8. To get a nice girl into family way and then leave her.
9. To set fire to a house with people in it.
10. To shoot to kill a man who runs away when you try to rob him.

The ergograph affords an important test, not only for delinquents, but also for more ordinary defectives, especially when the question arises of their capacity for work in the ordinary world.

The Psycho-galvanic Reflex Test.

Reference may be made to the investigations of Dr. E. Prideaux in the Psychological Laboratory at Cambridge in regard to the psycho-galvanic reflex test. Dr. Prideaux says that:—

> "The factors which are responsible for the variation of polarising resistance in different persons is yet to be determined, but the evidence tends to show that the skin polarisation effects are correlated with the functions of the brain. So far as my experiments go at present, persons of the mentally deficient class tend to give a low psycho-galvanic reflex."

He also states:—

> "It is certainly my experience that the reactions in subjects of poor intellect, as evidenced by their low standard at school, are rarely so marked as in my intellectual subjects, and I have attributed this to the fact that the intellectual subject has usually a much greater control over his emotions, and has a wider range in the association of ideas."

The Need for a Series of Tests.

It is important to employ some series of tests in all examinations of defectives; in high-grade cases and criminals this is essential. When time is very limited, and a rough-and-ready estimate is all that is expected, I find that fairly definite indications can be obtained from the use of the following three tests: (1) The vocabulary test, as presented in the Terman Revision. This gives a rough indication of the mental age. (2) Healy's form board, which indicates the capacity for mental work. (3) Pictorial completion, which may give a clue to the moral character and type of mental make-up.

The mental examination in the American Army consisted first of the Binet-Simon tests or some modification of them, and, in addition, a large number of other ingenious tests which were divided into two sets according as to whether the recruit under examination was a "literate" or an "illiterate." The "literate" group, of course, were those who could read and understood the English language fairly well.[2]

It is interesting to note that American psychologists applied the army mental tests later to certain other groups. When used in *prisons* it was found that their use would lead to the segregation of the feeble-minded, but did not solve the problem of criminality. When *prostitutes* were examined it was discovered that 53 per cent. had a mental age under 10, and that 10 per cent. should have been in custodial institutions. A large percentage of those with a mental age over 10 had marked mental instability or actual mental disease. Only a small number were mentally normal. *Conscientious objectors* were found to have a mental age above the average. When applied to *industry* the conclusion reached was that the examination was very useful.

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[2] Some of the American Army tests were shown, having been copied from "Mental Tests in the American Army," compiled and edited by Clarence S. Yoakum and Robert M. Yerkes, published by Sidgwick and Jackson, Ltd., London. Some of the Maze tests which have been found to be valuable were included in the American Army tests.

MENTAL AFTER-CARE ASSOCIATION.—A well-attended meeting of this association for poor persons convalescent or recovered from institutions for the insane was held at Bridewell Royal Hospital on Feb. 23rd by permission of the governors of that hospital. Sir Charles Wakefield presided, and made an eloquent appeal for further support. He alluded to the last year's accounts, which showed a deficit, and promised to give a donation which would wipe out the amount. After Dr. H. Rayner (chairman of the Association) had read the report, which showed the great increase in the work which has taken place during the last 12 months, Sir William Byrne moved its adoption, speaking in high terms of the way in which the association performed its duties and urging the great need for its ministrations amongst those patients who are discharged from mental hospitals. Amongst the other speakers were the Right Rev. the Lord Bishop of Barking, Dr. Hubert Bond, the Hon. John Mansfield (Lord Chancellor's Visitor in Lunacy), Mr. C. Gabain, Sir George Savage, and Mr. Ernest Sanger.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THEREPEUTICAL.

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A CASE OF

ENCEPHALITIS LETHARGICA COMPLICATING PREGNANCY.

BY J. BRIGHT BANISTER, M.D. CAMB., F.R.C.S. ENG.,
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AND
G. SOPHIANOPOULOS, M.R.C.P. LOND.,
RESIDENT MEDICAL OFFICER, QUEEN CHARLOTTE'S HOSPITAL.

NEVER having seen any reference to encephalitis lethargica occurring in pregnancy, we felt that a permanent record of the following case would be of interest.

The patient, a primigravida of 31, in the thirty-sixth week of pregnancy, was seen by one of us (J. B. B.) on Dec. 27th, 1920, in consultation with Dr. Pearson, of Hornsey, under whose care she had been for the previous nine days. She had been perfectly healthy up to Dec. 18th, when she went to her doctor complaining that she could not sleep, but had felt very heavy about the eyes for two days. On a routine examination being made nothing abnormal was discovered, and a sedative mixture was prescribed. Two days later (on the 20th) she complained of being unable to keep awake, of great pain when she raised her eyelids, and of slight tremors in the hands.

Other symptoms gradually developed, and when she was seen in consultation the general condition was as follows:—

A rather frail-looking woman in the thirty-sixth week of pregnancy. Complexion somewhat muddy and tongue furred. A very definite bilateral ptosis was noticed, and slight weakness of the right side of the face; pulse 110, temperature normal. She answered questions rationally; no definite twitching was noticed anywhere. Her relatives stated that the mental condition has varied from time to time. No headache or vomiting throughout the illness; knee-jerks exaggerated, that on the right being the brisker; apparently a slight loss of power in right arm and head.

A tentative diagnosis of encephalitis lethargica was made, and it was decided to transfer the patient to Queen Charlotte's Hospital for further investigation and treatment.

From her friends certain other points were elicited in addition to the changeable mental condition. They noticed very early in the disease a slight unsteadiness in gait which had become gradually more marked, while during sleep they had observed what they described as a "scrubbing" movement of the right hand. Her speech also had become less distinct and more halting day by day, while she had complained of "seeing double" on the third day of the illness. Constipation had been marked throughout.

On admission, the most apparent feature was a bilateral ptosis of a marked degree. There was an internal strabismus of the right eye. Horizontal and vertical nystagmus was elicited, the latter being very marked indeed. The pupils reacted to light and accommodation sluggishly and slightly; hippus was present; some irregularity in outline of the left pupil, but no anisocoria; discs normal. The face was mask-like, and the lower left quadrant appeared to be less mobile and more flattened than the opposite side; left angle of mouth was noticed to be twitching in a lateral direction. The tongue was protruded naturally, and was not tremulous; levator-palati contracted equally strongly; muscles of mastication and deglutition appeared unaffected; special senses not impaired, except the sight as already detailed.

Mentally the cerebration was slow; speech drawn and slurred, with an attempt at tailing off the sentences into a whisper; voice at no time normal in quantity, giving the impression of a lazy and effortless response. The intensity of the mental stimulus, although varied, could not influence the rapidity or the thoroughness of the reaction. Only at times was the patient noticed to be irrational in her replies.

The skin was dry and harsh, pulse rapid (110 on examination); katatonia could not be elicited. Reflexes all exaggerated; abdominal reflex not obtained, but because of the stretching of the parietes by the pregnant uterus much importance could not be attached to this fact.

The left upper limb (patient right-handed) appeared somewhat stronger than the right; no weakness detected otherwise. Triceps, pronator, and supinator jerks were obtained and were brisk. The right arm grips were all sustained and gave no impression of being lethargic in inclination. There was a peculiar pronatory movement of the right forearm, and the fingers were held in the position of writing. The rhythm appeared regular, but the frequency was not timed. The lower extremities appeared of equal and average strength; reflexes exaggerated, but clonus could not be elicited; plantar response slightly flexor; there was a marked protective reaction and the extensor fascia lata was noticed to contract. Sensation normal throughout; dermographism present to some extent. Rombergism not present, though the patient was very unsteady on attempting to provoke the sign. No ataxia. The patient had some hesitation in turning, comparable to the Parkinsonian manœuvre, and it was very apparent there was a definite list to the right side. False pointing to the outer side of an object was noticed. In certain respects the case was of the paralysis agitans type, showing some involvement of basal nuclei and red nucleus, mask-like expression, tremor (though this was not typical), increased reflexes, difficulty in turning, and the monotonous element in the speech. There was some indication of cerebellar involvement shown by the nystagmus, the false pointing, and the list in the gait.

The rapid pulse might be possibly construed as a removal of vagal control, though vagal function was not investigated. It was noted also that though the lungs were free from disease, respiration was rapid and noisy, though the accessory muscles were not brought into use. Lumbar puncture was performed on the fourteenth day of disease; anæsthesia with chloroform was employed for a lumbar puncture, without any untoward effect. The cerebro-spinal fluid was under pressure, and 30 c.cm. were withdrawn without completely relieving it; the fluid was clear and colourless, and bacteriogically sterile. The Wassermann, Nonne, and Lange tests were all negative. The cells were much increased, 348 per c.cm. being counted (48 per cent. polynuclear). The urine was free from albumin, casts, sugar, acetone, and diacetic.

Puncture was not repeated. The pregnancy was terminated by induction on the sixteenth day of disease. The child was perfectly healthy. A second anæsthetic had to be employed to end the second stage by the use of forceps. The pains were insidious and very effective, and the child was delivered nearly four hours after induction with two gum-elastic bougies.

The treatment besides this was the four-hourly use of 10 gr. of urotropine (which gave no rise to toxic symptoms) and the production of a fixation abscess in the thigh by the injection of 20 mm. of turpentine. The patient's mental state improved after delivery of the child on Jan. 2nd, 1921. The change, however, was short-lived: incontinence of urine and fæces commenced on the 5th, lethargy increased, tremors became more marked, pupils ceased to react to light, and deglutition became very difficult. The patient died on the 7th, three weeks from the onset of the disease.

Post-mortem was not obtained. The whole course was apyrexial except for slight rise to 100° F. a few days after the setting up of the *fixation* abscess.

The induction of labour was decided upon in view of the following facts: (*a*) The patient's condition was becoming continually worse; (*b*) the baby was alive; (*c*) it was hoped that the removal of the fœtus might influence the patient's metabolism for the better. The very definite improvement for the first 36 hours after delivery gave rise to great hopes of recovery, but the experience of this case leaves the question of interference with the pregnancy sub judice. It would be instructive to obtain speculations upon the advisability or otherwise of terminating pregnancy in cases such as the one under consideration.

A CASE OF
ACUTE DIVERTICULITIS.

By W. F. A. CLOWES, M.R.C.S., L.R.C.P. LOND.,

SURGEON, ESSEX COUNTY HOSPITAL.

THE following notes may be of interest, as they deal with a disease which I believe to occur more frequently than is generally supposed.

Mrs. P., aged 57, wife of a publican, was first seen for dyspnœa by my partner, Dr. E. F. Clowes, in March, 1919. She was a short stout woman, lived a rather sedentary life, and drank ale but no spirits; there were no apparent signs that she was an excessive drinker. She was not constipated and had no digestive symptoms. Dietary and treatment improved her so much that she was not seen again until Feb. 2nd, 1920, when she had an attack of diarrhœa and sickness, apparently caused by eating tinned salmon. A dose of castor oil and a bismuth mixture soon cleared this up and she did her usual work on Feb. 3rd. On Feb. 4th, whilst cleaning a fire-grate, she was suddenly seized with pain in the lower abdomen, so severe that she fainted. When seen at 3.48 P.M., about a quarter of an hour after the onset of pain, she was very collapsed, sweating, had a temperature of 97·4° F., and very small pulse, beating 146 per minute. She was vomiting at intervals of a few minutes a dark bilious fluid, and had hiccough. The abdomen was distended generally and did not move to respiration; it was rigid and very painful over the whole area below the umbilicus. The patient was removed as soon as possible to a nursing home. I saw her at 8.30 P.M. and decided to perform an operation; this was begun an hour later. She was then in such a collapsed condition that Dr. C. Sherris, the anæsthetist, considered a general anæsthetic inadvisable; the patient was extremely nervous of feeling any pain, so a whiff of ether was given, and a spinal anæsthetic administered. On opening the abdomen by a median incision I found a large quantity of purulent fluid with much recent peritonitis in lower part of cavity, especially the left iliac fossa. After mopping away the fluid I discovered the appendicæ epiploicæ were very much enlarged, being arranged on the convexity of the gut in two rows; they were of washleather colour, about the size of small grapes, and looked much like bunches of the latter. The large intestine from the rectum to the cæcum was affected in this way, but the sigmoid and lower part of descending colon was the part where the condition was most marked. The large bowel was very red, thickened, and rigid. A coil of small intestine was found attached by recent lymph to a small bunch of epiploicæ from the sigmoid, and here a leakage had evidently taken place. The condition of the large bowel and the great length affected made it impossible to do any kind of plastic operation, so the abdomen was washed out and drainage-tubes inserted.

Patient stood the operation well, considering her very collapsed condition, and on the following day was fairly comfortable but vomited frequently. This ceased on the second day, and she remained comfortable till the fourth day; diarrhœa and vomiting then set in again, continuing more or less until she died on March 3rd, 28 days after the operation.

Unfortunately, I was unable to obtain consent for a post-morten examination, which would have been most instructive. The appearance of the enormously enlarged epiploicæ and the way they were arranged when first seen at the operation gave the impression of malignant growth, and it was only on carefully examining it that its real condition was found out.

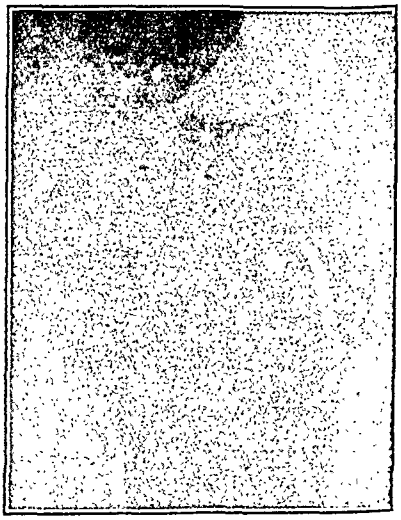
A NOTE ON
A CASE OF SCHLATTER'S DISEASE.

By ISAAC EBAN, M.A., B.SC. EDIN., M.B., B.CH.BELF.,

LATE CASUALTY OFFICER, ROYAL BERKSHIRE HOSPITAL, READING.

AN account of the following case is given here as it may prove of interest to casualty officers and out-patient surgeons at hospitals, besides recalling attention to a relatively rare condition.

A boy, A.W., aged 13, limped into the surgical extern of the Royal Berkshire Hospital one morning and complained of pain in the left knee of nine days' duration, idiopathic in origin. On examination the usual signs of inflammation were found in the region of the tibial tuberosity, and my first thoughts were of tuberculosis and of bursitis. The latter was soon ruled out, and as no other evidences of tuberculosis elsewhere were found, an X ray examination was made. An antero-posterior view of the knee appeared normal both on the screen and on the plate, but a lateral view revealed the typical appearance shown in the accompanying illustration. There is an irregular outgrowth of the tibial tuberosity somewhat resembling a forward displacement of the upper epiphysis, and this is quite characteristic. No history of injury could be obtained, although the boy played football for his school.



Radiogram of a case of Schlatter's disease.

Although the ætiology and pathology of the condition are still obscure, the treatment, which is therefore largely empirical, is usually quite satisfactory, comprising (1) rest, (2) back-splint, and (3) patience. The general consensus of surgical opinion is against operative treatment except in very marked or advanced cases. The most recent reference to this condition, as far as I know, occurs in the *Archives of Radiology and Electrotherapy* for May, 1920, where two somewhat similar figures are given.

The X ray plate was taken by Mr. A. L. Watson, radiographer to the hospital.

Reading.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

CONGENITAL SYPHILIS.

A MEETING of this section of the Royal Society of Medicine was held on Feb. 25th, Dr. F. S. LANGMEAD, the President, being in the chair, when a discussion on Congenital Syphilis was opened by Sir HUMPHRY ROLLESTON, whose paper appears in full in the front part of this issue of THE LANCET.

Mr. O. L. ADDISON opened the

Discussion from the Surgical Side.

He said that the manifestations of congenital syphilis, which came within the province of the surgeon were, on the whole, less desolating than those with which physicians had to deal, for surgeons were spared the contemplation of the assaults made by the disease upon the central nervous system. Surgical lesions were so peculiarly amenable to treatment, if identified in time, that it was not necessary to labour the importance of early diagnosis.

The chief factor in successful diagnosis of most diseases was to be on the watch for them, for only so could one penetrate their manifold disguises, and it was a commonplace that syphilis was the most efficient masquerader of them all. Once suspected, the diagnosis in the forms of syphilis with which he had to deal could be decided by the results of treatment, with or without the help of the Wassermann reaction.

He described briefly the features of congenital syphilis. As far as rarities were concerned he would content himself with insisting again that one could not be too suspicious of lesions which, however variegated and anomalous, could conceivably be credited to a chronic inflammation.

At the present day we seldom saw the severer manifestations of the disease except in infancy; Hutchinson's triad—i.e., notched teeth, deafness, and interstitial keratitis—was uncommon, and it was much more usual for the lesion for which treatment was sought to be the only obvious sign of the disease. With the present system of antenatal treatment there was every hope that the syphilitic infant would soon be a rarity. There seemed to be no limit to the age up to which symptoms might continue to appear; at the present time he had a patient, aged 20, with old thickening of the *tibiæ*, who had just developed a gumma in the muscles of the leg, and interstitial keratitis. For descriptive purposes it was advisable to consider the manifestations of congenital syphilis in relation with two age-periods—viz., (1) infancy, and (2) after infancy.

(1) Congenital Syphilis in Infancy.

If we excepted "snuffles" there was only one common surgical lesion of congenital syphilis during infancy—viz., osteomyelitis of the long bones. It was seen most often at about 3 months of age, and started as a periostitis, rapidly becoming an osteomyelitis, and affecting as a rule the long bones of the arms and legs. The condition was generally more advanced in the arms than in the legs. X ray photographs were very characteristic. In the milder degrees they showed the periosteum raised from the shaft by a deposit of new bone. More advanced cases showed, in addition, large areas of absorption, most marked at the ends of the diaphysis.

Mild degrees of this osteomyelitis did not give rise to obvious symptoms, but he believed it to be an almost constant feature of infantile congenital syphilis, and he had frequently had X ray examination carried out in doubtfully syphilitic cases for the purpose of confirming the diagnosis. In advanced cases fractures were frequent. Owing to the absence of pain and swelling in the earlier stages, it was only the advanced cases which were recognised, and then under the entirely misleading name of "epiphysitis." The reason for this name was that changes were most advanced at the ends of the diaphysis, and consequently it was here that the tenderness and swelling were most marked. The child naturally refrained from use of any muscles attached to the inflamed periosteum, and a pseudo-paresis resulted. Later, effusion into the joint occurred, with or without a secondary infection, and separation of the epiphysis was not infrequent. He had not seen syphilitic arthritis in infants unassociated with osteomyelitis. Bending of the bone due to softening was said to occur, but he had seen no instances of this, though fractures were quite common and might cause deformity. There would be little or no difficulty about the diagnosis of these cases if X ray examination were made. He had met with no other disease which gave similar appearances in *all* the long bones.

Diagnosis had to be made from—

(1) *Periostitis and osteomyelitis of other origin*—e.g., staphylococcal, pneumococcal, tuberculous, &c. These were all extremely rare at the age when syphilitic osteomyelitis was most common—i.e., 3 to 4 months—and never did they affect all the long bones. The diagnosis was obvious from the X ray picture alone.

(2) *Scurvy.*—Here the age of the child, seldom under a year, and other obvious signs of scurvy were sufficient.

(3) *Poliomyelitis*, might be mistaken for the advanced stage of pseudo-paresis, but again an X ray examination of the long bones settled the question.

(4) *Acute infective arthritis*, which was most often pneumococcal, but might be due to almost any organism, even the *Bacillus coli* or the meningococcus. These might be differentiated readily from the syphilitic cases by X ray evidence of osteomyelitis in the latter, but it must be remembered that it was quite usual for a secondary infection to occur in the syphilitic cases.

(5) Cases of *renal insufficiency* associated with multiple fractures, such as were recently described before the section by Mr. D. H. Paterson, with X ray appearances not unlike late quiescent cases of syphilitic osteomyelitis, but the presence of *albumin in the urine* and a *negative* Wassermann reaction would indicate the correct diagnosis.

Dactylitis was extremely rare; he had only seen one or two instances.

Orchitis was the next infant lesion in order of frequency. It was common at birth or in the first month or so, and appeared as a hard, painless enlargement, usually symmetrical and accompanied by a small hydrocele. A few cases of broken-down gummata of the testicle had been recorded, the earliest at the age of 9 weeks. He knew of no other lesion for which this could be mistaken. Tubercle of the testis occurred at a later age.

(2) Congenital Syphilis after Infancy.

In this period bone and joint affections were still the most frequent manifestations. There were two forms of bone involvement, periostitis and osteomyelitis.

Periostitis occurred at the age of 3 to 4 years or later and was either diffuse or localised, the diffuse form giving rise to the well-known sabre tibia, the localised form to nodes; both were commonest on the tibia, but might occur on other long bones, and the node not uncommonly on the cranial bones and vertebræ. The diffuse form rarely broke down, whereas the node commonly did. Both forms led to the formation of a large quantity of sclerosed bone, except in the cranium and vertebræ.

General osteomyelitis affecting a part or the whole length of one or more long bones was much less common. It gave rise to an enormous general increase in amount and density of the compact bone, with areas of softening and formation of sequestra in the medulla. Lesser sinuses formed and the condition was clinically indistinguishable from a chronic osteomyelitis of staphylococcic or other origin. Overgrowth in length and bending might occur, or shortening if the epiphyseal cartilage was involved.

With regard to diagnosis, in diffuse periostitis the perfectly smooth even deposit of new dense periosteal bone was unlike any other condition which he knew of. There was no excuse for mistaking the rickety tibia for syphilitic periostitis.

Local periostitis in long bones might occur anywhere in the length of a long bone, but usually was near one or other end of the diaphysis. A green-stick fracture without bending or a simple traumatic periostitis might be mistaken clinically for an early stage. In more advanced cases there was often a very great enlargement of the bone, and a diagnosis of sarcoma was frequently made on clinical grounds, but an X ray examination showing the often enormous formation of dense bone would settle the question. From an enlargement due to tuberculous abscess or osteomyelitis an X ray test was conclusive, for in tubercle rarefaction and absorption with very little new formation or sclerosis of bone was usual. Many of these syphilitic cases had been described as a hypertrophic form of tuberculosis of bone. Localised periostitis of the cranial bones was frequent and often indistinguishable clinically from sarcoma or tubercle, though the latter was extremely rare.

From the local forms of osteomyelitis, tubercle and sarcoma might be indistinguishable clinically, but here again an X ray examination was conclusive, but it might not be so from a chronic abscess of bone due to staphylococcus.

In diffuse syphilitic osteomyelitis the onset was never so acute as in the more common forms due to staphylococci, &c., but a certain diagnosis could seldom be made on clinical or X ray evidence, and reliance must be placed on the presence of other signs of syphilis, the Wassermann reaction and the results of treatment.

Joint lesions were of three types; two of these were common—gummatous synovitis and symmetrical serous effusion, and one was very rare—chondro-arthritis.

Gummatous synovitis was seldom recognised as it was indistinguishable clinically from tubercle; in both muscular spasm and wasting were present, and it was commonly unassociated with other signs of congenital syphilis. Another point of resemblance to tubercle was that the joint might recover with simple splinting. These cases differed from tuberculous joints in that there might be considerable overgrowth, and that shortly after the removal of the splints there was perfect recovery of movement. In gummatous synovitis X rays frequently showed a layer of new periosteal bone at the end of the adjacent bones. This condition was usually monarticular, and might affect any of the larger joints.

Symmetrical serous effusion (Clutton's joints) most commonly affected the knee-joints. The condition was usually much more marked in one of the joints, the other frequently escaping the parents' notice. There were considerable effusion and a variable amount of synovial thickening. The symptoms were slight, little or no pain being felt except after prolonged use. Muscular spasm was absent, wasting slight, and the movements were free except for mechanical limitations.

Chondro-arthritis was rare, and one of the later manifestations; it was characterised by effusion, by thinning and ulceration of cartilage, and erosion of the underlying bone. The synovial membrane was thickened and fringed. Several joints were affected. G. F. Still described another type with much limitation of movement and no effusion, closely resembling a rheumatoid arthritis.

Other rarer lesions of congenital syphilis belonging to this age were:—

(1) *Gummata* in muscles, often reaching a large size. Gummata of the skin and subcutaneous tissues, unassociated with underlying disease of bone, were very rare, but cases with extreme extensive destruction of the lips and nose had been recorded. He had seen one case of multiple gummatous ulceration of the skin and one or two of rupia. As a rule the so-called cutaneous gumma was a tuberculide. The diagnosis of gummata in muscles from any chronic inflammatory mass might be impossible clinically, and recourse must be had to the Wassermann reaction, and, if necessary, exploratory operation and bacteriology or a microscopic examination. Sarcomata might generally be diagnosed by their better definition, though a diagnosis might be impossible without an exploratory operation.

(2) *Ulceration* of the hard or soft palate and glossitis were not uncommon.

(3) *Chronic enlargement of the glands of the neck*, often forming a mass of considerable size and indistinguishable clinically from enlarged glands due to tubercle or any other chronic inflammation, was fairly frequent.

Diagnosis and Treatment.

Diagnosis in the presence of the commonly accepted signs of congenital syphilis—viz., depressed nose, Hutchinson's teeth, interstitial keratitis, &c.—was simple, and the diagnosis of any given lesion had only to be suspected to be immediately confirmed.

Unfortunately, many of these cases showed no clinical signs other than the lesion for which treatment was sought, and these lesions so exactly imitated those of other and more common diseases that the correct diagnosis was not thought of. The most striking example of this mistake, in his experience, was gummatous arthritis; in these cases other clinical signs of syphilis were usually wanting and a diagnosis of tubercle was almost invariable. Unless a Wassermann reaction was done as a routine in all cases of suspected tubercle of joints and spines the majority of these cases would be missed. Congenital syphilis could, and did, imitate exactly nearly all the lesions of tubercle, and he thought that this was responsible for the statements seen in the older text-books that the association of the two diseases was very common. He had only had one case where he was able to prove the presence of both syphilis and tubercle. In doubtful cases diagnosis could only be made on the Wassermann reaction and the results of treatment.

He would leave a detailed consideration of this to Dr. Nabarro, who had given the general treatment in a large number of his cases.

Constitutional treatment, he considered, was all-important and he believed strongly in a course or courses of intravenous or intramuscular injections of novarsenobillon with prolonged use of mercury; of the two drugs, he believed mercury to be of far greater value, but courses of the drug must be given over a period of many years. He preferred to use it in the form of equal parts of ung. hydrarg. and lanoline. With this he used to get excellent results before the days of arsenobillon. He had not yet known of a child with a Wassermann reaction originally positive becoming negative as a result of treatment and remaining so permanently. It was possible, and he thought likely, that in some cases the virus did die out, but seeing that latent periods with entire absence of symptoms might last for 30 to 40 years, we could not say that a patient was cured even if the Wassermann reaction remained negative for 9 or 10 years.

Juvenile General Paralysis.

Sir **FREDERICK MOTT** described cases of infantilism, and showed lantern slides of juvenile general paralysis.

He remarked that among 40 cases of this disease resulting from congenital syphilis only about one half showed obvious clinical signs, but the history of miscarriages, abortions, and children dying in early infancy was followed by this form of late syphilis of the nervous system. He stated that he had examined the testes in a number of cases of juvenile general paralysis and he had observed that those with infantilism exhibited arrest of development of the spermatic tubules so that they presented the same appearances as the sections of the testes of a newborn infant. The interstitial cells of Leydig were not visible and there was replacement by a lymphocyte infiltration. In cases which presented no clinical evidence of infantilism, the seminal fluid contained normal spermatozoa; in one case living spermatozoa were found in the fluid eight hours after death. These testes also showed the interstitial cells of Leydig. Although he had found spirochætes in an emulsion of the brain in ·66 of 100 successive cases of G.P. he had not once found in 50 cases spirochætes in an emulsion of the testes. He had examined the pituitary body in a few cases of general paralysis and tabes, but he had never seen spirochætes or any evidence of syphilitic inflammation. He was of opinion that affection of the endocrine organs would be associated in the great majority of cases with a general spirochætal septicæmia that would terminate fatally in early infancy. He finally referred to facts pointing to the probability that the spirochæte causing tabes and general paralysis was an attenuated form—possibly, as Levaditi and Marie suggested, neuropathic, as distinct from dermatropic. The history of the majority of the cases of juvenile general paralysis did not support this hypothesis of a distinct organism.

Treatment in Relation to the Wassermann Test.

Dr. **DAVID NABARRO** said that his experiences referred almost entirely to the V.D. clinic at the Children's Hospital, Great Ormond-street. Compared with those of some observers, his record of cases might not be a large one, but he was in the fortunate, and possibly unique, position of taking the bloods and doing the Wassermann tests, and of treating and watching the cases himself. Thus, during the year 1920 he saw 68 new positive cases, did 662 Wassermann reactions, and treated 77 patients with 530 injections.

Until the end of last year he used novarsenobillon for the injections and with no ill-effects except a little sickness in a very few cases. He was now using neokharsivan for some patients and found that it increased the number of cases of vomiting immediately after the injection. Intravenous injections into an arm or the external jugular vein, but never into the superior longitudinal sinus, were given whenever possible. In the absence of a suitable vein the injections were given intramuscularly, and the drug was used in simple watery solution for both kinds of injection. For infants under 1 year the initial dose was 0·05 g., increasing to 0·1 or 0·15 g. For larger children the initial dose, according to the size of the child, was 0·1 or 0·15 g., increasing to 0·3 or 0·45 g. A course consisted of six weekly injections of N.A.B. and simultaneous inunction with mercury ointment. At the end of the course some potassium iodide or syr. ferri iodidi was given for three weeks and then a Wassermann test taken. If necessary the course was repeated once or twice or even more often. Several of his patients had had 18 to 24 injections totalling from 5 to 7 or 8 g. of N.A.B., and one boy had had over 10 g. of galyl and N.A.B. in 28 injections without any ill-effects and, it should be added, with no effect upon the very strongly positive Wassermann reaction of his blood.

With regard to the Wassermann test, he had great faith in this when *reliably* done, and believed that a "strong positive" always means syphilis. One must remember, however, that a positive Wassermann did not always prove that a particular lesion in a child was syphilitic in nature. Thus he had seen a tuberculous bone lesion in a syphilitic child and quite recently a case of poliomyelitis. A negative Wassermann did not always preclude syphilis. Very young children might give a negative reaction, so that he invariably tested, whenever possible, *the blood of the mothers of infants under a year.* The mother's blood was practically always positive (but varied in degree) when the child's blood was positive. Very rarely was the mother's blood negative when the child's was positive. He had found that the father's blood was frequently negative. Other children in the family might have a strongly positive Wassermann reaction. He was treating some of these cases, even in the absence of any symptoms, in the hope that thereby the later manifestations of congenital syphilis—especially the serious eye and ear lesions—might be averted.

As a result of the combined treatment with arsenic and mercury many of the patients were much benefited, but it was as yet too early to say that they were cured. Hearing might improve, ulcerations of the palate heal quickly, hæmoglobinuria be prevented, even mentally defective patients become brighter and less noisy and troublesome to their parents, as well as more intelligent. The keratitis cleared up more thoroughly perhaps than with mercury alone, but *he could not say if the duration were shortened.* Many of the young patients developing a rash at four, five, or six weeks died in spite of the treatment.

In congenital syphilis, so far as his experience went, the Wassermann reaction could not easily be made negative. As already mentioned, one patient had had over 10 gr. of arsenic compound and much mercury, and his blood was still very strongly positive. Out of 62 treated cases the Wassermann reaction had at some time or another become negative in only 14, and in five of these cases it had since become positive again.

Lastly, in view of: (1) the difficulty of certainly curing cases of congenital syphilis; (2) the heavy infantile mortality for which syphilis was directly and indirectly responsible; and (3) the large amount of mental and physical disability which congenital syphilis produced—especially mental deficiency, impairment and even total loss of sight and deafness—it was obvious that attempts should be made to treat the child before it was born by treating the mother. It had *now been abundantly proved that by treating a prospective* mother by the combined method she would be delivered of a healthy child, in most cases.

Obstetric and Antenatal Standpoint.

Dr. **AMAND ROUTH** said that he wished to speak from the obstetric and antenatal standpoints, for congenital syphilis could never be stamped out unless the infected fœtuses were treated through their mother during pregnancy. Probably the deaths of the embryos and fœtuses were as numerous during their mother's pregnancies as the deaths of the surviving infants during the first year of life, which latter, in 1919, amounted to 61,715. It had been estimated that in each of these periods about 16 per cent. of the deaths were of syphilitic origin, which would mean that 20,000 potential citizens died annually between fertilisation of the ovum and the end of the infantile year. Many of the intra-uterine deaths would occur very early in pregnancy, before nature's protection or treatment of the mother could effectively operate, and the abortions would be unrecognised as such.

The infantile deaths of syphilitic children would occur chiefly at two periods, the one during the first week or two after birth, due to the debilitated newborn children being unable to stand the strain of birth, the other later on in the infantile year when congenital syphilitics, born apparently healthy, had become clinically syphilitic. The tendency for weakened children to die soon after birth was shown by the fact that in 1919, out of 61,715 infantile births 8383 died in the first 24 hours of life, and 9388 in the first six days, together being more than a fourth of the infantile deaths. The reduction of infantile mortality in 1917-18-19 had been entirely from reduction of causes operating in the later months of the infantile year.

Owing to the absence of a scheme of confidential death certificates *in this* country *(alone in this respect amongst* European countries) the mortality of congenital syphilitic children who had not been treated through their mothers during pregnancy was not known; but Dr. Helen Campbell, head of the Infants Health Department in Bradford, reported that in 1918, out of 1606 children under her care, 148 died, and of them 120 (81·08 per cent.) were congenital syphilitics. Of the 107 legitimate children who died, 83 (77·5 per cent.) had congenital syphilis, and of the 41 illegitimate children who died 37 (90·2 per cent.) had syphilis. Dr. Helen Campbell said that these deaths of congenital syphilitics were due to the fact that they were peculiarly selected for attack by respiratory and gastro-intestinal and specific (measles) infections which killed them in much larger numbers than infants not so affected. Obviously these children, infected from their conception, must be treated during their mother's pregnancy if they were to be born healthy. Up to 1905 pregnant mothers *who had previously had syphilitic children were treated by* mercury from the third month of pregnancy, and healthy children were born and reared, but the treatment had to be adopted at each subsequent pregnancy. Was this necessary now under salvarsan treatment? There was no doubt, however, that treatment should be begun as early as possible, though Mr. John Adams, Mr. Charles Gibbs, Dr. J. H. Sequeira, and Dr. Morna Rawlins had proved that treatment of the pregnant mother by salvarsan could be begun as late as the seventh or eighth month, with the great probability that a healthy child would be born. This was a surprising result. Such a cure could not happen in cases where the child's organs were already diseased and full of active spirochætes, but only where the infection was in a quiescent stage rendered latent by natural agents.

Latent Syphilis in Pregnancy.

The fact of latent syphilis in pregnancy was now admitted to be frequently present, especially as regards the child. If this were not so, no infected fœtus could live in utero for nine months with active syphilis progressing. The ovum could be infected at fertilisation or soon after, whilst implanted in the uterine mucosa, by early granule stages of the mature spirochætal organism. These granules were the result of the spontaneous breaking up of the spirochætes. Noguchi had described how he had reared such granules in a series of cultures from 1910 to 1917 and had seen them "sprout" and develop into the mature spirochæte capable of infecting monkeys and rabbits. Sir F. W. Mott had quoted O'Farrell and A. Balfour to show that injection of salvarsan caused shedding of granules from the *Spirochæta pallida*, and he himself believed that a similar result was obtained by the action of the syncytial toxins formed throughout pregnancy, during the trophoblastic action of the cells of the chorionic villi, whilst burrowing into the maternal tissues at the placental site, at the point of union of the mother and fœtus. The infection was, he believed, rendered latent by the granules being kept biologically inactive, perhaps by the prompt destruction of their delicate reproductive "sprouts." In such cases the child would be infected by the inhibited granules and have a negative Wassermann, and if the mature organism were absent also from the mother's tissues she also might be negative during the pregnancy. If the mother had not been treated during her pregnancy the child might be born apparently healthy owing to the infection being latent, but as the syncytial toxins (or "chorionic ferments") disappeared from its tissues, the granules would begin to develop into the mature organism and the child would give a positive Wassermann reaction, owing to enough antibodies being produced to excite a general reaction in its blood; the child would then become clinically syphilitic. Occasionally, the natural protection afforded by this syncytial action would be so strong that the granules would not only be inhibited but destroyed, and the child would be born free of syphilis. This explained the occasional birth of a healthy child amidst a series of stillbirths or infected children.

The cause of death was "unknown" in about 25 per cent. of stillbirths, and in a larger proportion of abortions. Dr. Eardley Holland was working at this problem and considered that in the absence of spirochætes, chondro-epiphysitis was a certain sign of syphilis, whilst enlargement of the liver and spleen were less certain indications. He thought that further research would reduce the large class of "unknown" cause of death in macerated fœtuses and increase the class of cases due to syphilis. It might also be possible, by staining or culture, to recognise earlier stages of the mature organism. With our present knowledge congenital syphilis could be prevented or cured if every syphilitic mother were treated, not only during her pregnancy but in anticipation of the next pregnancy, till she was definitely cured. The child might, however, need treatment after birth for a length of time not yet agreed upon. There must be serious cases of embryonic fœtal infection where it was not rendered latent early enough *to save the child's life, but all such cases* would terminate in abortion or stillbirths. All other cases seemed to be amenable to modern treatment during pregnancy up to the seventh or eighth month.

The real difficulties were, he said, (1) to get the mothers under medical supervision for diagnosis and treatment; and (2) to be able to enforce treatment for a sufficiently long time to get the desired result. If these difficulties could be surmounted congenital syphilis could be stamped out by antenatal treatment of the mother.

Blindness and its Associated Symptoms.

Mr. **BISHOP HARMAN** described the associated symptoms found in 600 cases of children blinded from the effects of congenital syphilis. He stated that the cases were the collection of 17 years, and that they had been under his care for an average time of six years, so that there was ample opportunity for observation.

Dividing the cases into two groups as to whether the front or back parts of the eyes showed the most manifest inflammatory effects, he found 398 cases of interstitial keratitis and 229 cases of disseminated choroiditis. Amongst the group of interstitial keratitis the main associated symptoms were: Hutchinson's teeth, 265; physiognomy, 115; iritis, 128; bad family history, 170; scarred mouth, 61; bone or joint disease, 26; ulceration of nose or palate, 15; deafness, 63. Amongst the group of disseminated choroiditis numbering 229 there was optic atrophy in 117; Hutchinson's teeth, 97; physiognomy, 53; bad family history, 115; bone or joint disease, 19. deafness, 51. Comparing the frequency of the chief associated symptoms of the two groups, it was found that the characteristic teeth were present in 73 per cent. of keratitis and 46 per cent. of choroiditis, bad family history in 47 per cent. of keratitis and 55 per cent. of choroiditis, gross mental disorder in none of the keratitis cases but in 41 per cent. of choroiditis. Bad family history was shown by the high rate of miscarriage, stillbirth, infant death, and diseased children. Amongst 150 syphilitic mothers there were 1000 pregnancies, with only 390 presumed healthy children. Amongst 150 average hospital mothers there were 826 pregnancies, with 654 healthy children, or 792 per 1000, so that the average mothers produced twice as many presumed healthy children as the syphilitics.

The discussion will be reopened on Wednesday, March 16th, at 8.30 P.M., by Dr. Morley Fletcher, and continued by Mr. John Adams and others.

COMBINED MEETING OF CLINICAL, MEDICAL, AND SURGICAL SECTIONS.

GRAVES'S DISEASE: ITS MEDICAL AND SURGICAL TREATMENT.

THE adjourned discussion on this subject was continued on Feb. 25th, Sir ANTHONY BOWLBY, President of the Clinical Section, being in the chair. A report of the opening of the discussion appeared in THE LANCET of Feb. 19th (p. 379).

Surgical Treatment of Hyperthyroidism.

Mr. **DONALD ARMOUR**, in reopening the discussion, said that it was regrettable that a name based on its pathology had not yet been adopted generally for the symptom-complex. "Exophthalmic goitre," descriptive of two of its most obvious symptoms, was often a misnomer from the absence of one or other or both of them. Moreover, the addition of the qualifying terms "true" and "false" would only add to the confusion. He would urge that the term "hyperthyroidism" should more generally be applied to this disease as being a more accurate and scientific description. His experience of the surgical treatment extended over some 15 years and included about 200 cases. Surgical treatment was based on the view that this disease was primarily one of the thyroid gland, and that the resulting symptoms were due to a disturbed function of that gland "probably to hypersecretion of materials which induce a sort of chronic intoxication" (Osler). Surgical treatment was directed to lessening the overaction of the gland or diminishing the amount of its perverted secretion, either by reducing its blood-supply by ligation of arteries or by ablation of more or less of the gland substance. These results were more certainly and more permanently attained by surgical treatment than by other means. With greater experience in operative and anæsthetic technique and increased knowledge of the disease the surgical risks had been greatly reduced in the last few years.

The general anæsthetic bogey, he hoped, had been laid finally to rest. A technique evolved by a skilled anæsthetist from long experience of these cases, one with whom he had worked in frequent association, had relieved him from all anxiety with regard to the anæsthetic, which in his practice was always a general one. In those cases in which, from the condition of the patient, it was thought advisable to "steal the gland," as Crile called it, the method carried out by his colleague, Mr. H. M. Page, was briefly as follows. The preliminary treatment was described to the patient as consisting of hypodermic injections and rectal enemata. For several days preceding the operation hypodermic injections of distilled sterile water were given, followed by small saline injections per rectum. The saline was changed to olive oil for a day or two, and finally on the day fixed for the operation—of which the patient had no knowledge—a hypodermic of morphine and atropine was given, followed by ether and olive oil by the rectum. He had found rectal ether an ideal anæsthetic for these cases. Chloroform as an anæsthetic should never even be mentioned.

The anæsthetic bogey looked like being replaced by another, that of damage to the recurrent laryngeal nerve. Unquestionably injury to this nerve might take place, and was a very serious operative result, but it could be avoided by skill and experience. A specimen had recently been shown in which the recurrent laryngeal nerve before going into the larynx broke up "into a leash or plexus." The opinion was expressed that "that was probably invariable, and it was almost impossible to enucleate the lateral lobe of the thyroid without damaging one of these branches." On this question he had consulted Professor Arthur Keith, who had told him that he had knowledge of such behaviour from the work of Mr. F. G. Parsons, but that it was "probably invariable" he did not agree. Nor did a search of the specimens in the Hunterian Museum reveal a single example of such behaviour. Nor did Professor Keith agree with the second deduction, because the nerve neither entered the gland nor pierced the capsule, and could easily be avoided with reasonable care during the operation. The requisites, in addition to a knowledge of the anatomy, were the use of the greatest gentleness and deliberation in that part of the operation which had to do with the gland itself. He thought that the risk was still further reduced by following Charles Mayo's suggestion of wiping down the capsule off the gland with gauze. Moreover, the inferior thyroid vessels should be secured within the capsule as near the gland substance as possible. "Considerable traction on the gland and free use of the scissors," as described by one writer, would certainly, sooner or later, result in injury to this important structure.

With regard to the amount to be removed, he had always acted empirically and removed one lobe, the larger if they differed in size, together with the isthmus. Other surgeons did likewise, and advised further subsequent removal if indications arose. Might not this method result in the removal of too much gland at the first operation? It was so in the case he had shown. A hemithyroidectomy had been done with excellent results as far as the hyperthyroidism was concerned, but the patient had now gradually developed symptoms of hypothyroidism, controlled only by thyroid extract. Would it not have been sufficient to have tied the superior thyroid arteries? Ligature of the arteries had a definite place, either as a preliminary to future gland removal, or as the only operation necessary. He had been struck by the excellent results obtained by ligature alone in a few cases. These two operations alone should have a place in the surgical treatment of the disease.

Every case at any period of its course was not suitable for surgical treatment, nor should surgical operation be blindly applied to every case. The surgical treatment of hyperthyroidism was *not* an emergency operation, and cases should come to operation only after such treatment by rest and medication had been undergone as was necessary to make them suitable for operation. The symptoms contra-indicating immediate operation were progressive and rapid emaciation, acute cardiac dilatation and myocardial exhaustion, persistent vomiting and diarrhœa, and marked mental symptoms. In general terms acute cases were also unsuitable for operation immediately. On the other hand, the cases called by Kocher "secondary Graves's disease" were particularly suitable for surgical treatment.

Treatment by X Rays.

Dr. **FLORENCE STONEY** gave particulars of 200 cases showing the benefit accruing from treatment by X rays; 185 were of women and 15 of men.

Graves's disease, she said, was essentially a disease for the physician. Two lines of treatment were indicated, one to lessen the activity of the thyroid, the other to remove the cause, the bacterial toxins responsible. The radiologist or surgeon was necessary in every case to complete the former. X rays acted as a specific; they brought about partial atrophy of the thyroid gland, which could be stopped at any time it was thought desirable. In the early cases the action was rapid, but in chronic cases, and in later stages much patience was required to get satisfactory results. X rays attained the same aim as the surgeon without danger or pain. The three disadvantages were the delay in obtaining results, telangiectases at the site of the application, and scarring of the neck by prolonged treatment in chronic cases. An essential to the treatment was removal of the primary cause and control of the source of toxæmia, whether oral sepsis, otorrhœa, chronic appendicitis, intestinal stasis, or other source. Additional measures of value were mental quietude and endocrine therapy.

It was not advisable to wait for exophthalmos or goitre before making the diagnosis or commencing treatment, and considerable reliance in early stages could be placed upon the rapid pulse and toneless first sound. The disease required treatment from the dentist, physician, and radiologist working in combination.

Results of Treatment at Guy's Hospital.

Dr. J. M. H. CAMPBELL had investigated the results of the cases of Graves's disease treated at Guy's Hospital from 1908–17 with a view to comparing the figures with those of Sir William Hale-White of an earlier series, and to estimating the prognosis.

There were 127 cases, of which 8 terminated fatally in hospital, either directly from Graves's disease or from terminal infections; 1 patient had died from carcinoma of the pancreas. Eighty of those discharged from hospital had been traced for periods of from 4 to 12 years; of these 7 died from exophthalmic goitre and 5 from other diseases. These 80 cases, together with the 8 who had died in hospital, were arranged for statistical purposes into five groups. Group I., cured completely 7, or 8 per cent.; Group II., almost cured with but few signs remaining 26, or 30 per cent.; Group III., much improved and able to do light work 29, or 34 per cent.; Group IV., little or no improvement 11, or 13 per cent.; Group V., died (8 in hospital, 7 afterwards) 15, or 15 per cent.

The percentages were calculated on the total number of 127 cases, making use of the assumption that among the 38 not traced the relative results were the same as among the 80 who could be traced. In arriving at a comparison between surgical and medical treatment 5 cases treated surgically were excluded, as they died within a year and therefore came among cases which many surgeons would have considered inoperable. There had been no deaths from the operation itself. The cases which formed the basis for these figures were 16 treated surgically and 56 treated medically. The figures for the corresponding groups were as follows: Groups I. and II. (cured and almost cured), surgical 38 per cent., medical 41 per cent.; Group III. (much improved), surgical 38 per cent., medical 28 per cent.; Group IV. (not improved), surgical 12 per cent., medical 17 per cent.; Group V. (died), surgical 12 per cent., medical 14 per cent. He suggested that the reason why a second operation might become necessary was, perhaps, that after the first operation the gland responded again to the stimulus, whether psychogenetic or toxic, which had provoked its original enlargement. The results were too few for definite conclusions, but showed that partial thyroidectomy was not always so preferable that one ought to forget the possible danger of operation and advise it on every occasion.

Selection of Cases for Operation.

Mr. W. H. C. ROMANIS considered especially three aspects of the question: (1) the selection of cases for operation; (2) the nature of the operation to be done; and (3) the after-results of operative treatment. It was not unusual, he said, to find that some observers labelled many cases "Graves's disease" when the symptoms and physical signs were not sufficiently pronounced to merit that name. Nor was it unusual to find patients with adenoma of the thyroid, parenchymatous goitres, and even malignant thyroids, exhibiting palpitation, nervousness, rapid pulse, and tremor; but he did not regard these as Graves's disease, and thought that the name should be applied only to those patients who in addition had a noticeable change in the eyes, and definite cardiac enlargement.

1. As regarded the decision whether such a case was likely to benefit by operation, we must consider whether mild cases should not have medical treatment first; if all signs and symptoms were slight, not progressing, and of short duration, medical treatment would often give benefit, though frequently only temporary. But in moderately severe cases or in patients in whom any one sign or symptom was present to a marked degree and progressing, medical treatment was only of value as a preliminary to operation, and should only be indulged in for two or three months. Unfortunately, many patients were not advised to have surgical treatment until the condition was so severe that risk of operation had to be balanced against the benefits which might follow it, though in dealing with so serious a disease a small risk was justifiable in an attempt to obtain a cure. He did not regard great rapidity of pulse-rate, irregularity, marked cardiac dilatation or fibrillation, acetonuria, diarrhœa and vomiting, serious loss of weight as any contra-indication to operation, provided that the patient was anxious to have operation done and that her mental condition was moderately good. Marked nervous excitability (almost always present) was no bar to operation, but melancholic, delusional, or maniacal symptoms forbade operation, for it would lead to no improvement. Age of over 60, diabetes, great fear or unwillingness to have operation, or œdema due to a failing heart, contra-indicated surgical treatment. Patients who submitted to operation unwillingly did not benefit from it as much as those who were anxious to have it done; but most of the hypersensitive, nervous patients willingly underwent operation.

2. The nature of operation to be done. Removal of a large portion of the thyroid gland was the procedure of choice. Whatever the cause of the enlargement might be (infection possibly) the enlarged gland was the factory of the symptoms, and by reducing its activity we could cure them. Hemithyroidectomy was never sufficient; one lobe, the isthmus, and at least a quarter of the other lobe, was the minimum amount to be excised. Hemithyroidectomy would produce an improvement, but not a cure. It was most important not to leave behind small portions of the lobe which was being removed, on the recurrent laryngeal nerve or on the superior thyroid artery, as was done by some surgeons, and also that the tongue-shaped process which often passed behind the larynx should also be removed, for otherwise the pieces left behind hypertrophied and caused persistence of symptoms and subsequent relapse. Milder cases could safely be operated on under open ether or rectal ether, but severe cases were subjected to a much smaller risk if done under local anæsthesia; anxiety and fright would not in this case be present if morphia and hyoscine were first given; if this was done 90 per cent. of the patients declared afterwards that they had no recollection of the operation at all, even though they might have cried or talked during it. Many patients asked to have it done under local anæsthesia. In very severe cases a second or even a third operation might be necessary.

3. The after-results. In the very severe cases the patients seemed to obtain even greater relative benefit and were more pleased with their improvement after operation than were those more slightly affected. As regards mortality, out of about 220 thyroidectomies done for this condition, mostly under local anæsthesia, five had died (two of pneumonia) a mortality of just over 2¼ per cent. Many of these patients had pulse-rates of over 170. Usually after thyroidectomy there appeared to be more improvement in the subjective symptoms than in the physical signs. Patients looked better and felt much better within a day or two, but the physical signs might take some weeks to improve. As a rule, four months after an adequate thyroidectomy patients felt well, slept well, ate well, and could do their day's work and put on weight, but the pulse-rate, though much slower, was not quite normal; the cardiac dilatation was very much less. Irregularity of pulse, diarrhœa and vomiting, and acetonuria invariably disappeared, but the eyes, though much less prominent than before, rarely returned completely to the normal. It might be thought that if even more thyroid tissue had been removed these physical signs would be improved still further, but he doubted it. For though a second operation was often worth while if the subjective symptoms had not quite gone, it did not produce much further improvement in the eyes and pulse-rate, whilst in the few total thyroidectomies he had done for Graves's disease the physical signs had never quite completely disappeared. He would like to receive information on the following points: Were not the parathyroids a physiological myth, and did they really exist as functioning organs? After complete removal of the whole thyroid gland for malignant disease or for Graves's disease, and after the second and third operations for removal of thyroid tissue, all done without paying the slightest attention to the parathyroids, he had never seen any symptoms of parathyroid insufficiency, and he knew no surgeon who had. In fact, tetany seemed to be more common after gastric operations than after thyroid operations, and he was tempted to doubt whether in man the parathyroids played so important a part as the physiologists would have us believe.

Surgical Treatment of Medical Failures.

Mr. A. J. WALTON said that his experience of exophthalmic goitre was based upon 101 cases which were in a sense selected cases, since all had had medical treatment which had failed to cure them. If operative treatment was to be accepted as a routine measure two premisses must be granted: (1) that the disease was due to hypersecretion; (2) that the results of medical treatment were unsatisfactory. The experimental and clinical evidence were both strongly in favour of the disease being due to hyperthyroidism. The actual results of medical treatment could only be determined from the published statistics, and in the past these results had not been good. The mortality appeared to be about 25 per cent., and there was no question but that medical treatment often had to be prolonged over a course of many years. He was much interested to hear Dr. H. Mackenzie state that the results of medical treatment were unsatisfactory in some cases. This had been his own opinion, but it was based upon no direct evidence. Sir William Hale-White had given figures which at first sight appeared to favour medical treatment. His figures as published in his paper of 1912, if he interpreted them right, showed that only 102 cases were traced out of a total of over 200, and did not include a series of 18 that died in hospital. If this was so the results are valueless, for we had no knowledge of the mortality in the untraced cases. so that the total mortality might be anything from the 156 given by Sir William Hale-White to over 502. It was his custom never to operate in the first six months of the disease, for in this period the most beneficial results would be likely to accrue from other measures; thus every case upon which he had operated had been treated for six months or more, and many had been under treatment for as long as 10 to 15 years. His experience of these patients had been that while they were in bed having complete rest their condition was considerably improved; but that as soon as they were up and about again and attempted to work their disease relapsed, and that few, if any, had been able to live a normal life while undergoing treatment. He had found that the results of X ray treatment had been little, if any, better. He must admit, however, that, as in the case of medical treatment, it was mainly the failures that had come to him seeking further advice. His experience was based upon three groups of cases:—

(1) Eleven had come to him after X ray treatment, from which they had obtained little or no relief. Many of them had had treatment under different physicians for over a year. It was important to note that they came from all areas, so that it could not be claimed that the bad results were due to incorrect technique. All of them showed very considerable disfigurement from widespread telangiectases of the neck. Two stated definitely that while under X ray treatment their symptoms were greatly increased and that the thyroid became much more swollen. One of them developed carcinoma of the skin, which, although removed with a portion of the thyroid later, led to the death of the patient.

(2) Four which he operated upon in his early series relapsed after hemithyroidectomy, which he now knew to be insufficient. The symptoms were, as a rule, mild, and therefore they were especially suitable for X ray treatment. Although given a trial with this method they obtained no relief whatever.

(3) One was seen in the early stages when operation was considered inadvisable. In this patient the X rays were combined with medical treatment and the patient made a complete recovery.

It was his custom to advocate medical treatment:—

(1) In the first six months of the disease. During this period cases were transferred to a physician and the treatment usually consisted of rest, drugs, and X ray applications.

(2) As a preliminary to surgical treatment. As long as the patient was kept in bed and at complete rest very considerable improvement would follow, and no operation should ever be undertaken until such a preliminary course had been given.

(3) For certain cases where probably too small an amount of thyroid had been removed. They reached the third stage after operation, but failed to progress further. Medical treatment would then often help them to make a complete recovery. In all other cases operation is advocated.

In performing the operation he laid stress upon the importance of the following details.

Selection of the time of operation.—There could be no question but that the safety of the operative measures largely depended upon the careful selection of the time. Sometimes there were in the first six months or so very acute symptoms, and if an operation was then undertaken the mortality was likely to be high. With careful medical treatment the symptoms often abated, but having reached a more chronic stage failed to make further progress. It was in such a stage that the operation should be undertaken. All cases showed a very marked periodic variation. It would be noted, if a pulse and temperature chart were kept, that there were waves of exacerbation and depression, and that a period of exacerbation always follows any excitement, such as moving the patient to a hospital or nursing home. It was most essential that the operation be delayed until a period of depression of the symptoms. Hence no operation should ever be performed immediately after the patient had been moved to a hospital or home. He believed that two of the deaths in his early cases were directly due to the fact that he did not realise this important point. He had not found variation which had been described by Mayo, who stated that the best time to operate was either within the first six months or after the end of the first year, and that there was an exacerbation in the second six months, during which operation became a more risky procedure. In his experience if the patient were carefully watched operation could as successfully be undertaken during this period as in any other.

In the late stages of the disease secondary changes occurred, especially in the heart and kidneys. The mortality of operations undertaken in this period would be high, but with any other form of treatment the disease would steadily progress and the only hope of arresting its progress lay in operative treatment. The risk should therefore be carefully explained to the relatives, but operation should never be postponed because of these complications. He had one case where the disease had been in existence for eight years and very marked cardiac changes were present which quite incapacitated the patient from working. Since operation the man had improved enormously, and although the heart beat was still most irregular he was able to live a useful and happy life.

Selection of the type of disease.—There were three clinical types, two of which alone were true examples of exophthalmic goitre.

(1) The vascular type, which was most commonly seen in young women. The thyroid was large and there was much pulsation. There was a rapid pulse and well-marked exophthalmos. The chief complaint was dyspnœa and palpitation. Nervous symptoms might be present, but were not the chief factor in the disease. This type showed, as a rule, very good results after operation. The mortality was low and the progress after operation rapid.

(2) The nervous type, generally seen later in life and most commonly found in women at or about the menopause. The thyroid was often but little enlarged. Cardiac symptoms and exophthalmos were present, but not so obvious. The chief trouble was centred around the nervous system. The patient was very nervous, with tremors and erratic movements, so that she could hardly sit still, and her condition somewhat resembled chorea. The prognosis was less satisfactory. The mortality was slightly higher and improvement was slower. Some of them had definite mental symptoms; if there had been any form of mental disturbance before operation the mortality was likely to be much higher.

(3) Hyperthyroidism with adenoma. These were not examples of exophthalmic goitre at all, but were often included. There was a localised soft adenoma in one or other lobe which was associated with considerable evidence of hyperthyroidism, but never with complete hyperthyroidism. In no case so far had exophthalmos been present. These were the most satisfactory cases to operate upon. The mortality was negligible and the progress extremely rapid. The hyperthyroidism might cease completely within a fortnight after operation. It was often stated that the good results of surgical statistics were in large part due to the inclusion of many cases of this type. His series, however, did not include a single example of this variety.

It was important to remember the risk of operating for some other condition in a patient, the subject of hyperthyroidism. These patients seemed especially prone to gynæcological lesions, and he had seen a considerable number of cases with Dr. R. Andrews where the patient had been suffering with a uterine fibroid or some ovarian lesion. Operation elsewhere upon the body was associated with the same risk of increased hyperthyroidism without the relief gained by removal of a portion of the thyroid. For this reason he always advocated that wherever possible the thyroidectomy should be performed first. Later, when the condition was improved, the other operative measures could be carried out with relative safety.

Choice of operation.—The two chief dangers at operation were dependent upon pressure upon the gland and upon hæmorrhage. There was no doubt that if the hæmorrhage was severe the reaction after operation was much more marked. Owing to the dangers of pressure a wedge resection should never be performed. The portion of thyroid to be taken out should be removed by slow and careful dissection, all the vessels being ligatured before they were divided. He had never yet performed the operations of preliminary ligature or of injection of boiling water. By carefully selecting the time of operation the condition could be so improved that a partial thyroidectomy could be performed with safety. He was willing to admit, however, that some of the more severe cases could be much benefited by a preliminary ligature, and that it might render the later operation safer. He considered the operation of partial thyroidectomy to be the one of choice.

Preparation for operation.—Much of the success of the operation was dependent upon careful preparation of the patient. Stress had already been laid upon the importance of keeping these patients under medical treatment until their symptoms had abated. During this period it was his custom to have saline injections administered. They were given three-quarters of an hour before the time at which the operation would be carried out upon the appointed day. They seemed definitely to diminish the toxæmia and to lessen the symptoms. The choice of anæsthesia was extremely important. The evidence appeared to be convincing that there was real danger in the use of chloroform, and that the very high mortality which had been reported in the earlier series was dependent upon the use of this drug. Personally, he disliked operating upon patients under a local anæsthetic, and especially patients so extremely nervous. He believed that the anticipation of the operation might lead to an increase of the nervous symptoms. It was therefore his custom, wherever possible, to carry out the operation without the patient's knowledge. The relatives were informed but were asked not to communicate the fact to the patient. On the day of the operation the customary rectal saline was replaced by olive oil and ether, 3 ounces of each being given per rectum. Within half an hour the patient was quite unconscious and was then taken to the theatre. The dose was a minimal one and its effects were not sufficient to last through the operation; the anæsthesia was therefore continued with open ether, but as a rule only 1 or 1½ ounces was necessary.

After-treatment.—After describing his operative technique Mr. Walton said that after every operation there was a period of reaction which was probably due to hyperthyroidism following the trauma. The tube should therefore be kept in place *until* the temperature was normal. In one case in which it was accidentally removed too soon the patient had an acute attack of hyperthyroidism. It was rapidly reduced when the tube was re-inserted. On reaching the ward a rectal wash-out was given to remove the olive oil and ether and frequent rectal salines were given. If the patient was at all restless morphia was given without stint. No harm could arise if it was administered only when the patient was restless, and he had not uncommonly given as much as 2 gr. in separate ¼ g. doses within the first 24 hours.

Operative results.—Of the 101 cases there had been an immediate mortality of five. There was no question but that this was too high. Three of the deaths occurred within the first 50 cases, and two of them were almost certainly due to the operation being performed at an unsuitable time. Of those that recovered from the operation five have died later. One was due to an X ray carcinoma, and should not therefore be included. Two developed a fatal diabetes and two died with cardiac symptoms probably directly due to the hyperthyroidism. Of the remaining 91 cases 52 were cured, 23 had been so relieved that, although they still showed exophthalmos and a pulse which was considerably increased, were yet able to live normal lives and earn their own livings—that is, 75 per cent. had been changed from disabled wrecks into people who were capable of living normal lives and of earning their own living. Eight had had but slight relief and two were no better. They had developed marked hypertrophy of the remaining portion of the thyroid. Possibly, if they would consent, relief might be gained by further operative measures. Three had relapsed until their condition was nearly as bad as formerly, and three had been lost sight of. In considering the after-results of operation, it must be remembered that for a certain period the symptoms would continue, for the amount of thyroid removed had to be more or less empirical, and in order to be on the safe side rather too much was sometimes left. It was only when this diminished that the symptoms decreased. Careful observation after operation would show that the progress might be divided into the following stages:—

(1) The stage of reaction, which lasted for two or three days after operation. The hyperthyroidism was much increased, as shown by a raised temperature and pulse, and by marked restlessness. It was in this stage that a fatal result was likely.

(2) The primary improvement. This was the period which followed immediately after the reaction, and the improvement was often most remarkable. The exophthalmos might be diminished, the pulse, which had been 120 or 160 before operation, might fall to 80 or 90, and the nervous symptoms might abate enormously. It was a remarkable thing that many of the patients had shown a complete amenorrhœa for several years before operation, but during this period of primary recovery the catamenia might reappear and might be regarded as one of the first evidences of improvement. This stage persisted as a rule for two or three weeks.

(3) The stage of relapse. After the patients had left the home or hospital they suffered from a certain amount of relapse which might often cause considerable disappointment. If the case was progressing favourably it would last for only two or three months. Sometimes it might be prolonged for six or nine months, and if insufficient thyroid had been removed or if there had been much hypertrophy of the remaining portion the patient might continue in this stage. Those cases in which there had been little or no relief belonged to this group.

(4) The stage of apparent cure. This period, during which the patient was apparently well, but might relapse under any severe stress, might persist for two or three years. It was most in evidence during the war. Several of his patients who were apparently quite free from symptoms were exposed to air-raids, and within a short period of time had a very definite relapse of their symptoms.

(5) The stage of complete cure. This followed the last at an indefinite period. It was difficult to say when it had been entered upon, but apparently a time arrived after which the patient might be exposed to severe stress with no more fear of hyperthyroidism than would occur in a normal person.

The Basal Metabolism Test.

Professor H. G. **EARLE** said that for two months he had been using the basal metabolic test, which in theory was based upon the assumption that the thyroid sets the metabolic rate. With hyperthyroidism the metabolic rate was increased. He considered the test to be of value. By Benedict's apparatus, which he had been using recently, a direct measure could be obtained of the oxygen consumed. He had experienced great difficulty in taking the readings at first, but by means of an improvement whereby graphic records were obtained it was now possible to secure a very accurate measurement. The metabolic rate usually followed the pulse-rate, a high pulse-rate being generally accompanied by a high metabolic rate. There were other groups of cases, however, in which either a high metabolic rate was accompanied by a low degree of tachycardia or a low metabolic rate with a high degree of tachycardia. Cases with a high metabolic rate after a period of rest in bed were unfavourable for operation.

Mr. J. E. **ADAMS** said that the bad results of surgical treatment were in part due to the use of chloroform and want of gentle handling. A great merit of local anæsthesia was that it compelled gentle manipulation. Ether anæsthesia, per rectum, was a useful method, but the amount of ether necessary for removal of four-fifths of the gland was too great to be safe. He suggested that the introduction of radium into each pole of the remaining lobe, after hemithyroidectomy, might be advantageous. Frequently a patient was quite satisfied with the result of hemithyroidectomy and declined further operation.

Dr. F. **HERNAMAN-JOHNSON** was doubtful whether X rays, unless used in dangerous doses, produced definite diminution in the thyroid gland; yet beneficial results followed the use of X rays whenever applied. The good effects, he thought, were produced constitutionally rather than locally, and were general rather than specific. During treatment tram or 'bus journeys ought to be avoided and electrical methods should never be neglected. Proper radiological technique was as necessary as proper surgical technique. He now used X rays for their local regulating action as well as for their constitutional effect; the first could equally well be obtained by electrical treatment. In no sense were X rays an alternative or rival to surgery, for they should be used when the diagnosis was made, and in advanced cases were only useful to render the case more suitable for the surgeon. Though he agreed with almost everything that Dr. Stoney had said, he did not agree that X rays caused atrophy of the gland. It was, he thought, unjustifiable to show illustrations of telangiectasis of scarring or telangiectasis after X rays as arguments against their employment; the method was new, and these dangers had to be appreciated.

The discussion was further adjourned to March 4th at 5.30.

SECTION OF PSYCHIATRY.

MENTAL TESTS.

A MEETING of this section of the Royal Society of Medicine was held on Feb. 8th. In the absence of *Dr. Farquhar Buzzard, the President,* Dr. **PERCY SMITH** was in the chair.

Dr. W. A. **POTTS** read a paper on Mental Tests, which is published in full in the present issue of THE LANCET.

Discussion.

In opening the discussion, Dr. **PERCY SMITH**, that mental tests were very important, and that found the Binet-Simon series useful in dealing with children.

Dr. W. H. COUPLAND said that the great development of tests in America was important, even if the Americans were somewhat too enthusiastic in regard to them. In time the various tests would be more accurately evaluated. He agreed that the question of mental defect must not depend only on passing tests.

Dr. F. C. SHRUBSALL said that the subject was so vast that it was very difficult to criticise a paper dealing with it. The first point that occurred to him was whether 16 was the right age to take as the maximum limit of intelligence in connexion with the intelligence quotient; he rather thought it ought to be 13. If the mental age was below seven there was no chance of the defective doing much good. He did not think that moral tests were any use for moral imbeciles, because they always had satisfactory ideas in regard to what was right and wrong when anyone else was concerned. The unsatisfactory thing about them was their attitude to their own bad conduct. As regards the various series of mental tests, he could not agree that the Terman Revision was the best. He preferred the Binet-Simon, and was not sure that he did not like best the old Binet tests of 1908, because there was no reading test in them. The Terman Revision really dealt with a higher type than could be dealt with under the Acts dealing with defectives. Much depended on environment, and children of a better social position came out better in such tests. His opinion was that if defectives were not under the age of 9, according to the Binet scale, and if they could perform Healy's construction puzzles A and B, then they would manage quite well in the ordinary world. The paper had made very little reference to the Porteous maze tests, which he had found very useful. In tests such as the puzzle box or the wire test, the important point was not whether the person being examined could do the test himself straight off, but whether he could follow the steps when pointed out and done before him, and then be able to do it himself afterwards. He considered it important to test defectives along any special line of ability they might have.

SECTION OF OPHTHALMOLOGY.

EXHIBITION OF CASES AND SPECIMENS.

A MEETING of this section of the Royal Society of Medicine was held on Feb. 11th, Dr. JAMES TAYLOR, the President, occupying the chair.

Commotio Retinæ with Extreme Œdema.

Mr. F. A. WILLIAMSON showed a boy, aged 15 years, who, six days previously, had received a blow in the eye from a suspended rope, immediately followed by loss of sight in that eye. He was first seen two days after the accident, and the œdema had since decreased a good deal. The macula was of a reddish-brown colour, and there were two horizontal folds in the retina. He raised the question as to whether the concussion alone could account for all the œdema present. When the eye became more quiet, some of the obscure features might be cleared up.—Mr. J. B. LAWFORD said that but for the definite time-association of the injury and the œdema he would have suspected that the concurrence of the two conditions was mere coincidence. If there had been rupture of any important vessel, the hæmorrhage would have been evident. The folding of the retina was very striking.—Mr. LESLIE PATON said that when he first saw the case it presented almost the typical picture of central embolism of the retina. It was still likely there might be blockage of a vessel, the result of the concussion, though he had never seen so much œdema as a result of simple commotio. There might be a tearing of a nerve which affected a vessel, and the hæmorrhage had not come forward.—Dr. G. MACKAY referred to a case which followed a blow from a tennis-ball, and agreed with Mr. Paton's suggestion on the present case.

Artificial Eyes and Lids Attached to Spectacle-Frames.

Mr. M. W. B. OLIVER and Mr. JACKSON, attached to the Sidcup Hospital for Deformities, gave a remarkable demonstration of facial improvement brought about by their imitation of the appearance of the normal eye on the spectacle-frame of those who during the war had received wounds of the orbit resulting in evisceration. They were highly commended by all the speakers.

Corneal Loop.—Scotometer.

Mr. BASIL T. LANG showed an ingenious corneal loop for removing, unaided, a foreign body from the cornea. At Mr. Holmes Spicer's suggestion he had added a transilluminator device.

Mr. LANG also demonstrated his Scotometer, for which ordinary unprepared paper could be used, and the observer could watch the patient the whole time. He reminded members of the important observations which could be made with the scotometer.

Mr. LANG read a paper on the subject of

Scotometry.

He said that in scotometry one was concerned with more or less blind areas surrounded by more or less healthy seeing retina, and was usually applied to areas within 40° of the fixation point. It only differed from perimetry in involving a more detailed examination. Two types of scotomata were recognised: absolute and relative, the latter when an area of the retina, while able to appreciate brightly lighted white objects, was unappreciative of certain colours or gray.

Among the points to be considered in determining the size of a scotoma were: illumination, size of the object, colour of the object, colour of the background, distance of the object, scale and size of the chart, and method of making the observations. If quite a small object were brilliantly illuminated, it might be visible over an area in which a less bright, but much larger object, could not be seen. In arriving at scotomata, therefore, the light used should not be too brilliant, and direct bright sunlight should be avoided, especially as natural light varied in intensity and colour with season. No standard of artificial illumination had yet been agreed upon, but that from a single carbon filament lamp was quite suitable for this purpose. The size of the object should be measured in terms of the angle it subtends, not by the length of the edge. If using a small object, the patient should be in the best position to see it, and if presbyopic, he should be wearing his correction. Green was less easily seen than red, red than blue, and blue than white. There should be a marked contrast between the colour of the object and the background, and the latter should not reflect light. The question of the distance at which the observations should be made was a controversial one, but if working very close to the patient it was difficult to move the object sufficiently slowly to give the patient time to form and convey his impressions. Quite accurate observations could be made at one-third of a metre distance. The scale and size of the chart were matters of personal convenience. There were many methods, and he laid it down that a good method should be easy to employ, should give accurate results, should enable a permanent record to be made easily, and should enable the observer to watch the patient during the whole examination to counteract eye wandering. He proceeded to describe and demonstrate his scotometer and to discuss the features of other makes. Possibly a patient with high hypermetropia might be the subject of increased intracranial pressure, and then arose the question whether the swelling of the disc was physiological or pathological. It was probably the former if the disc when determined with a dull green was no larger than with a brilliant white light. In some cases of tobacco amblyopia and of retrobulbar neuritis scotomata for green and red, or for green only, might be found, but the chief purpose of scotometry was to determine an increase of the blind spot in suspected glaucoma.

Mr. BISHOP HARMAN contended that it was an advantage to be unconscious of the progress of delineating the scotoma until it was completed, as the mind might otherwise be influenced by what was expected. Every effort should be made to exclude the personal equation, and that had been his aim in his own scotometer, which did also enable the observer to watch the patient.—Dr. A. H. H. SINCLAIR (Edinburgh) referred to the work of previous observers in this field especially Bjerrum, Runner, Walker (of Boston), Traquair (Edinburgh), and himself. All those observers realised the importance of using a very small test object. He thought the screen should be at a sufficient distance so to enlarge the scotoma that its details could be studied. The scotoma of interest in early diagnosis was the relative one.

Late Infection after Sclerostomy.

Mr. T. **HARRISON BUTLER** (Leamington) read a paper with this title. It opened with a historical sketch of the work of von Graefe, Grosz, La Grange (who discovered the first method which could be relied on to produce a filtering scar), Herbert, Evans and Allport, Holth, Freeland Fergus, and Elliot. Mr. Butler said the conclusion was that the modern fistulising operations were more efficient in reducing hypertension than was iridectomy, but that the danger of late infection was a serious offset which had deterred many from performing sclerostomy, driving them to older but less efficient procedures. He had himself treated 11 eyes, the subjects of such late infection, and some of the patients had had a second or a third attack. These tragedies caused him to abandon sclerostomy and revert to iridectomy; but the results of a series of cases were so futile that he reverted to trephining, and a comparison of his later results so completely vindicated the fistulising method that he did not propose again to perform iridectomy for glaucoma simplex. His statistics gave 45 per cent. of successful iridectomies, as against 75 per cent. of good results from sclerostomy.

During 1918–19 he trephined 40 eyes for glaucoma simplex, and until recently all had been successful. Two had reappeared with raised tension and had been trephined with success. On reviewing his cases over the last five years, he found all the late infections had followed the trephine operation and Holth's punch operation. He discussed a number of informing cases in detail. It was obvious, he said, that the scar left by the punch was far more vulnerable than was the trephine scar; probably there was more bruising. A button-hole was a serious menace, but in some cases the conjunctiva was so friable that it might tear. The Holth operation belorged to the past. He thought hypertony was one of the conditions favouring late infection. In many of his unfavourable cases alcohol had been a factor. When he knew *Staphylococcus albus* was obtainable from the conjunctival sac he refused to operate. In order to avoid late infection, he thought the operation should not be regarded as an easy one; a perfect technique should be cultivated, and, consistent with good work, the operation should be done as quickly as possible; the flap should include all the tissues, and should not be bruised. Any local septic focus should be searched for. As an antiseptic lotion for use all the time, he advised a 1 in 10,000 solution of oxy-cyanide of mercury, used nightly in an eye-bath.

Mr. S. H. **BROWNING** asked whether the eyes were examined bacteriologically before operation, and, if so, by what method. If by Elschnig's method, that did not receive general approval. Pneumococcal infections in the eye were quite common. The presence of pus was apt to be deceptive, and should not be the only thing looked for, as eyes apparently healthy were found to contain pneumococci, streptococci, and even *Staphylococcus aureus*, in numbers to warrant postponement of the operation.—Mr. D. **LEIGHTON DAVIES** (Newport) emphasised the importance of a sufficiently thick flap; a thin one might lead to late infection.—Mr. M. S. **MAYOU** agreed that a thick flap was an important protection against infection. Another protection was the amount of fluid leaking from the anterior chamber through the trephine hole. He had had only one case of late infection after trephining; he had seen two others, and in all recovery was good.

Mr. **BUTLER**, in reply, agreed as to the adoption of good methods of ascertaining whether the conjunctival sac was sterile, but for practical purposes he used a 48-hour culture on agar.

NORTH-WESTERN TUBERCULOSIS SOCIETY.—A special meeting of this society was held in Manchester on Feb. 24th to discuss a proposal to make the society a constituent part of the Tuberculosis Group within the Society of Medical Officers of Health. A majority of those present were in favour of maintaining independence for the discussion of purely clinical matters, leaving any who wished to do so to join the new group. Decision was deferred until after a meeting with a deputation from the M.O.H. Society to be held in Liverpool on April 7th.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF STATE MEDICINE.

AT a meeting of this section on Jan. 14th Dr. R. J. **ROWLETTE**, the President, opened a discussion on

Medical Reform in Ireland.

He gave an abstract of a recent report of the Irish Public Health Council and expressed the opinion that it gave the foundation for a thorough and statesmanlike scheme of reform. Unfortunately the Government had declined to legislate on it, and the Chief Secretary had given contradictory reasons for this refusal. The scheme might, however, form the basis of legislative action when a normal system of Government would again exist in Ireland. It was a hopeful sign that those who represented the political opinions of the majority of the Irish people had serious and sound views on health matters.

Sir **JOHN MOORE**, President of the Academy, read a paper on

Existing Hindrances to Public Health Work in Ireland,

in which he drew attention to the fact that the Infectious Disease (Notification) Act of 1889 provided that the local authority should pay to the medical practitioner a fee of 2*s.* 6*d.* for each certificate sent by him in accordance with the Act if the case occurred in his private practice. This provision was endorsed and extended by the Infectious Diseases (Prevention) Act of 1890. The Tuberculosis Prevention (Ireland) Act of 1908 provided that a fee of 1*s.* should be paid to the practitioner for certificates in the case of persons treated in public institutions, and 2*s.* 6*d.* if the case occurred elsewhere. The Local Government Emergency Act of 1916 *reduced* the fee payable for notification to 1*s.* in all cases. With regard to the sanatorium treatment of tuberculosis, he referred to the extraordinary fact that an impasse between the Local Government Board and the local authorities should be allowed to cause serious risk to public health by interfering with and interrupting the machinery provided under Statute for dealing with tuberculosis. Lastly, he pointed out that the recommendations and proposals of the Irish Public Health Council, a statutory body, had been for the time being stultified by the decision of the Government that schemes involving expenditure and not yet in operation were to remain in abeyance.

Mr. T. A. **BURKE** congratulated Dr. Rowlette and Sir John Moore on their very radical and fearless treatment regarding the backwardness and existing obstacles generally of public health administration in Ireland. It was very hopeful to see medical men of the political views and professional standing of Sir John Moore and Dr. Rowlette putting Irish public health before every consideration. It was gratifying and hopeful to see that such pioneers of public health in this country were so unmistakable in attaching responsibility to the British Government for the threatened (actual in some places) suspension of the health services in Ireland. The present deplorable condition of public health in Ireland was for the most part due to the Government withholding grants which heretofore were given towards public health administration, but now were diverted to meet the awards for malicious injuries.

Dr. T. G. **MOORHEAD** said that he had been lately studying the financial position of the voluntary hospitals, and that he was of the opinion that the only hope for the future lay in some form of State subsidy or grant. He hoped that the voluntary basis would always be maintained. He saw little prospect of a sufficient increase in voluntary subscriptions to meet in any way the present difficulties. For the last year or so most of the hospitals had succeeded in getting a larger percentage of the patients to pay than heretofore, and in the future, undoubtedly, considerable sums would be obtained from the patients, but there would still remain a considerable number of people in the country who would be quite unable to pay their way when ill, and he hoped that the hospitals would never shut their doors to this class. When the combined sums of voluntary subscriptions, pay from patients, and municipal subscriptions were added together there would still remain a deficit, and this deficit he felt must be made good by the State. Even if this were done it was not necessary to have State control. The municipalities that subscribed to the hospitals sent representatives to the hospital boards. These representatives were, as a rule, most welcome and were most useful members. Similar representatives of the State would, he felt sure, add strength in every way to the hospital boards in the future.

Sir WILLIAM THOMPSON, Registrar-General, said as a member of the Irish Public Health Council he did not think even the profession fully realised the amount of invaluable work done for public health by Sir John Moore, Dr. Rowlette, and Dr. Alice Barry, who were selected by the Irish medical profession to represent their interests on the Irish Public Health Council. As might be expected, such representatives of the profession did not confine their efforts to protecting and promoting in any narrow sense the mere worldly interests of the profession; some of the best features of the report of the Irish Public Health Council were due to the incorporation of the suggestions of the three medical representatives whose names he had just mentioned.

Dr. H. T. BEWLEY, Dr. W. M. CROFTON, Dr. H. M. EUSTACE, Dr. G. NESBITT, Mr. E. P. MCLOUGHLIN, and Dr. T. HENNESSY also spoke.

SOCIETY OF SUPERINTENDENTS OF TUBERCULOSIS INSTITUTIONS.

A MEETING of this society was held at 122, Harley-street, on Feb. 14th, Dr. JANE WALKER, the President, being in the chair, when the office-bearers for 1921 were elected as follows:—President: Dr. Jane Walker. Secretary and Treasurer: Dr. P. W. Edwards, Bramcote Sanatorium, Nuneaton. Executive Committee: Dr. H. O. Blanford, Dr. Esther Carling, Sir Henry Gauvain, Dr. Marcus Paterson, Dr. S. Vere Pearson, Dr. Niven Robertson, Dr. James Watt, and Dr. R. C. Wingfield.

Dr. JAMES WATT opened a discussion on

A Scheme of Sickness Insurance for Ex-sanatorium Patients.

The need of after-care was, he said, well recognised, but it was hopeless at present to expect the State to subsidise the civilian ex-patient. The scheme of insurance outlined took account of the great liability to relapse, but applied only to a limited class—those whose working capacity was quite, or almost completely, restored by treatment. It must be purely voluntary, should impose no extra burden on the employer, and be independent of, and a supplement to, National Health Insurance. It could be best applied to a group of tuberculous persons employed in an institution or in a business, or even possibly to a group of persons scattered through many businesses, in which case the after-care committee might administer the fund. The main idea was that a group of tuberculous persons employed by an institution or in a business should form themselves into a benefit club, managed jointly by themselves and the employer, to the funds of which the members would contribute by weekly deductions from wages when in health, and from which they would draw during temporary breakdown of health sufficient benefit to maintain themselves and their dependents. Various safeguards to keep the fund solvent and to prevent disputes were described, and it was suggested that a premium of not more than 10 per cent. of wages would suffice to cover all sickness due to tuberculosis where reasonably suitable cases were selected. A large number of ex-sanatorium patients would willingly join such an insurance scheme, since it would considerably increase their employability and diminish the risks of a further breakdown in health.

Dr. H. A. ELLIS compared the scheme with that for Post Office employees. It would succeed only where good cases were picked. If a man's relapse was taken early it cost only a few pounds to put him on his feet again, and if he survived two years without relapse he was quite a good life. The keynote in employing ex-sanatorium patients was to put them on repetition work.

Dr. F. R. WALTERS thought the plan might succeed for a combination of institutions or businesses. The period during which benefit was paid would have to be limited, because where a tuberculous person broke down it was for very long periods.

The discussion was continued by the PRESIDENT, Dr. G. HEATHCOTE, Dr. PATERSON, Dr. BLANFORD, Dr. CARLING, Dr. W. GOODCHILD, Dr. A. C. TA'BOIS, Dr. NOEL BARDSWELL, and Dr. W. T. GORDON PUGH. A committee was finally appointed to investigate the sickness-rate in institutions employing tuberculous staff, and to formulate recommendations.

The report of the committee on

Standards of Staff (Medical and Nursing)

in sanatoriums and tuberculosis hospitals was submitted and adopted. The committee was requested to report further on the modifications necessary in the case of the staff of small institutions and of hospitals for non-pulmonary forms of tuberculosis, and on the standards of domestic and clerical staffs for the different types of institution. The report adopted recommended that for a sanatorium or hospital for advanced cases there be one medical officer, including the superintendent, for every 75 beds where the dispensing and the bacteriological work are not done by the medical staff, and one to 70 where they are. The standard laid down for nursing staff, including the matron, is one for every eight beds in a sanatorium, and one for every five beds in a hospital, on the basis of a 56-hour working week. The best nursing unit under one sister was 50 beds in a sanatorium and 40 beds in a hospital.

Consideration was resumed of the report of the committee on the

Coördination of Statistics.

The main part, dealing with the classification of cases of pulmonary tuberculosis had been referred back to the committee.[1] It was decided to adopt the Ministry of Health's proposed classification of immediate results of treatment—namely, arrested (where quiescent for at least two years), quiescent (including absence of T.B. from sputum), much improved, no material improvement. As to after-results, these should be described thus: fit for full work (being the person's ordinary occupation), fit for light or partial work, unfit for any work, died, lost sight of. It was agreed to postpone the question of the symbolic representation of physical signs, and to make no recommendation regarding the form of case records.

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[1] This report was presented by Dr. Niven Robertson at a meeting of the society held on Dec. 13th. It was urged that uniform methods should be agreed upon for classifying cases of pulmonary tuberculosis and for describing the immediate and the after-results of treatment. Classification should be based on the four main factors influencing prognosis—namely, anatomical extent of lesion, type of lesion, systemic effect, and presence or absence of tubercle bacilli in sputum. The upper and middle lobes of the right lung should be regarded as one lobe, which would then be comparable in size with the other three lobes. Extent of disease in the lung, along with tuberculous lesions of other organs, should be divided into four groups, while four types of lesion were proposed depending on presence of infiltration, consolidation, excavation, and fibrosis. Systemic effect was divided into three grades depending on the degree of the main symptoms. Finally cases were to be further sorted according as tubercle bacilli had or had not been found in the sputum. This method of classification would mean a large number of groups, but would provide an accurate and scientific sorting of all cases of pulmonary tuberculosis where large numbers were being dealt with. For small numbers it was preferable to use a simpler method, dividing cases into early, medium, and advanced. On the motion of Dr. James Watt this report was referred back to the committee with the instruction to work out a system of classification which should fit into that proposed by the Ministry of Health, and which should be further subdivided in a way similar to, but improving upon, that of the American Sanatorium Association. The Ministry, he said, were putting forward a classification, which, after a primary sorting according to sex and presence or absence of tubercle bacilli, divided the T.B.-positive cases into three groups, depending mainly on the grade of constitutional disturbance, thus separating off on the one hand the undoubted sanatorium cases, and on the other the undoubted hospital cases from a large heterogeneous middle group. For institution purposes this middle group, and possibly also the others, would require subdivision. While the degree of systemic effect must be taken into account in classification, the primary factor should be the extent and character of the tuberculous lesion. The method of the American Sanatorium Association divided these two main factors each into three classes, giving nine groups in all, a number which was convenient for clinical as distinct from public health purposes, and which could probably be made to fit into the Ministry's classification. The committee was also asked to give consideration to the classification proposed by the Inter-departmental Committee.

The meeting adopted the report of the committee on the

Training of Nurses,

which advises a two years' training in a tuberculosis institution, followed by an examination conducted by an independent examiner and to the satisfaction of the College of Nursing. Nurses should be encouraged to proceed to general training, from which a remission of six months in a three years' training should be allowed to those passing the examination.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.

A MEETING was held on Feb. 15th at the Elizabeth Garrett Anderson Hospital, Mrs. E. Flemming, M.D., in the chair, when Dr. Eva Handley-Read read a paper on

The Influence of Diet on Dentition

(1) on teeth during the pre-natal period, (2) on dental caries, (3) on pyorrhœa alveolaris.

The speaker emphasised the importance of accessory food factors as absolutely essential to growth, and of the antirachitic fat-soluble A vitamine as a necessity in diet if the hardest tissue of the body and the one requiring the best nourishment—i.e., the enamel of the teeth—is to develop properly. Dr. Handley-Read said that the temporary teeth are fully formed in the jaws before birth. Calcification begins in the sixteenth week, and continues throughout the existence of the teeth; hence it is evident that the mother's mode of living during pregnancy and lactation must influence the teeth of the child. Even at the worst war period the diet of the poorest working women of this country had just sufficient essential vitamines to produce bone and tooth tissue fairly well calcified, and observations at baby clinics, &c., showed that the teeth of all babies erupt fully formed with apparently good enamel, but if the diet is poor in the antirachitic vitamine the enamel is found carious within a few months. Dr. Harriette Chick, Mrs. Mary Mellanby, and others had done much important research work on the accessory food factors. It had been shown that absence of fat-soluble A influences the development of teeth and jaw in puppies, causing (1) poor growth of bone and alveolar process, the tissue being osteoid; (2) irregularity of lower incisors; (3) delayed eruption and shedding; (4) delay in calcification, poor enamel and dentine, and lessened resistance to diseases such as distemper and broncho-pneumonia. Pregnant and nursing mothers should thus have a liberal supply of fat-soluble A in the diet as well as the other vitamines.

Dr. Handley-Read referred to the work of Dr. Sims Wallace, Sir F. Colyer, and Dr. J. Wheatley on the importance of stone-ground flour in diet owing to its antineuritic vitamine, to cellulose content, and to its need of attrition. Vigorous mastication stimulates the flow of saliva essential for proper cleansing of the mouth and for the neutralisation of acids. Speaking of the infant's diet after weaning, she said that the transition from milk to solid food should not be via pap food as this is bolted without proper mastication or insalivation. By 1½ years of age, if dentition is normal, a child should be able to masticate an apple, while from 2–5 years a normal child should be capable of masticating any hard food. The County Council classes in their syllabus advised a diet which was almost entirely confined to pap food and yet insisted on the importance of efficient mastication. It was interesting to note that between 1919 and 1920, according to Dr. Wheatley's report from Shropshire, children of 5 years of age showed on an average 1·9 decayed teeth per child, as against 6·4 per child between 1910 and 1914. This seemed to be explained largely by the restriction in the purchase of carbohydrates, and by the fact that new bread was prohibited and crusts of coarse bread had to be eaten. In poor districts ½*d.* worth of raw carrot (a vegetable particularly rich in vitamines) largely replaced the pre-war pennyworth of sweets.

Pyorrhœa alveolaris was now rampant all over the world among white and coloured races, and was also common in animals kept in captivity. It seemed probable that excessive carbohydrate and deficient antiscorbutic diet largely accounted for this. In true scurvy acute periodontitis was a marked symptom and the teeth dropped out if antiscorbutic treatment was delayed. Probably modern diet contained sufficient antiscorbutics to prevent actual acute scurvy but not to prevent a chronic periodontitis. Pyorrhœa was present because in the mouth there was damaged tissue in the shape of inflamed gums, due to pap foods; bacteria were always present and with a diet deficient in antiscorbutic vitamines pyorrhœa supervened. That many vegetarians suffered from pyorrhœa was probably explained by the fact that they are mostly large consumers of carbohydrates and that their vegetables or fruit are rarely eaten raw. In Asiatic races caries is rare, but the teeth drop out at middle age in those parts of the country where the antiscorbutic factor is deficient in the diet. Points which lead to the conclusion that chronic general periodontitis was really connected with diet were its universality, its development among wild animals brought into captivity, the fact that no specific bacteria had been isolated, and the further fact that some persons who might be considered food cranks had effected their own cure.

Dr. Handley-Read then described several cases in which she had found acute pyorrhœa which had completely cleared up on a diet of raw vegetables, salads and fruit, eggs, a little *milk, and very limited carbohydrates. An "intensive vitamine"* diet such as this would produce astonishingly good results. While firmly believing in the efficacy of such treatment for chronic pyorrhœa, local treatment by drugs, vaccines, and ionisation should not be neglected.

In the discussion of the paper Dr. O. Lewin, Dr. D. Hare, Dr. E. Harding, Mrs. Flemming, and others took part.

SOCIÉTÉ DE THÉRAPEUTIQUE DE PARIS.

AT a recent meeting of this society Dr. G. Caussade and Dr. P. Charpy communicated a paper on the

Pharmacology, Posology, and Clinical Aspects of Salicylate of Soda.

They remarked that the toxicity of this drug had been much disputed. While fatal cases had been reported after small doses, in other instances only transient disturbances had been caused by much stronger doses. Children above the age of 7 would very well take the doses ordered for adults; on the other hand, above 30 the drug was usually contra-indicated because, in the first place, acute articular rheumatism was rare after that age; and secondly, because the liver and kidneys were less likely to be healthy then than in younger persons. Women showed a special susceptibility to the drug, and it should not be given to alcoholic subjects or to persons with a nervous taint. Apart from individual susceptibility, the impurity of the product employed should be considered. Commercial salicylate of soda contained free salicylic acid, isomeric acids, isophthalic and creosotic acids. The last two were toxic substances, and every salicylate should be rejected which was not crystalline, and which was violet or grey in colour and acid in reaction. Salicylate of soda was mainly eliminated in the urine in the form of salicyl-uric acid, a *combination* of salicylic acid and glycocoll. Its elimination should be hastened by putting all patients taking the drug on a vegetarian diet, since by that means a more abundant formation of glycocoll was effected, the suppression of which might give rise to serious symptoms. The most frequent, if not the most serious, symptom of salicylate intoxication was delirium. It appeared fairly soon after the commencement of treatment. Its onset might be sudden, occurring at the same time as the pains in the joints disappeared. When it developed less suddenly it was characterised by talkativeness, restlessness, and a freedom of movements in striking contrast with the functional impotence of the previous days.

Dr. Gaston Durand read a paper on

Migraine and Auto-hæmotherapy,

in which he reported the case of a woman who at the age of 50 began to suffer from attacks of migraine accompanied by urticaria, which became worse in the course of six months until she had only a few days' respite. After other methods had failed Durand decided to make use of autohæmotherapy which he had found successful in several cases of urticaria. A subcutaneous injection of 10 c.cm. of the patient's blood was given during an attack, and four days later at the onset of an attack, with the result that the patient for the first time for three months was a whole fortnight without having another attack. The next attack was mild and the subsequent ones milder still, 2 c.cm. of the patient's blood being used on each occasion. During the following months only abortive attacks occurred, and were easily cured by injections of 2 c.cm. of the patient's blood.

Dr. G. Petges (Bordeaux), in a paper on

The Treatment of Epidemic Hiccough by Aspirin,

stated that in several cases he had found that aspirin in doses of 1 g. had a very rapid and successful action on the hiccough, and for that reason he was inclined to regard the condition, not as a manifestation of influenza, as had been done by Logre and Heuyer, nor of epidemic encephalitis, as maintained by Sicard and Paraf and Achard and Rovillard, but as a rheumatoid or rheumatismal manifestation.

Dr. G. LEVEN, in his paper on

Symptomatic Aerophagia,

stated that although the diagnosis of aerophagia was an easy matter, the practitioner should realise that the most typical aerophagia might sometimes accompany an organic lesion, and that the most careful and complete treatment of aerophagia might fail because the symptoms masked a more serious disease. He recorded three typical cases of aerophagia which were associated with descending goitre, stricture of the œsophagus, and cardiac hypertrophy respectively, these three diseases being to a certain extent responsible for aggravating the aerophagia.

DEVON AND EXETER MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Cases and Specimens.

A MEETING was held at the Royal Devon and Exeter Hospital on Feb. 17th, Mr. A. C. ROPER being in the chair.

Mr. A. L. CANDLER showed: (*a*) X ray plate of a case of Perthes or Legg's Disease of Hip in a girl aged 17, who also gave evidence of deficiency of endocrine glands; (*b*) Myoma of Uterus weighing 10½ lb. with pregnancy of four months' duration; (*c*) three specimens of Ectopic Gestation—viz., tubal, ovarian, and secondary abdominal pregnancies.

Mr. NORMAN LOCK showed: (*a*) Two Ribs with Chondrosarcoma on the Inner Side removed successfully some months previously; (*b*) Large Stones in Kidney; (*c*) a greatly Thickened Gall-bladder containing a Gall-stone.

Dr. RANSOM PICKARD exhibited Eyes removed for Sarcoma of Choroid and Sarcoma of the Ciliary Region respectively.

Dr. G. P. HAWKER showed a patient with Embolism of Retinal Artery.

Dr. R. V. SOLLY showed: microscopic slides of (1) Cattle and other Ringworms; (2) Basal-celled Carcinoma; (3) Cerebral Tumour in Brain secondary to Sarcoma of Eye in a case where no other secondary growths could be found elsewhere at the autopsy.

Dr. SOLLY also showed for Mr. B. DYBALL: (1) Myeloma of *Fibula; (2) Hypernephroma.*

Dr. F. A. ROPER showed X ray photographs of: (1) Osteitis Deformans with commencing Sarcoma; (2) Hernia of Stomach into Left Side of Thorax following G.S.W.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

Exhibition of Cases and Specimens.

A MEETING was held at Liverpool on Feb. 18th, Mr. CARLTON OLDFIELD, the President, in the chair.

Dr. J. E. GEMMELL and Dr. LEYLAND ROBINSON showed three specimens of Uterine Fibroids, complicated in two cases by a coexisting carcinoma of the body of the uterus. In the third specimen a left hæmatosalpinx was present and was evidently produced by torsion, as there was no evidence of ectopic pregnancy.

Dr. J. H. WILLETT and Dr. R. A. HENDRY (Liverpool) showed a specimen of Hydatidiform Mole with a Well-developed Four and a Half Months' Fœtus and Placenta. They were of opinion that this was a case of twin pregnancy in which one ovum had undergone vesicular degeneration.

Dr. W. W. KING (Sheffield) described a case where acute symptoms arose during pregnancy from the rupture of a vein on the surface of a subperitoneal myoma of the uterus. At the operation a large quantity of free blood was found in the peritoneal cavity. The tumour was removed by myomectomy and the pregnancy left undisturbed.

A discussion took place on Dr. F. H. Lacey's paper on Induction of Labour for Moderate Contraction of the Pelvis, read at the last meeting of the society and reported in THE LANCET, Feb. 12th. The opinion of the majority of the speakers was that, although excellent results could, no doubt, be obtained in hospital, as Dr. Lacey's figures showed, the method was extremely tedious in private practice and apt to cause a good deal of anxiety to the patient and her attendant. Cæsarean section should be the operation of choice where there was any reason to fear that delivery of a healthy full-term child by the natural passages was going to be ble.

Reviews and Notices of Books.

TRUTH ABOUT VENEREAL DISEASE.

By MARIE CARMICHAEL STOPES, D.Sc., Ph.D. London: G. P. Putnam's Sons, Ltd. 1921. Pp. 52. 1s. 6*d*.

TRUTH, unfortunately, is a relative term. In regard to venereal diseases it has suffered very greatly at the hands of its most eager disciples. Mrs. Stopes has visited both warring camps—she acknowledges indebtedness for much information from Mrs. A. C. Gotto and also from Mr. H. Wansey Bayly—and has discovered as common to both the National Council for Combating Venereal Diseases and the Society for the Prevention of Venereal Disease a body of ascertainable facts, some simple deductions from these facts, and campaigning principles based on these deductions. These are set forth with great literary skill and persuasiveness in a little pamphlet of 50 pages, which, she states, was written at the request or with the approval of Professor W. M. Bayliss, Sir James Crichton-Browne, and others. The book is divided into nine sections, of which the headings are: Germs Generate Disease; The Deadliest Germs; Pure and Happy Marriage is the Only True Safeguard of the Race; The Characteristics of the Deadliest of all Germs; Contact is the Source of Infection; Disinfectants do Disinfect; Disinfectants Only Disinfect; Disinfectants Disinfect, They do not Cure; Humanity can be Entirely Freed from this Terror. While the first eight sections are instructive it is to the ninth that the informed reader, sick of controversy, will naturally turn. Mrs. Stopes holds that if we only dealt with the subject energetically enough we should stamp out the diseases in this country more quickly and easily than plague, small-pox, or leprosy. To this end she is assured of the necessity of a complete survey of everyone in the country, although it may be many years before the public demands it. Sex diseases, she thinks, would never have saddled themselves on humanity had not all *sex knowledge been befouled by prudery.* "No one would willingly sleep with a case of small-pox or the plague." She believes that a new and overwhelming spiritual power is even now entering upon the earth, but that immediately to stem the onrush of contamination some *new factor* of health and cleanliness must be brought into play during the hiatus, until the young generation grows to maturity. The concluding paragraph of the book runs:

> It is the duty of the Churches to win the people by moral precepts and teaching to a right view of life and pure living; it is the duty of the doctor to see that people are decently clean; it is the duty of the reformer to see that people *know* facts essential to their life and progress. In this respect the moralist and the doctor have essentially the same message to teach.

We believe that the chief merit of Dr. Stopes's book lies in the fact that after reading it every right-minded citizen will enlist according to his strength and ability in the campaign against venereal diseases, and will be unlikely to embarrass the high command by violent adhesion to a particular battalion.

LECTURES ON DISEASES OF CHILDREN.

Fourth edition. By ROBERT HUTCHISON, M.D., F.R.C.P. London: Edward Arnold. 1920. Illustrated. Pp. 416. 21*s*.

AN author who publishes in book form a series of lectures prescribes for himself definite limitations, by which the writer of a text-book is unfettered. Each lecture must be a composite whole, even though the teaching be in accordance with consecutive tenets or theories, and the subject-matter of its title must stand out in relief. Though necessarily hampered by these restrictions, Dr. Hutchison has contrived to embody in his lectures a great deal of information of first-rate importance concerning the diseases of children, and it is not to be wondered at that a fourth edition has already been called for. The author has rewritten the lectures dealing with infant feeding, tuberculosis, and congenital syphilis, added a new lecture on fever of obscure origin, making 31 lectures all told; and he has revised the remainder.

We could wish that the question of breast-feeding had been less summarily dealt with. Its importance is recognised, but, we think, scarcely emphasised enough, nor are its advantages forcibly expounded to the uninitiated. Its many pitfalls, too, receive scant notice, and though various devices are advocated by which premature weaning may be avoided, the reader is given no guiding principle by which to select the treatment. Due regard is paid to weight as an evidence of the infant's progress or the reverse, but we think that the other criteria are rejected somewhat lightly, no distinction being made between such doubtful evidence as is procurable from a history, and objective signs of malnutrition other than those afforded by the scales. In the matter of bottle-feeding the author makes many recommendations with which divers authorities would disagree; this is only to be expected in so contentious a field. Thus, he disapproves of dilution of milk by more than one-half, yet delays the giving of whole milk until the ninth month. Again, though he endorses the modern practice of feeding infants less frequently, by advising three-hourly feeds from the beginning, he postpones four-hourly feeds until the sixth month. His dictum that "a good mixed milk from a trustworthy dairy is all you need" is, no doubt, excellent; but unfortunately the good mixed milk and the trustworthy dairy are hard to come by, except in favoured and limited areas. With the milk-supply in its present state Grade A certified milk deserves mention, for therein lies the only safe alternative to dried milk in many districts.

A new lecture on fever of obscure origin is one of great practical value, and a welcome addition to the book. In it are discussed the several conditions which may cause in children fever the origin of which is difficult to find or remains undetermined, but the occurrence of which is frequently a matter of great concern to the parents and practitioner alike.

Briefly, the book is a sound, lucid, and attractive exposition of the more important parts of pediatrics, and has this notable virtue—it is entirely free from fads.

Practical Preventive Medicine.

By Mark F. Boyd, M.D., M.S., C.P.H. London and Philadelphia: W. B. Saunders Company. 1920. Pp. 352. 20s.

An author who aims at summarising the whole field of modern industrial medicine in just over 300 pages, many of which are devoted to illustrations, is attempting an impossible task, and Professor M. F. Boyd has hardly done justice to himself or his subject. He makes free use of the modern American plan of presenting subject matter by the method of classification; this is occasionally effective in his hands, but more often oppresses the reader with multiplicity of detail. Preventive medicine depends upon the broad principles of health, and the student who finds himself faced with a vast array of pigeon-holes, each containing, neatly docketed within, a compact list of facts, will never obtain a right sense of proportion. This book may almost be accused of being useful for examination purposes, an accusation which is no compliment to the examination system. Most textbooks are uneven because authors are not contented to deal only with their own specialty, but attempt to present the specialties of others. Such books take their value from those chapters which arise from the special knowledge of the author. Perusal of the book under review has failed to disclose any subject so handled, and we find ourselves in agreement with the preface, that "no originality is claimed for the material here presented."

There are, however, readers who like to absorb knowledge in tabloid form, and to them we recommend this book, for the facts stated are correct and up to date. Professor Boyd has given lists of references at the end of each chapter which are most valuable to us, since they refer to many sources of information published in America and not known in this country; but we should have expected his American readers to desire information regarding literature published abroad. If so, they will be disappointed that only American publications are named, for public health medicine saw its birth in this country, and continental workers have contributed nourishment to the growing child.

Madura Foot.

Dos Mycetomas. By Dr. Alex K. Yazbek. Published by the Faculty of Medicine and Surgery of S. Paulo. 1920. Pp. 164.

This monograph, which is based on a study of seven cases of "madura foot," deals with a condition unfamiliar to European practitioners. The disease is, nevertheless, of importance in its relation to actinomycosis, which is now being more frequently recognised than hitherto in this country. No condition resembling madura foot has yet been recorded in England, but there is no inherent impossibility that it may not one day be found, for Dr. Yazbek considers that he has identified the infective agent as *Discomyces bovis* in four of his seven cases. This treatise is well illustrated with photographs of microscopic preparations, cultures, and typical lesions; from the latter it is evident that the condition bears a close clinical resemblance to actinomycosis as found in other parts of the body. The treatment appears to be unsatisfactory. The infective agent is not always the same; iodide medication is sometimes ineffectual and amputation may have to be performed.

Diseases of the Ear.

Second edition. By Philip D. Kerrison, Aural Surgeon to the Willard Parker Hospital for Infectious Diseases. London and Philadelphia: J. B. Lippincott Company. 1921. With 332 illustrations and 2 coloured plates. Pp. 596. 35s.

This book, by reason of its size, is intended less for the medical student and general practitioner than for the student of otology, who will find it a most interesting, useful, and instructive work. The teaching is sound and practical, and the statement of controversial matters is very well balanced. The author has devoted more attention than is usual to suppurative labyrinthitis and to the cerebral complications of aural disease, and the chapters on these subjects are the best in the book. It would have been a more orderly arrangement if the caloric and rotation tests of the labyrinthine function had been described together with the examination of the hearing in the preliminary chapters, and not placed among the symptoms of suppurative labyrinthitis; for it is not only in this disease that the labyrinthine tests are of value. Similarly, Bárány's tests of cerebellar function might have been considered with the testing of the ear, instead of having a chapter to themselves. But these are minor matters, and the book may be cordially recommended to all who desire a sound and thorough knowledge of otology. The illustrations, the type, and the paper are all excellent, and there is a good index.

Practical Bazaar Medicines.

With over 200 Useful Prescriptions. By G. T. Birdwood, M.A., M.D. Cantab., Lieutenant-Colonel, I.M.S. Calcutta and Simla: Thacker, Spink, and Co. 1920. Pp. 179. Rs.3/8.

This little book is written for the use of medical men working in Indian districts far away from chemists' shops, and points out how many maladies can be treated inexpensively and efficiently by means of drugs obtained from the bazaars. It begins with a list of bazaar medicines classified according to their actions; the bulk of the work consists of two sections, of which one deals with the sources, actions, and methods of use of the more common and useful bazaar remedies, and the other forms a bazaar medicine pharmacopœia comprising more than 200 prescriptions. The book will be found especially helpful as a reminder to medical men that many simple remedies already known to h habitually used by them, can be obtained in the with regard to the less-known native difficulty arises in that prescribers, at any rate those trained in England, have no adequate means of ascertaining the genuineness and purity of such products. A few of the formulæ are open to criticism; "Pot. chlor.," named as an ingredient of Rogers's intravenous injection for cholera, is ambiguous; one would expect an ointment consisting of catechu, wax, and honey to present some difficulty to the compounder, and, on paper at least, a mixture of catechu, chalk, alum, ferrous sulphate, and gall-nut powder as a dentifrice appears rather nauseous. The book, which is interleaved with blank pages, should prove distinctly useful to those for whom it is intended.

JOURNALS.

The Journal of Biological Chemistry (Vol. XIV., 1920) contains a number of useful studies on vitamines, of which the following may be specially mentioned:—

A Deficiency in Heat-treated Milks (p. 381), by A. L. Daniels and R. Loughlin.—The authors obtained no data indicating that either the fat-soluble or the water-soluble vitamine in milk is affected by heat treatment, nor is the casein apparently affected. The results of all the experiments pointed to the one conclusion that long-heated and super-heated milk owes its deficiency to the fact that in the heating process the calcium salts are rendered more or less insoluble. Rats fed on such milk make inferior growth, but normal growth-gains were made when the heated milk was supplemented with calcium phosphate properly incorporated. The application of these findings to infant nutrition is now under investigation.

A Quantitative Method for the Determination of Vitamine in Connexion with Determinations of Vitamine in Glandular and other Tissues (p. 531), by F. K. Swoboda.—The biological test of Williams for the detection of small quantities of the water-soluble B vitamine was developed and found to be of quantitative value. From the results of determinations of the vitamine-content of various organs it is evident that this specific vitamine is present in large quantities in most of the organs of internal secretion which are of developmental importance, whereas there was a very much lower concentration in other organs examined. The liver and kidneys, however, are high in vitamine-content, whereas tissues high in nuclear material—e.g., thymus and lymph glands—gave low values.

Water-Soluble B in Cabbage and Onion (p. 175), by B. K. Whipple.—The yeast-growth method (Williams) was used. Although quantitative results were not secured the following points were established. Water-soluble B in cabbage is not destroyed by boiling for 30 or 60 minutes, neither is it destroyed by boiling with acid or alkali. It is present in onions and is not destroyed by boiling. Not more than one-half the water-soluble B is lost in the cooking water from cabbage or onions boiled for 30 minutes.

The Effect of Cooking on the Water-Soluble Vitamine in Carrots and Navy Beans (p. 158), by E. W. Miller.—The yeast method used for the quantitative determination of the vitamine content of vegetables has yielded good results when averages were taken of the number of colonies. Cooking carrots at 100° C. for 30 minutes, or heating them when tightly packed in a jar for 45 minutes at 115° C. causes no reduction of vitamine. Cooking Navy beans at 120° C. for 30 minutes decreased the vitamine content 40·6 per cent.; cooking for 70 minutes in 0·5 per cent. sodium bicarbonate solutins caused a loss of 37·5 per cent. of the vitamine. A large proportion of the vitamine from 36 to 70 per cent. was present in the cooking water.

Some Effects of Water-Soluble Vitamine upon Nutrition (p. 255), by W. G. Karr.—From experimental observations the author concludes that a relation exists in the dog between the desire to partake of food and the amount of the so-called water-soluble B vitamine ingested. Brewers' and bakers' yeast, tomatoes and milk were investigated as sources of vitamine B. Quantitative data are given to show the relative potency of the various substances investigated. Brewers' yeast was much more potent than bakers' yeast. Drying at 100° C. does not appreciably lower the vitamine content of these supplements, but heating in an autoclave at 120° C. for three to four hours causes destruction.

Metabolism Studies with Diets Deficient in Water-Soluble B Vitamine (p. 277), by W. G. Karr.—The lack of the water-soluble accessory does not affect the utilisation of nitrogen or metabolism of the dog. Data are presented which show that small amounts of a *good* protein (casein or yeast) beneficially supplements proteins which are known not to be so complete (wheat gluten).

A Test for Anti-Beri-beri Vitamine and its Practical Application (p. 457), by C. Funk and H. E. Dubin.—The procedure is as follows: A yeast suspension is prepared by shaking a loopful of a 48 hours' pure culture of yeast in 100 c.cm. of Nägeli solution on a shaking machine for three hours. Measured quantities are incubated for 20 hours at 30° C. in the presence of the unknown vitamine, with control tubes containing a vitamine of measured strength. The fermentation is stopped by heating the tubes to 75° C. in a water-bath for a few minutes, the contents transferred to special centrifuge tubes, and the volume of yeast estimated after centrifugalisation for 15 minutes. The approximate vitamine activity of a number of products has been determined by this method and the activity of autolysed yeast under various conditions has been observed.

Nutritive Properties of Milk, with special reference to Reproduction in the Albino Rat (p. 157), by H. A. Mattill and R. E. Conklin.—Young rats, taken at weaning, were placed on various rations consisting primarily of cow's milk, fresh and desiccated. The rations included the addition of starch, wheat embryo, dry skim milk, butter fat, and iron citrate, but a ration containing dry milk and 1 per cent. yeast was the only one on which normal growth and successful reproduction were obtained, and the growth of rats on that ration and one containing 5 per cent. of yeast was normal.

Reference may also be made to a series of articles dealing with Blood and Urine Analysis.

Note on the Preservation of Specimens of Blood Intended for Blood-Sugar Determinations (p. 203), by W. Denis and H. Aldrich.—The relative rapid decrease in the sugar content of the blood, occurring even when preserved at low temperatures, can be prevented by the addition of 1 drop of commercial formalin (40 per cent. formaldehyde) to 5 c.cm. of oxalated blood. The addition of a larger amount of formalin (3 drops to 5 c.cm. blood) adds no advantage, nor apparently does it introduce any error in the determination of sugar by the Folin-Wu method (Ibid., 1920, xli., 367). By this method of preservation glycolysis in blood specimens can be prevented for as long as 96 hours at temperatures varying from 20° to 33° C.

Rapid Colorimetric Methods for the Determination of Phosphorus in Urine and Blood (p. 55), by R. D. Bell and E. A. Doisy.—The method depends on the fact that certain reducing reagents will reduce phosphomolybdic acid without affecting molybdic acid. Phosphomolybdic acid is reduced by hydroquinone, giving a blue colour, which is distinct even with as little as 0·005 mg. of phosphorus as phosphate in a volume of 100 c.cm. The method is rapid and easy of manipulation. Details are given for the determination of inorganic, organic, and total phosphorus in the urine, and inorganic and acid-soluble phosphorus in the blood. The method for inorganic phosphate appears to be more accurate and rapid than the usual uranium titration.

The Estimation of the Chlorides in Blood (p. 47), by V. C. Meyers and J. J. Short.—A method for chloride estimation in blood is described; the proteins are removed by precipitation with picric acid, and the chlorides estimated by the Volhard-Harvey method in the filtrate. The picric acid filtrate can also be used for the estimation of creatinine and sugar.

The Nature of Chlorine Combination in Urine (p. 239), by A. T. Cameron and M. S. Hollenberg.—These authors conclude that, in the absence of chlorate or similar medication, chlorine occurs in the urine as chloride only; organic chloride and chlorine oxy acids are absent.

Estimation of Phenolic Substances in Urine (p. 409), by T. F. Tisdill.—The results obtained for the total phenolic substances in urine by the ether extraction method outlined in this paper are at least 50 per cent. lower than those recorded by Folin and Denis. It is suggested that there are unidentified substances present in urine which react with the colour reagent used by Folin and his co-workers, which are responsible for the high values by the latter method. These unidentified compounds are partly present in the free state and partly formed by the action of strong minerals acids on the urine. Only a small fraction of the volatile phenols are excreted in the urine in the free state.

British Journal of Experimental Pathology. February, 1921. London: H. K. Lewis and Co. *7s. 6d.*—The Measurement of Capillary Blood Pressure in Man, by Leonard Hill, F.R.S., and J. M. McQueen. The pressure which stops the flow through and expresses blood from the skin has generally been taken as the measure of the capillary blood pressure. It indicates actually the pressure in the small arteries plus the pressure required to deform the convex horny layer of the skin. The authors have devised a method for estimating the true pressure of the small arteries; it amounts, they find, to 10 mm. of mercury. Results obtained by Dr. Hill and his collaborators in previous investigations into capillary pressure in the brain, in transparent membranes in frogs and mice are given and discussed. They all indicate that the true capillary pressure is very low, a fact of great importance in physiological theories of lymph secretion, and bearing directly upon our conception of inflammation.—Spontaneous and Artificial Pulmonary Lesions in Guinea-pigs, Rabbits, and Mice, by H. B. Maitland, Mary L. Cowan, and H. K. Detweiler. A pulmonary lesion, which is an agonal phenomenon, is described, characterised by hæmorrhage into the alveoli and sometimes into the bronchioles, without leucocytic infiltration in the lung tissue. A second type of lesion consists in a slow proliferation of endothelial cells.—The Nature of the Effect of Blood Pigment upon the Growth of *B. influenzæ*, by P. Fildes. The author concludes that the blood pigment acts as a catalytic agent.

Ophthalmic Literature. Denver, Colorado: Ophthalmic Publishing Company. Published quarterly.—Up till the end of 1919 a digest of ophthalmic literature was published monthly as a supplement to the *American Journal of Ophthalmology.* The subjects of the 12 supplements were so arranged that each number dealt with certain topics, reviewing the literature in connexion therewith for the preceding year, the 12 supplements being separately paged, and forming the "Ophthalmic Year Book" for each year. In 1920 a new method of publication was adopted without any alteration in the plan of the subject matter. Instead of monthly supplements a separate number is published quarterly under the title of "Ophthalmic Literature," the four numbers forming, as before, a complete digest of the ophthalmic literature of the world for the 12 months preceding their date of publication. It continues to be issued as a supplement to the *American Journal of Ophthalmology,* and is delivered free to the subscribers to that journal. The work is excellently done by eight editors, with 25 collaborators, all but four being Americans. It forms by far the most complete digest of recent work in ophthalmology all over the world.

THE LANCET.

LONDON: SATURDAY, MARCH 5, 1921.

Records and Medical Secrecy.

THE general question of the law in its relation to medical secrecy is under the consideration of the Lord Chancellor, but Dr. ADDISON replied last week to two specific questions put to him by Colonel F. E. FREMANTLE on behalf of colleagues inside and outside the House of Commons. The first related to the possible liability of a doctor to an action for libel in respect of matter entered on an insurance record card should this be "published" to his private secretary. The Minister of Health said he was advised that in the circumstances mentioned it was in the highest degree unlikely that there would be any cause of action against the doctor unless malice on his part could be proved. It is indeed not very easy to imagine conditions which would lead to any such action being ever attempted. True, there may be technical publication of defamatory matter, but no one will know that such matter has been so published unless the doctor or his secretary chooses to give information about it. Even should the secretary be cast for melodrama and say to the patient, "My employer has entered on a card that you are suffering from a certain disease, involving disgraceful conduct on your part, and has handed the card to me for filing," the fact that the entry was true and was made in accordance with a statutory regulation would be a complete answer to any proceedings for libel or slander. If, on the other hand, a wrong entry were made designedly the medical man who suffered for so doing would deserve no sympathy. If he made an error of diagnosis, or had a lapse of memory, the absence of malice, referred to by the Minister of Health, would help him out, although privilege accorded in terms by Parliament might protect him more completely.

A second question referred to the possible obligation to produce medical history cards under subpœna in a court of law. Here Dr. ADDISON'S reply was to some extent evasive. He appears to have suggested that in any case the facts desired to be proved would have to be the subject of oral evidence. This, however, would not protect the medical man from being requested to look at his entry on a card and so to refresh his memory or correct his statement. To this extent, therefore, the enforced production of the cards in court might be the means of extracting from medical men information on confidential matters adversely affecting their patients. We need hardly say that if a medical man is called on behalf of a patient, it is his duty to say what he knows, and the question of what he has written on a card will not affect his desire to do so. It is with regard to evidence which is adverse to the patient's interest, and which, if given, will be given without the patient's authority that we are more concerned. Such evidence is an old matter of controversy, frequently disputed between the medical man summoned into the witness-box on the one side and counsel or the court on the other. The question here is to what extent will the possible production of past medical history cards operate with regard to the giving of medical evidence under order of the court by an unwilling witness. We are inclined to think that it should have little or no effect.

If a medical man gives evidence, willingly or not, he will give it truthfully and accurately, and will acknowledge where his memory is at fault. In such circumstances he, at any rate, has nothing to fear from the production of the cards. When we consider whether the patient will have anything to complain of we must remember the conditions under which adverse medical evidence may come to be given in the case of insured patients. It appears to us that, if the patient is interested in establishing the truth, the medical man who has attended him will almost inevitably be a witness on his side. If he is not going to be called on behalf of his patient, but subpœnaed against him, the doctor may be reluctant to give evidence, and has a right to express his reluctance. He can hardly desire, however, to keep silence from "ethical" reasons, if he knows that his patient, relying on his silence, is endeavouring to deceive a court of law and to defeat justice. In such a case as we have suggested can a patient rightly complain if a medical record, made at the time by his panel doctor, helps to establish the truth? We are inclined to think not, and to believe that, as a general rule, any danger from the production of cards in court, if they are made producible, will only affect an inaccurate witness or a dishonest suitor. That there may be exceptions is possible. These will be cases, however, where the medical man will protest against giving evidence, and invite the protection of the court. The ruling given will not depend upon the production of the cards under discussion.

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The Report on Biologicals.[1]

WE published last week a resume of the conclusions arrived at in the report of the strong Departmental Committee appointed by the Minister of Health to consider the effective control of therapeutic substances which cannot be tested by direct chemical means. On the analogy of "chemicals" we propose, for want of a better term, to call these substances "biologicals." We found the conclusions arrived at reasonable, and at the same time referred to the fact that they had been discredited in the daily press upon the issue of the report. The medical correspondent of the *Times* has provided a case in point. We are certain that the *Times*, like ourselves, have the dissemination of accurate information at heart, and we welcome the coöperation of the general press, which has latterly done so much to explain the medical position in public affairs to thousands who could not be expected to read scientific journals, or to accept the views expressed in such quarters; but the divergence of opinion between the medical correspondent of the *Times* and ourselves is in the matter of this report so open that we owe it to our readers to justify our views. They are prompted by intimate knowledge of the origin of the report, and of the value of the evidence upon which its recommendations have been based.

The comments by the medical correspondent of the *Times* appeared on Feb. 23rd, and show no close acquaintance with the Report, and also no desire to consider it on its merits. No attempt is made to appreciate the position which led to the Committee's appointment, or the problems with respect to which they were asked to make recommendations. It is stated that, "so far as can be ascertained," the General Medical Council, which is the body responsible for the British Pharmacopœia, have performed their duties well, and might, if necessity exists, have their powers extended—the implication being that the further safeguards suggested by the Committee are superfluous. Now it was part of the Committee's duty to interrogate the representative (the President) of the General Medical Council, and to inquire what had been the action of the Council with regard to biologicals. The Committee were informed that the Pharmacopœia Committee of the General Medical Council had been unable to include in the Pharmacopœia precisely the important remedies of the class referred to the Committee, because they were not susceptible to such tests for activity and authenticity as were regarded necessary in the Pharmacopœia. The Pharmacopœia was obliged to prescribe such tests as could be carried out by a qualified pharmacist, by a public analyst, or by some public functionary, such as the Government Chemist. In the case of the remedies under consideration, no such tests could be prescribed, and no public provision was made for the performance of the only possible tests. Accordingly, in 1909 the President of the General Medical Council approached the Government with the suggestion of a public institution for the pharmacological standardisation of potent drugs and of serums, an action which disposes of the view that the admirable work of the Council could be extended to perform the work which they admitted to be necessary.

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[1] Ministry of Health. Report of Department Committee on Control of Certain Therapeutic Substances. London: His Majesty's Stationery Office. 1921. 2*d*. net.

We cannot find any suggestion in the Report "that the sera and vaccines supplied by the great drug houses, and by such institutions as St. Mary's Hospital, will be much improved by control and inspection," while it would appear that the medical correspondent of the *Times*, in writing thus, has overlooked the cited evidence of important manufacturers. There exist in this country no standards for biologicals to which manufacturers or scientific institutions can work. The country has been fortunate in that the preparation of these substances has been for the most part in the hands of well-qualified, and responsible workers, but there is nothing to prevent its falling by competition into hands of a very different kind. There is with us no restriction on importation, and no kind of guarantee that importers will have regard to the standards which British manufacturers have adopted for themselves. The case of salvarsan illustrates the anomaly of the present position very clearly. Before the war this substance was entirely obtained from Germany. It is admittedly extremely dangerous to use preparations of it which have not been tested by biological methods to ensure their freedom from toxicity. During the war an emergency control was obtained by the roundabout method of inserting into every licence for suspension of the patent rights held by German nationals a clause imposing the obligation to have every batch which was manufactured tested before issue by a proper authority. Now that war is finished this control over the British-made product will shortly come to an end, while the German product is again being freely imported without control of any kind, except what is exercised in the country of its origin. Medical opinion is clear that the situation is a dangerous one. Is it to continue because effective control necessitates legislative action? We should find such economy very like carelessness.

The Committee, in drawing up their recommendations, had several possibilities to consider. It was urged from some quarters that the simple way out was manufacture by the Government, and free distribution. The Committee, on grounds of efficiency and economy, promptly rejected this suggestion, which was indeed excluded by implication from the terms of their reference. Another possibility would have been to adopt a proposal, such as that put forward in 1909 by the General Medical Council, for the establishment of a new public institution with Government money, where the necessary standardisation could be carried out. This also is rejected in the Committee's Report. After considering the working of the different systems, whether of Government monopoly or official control—some of which already exist in other countries—the Committee decided to recommend a scheme which should enable the Government to deal with the whole matter without creating a new institution. They point to the fact that, in the clearly imperative case of salvarsan, biological control has already for some years been carried out by the scientific staff of the Medical Research Council in their National Institute for Medical Research. They suggest that the Medical Research Council should be asked to undertake the duty of preparing such other biological standards as are required; that as far as possible the application of those standards should normally be left to the individual manufacturers; and that the minimum of inspection necessary to see that the standards are faithfully and properly applied shall be carried out by the scientific workers themselves, who have the responsibility for the preparation and maintenance. The legal authority for scheduling the substances which need such control, is to be, not the Minister of Health nor any Committee appointed by him, but the already existing Committee of the Privy Council to which the Medical Research Council are already responsible for the discharge of their existing functions. The Committee were presented with a problem which asked urgently for action, and they seem to have found a way of dealing with it efficiently, at little expense to the public, and with the minimum of interruption to conscientious and efficient manufacture. The manufacturers, indeed, are strongly in favour of the scheme as giving them, as well as the public, protection from the activities of those who are inefficient or dishonest, or both.

BRADFORD TECHNICAL COLLEGE: COURSE IN PUBLIC HEALTH.—A course designed to meet the needs of qualified medical practitioners who may wish to obtain the Diploma in Public Health of the Royal Colleges of Physicians of London and Surgeons of England has been arranged by the Technical College Committee and the Health Committee of the City Council. For this purpose the Technical College has recently been placed upon the list of recognised institutions by the Royal Colleges. The proposed course will extend over 25 weeks, and will include lectures and laboratory work in bacteriology and pathology and in chemistry. The course in bacteriology will be conducted in the Public Health Laboratories. Dr. William Campbell has been appointed lecturer in bacteriology and the pathology of industrial diseases, and Dr. R. Cecil Robertson assistant lecturer and demonstrator in serology and immunology. The course in chemistry will be conducted in the Chemical Laboratories of the Technical College, under the direction of Dr. R. D. Abell.

Annotations.

"Ne quid nimis."

THE FELLOWSHIP OF THE ROYAL SOCIETY.

IN scientific circles the elections to the Fellowship of the Royal Society are scanned with a keen and jealous eye, to judge which sections or sub-section may claim the largest share of this coveted honour. Medicine is fortunate in that she can justly count in her list those who bear any part in the teaching of medical students, or whose work has intimate relation to medical research. Of those recently selected the physicists, Professor W. L. Bragg and Professor W. H. Eccles; the biologists, Dr. W. G. Agar, Dr. W. T. Calman, and Dr. A. H. Church; and the chemists, Professor K. J. P. Orton and Professor J. C. Philip can certainly be placed in these categories, while the services of Mr. G. U. Yule and his fellow statisticians, already invaluable, will be requisitioned to a still greater extent as medicine becomes a more exact science. The qualified medical men include a distinguished ophthalmologist, Mr. J. H. Parsons, while pathology and bacteriology are well represented in the persons of Professor Georges Dreyer and Dr. J. C. G. Ledingham. No one of these needs introduction to readers of THE LANCET. Professor Dreyer's recent work on the measurement of vital capacity and of normal basal metabolism has appeared in our columns, and within the last few weeks Dr. Ledingham has published a valuable contribution to our knowledge of cultural diagnosis. We congratulate these new Fellows in the name of all their colleagues in the teaching and in the scientific practice of medicine.

THE FULL USE OF ARTIFICIAL LIMBS.

THE letter from Dr. M. Dockrell in THE LANCET of Feb. 19th raises the important questions: To what extent are patients who have suffered amputation able, by the light of nature, to use the limbs with which they are provided, and how great is their disability when properly fitted? Other questions also demanding a reply are: Can these patients be benefited by physical treatment? Is this treatment perfected? Is it procurable? Familiarity is presumed with the pioneer work of Captain Rowlatt Maxwell, C.F., amongst men who have undergone upper-extremity amputation. Provided the patient will make the effort required to use his prosthesis, instead of relying upon the remaining limb to do the work of both, he can gain great help from his appliance, although considerable disability must needs remain. Amputation of a lower limb, on the other hand, should entail little or no disability provided that 4 inches of bone are left; with less than this, disability becomes pronounced. Yet there are many patients with above-knee amputations, and even some with below-knee, who use their artificial limbs so indifferently that their handicap is severe alike in work and play. This should not be. The ordinary method of training—namely, to place the patient in his limb and instruct him to walk up and down prepared slopes and so forth—is inadequate. Some may learn the full possibilities of their limb by the light of nature; few are so fortunate. For the latter a special course of training was devised at St. Thomas's Hospital, which provided accommodation for a certain number of limbless officers at the request of the Ministry of Pensions. Here it was found that even for above-knee amputations the patient should not be incapacitated, whatever his walk or station in life. The mining engineer, the traveller, or the golf professional should be able to return to his duties or his recreations. Training is supported by the knowledge that the blind tabetic is not ataxic until the last stage of his disease, while many tabetics with good vision can be trained until their disability is negligible. It was surmised that patients with amputations should be better off than the tabetic, as joint- and muscle-sense are intact in the remainder of the limb, however small, and common sensation can be educated to a pitch of efficiency which largely compensates for the lack of feeling in the artificial part of the limb. And this was found in practice to be true. Dancing, jumping, walking naturally up and down stairs are all within the scope of practical possibilities, but only, for the most part, as the result of careful training. Dr. Dockrell has indicated the value of muscle-training for below-knee amputations. Naturally, the importance is greater the higher the amputation. But more important still is the education of joint, muscle, and common tactile sensations. These can be developed until the patient can actually feel with his artificial foot sufficiently to recognise its position on the ground or in space, and can detect any trifling irregularity of surface. Full efficiency cannot be restored unless the patient is fitted with a limb sufficiently light in weight to enable him to use it without fatigue either of muscle or sensation. Fortunately the controversy over the relative merits of the light and heavy limb is now a thing of the past, although comparatively few of the light-metal limbs have so far been issued. But adequate training is essential if the best use is to be made even of these limbs, and it should be available for the many. The so-called training, as at present in vogue, is inadequate; muscle-training and education of the various senses are imperative if full success is to be attained. To accomplish this every muscle which controls the movements of the remaining joints needs to be fully developed by special exercise and training, and their coordination re-developed to meet the alteration of function required of them. Not only have these muscles to learn the control of the joints on which they act directly, but also that of the artificial joints in the distal part of the limb. The use of "harness" of the central knee control type is a confession of inability to train the muscles which govern hip movement to control that of the artificial knee. Yet this training is practicable in almost every case, and the patient thereby saved from unnecessary apparatus and from the compulsion of using muscles other than those intended by nature for the purpose of walking. Efficiently to carry out the necessary training presupposes an intimate knowledge of muscle action, of joint movement, of the nature and function of all common and special sensation, and experience in training modelled on the lines originally laid down by Fränckel. To entrust this highly specialised work to an orderly, a nurse, or even to a medical gymnast, who has not been specially trained in work of this description, is to deprive patients of the full benefit of their limb. The difficulty of securing competent instructors is a real one, but not insuperable if those in authority recognise the need.

THE SUSPENSION STABILITY OF BLOOD CELLS IN PULMONARY TUBERCULOSIS.

IN 1917 Fahraeus showed that in pregnancy and certain diseases the blood cells in a column of blood gravitate to the lower sections of the column more quickly than under ordinary conditions. In *Beiträge zur Klinik der Tuberkulose* (1921, Bd. xlvi., Hft. 2) his countryman, Dr. Alf. Westergren, publishes a series of investigations on 500 persons, most of whom were inmates of a Stockholm tuberculosis hospital. His technique was as follows. A "Record" syringe of about 1·2 c.cm. capacity was used, and one-fifth of its space filled with a 3·8 per cent. solution of sodium citrate. A vein of one arm was then punctured and the syringe completely filled with blood. This was then shaken up in a small test-tube and then aspirated into a cylindrical glass pipette, with a capacity of about 1 c.cm. and a height of 200 mm. This pipette was kept vertical, and after an hour the length of the column of clear plasma was read off. After carrying out more than 3000 such tests Dr. Westergren found that the rate of sedimentation varied from 1–2 to as much as 120 mm. in the hour. The rate in a normal person was about 2 mm. per hour, and it was regarded as definitely pathological when it was 10 mm. or more. In the case of tuberculosis the suspension stability of the blood was inversely proportional to the activity of the disease. When the rate of sedimentation was within the normal limits there were also no clinical signs of active disease, and the prognosis, as judged by the clinical evidence, was good. In some afebrile cases the normal stability of the blood was much impaired, and the opinion was formed that this test was a much more reliable index to the degree of activity of the disease than the patient's temperature. The rate of sedimentation was invariably increased by fever, particularly when this was due to tuberculosis; and it was noted that a febrile period was often preceded by an increased rate of sedimentation. This test is, however, certainly not specific; in addition to pregnancy and acute infectious diseases, Bright's disease, syphilis, certain forms of "rheumatism," diseases of the blood, and other conditions may greatly hasten the rate of sedimentation. The test would, therefore, seem to be of less value in diagnosis than in determining the degree of activity of tuberculosis and its prognosis.

FIFTIETH ANNUAL MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION.

THE fiftieth annual meeting of the American Public Health Association will be held in New York City in November next. The date which is tentatively announced is Nov. 14th–18th. It is especially interesting to ourselves to note that Dr. Stephen Smith, the founder and first President of the Association, who is now entering his ninety-ninth year, is expected to celebrate his approaching centennial, together with the semi-centennial of the Association. Dr. Smith was for many years one of our correspondents in America. The first organisation meeting of the Association was held in New York City on April 18th, 1872, and that is one of the reasons for selecting the same place for the celebration of the semi-centennial. Other considerations are the convenience to foreign representatives and to Dr. Smith, who lives in New York City. Moreover, a plan will then be feasible to conduct demonstrations of public health methods in the laboratories, executive offices, garbage disposal plants, and similar centres of public health interest, where New York City is often a model of administration. It is expected to present in connexion with the celebration a review of the progress of the various branches of public health within the last 50 years. The sectional programmes will include Public Health Administration, Vital Statistics, Laboratory, Food and Drugs, Sociology, Sanitary Engineering, Industrial Hygiene, and Child Hygiene.

CARCINOMA OF THE STOMACH IN A BOY.

Dr. D. A. Laird,[1] of Edinburgh, records the case of a boy, aged 15, with an unimportant hereditary and personal history, who was admitted to hospital for pain in the chest and back of a fortnight's duration, with occasional vomiting. On admission a small, hard, epigastric swelling was found just medial to the left costal margin. There was no tenderness, but a dull pain was complained of over the swelling, radiating to the left scapula. The liver was enlarged and tender. On examination of the blood leucocytosis was found. Both test-meal and vomit showed an absence of free hydrochloric acid. Nothing was found on X ray examination. Seventeen days after admission to hospital laparotomy was performed by Professor Alexis Thomson, who found an inoperable tumour of the lesser curvature of the stomach, with secondary nodules in the liver. Glands were excised from the mesentery for examination and the abdomen was closed. The operation was followed by temporary improvement, but death took place four weeks later, only two months after the onset of the first symptoms. The tumour, which on microscopical examination proved to be a columnar-celled carcinoma, was found at the autopsy to involve the whole of the lesser curvature of the stomach, and the entire posterior wall medial to the cardiac orifice as far as the greater curvature. Perforation of the stomach had occurred shortly before death, as the peritoneal cavity showed gastric contents but no signs inflammatory reaction. Metastases were found in the liver, pancreas, diaphragm, and the gastric, pyloric, aortic, and mediastinal lymphatic glands. Commenting on the case, Dr. Laird draws attention to the sex of the patient, showing that the great majority of recorded cases of carcinoma of the stomach under 30 have occurred in males, though it may be noted that a case under Sir Norman Moore was in a girl aged 13. Other noticeable features in the present case are the rapid course characteristic of the disease in young subjects, the temporary improvement after laparotomy, which is not infrequent in inoperable carcinomata, and the rare metastatic involvement of the diaphragm.

EXPENSIVE ECONOMY.

THE intention of the London County Council to withdraw its annual grant to the Physiological Laboratory of the University of London, and the consequent decision of the Senate to close the laboratory "failing the assurance of adequate support before the end of March, 1921," threaten a disaster, the extent of which our readers will realise. The laboratory is the only institution in the United Kingdom where the requirements of elementary teaching do not to some extent interfere with the development of research work, and the prospect of deprivation of the facilities for original investigation, which have proved valuable to many workers in physiology, has occasioned strong protest. The Senate have given as a second reason for their resolve, the fact that more space is required for general university purposes, while the London County Council is presumably expecting shortly to have to contribute largely to the establishment of the University on a new site. But whatever the future demand upon space, it is surely worth while to leave the laboratory *in situ* for what can only be a comparatively short period of time; and the grant of £500 a year now made by the Council does not seem large in view of the expense of the removal of the University already contemplated, and is very small in proportion to the scientific value of the work done. It is to be hoped that the Council will reconsider its decision, and that the Senate, if they cannot see their way to let the laboratory remain in its present quarters, will, at any rate, take steps to house it elsewhere. At a recent meeting of the Medical Faculty of the University resolutions were passed urging the continuance of the work, preferably at the Imperial Institute, and suggesting that, failing the support of the Council, the Senate should allow a sum of £1300 for the triennium ending in August, 1924, even if a portion of that sum has to be taken from the reserve fund of the University. The reserve fund is reported to stand at a considerable figure; but if assistance from this quarter should remain lacking it is almost impossible to believe that some private individual or corporate body will not come forward with the means necessary to ward off what would be a deserved reproach to public intelligence.

CZECHO-SLOVAK MEDICAL COMMISSION.

ON Feb. 18th, at the Czecho-Slovak Legation, the members of the Commission gave to representatives of the press their impressions of a visit to this country, which terminated officially on Feb. 24th. The members of the Commission, who were officials of the Czecho-Slovakian Ministry of Public Health and Physical Education, said they had studied the English and American systems rather from the point of view of public hygiene and sanitation than from that of medicine. Comparing the English and American services they expressed the opinion that the former, with its combination of central and local control, was more suited for adaptation to the needs of their own country. They were accustomed to State organisation—the old Austrian system had been completely centralised and very uneconomical—and nothing in England had impressed them more than the voluntary hospitals. They had obtained much valuable information in matters of school hygiene and child welfare generally, including pre-natal care and milk control; the milk shortage in Czecho-Slovakia was at present a source of great difficulty. A movement was already on foot in that country to group districts together for the more comprehensive treatment of tuberculosis and venereal diseases; in the matter of the education of medical officers of health and lay health visitors they hoped to follow the English example. Their public health officials were only allowed to enter the service after two years' ordinary practice; hitherto, moreover, no body comparable to the English health visitors had been organised. Water-supply and housing had also attracted the special attention of the Commission. With regard to physical education in Czecho-Slovakia, it was remarked that a law would shortly be enacted making compulsory a system of training for men up to the age of 21—i.e., up to the beginning of the period of military service. All townships, &c., would be required to provide and maintain space and apparatus for the working of this national scheme. The compulsion was not extended to girls, but the "Sokol" Athletic Association, with branches all over the country, was awakening widespread interest in the physical development of both sexes. Questioned as to the expense of the projected reorganisation of public health services in Czecho-Slovakia, Dr. Karel Driml, who acted as interpreter, explained that the State would bear the entire cost, and that the impoverished condition of the country would make it necessary to move slowly. In conclusion, members of the Commission expressed the gratification afforded them by the cordiality of their reception in this country, and whilst regretting the short duration of their visit and the resultant limitation of their movements, they hoped that the contact thus established with English medical and public health institutions would be maintained with mutual advantage. They wished particularly to mention with gratitude the name of Dr. J. A. Glover, of the Ministry of Health, who had acted as their guide throughout the visit and had given them every possible assistance.

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[1] Edinburgh Medical Journal, February, 1921.

RUPTURE OF SYPHILITIC PAPILLARY MUSCLE.

A CASE of a very rare accident—rupture of a papillary muscle of the heart—has recently been reported by E. D. Spalding and W. C. Von Glahn.[1] A coloured labourer, aged 31 years, was admitted to the City Hospital, Baltimore, on March 23rd, 1920. There was a history of a venereal sore in 1905 and of a miscarriage of his wife. Fifteen months before admission he had an attack of hoarseness for three weeks, after which he suffered from dyspnœa and nocturnal cough with bloody sputum. This subsided spontaneously, but returned more severely a year later, when he was admitted to the University of Maryland Hospital on Jan. 5th, 1920. The apex beat was in the sixth interspace 14 cm. to the left, where an indefinite presystolic thrill was felt. There was a diffuse præcordial heave. At the apex the sounds were replaced by a blowing systolic and short diastolic murmur. At the base and down the sternum a short diastolic murmur replaced the aortic second sound. The second pulmonic sound was accentuated. There was slight dullness at the base of the right lung behind, and the liver extended three finger-breadths below the ribs. Blood examination showed slight secondary anæmia and a positive Wassermann reaction. The X rays revealed an enlarged heart and aorta and clouding at the base of the right lung. Compensation was gradually restored, and he was discharged on Feb. 27th. He steadily went down hill, and after a month was admitted to the City Hospital. He was œdematous and dyspnœic. The pulse was rather rapid and collapsing but regular, and of fair quality. He did not appear to be in a bad condition, and was given a bath in the ward. Immediately afterwards he complained of feeling ill. He was cyanotic, sweating, and very dyspnœic with rapid, thin, and weak pulse. He was wheeled to his bed, and three minutes later was frothing at the mouth and nose. The heart was found greatly dilated, chiefly to the left. Venesection was immediately done, strophanthin administered intravenously, and morphine and atropine subcutaneously. The pulse became stronger, but the respirations were slow and very laboured, with tracheal rhonchi. He was turned on his face and artificial respiration performed, but he soon died. The diagnosis was aortic and acute myocardial insufficiency due to syphilis. The necropsy showed a greatly hypertrophied heart, chronic passive congestion of the viscera, and œdema of the lungs. The cavity of the left ventricle was much enlarged, measuring 12 cm. from mitral ring to apex. The posterior papillary muscle was Y-shaped, being divided into two pillars. The pillar to which the chordæ tendineæ from the right half of the aortic leaflet of the mitral valve were attached was ruptured close to the point of division. The fragment attached to the valve was yellowish-white, and the endocardium over it opaque. The torn end was irregularly conical, and covered with firmly adherent clot. In the centre was muscle still recognisable surrounded by a yellow opaque ring. The endocardium was thickened below the aortic valve and over some columnæ carneæ, and there were many small endocardial hæmorrhages. The myocardium was greyish-red and its muscular fibres were hypertrophied. In the aorta was a large, oval, corrugated plaque involving the left posterior and anterior cusps. The anterior half of the left posterior cusp was entirely destroyed and the anterior cusp was eroded. Microscopic examination showed a large area of coagulative necrosis in the stump of the ruptured muscle, around which leucocytes had accumulated. Just beyond the leucocytes the muscle fibres had shrunken almost to threads and their striations and nuclei had disappeared. Next to these was a zone of fibres containing droplets of fat. The muscle fibres elsewhere were hypertrophied and the connective tissue was increased. In Levaditi preparations spirochætes were found just beyond the necrotic area. In 1911, Wankel, a German writer, reported a case of ruptured papillary muscle, and in the literature could find only four other cases. In the same year Dr. J. H. Teacher reported a case. In all the rupture was in the left ventricle. In four there was sclerosis of the coronary arteries, and in two thrombosis. In the present and in one recorded case these arteries were normal. In none of the cases was there any reference to syphilis, but in one aneurysm of the aorta was present.

ARMISTICE SUNDAY.

WE are informed by the executive officer of the Joint Council of the British Red Cross and Order of St. John, that the heads of the churches have agreed to recommend that collections should be made in aid of the work of the Council next Armistice Sunday, Nov. 13th. Similar steps have been taken throughout the Empire, so that in all parts of the world worshippers will join in one common act on the same day. In America this has been already arranged. The appeal has met with the hearty approval of the Archbishops of Canterbury, York, and Wales, and the Primate of All Ireland. The Cardinal Archbishop of Westminster has kindly promised to place the matter before his Bishops at their annual meeting in April. The heads of all the Free Churches have signed the memorandum, as [illegible] the Chaplain of the Fleet, and the Chaplain [illegible] the Forces. Where Nov. 13th has, by virtue [illegible] old custom, been reserved for a particular cha[illegible] other convenient date can be selected in the [illegible] that particular church.

A DISAPPOINTING NECESSITY.

A CIRCULAR addressed by the Ministry of Health [illegible] local authorities calls their attention to an [illegible]ment made in the House of Commons in December [illegible] the Chancellor of the Exchequer to the effect that [illegible] spending departments must practise rigid economy, and in particular must hold in abeyance schemes involving expenditure not yet in operation. The circular, applying the principle thus enunciated to the matters within the scope of the authority of the Ministry, recognises the difficulty of economy where the public health is concerned, but states in equally plain terms that the need for lightening the burdens on the community is imperative. The limits there were also no clinical signs of active disease, and the prognosis, as judged by the clinical evidence, was good. In some afebrile cases the normal stability of the blood was much impaired, and the opinion was formed that this test was a much more reliable index to the degree of activity of the disease than the patient's temperature. The rate of sedimentation was invariably increased by fever, particularly when this was due to tuberculosis; and it was noted that a febrile period was often preceded by an increased rate of sedimentation. This test is, however, certainly not specific; in addition to pregnancy and acute infectious diseases, Bright's disease, syphilis, certain forms of "rheumatism," diseases of the blood, and other conditions may greatly hasten the rate of sedimentation. The test would, therefore, seem to be of less value in diagnosis than in determining the degree of activity of tuberculosis and its prognosis.

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[1] Johns Hopkins Hospital Bulletin, January, 1921.

FIFTIETH ANNUAL MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION.

THE fiftieth annual meeting of the American Public Health Association will be held in New York City in November next. The date which is tentatively announced is Nov. 14th–18th. It is especially interesting to ourselves to note that Dr. Stephen Smith, the founder and first President of the Association, who is now entering his ninety-ninth year, is expected to celebrate his approaching centennial, together with the semi-centennial of the Association. Dr. Smith was for many years one of our correspondents in America. The first organisation meeting of the Association was held in New York City on April 18th, 1872, and that is one of the reasons for selecting the same place for the celebration of the semi-centennial. Other considerations are the convenience to foreign representatives and to Dr. Smith, who lives in New York City. Moreover, a plan will then be feasible to conduct demonstrations of public health methods in the laboratories, executive offices, garbage disposal plants, and similar centres of public health interest, where New York City is often a model of administration. It is expected to present in connexion with the celebration a review of the progress of the various branches of public health within the last 50 years. The sectional programmes will include Public Health Administration, Vital Statistics, Laboratory, Food and Drugs, Sociology, Sanitary Engineering, Industrial Hygiene, and Child Hygiene.

CARCINOMA OF THE STOMACH IN A BOY.

Dr. D. A. Laird,[1] of Edinburgh, records the case of a boy, aged 15, with an unimportant hereditary and personal history, who was admitted to hospital for pain in the chest and back of a fortnight's duration, with occasional vomiting. On admission a small, hard, epigastric swelling was found just medial to the left costal margin. There was no tenderness, but a dull pain was complained of over the swelling, radiating to the left scapula. The liver was enlarged and tender. On examination of the blood leucocytosis was found. Both test-meal and vomit showed an absence of free hydrochloric acid. Nothing was found on X ray examination. Seventeen days after admission to hospital laparotomy was performed by Professor Alexis Thomson, who found an inoperable tumour of the lesser curvature of the stomach, with secondary nodules in the liver. Glands were excised from the mesentery for examination and the abdomen was closed. The operation was followed by temporary improvement, but death took place four weeks later, only two months after the onset of the first symptoms. The tumour, which on microscopical examination proved to be a columnar-celled carcinoma, was found at the autopsy to involve the whole of the lesser curvature of the stomach, and the entire posterior wall medial to the cardiac orifice as far as the greater curvature. Perforation of the stomach had occurred shortly before death, as the peritoneal cavity showed gastric contents but no signs of inflammatory reaction. Metastases were found in the liver, pancreas, diaphragm, and the gastric, pyloric, aortic, and mediastinal lymphatic glands. Commenting on the case, Dr. Laird draws attention to the sex of the patient, showing that the great majority of recorded cases of carcinoma of the stomach under 30 have occurred in males, though it may be noted that a case under Sir Norman Moore was in a girl aged 13. Other noticeable features in the present case are the rapid course characteristic of the disease in young subjects, the temporary improvement after laparotomy, which is not infrequent in inoperable carcinomata, and the rare metastatic involvement of the diaphragm.

EXPENSIVE ECONOMY.

THE intention of the London County Council to withdraw its annual grant to the Physiological Laboratory of the University of London, and the consequent decision of the Senate to close the laboratory "failing the assurance of adequate support before the end of March, 1921," threaten a disaster, the extent of which our readers will realise. The laboratory is the only institution in the United Kingdom where the requirements of elementary teaching do not to some extent interfere with the development of research work, and the prospect of deprivation of the facilities for original investigation, which have proved valuable to many workers in physiology, has occasioned strong protest. The Senate have given as a second reason for their resolve, the fact that more space is required for general university purposes, while the London County Council is presumably expecting shortly to have to contribute largely to the establishment of the University on a new site. But whatever the future demand upon space, it is surely worth while to leave the laboratory in situ for what can only be a comparatively short period of time; and the grant of £500 a year now made by the Council does not seem large in view of the expense of the removal of the University already contemplated, and is very small in proportion to the scientific value of the work done. It is to be hoped that the Council will reconsider its decision, and that the Senate, if they cannot see their way to let the laboratory remain in its present quarters, will, at any rate, take steps to house it elsewhere. At a recent meeting of the Medical Faculty of the University resolutions were passed urging the continuance of the work, preferably at the Imperial Institute, and suggesting that, failing the support of the Council, the Senate should allow a sum of £1300 for the triennium ending in August, 1924, even if a portion of that sum has to be taken from the reserve fund of the University. The reserve fund is reported to stand at a considerable figure; but if assistance from this quarter should remain lacking it is almost impossible to believe that some private individual or corporate body will not come forward with the means necessary to ward off what would be a deserved reproach to public intelligence.

CZECHO-SLOVAK MEDICAL COMMISSION.

ON Feb. 18th, at the Czecho-Slovak Legation, the members of the Commission gave to representatives of the press their impressions of a visit to this country, which terminated officially on Feb. 24th. The members of the Commission, who were officials of the Czecho-Slovakian Ministry of Public Health and Physical Education, said they had studied the English and American systems rather from the point of view of public hygiene and sanitation than from that of medicine. Comparing the English and American services they expressed the opinion that the former, with its combination of central and local control, was more suited for adaptation to the needs of their own country. They were accustomed to State organisation—the old Austrian system had been completely centralised and very uneconomical—and nothing in England had impressed them more than the voluntary hospitals. They had obtained much valuable information in matters of school hygiene and child welfare generally, including pre-natal care and milk control; the milk shortage in Czecho-Slovakia was at present a source of great difficulty. A movement was already on foot in that country to group districts together for the more comprehensive treatment of tuberculosis and venereal diseases; in the matter of the education of medical officers of health and lay health visitors they hoped to follow the English example. Their public health officials were only allowed to enter the service after two years' ordinary practice; hitherto, moreover. no body comparable to the English health visitors had been organised. Water-supply and housing had also attracted the special attention of the Commission. With regard to physical education in Czecho-Slovakia, it was remarked that a law would shortly be enacted making compulsory a system of training for men up to the age of 21—i.e., up to the beginning of the period of military service. All townships, &c., would be required to provide and maintain space and apparatus for the working of this national scheme. The compulsion was not extended to girls, but the "Sokol" Athletic Association, with branches all over the country, was awakening widespread interest in the physical development of both sexes. Questioned as to the expense of the projected reorganisation of public health services in Czecho-Slovakia, Dr. Karel Driml, who acted as interpreter, explained that the State would bear the entire cost, and that the impoverished condition of the country would make it necessary to move slowly. In conclusion, members of the Commission expressed the gratification afforded them by the cordiality of their reception in this country, and whilst regretting the short duration of their visit and the resultant limitation of their movements, they hoped that the contact thus established with English medical and public health institutions would be maintained with mutual advantage. They wished particularly to mention with gratitude the name of Dr. J. A. Glover, of the Ministry of Health, who had acted as their guide throughout the visit and had given them every possible assistance.

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[1] Johns Hopkins Hospital Bulletin, January, 1921.

CHILD WELFARE IN AUSTRIA.

IN the early winter of 1919 there were in Vienna 36 infant welfare centres, at which 20,000 children were attending. Of these centres, eight were in the hands of the municipal authorities, while four independent organisations were responsible for the remainder. Many of these dealt with the first year of life only, but the work of the municipal institutions was broader, including antenatal consultations and the care of the child up to the age of 18. Most of the centres were well organised with up-to-date appliances and competent medical treatment; but all were handicapped by the scarcity of such elemental necessaries as milk, soap, linen, and paper. From 80 to 90 per cent. of the attending one-to-fives were found to be rachitic or tuberculous and stationary in weight; and when in November, 1919, the Society of Friends' Relief Mission was able to arrange for small regular supplies of food to certain constant attenders of centres the rise in weight of the children was frequently extraordinary. Depôts were opened where mothers of such children could obtain a ration for them on production of a card signed by the doctor of a welfare centre, the charge made being estimated with regard to the father's earning capacity, some 15 per cent. of the rations being supplied free. It is hardly surprising that the number of children eligible for these rations very soon became too great to deal with, and the Vienna Board of Health then combined all infant welfare organisations into one body, the Hauptausschuss für gesundheitliche Jugendfürsorge. Existing centres were extended and reorganised, with the result that it was possible to open 34 new centres, to examine all the children in the city under six years of age, and to keep those who required it under supervision. Equipment was still scanty; children were weighed on luggage-scales and examined on tables for which, as a rule, neither cloth nor paper covering was obtainable. A timely gift of soap from the American Red Cross enabled medical officers to wash their hands. How keenly this work among the children appeals to local workers is evident from the fact that during a recent collection for the children in Vienna doctors and nurses contributed one-tenth of their monthly salaries; at what sacrifice may be seen from a study of our Vienna Correspondent's recent letters. Between June and October of last year 85,000 children were examined, 54,000 of whom were receiving supplementary fortnightly rations, and it was possible to note some improvement on the conditions of 1919; although only 10 per cent. were normal in weight, no more than 56·1 per cent. showed signs of actual disease. It is an extraordinary fact, and one of great interest to the study of scientific dietetics, how small has been the increment necessary to change a down-grade or stationary child into an up-grade one. Fortunately, much study is being given in Vienna to these new and intimate problems of national nutrition. Dr. Harriette Chick and Dr. Elsie Dalyell, on behalf of the Lister Institute, are still working in Vienna hospitals at the problem of vitamines and the most effective way of utilising them on a minimum caloric diet. We publish this week a valuable study of the food-supply and state of nutrition of a representative sample of the Viennese working classes by Miss M. R. Gribbon and Miss M. Ferguson, the two investigators using methods which under Professor Noel Paton, of Glasgow, have already thrown light on the ætiology of rickets nearer home. In the remainder of German-speaking Austria a system of infant welfare centres has been established, controlled by a central body, the Landesjugendamt. The conditions, especially in the small industrial towns, are at present actually worse than those in Vienna, for food-supplies are inadequate and assistance is not so widely available. There is ample scope within the borders of the old Hapsburg dynasty not only for abundant charity but also for the discerning brains which shall apply this charity to the best results.

A HANDICAP REDUCED.

Dr. Monod demonstrated the retarded kinema on Feb. 23rd to a hall filled to capacity. Moreover, even those among his audience who normally take but little interest in medical politics listened with sympathy to his ideals of a closer bond between the profession in England and France, and with keen attention to his tentative plans for its promotion. The subject was not devoid of difficulties, but so tactful was his approach and so reasonable his appeal that the success of Dr. Monod's mission is assured. Many arrived quite ready to cement cordial professional relations with a country showing such a neighbourly interest in the reduction of their golf handicaps, and left convinced of other even more important advantages to be gained from a closer fellowship with their colleagues in France. The actual show was novel to many of those present. The slowed pictures of athletes putting the weight, throwing the discus, and jumping with and without the aid of a pole were miracles of effortless grace. No sign of sudden stress was apparent at any one moment, though an increase or relaxation of muscular tension might be detected on closer study. Dr. Monod made the interesting claim for his compatriot, the physiologist Marey, of having invented the apparatus for taking a rapid series of photographs of life in motion. But for the perforations along the edge of the film, he left little for subsequent ingenuity. The cardiac film was, as Dr. Monod said, more an indication of the possibilities of this method in physiological research than a contribution to our knowledge of heart movements; the pathology of the heart-lung preparation, said to be in a state of auricular fibrillation, was not very clear. An exposition of the golf swing, however, gave great satisfaction, but it would be necessary to administer a "repeat" of the mixture of several movements many times before their analysis could be used to cure individual faults; unfortunately, the films were shown to the sufferers only once. But if Dr. Monod failed to effect a general reduction of golf handicaps, he achieved a big step towards the reduction, if not the removal, at least of that handicap to universal medical fellowship which depends only on insular prejudice.

WE regret to announce the death on March 1st of Sir Felix Semon in his seventy-second year.

A DISCUSSION upon the Eradication of Tuberculosis in Men and Animals will be held in the Robert Barnes Hall of the Royal Society of Medicine, 1, Wimpole-street, London, W., on Monday, March 14th, at 5.30 P.M. The discussion will be opened by Sir John McFadyean, who will be followed by Sir Clifford Allbutt, Sir G. Sims Woodhead, Dr. Arthur Latham, Professor Hobday, Dr. A. C. Inman, Mr. Cyril Nitch, Dr. H. Sutherland, and others. The chair will be taken by Sir John Bland-Sutton.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

A Challenge to Professional Secrecy.

THE text of the Order[1] issued in various parts of Ireland by the competent military authority, and served on the secretaries of the general hospitals and the medical officers of certain workhouse and district hospitals, has naturally caused much perturbation in the minds of the medical men affected thereby, and it opens a professional question of more than local interest. The demand made by a legally constituted authority that doctors are to act as informants in regard to their own patients is, as far as we know, unprecedented in these countries. It is stated by Dr. George Sigerson, in an interview reported in a Dublin paper, that a similar demand was made on the Paris hospitals in the time of Napoleon III., but the hospitals refused to obey. There is no point of ethics to which the medical profession has clung more tenaciously than its obligation to secrecy as regards personal knowledge gained in professional work. From Hippocrates down to the present day professional confidences have been regarded as inviolate.

The latest collective pronouncement regarding secrecy made on behalf of the profession is that of the Representative Meeting of the British Medical Association held last June at Cambridge. It is in the following terms:—

> That having further considered the question of professional secrecy viewed from the standpoint of the medical profession and with special regard to venereal diseases, the Representative Body reiterates the opinion that a medical practitioner should not, without his patient's consent, voluntarily disclose information which he has obtained from such patient in the exercise of his professional duties.

Though the meeting was specially considering the problems arising out of the State-provided treatment of venereal diseases, the proposition is general. How far a medical man in obeying the military Order in Ireland would be acting voluntarily or under compulsion it is difficult to say, but it is clear that in giving information regarding his patients in obedience to a general order he would be going much further than if he were merely to answer specific questions when produced as a witness in court. The duty of a medical man who, from information gained professionally, suspects that a crime has been committed is by no means clear. Dixon Mann[2] says:—

> "It is not part of his [the practitioner's] duty to act as a detective and give information to the police whenever he comes across crime. Yet at the same time he must use reasonable discretion, and in a serious case he may be justified in subordinating the immediate personal obligation to public duty."

He further quotes from Mr. Justice Hawkins:—

> "When it was said that there was a general rule existing in the medical profession, that whensoever they saw, in the course of their medical attendance, that a crime had been committed, or was about to be committed, they were in all cases to go off to the Public Prosecutor, he was bound to say that it was not a rule which met with his approbation, and he hoped it would not meet with the approbation of anyone else. There might be cases where it was the obvious duty of a medical man to speak out."

What is more pertinent, perhaps, in the present state of Ireland is that the Order is not likely to prove effective as regards its object, while it may have the undesirable result of estranging the medical profession as a whole from those whose sole duty in Ireland is to restore law and order. It is understood that the Council of the Royal College of Surgeons in Ireland has, after serious consideration, decided to make representations on the subject to the military authorities. We may hope that as a result of such representations the authorities may decide to withdraw, or if that is impolitic, to ignore the Order.

Trial of a Doctor's Wife.

It is announced that Mrs. Ryan, of Wexford, wife of Dr. James Ryan, M.P. for South Wexford, has been fined £50 by a military court in Waterford for refusing to post in one of the windows of her house a notice proclaiming martial law. In default of the payment of the fine within seven days a distress was to be levied on her goods, and in default of distress she was ordered three months' imprisonment. Dr. James Ryan has been under arrest for some weeks past without being brought to trial. He is stated to have been carried as "a hostage" in lorries patrolling disturbed areas.

Death of Sir Charles Cameron.

The death of Sir Charles Cameron, the veteran medical officer of health of Dublin, occurred last Sunday, in his ninety-first year, after a prolonged illness. The only surviving son of Captain Ewen Cameron, of Lochaber, and educated at Dublin and Guernsey, he was already public analyst in the capital before taking medical qualifications at the Coombe Hospital, Dublin, when he was 38 years old. A few years later he became F.R.C.S. Irel. and D.P.H. Camb., thus equipping himself on many sides for the position of adviser to the public health department of the Dublin Corporation, a position which he held for half a century. Over and above his onerous official duties Cameron found time to preside for some years over the Royal College of Surgeons of Ireland, in which he occupied the chairs of hygiene and chemistry. He was Harben gold medallist in 1902. In 1885 he received the signal honour of knighthood in recognition of his services to public health, being the first health officer to be thus distinguished. Professional honours of all kinds naturally fell to his share. Sir Charles Cameron was a prolific writer with a flowing pen and lucid style. His "Manual of Hygiene and Compendium of Sanitary Laws" found readers of all kinds, and his "History of the Royal College of Surgeons in Ireland" has taken its place in the archives of medical history.

Ulster Medical Society: Annual Dinner.

The annual dinner of the society was held in the Medical Institute, Belfast, on Feb. 17th, when Dr. Houston, the President, occupied the chair; the company numbered about 70. Among the guests were Sir Almroth Wright, F.R.S.; Judge Matheson, Recorder of Belfast; the High Sheriff, Councillor W. G. Turner; Mr. S. G. Crymble, president of the Northern Law Society; and Dr. Alexander Fleming. After dinner the President gave the toast of "The King," which was received with enthusiasm. Professor J. A. Lindsay proposed the toast of "The Belfast Corporation," which was responded to by the High Sheriff in the absence of the Lord Mayor, who had been called to London on official business. The President gave the toast of "Our Guests," and spoke of Sir Almroth Wright's important contributions to medical science and of his cordial relations with those members of the society who had visited his laboratory at St. Mary's Hospital. Sir Almroth Wright, in responding, emphasised the importance of experiment in the advance of scientific truth, and expressed his conviction of the fallaciousness of too much reliance upon experience. Dr. Fleming also responded. Dr. J. S. Morrow gave the toast of "The Legal Profession" in an amusing speech. Judge Matheson, in responding, paid a high tribute to the beneficent work and the high ethical standards of the medical profession. Mr. Crymble also responded. Dr. J. E. MacIlwaine gave the toast of "The President." Dr. Houston made a suitable response, and concluded by proposing the toast of the acting secretary, Dr. R. Marshall, to whom the success of the evening was mainly due. Dr. Marshall, in acknowledging the toast, expressed the pleasure which the members of the society felt at the convalescence from his long illness of the secretary, Dr. W. W. D. Thomson. On the following afternoon Sir Almroth Wright addressed the society on the subject of Acidæmia. There was a crowded attendance and the address was heard with much interest and pleasure.

Belfast Maternity Hospital.

The annual meeting of this institution was held on Feb. 24th, Mr. Herbert Ewart, chairman of the board of governors, in the chair. The annual report showed a large increase in the volume of work during the past year, both in the hospital and the district work carried on in connexion with the institution. During the year 831 patients were treated, 517 children were born, 31 were stillborn, and 13 died. In the district work 4774 visits were paid. The maternal death-rate was 1·34 per cent. The report made sympathetic reference to the resignation of Dr. Brice Smyth after a connexion with the hospital for the long period of 50 years, and to the death of Sir John Byers. Professor C. G. Lowry and Mr. T. S. S. Holmes, F.R.C.S., had joined the staff. Twenty-one nurses had entered for and passed the C.M.B. examination. The financial report showed a small deficit, £120, on the year's working. The endowment fund had been considerably augmented. In seconding the adoption of the report, Professor Lindsay mentioned that in the ensuing year the hospital would undertake work in connexion with the maternity and child welfare movement. He also dwelt upon the *necessity for larger accommodation for maternity* work in Belfast. Dr. H. D. Osborne was elected a governor in succession to Dr. Brice Smyth, resigned.

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[1] THE LANCET, Feb. 26th, p. 453.

[2] Forensic Medicine and Toxicology, 5th ed., p. 346.

Central Midwives Board for Ireland.

A meeting was held at the office of the Minister of Health, St. Stephen's Green, Dublin, on Feb. 24th, with Sir Edward Coey Bigger in the chair. The secretary reported that at the examination held in Dublin, Belfast, and Cork simultaneously on Feb. 8th and 9th 63 candidates presented themselves, of whom 61 passed and were granted certificates. The total number on the Midwives Roll of Ireland is now 2902. At a special meeting of the Board subsequently held the name of one of the midwives was removed from the Roll.

Feb. 28th.

TUBERCULOSIS.

When is a War Pensioner Tuberculous?

IN 1918 Dr. Büttner-Wobst published a paper in which he made out that from 60 to 80 per cent. of the cases admitted to sanatoriums in Germany were not really tuberculous. His paper roused a good deal of criticism, and last year Dr. M. Landolt published a lengthy statistical analysis of sanatorium material, showing that only in about 6 per cent. could the original diagnosis of tuberculosis be regarded as mistaken. With these discrepant opinions for a background, it is well worth scrutinising a remarkable statement made by the London Insurance Committee. It appears that arrangements were recently made with the Brompton and City of London Chest Hospitals for the admission of 158 cases for observation. They included 73 ex-Service cases in which the diagnosis of tuberculosis had been accepted by the Ministry of Pensions and queried by tuberculosis officers. There were 37 cases regarded as tuberculous by tuberculosis officers and 48 recommended for diagnostic observation by tuberculosis officers. Of the total of 158 cases, 124, or more than 78 per cent., were considered by the hospitals mentioned as "not suffering from tuberculosis." In ten other cases the disease was regarded as arrested. Thus only 15 per cent. of the 158 cases were recommended for treatment. At first sight these figures are certainly disconcerting; they suggest incompetence to the unitiated, ignorant of the usual difficulties in the early diagnosis of tuberculosis and the special difficulties connected with a pension. These are indeed great, and one of the thoughts in the mind of a conscientious tuberculosis officer is this: I cannot be sure whether this man is tuberculous or not. If I give him the benefit of the doubt he will enjoy skilled treatment, with periodic "boards" at which a mistake, if committed, can be rectified. But if I label him non-tuberculous bitter experience has taught me that, in the event of his proving tuberculous after all, the task of securing him a tuberculosis pension will be most tedious, exasperating, and often hopeless. By their mistaken parsimony in such cases the pensions authorities have defeated their own object, and have driven tuberculosis officers to take a course which, under the circumstances, is perfectly justifiable. The remedy for this state of affairs is obvious. Another remedy which this report clearly indicates is the provision of every tuberculosis officer with a certain number of observation beds. It may be possible to diagnose advanced cases in an overcrowded dispensary, but it is absolutely impossible to decide that a case is definitely non-tuberculous. Even in a hospital, and with a case under observation for several days, the unequivocal exclusion of tuberculosis from the possible diagnoses calls not only for great skill and experience, but also in some cases for a remarkable degree of assurance. It may be noted in this connexion that already two cases reported by a hospital as not being tuberculous have subsequently shown conclusive evidence of the disease. There can be little doubt that if every first-stage patient who was sputum-positive ten years ago, and who had since kept well, were examined for tuberculosis in a hospital, a goodly proportion would be discharged as non-tuberculous if their previous records were concealed. Yet the aphorism, "Once tuberculous always tuberculous," is undeniably true.

Heredity in Tuberculosis.

In a paper in the *American Review of Tuberculosis* for November, Dr. Raymond Pearl has published some suggestive figures dealing with the problem of infection and heredity in relation to tuberculosis. His observations are the more valuable as they are leavened by a canny recognition of the many pitfalls awaiting the investigator who attempts to discover the comparative importance of heredity and infection. He has investigated 57 family histories, involving more than 5000 blood relatives. In 38 cases the original subject of investigation was tuberculous, and in 19 cases non-tuberculous. Each group could be regarded as a random sample of the working-class population of Baltimore, the only differential factor in the selection being that in the one case the individual with whom a history started was tuberculous, and in the other case not. Five generations were studied with the following striking results. A tuberculous person, it was found, had nearly six times as many tuberculous blood relatives as a non-tuberculous person. In other words, 7 per cent. of the blood relatives of a tuberculous person were themselves tuberculous, whereas this was the case with only 1·2 per cent. for the non-tuberculous. Where there was no immediate tuberculous ancestry (parents and grandparents non-tuberculous) 7·4 per cent. of the offspring were actively tuberculous. Nearly a quarter (22·2 per cent.) of these tuberculous progeny were known to have lived for some time before developing the disease in close contact with cases of active tuberculosis. On the other hand, of the 92·6 per cent. non-tuberculous offspring of non-tuberculous ancestry, only about one-tenth (11·2 per cent.) had been in close contact with an active case. Thus, twice as many of the tuberculous offspring of non-tuberculous ancestry had been in close contact with active tuberculosis, as had been the case with the non-tuberculous offspring of non-tuberculous ancestry. These figures stress the importance of infection. But, as Dr. Pearl points out, when one or both of the parents were actively tuberculous virtually three-fourths of their non-tuberculous offspring had been in just as close contact with active, open cases as their brothers and sisters who developed the disease. Dr. Pearl's figures show that familial contact with active, open cases is undoubtedly a factor in determining the incidence-rate of clinically active tuberculosis, but he thinks it equally obvious that such contact does certainly not account for the whole, and it probably accounts only for a small part, of the increase in the incidence of the disease occurring as the amount of tuberculosis in the immediate direct ancestry increases.

The Farming Out of Sanatorium Patients.

In his report for the year ending March 31st, 1920, Dr. C. Rolleston, tuberculosis officer to the Soke of Peterborough, has some candid remarks to make on the system, adopted by certain local bodies, of farming out their sanatorium cases. The disadvantages of this arrangement are illustrated by the case of a patient of over 50 who acquired tuberculosis in the army. Farmed out by the War Pensions Committee in a distant sanatorium he was suddenly discharged without a word of warning to the committee or their medical officer. His home was a common lodging-house, where his opportunities for spreading the disease would be unrivalled. Yet no opportunity was given for arranging further institutional treatment prior to his discharge. Dr. Rolleston points out that the distance of all sanatoriums from Peterborough undoubtedly deters many patients from staying for the necessary period in a sanatorium. As his figures show, the Soke of Peterborough could keep a 50-bed institution full of its own patients; and were such an institution provided in the county area friends and relatives could visit patients, who would thus be encouraged to submit to the tedium of a long stay. Dr. Rolleston is to be congratulated on bringing into prominence one of the most important causes of sanatorium unrest in this country. His recognition of the importance of rest is summed up in the advice he gives to the wives of his patients: "Take away his trousers; his lungs will take care of themselves."

Surgical Tuberculosis in Switzerland.

At a recent meeting of the Swiss League against Tuberculosis special attention was drawn to the needs of those suffering from surgical tuberculosis. Their number in the whole country is reckoned as being about 15,000. Statistics at Basle have shown that among 100 such cases only 3 belong to the wealthy classes, 28 to the middle classes, and 69 to the poor. Hence the urgent need of some public help. Both Dr. Rollier, of Leysin, and Professor de Quervain, of Berne, pointed out that special care should be taken to secure for these cases treatment in an Alpine sanatorium. Dr. Rollier was able to show from his experiences of twenty years what the "cure hélio-Alpine," as he calls it, can achieve. All cases of surgical tuberculosis, except certain forms of fungous synovitis of the knee-joint or of genito-urinary affection, benefit greatly by it. It is often said that this holds good only for children, but at Leysin adults have always been in a majority, and their prognosis is not less favourable, nor is the duration of their treatment, longer than that of children. Dr. Rollier produced the following statistics of 2167 cases treated since the beginning of the war and controlled by skiagrams: cured, 1746; ameliorated, 242; no change, 147; worse, 32. With the hélio-Alpine treatment Dr. Rollier has combined a treatment of work. He founded at Leysin work and agricultural colonies which met with great success; up to the present the special sanatorium at Leysin has been the only institution in the country for the treatment of surgical tuberculosis of the poorer classes. Professor de Quervain urged that this example should be followed throughout the country. There are two solutions, the foundation of special sanatoriums and the formation of special wards in the ordinary sanatoriums for pulmonary cases. Such wards, however, require a staff of surgical specialists, as the treatment of surgical tuberculosis combining orthopædic, operative, and conservative measures with X ray cure demands, no less than the pulmonary form, a special knowledge. In this connexion the universities of Geneva, Lausanne, and Neuchâtel have launched a notable scheme—namely, the foundation of a sanatorium at Leysin specially for teachers and students of those universities suffering from tuberculosis of a curable nature. To realise this scheme a large sum of money is needed. The idea has been taken up with great enthusiasm by the universities, and a campaign has been opened in its favour. A Bill for measures against tuberculosis will soon be brought before the Federal Chambers. Hitherto the campaign has been carried on entirely by private persons, cantons, and municipalities, with varied vigour in different parts of the country. The new Bill, far from abolishing private initiative, will centralise and concentrate efforts already in operation. It also provides compulsory notification of all cases.

PAYING PATIENTS IN POOR-LAW HOSPITALS.—Reference has already been made in THE LANCET to the scheme of the Manchester board of guardians now in operation in their hospitals at Withington and Crumpsall, whereby people who cannot pay the fees of private nursing homes are admitted to all the benefits of hospital treatment, attendance, and keep for 3 guineas per week. Patients suffering from acute but not infectious or contagious diseases are admitted, and the scheme has been in operation since Feb. 1st. In view of the important principles involved, the Ministry of Health has asked for a full statement of the exact nature of the proposals and what, if any, steps have been taken towards bringing them into operation. The board's unanimous resolution, in reply, took the form of an explanation of the guardians' scheme, pointing out that their scheme is similar to those adopted in many other unions. The guardians add that the institutions have relieved many sick persons of the necessity of waiting many months before obtaining admission to a voluntary hospital, and they trust that the Ministry of Health will give them every assistance in the carrying out of their scheme.

Public Health.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

CITY OF SHEFFIELD.

Dr. H. Scurfield has issued his report for 1920. Though a short document, it contains many points of interest. The difficulty of making an accurate estimate of the population for the years of the war and since the armistice is dealt with. The population was depleted by the men joining the Services, but there was also a great influx of munitions workers. For the birth-rate the population is estimated at 493,839; for the death-rate at 492,570. There has been a great jump in the birth-rate. The number of births registered was 13,186, being 2770 more than in the previous year. This gives a birth-rate of 26·7 and is the highest recorded since 1914, when it was 27·3. The war decline continued till the first quarter of 1919, the quarterly birth-rates for 1919 being successively 16·2, 16·8, 19·6, and 26·6, and for 1920 28·8, 26·9, 26·4, and 24·6. There were 6660 deaths registered, being 41 less than in the previous year, and the death-rate is estimated to be 13·5, being the lowest ever recorded for the city.

For the first time on record not a single death has been attributed to *enteric fever*, and it is mentioned that since 1914, in contrast with previous years, there has been no autumnal increase in the prevalence of this disease.

The steady decline in the death-rate from *tuberculosis* which took place during the first years of the century had a set-back during the war. The increase during the war was greater among females than among males, no doubt owing to the increased amount of female factory labour. Since the armistice this increase in the tuberculosis death-rate has disappeared with remarkable rapidity, rendered all the more remarkable by the fact that the improvement has taken place in spite of the bad housing conditions and overcrowding which are referred to in another part of the report. There is an increase in the number of new cases of sickness from tuberculosis of the lungs, but this is attributed to the increase in the war-depleted medical staff of the tuberculosis dispensary, which has enabled the examination of "suspects" and "contacts" to be carried out more thoroughly.

There is an increased number of deaths from *cancer*—namely, 521 for 1920 as compared with an average of 471 for the previous five years. This increase is among the male deaths, which are 254 for 1920 and 209 for the previous quinquennium, the female deaths from cancer during 1920, being 267 as compared with 262 for 1915–19.

The *infant mortality* is 103 per 1000 births as compared with 96 in 1919, which was the lowest ever recorded for Sheffield. Although 103 is Sheffield's second best on record it is shown on page 7 to be 23 in excess of the rate for England and Wales, and one wonders to what extent this is attributable to the bad conditions for infants resulting from the overcrowding. The neo-natal mortality was 38 per 1000 births and has to be compared with 43 for the year 1919. Dr. Scurfield draws attention to a slight recrudescence of influenza which took place during May, 1920, and gives reasons for supposing that Blackburn, Halifax, and Sunderland were similarly affected during the month of April.

The work of the *maternity and child welfare* department goes on increasing. There were 51,456 attendances at the "baby consultations" as compared with 39,316 in the previous year. The pre-natal work is not extensive. Only 112 new cases attended, 47 of whom were recommended by midwives and 48 by the women inspectors.

Dental cases.—Only nine patients were treated by the dentist. It is obvious that the need for attention to the teeth of the expectant and nursing mother is not understood in Sheffield, and that a large amount of propaganda work will have to be done in order to combat the widespread superstition that it is not safe for the mother to have her teeth put right at these times. Few things have been more striking recently than the demonstration of the effect on the nursling's health produced by having the mother's decayed teeth extracted and her mouth "cleaned up."

In spite of overcrowding and want of proper lying-in accommodation for the largely increased number of confinements, the *death-rate from puerperal fever* and other complications of childbirth is lower than in the two previous years. When the triennium 1918–20 is compared with the pre-war triennium an increase in the death-rate per 1000 births from puerperal fever from 1·3 to 1·8 is recorded, while the death-rate from other complications of child-bearing remains the same.

During 1920 302 cases of *ophthalmia neonatorum* were recorded as compared with 219 in 1919. This increase is partly accounted for by the increase in the number of births from 10,146 in 1919 to 13,186 in 1920. During 1920, however, the damage to the eyes was much greater. In 1919 there were no cases of lost eyesight known to have occurred. In 1920 two children were blinded in one eye and one in both eyes. The blind child died subsequently. In addition, there were 20 cases under observation at the end of the year, including some severe ones which are likely to cause further eye-destruction. We believe that ophthalmic surgeons are agreed that these cases should hardly ever occur with proper attention at birth, as in a well-conducted lying-in hospital, and that when they do occur the eyesight should, practically speaking, never be lost if efficient treatment is applied at once. We have, therefore, to face the fact that somewhere about one-third of the inmates of blind institutions are there owing to inefficiently treated ophthalmia neonatorum.

The work of the Sheffield clinics for *venereal diseases* is shown in the following statement:—

	1918.	*1919.*	*1920.*
Total number of persons dealt with ...	1,805	3,215	4,871
Total attendances of out-patients ...	12,846	21,770	28,359
Total number of in-patient days ..	4,345	3,189	2,856

The cost per person dealt with was £3 0*s.* 9*d.* in 1918, £2 5*s.* 4*d.* in 1919, and £1 14*s.* 3*d.* in 1920. The diminished cost per person is due to the fact that it has been found possible to give a greater proportion of the injections of salvarsan substitutes to out-patients.

We are surprised to learn that Sheffield has still as many as 10,800 privies requiring conversion.

Housing question.—With regard to the housing question Dr. Scurfield says:—

> "The unsatisfactory feature of the year's work has been the increase in overcrowding owing to the fact that sufficient houses are not being built to accommodate the natural increase of the population. In this respect Sheffield is in a similar position to the other large towns of the country. It is impossible to condemn houses, however unfit for habitation they may be, and unless there is a very great change it will be years before we can dream of clearing slums and providing open spaces in the congested parts of our great towns."

A statement is given showing the houses built since 1886, and during each month since the armistice, followed by the comment:—

> "It will be noticed that 267 new houses have been provided during the year 1920. During the same period there were 5075 marriages and 6526 more births than deaths."

A truly appalling state of affairs!

The report concludes with tables showing the death-rates, &c., in the various subsections of the city, and a comparison of the Sheffield statistics with those of the 45 largest towns of England and Wales. In the subsections of the city the birth-rate varies from 37 in Park A to 17·25 in Broomhall B; the death-rate from all causes from 21·55 in Sheffield North B to 8·52 in Brightside West B; and the infant mortality from 172 in Sheffield North B to 69 in Brightside West B. The table for the 45 towns shows that there were 17 towns with higher birth-rates than Sheffield, 13 with higher death-rates, and 9 with higher infant mortality rates.

COUNTY OF KENT.

Some interesting problems connected with the administrative control of certain infectious diseases are discussed in Dr. Alfred Greenwood's annual report for the year 1919. On the subject of scarlet fever, allusion is made to "return" cases and extracts on the subject from the reports of the M.O.H.'s of Chislehurst and Ramsgate are given. In the former district an arrangement is apparently in operation by which cases discharged from the isolation hospital are examined at their homes within three days of their return by the medical practitioner who originally notified the case, and he supplies a short report on the subject. This is done with the object of preventing "return" cases. It is unfortunate that no indication of the success or failure of this procedure is given, but perhaps it has not yet been sufficiently long in operation to justify any conclusion on the subject.

Every precaution is taken in Ramsgate by the hospital authorities with the object of reducing the number of "return" cases as much as possible. With this end in view no scarlet fever patient is allowed to leave the hospital until all nasal discharge and all objective signs of complications have ceased for some time; but, in spite of this, it is impossible to prevent the occurrence of "return" cases, as, in the absence of knowledge of the cause of the disease, it is difficult to say definitely when a convalescent patient is in fact non-infectious. In some instances the infection may be quiescent at the time the patient leaves the hospital, yet an infectious nasal discharge or other morbid condition of the nose may develop or recur some time after returning home. It is therefore important, especially in the case of children, that for three weeks after leaving hospital the patient should not sleep in the same bed, or, if possible, in the same room, with children who have not had scarlet fever, and that during this period all articles such as cups, spoons, handkerchiefs, towels, &c., used by the patient should be kept distinct from those used by others.

As regards *diphtheria*, many of the reports of the district M.O.H.'s refer to the difficulties met with in connexion with "carrier" and "return" cases of the disease, but the extended facilities afforded by the county bacteriological laboratory enable these cases to be controlled with a large measure of success. In Dr. Greenwood's view, no diphtheria patient should be considered free from infection until at least three consecutive negative swabs have been obtained. Dr. D. Macdougall, M.O.H., Ashford urban district, thinks that this district has more than its share of diphtheria, and suggests that the incidence of the disease might be reduced by improving the insanitary conditions which prevail and abating the nuisances caused by the large number of hand-flushed water-closets which are found in the area. Dr. J. Mathewson, M.O.H., Bromley, expresses the view that many cases of diphtheria are now diagnosed that would have been overlooked a few years ago at a time when no facilities existed for bacteriological investigation. On the other hand, most medical men have had experience of cases in which the result of examination of the swab has been contrary to their expectations. In Dr. Mathewson's view a more extended use of swabs in cases of sore-throat, in which there is doubt concerning the diagnosis, would be helpful; and in this connexion it is to be remembered that it not infrequently happens that the diphtheria bacillus is present in the nose while absent in the throat.

Dr. E. C. Warren (Gillingham) states that mild cases of diphtheria were observed with only small follicles on the throat, which were found positive on bacteriological investigation. Such cases are often neglected, and it is only when another member of the family develops a really bad throat that a doctor is called in. This emphasises the importance of medical advice in connexion with a sore-throat in any form.

Dr. R. McCombe (Margate) calls attention to unpaved yards as a predisposing cause of diphtheria. Children playing in these muddy places suffer from wet, cold feet, which often causes sore-throat and a consequent lowered state of vitality and resisting power. Much is being done, with the assistance of the property owners, to remedy these defects, but it is hoped that everyone will assist in this matter, which is one of common interest for the welfare of the town and its inhabitants.

Dr. G. M. Tuke (M.O.H., Hollingbourn rural district) reports an instance in which six cases of diphtheria occurred in one cottage. The source of infection was a child, who had had a sore-throat five weeks previously, and was most probably a "carrier." These "carrier" cases often retain the specific bacillus in their throats for long periods. Two such cases recently came under observation, which remained infectious for nearly 12 months, notwithstanding all the doctor's efforts.

URBAN VITAL STATISTICS.

(Week ended Feb. 26th, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18½ million persons, the annual rate of mortality, which had increased from 12·3 to 15·4 in the four preceding weeks, further rose to 15·5 per 1000. In London, with a population of 4½ million persons, the death-rate was 15·1, or 0·9 per 1000 above that recorded in the previous week, while among the remaining towns the rates ranged from 8·8 in Swindon, 8·9 in Acton, and 9·0 in Northampton and in Preston, to 23·6 in Southport, 25·2 in Barnsley, and 27·8 in Hastings. The principal epidemic diseases caused 254 deaths, which corresponded to an annual rate of 0·7 per 1000, and comprised 80 from infantile diarrhœa, 71 from diphtheria, 62 from whooping-cough, 29 from measles, 10 from scarlet fever, and 2 from enteric fever. Whooping-cough caused a death-rate of 1·6 in Walsall and 3·3 in Warrington. The deaths from influenza, which had been 61, 93, and 103 in the three preceding weeks, rose to 138, and included 30 in London, 15 in Portsmouth, and 8 in Sheffield. There were 3845 cases of scarlet fever and 2800 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 3919 and 2808 respectively at the end of the previous week. During the week ended Feb. 19th 9 cases of encephalitis lethargica were notified in the County of London, and comprised 2 each in Islington and Bethnal Green, and 1 each in Paddington, Stoke Newington, Stepney, Wandsworth, and Camberwell. The causes of 43 of the 5516 deaths in the 96 towns were uncertified, of which 6 were registered in Birmingham, 4 each in Southport and Manchester, and 3 each in London and Stoke-on-Trent.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2¼ million persons, the annual rate of mortality, which had increased from 14·9 to 18·2 in the three preceding weeks, further rose to 19·4 per 1000. The 443 deaths in Glasgow corresponded to an annual rate of 21·0 per 1000, and included 34 from whooping-cough, 19 from influenza, 4 from infantile diarrhœa, 2 from diphtheria, and 1 from scarlet fever. The 172 deaths in Edinburgh were equal to a rate of 20·1 per 1000, and included 5 each from diphtheria and influenza, 4 from measles, 2 from whooping-cough, and 1 each from scarlet fever and infantile diarrhœa.

Irish Towns.—The 147 deaths in Dublin corresponded to an annual rate of 18·1, against 18·2 per 1000 in the previous week, and included 3 from infantile diarrhœa and 1 each from enteric fever, whooping-cough, and diphtheria. The 154 deaths in Belfast were equal to a rate of 19·1 per 1000, and included 19 from whooping-cough, 2 from diphtheria, and 1 each from enteric fever, measles, and infantile diarrhœa.

Obituary.

E. C. LOMAS, C.B., D.S.O., M.B. VICT., F.R.C.S. EDIN.,

SURGEON-CAPTAIN, R.N.

THE death of Surgeon-Captain E. C. Lomas, though not unexpected by those who know the nature of his distressing illness, recalls the loss to the Naval Medical Service thus prematurely caused by his retirement in 1919. Born in December, 1864, and educated at Owens College, Manchester, he entered the Naval Medical Service in 1891, was awarded the D.S.O. for his work on the Ladysmith Relief Column, and was promoted to the rank of Staff-Surgeon, R.N. He had a unique experience in hospital ships. Before the war he was the senior medical officer of the *Maine*, the only hospital ship in commission, which was wrecked, in his absence on urgent family affairs, in the first half of 1914; he was also senior medical officer of H.M.H.S. *Rohilla*, totally wrecked late in 1914, and then subjected himself to much exposure; he was next in medical charge of H.M.H.S. *Garth Castle*, and in 1916 was made C.B. (Military) in recognition of his war services. In October, 1916, he organised and opened the Royal Naval Hospital at Granton, near Edinburgh. Here he did remarkably good work, his organising ability, his devotion to laborious detail, and his kindly tact being responsible for the efficiency, success, and happy spirit characteristic of the hospital. It is sad that a career of such successful achievement has been terminated before its full course has run.

PHINEAS SIMON ABRAHAM, M.D. T.C.D., F.R.C.S.I.,

CONSULTING DERMATOLOGIST TO THE WEST LONDON HOSPITAL AND MEDICAL COLLEGE.

Dr. Phineas Abraham, who died on Feb. 23rd at the age of 74, was a dermatologist of note. He was born at Falmouth, Jamaica, was educated at University School and College, London, at Trinity College and the Royal College of Science, Dublin, at the École de Médecine, Paris, and at Clausthal. He was scholar and exhibitioner at St. Bartholomew's Hospital, and won many other distinctions in his undergraduate career. His early experience was varied. Working first as a mining and chemical engineer, he became assistant in the Natural History Department of the British Museum, and in 1879 was appointed curator of the Museum of the Royal College of Surgeons in Ireland, where, after taking the Fellowship, he was appointed a member of the Court of Examiners. On graduating in medicine in 1886 he obtained the lectureship in physiology and histology at the Westminster Hospital Medical School and decided to specialise in diseases of the skin. First clinical assistant, then surgeon to the Hospital for Diseases of the Skin, Blackfriars, subsequently he was selected as medical secretary to the National Leprosy Fund and later became dermatologist to the West London Hospital. In 1910 he presided over the Dermatological Section of the B.M.A. annual meeting in London and he occupied for some years the chair of the West London Medico-Chirurgical Society and of the New London Dermatological Society. Dr. Abraham's knowledge of leprosy was nearly unique; he edited the Journal of the Leprosy Investigation Committee, and contributed articles thereon to Hillis's "Leprosy in British Guiana," to Allbutt's "System of Medicine," and to "A System of Syphilis." His dermatological writings are confined to the proceedings of several societies, but his translations of Unna have enjoyed wide circulation.

A friend of 30 years' standing writes of him: "A sound and successful clinician, Abraham *cured* his patients, and was not afraid to use the word, sometimes, I fear, to the annoyance of brother specialists. He was a tremendous worker, and spared no pains either in his laboratory or with his patients. Once during the war he spent nearly nine hours (with a short interval for lunch) over a bad case of diffused persistent acne, dealing with some hundreds of 'abscesses' individually with the happiest result to his patient, a young officer who had been sent home as incurable. He was one of the oldest and most loyal members of the Savage Club, many of whom have cause to be grateful to him for kindness both personal and professional, for he would accept no fee from a 'Savage.' An ardent Mason also and a Bohemian of the best type, his closest friends were to be found among artists of all kinds—actors, painters, sculptors, musicians, and journalists. With all these interests he was a devoted husband, father, and brother, for he lived for his family, and sympathy will be specially felt for his sister Ella, who devoted the whole of her life to him."

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Cmdr. H. Clift is placed on Retired List at own request, with rank of Surgeon Captain.

Lieut. D. W. Granet is transferred to Emergency List.

Surg. Cmdr. F. E. Bolton and Surg. Lieut.-Cmdr. G. L. Ritchie to *Southampton*; Surg. Lieut. J. F. M. Campbell to *Victory*.

ROYAL ARMY MEDICAL CORPS.

Major P. J. Marett retires, receiving a gratuity, and is granted the rank of Lieutenant-Colonel.

To be temporary Captains: E. G. S. Hall (late Captain, Spec. Res.) and R. Stephens (late temporary Captain).

Lieut. J. F. P. Gallagher resigns his commission.

Officers relinquishing their commissions: Temp. Major G. W. Beresford (retains the rank of Major). Temp. Capt. (acting Major) J. B. Butler (granted the rank of Major). Temporary Captains retaining the rank of Captain: I. Bidge-Jones, Z. A. Green, E. G. M. Gilchrist, W. Kirk, and H. H. McClelland. Temp. Hon. Capt. M. Bronk (retains the honorary rank of Captain). Temp. Lieut. J. A. B. Sim.

TERRITORIAL FORCE.

Capt. W. D. Carruthers, from 1st London (City of London) Sanitary Company, to be Captain.

Capt. B. J. Alcock resigns his commission and is granted the rank of Major.

Capts. W. G. Cook and L. T. Whelan resign their commissions and retain the rank of Captain.

INDIA AND THE INDIAN MEDICAL SERVICE.

Col. J. B. Smith to be Major-General.

The King has approved the retirement of Lieut.-Cols. W. W. Clemesha and C. C. S. Barry.

DONATIONS AND BEQUESTS.—Mr. Robert Francis Samuels, of Shaw-street, Liverpool, who has left property of the value of £11,346 net, has bequeathed £1500 to the University of Liverpool for three scholarships in medicine, surgery, and obstetrics and gynæcology; £200 to the Liverpool Royal Infirmary; £100 to the Queen Victoria Nursing Association; £200 to the Hospital for Women, Liverpool; £200 to the David Lewis Northern Hospital; £200 to the Liverpool Southern Hospital; and £200 to the Stanley Hospital, Liverpool. The residue is left to the executors for such persons, objects, or institutions as they may select.—Mr. Arthur Massingham, of Hove, Brighton, has left £100 to the Brighton, Hove, and Preston Dispensary; and £100 to the East Dereham Nurses' Home.—Mr. Henry Rutson, of Northallerton, has bequeathed £1000 to the Rutson Hospital, Northallerton, and £1000 to the York County Hospital.

Correspondence.

"Audi alteram partem."

VITAMINES AND COMMON SENSE.

To the Editor of THE LANCET.

SIR,—I am not one likely to underestimate the importance of the discovery of vitamines or "accessory food substances." The subject is one of such vital interest to the community that its immediate application to the problem of food has been at once grasped not only by the medical profession but by the public at large. Even *Punch* has. published a pleasant skit upon the subject. This popularity is not without its dangers, especially among those whose physiological knowledge is so scanty that they are apt to run the idea to death. The introduction of a new and taking term and all that it connotes is frequently the cause of a great deal of loose talk and reasoning. This certainly followed when the word hormone was coined, and Professor Cathcart, in his recently published book on the "Physiology of Protein Metabolism," when speaking of the vitamines, says:

> "There is at present a tendency to draw conclusions in a haphazard way, and attempts are being made to convert a valuable and interesting field of research into a happy hunting ground for the charlatan and the manufacturer of proprietary remedies."

May I expand this theme a little? The now well-known analogy which Professor F. G. Hopkins was the first to use, between the building of a wooden hut and the building of our body, comes in very handy here. The hut is built of planks, but the planks alone without nails are useless. The body is built of food materials, but the presence of a small amount of the vitamines (the nails) is indispensable. But who would dream of building a wooden house with nails only? Yet this is just the way some people are at present speaking; so impressed are they with the indispensability of the vitamines that they seem to have forgotten that the essential food principles (proteins, fats, carbohydrates, salts, &c.) are necessary also. I have, for example, heard of teachers of household science who know that the antiscorbutic vitamine is the one to which heat is most detrimental, advising their pupils to eat raw cabbage in preference to boiled vegetables. They would no doubt get more vitamine, but what about the starch and other constituents of the plant material? A great desideratum in the further exploration of the vitamines is, as Miss Harriette Chick pointed out some time ago, the employment of trustworthy quantitative methods. So far as such methods at present go, they all show that very minute amounts of the various vitamines suffice. In Professor Hopkins's pioneer work he succeeded in converting a useless diet compounded of pure proteins, fats, &c., into a useful and efficient one by the simple addition of 2 or 3 c.cm. of milk per diem. Boiling a potato or a cabbage for many hours will, in time, succeed in destroying all its vitamine, but who is there who wastes coal or gas in this way? Before and since the discovery of vitamines people have thrived upon cooked food, and there is no evidence to show that they were any the worse or suffered from scurvy or other deficiency diseases. Some of the vitamine evidently has escaped the destructive action of the heat which has been applied at a reasonable temperature or for a reasonable time. That which remains is evidently sufficient in all ordinary conditions. Common sense must be blended with the acquirement of physiological wisdom.

It is, however, in relation to milk that the question appears to be most urgent. Colonel R. J. Blackham, in a recent article in THE LANCET,[1] draws attention to it, and shows that in addition to confusion between the three known vitamines there is, even in relation to the antiscorbutic vitamine, the one to which heat is most inimical, considerable difference of opinion as to how much of it is destroyed at high temperatures; the balance of evidence is in favour of the view that this vitamine does not entirely disappear when the milk is raised to the boiling temperature. Does not this also coincide with experience? The use of heated milk, of boiled milk puddings, and the like, is no new departure. Are we in consequence afflicted to any great extent with scurvy or even with infantile scurvy?

The whole subject of pure milk is one very near to my heart. The importance of milk straight from the mammary gland of the infant's mother is a truism, but so long as mothers cannot or will not suckle their children, one has to fall back on the best substitute, in this country the milk of the cow. Here again it should be absolutely fresh and pure (suitably diluted of course), and not sophisticated either by addition of preservatives or by subtraction of one or other of its ingredients. But in the present state of legislation this ideal condition is difficult to realise. Some measure of protection against disease germs carried in the milk must be adopted, and the simplest precaution of all is that known as pasteurisation. I am quite aware that the quantity of the antirachitic factor (vitamine C) in milk is not very great, and that its entire removal by the drastic agencies employed in the manufacture of some dried milks is followed by outbreaks of infantile scurvy. Although I am open to conviction that the repeated heating of milk is open to the same objection, I cannot see that the simple process of pasteurisation is the danger that some extremists allege it to be. Better to run the risk of some lessening of the vitamine, for probably enough will be left to make it still efficacious antiscorbutically, than to run the much more serious risk of conveying by the milk the germs of fatal disease. Again, it is necessary to blend common sense derived from experience with the application of new-found facts, however important they may be.—I am, Sir, yours faithfully,

W. D. HALLIBURTON.

King's College, London, Feb. 24th, 1921.

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[1] THE LANCET, 1920, ii., 1139.

DUST IN EXPIRED AIR.

To the Editor of THE LANCET.

SIR,—The efficacy of the air passages as a trap for the removal of suspended matter in the air has been generally assumed to be very high. Tyndall is quoted as stating that expired air was optically pure, and, generally speaking, the assumption is made that air entering the lungs through the nose is purified from all suspended matter before it reaches the deeper parts of the lungs.

Having some doubts as to the truth of this assumption I made a few experiments to ascertain what the facts of the case were. Using the standard instrument described in the third report of the Advisory Committee on Atmospheric Pollution[1] I tested, on Nov. 17th last, a sample of air during a slight smoke haze in London. The air was found to contain approximately 1·92 mg. per cubic metre. I then filled a small rubber balloon with ordinary tidal expired air, taking care that the balloon was washed out by filling with expired air and emptying several times before testing. It was then blown up with air breathed in through the nose as in ordinary respiration, the balloon was fixed on the filter and a record obtained from the contained expired air. This was found to contain 1·28 mg. per cubic metre. Thus, in ordinary breathing the expired air contained about 70 per cent. of the suspended impurity which entered during inspiration. Doubtless, some of the suspended matter in the expired air was deposited on the walls of the balloon, but this would be a very small percentage of the total and would not invalidate the general results.

A similar experiment was then made, but in this case instead of "tidal" air, "reserve" air was used; the balloon was thoroughly washed out with "reserve" air and then filled after the end of a long inspiration, the air in each case being drawn in through the nose. The balloon was attached to the instrument and a record obtained which showed that the "reserve" air contained about 60 per cent. of the dust in the inspired air.

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[1] Supplement to THE LANCET, March 23rd, 1918.

In order to check these observations I used an apparatus by means of which a very small jet of air could be blown upon a microscope slip; the jet was about 1/100 in. in diameter and impinged upon the slide at a distance of about 1/16 in. The result of causing such a jet of air to strike the slide is that a certain proportion of the suspended particles strike and adhere to the slide, so that a few cubic centimetres of ordinary London air directed against the slide are sufficient to produce a black spot, quite visible to the naked eye.

Using this instrument I repeated the observations, both with expired "tidal" air and with expired "reserve" air, taking all precautions to avoid fallacies in the experiment. In each case from the expired air I obtained a black deposit upon the slide. A sample of ordinary London air projected against the slide was examined microscopically and it was found that the particles were all black and varied in diameter between 1/100,000 and 1/20,000 of an inch. Slides obtained from expired air were also examined and the deposit was found to consist of similar black particles of similar dimensions.

It seems certain, therefore, that the suspended matter in the London air is not entirely removed by the action of the respiratory passages, but only about 30 per cent. is so removed. I am, Sir, yours faithfully,

Victoria-street, S.W., Feb. 22nd, 1921. J. S. OWENS.

PSEUDO-COXALGIA.

To the Editor of THE LANCET.

SIR,—I confess to having been rather puzzled about the treatment of pseudo-coxalgia, and I would like to make one or two remarks *à propos* of Mr. H. A. T. Fairbank's paper (THE LANCET, Jan. 1st), and Sir Henry Gauvain's letter (Feb. 19th).

One of my earliest cases of this condition was that of a boy who presented typical signs on both sides—the skiagrams showing characteristic changes in the head of each femur. By my direction he was kept recumbent for several months with weight extension on the legs, and, by way of exercise, he had massage and movements daily. Eventually he recovered with no deformity and perfect movements of the hips in all directions—the skiagrams now showing complete regeneration of the head of the femur on both sides. This is what I understand by "recovery" in pseudo-coxalgia. I have since been told by various kind friends and colleagues that my treatment was, to say the least of it, superfluous; that it is quite unnecessary to keep these cases off their feet, or, indeed, to treat them at all; because they all get well without treatment. Yet, on at least three occasions recently I have been shown skiagrams of "the late results of pseudo-coxalgia." These all showed a very ugly deformity of the hip. The head of the femur was mushroomed and grossly deformed, and there were shortening and limitation of movement at the hip-joint; in fact, obvious disability.

So when I read that "the progress of the case is always towards recovery"; that "most writers agree that treatment, or entire absence of treatment, has little, if any, effect on the ultimate result"; and that "finally there may be some mushrooming of the head of the femur"; I am tempted to ask what is meant by "recovery" in this condition. Sir Henry Gauvain points out that these cases do not die, "nor is permanent disability, other than slight shortening and limitation of abduction, to be anticipated." But neither do cases of scoliosis die, yet we should hardly be justified in saying that a case of scoliosis has recovered because it happens to be alive after a few years.

During a recent visit to this country Professor Calvé remarked that treatment (of pseudo-coxalgia) is unnecessary, as they all get well without it, and he added, "Of course, they limp"—as though it was the most natural thing in the world that a child should grow up with a short limb, a limp, and limited movement at the hip-joint. Most orthopædic surgeons have seen a good many cases of this condition by now, but few of us have the opportunity of seeing any number of them grow up from childhood to adult age. It is very desirable that the end-results of untreated cases should be recorded. It is said that after a time "the ossification of the epiphysis returns to the normal, until at last the hemispherical shape of the ossific centre is restored." This may be so in some cases, but is it the rule, can it be relied upon in untreated cases? If not, how should these cases be treated? I know that weight may be taken off the hip-joint by a skilfully and accurately fitted calliper splint or a Hessing's splint. But I know, too, that there is a good deal of make-believe and self-deception in the common use of these splints especially in growing children. I question whether the calliper splint, as ordinarily used, is really efficient in preventing deformity of the head of the femur, and one would like to see recorded the end-results of cases treated by this method. Meanwhile, it would not be a bad plan to consult the parents of some of these children (especially in private practice) as to whether a little limp, a little shortening, and some limitation of movement at the hip, are really nothing to them. I strongly suspect that if any orthopædic surgeon had to treat a child of his own for pseudo-coxalgia he would take very good care that no weight came upon that child's hip-joint, and he would be very chary of trusting to the ordinary calliper splint until the head of the femur was well on the way back to normal.

I had almost been persuaded that my treatment of these cases was wrong, in fact, superfluous, when I saw the skiagrams of late results already mentioned. But I now require a good deal more evidence that treatment is useless before I abandon it. I realise, of course, that in hospital cases we may be driven by lack of accommodation to methods which are perhaps only second best. But we ought to be clear about what is really the best and, therefore, the proper treatment.

I am, Sir, yours faithfully,
A. S. BLUNDELL BANKART.

Harley-street, W., Feb. 23rd, 1921.

THE BRITISH PHARMACEUTICAL INDUSTRY: AN APPEAL TO MEDICAL MEN.

To the Editor of THE LANCET.

SIR,—We, the undersigned old-established British houses, earnestly appeal to medical men of the British Empire to support British industry to the utmost of their power. This appeal has no political foundation. We wish simply to place before your readers a few facts for their most careful consideration:—

(1) In all fairness it should be realised that international trading is not on a reciprocal basis, that is to say, foreign chemicals and pharmaceutical preparations are admitted into this country, practically speaking, duty free, whilst goods exported from this country to countries abroad are subject to an exceedingly high ad valorem duty. One vast country we have in mind directly prohibits the import of pharmaceutical preparations of other countries, while other immense States do so indirectly by means of the high duty already referred to.

(2) It should be remembered that, although much has been done during the war and since in the direction of promulgating British chemical industry, a great amount of work has yet to be done to consolidate the fine chemical and allied industries at home, and an obvious point is that the factories in Germany are for the most part absolutely intact and she retains secrets which are the outcome of laborious, painstaking investigation.

(3) We desire to respectfully impress on your readers that we do not advertise to the public, nor "prescribe," nor in any way trespass on the rightful province of the medical practitioner; on the contrary, we rely on the position that the chemist, so far as the medical use of chemicals is concerned, is the handmaid of the medical man, and we might add, rather bluntly, we do not recommend foreign medical men and health resorts; why should the medical man recommend foreign pharmaceutical preparations?

(4) The scientific staffs in our laboratories welcome suggestions from medical men, and will carry out investigations to elucidate problems connected with chemistry, materia medica, and the like which may prove of assistance in the art of healing.

(5) We have in our employment men who have been through the hell of the recent war. We have also with us young pupils and apprentices who had never even heard the name of Lister and who knew nothing of his teaching until we taught them what he did for suffering humanity. These two types of men, in our opinion, need every support, encouragement, and protection which the medical man can give.

We ask the doctor to demand British produce and, furthermore, convince himself that what is stated to be British *is* British, and by so doing enable us to give employment to more and yet more British workmen and to compete with foreign enterprise on the unequal footing above mentioned.

We are, Sir, yours faithfully,

JOHN BELL AND CROYDEN, LTD., Wigmore-street, W.; JOHN BELL, HILLS, AND LUCAS, LTD., Tower Bridge-road, S.E.; BRAND and CO., LTD., South Lambeth-road, S.E.; BLEASDALE, LTD., York; J. L. BULLOCK AND CO., Hanover-street, W.; BURGOYNE, BURBIDGES AND CO., LTD., East Ham; J. R. CAVE, LTD., Southport; COOPER LABORATORIES, Watford; CURTIS AND CO., Baker-street, W.; CUXSON, GERRARD, AND CO., LTD., Oldbury, Birmingham; DUNCAN, FLOCKHART AND CO., Edinburgh and London; GALE AND CO., Bouverie-street, E.C.; GALEN MANUFACTURING CO., LTD., New Cross-road, S.E.; GOODALL, BACKHOUSE AND CO., LEEDS; HANDFORD AND DAWSON, Harrogate; HARRINGTON BROS., LTD., City-road, E.C.; HODGKINSON, PRESTONS, AND KING, LTD., Bishopsgate, E.C.; JEYES' SANITARY COMPOUNDS CO., Cannon-street, E.C.; THOS. KERFOOT AND CO., Bardsley Vale, Lancs.; H. AND T. KIRBY AND CO., LTD., Willesden; HOWARD LLOYD AND CO., LTD., Leicester; LOFTHOUSE AND SALTMER, Hull; W. MARTINDALE, London; MOTTERSHEAD AND CO., Manchester; G. T. W. NEWSHOLME, LTD., Sheffield; OPPENHEIMER, SON, AND CO., LTD., Queen Victoria-street, E.C.; PAINE AND CO., St. Neots, Hunts; PEAT PRODUCTS, LTD., Queenhithe, Upper Thames-street, E.C.; PECK AND SON, Cambridge; POTTER AND CLARKE, LTD., Artillery-lane, E.; PRIDEAUX, LTD., Motcombe, Dorset; RAIMES AND CO., York; RAIMES, CLARK, AND CO., LTD., Leith; F. ROGERS, Oxford-street, W.; RICHARDSON AND CO., Blackpool; JOHN RICHARDSON AND CO., LTD., Leicester; F. M. RIMMINGTON AND SONS, Bradford; SQUIRE AND SONS, LTD., Oxford-street, W.; STANDARD TABLET AND PILL CO., LTD., Hove; H. E. STEVENSON AND CO., LTD., London, S.E.; SYMES AND CO., LTD., Liverpool; TYPKE AND KING, LTD., Mitcham; THOS. TYRER AND CO., LTD., Stratford; WHIFFEN AND SONS, LTD., Battersea; WRIGHT, LAYMAN, AND UMNEY, LTD., Southwark-street, S.E.

March 1st, 1921.

THE SEPARATION OF PRESCRIBING AND DISPENSING.

To the Editor of THE LANCET.

SIR,—In reply to the letter of Mr. J. O. Braithwaite in your issue of Feb. 26th, the Ministry of Health Committee of the Pharmaceutical Society admits, in its report which appeared in the *Pharmaceutical Journal* of May 15th, 1920, that the only statutory qualification in the dispensing of medicines is that held by the apothecary's assistant, also that the statutory qualification of the pharmacist for the dispensing of poisons applies only to open shops, and only to scheduled poisons. A hospital or institution cannot be held to be an open shop. If there is to be any separation of prescribing and dispensing the apothecary's assistant can justly claim priority to dispensing in any places other than open shops.

I should like to point out that in the orders governing the appointment of dispensers to many public hospitals, institutions, &c., the apothecary's assistant is equally eligible with the pharmacist, and in order of precedence appears before the pharmacist, and further, as a matter of fact he discharges his duties in these places to the entire satisfaction of those concerned. Mr. Braithwaite seems to have overlooked the fact that the business of a chemist and druggist has many things in common with the herbalist and grocer, and if such classification is necessary the pharmacist certainly has the prior claim.—I am, Sir, yours faithfully,

H. C. RICHARDS,
Hon. Secretary, Association of Certificated Dispensers.
Hathaway-road, Croydon, Feb. 27th, 1921.

RACIAL TUBERCULOSIS SUSCEPTIBILITY.

To the Editor of THE LANCET.

SIR,—In an annotation in THE LANCET of Nov. 30th, 1920, figures are quoted from a paper by Professor S. le Cummins, contrasting the rates for tuberculosis [illegible] British Army with the much higher rate which [illegible]iled amongst the men of the South African Labour [illegible], and using these as an illustration of the susceptibility of primitive races to a new disease and their inability to withstand its attack. This use of the figures is not justifiable in regard to South African natives at all events. In a paper written in 1911, a précis of which appeared in THE LANCET of May 11th, 1912, I gave evidence to show that the great susceptibility of South African natives to pneumonia and tuberculosis was due to the great prevalence of a syphilitic taint in all native tribes in South Africa, and that they took these diseases in a virulent form. In a subsequent paper (THE LANCET, April 11th, 1914) it was shown that a similar susceptibility, in a somewhat less degree, applied to the white population also. The ancient and often-quoted example of the heavy mortality resulting in a "virgin soil" from such a disease as measles is easily understood by anyone who knows the habits of natives when suffering from any febrile disease without putting the onus therefor on the "virgin soil," as Professor Cummins seems to do.

I am, Sir, yours faithfully,

Clocolan, O.F.S., South Africa, Jan. 6th. B. G. BROOK.

AS OTHERS SEE US.

To the Editor of THE LANCET.

SIR,—The letter with this title by Dr. Harry Roberts in THE LANCET of Feb. 26th has touched me in a marked degree. The author of "Chronicle of a Cornish Garden," a fellow-student of mine some 30 years ago, concentrated his early energies in the congenial air of a wide and wild part of England, only to remove later to the drab and depressing atmosphere of an East-end district. No wonder he unconsciously contrasts, in his mind, the almost undisguised worship of a simple and kindly country-folk with the more shrewd and critical audience of the town wage-earner. Perchance if he had practised first in the sordid surroundings of some vast city and then transferred his sphere of action to the free and open country his opinions might have been reversed, and he might even have thought the status of the general practitioner had risen rather than descended.

But there is great truth in his letter. The political reformer who dreams wonderful visions of an ideal organisation for both the public and the practitioner is usually just the man who has never had any personal experience of private practice. How many general practitioners, I would ask, represent our profession in Parliament? As is usual among this type of man, in his overflowing enthusiasm and concentration he does everything of which he can possibly think but "the one thing needful." The machinery is all most perfectly made, of the finest metal, intricate, beautiful and wonderful, but, alas, those little drops of oil, that are so essential for it to run smoothly and wisely, have been forgotten, and sooner or later it is doomed to be placed on the scrap-iron heap. The vital factor in the life of medical practice is the relationship between the doctor and his patient. You may organise veterinary surveillance for a flock of sheep or goats and they cannot demur. Human beings are different. They can and will demur. The panel kills or stifles that fine professional relationship which every self-respecting medical practitioner unconsciously seeks. The patient, instead of being an individual, becomes merely an integer. The democratic Briton, whoever he may be, will not tolerate this. He has to put up with it for a time, as there is nothing else to fall back upon, but eventually, I feel convinced, he will resist it to the uttermost.

I agree with Dr. Roberts that by far the vast number of practitioners are keenly alive to the Hippocratic oath, and by far the majority, under particularly adverse circumstances and often against tremendous odds, will maintain and dominate an almost intolerable position, rather than sink to the level of the mean and, may be, squalid surroundings in which they may be placed. Although not on the panel, 20 years ago I tasted the difficulties and position of a country "club-doctor." A certain number of club members take up an attitude that because you are a club-doctor you are unable or unwilling to do justice to them on account of the small fees paid. Their prejudice leads them to think they are not receiving the best attention and, in the case of a protracted illness they will sometimes call in another doctor who they imagine may render them greater assistance, as they will be paid for their services by "piece-work." This, in many cases, is most disheartening for the club-doctor who is giving his best attention under, perhaps, difficult and adverse circumstances. What is he to do? He is in the grip of a relentless system over which he has no power to cope. And yet there are others. One, in particular, I remember, who after a long illness, from which he slowly recovered, told me: "I shall always respect you, Sir, for what you have done." This, from Dr. Roberts's view-point, was a success, though from a materialistic standpoint, no doubt, was a failure.

In practices such as Dr. Roberts appears to have it is a constant and continuous "casting of one's bread upon the waters," but I do believe if we are faithful to the highest ideals of our profession, we see it back again, even though it may be "after many days." One can only have unceasing admiration for those of our profession who are fighting to keep alive their spirit-instincts among an uncongenital society and in impossible surroundings. Are they not the very salt of our profession and are not these the men that have given to our profession in the past the splendid name it has won and will, we believe, carry it on unblemished to the end of all time?—I am, Sir, yours faithfully,

Crouch End-hill, N., Feb. 26th, 1921. T. WILSON PARRY.

REFERRED PAIN.

To the Editor of THE LANCET.

SIR,—The time was ripe for the leading article on referred pain which appeared in your issue of Jan. 22nd, as is shown by the interest it has evoked. The rôle of a nerveless automatism in visceral action had been played out, and if a few actors still reluctantly withdraw from that deserted stage and with a silence with which positions once held are abandoned, the curtain is descending and the footlights on that play are growing dim. But all the bustle of an entertaining piece still animates the discussion of the parietal expression of visceral pain. The interest, moreover, in this matter is not only professional, for a long-suffering public, rendered valetudinarian, is regaled with this mystery even by the lay press, the *Times* being most obtrusive in its adulatory appreciation of the parietal interpretation of visceral pain. In due course, however, and with a like conclusion, the curtain will descend on this piece also, for the anatomical fates have decreed it, and they are, on the whole, more reliable prophets than either physiological or clinical vaticinators, although of the latter the clinical may, perhaps, be regarded as the more trustworthy.

The conclusion reached in your article is that viscera are capable of being the site to which pain is referred under certain circumstances, notwithstanding the well-known peculiarities of their sensibility. You, therefore, subscribe in this matter, and I think with more justice than is often the case, to the truth of the saying, *Securus judicat orbis terrarum*. That is, that the "man in the street" with nephritic colic or angina pectoris is aware that he is not suffering from a dermic or hypodermic neurosis, but from a deeper visceral pain. As you remarked in an editorial note on the letter of one of your correspondents (Feb. 6th), this chief point has been ignored by most of your correspondents, who appear to be more occupied with the existence and diagnostic value of the parietal and segmental tenderness which is, at times, the aftermath of an orginally deeper suffering.

The exception to these is your last correspondent, Sir Clifford Allbutt (Feb. 26th), who bases his views on the embryology and innervation of the serous surfaces or "inpacked" "skin" which forms the capsule of the viscera; hence, he demurs to Dr. A. F. Hurst's conclusion, that the viscera are themselves sensitive, given an "adequate stimulus." *To accept Sir Clifford Allbutt's* view would be to agree that, unless the investment of viscera be affected, there can be no visceral pain and that all intrascapular visceral innervation is motor in character or function. Even the acutely painful thrombus in a coronary artery hurts, according to him, because of a stretching of the pericardium, which he regards as ensuant. How does this conclusion agree with Cannon and Washburn's demonstration of the association of hunger-pains with gastric contraction? In this case the capsule is relieved of tension during the pain not stretched. The tension here is in the contracting muscle.[1] From clinical evidence it may be asserted with confidence that pain *during an attack*, whether of angina pectoris, acute appendicitis, nephritic or biliary colic, or any other visceral agony is *deep* and referred by the patient, as well as determinable by the physician, to be subparietal. The surface aftermath but proves that the circumstances which induce visceral pain reveal the existence of paths in the autonomic nervous system afferent to centres, spinal and cerebral, which are usually denied to exist except in very limited numbers. That the visceral nerves are mixed nerves may, however, be shown anatomically.

More than 20 years ago, when delivering the Morison lectures in Edinburgh, I showed that "the nerves which innervate the pia mater are anatomically similar to those which follow, twist round and end on vessels, and may occasionally be actually seen to take their departure from the nerve on the vessel." It will be *admitted that if the vessel be a motor organ the* pia mater certainly is not, and that its innervation therefore belongs *to the sensory group, however* modified from the somatic type of the same series. I may remark, in parenthesis, that the intracranial vessels were at that time regarded by physiologists as nerveless and muscular automata. They played, indeed, a leading part in the drama now withdrawn, to which I have already referred. I have also shown that the innervation of the coronary artery is submuscular as well as perimuscular—intravascular as well as extravascular—and *that the mode of termination of visceral* nerves, whether capsular or intracapsular, is the same.[2]

My anatomical and clinical experience, therefore, has strengthened me in the position I have long maintained and published, on what have appeared to me to be sufficient grounds—namely, that the site of visceral pain may be not only capsular or peri-organic but also intracapsular and organic. With this view the leading article already referred to seems to be in agreement, although it does not appear to show acquaintance with my work.—I am, Sir, yours faithfully,

ALEXANDER BLACKHALL-MORISON.

London, Feb. 27th, 1921.

JOHN HOWARD McFADDEN.

To the Editor of THE LANCET.

SIR,—A tribute is due to the memory of John Howard McFadden, who died at Philadelphia on Feb. 16th, aged 70. He was an unostentatious philanthropist who helped to make progress. Although he was attacking a problem which he could scarcely hope to solve, he cheerfully started and entirely supported for six years a cancer research *organisation* at the Lister Institute of Preventive Medicine in London. He gave carte blanche, and later on extended the investigations to other branches of medical research—for example, sending expeditions to investigate pellagra in the United States. The researches made in association with the Home Office into the cause of industrial cancer at briquette works are to the credit of Mr. McFadden, who received the thanks of the Secretary of State for what he called his "spade-work," but he never courted publicity. He was a remarkable *personality*. Equally known in the great cities of Europe and America, he was a sort of "Mr. Potter of Texas," with the sombrero replaced by a silk hat and the revolver by kindness. A cotton magnate, he enjoyed to act the part of an American millionaire. He was a daring speculator, being usually *"bullish"* when others were "bears," and on one occasion at least he averted a panic in the Cotton Exchange in New York by his sheer force of personality. He was a judge of pictures, and collected a fine gallery of eighteenth-century English art. By medical men he will be remembered for, among his many activities, his practical interest in medical research.

I am, Sir, yours faithfully,

Curzon-street, W., Feb. 26th, 1921. H. C. ROSS.

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[1] Amer. Jour. of Phys., vol. xxix., p. 441.

[2] The Nervous System and Visceral Disease, Edinburgh, 1899.

Parliamentary Intelligence.

HOUSE OF COMMONS.

Wednesday, Feb. 23rd.

Indian Medical Service and Cadre Acceleration.

Mr. Rupert Gwynne asked the Secretary for India whether he was aware that the Indian Medical Service had received neither the benefits of the accelerated cadre promotion granted in the British Army and the Royal Army Medical Corps or the accelerated time promotion granted in the Indian Army; whether the reason given for the exclusion of the Indian Medical Service from the British Army and Royal Army Medical Corps cadre acceleration to lieutenant-colonelcy was because the Indian Army did not have it, and from the Indian Army time scale acceleration to field rank because the Royal Army Medical Corps did not have it; and what was the object of placing officers of the Indian Medical Service in this disadvantageous position.—Mr. Montagu replied: I find some difficulty in understanding the honourable Member's question. Perhaps he could furnish me with particulars of any specific case on which it is based. Meanwhile I can assure him that there has been no discrimination against the Indian Medical Service.

Ministry of Health Bill.

Mr. Ormsby-Gore asked the Minister of Health whether he proposed to reintroduce the Ministry of Health (Miscellaneous Provisions) Bill in the form in which it was rejected by the House of Lords last session; and, if so, when.—Dr. Addison replied: I propose to introduce as a separate Bill the housing portion of the Bill of last session. I am not at present in a position to state the course that will be taken with regard to the other portions of the Bill.

Local Medical Officers' Salaries.

Mr. Mosley asked the Minister of Health whether it was the practice of the Ministry of Health to abrogate agreements regarding salary arrived at between local councils and their medical advisers and to raise these salaries, without consulting in any way the ratepayers of the district. -Dr. Addison replied: The answer is in the negative.

Dr. M'Donald asked the Minister of Health if, in order to obtain true health statistics of the nation, he purposed ultimately issuing record cards to the whole population and not, as at present foreshadowed, limiting the issue to insured persons.—Dr. Addison replied: I do not think that it is practicable to give effect to the honourable Member's suggestion.

Spahlinger Cure for Consumption.

Mr. Lynn asked the Minister of Health whether he was in a position to give any information regarding the Spahlinger cure for consumption.—Dr. Addison replied: I have made full inquiries regarding this supposed remedy for tuberculosis, but it is clear that much further investigation and experience will be necessary before accepting the claims made for it. It appears that as long ago as 1913-14 the serum in question was prepared. It was tried by several hospital physicians, but there is not yet sufficient evidence of its therapeutic value, nor have the trials of it been sufficiently extensive to justify any definite and reliable conclusions. I understand that a report on the method of treatment has been presented to the French Academy of Science, and if and when supplies of the serum become available for investigation in this country I shall be prepared at once to facilitate and coöperate in an exhaustive examination of its efficacy both from laboratory and clinical points of view. I understand that a supply of the serum is not likely to be available for this purpose for some months, and that on account of the secrecy maintained as to its constitution and method of preparation it has hitherto been found impracticable for the recognised research laboratories in this country to investigate its properties and effects.

Infectious Cases in Bedwellty Area.

Mr. Charles Edwards asked the Minister of Health whether the medical officer of health for the Bedwellty area reported nine cases of scarlet fever and one case of diphtheria for the week ending Jan. 22nd, 1921; if so, why were these cases not reported in the weekly summary of returns of certain specified infectious diseases; whether he was aware that for two months Bedwellty had been marked "Nil" in the Report, which was not in agreement with the returns sent in by the medical officer.—Dr. Addison replied: The honourable Member is under a misapprehension. The cases in question were not included in the weekly summary because the returns of these cases were not received from the medical officer of health in time for their inclusion. The district in question was not, however, marked "Nil" in the summaries, but as "Returns not received." The figures thus omitted from the weekly summaries were, according to practice, included in the monthly supplementary statements for the periods concerned.

Charges to Panel Patients.

Mr. Robert Young asked the Minister of Health whether his attention had been drawn to the case at Old-street police-court where it was elicited that a panel patient had to pay 2s. 6d. for each visit she made to the doctor because she could not afford to leave her work to attend at the surgery during the hours fixed for panel patients, and what steps he proposed to take in this and similar cases.—Dr. Addison replied: My attention has been called to this case which I learn is under investigation by the London Insurance Committee. In all cases where complaint is made that a doctor has improperly charged a fee to an insured person the matter is referred for investigation by the Insurance Committee to the appropriate tribunal set up under the Regulations for dealing with complaints with a view to the necessary disciplinary action if the complaint is established.

Ministry of Health Secretary's Salary.

Sir Thomas Polson asked the Chancellor of the Exchequer whether the salary of the first secretary of the Ministry of Health had recently been increased from £2000 to £3000 per annum, and that of the second secretary from £1700 to £2200; and if he would state on what grounds these increases had been made.—Mr. Chamberlain replied: The salary of the first secretary to the Ministry of Health has been increased from £2000 plus £750 bonus to £3000 plus £500 bonus, and that of the second secretary from £1700 plus £750 bonus to £2200 plus £500 bonus in pursuance of the recommendations of a Committee appointed by the Government to advise them as to the emoluments which should attach to the principal permanent posts in the Civil Service. My right honourable friend the Member for Paisley (Mr. Asquith) was good enough to act as chairman of the Committee.

Military Service and Attributability.

Mr. T. A. Lewis asked the Minister of Pensions whether the Ministry could see its way to lay down the principle that any man who, entering the army in sound health, was discharged in impaired health should have his invalidity automatically attributed to military service.—Mr. Ian Macpherson replied: I am not prepared to accept this suggestion. Each case is considered on its merits in the light of all available evidence, and if a claim to pension is rejected by my department on the ground that the disability is not due to service, the man has a right of appeal to an independent tribunal.

Coroners (Remuneration) Bill.

Sir T. Bramsdon introduced a Bill to amend the law relating to the remuneration of coroners. The Bill was read a first time.

Thursday, Feb. 24th.

Pension Appeals to House of Lords Tribunal.

Mr. John Guest asked the Minister of Pensions if he would state how many cases of appeal against pension decisions by discharged Service men were dealt with by the House of Lords Appeal Tribunal during the year ending Dec. 31st, 1920; if it was the practice when such appeals were heard for a discharged man to sit on the tribunal; if it was not the practice, how many cases were dealt with during the above period without an ex-Service man on the tribunal; if he would state how many cases of appeal by ex-officers against pensions decisions were dealt with by the House of Lords Appeal Tribunal during the same period; if it was the practice for an officer to sit on the tribunal; and, if it was not, how many cases were heard during the above period without an officer on the tribunal.—Major Tryon (Parliamentary Secretary to the Ministry of Pensions) replied: I am informed that during the year 1920 the Pensions Appeal Tribunals heard and disposed of 344 appeals from officers and 13,557 from men. The answer to the second part of both these questions is in the affirmative. It is, in fact, not merely the practice, but a statutory requirement.

Ministry of Pensions and Tuberculous Ex-Service Men.

Dr. M'Donald asked the Minister of Pensions if he would reconsider his attitude towards ex-Service men who had been certified as suffering from tuberculosis shortly after their discharge from the army on account of being unfit for further military service and now considered ineligible for pension; whether he was aware that, while the health of some men was improved by service, the health of others was deteriorated, thus paving the way to tuberculosis; and whether cases of this character would be dealt with more sympathetically, notwithstanding the decision of any medical board examining these men months after their discharge.—Major Tryon replied: My right honourable friend is not aware that claims to pension on the ground of tuberculosis are unsympathetically considered. If the tuberculosis develops within a short period of discharge the disablement is generally admitted to be either attributable to or aggravated by service, and even where the disease does not develop until after a considerable period the circumstances of the man's military service and of its effect on his health are carefully examined. If the Ministry are unable to accept his claim the man is advised of his right of appeal to an independent tribunal.

Disabled Men and Form M.P.M.D.S. 29.

Lieutenant-Colonel WALTER GUINNESS asked the Minister of Pensions whether he was aware that great difficulty was caused to men drawing allowances when under treatment at home but unable to work in finding persons in responsible positions to witness the form M.P.M.D.S. 29, as the witnesses almost invariably understood that in signing the document they were vouching for the accuracy of the man's statement; and whether, in view of the undertaking on the form that the pensioner will at once notify the local committee if he undertook paid work, the Ministry of Pensions would limit the obligation to complete the form every week to those men who were able to work, but who were required on medical grounds to abstain from using their earning capacity, and that in the case of those where the medical certificate showed total incapacity for work the form should only be completed each time the man came up for review by the medical referee.—Major TRYON replied: The form M.P.M.D.S. 29, to which my honourable and gallant friend refers, is now under revision, and consideration is being given to the difficulty stated in this question.

Pensions Appeal Delays in London Region.

Lieutenant-Colonel Sir FREDERICK HALL asked the Minister of Pensions if he was aware that there was delay in appellants having their cases heard before an appeal tribunal, particularly in the London region; whether recommendations had been made for considerable increase in the number of these courts; if he could give any reason why there had been such delay in recommendations being carried out; and what steps it was intended to take to remedy this unsatisfactory state of affairs.—Major TRYON replied: I am informed that two extra courts are now sitting and that two more will begin sitting next Monday. The question of still further increasing the number of courts is now under the consideration of the Lord Chancellor.

Captain Sir DOUGLAS HALL asked the Minister of Health if, as the result of an earlier system of record cards of insured patients, the cards proved to be useless and were practically unexamined, large quantities of cards being sold as waste paper; and did he anticipate a better fate for the new cards.—Dr. ADDISON replied: Under the earlier system of record the cards were by no means useless and were destroyed only after having served their purpose, but their value for clinical purposes was greatly impaired because at the end of every year they were surrendered and the particulars as to the names of patients and their illnesses separated. It was because of this inherent defect in the old cards that the new records have been designed by a committee mainly composed of members of the medical profession who gave fuller place (and in my view rightly so) to the clinical objects of the record, and so designed a form which might serve as a continuous record of insured persons' illnesses. These records will undoubtedly be of great value, and I may add that the keeping of them gives insurance practitioners less work than the old records.

Dangerous Drugs Act Regulations.

Mr. HANNA asked the Minister of Health whether he had received numerous resolutions and letters of protest from associations of and individual chemists in the north of Ireland against certain parts of the regulations under the Dangerous Drugs Act; and, if so, would he say what action he proposed to take in the matter.—Mr. SHORTT (Home Secretary) replied: A number of representations have been received from chemists and associations in the north of Ireland. As regards the action which is being taken in the matter I would refer the honourable Member to previous replies on the subject.

Mr. CLOUGH asked the Secretary for the Home Department if he would state what was the result of the submission of the preliminary draft of the regulations under the Dangerous Drugs Act by the Home Office, as stated by the Under Secretary of State in the press on Feb. 9th, to the Pharmaceutical Society of Great Britain, the Pharmaceutical Society of Ireland, the General Medical Council, the Royal College of Physicians, and the Royal College of Surgeons; whether, prior to the publication of the draft regulations by the Home Office, any and, if so, which of those bodies had indicated their approval of the draft; and whether any and, if so, which had submitted objections.—Mr. SHORTT replied: The result of the communication of the preliminary draft in November last to the bodies mentioned for their observations was as follows. The Royal College of Physicians and Royal College of Surgeons considered the draft satisfactory and offered no observations, except that the Royal College of Physicians thought the minimum limit in the case of cocaine (which is fixed by the Act and cannot be altered by regulation) too high. The General Medical Council also approved the regulations, but asked that the directors of research laboratories might be included among the classes of persons who are authorised by the regulations themselves to be in possession of the drugs. The Pharmaceutical Society of Great Britain replied by a letter maintaining that the proposal in the regulations to prohibit the sale of the drugs to the public except on a medical prescription was ultra vires of the Act, and proposing that before going on with the regulations the Government should appoint a committee to consider the desirability of separating the functions of prescribing and dispensing. The reply of the Pharmaceutical Society for Ireland, which was not received till after the draft had been published, submitted objections on various points.

Admiralty Surgeons' Fees.

Captain ELLIOT asked the First Lord of the Admiralty if he would state when it was intended to revise the scale of fees paid by the Admiralty to surgeons and agents (Article 21, Clause 3), seeing that these fees were below those paid by other departments and had not been revised for 35 years, notwithstanding the enormous increase in the cost of living. —Sir JAMES CRAIG (Parliamentary Secretary to the Admiralty) replied: A revised scale of fees is now under consideration, and it is hoped that a decision may be reached and promulgated very shortly.

Industrial Fatigue Research Board.

Captain ELLIOT asked the Lord President of the Council whether the Treasury had ordered the Industrial Fatigue Research Board to be wound up by March; whether this body had recently issued a most valuable report on conditions in the steel-making industry, indicating methods for securing greater efficiency in production; whether it was the case that the dissolution of this body now would mean the loss of all the work and money spent in getting it to the present point when it was beginning to show a return; and whether, in view of these facts, he would take steps to prevent the total destruction of this Board.—Dr. ADDISON replied: The matter referred to is now under consideration, and if my honourable friend will repeat his question next week I hope to be able to give him a definite reply. The Government entirely shares his view as to the report in question.

FRIDAY, FEB. 25TH.

Food Values.

Captain ELLIOT asked the Minister of Health whether he would consider whether information regarding nutritious and economical foods could be circulated to local authorities, educational authorities, and the press, in view of the present distress and the great amount of manufactured and semi-manufactured foods consumed by the people of this country. —Dr. ADDISON replied: I am considering whether it would be practicable to issue a pamphlet containing information on the lines suggested by the honourable Member. As he is aware, it is difficult to make any general statements with regard to the values of food which are not liable to be misconstrued. I am having certain researches conducted on the subject in collaboration with the Medical Research Council.

Dangerous Drugs Act Regulations.

Lieutenant-Colonel WALTER GUINNESS asked the Secretary for the Home Department whether the draft regulations under the Dangerous Drugs Act provided that no prescription given by a veterinary surgeon could be dispensed; and what provisions were made in the regulations enabling farmers and stock breeders to be in possession of the drugs for the purposes of administering them to their stock.—Mr. SHORTT replied: The draft regulations provide generally for the issue of licences or authorisations in proper cases and I propose to insert words in the regulations expressly authorising the supply of the drugs for the purposes of the treatment of animals on the prescription of a veterinary surgeon. Further details as to the application of the regulations to agriculture are under consideration in consultation with the representatives of the agricultural interests.

COLSTON UNIVERSITY RESEARCH SOCIETY.—At a recent meeting of the University Colston Society Committee it was decided to alter the title of the society to Colston University Research Society. The society was founded in 1899, and on the establishment of the University of Bristol the decision was made to apply the funds of the society to the support of research work within the University. The new title has been adopted in order to make it clear that the society exists to support research work within the University and that the funds are devoted entirely to facilitate and extend this work. The annual dinner of the society is fixed for May 23rd. The president this year is Alderman Frank Sheppard, and Sir William Bragg, F.R.S., Quain professor of physics of the University of London, will be the guest of the society.

Medical News.

ROYAL INSTITUTION OF GREAT BRITAIN.—The Friday evening discourse on March 11th will be delivered at 9 o'clock by Dr. John Freeman, on Medical Idiosyncrasies. A general meeting will be held at 5 P.M. on Monday, March 7th.

ROYAL SOCIETY OF ARTS.—Three Cantor lectures will be delivered on March 7th, 14th, and 21st, at 8 P.M., at the house of the society, John-street, Adelphi, London, W.C., by Major G. W. C. Kaye, D.Sc. The subject will be X Rays and their Industrial Applications.

HARVEIAN SOCIETY.—The next meeting will be held on Thursday, March 17th, at 8.30 P.M., at the Town Hall, Paddington Green, London, W., when the Harveian lecture on the Thymus Gland in Everyday Life will be delivered by Dr. Leonard Williams.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.—A conference convened by the Medical Officers of Schools Association will be held on Friday, March 18th, at 4.30 P.M., at the rooms of the Medical Society, 11, Chandos-street, Cavendish-square, London, W., on Punishments in the Schools.

HUNTERIAN SOCIETY.—The next meeting of this society will be held at Sion College, Embankment, London, E.C., on Wednesday, March 9th, at 9 P.M. Papers will be read by Mr. H. Tyrrell Gray on Obscure Intestinal Colic, and by Dr. A. R. Friel on the Use of the Continuous Electric Current in Treatment. All members of the medical profession are invited to attend.

AT a meeting of the Central Council of the Combined Universities Conservative and Unionist Association Mr. Sidney C. Lawrence, M.B., Ch.B. Birm., medical officer of health for Edmonton, was adopted as one of the prospective candidates for the Combined English University Constituency at the next General Election.

A MEMORIAL TO SIR HERMANN WEBER.—A tract of land near Woldingham, on the Surrey Downs, has been presented to the National Trust for public enjoyment in memory of the late Sir Hermann Weber by one of his daughters. The gift is specially appropriate, inasmuch as Sir Hermann Weber was himself a great walker and a "lover of fresh breezes and wide horizons," and this epitaph is inscribed on a seat of marble and teak placed in the woods.

PRINCESS ALICE MEMORIAL HOSPITAL, EASTBOURNE.—The annual report of this hospital for 1920 shows a deficit of nearly £5000. Notwithstanding 146 more patients than in the previous year, the annual subscriptions marked a decrease of £225, and a committee was appointed to go into the finances of the institution. The question of adopting a scheme for paying patients will probably be considered.

BRIGHTON PROVIDENT SCHEME.—Amongst the nine Brighton hospitals coöperating in the provident scheme for hospital benefits and additional medical services, propounded by Dr. Gordon Dill, is the Royal Alexandra Hospital for Sick Children. Speaking at the annual meeting of the governors of this institution on Feb. 21st Mr. R. P. Modera, chairman of the hospital, said the provident scheme in theory was ideal, but it was not yet certain how it would work in practice. It was in the nature of an insurance, and much would depend upon how it was taken up by the public. The committee, he said, were at first inclined to keep out of the scheme, which bristled with all sorts of difficulties; but since the whole future of voluntary hospitals was in a very dangerous position, the committee thought they ought to fall in line with all the hospitals in the town and give it a trial; they would treat it purely as an experiment. Mr. Modera said the hospital was also falling into line with the other institutions in Brighton in asking those responsible for in-patients to contribute what they could towards the cost of their maintenance while in the institution. That, he thought, was only fair, and involved no hardship. The doors of the hospital would never be closed to the needy poor. Where real poverty or hardship existed the cases would be admitted free, and if it was justifiable in other cases the minimum contribution of 7*s.* a week would be reduced.

Dr. Gordon Dill explained his scheme at a Brighton and Hove Rotary Club gathering on Feb. 23rd. He quoted figures showing that the cost of the maintenance of the nine coöperating hospitals was £52,000 a year, and that if the insured people in Brighton, Hove, and Preston alone became members of the scheme (£1 a year in the case of single ersons; £1 10*s.* in the case of married couples; £2 for ilies, however large) they would provide an income more n equal to that sum.

EASTBOURNE EYE HOSPITAL.—The governors of the Eastbourne Eye Infirmary at their annual meeting on Feb. 22nd decided that the institution should henceforth be known as the Eastbourne Eye Hospital. Efforts are being made to find more suitable and commodious premises. New patients during the year 1920 numbered 702, and the in-patients numbered 30.

ROYAL SUSSEX COUNTY HOSPITAL.—On Jan. 3rd last there came into operation at the Royal Sussex County Hospital, Brighton, a scale of charges for both in-patients and out-patients towards their cost of treatment and maintenance. According to the chairman of the governors, Mr. C. R. Scrase Dickins, the response has been most gratifying. At the annual court of governors on Feb. 24th he said they had met with great willingness on the part of the patients, and that at the present time they were getting from that source alone no less than £50 a week. Much satisfaction was expressed that, thanks in the main to special efforts on behalf of the hospital, a debit balance of £6000 had been converted into a credit balance of £17,000. A feature of the year's operations at the hospital was the increase in the number of massage cases, these cases marking an increase of no fewer than 6969. X ray cases increased by 1185, nearly double the number treated last year by this means.

THE RECENT OUTBREAK OF SMALL-POX IN BRISTOL.—Dr. D. S. Davies, M.O.H. for Bristol, has issued a report on this outbreak, which has been traced to a mild attack contracted in December by a dock labourer, aged 29. He had been vaccinated in infancy (four marks); the attack was so mild that he continued work except for four days discharging cargoes on three ships at Avonmouth. Dr. Davies considers it probable that he contracted his attack from infected articles, as one of the vessels came from a Roumanian infected port. On Jan. 22nd a medical examination had revealed the presence under the thick skin of the sole of one undoubted deep-seated pustule. So far as is known, he communicated the disease only to intimate bedroom contacts: (1) His wife, aged 28, vaccinated in infancy, four good scars, sickened on Jan. 2nd, developed modified discrete eruption on Jan. 4th. Secondary fever. (2) His son, 5 months, unvaccinated, sickened on Jan. 2nd, eruption on Jan. 4th. Attack semi-confluent, becoming hæmorrhagic in pustular stage, died on Jan. 12th. Another vaccinated child of 2, though equally exposed remained well. The cases were not recognised and notified until Jan. 8th, when 11 visitors had had access to the house. Of these, four sickened and are now convalescent. The last case was removed to hospital on Jan. 18th, and no further cases have occurred.

CENTRAL COUNCIL FOR DISTRICT NURSING IN LONDON.—The annual meeting was held on Feb. 28th in the Board Room, Metropolitan Asylums Board, Victoria Embankment. The report of the Executive Committee chronicled the election of Mr. E. B. Turner as chairman and Dr. Scott Lidgett as vice-chairman of the committee. The inclusion amongst the patients visited of those who were unable to employ a private nurse, rather on account of lack of accommodation than from inability to pay the cost, had been considered by the Executive Council, and a memorandum suggesting the terms on which such visits might be arranged had been circulated (THE LANCET, 1920, p. 1180). The panel of emergency nurses, instituted in accordance with resolutions of the Council on Feb. 26th, 1918, and Feb. 26th, 1920, had proved to be of considerable usefulness to the various associations. The City Parochial Foundation had renewed their grant of £100 for the training of four district nurses as midwives. The Executive Council had been approached by the National Association for the Prevention of Tuberculosis and by the Lock Hospital in regard to the need for special training for district nurses, and had therefore decided to give special consideration to the question of the district training provided and required by the associations over and above the three years' training in hospital. The Council considered that the attention of the training schools for nurses should be drawn to the large amount of additional instruction needed before a fully trained nurse was equipped for district work, and recommended that the foregoing be communicated to the General Nursing Council for consideration in connexion with the training of nurses. On the question of salaries the Council recommended that it be a condition of a grant from the Council that the minimum salary of a resident nurse shall be not less than £63 clear, and of a non-resident nurse not less than £63 clear, over and above a reasonable allowance for board and lodging. Acknowledgment was made of grants and donations received, and a statement made of the amounts allotted to various district associations, and in view of the continually increasing cost of the nursing services it was resolved that the need for and desirability of appeal to the public for funds in aid of district nursing in London should be given consideration.

PROPRIETARY MEDICINES BILL.—Dr. Addison has stated his intention to reintroduce this Bill in a modified form during the present Parliamentary session.

LONDON HOSPITAL AND INSURANCE PATIENTS.—At a meeting of the Governors of the hospital, on March 2nd, Lord Knutsford announced the decision to discontinue treatment of insured persons unless their Approved Societies came to the financial aid of the hospital. This, he believed, they would agree to do in the near future.

INDUSTRIAL WELFARE.—The Duke of York attended the Industrial Conference held at the Mansion House, London, on March 2nd, in support of the industrial welfare movement. In a letter issued to the press the Duke of York speaks of this movement as one of the most valuable contributions toward the bringing about of understanding and harmony in industry.

THE Brighton Corporation on Feb. 24th decided to place the Royal Pavilion buildings at the disposal of the Balneological and Climatological Section of the Royal Society of Medicine for its annual meeting this summer. It was also decided to give facilities for the members to visit places of interest under the control of the corporation.

NORTHERN HOSPITAL, MANCHESTER.—In spite of applying £2100 of invested funds and treating as income £650 received from legacies, the Manchester Northern Hospital for Women and Children started the past year with a debt of £1600. A bazaar held last November realised £3000, and a gift of £2800 from the National Relief Fund leaves a balance in hand of £3700. This apparent prosperity is misleading, as last year was abnormal, and the fact remains that the dependable income fell short of the expenditure of £8180 by £2320.

Appointments.

HUTT, C. W., M.A., M.D. Camb., D.P.H. Oxf., has been appointed Medical Officer of Health to the Borough of Holborn.

Certifying Surgeons under the Factory and Workshops Acts: McDOUGALL, D., M.B., Ch.B. Glasg. (Kilbride); ROBERTSON, I. M., M.B., Ch.B. Glasg. (Strichen); PEARSON, R. W., M.B. Durh. (Arundel).

Vacancies.

For further information refer to the advertisement columns.

Beckenham Education Committee—Dental O. £500.

Birmingham and Midland Homœopathic Hospital.—Res. H.S. £125.

Bootle County Borough.—Tuberc. O. and Deputy M.O.H. £750.

Bristol Education Committee.—Asst. Sch. M.O. £600.

Bristol General Hospital.—H.P.'s, H.S.'s, Cas. H.S. and Obstet. O. £175.

Bristol Royal Infirmary.—Hon. Registrar and Hon. Surg.

Charing Cross Hospital, Agar-street, W.C.—Surg. Registrar. £150.

City of London Hospital for Diseases of the Chest, Victoria Park, E.—H.P. £100.

Derby, Derbyshire Royal Infirmary.—Ophth. H.S. £200.

Dunrossness Parish.—M.O. and Vaccinator. £40.

Ealing Borough.—Asst. M.O.H. £500.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Anæsth. £50. Also Ophth. S.

East Sussex County Mental Hospital, Hellingly.—Sec. Asst. M.O. and Path. £450.

Eastern Dispensary, Leman-street, E.—P. and Ophth. S.

Evelina Hospital for Children, Southwark, S.E.—H.P. £160.

General Lying-in Hospital, York-road, Lambeth, S.E.—Res. M.O. £100.

Glamorgan County Asylum, Bridgend.—Jun. Asst. M.O. £415.

Great Northern Central Hospital, Holloway, N.—Two H.P.'s. £150.

Greenwich, "Dreadnought" Hospital.—H.S. £150.

Herefordshire General Hospital.—H.S. £200.

Laboratories of Pathology and Public Health, 6, Harley-street.—Asst. Path. £450.

Leicester Royal Infirmary.—H.P. £200.

Lewisham Hospital.—Consulting S. and Consulting P. £150. Sen. Asst. M.O. £500. Two Res. Asst. M.O.'s. £400.

Liverpool, David Lewis Northern Hospital.—Two H.P.'s. Three H.S.'s. £120.

Liverpool Royal Children's Hospital, Myrtle-street.—Two Res. H.P.'s and Two Res. H.S.'s. £90.

Liverpool Royal Infirmary.—H.P.'s., H.S.'s., and Sen. Cas. O. £60 each.

Liverpool, Royal Southern Hospital.—Two H.P.'s and three H.S.'s. £100 each.

London County Council, Hammersmith School Treatment Centre.—Eye S., Minor Ailment S., Ear and Throat S., Two Anæsth.'s. £80 each. Two Dental S.'s. £65.

London Missionary Society.—Surg., and P. and S. for Hospital Service, China.

Maidstone, Kent County Mental Hospital.—Asst. M.O. £350.

Maldon Union.—M.O. and Public Vaccinator. £107.

Manchester Royal Infirmary, Central Branch, Roby-street, Manchester.—Asst. M.O. £100.

Margate, Royal Sea Bathing Hospital for Surgical Tuberculosis.—Female S. £200

Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Gynæc., and Dent. S.

Muktesar, India, Imperial Bacteriological (Veterinary) Laboratory.—Director and First Bacteriologist. Rs. 1500 per mensem. Also Second Bacteriologist and Pathologist. Rs. 600 per mensem each.

Newark Hospital and Dispensary.—Res. H.S. £200.

Newport, Mon., Royal Gwent Hospital.—H.S. £200.

Nottingham City Asylum.—Sec. Asst. M.O. £400.

Nottingham General Hospital.—H.S. £200.

Oldham Royal Infirmary.—Third H.S. £200.

Poplar Hospital for Accidents, Poplar.—Asst. Res. S. £150.

Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Asst. Res. M.O. £60. Also Dist. Res. M.O. £80.

Queen Mary's Hospital for the East End, Stratford, E.—H.S. and H.P. £150 each.

Rochester, Kent, St. Bartholomew's Hospital.—Jun. Res. M.O. £200.

Royal National Orthopædic Hospital, 234, Great Portland-street, W.—Hon. Anæsth. £1 1s. per attendance.

St. Bartholomew's Hospital Medical School.—Chair of Anatomy. £900.

Salford Royal Hospital.—Res. Surg. O. £250. H.P. £200. H.S.'s, Orthop. Dept. and Genito-Urinary Dept. £150 each. Cas. H.S. £150. Anæsthetist. £50.

Salisbury General Infirmary.—H.S. £200.

Samoan Medical Service.—Three Jun. M.O.'s. £600.

Sheffield Royal Hospital.—Asst. Cas. O. £150.

Sheffield Royal Infirmary.—H.S. £150 Ophth. H.S. £150. Asst. Cas. O. £150.

South Shields, Ingham Infirmary and South Shields and Westoe Dispensary.—Sen. H.S. £225.

Sunderland Royal Infirmary.—Jun. H.S. £200.

Tunbridge Wells General Hospital.—H.S. £160.

Tyne Port Sanitary Authority.—Asst. M.O.H. £750.

Wakefield, West Riding Asylum.—Jun. Asst. M.O. £400.

Western General Dispensary, Marylebone-road, N.W.—Asst. Hon. Aural S.

Western Ophthalmic Hospital, Marylebone-road, N.W.—Non-Res. H.S. £150.

West London Hospital, Hammersmith-road, W.—H.P. and Two H.S.'s. £50. Also Asst. Anæsth.

West Riding County Council.—Asst. M.O. at Cardigan Sanatorium, Carr Gate, near Wakefield. £500.

Wigan County Borough.—M.O.H. £850.

Wigan Infirmary.—Hon. P. and Asst. Hon. P.

Wilts County Council.—Female Asst. County M.O.H. and Asst. Sch. Med. Inspec. £500.

Winchester, Royal Hampshire County Hospital.—Hon. Physician in Ordinary.

Wolverhampton and Staffordshire General Hospital.—Hon. Specialist Ear, Nose, and Throat Dept. Also Res. Cas. S. £300.

York Dispensary.—Res. M.O. £250.

York Retreat.—Med. Supt. £800–£1000.

THE Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for the Sheriffdom of the Lothians and Peebles. Applications for the post should be addressed to the Private Secretary, Scottish Office, Whitehall, S.W. 1, and should reach him not later than March 16th, 1921.

THE Chief Inspector of Factories announces the following vacant appointments:—*Barton-on-Humber* (Lincoln), Brading (Isle of Wight), Bromyard (Hereford), Wincanton (Somerset).

Births, Marriages, and Deaths.

BIRTHS.

COOPER.—On Feb. 23rd, the wife of Dr. R. M. Le Hunte Cooper, of Strathray-gardens, Eton-avenue, N.W., and Wimpole-street, W., of a daughter.

SCOTT.—On Feb. 21st, the wife of Eric A. Scott, M.R.C.S., L.R.C.P., 9, Harley-street, W., of a daughter.

SPENCER.—On Feb. 22nd, at a nursing home, Oxford, the wife of Gordon Winstanley Spencer, M.D., Mesopotamian Health Service, of a daughter.

MARRIAGES.

RYGATE—BEVEN.—On Feb. 26th, at Durrington Church, Salisbury, Captain J. R. Rygate, R.A.M.C., to Kathleen, daughter of the Rev. Sydney Beven, Brighton.

THE marriage arranged between Major H. Graeme Anderson, M.B.E., M.D., F.R.C.S., Surgical Consultant to the Royal Air Force, of 75, Harley-street, W., and Gladys, elder daughter of Charles Hood, of Hatch End, Middlesex, will take place on March 18th, at St. Columba's (Church of Scotland), Pont-street, S.W., at noon.

DEATHS.

ABRAHAM.—On Feb. 23rd, at Marlborough-hill, St. John's Wood, N.W., Phineas Simon Abraham, M.D., F.R.C.S.I., &c., late of Harley-street, W., aged 74.

CAMERON.—On Feb. 27th, at Dublin, Sir Charles Alexander Cameron, C.B., M.D.R.U.I., F.R.C.P.I., F.R.C.S.I., D.P.H., in his 91st year.

LOMAS.—On Feb. 24th, at Pencaitland, Ernest Courtney Lomas, C.B., D.S.O., F.R.C.S. Edin., Surgeon-Captain, R.N. (retired), aged 56.

MOSSE.—On Feb. 25th, at Belvedere-terrace, Weymouth, Charles George Drummond Mosse, Lieutenant-Colonel (retired), R.A.M.C., F.R.C.S.I., and Ministry of Pensions, aged 63 years.

SEMON.—On March 1st, at *Rignalls, Great Missenden, Bucks*, Sir Felix Semon, K.C.V.O., M.D., F.R.C.P., aged 71.

TURNER.—Feb. 28th, at Oundle, Emma Beatrice, wife of Dr. R. B. Turner, Oundle, Northants.

WRENCH.—On Feb. 23rd, at Ireshopeburn, Wearhead, Co. Durham, Edward Branson Wrench, M.B., M.V.O., F.R.C.S., of Park Lodge, Baslow, Derbyshire, in his 57th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, March 8th.

SECTION OF PSYCHIATRY: at 5.30 P.M. (instead of 8.30 P.M.)

Paper:

Dr. Henry Devine: Study of Hallucinations in a Case of Schizophrenia.

Thursday, March 10th.

SECTION OF BALNEOLOGY AND CLIMATOLOGY: at 5.30 P.M.

Discussion:

On "The Place of Baths and Health Resorts in Gynæcology."

Members of the Section, with guests, will dine together at the Welbeck Palace Hotel, Welbeck-street, W., at 7 P.M. Those intending to be present are requested to send their names to Dr. C. F. Sonntag, 80A, Belsize Park-gardens, N.W. 3, not later than the last post on March 10th.

OBSTETRICS AND GYNÆCOLOGY: Members of this Section are cordially invited to attend this meeting.

Thursday, March 10th, and Friday, March 11th.

SECTION OF NEUROLOGY } at 8.30 P.M. (Cases on
SECTION OF OPHTHALMOLOGY } March 10th at 8 P.M.)

Discussion:

On "Ocular Palsies," to be opened by Dr. Gordon Holmes and Mr. Leslie Paton, and continued by Mr. J. B. Lawford, Mr. M. S. Mayou, Mr. N. Bishop Harman, Mr. Foster Moore, Mr. W. H. McMullen, Mr. M. L. Hine, Dr. S. A. K. Wilson, and others.

Friday, March 11th.

CLINICAL SECTION: at 5.30 P.M. (Cases at 5 P.M.)

Exhibition of Cases.

Will Members wishing to exhibit cases please notify Mr. R. P. Rowlands, 12, Queen Anne-street, W. 1.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, March 7th.—9 P.M., Lettsomian Lecture (III.):—Mr. G. E. Gask: Surgery of the Chest and Pleura.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

MONDAY, March 7th.—8 P.M., Cantor Lecture:—Major G. W. C. Kaye: X Rays and their Industrial Applications. (I.)

HUNTERIAN SOCIETY, at Sion College, Embankment, E.C.

WEDNESDAY, March 9th.—9 P.M., Papers:—Mr. H. T. Gray: Obscure Intestinal Colic.—Dr. A. R. Friel: The Use of the Continuous Electric Current in Treatment.

BIRMINGHAM MEDICAL PSYCHOLOGICAL SOCIETY.

WEDNESDAY, March 9th.—4.15 P.M., Paper:—Dr. G. Gordon: Amnesia.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

There will be Daily Demonstrations in the Wards and Out-patient Department by the Staff of the West London Hospital at 10, 11 A.M., and 12 noon, and 2 P.M. All the Special Departments of the Hospital will be used for teaching purposes. The following lectures will be delivered during the week:—

MONDAY, March 7th.—5 P.M., Dr. G. Stewart: Spinal Tumours.

TUESDAY.—5 P.M., Dr. Pernet: The Alimentary Tract and Morbid Skin Manifestations.

WEDNESDAY.—5 P.M., Mr. Gibb: Glaucoma.

THURSDAY.—5 P.M., Dr. B. Spilsbury: Arsenical Poisoning.

FRIDAY.—5 P.M., Mr. Steadman: Dental Sepsis in Relation to the Alimentary Tract.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, W.C. 1.

MEDICAL SCHOOL.

MONDAY, March 7th.—2 P.M., Out-patient Clinic: Dr. Collier. 3.30 P.M., Lecture:—Mr. Scott: Disturbances of the Vestibular System. (II.)

TUESDAY, March 8th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Dr. Risien Russell: Syphilis of the Nervous System. (I.)

THURSDAY, March 10th.—2 P.M., Out-patient Clinic: Dr. Farquhar Buzzard. 3.30 P.M., Lecture:—Dr. Gordon Holmes: Muscular Atrophies. (II.)

FRIDAY, March 11th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Dr. Russell J. Reynolds: X Ray Demonstrations of Cases.

Fee for Post-Graduate Course £7 7s. C. M. HINDS HOWELL, Dean

MIDDLESEX HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON).

TUESDAY, March 8th.—3 P.M., Emeritus Lectures:—Dr. W. McC. Wanklyn: The Future of the Medical Profession.

THURSDAY.—3 P.M., Emeritus Lecture:—Sir Alfred Pearce Gould: Surgery, a Progressive Science: the Latest Word is not the Last Word.

FRIDAY.—3 P.M., Sir James Kingston Fowler: The Treatment of Tuberculosis.

KING'S COLLEGE (DEPARTMENT OF SCIENCE), Strand.

Nine Lectures on Problems of Modern Science.

WEDNESDAY, March 9th.—5.15 P.M., Lecture (VIII.):—Prof. W. D. Halliburton: Physiology.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, March 10th.—4 P.M., Lecture:—Dr. C. B. Heald: Muscular Defects in Poliomyelitis.

TIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W.

MONDAY, March 7th.—5.30 P.M., Post-Graduate Lecture:—Dr. J. Parkinson: Dropsy.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

THURSDAY, March 10th.—6 P.M., Chesterfield Lecture:—Dr. K. Sibley: Electrical Treatments. Diathermy and High Frequency.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, W.

TUESDAY, March 8th.—3 P.M., Lecture:—Prof. A. Keith: Darwin's Theory of Man's Origin.

THURSDAY.—3 P.M., Dr. G. C. Simpson: Meteorology of the Antarctic.

FRIDAY.—9 P.M., Dr. J. Freeman: Medical Idiosyncrasies.

SATURDAY.—3 P.M., Lecture (II.): Sir Ernest Rutherford: Electricity and Matter.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

TUESDAY, March 8th.—4.30 P.M., Lecture:—Mr. H. H. Rayner: Surgical Disorders of Infancy and Early Childhood.

SALFORD ROYAL HOSPITAL AND ANCOATS HOSPITAL POST-GRADUATE DEMONSTRATIONS, at the two Hospitals alternately.

THURSDAY, March 10th.—4.30 P.M., Dr. Jenkins: The Examination of Sputum. (At Salford Royal Hospital.)

ST. MARY'S HOSPITALS, MANCHESTER, POST-GRADUATE LECTURE, at Whitworth-street West Branch.

FRIDAY, March 11th.—4.30 P.M., Dr. Ward: Dyspepsia in Infancy.

MANCHESTER BABIES' HOSPITAL.

Post-Graduate Lectures and Demonstrations in the Onward Buildings, Deansgate, or at the Hospital, Slade lane.

SATURDAY, March 12th.—3.30 P.M., Dr. Chisholm: Demonstration of Food Preparations with Comments on their Therapeutic Value. (At the Babies' Hospital.)

Communications, Letters, &c., to the Editor have been received from—

A.—Assurance Medical Society, Lond., Hon. Sec. of; American Public Health Association, Boston, Sec. of; Capt. M. Anupsingh, I.M.S.; Dr. A. Abrahams, Lond.

B.—Mr. H. Brown, Lond.; Dr. J. W. Bigger, Dublin; Mr. E. C. Bevers, Oxford; Dr. A. Blackhall-Morison, Lond.; Dr. T. W. Barry, Lond.; Dr. G. Bidou, Paris; Mr. A. S. B. Bankart, Lond.; Dr. B. Blacklock, Liverpool; Mr. J. Burns, Edinburgh; Mrs. C. Brereton, Lond.; Mr. J. Bocarro, Kurduvada.

C.—Dr. J. B. Christopherson, Lond.; Dr. S. D. Clippingdale, Lond.; Central Midwives Board for Ireland, Dublin; Crown Agents for the Colonies, Lond., Chief Engineer of; Central Council for District Nursing in London, Hon. Secs. of; Cambridge University Press, Lond., Manager of; Colston University Research Society, Hon. Sec. of; Combined Universities' Conservative and Unionist Association, Lond.; *Canada*, Lond., Editor of.

D.—Miss L. Davies, Lond.; Dr. D. Dougal, Manchester; Dr. D. S. Davies, Bristol.

E.—Dr. I. Eban, Lond.; Mr. R. C. Elmslie, Lond.

F.—Mr. W. G. Frye, Midhurst; Mr. W. R. Fairbrother, Lond.

G.—Mr. H. Grover, Lond.; Dr. W. E. Gye, Lond.

H.—Home Office, Lond.; Dr. I. Harris, Liverpool; Hunterian Society, Lond.; Major W. E. Home, Lond.; Prof. W. D. Halliburton, Lond.

I.—Incorporated Association of Certifying Factory Surgeons, Lond.; *Indian and Eastern Druggist*, Lond., Editor of; Illuminating Engineering Society, Lond.

K.—Dr. W. H. King, Fowey; Lt.-Col. J. Kynaston, R.A.M.C.; Mr. C. Körner, Leipzig.

L.—London and Counties Medical Protection Society, Lond.; Dr. O. Langmead, Lond.; Mr. R. Lake, Lond.; London Hospital Medical College; Mr. E. M. Little, Lond.

M.—Dr. E. D. Macnamara, Lond.; Metropolitan Life Insurance Co., New York; Metropolitan Water Board, Lond.; Dr. B. Myers, Lond.; Dr. J. J. Moren, Louisville; Sir J. Mackenzie, St. Andrews; Ministry of Health, Lond.; Mr. S. A. Mann, Lond.; Medical Officers of Schools Association, Hon. Sec. of; Mr. H. W. G. MacLeod, Lond.; Dr. W. C. Morton, Leeds.

O.—Dr. J. S. Owens, Lond.

P.—Dr. R. M. F. Picken, Glasgow.

R.—Royal Institution of Great Britain, Lond.; Royal Society of Arts, Lond.; Dr. R. J. Rowlette, Dublin; Mr. A. Rugg-Gunn, Lond.; Dr. J. D. Rolleston, Lond.; Mr. H. C. Richards, Croydon; Mr. J. H. Ryffel, Lond.; Mr. H. C. Ross, Lond.; Sir H. D. Rolleston, Lond.; Major A. J. H. Russell, I.M.S.

S.—Prof. W. Stirling, Manchester; Scientific and Industrial Research Department, Lond.; Dr. A. L. Smith, Lond.; Very Rev. Canon Sprankling, Weybridge; St. Mary's Hospitals, Manchester; Lt.-Col. J. H. Stanley, Lond.; Mr. F. B. Smith, Harrogate; Dr. J. Sorley, Lond.; Mrs. H. Schuster, Lond.

T.—Dr. G. L. Thornton, Exmouth; Dr. D. Triantaphyllos, Athens; Technical College, Bradford, Principal of; Mr. G. M. Thomas, Lond.; Miss Turner, Stoke Green.

V.—Miss E. D. Vickers, Lond.; Dr. F. Van Allen, Madura.

W.—Sir G. Woodhead, Cambridge; Dr. F. J. Waldo, Lond.; Dr. S. Welsh, Lond.; Dr. E. Ward, Paignton; Dr. J. W. T. Walker, Lond.

Y.—Dr. A. G. Yates, Sheffield.

Z.—Dr. S. S. Zilva, Lond.

WESTERN OPHTHALMIC HOSPITAL.—The monthly clinical meeting was held on Feb. 23rd, when the following cases were shown: (1) Congenital Dislocation of the Lenses in High Myopia; (2) Retinitis Pigmentosa; (3) Intramarginal Cupping of the Discs; (4) Gumma of the Iris, by Dr. Hugh Thompson; (5) Keratitis Nodosa, by Mr. Cole Marshall; (6) Intramarginal Cupping of the Discs, by Mr. W. L. Holyoak; (7) Early Choroiditis at the Macula; (8) Specific Retino-choroiditis; (9) Optic Atrophy in Tabes Dorsalis; (10) Tubercular Choroiditis; (11) Syphilitic Retino-choroiditis Resembling Retinitis Pigmentosa, by Mr. A. Rugg-Gunn. These meetings are held at 5 P.M. on the fourth Wednesday of each month, and medical practitioners and others interested are cordially invited to attend. Any further information may be obtained from Mr. A. Rugg-Gunn, secretary of the Medical Committee, 9, Wimpole-street, London, W. 1.

Notes, Short Comments, and Answers to Correspondents.

THE IMPORTANCE OF BIOLOGY.

LECTURING on Problems of Modern Science at King's College, London, on Feb. 23rd, Professor A. Dendy said that scientific knowledge of all kinds had been accumulating during the past century at an altogether unprecedented rate, and it was necessary that the heap should be organised in some rational manner. Biology had much in common with chemistry and physics, and it might be regarded as a sort of super-chemistry and super-physics, though the living organism, taken as a whole, was something more than a mere physical and chemical machine. In this fact lay the justification for separating biology from chemistry and physics and in regarding it as one of the cardinal sciences. The general divisions of biology adopted by our universities were on the whole justified, but had many disadvantages, and a strictly logical foundation could hardly be claimed for the system of classification. The anatomists and physiologists of our medical schools had been seriously handicapped by taking too narrow a view of the wide relationships of biological science.

Progress of Biological Science.

Pleading for a wider interpretation of the subject Professor Dendy suggested a scheme under the main headings of pure biology, experimental biology, philosophical biology, and applied biology, and passed in rapid review the work which would fall under the main headings and under their many subdivisions. The descriptive and systematic work which belonged to pure biology, he said, was necessary to the experimental biologist who could not carry out his investigations until he knew with what material he had to deal, while the philosophical biologist had to rely on both branches. It was in the domain of cytology that much of the most important progress in biological science had lately taken place, and its study had become a necessary adjunct to a right understanding of heredity. In this connexion the lecturer mentioned the work of Professor Morgan and his colleagues in America in regard to the chromosomes, and maintained that a knowledge of embryology must still be regarded as an indispensable part of the equipment of the student of comparative anatomy and organic evolution. This was still more true of palæontology, in which great advances had been made in recent years, and, whether with Huxley we derived the human stock from some ape-like form or, with Wood Jones, placed it further back, it made no difference to the belief that man was one final product in one direction of organic evolution. We could safely trust the labours of the palæontologist to fill in more completely the gaps in our knowledge. Reverting to the work of the systematologist the lecturer said that not only now, but still more in the future, there would be urgent need of some kind of museum training as well as for international coöperation.

Biology and Medicine.

Experimental biology opened up a vast field and some of the individual problems involved would be sufficient to occupy a man during his lifetime. Physiology had long been recognised as of primary importance in the university curriculum, and although regarded as a distinct science it clearly overlapped almost every other department of biology. It was a vast subject which required subdivision before it could be adequately treated. General physiology of plants and animals dealt with the complete vital activities of individuals, and biochemistry and biophysics formed the connecting links with the sister sciences, bringing the living organisms into contact, so to speak, with the inanimate world. Physiology of the special functions in any scheme would probably have to receive special treatment. Experimental psychology, including what was commonly called the behaviour of animals, was a branch of physiology at present much studied and was the chief field of contest between the mechanist and the vitalist. The study of animal behaviour merged almost imperceptibly into experimental morphology and embryology. Heredity concerned itself with the unravellings of the connexions which exist between parent and offspring, and the studies of Mendel had been fruitful in results of practical importance. The Mendelian factors whose existence had been demonstrated by the genetist had not yet been identified as entities in the germ cells, but the American school had localised them with great probability in the chromosomes. The truth appeared to be that the Mendelian factors were only modifying agents. There were probably no special factors, for example, that determined whether the normal human being should have a nose or no nose, though they might decide whether the nose should be of one shape or another, just as there were factors which determined the colour of the eyes. The so-called Mendelian factors which modified organisms might be of a chemical nature, since a perfectly definite result was got from a perfectly definite stimulus. Investigations in the study of the blood had developed almost into a new science which was really a part of biochemistry and biophysics. An injection of the spermatozoa of one animal into the blood stream of another animal of a distinct species produced in the blood an antibody which caused the destruction of foreign bodies. By injecting a solution of the lens from the eye of a rabbit into the blood of fowls a lens-sensitised serum was produced capable of dissolving lens tissue. This serum injected into pregnant rabbits produced animals with defective lenses, and this defect was inherited by at least six generations. Moreover, it had been shown that the effect could be produced through the male rabbit alone.

In conclusion, Professor Dendy said that the question as to how far applied science should form part of the University curriculum was a matter for discussion, but everyone would agree that both pure and applied biology must remain in touch with each other. Medicine, surgery, parasitology, and other sciences were dependent upon biology, and pure science must be regarded as the root and applied science as the fruit of the tree. If the root were starved the crop of fruit would not be forthcoming.

FISHERMEN'S DISEASES.

AT a recent meeting of the Norfolk and Norwich Medico-Chirurgical Society, held at the Norfolk and Norwich Hospital, Dr. H. Muir Evans had much of interest to say on injuries and diseases peculiar to fishermen. Lantern slides showed the general appearance of several poisonous fishes, including the dog-fish, the sting ray, and the greater and lesser weever; also the microscopical features of the poison glands of each species from sections cut by the author and photographed by Dr. D. H. Hutchinson, of Lowestoft.

The injuries produced by the prick or sting of fish armed with spines are usually, Dr. Evans said, the result of an unpremeditated contact with the greater or the lesser weever, which possesses a perfect double-grooved exploring needle on either gill cover. Each grooved spine is covered by a movable skin. At the root of the spine is a definite poison gland, and when alarmed the fish erects its gill cover and bends itself round, driving the poisoned spine into any adjacent body, which at once receives some grumous drops of a highly poisonous nature. There are lesser poison organs in each spine of the dorsal fin. The burning pain that ensues is so great that men will attempt to throw themselves overboard, or will hammer the affected part with a thole pin against the bulwarks. The pain lasts several hours and is associated with immediate swelling of the affected limb; a certain amount of paralysis may affect the limb temporarily. The swelling subsides in a few hours or may go on to phlegmonous inflammation with local gangrene around the site of injury.

The Nature of Fish Venom.

The study of snake venoms has shown the presence of different toxins, one acting on nerve tissues, a neurotoxin, another on red blood cells, a hæmolysin, another on white blood cells, a leucotoxin, and another on the epithelial lining of blood-vessels. It is possible to fix a neurotoxin to nerve cells in vitro, the hæmolysin remaining in solution, and vice versa. Weever venom contains a neurotoxin, a hæmolysin, and a leucotoxin. The hæmolytic constituent of weever venom differs, however, from most snake venoms in that it acts directly on washed red corpuscles—that is to say, without the presence of serum. This statement conflicts with that of certain French workers, but my experiments were made with fresh poison, whereas they made use of filtered glycerine extracts. The French view is that venoms can only cause solution of blood cells in the presence of a heated serum, while a normal serum inhibits the action. To complete the analogy between this and other venoms, Briot has been able to immunise dogs and rabbits by repeated local injections of the venom, so as to render them insusceptible to many times the lethal dose of poison injected intravenously. As early as 1879 Bottard recorded an experiment in which he had injected a dog with the venom, and after the slough thus produced had separated, 16 days later, he put some drops of the venom into the eye of the same dog without producing any effect.

Experiments I have made on the paralytic effect of the venom on white blood corpuscles show a marked diminution in the phagocytic action of the leucocytes. Secondary septic inflammations frequently follow the sting of these fish, a result which shows how readily the barrier of phagocytosis may be broken down to admit pathogenic organisms from the dirty skin.

Treatment of Fish "Sting."

The various empirical methods of treatment are worthy of study. For example, the injury being called a sting, on analogy with the acid ant's sting ammonia is presumed to counteract the poison. In the islands of Mauritius and Réunion, where a similar stinging fish, the Synancia, frequently injures the feet of fishermen, the natives employ the leaves and seeds of a species of Datura which grows in abundance on the dry sand of the shore, and find it gives relief, in the same way as a person stung by a nettle flies to a dock-leaf. But among the plants employed in an empirical way to cure the prick made by the fish the seed of *Abrus precatorius* seems, according to Bottard, to have the virtue of a specific. We are familiar with abrus or jequirity seeds as a remedy for certain chronic eye diseases, while a toxin abrin derived from it has been shown to possess the characters of the toxins of diphtheria and tetanus, dissolving red blood cells and possessing also a neurotoxic effect. Test-tube experiments show that abrus has an inhibiting effect on hæmolysis by weever venom.

Of local methods of treatment the most frequent is to plunge the part into boiling vinegar; another is to hold the limb over the funnel of the boiler which, in a smack, drives the donkey engine. A third is to apply heat vicariously by throwing the offending weever on the fire. Sometimes the sufferer soaks a piece of brown paper in vinegar, allows it to dry, and, wrapping the paper round the finger, applies a light, letting the paper smoulder until the heat becomes unbearable. Another treatment consists in cutting out the fish's liver and applying it to the wound. Here we are again approaching scientific method. Serpent's bile appears to be an antidote to serpent's venom, and a preparation of snake's liver is of value in the treatment, not only of snake-bite, but also of some disease toxins, as of tetanus and diphtheria. Possibly the effect of the liver is due to cholesterin. Cases of tetanus have been successfully treated with injections of cholesterin, and it has been established that cholesterin inhibits hæmolysis by cobra venom (Preston Keyes) and arachnolysin.

As with snake venoms, potassium permanganate, chloride of lime, and chloride of gold destroy the venom rapidly, and I have suggested that all smacks and drifters should be provided with a Lauder Brunton snake-bite lancet (which at one end contains pot. permang. crystals), so that a really efficient remedy may be at hand.

Jelly-fish Stings and Water Boils.

In the summer voyages the drift fishermen get their nets full of jelly-fish, and the sting frequently causes burning pain followed the next day by intense itching. From the tentacles of actiniæ a toxin has been isolated, thalassine, soluble in water and alcohol but insoluble in ether, which produces intense itching. The eyes and nose of those mending the dry nets after summer fishing are often affected, and this is, so far as I know, not described in any work. It would seem as if the dry toxin of the jelly-fish becomes mixed with the dust from the nets, so that the fishermen are frequently unable to mend the nets on account of the sneezing and lacrymation which the handling of them produces. It would be interesting to collect the dust from these nets and extract the toxin which they no doubt contain.

Finally, I must mention water boils, occurring on the forearm of fishermen and sometimes extending up to the elbow, but mostly to be found over the lower ends of the radial and ulnar borders of the arm. These boils begin as pustules, but may extend and form large suppurating areas of half to one inch in diameter. No doubt they are connected with the rubbing of the edge of their oilies, wet with sea-water and all the dirt of the fisherman's calling. They are most frequent in the autumn and winter. They cause many weeks' incapacity to the men, when they say their blood is out of order. I have examined the pus from these boils and find it in all cases to give a pure culture of *S. pyogenes aureus*. In severe cases I have given injections of vaccine with good results. The prevention of infection from one fisherman to another is also important.

SIR ASTLEY COOPER.

To the Editor of THE LANCET.

SIR,—You have recently published a justly laudatory article upon Sir Astley Cooper. It comes as a surprise, therefore, to find the following paragraph in Samuel Smiles's "Life of George Stephenson," the celebrated engineer, when he was engaged in constructing the London and Birmingham Railway: "Sir Astley Cooper, the eminent surgeon, near whose estate at Hemel Hempstead the railway would pass, was one of the most active opponents to the measure, and a deputation of the directors one day called upon him for the purpose of mitigating his opposition. They found a courtly old gentleman, of highly dignified manners and appearance. The deputation explained to him their project and he politely heard them out: but Sir Astley was not to be conciliated. 'The scheme is preposterous and absurd,' said he, 'from beginning to end. You are entering upon an enormous undertaking of which you know nothing. Then proposing to destroy property, cutting up our estates in all directions! Why, gentlemen, if this sort of thing be permitted to go on, you will, in a very few years, destroy the *noblesse!*' The deputation retired disgusted, one of them bitterly remarking after they had left—'Well it is really provoking to find one who was made a "Sir" for cutting a wen out of George IV.'s neck charging us with destroying the noblesse because we propose to confer upon him and his neighbourhood the benefits of a railway!'"

I am, Sir, yours faithfully,

Holland Park-avenue, Feb. 26th, 1921. S. D. CLIPPINGDALE.

A HYGIENIC TELEPHONE MOUTHPIECE.

Mr. Archibald T. Hutchinson, of 67, Burt-terrace, Gateshead-on-Tyne, has sent us a specimen of a telephone mouthpiece, which is used by the Newcastle-on-Tyne Electric Supply Company. Made of a wax-like substance impregnated with an antiseptic, it is simple in construction and takes the form of a movable lining to the fixed mouthpiece. The appliance is said to last for some two or three months before requiring renewal. The creasote-like odour of the antiseptic makes the mouthpiece pleasant to use, while there is no obstruction to the sound of the voice.

THE CONTENTS OF ARTIFICIAL PEARLS.

To the Editor of THE LANCET.

SIR,—Professor A. J. Hall last week gave an interesting case of local dermatitis apparently determined by the wearing of an artificial pearl necklace. He does not mention whether the contents of the beads were analysed. Blown pearls usually consist of globules of glass coated on the inside with the so-called oriental pearl essence, or *essence d'orient*. This is a liquor prepared from the scales of various cyprinoid and clupeoid fishes, some of which are popularly known as whitings, as the bleak, or ablette in French; the scales give the brilliant iridescence to the artificial pearls. The scales are rubbed down in a mortar with fresh water and strained. Ammonia is added to prevent decomposition and to aid in coating the pearls. The rest is white wax or alabaster, but parchment-glue, isinglass, or mucilage is also used. Sometimes hydrofluoric acid and oxide of tin are employed in preparing the glass. The *ablette* used to be plentiful in the Seine. A Frenchman named Jannin is believed to have first invented the manufacture of artificial pearls about 1680. I am, Sir, yours faithfully,

OYSTER.

"*Intestinal Disinfection.*"—The publishers of this brochure are the Universal Medical Periodicals, Ltd., of 36, Whitefriars-street, London, E.C.

The Langham Telephone Exchange.—After 2 P.M. on Saturday, March 5th, the telephone number of the office of the General Medical Council will be Langham 2500.

Common Sense.—It is no longer possible for a man to take his stand unchallenged on the position given him by belonging to "one of the three learned professions." Our correspondent's communication would lead to immediate contradiction.

BOOKS, ETC., RECEIVED.

BALE, JOHN, SONS, AND DANIELSSON, London.

- A Study in the Epidemiology of Tuberculosis, with especial reference to Tuberculosis of the Tropics and of the Negro Race. By G. E. Bushnell, M.D. Pp. 221. 20s.
- Manual for Health Visitors and Infant Welfare Workers. Edited by Mrs. Enid Eve. Pp. 194. 10*s*. 6*d*.
- Six Papers by Lord Lister, with a short Biography and Explanatory Notes. By Sir Rickman J. Godlee, Bart., K.C.V.O. Pp. 194. 10s.

FROWDE, HENRY, AND HODDER AND STOUGHTON, London.

- Orthopædic Surgery of Injuries. By Various Authors. Edited by Sir Robert Jones, K.B.E., C.B., F.R.C.S. Vol. I., pp. 540; Vol. II., pp. 692. £4 4s. the set.
- The Early Diagnosis of Tubercle. By Clive Riviere, M.D. 3rd ed. Pp. 318. 15s.

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THE LANCET, MARCH 12, 1921.

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An Address

ON

THE NEUROLOGICAL ASPECTS OF SHOCK.

Delivered before the Leicester Medical Society on Feb. 9th, 1921,

BY SIR FREDERICK MOTT, K.B.E., M.D. LOND., LL.D., F.R.S.

SHOCK may be defined as a condition of profound exhaustion and prostration of voluntary and involuntary functions of acute onset, caused by trauma, surgical operations, or sudden emotional or commotional disturbance of the central nervous system, or to the effects of toxic agents and anaphylaxis. The term has unfortunately been greatly extended by the inclusion of all forms of war neurosis under the name of "shell shock," the symptoms of which in no way differ from cases that have never been exposed to shell fire. It will be my endeavour to show that over-stimulation and exhaustion of the central nervous system play an important part in the production of all forms of shock.

PRIMARY AND SECONDARY SHOCK.

Two forms of shock may be recognised: (*a*) primary; (*b*) secondary.

Primary shock.—This form is analogous to a faint or collapse coming on instantaneously as a result of emotional or commotional disturbance of the brain. It may come on immediately on receipt of an injury, but in some instances when the patient actually sees the injury, showing that the emotional disturbance was the cause and not the injury.

Secondary shock.—The late onset of secondary wound shock does not refute the theory that surgical shock may be the result of over stimulation by nociceptor afferent impulses *exhausting the vital medullary centres presiding over the* circulation and respiration; but it allows of the conception that other factors—namely, the *toxic*—play an important part in its causation, for in secondary shock the necessary time for the production and absorption of toxins would occur.

Before passing on to discuss the two forms of primary and secondary surgical shock it is necessary to make a few remarks upon anaphylactic shock.

Anaphylactic Shock.

Prior to the discovery of anaphylactic shock by Richet it was the fashion to ascribe all the "shock" effects of the ingestion of harmful substances into the body to toxæmia. Anaphylactic shock is characterised by dyspnœa, fall of blood pressure, vomiting, and other gastric intestinal disturbances, accompanied by collapse, and in some cases by convulsions, a symptom-complex which follows the administration of any one of a large number of dissimilar substances of animal or mineral origin to which the blood and tissues is inherently over-sensitive, or has been rendered over-sensitive by previous administration.

These symptoms, according to Widal and his collaborators, are accompanied and preceded by a "blood crisis" of remarkable suddenness and intensity characterised by a leucopenia with predominance of lymphocytes, diminution of blood platelets, and great alteration in coagulability. They propose to call this condition hæmoclasia, the term implying a sudden dislocation of the static equilibrium of the colloids of the blood—a bio-physical manifestation—and this was the conclusion arrived at by Bezredka in 1907. But the physics and chemistry of the colloids, about which at present we know but little, underlie all vital phenomena, and it may be presumed that in anaphylactic shock there is a dislocation of the static equilibrium of all the cells of the body, especially of the nervous system, and the term colloidoclasia would more accurately represent the condition. Idiosyncrasy may be regarded as a specialised inherent hypersensitiveness to the dislocation of the static colloidal equilibrium from the action in the body of particular substances.

THE FALL OF BLOOD PRESSURE IN ALL FORMS OF SHOCK.

In all forms of shock there is a fall of the blood pressure, and when death takes place it is by a failure of the vital autonomine centres presiding over the circulation and respiration. Now, in shock, which comes on some time after injury, this question arises: Do these vital centres fail to function, primarily on account of exhaustion through over-stimulation, or do they fail secondarily from (1) the effects of toxins, (2) from fall of blood pressure and consequent anæmia, or (3) from exæmia with concentration of blood and capillary stasis in some cases accompanied by fat embolism?

In my opinion there is evidence to show that in secondary shock from extensive burns and severe wounds, especially compound comminuted fractures with extensive laceration and injury of the soft parts, all the before-mentioned factors conspire together to form a vicious circle, which tends to a fatal termination by failure of the vital autonomic centres presiding over circulation and respiration. In fatal primary emotional or commotional shock toxin absorption cannot play a part, for the symptoms immediately follow the exciting cause; and a fatal termination can therefore only be due to a refractory or exhausted condition of the vital autonomic centres presiding over the circulation and respiration.

PRIMARY SHOCK AND THE PSYCHONEUROSES.

What is the psycho-physiological explanation of emotional shock? We know that a sudden emotion may cause a "faint," a sudden loss of consciousness explicable by a sudden fall of blood pressure. Now, if the fear stimulus which caused this persists there may be a continuance of arrest of function of the autonomic centres; and in very rare cases a fatal termination has been known to result. Individuals who are inherently neurotic or of a timorous temperament, or persons whose higher controlling centres have been exhausted by prolonged stress, anxiety, and insomnia, are most susceptible to emotional shock.

In the great majority of cases of primary commotional and emotional shock after a variable time the patient recovers. In hysterical patients some part of the field of consciousness may remain dissociated, and the result is mutism, psychic blindness or deafness, paralysis, tics, tremors, contractures, &c., all of which can be readily cured by suggestion or persuasion. Not infrequently following the emotional shock the patient remains for a time in a dazed or semi-automatic state. He has no recollection of what transpired during this period of his life. It may happen that he does not recollect the events which immediately preceded the shock; and I have seen cases in which the shock was so severe that the memory of all past events of their life were blotted out, and in several cases of this kind they spoke only a few simple words in an infantile way, both as regards the words used, the mode of articulation, and the modulation of the voice.

Now, two types of psychoneurosis may follow emotional or commotional shock—viz., hysteria and neurasthenia; the former was the commoner in the ranks, the latter much the commonest in officers. Hysterical symptoms arising from auto- or hetero-suggestion were curable by contra-suggestion. They were the result of a preservation of an unconscious wish-fulfilment to avoid an intolerable situation; a defence mechanism related to the emotion of fear. The other form of psychoneurosis, which may follow emotional or commotional shock, is neurasthenia—irritable nervous weakness with mental preoccupation, concerning a situation for which the man is unable to make fitting necessary mental adjustment. In the case of officers there was a continuous mental conflict between the impulse to return to duty, fearing otherwise that they would be considered either cowards or scrimshankers, and the fear of returning to an intolerable situation, not always intolerable on account of the danger to life, but intolerable because they felt they did not possess the will-power and energy to undertake efficiently duties and responsibilities involving the lives of their men. This mental conflict, combined with insomnia and unrefreshing sleep accompanied by terrifying dreams, together with the effects of previous stress and strain of war can exhaust the vital energy of a good soldier and render him more susceptible to either primary or secondary shock.

No. 5089.

Now, one of the problems medical officers in the Great War had to decide was whether a case of shock should be classified as a battle casualty. Was the patient sufficiently near a large shell when it exploded to cause commotional shock? Especially would such a classification be justifiable if the man were buried, or if the shell burst in a dug-out, or closed space, where the effects of repercussion would be felt and if he had signs of contusion on the body. Still, many individuals with an inborn or acquired emotivity might suffer so severely from emotional shock that it would be extremely difficult to decide from symptoms whether the case was commotional or emotional. For a man neuro-potentially sound, after prolonged stress, anxiety, and exhaustion of trench warfare, may become emotive. The previous conduct of the man as a soldier, the time he has been on active service at the front prior to the occurrence of the shock are important indications. If when he recovered consciousness there existed a retrograde amnesia and he exhibited neurasthenia and not hysterical symptoms it may be presumed that the case was one of commotional shock. Observations, moreover, show that in commotional shock, as distinct from purely emotional shock, the cerebro-spinal fluid exhibited an increased pressure when lumbar puncture was performed; it has also been found that the fluid upon examination contained protein and in some cases blood. True commotional shock is, relatively to emotional shock, rare, perhaps 5 to 10 per cent. of the cases of so-called "shell shock."

"COMMOTIONAL SHOCK."

The forces generated when high explosives are detonated are enormous, and men have been found dead from shock without visible injuries to account for it in dug-outs and closed spaces where percussion and repercussion can occur. Undoubtedly there is a condition of true commotional shock, although there is a tendency now almost to decry its existence. The brains of soldiers who have died of commotional shock have been sent to me to examine, and my observations show that this form of shock is a definite condition not met with in other forms of shock which I shall describe. Moreover, Colonel P. W. G. Sargent, in a very interesting introduction to an article on Shock, published by the Medical Research Council, gives instances of two cases of death from shock caused by explosives, in which the brains showed no naked-eye evidence of injury and no fracture of skull. Perhaps if the brains had been examined microscopically similar changes to those which I shall describe might have been found.

Before, however, considering the nature of the different forms of shock, let me call your attention to some anatomical and physiological facts bearing upon the subject of primary and secondary shock.

Anatomical and Physiological Facts Bearing upon Shock.

Referring to the theory of dislocation of the static equilibrium of colloids as a cause of anaphylactic shock, we may ask, may this be an explanation of commotional shock, in which no sufficient visible macroscopic or microscopic changes can be found to account for the symptoms. The study of the living neuron shows that Nissl bodies and fibrils in the ganglion cells are artefacts, the result of death changes, and due to the action of fixatives and stains; for if we look at the living nerve cell by direct illumination, we see an emulsion of black dots in the plasm, in the centre of which is the nucleus; the converse is observed in the cell when examined microscopically; for it seems to consist of a plasm in which are numbers of highly refractile granules of similar shape and size, with a dark-looking non-refractile nucleus, which contains none of these granules. When the living cells are stained with vital blue the granules take the blue stain. If the cells so stained are kept in cerebro-spinal fluid in an atmosphere of N the blue colour fades to a green. This affords evidence that the granules form an oxygen surface like spongy platinum. By the catalytic action of the P and Fe of the nucleus the molecular oxygen on the surface of the granules is continually being converted into atomic oxygen, and this process is fundamental to the life and functional activity of the neuron. Now it is conceivable that a violent commotion, even without contusion sufficient to cause minute hæmorrhages into the nervous substance, may have a ofound effect upon these delicate colloidal structures l cause a dislocation of static equilibrium. The force of the explosion may be so great as to be conveyed through the enclosing structures of the brain, and in spite of the special protective water-cushion mechanism of the cerebro-spinal fluid, cause a "shock" to the vital centres of the medulla, and sooner or later a fatal termination; the rupture of small vessels may not be sufficient of themselves to account for death, but are merely an expression of the force of the explosion.

Nissl Granules and Neural Energy in Relation to Shock.

Do we possess methods by which we can ascertain the existence of exhaustion of the neural energy of the ganglion cells and biochemical changes upon which can be established a neuropathological theory of "shock." Now, although the Nissl bodies are artefacts, yet the amount of this basic chromophil substance may be regarded as an index of the amount of stored energy substance; and to continue the argument we must assume that stimuli arriving at the cell excite the katalytic action of the nucleus and the stored latent energy substance is thereby transformed into active energy in the form of stimuli, which are transmitted directly or indirectly to muscles and glands through systems of neurons. Now it is quite obvious that excessive stimulation, when associated with multifarious depressing conditions, may lead to exhaustion by over-stimulation of this latent store of neuro-potential; and particularly is this likely to occur if there is a fall of blood pressure accompanied by other contributory factors, especially pain and loss of sleep, during which neural energy is stored. Crile's experiments show that an exhaustion of the kinetoplasm may occur from absence of sleep.

Crile's Theory of the Inter-relation of the Brain, the Thyroid, and the Adrenal Glands in Relation to Shock.

Crile maintains that there is an inter-relation of the brain, the thyroid, and the adrenal glands. He puts forward the theory that "through the special senses and common sensibility environmental stimuli reach the brain and cause it to liberate energy, which directly or indirectly activates muscles and glands, among others the thyroid and adrenals." The thyro-iodin is essential for the storage of neural energy. The clinical symptoms of myxœdema show this, and I have found in seven cases of myxœdema a great diminution of this basophil-staining substance of the neurons, especially affecting the autonomic cells of the medulla.

The work of Cannon and Elliot has shown that in anger and fear there is an increased quantity of adrenalin discharged into the circulation. The instinctive protective reaction in a struggle for life in man is either fight or flight, both of which require an increased production of energy in the whole neuro-muscular mechanism. The store of adrenalin in the suprarenal gland is a defensive mechanism for emergencies connected with the instinct of self-preservation. Not only does the substance raise the blood pressure; it stimulates oxidation processes, mobilises the glycogen in the liver as sugar, and increases the coagulability of the blood; and it also excites the discharge of thyro-iodin into the circulation. This automatic pouring out of adrenalin and thyro-iodin is brought about by an excitation of the autonomic centres in the medulla conveyed to the suprarenal glands by the splanchnic nerves. In persistent paralytic fear or persistent psychic shock there is a continued emotional refractory reflex condition of these medullary autonomic centres causing establishment of a vicious circle connected with the normal storage and discharge of neural energy. This condition is much the more likely to occur in trench warfare than in a war of action; for the soldier exhausted by prolonged stress of enforced inactivity, unable to fight or run away, the two instinctive protective reactions to threatened dangers, has to adopt the paralytic crouching attitude of concealment.

Having thus dealt briefly with the psychic mechanism of emotional shock I will pass on to a description of the morbid changes found in "commotional shock"; but it must be obvious that a man whose neural energy has been exhausted by stress and strain and has become neurasthenic is more likely to suffer severely and die from shock caused by the explosion of a large shell near him than a man whose neural energy is not in a state of exhaustion. The following case illustrates this point:—

Case of Commotional Shock and the Microscopic Findings in the Brain.

A soldier developed nervousness, owing to the severe stress of fighting on the Somme, which he never lost, but was able to control for six months. Later he was in an area which was subjected to an intense bombardment, during which, as far as can be ascertained, no gas-shells were used; this lasted about four hours. Although he remarked to another man "he could not stand it much longer," he did not give way until the following day, 12 hours later, when perhaps six shells came over. He was *not buried and not gassed*. One burst just behind his dug-out—viz., 10 feet away—in the morning, but many must have been as near the previous day. Early symptoms were general depression and tremors. The later symptoms were coarse tremors of the limbs, crying, *inability to walk or do anything*. He could not answer questions and his pupils were dilated. The condition of the pulse is not noted. The M.O. who made this report states that he was very busy with wounded at the time, and unfortunately did not make a detailed examination. He was admitted to F.A. in the evening in a state of acute mania, shouting "Keep them back." He was given two hypodermics of morphia and chloroform and slept all night. Next morning he woke up apparently well and suddenly died. It cannot be said that the clinical notes are very satisfactory, and from the correspondence it appears that there was some difficulty in obtaining them. The report of the P.M. examination by Captain Adrian Stokes is completely satisfactory. I will do no more than give his conclusion. "There was no gross lesion of the viscera, which would have been a cause of death, but though I have never seen a case of 'shell shock' I consider the condition of the brain is consistent with that diagnosis." The notes state there were no external marks of violence on the body other than some small scratches on the chest wall. The lungs were œdematous, and in the substance of the lower lobe of the left lung there was a hæmorrhage.

Head.—There was a slight bruise on the scalp in the frontal region. The brain was extremely congested, and on each side of every vessel there was an ecchymosis. There were a number of minute punctiform hæmorrhages at the termination of the smallest vessels on the surface of the brain. The whole brain was soft, but not markedly œdematous. The cerebro-spinal fluid appeared to be tinged with blood. There was no large hæmorrhage found and no small intracerebral petechiæ.

It may be remarked that hæmorrhage into the lung has been found in animals exposed to the force of detonated high explosives and a similar condition of the brain.

The main interest of this case is that there was no complication of gas poisoning; in the other two cases this cannot be excluded, and probably existed for the punctiform hæmorrhages found in the corpus callosum, and white matter is found in CO and other forms of gas poisoning due to thrombosed vessels. In the white matter of the corpus callosum, the internal capsule, the basal ganglia, the pons and medulla there are seen congested veins and hæmorrhage into the sheaths of the vessels; and in the lower part of the medulla oblongata a vessel has ruptured, not only into the sheath of the vessel but into the adjacent nervous tissue. Inasmuch as in this case death in all probability resulted from heart failure, it may be associated with the changes observed in the cells of the vagus nucleus. The macroscopic and microscopic appearances of the brain are consistent with fall of blood pressure and cerebral anæmia.

CEREBRAL ANÆMIA AND SHOCK.

I have found that certain similar conditions indicative of cerebral anæmia exist in the brains of all cases of fatal shock, whether primary, due to shell concussion, or secondary shock following cases of (1) extensive burn, (2) severe gunshot wounds with fracture of bones and much laceration of tissues, and (3) contusion of heart and slight gunshot wounds. In most instances there was a wet condition of the brain; in a few cases the superficial veins were noted as being congested at the *post mortem*. I have observed similar conditions in the brains of animals after ligation of all four vessels. They indicate a deficiency of blood in the brain, its place being taken by cerebro-spinal fluid.

MICROSCOPIC EXAMINATION OF BRAIN IN SURGICAL SHOCK.

Microscopic examination revealed in all these cases of shock (1) many empty collapsed vessels in the substance of the brain, with dilatation of the periadventitial spaces and perineuronal spaces, both of which are filled with cerebro-spinal fluid; (2) a variable degree of chromatolysis of the brain cells, most marked and obvious in the autonomic nuclei of the medulla oblongata and less marked in the bulbo-spinal motor nuclei—e.g., the hypoglossal and cervical spinal motor cells; (3) the smaller pyramidal cells of the cortex are, as a rule, more affected than the large pyramidal and Betz cells; (4) the cells of Purkinje have shown definite chromatolysis and a tendency to take the eosin-acid staining dye in place of the blue basic dye. This confirms the observations of Crile, who noted this change of staining reaction in all forms of shock, whether in human beings or as a result of experimental conditions in animals.

Why does this occur with such constancy and intensity in this organ of uniform structure? There are many biological and physiological facts in support of the view that one, and perhaps the most important, function of the cerebellum is that of a large store of neural energy for reinforcing muscular action. The acidophil reaction which Crile found that these cells manifested; he used as one argument in favour of "acidosis" in the production of shock. In the very remarkable and extensive series of researches which have been carried out under his direction, attention has been directed only to the cerebellum. Other cells of the central nervous system do not show this acidophil reaction. But that "acidosis" is an essential factor cannot be claimed for intravenous injection of alkaline. Locke or Ringer's fluid does not prevent a fatal termination in cases of shock.

Fat Embolism in Surgical Shock.

Porter examined the brains of a number of cases of surgical shock caused by extensive gunshot wounds and found fat embolism. He came to the conclusion that this might be the cause. I have found fat embolism in three cases of gunshot wound with compound comminuted fractures of large bones and much damage and laceration of the soft tissues, but I do not think it was sufficient to cause a fatal termination, although it may have been a contributory factor, seeing that vessels in the medulla contained droplets of fat.

Absorption of Histamines in Surgical Shock.

A more important cause of secondary wound shock is the absorption of histamine or toxic substances from the damaged muscles. The arguments advanced in favour of the absorption of toxins derived from damaged muscles are: (1) A number of these men suffering from pure muscle injury have died of shock. It has been established that microbic infection is not an important factor in these cases. (2) Great improvement may follow rapid amputation of a lacerated limb. (3) Bayliss has shown experimentally that violent damage of the muscles of an animal while under anæsthesia causes shock; but Crile would argue that when you damage a tissue, although that animal may not show any signs of feeling, it is nevertheless receiving nociceptor stimuli, and it is quite conceivable that these nociceptor stimuli reaching the great central station for pain, the optic thalamus, are unconsciously reflected down to the cardiac and respiratory medullary centres. Morphia, carefully administered—and it may be remarked that it is contra-indicated if there is cyanosis—will relieve pain and excitation of the nerve centres and help to prevent shock in severe wounds.

Experiments of Dale on Histamine Shock.

There is experimental evidence that absorption of toxins derived from damaged tissues play an important part in the production of shock; for Dale has shown that injection of histamines produces shock. In one case, after slow infusion occupying an hour, death took place from failure of the vital centres. During that time the cells had used up a certain amount of the basophil staining substance shown by the comparison of the appearance of the cells of the medulla and the large flask-shaped cells of the cerebellum with similar cells in the brain of an animal which died three minutes after infusion at once of the same amount of histamine. In this case of sudden death there was no time for the cells to use their stored energy substance; consequently they present a normal staining appearance.

The former experiment would represent what actually takes place in wound shock—viz., a slow poisoning of the vital centres. It may be presumed that in the former there was a slow and progressive fall of the blood pressure; in the latter there was a gradual fall. Four other brains are being investigated.

Vascular Theory of Shock: Exæmia of Cannon.

I have not said anything yet about the vascular theory; it was formerly held that in "shock" the blood pressure fell, owing to its accumulation in the capillaries and veins of the abdominal organs. But it has been found that this is not the case. There is, however, a concentration of the blood and stasis in the capillaries of the body generally, a condition which Cannon calls "exæmia." The plasma exudes through the capillary walls into the tissues; and in proof of this concentration is the fact that the hæmoglobin index is increased, likewise the blood cells count.

TREATMENT OF SHOCK.

Intravenous injection of salines proved useless; in some cases transfusion of citrated blood and gum saline solution, which was introduced on the assumption that it could not escape from the vessels, have raised the blood pressure and led to recovery; in others, as in the four cases of which I have investigated the brains, these measures were unavailing. Crile recommends introduction of fluids by natural methods—e.g., Murphy's drip enema of 5 per cent. glucose and 5 per cent. soda bicarbonate solution. Stimulants seem to be useless, also injection of adrenalin and strychnine.

I have already pointed out that all causes of exhaustion of vital energy, whether psychical or physical, predispose to primary and secondary shock. In the case of the wounded in battle, thirst, exposure to cold and wet, delayed evacuation, rough and prolonged transport to hospital, and suffering with acute physical and mental agony conspire together to sap the vital energy, and when in consequence of circulatory failure and toxæmia the vital centres of the medulla become refractory and fail to discharge impulses the blood pressure falls progressively, and eventually in spite of all remedial measures the circulation and respiration cease.

In secondary wound and burn shock I did not find hæmorrhages; I conclude, therefore, that in cases of true "shell shock" this condition is due to physical effects produced by the forces generated by the explosion, but in some cases to the poisonous effects of gases absorbed while the man is lying unconscious.

In resuscitation from surgical shock practical experience shows that the treatment of the following phenomena have yielded satisfactory results—viz., (*a*) the fall of blood pressure; (*b*) the fall of the body temperature; (*c*) the lessening of the volume of the blood. Experience shows that cases of hæmorrhage combined with little shock yield the best results.

In conclusion, I desire to say that a full report of the neurological changes will be published shortly by myself and Dr. Uno, of Tokio, who is at present engaged in making an investigation of the microscopic changes in my laboratory under my direction.

Bibliography.—Reports of the Special Investigation Committee on Surgical Shock and Allied Conditions, Medical Research Council. National Health Insurance, Special Report Series, No. 25, No. 25. Surgical Shock, Crile and Lower, W. B. Saunders and Co.

Lieutenant-Colonels Walter Lidwell Harnett, I.M.S., and Francis Kenneth Kerr, R.A.M.C., and Dr. John Sinclair have been appointed Esquires of the Order of the Hospital of St. John of Jerusalem in England.

AN EXTENDED CURFEW IN DUBLIN.—For some months past, writes our Dublin correspondent, the curfew hours in Dublin have been from 10 P.M. to 5 A.M. Unfortunately, a number of attacks on parties of military or police occurred recently in the streets between dusk and curfew, and after giving warning that if such attacks did not cease curfew hours would be extended, last week the military authorities ordered that in future curfew would begin at 9 P.M. instead of 10 P.M. As heretofore medical practitioners, clergymen, and nurses will be granted permits to be abroad on urgent professional business. The earlier hour of curfew will put great difficulties in the way of the various medical societies whose meetings have always hitherto been held in the evening. No doubt an attempt will be made to substitute afternoon meetings.

FURTHER NOTES* ON THE INTRAVENOUS INJECTION OF ANTIMONY TARTRATE.

LEUCODERMA AND SKIN COMPLICATIONS; ADMINISTRATION OF LARGE DOSES.

BY J. B. CHRISTOPHERSON, C.B.E., M.D. CAMB., F.R.C.P. LOND., F.R.C.S. ENG.,

TROPICAL DISEASES CLINIC, MINISTRY OF PENSIONS; LATE DIRECTOR OF THE CIVIL HOSPITALS OF KHARTOUM AND OMDURMAN.

THE temperature chart which I am publishing with this communication is that of a Sudanese boy, aged 18, a student at the Gordon College, Khartoum, during the course of treatment by the intravenous injections of antimony (pot.) tartrate for kala-azar. He was admitted into the Khartoum Civil Hospital on March 9th, 1918, and was given 87½ gr. of antimony (pot.) tartrate in 86 days by intravenous injections, and discharged on August 18th, cured so far as we could say. His was a well-marked case of kala-azar, with considerable enlargement of liver and spleen, and an intermittent temperature. He had noticed his illness for some months. Leishman-Donovan bodies found in splenic punctures on at least three occasions; no unfavourable complications such as ulceration of mouth, diarrhœa, œdema of legs, &c. In August, 1920, two years after the course, he was quite well, and subsequently he was accepted for permanent Government service.

In publishing this case I do not wish to advocate the habitual administration of large doses of antimony tartrate even in diseases for which it is appropriate; antimony and its derivatives are powerful and potentially dangerous drugs, and in all cases the minimum dose necessary is the dose to be given. My object is to emphasise the fact that a very considerable amount of antimony tartrate may be injected if necessary into the veins without ill-effect, and to comment on certain incidents and complications which occur during the course of the administration of antimony tartrate for kala-azar, and for other diseases within my experience.

The temperatures in the ordinary native wards of the Khartoum Civil Hospital are taken by the native attendants, more or less under the supervision of the resident doctors, and are charted twice daily. The chart published with this article, representing four months, corresponds to the ordinary kala-azar chart made under these circumstances, recorded approximately at 7 A.M. and 7 P.M. It does not show the characteristic kala-azar deviations of temperature during the 24 hours of the day, as it would had it been registered every two hours. The rise in temperature till noon, followed by a drop, and a rise again at 4 P.M., forming a notch between 12 and 4 P.M., would then have been apparent. (A similar notch occurs at the same period during the night,[1] making a notch in the chart during each period of 12 hours.)

The chart indicates: (1) That kala-azar is *curable* by antimony tartrate administered intravenously; this fact is now too well known to need comment. (2) That a large quantity[2] of the drug is sometimes necessary (87½ gr. in 86 days in this case) to effect a cure, and may be given with impunity, provided it is administered with care. (3) That 3 gr. of antimony tartrate[3] may be injected every other day with beneficial results for 16 times in 33 days, totalling 60 gr. in 48 days, doses gradually increasing from 1 gr. to 3 gr. (see chart, May 26th to July 11th). (4) That this may be done soon after the preliminary but insufficient course

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* Previous references to the writer's work on the subject appeared in THE LANCET, 1919, ii., 299, and 1920, ii., 528 and 1200.

[1] Colonel C. Donovan, I.M.S., pointed this out to me and gave me a chart to show it.

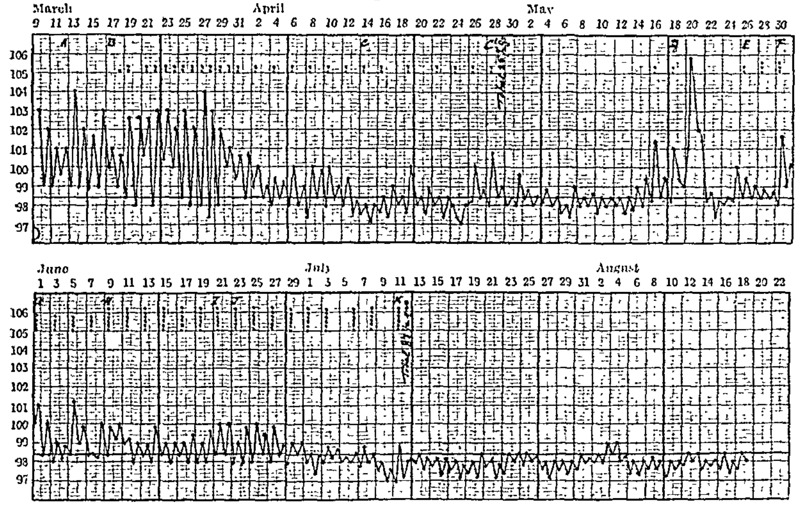
[2] A patient should be examined before commencing the course of injections in order to ascertain the existence or otherwise of contra-indications; stone, fistula, and certain renal complications often associated with bilharzia do not contra-indicate, whereas organic diseases of heart and kidney do contra-indicate injections for any reason. In far advanced cases of kala-azar it had best be withheld. My advice is, having ascertained that contra-indications are not present, inject with confidence.

[3] I have sometimes injected 4 gr. ant. pot. tart. at one time in cases of bilharzia.

(25·5 gr. in 41 days has been administered, during the early period of which 1 gr. antimony tartrate was given every day, afterwards every other day (see chart, March 17th to April 28th).

So much for the cumulative action of antimony. Of the more usual incidents attending the administration of antimony tartrate intravenously, the irritating cough at the time of injection—so constant when the potassium salt is used, but less frequent with sod. ant. tartrate—the metallic taste in the mouth and throat, the salivation, colic[4] and occasional diarrhœa, the nausea, retching, vomiting, the passage of a large quantity of urine two hours after injection, the occasional *faintness*[5] and collapse with cold clammy perspiration—of all these incidents only the cough, the metallic taste, and a little tightness or discomfort in the chest are frequent; in my experience they may indeed be considered almost as symptoms of the injection. When the others occur they indicate a need for caution. Cough, retching, *a little colic, and diarrhœa show that the maximum* dose for the time being has been reached. Jaundice and more albumin *in the urine than can be accounted* for by the disease under treatment indicate, in my opinion, *danger; when they occur permanent* organic damage to liver and kidneys will result if the injections *are continued. Both* liver and kidneys deal with the injected antimony tartrate, and their epithelium is liable to damage in the effort of these organs to eliminate it. To watch the effect of the antimony on the kidneys the urine should be examined after each injection. An attack of jaundice sometimes complicates the injections, indicating interference with the functions of the liver; but a much commoner complication indicating interference with the metabolism of the liver-cells by the antimony is shown by pains in the shoulders, and "lumbago" or muscular pains in arms or legs, sometimes so aggravated that the patient cannot turn over in bed. These pains appear to come on 4 or 6 hours after the injection, after a total of about 10 gr. have been given. At the same time the urine is loaded with crystals. In such a case it may be that certain products of digestion are not being elaborated as they normally should be by the liver, and the result is pain in various parts of the body of a rheumatic or arthritic nature, owing to the presence in the circulation *of "toxins" produced by the liver.* These pains usually pass off, but if they are severe it may be *advisable to suspend the injections or reduce the dose.*[6] They indicate interference by the antimony with the *normal metabolism of the liver.*

Kala-azar: Temperature and Treatment.



Each dot in temperature column represents 0·5 gr. ant. pot. tartrate. Total on April 29th, 25·5 gr.; on June 21st, 60·5 gr.; on July 11th, 87·5 gr. A, Blood negative for malaria. B, Leishman-Donovan bodies found; splenic puncture. C, Spleen measures 6½ inches below costal arch. C′, Total 25·5 gr. injected. D, Injections recommenced and suspended for a few days owing to reaction. E, Injections recommenced; *spleen 3½ inches below costal arch; 10 gr. quinine daily commenced. F, Splenic puncture negative; leucoderma* patches appear. G, 2 gr. P.A.T. per dose. H, 3 gr. P.A.T. per dose. I, Total 62 gr. J, Weight 8 st. 7 lb. K, Injections suspended; spleen normal to percussion; weight 8 st. 8½ lb.; total P.A.T. injected 87·5 gr.

Leucoderma.

This Arab boy had one very notable and, I believe, rare complication during the course of injections—namely, disturbance in the pigment distribution of skin and mucous membrane; he became piebald. Leucoderma began to appear after a total of 30 gr. were administered. (See Fig. 1.) Though occasionally one sees rashes, erythemata generally, I had not before seen this profound pigmentary disturbance of the skin during injections of antimony tartrate. The leucoderma areas are well shown in the photograph.

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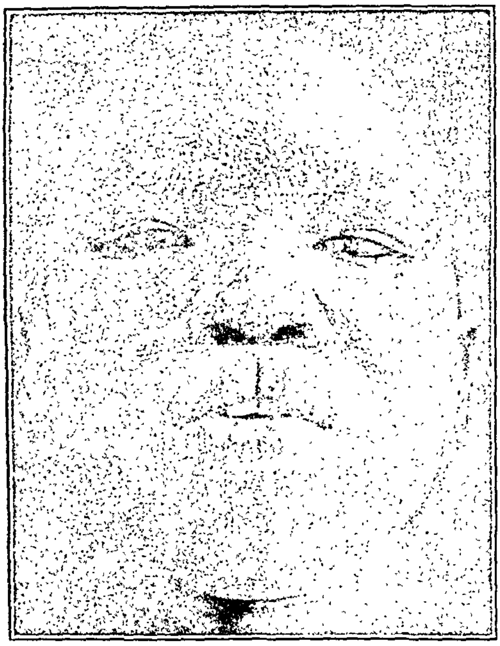
[4] An Englishman of 40, who had contracted bilharzia five years previously, complained of a pain in the abdomen half an hour after each injection when a dose of 2 gr. was reached; this was always *followed by a diarrhœa motion,* after which he felt quite well. Tolerance: In the course of antimony tartrate injections it sometimes happens, as in this case, that the patient retches, or, it may be, vomits *immediately after the injection even of 0·5 gr. If care be* taken not to increase the dose too rapidly and perseverance be exercised a tolerance is established. The patient under consideration retched on the table after first dose (½ gr.). Next day when given 1 gr. he vomited once. A day was omitted; on the next day (4th) he vomited again (once) after 1 gr. The drug was continued daily (1 gr.), and the patient established a tolerance at the eighth injection after 7½ gr. had been injected.

[5] *In certain cases due to idiosyncrasy or perhaps to faulty* arrangements, such as an indigestible meal previous to the injection, a patient will become dusky and drawn in the face, with contracted pupils and a slow *feeble pulse; for such a patient the* succeeding dose should be reduced and the arrangements adjusted.

[6] The pains are experienced when the full dose (2½ gr.) is being given; it is sometimes sufficient to reduce the dose by ½ gr. Another explanation of the "rheumatic" pains is that they occur when the drug reaches a certain concentration in the blood; this is *not so, however, because if* the amount of antimony is diminished by a smaller individual dose they do not recur, even although the concentration is greater after the reduced dose.

They appeared all over the body, but chiefly on the face and head (even on the palms of the hands and soles of the feet). On the face and body there were small, irregular, sharply outlined patches of absolutely white skin on the chocolate ground.

FIG. 1.



A. F., aged 18. Note white (leucoderma) patches on face, which extended all over the body; and lichen condition of skin.

Lichen planus.—A goose-skin or "lichen planus" condition (see Fig. 2) occurred somewhat earlier than the leucoderma and was distributed all over the body. I have noticed a "lichen planus" type of rash in other cases during injections of antimony tartrate, the shiny, velvety, smooth-all-over black man's skin becoming rough, dull, bumpy, and granular. Both these cuticular disturbances disappeared spontaneously, the "goose-skin" first, a month or two after the injections ceased; but, much to the boy's disgust, the skin of his lips remained a rosy pink instead of a dull red. These skin phenomena indicate that the skin is concerned in the elimination of the antimony from the patient; acting on this hypothesis, I have in two cases tried intravenous injections of antimony tartrate for chronic skin disease, psoriasis, with, I think, some success.

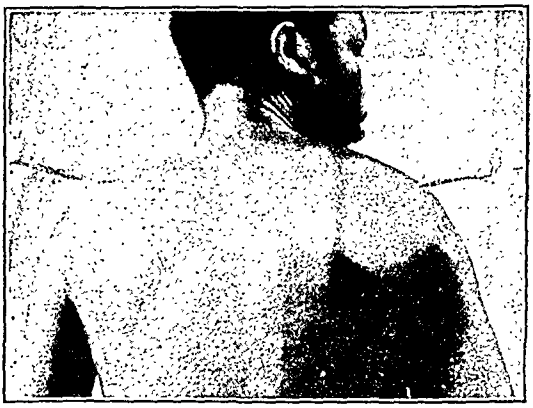
The doses of antimony tartrate recommended in bilharzia disease (20–30 gr.) have been described as "perilously high." They may be so; but they cure the patient and do him no harm.[7] The risks of antimony poisoning are known, and one naturally works with care. For the cure of internal leishmaniasis even larger quantities of antimony tartrate are required than for bilharziasis (it may be 87 gr., as in this case). Kala-azar is a formidable disease, and larger doses are justifiable. "Give as much antimony as the patient will stand in such cases, carefully checking the results of each dose; but give as little as is necessary," appears to be the sound rule for guidance. In India colloidal antimony has been recommended in order to reduce the amount of antimony tartrate necessary for kala-azar.

In the case of oriental sore (Delhi boil) as little as 5–8 gr. ant. tartrate intravenously injected is often sufficient to effect a permanent cure. To give as little as is necessary, and to stop dosage directly the object is attained, would seem to be the corollaries of the treatment. Trypanosomiasis appears to resist antimony to a greater degree than kala-azar. For none of these diseases does there appear to be a fixed (total) curative dose any more than there is a fixed single dose. Intravenous medication is empirical; the capacity of the vascular system of the individual can be calculated, but different organisms vary in their resisting power and different strains of the same organism vary in their power of resistance to A.T.

Doses also vary[8] *with the individual patient—one* person tolerates a larger dose of A.T. than another—but, speaking generally, it is a good rule to work on carefully until the objective is gained (or until danger threatens), in all diseases in which antimony appears to have a specific action.

The intravenous injection of antimony tartrate raises questions of considerable interest for the clinician. How is it that so large quantities of what we regard as a very potent and toxic drug may thus be introduced into the human body when the maximum dose by mouth is so small? The official (B.P.) dose of ant. pot. tartrate is $\frac{1}{24}-\frac{1}{8}$ gr., but one may with beneficial effect inject *into the veins at one dose 3 gr., and repeat it every* other day for 16 injections. (This is not a question of establishing a tolerance for the drug because under no circumstances will a patient tolerate such doses by mouth.) Another interesting fact is that a small dose only can be given by the mouth and practically none hypodermically, on account of its irritating and necrosing action; whereas as much as 3 gr. (in 10 c.cm. or less water) can be given without any local injury, and with no harmful effect on the general economy, provided it is injected into the lumen of the vein. Regarded as a tissue, the blood is capable of resisting a very considerable amount of rough treatment.

FIG. 2.



Showing lichen condition of skin of body during injection of pot. ant. tartrate. Also incidentally showing white leucoderma patches on face and body.

The intravenous injection of antimony tartrate also raises interesting biological questions. I have pointed out, when writing on the effect of antimony tartrate on bilharziasis, that the antimony circulating in the blood, killing the adult worms, also penetrates the shell envelope and kills the myracidium within. It would seem probable that it acts in the same way towards the Leishman-Donovan body whose envelope is also *permeable;* moisture disorganises this body—a dry syringe is necessary when splenic punctures are made for diagnosis of kala-azar—and we also know by experience how difficult it is to find the Leishman-Donovan bodies in the splenic or liver smears post mortem and in the sections of dead tissues, so sensitive are they to *the environment that directly death takes place they* disappear—i.e., break up, and cannot be demonstrated.[9]

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[7] It has been stated that a total of 10 gr., or even less, is a sufficient quantity of ant. tartrate for the cure of bilharzia. A British army officer, who contracted bilharzia in Egypt two years previous to the course of injections, had 22½ gr. (total); eight months later slight vesical irritation recurred; a few live ova reappeared in the urine, and I gave him another course of 30 gr. On the other hand, an English boy of 8 years, from Nyassaland, was cured after a total of 9 gr. The killing dose appears to be a variable one; some strains bilharzia worms are more resisting than others.

[8] Young people take antimony tartrate very well. Older people with organs healthy except for the disease for which it is given—bilharzia: leishmaniasis—as a rule, take it well. In patients over 40 it should be given with more caution. Certain people appear to be unable to tolerate a full dose. It is always advisable to commence by a small dose of ½ gr., increasing it cautiously; when the maximum single dose has been found it may be injected every other day—in England it is usually considered to be 2½ gr. Some Soudanese I found tolerated 3 or even 4 gr. well, others showed signs of an over-dose when 1 gr. was reached. A patient in the latter stages of kala-azar will obviously not tolerate as large doses of a cardiac depressant, such as antimony tartrate, as will the ordinary bilharzia patient. The fact is that young people especially tolerate the injections well, and people with organic disease (especially cardiac), badly; there is a certain number of apparently healthy persons who are intolerant.

We can understand these facts if there be free and easy communication through the limiting membrane—the envelope of the L.D. body. The permeability of the L.D. body envelope or membrane is further indicated by the kala-azar temperature chart and also by the profound constitutional disturbances caused by the disease—the body inside the envelope manufacturing waste products, toxic to the human organism, which escape through the shell and are possibly replaced by pabulum passing in from without. Practical advantage is taken of the permeability of enclosing membranes of organisms when staining for the microscope, and I wish here to emphasise its clinical importance. Antimony tartrate kills the myracidium lying in the bilharzia ovum; after a few grains have been injected for bilharziasis the ova are very difficult to find in the urine, having apparently been arrested in their progress to the lumen of the bladder. This arrest is not easily explained if the ova are merely foreign bodies embedded in the tissues acting simply as such; if they were, they would behave in the same way *before and after injection. Normally they are* apparently vital bodies, having automatic action; it seems that only when the motor machinery inside the myracidium is killed by the antimony tartrate does it become a foreign body simply.

To return to the case of kala-azar under discussion. The enlarged spleen and liver *did not satisfactorily* diminish under A.T. injections alone; 10 gr. of quinine were therefore given every morning from 25/5/18 to 11/7/18 (47 days).[10] Quinine was apparently necessary to this end; 10 gr. of quinine daily were given by mouth for 47 days, after which the spleen could not be felt, and the liver was not enlarged to percussion and palpation. Administration of quinine, together with injections of A.T., is thus advisable in kala-azar, when the spleen and liver do not satisfactorily diminish in size.

In bilharzia, kala-azar, and I believe also in trypanosomiasis, the initial effect of injecting antimony tartrate is a marked increase in constitutional disturbance, shown in bilharzia by increase of blood in the urine and aggravation of the local symptoms, in kala-azar by the rise in temperature often to 106° or 107°, and in sleeping sickness by aggravation of symptoms. The first effect of intravenous injection of antimony tartrate is, therefore, to provoke the disease by liberation of toxins into the circulation. Later, as the blood stream becomes more laden with antimony, the parasites are killed. This point of view is supported[11] by the initial increase of eosinophilia in bilharziasis during the course of injec*tions; the differential* count of the white blood cells afterwards becomes normal. (The large mononuclear cells also increase when antimony tartrate is injected in bilharzia.)

Summary.

To sum up. Experience seems to show that a few grains of antimony tartrate (5–8 gr.) by intravenous injections may be sufficient to cure leishmaniasis of the skin,[12] *more (20–30 gr.) are necessary, as a rule, to bring* about a cure in bilharziasis, and still more (60 gr., perhaps, and more) are necessary for leishmaniasis or kala-azar, and possibly still more (probably in repeated courses) for the cure of trypanosomiasis.

Antimony tartrate (pot. or sod.) when given intravenously in appropriate dilution and administered with care may be given in larger total doses than is generally supposed.

The blood, considered as a tissue, is probably capable of withstanding more physical and chemical ill-usage than any other organ; *but owing to its structure and* distribution it is obviously incapable of resisting micro-organic invasion, and is the logical route for direct attack upon micro-organic and other diseases, particularly those of the blood stream itself.

The cure of parasitic diseases, such as bilharzia, kala-azar, *trypanosomiasis*, filariasis, dracunculus medinensis, by a drug given intravenously (the drug itself if it acts directly, or a derivative if it acts indirectly) depends on: (1) the permeability of the enclosing membrane (or skin) of the parasite; (2) the penetrating power of the drug which in turn depends on its physical condition or chemical structure; (3) the toxicity of the drug to the parasite.

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[9] Although L.D. bodies may be found *plentifully in spleen and* liver smears, they are hard to find in the peripheral blood of a patient, in spite of the fact that the splenic blood-vessels communicate freely with the systemic vessels. Possibly they disintegrate when they find themselves in the peripheral circulation.

[10] The boy came from Cinga on the Blue Nile; possibly he had chronic malaria, although no malaria parasites were found in the blood.

[11] It is also supported by the temperature curve in *kala-azar* during the course of injections. Follow the chart published.

[12] Provided that the sores are not secondarily infected with a staphylococcal or streptococcal infection; otherwise they will not heal so soon, although the leishmanic infection will clear up.

THE OUT-PATIENT TREATMENT OF BILHARZIASIS,

WITH AN ANALYSIS OF 1000 CASES.

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THE war-time discoveries of the Bilharzia Mission under R. T. Leiper, and of J. B. Christopherson, N. H. Fairley, and others concerning the early signs of infection, the life-history of the parasite, and a specific remedy against it, have rendered possible a *campaign against the ravages of the disease in Egypt.* Since bilharziasis affects no less than 80 per cent. of the agricultural population in this country, it is evident that preventive measures must depend largely for their success on the awakening of an intelligent knowledge of the disease among the peasantry. It is hoped that by systematic instruction in the schools and by exhibition of posters and kinematograph films public interest will be aroused to the possibility of avoiding worm diseases and other infections and to the necessity of early treatment for curable maladies.

As a preliminary to work on a wider scale, it appeared desirable to test the methods of treatment advocated for bilharziasis, with a view of learning their possibilities and limitations. Experience soon showed that in-patient treatment was impracticable for most patients. The pressure on hospital beds prevented the admission of any but severe and complicated cases, and the average Egyptian would not stay in hospital unless seriously incapacitated. To overcome this difficulty permission was obtained from the Department of Public Health to erect a tent annexe at Kasr-el-Aini Hospital for the out-patient treatment of bilharziasis and ankylostomiasis. The particular subjects for investigation were twofold: (1) to test the practical value of out-patient treatment of bilharziasis as regards the attendance of patients and the efficacy of routine treatment; (2) to find the best methods of specific treatment and the minimum dosage and attendance necessary for the average case.

The annexe was opened in December, 1919, and put under the immediate charge of successive clinical assistants. To these doctors I am deeply indebted for all the clinical work and for invaluable assistance in the examination of the microscopic specimens necessary for scientific control. The annexe consists of marquee tents, pitched inside the hospital square, and arranged in two sections, male and female. They are provided with stretchers (on trestles) and blankets, and latrine accommodation is attached. A central marquee serves for examination and treatment. Each patient receives a numbered attendance card, which corresponds to a page in the registers in which all particulars are entered. At each visit a specimen of urine (or stool if indicated) is obtained and its appearance noted, while at appropriate intervals the specimen is kept for microscopical study.

Analysis of Cases Treated.

Number of patients.—The annexe has been well patronised from the start, being supplied from the numbers of bilharzial patients presenting themselves in the out-patient departments. From 100 to 200 new patients are seen every month, as is shown in the following table :—

1919.		Feb.	94	June	92*	Sept.	231
Dec.	44	March	111	July	174	Oct.	162
1920.		April	136	August.	124†	Nov.	169
Jan.	66	May	139				

* Ramadan Fast. † Bairam Holiday.

These numbers are exclusive of 115 ankylostoma patients also treated at the annexe during the last nine months.

For analysis the first 1000 cases have been taken :—

Sex.—There were 897 male and 103 female cases.

Age.—Patients were of all ages, ranging from 2½ years to over 60. 118 were children not exceeding 10 years of age.

Types of infection.—The great majority of patients were suffering from urinary disease, as is shown below :—

Bladder infection	875*	Bladder and intestine	29
Intestinal	26	Urethra only	1
Total			931

* Of these 111 were complicated by septic cystitis, 4 by fistula, and 2 by filariasis.

In addition, one case of chyluria (filarial) was also treated.

Selection of cases.—Only patients with active infection are suitable for specific treatment. The passage of blood at the end of micturition, or of bloody mucus with defæcation, is the usual clinical sign, and the diagnosis must be made by finding living bilharzia ova on microscopical examination. So long as living ova are present, the existence of secondary bacterial infections of moderate degree is no bar to successful treatment. But patients with advanced disease often present the signs of septic cystitis, and frequently pyonephrosis, while no ova, or only a few dead ova, are found on thorough examination. In such cases antimony treatment is useless, and therefore prejudicial to the reputation of the drug.

Contra-indications.—The chief of these, other than that above mentioned, is severe cardiac, arterial, or renal disease. Even a fairly advanced degree of hepatic cirrhosis need not be a deterrent, but doubtful cases are unsuited to out-patient treatment, and, indeed, cannot attend properly. We have also avoided giving antimony injections during pregnancy. On these grounds 68 out of the 1000 cases were rejected as unsuitable. Two bilharzial patients were admitted to the wards on account of their bad general condition, and two of the women were advised to wait until the termination of their pregnancy. Twenty-eight patients were rejected on account of advanced bladder and kidney disease, with no evidence of active bilharzial infection. The remaining 36 patients were found to be suffering from other diseases and not from bilharziasis.

Subsequent attendance.—One-third of the patients ceased attending after one to three visits, being unwilling or unable to continue treatment. Several returned later and took a full course. These return cases are omitted in the following table, which shows the total amount given in the ordinary way :—

Less than 5 gr.	313 patients.	20-25 gr.	55 patients.
5-10 ,,	215 ,,	25-30 ,,	84 ,,
10-15 ,,	146 ,,	Over 30 ,,	19 ,,
15-20 ,,	92 ,,		

Four patients refused injections; four others were treated by injections of colloidal antimony only.

On the whole these figures are satisfactory. Many of the patients had little disease, and to that they were well inured, so that the duration and inconvenience of the necessary treatment deterred them from continuing their course. A large number of patients ceased their visits as soon as their symptoms were relieved, as usually occurs within a week or two of commencing treatment. On the other hand, most patients with septic cystitis as a complication were diligent in attendance, though little benefit could be procured. The remainder, a considerable proportion, persevered and took as many injections as were deemed necessary.

Method of injection.—For good and rapid work a full light, a handy assistant, and a sharp needle on a glass syringe are needed. The requisite quantity of a 6 per cent. solution of tartar emetic (1 gr. in 1 c.cm.) is drawn up into the sterile syringe followed by some c.cm. of sterile saline. The patient lies on an operating couch with his arm extended and supported on a small three-legged table, with a Δ-shaped top, whose base abuts against the couch. The skin in front of the patient's elbow is swabbed with alcoholic picric solution by the attendant, who then grasps the arm above, while the patient clenches his fist to distend the veins. As soon as the needle has been shown to lie truly in the lumen of the vein by the free entry of blood, the attendant relaxes his hold and the injection is made. The patient then holds up his arm to arrest any bleeding and goes out to rest in the adjoining tent. The injections are given in the middle of the morning when the stomach is fairly empty and the drug has least untoward effect. Special care is necessary in making the injection, since tartar emetic is a most irritating compound to the tissues and causes severe inflammation if introduced outside the vein.

Course of treatment.—To adults was given an initial dose of 1 gr., 1½ gr. the next time, and 2 gr. on each subsequent occasion. Not many out-patients could take a larger dose without suffering from persistent giddiness and often vomiting. Young women and youths generally took 1½ gr. as a full dose, and it was found that many children could tolerate this amount. The injections were given as a rule on alternate days. Many patients were somewhat irregular in attendance and received only two, or even one, injection per week. The duration of treatment was controlled by observing the effect on the ova.

Examination of ova.—The urine is allowed to stand in a specimen glass; its appearance and the nature of any deposit is noted. The lowest layer is then transferred to a centrifuge tube and washed by centrifuging and shaking with successive quantities of water. Since the ova are relatively heavy they are brought down by a few turns of the handle, while most of the blood and pus corpuscles are left suspended, and can be poured off with the supernatant fluid. The sediment is finally transferred by a pipette to a shallow glass cell affixed to a microscope slide. By filling the cell above its brim and dropping on a cover-glass air bubbles are avoided and evaporation retarded, if it is desired to postpone examination until living miracidia have hatched out. Half an hour in an incubator at 37°C. will hasten matters in cold weather.

Under regular treatment by tartar emetic the phenomena outlined by Christopherson[1] occur as follows :—

(*a*) By the end of the first week there is a noticeable diminution in the amount of blood and number of ova passed in the urine. In mild cases blood is no longer visible to the naked eye.

(*b*) About the ninth day the ova begin to hatch out more slowly; the miracidia are less active and die quickly.

(*c*) By the end of the second week a considerable proportion of the ova fail to hatch. The shells of these ova are distended as usual by imbibition of water, but the enclosed miracidia show little or no movement. Small immature ova are frequently seen whose contents appear brown and granular instead of a translucent clearness.

(*d*) During the third week the toxic effect of the drug becomes very evident. The few miracidia that hatch out are usually globular in shape, move very sluggishly, and soon die in distorted shapes. Most of the ova no longer swell in water, while the delicate and refractile structure of the contained miracidium becomes obscure and granular. Death of the embryo is followed by a deepening opacity; the contents of the shell become brownish, and ultimately black, by transmitted light. This change occurs first in the cells and granules around the embryo, and later in the degenerated miracidium itself.

(*e*) By the end of the third week or during the fourth all the ova are dead, most being black. These black ova are often passed in masses held together by mucus. As many as 200 to 300 may sometimes be found in a specimen of urine even a month or longer after the conclusion of treatment, but in most cases the ova become scanty and difficult to find.

Similar phenomena are found in the case of intestinal disease due to the *Bilharzia mansoni*, with its lateral-spine ova and slightly larger miracidia. It should be borne in mind that ova left in contact with fæces or alkaline urine perish quickly, and so often fail to hatch on the subsequent addition of water. Also, that rough handling will rupture the shells of ova whether dead or alive, so that the finding of an empty shell is no proof of a living embryo. A preliminary search of the specimen before the ova have time to hatch naturally will obviate this error.

Immediate results.—The effects of injections on the ova are shown on the charts in diagram form. The curve shows the percentage of dead ova present, not the total numbers, and the figures beneath record the dose in grains of each injection. Chart 1 illustrates a typical case. When injections are given at long intervals the effect is delayed, as is well seen in Chart 2. To secure a quick result it is important to raise the concentration of antimony in the circulation by giving frequent injections in the first week. Chart 3 records the results in three patients of identical weight, who received different amounts of the drug during this period. *In each case eight days* elapsed before any definite effect was observed, but the subsequent progress varied in rate of cure. Occasionally one can observe the effect of one or two doses only, which is characteristically transient (see *Chart 4*). Now chemical analysis of the urine of patients has shown that the excretion of antimony is maintained for some two or three weeks at a high level after the termination of a *full course of tartar* emetic.[1] This fact, coupled with the special influence of an early concentration of the drug on the ova, made it appear possible to obtain the curative effect of the remedy by quite a short course of treatment, thus taking advantage of the cumulative action of antimony. On trial this method was found to succeed, four or five injections (a total of 8 to 9 gr.) being sufficient to kill the ova if given in the first ten days or so, and their effect looked for at the expiry of the usual interval—about a fortnight later (see Chart 5).

Late results.—Further experience proved that this short course was unsatisfactory, since re-examination two or three months later showed the recurrence of living ova in patients who had not been exposed to reinfection. Few adult *patients appear to have been* permanently cured by a smaller dose than 18 gr., although the number of ova may be very greatly reduced when seen some months afterwards. The occasional *finding* of a living ovum after a full course of treatment may be explained by the survival of ova which *have possibly* been protected against the influence of the drug by lying enclosed within a giant cell, as is not infrequent. But the reappearance *of living ova* in increasing numbers can only mean the presence of living worms. Hence we may conclude that the primary effect of antimony in bilharziasis is the destruction of the *ciliated embryos* within their shells, and that the parent worms require a larger lethal dose. This result is more in keeping

In the following Charts the Curve shows the Percentage of Dead Ova present on Examination of the Urine (reading from the left). The figures beneath record the Dose in Grains of each Injection.

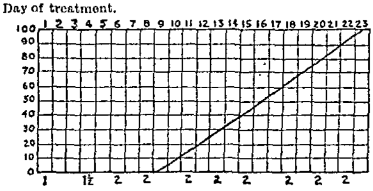


CHART 1.—Male, age 22, weight 10 st. Bilharzia of bladder 15 years, of intestine 1 year. Treated with tartar emetic (intravenous injections).

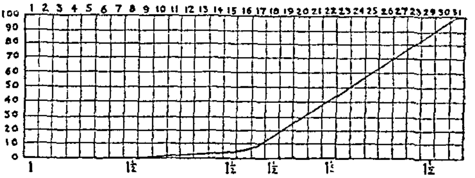


CHART 2.—Girl, age 11, weight 5 st. 1 lb. Bilharzia of bladder 1 year. Treated with tartar emetic (intravenous injections).

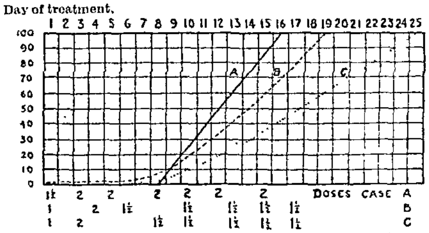


CHART 3.—To show the comparative progress in three patients with bilharzial disease of bladder. Ages 19 to 26, weight of each 9 st. 9 lb. Treated with tartar emetic (intravenous injections). In spite of the small total dose permanent cures were obtained.

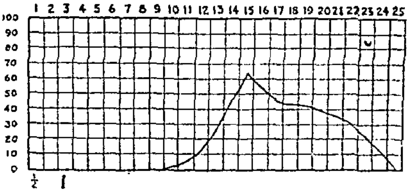


CHART 4.—Boy, age 7, weight, 2 st. 12 lb. Bilharzia of bladder 15 months. Treated with tartar emetic (two intravenous injections).

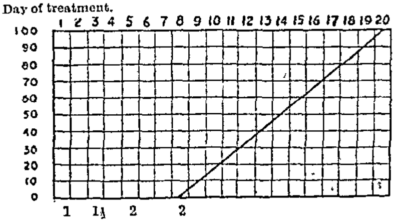


CHART 5.—Male, age 21, weight 9 st. 12 lb. Bilharzia of bladder 10 years. Treated with tartar emetic (intravenous injections).

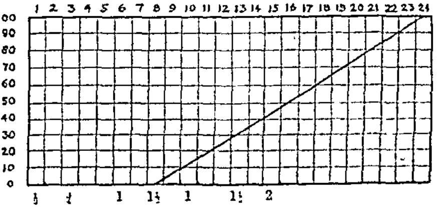


CHART 6.—Girl, age 8, weight 3 st. 13 lb. Bilharzia of bladder 5 months. Treated with emetine (intramuscular injections).

with the experience of Sir Leonard Rogers[2] (which we have confirmed), that in the *treatment of filariasis* a large amount of antimony is necessary to reduce permanently the numbers of microfilariæ in the circulation. The bilharzia worm can be found alive in the portal vein for many hours after the death of the patient from toxic diseases, and on experiment is found to resist quite considerable concentrations of antiseptics. Leiper and Christopherson inform me that they believe the bilharzial ovum is endowed with the power of digesting its way through the tissues. Hence the *reduction of the hæmaturia and number of ova passed* in the first week of treatment may be explained by a functional disability of the miracidia preceding their death, and not necessarily by a similar effect on the egg-laying worms.

Optimum dose.—For adults we may place the minimum effective dose at about 13 gr., but a larger amount is generally necessary. For considerable variations are observed in the amount of antimony needed to cause permanent disappearance of living ova. Thus two brothers, aged respectively 13 and 17, attended the annexe together and received the same number of injections. The elder received a total of 28½ gr., and six weeks later his urine was found to contain a very few dead ova. The younger received 19½ gr., but had a more severe infection, and six weeks after the course was terminated a specimen of urine contained seven living and two dead ova. A specimen before treatment contained some hundreds of living ova, so that treatment could not be considered a failure. Even a total of 25 to 30 gr. has not uniformly succeeded in permanently banishing living ova. It is probable that the effect of treatment depends to some extent on the condition of the worms and the ova present. An adult with disease contracted in childhood who has not been exposed to reinfection for years may need a smaller dose for his cure than would another patient recently infected with vigorous parasites. This theory may explain why 12 gr. can cure one case, while double that amount may be needed for another patient of similar size.

As the result of our experience with out-patients the following course is recommended for an adult:—

1st week:	Daily injections ...	1	1½	1¾	2	2	2	2 gr.
2nd "	Injections ...		2		2		2	"
3rd "	alternate days ...		2		2		2	"

The amount of each dose is regulated by the size, condition, and tolerance of the patient. Under this system the usual course for an adult totals 24 gr., and the omission of one or two doses owing to irregular attendance will hardly affect the result.

The urine is examined at the end of the course and again after a week, when a further course can be given in the unlikely event of ova surviving. The patient should report about three months later.

Complications.—Specific treatment is of great value before operations are undertaken for the closure of urinary fistulæ or excision of polypi, &c., complicating bilharziasis. Thus F. O. Lasbrey and R. B. Coleman[5] at the C.M.S. Hospital, and the members of our own surgical staff, find that post-operative healing is vastly accelerated in such cases once the causative infection has been removed. About 10 per cent. of our cases of urinary bilharziasis are complicated by a secondary septic cystitis. If the amount of pus present is quite moderate the cystitis generally disappears after the ova are killed, but a severe cystitis is hardly affected, though hæmorrhage usually ceases.

Treatment by other drugs.—The effect of other remedies has been tested and new preparations are on trial. Colloidal antimony is effective, but the ampoules only contain about 2 c.cm., a dose which is only successful in quite small children, adults requiring 5 to 10 c.cm. each injection. This preparation has the great advantage that it can be given by intramuscular injection. Emetine in large doses has been found effective by Diamantis[3] and A. Erian,[4] and we have confirmed their results. The remedy is best given intravenously, as a large dose is irritating to the tissues. The dose is from ½ to 3½ gr. for each injection, according [illegible]e weight and tolerance of the patient, and the course is similar to that for tartar emetic. Chart 6 illustrates *the effect on the ova produced by a course of emetine.* The high cost of emetine militates against its routine use for out-patients. But it is a most useful alternative to use under certain conditions, viz.: (*a*) for young children or others whose veins are too small or inconspicuous for intravenous injections; (*b*) for patients who exhibit an intolerance for tartar emetic or where an error in technique has resulted in abscess; (*c*) for cases of bilharzial dysentery complicated by amœbiasis.

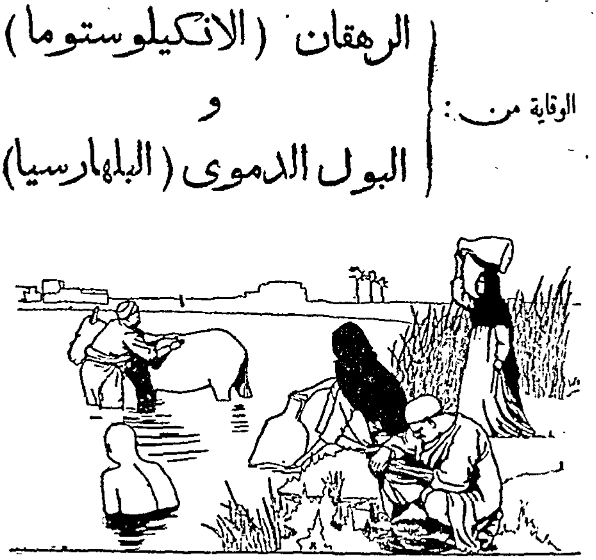
Ankylostoma Patients.

Cases without severe anæmia have been treated as out-patients in the annexe. The patient is instructed to come fasting in the morning but to bring some food with him to be taken after treatment. He is accommodated on a stretcher and is given 10 drops of oleum chenopodii on sugar at intervals of one and a half hours until three doses have been taken. One hour later he has a dose of castor oil. Before he leaves he has his food and is given a bottle of iron and arsenic mixture to take home. The treatment is repeated in three days and the stools re-examined after a fortnight.

For the detection of the ankylostoma ova in the fæces the flotation method has proved most convenient and satisfactory. A small portion of fæces is emulsified in a little water and poured through a coarse strainer into a small flask of conical shape, narrowing to the neck. (A small bottle with sloping shoulders and a wide mouth does equally well.) The flask is then filled to the brim with a saturated solution of common salt in water and left to stand for a few minutes. Portions of the surface film are then taken up by means of a wire loop dipped under the surface and transferred to a slide for microscopical examination. The ova are found concentrated in this surface film, and can be identified with the greatest ease.

Work in the Provinces.

The success of the special annexe at Kasr-el-Aini led the Department of Public Health to open similar establishments in connexion with three provincial hospitals in the Delta last summer. These annexes have proved very popular, and their usefulness has been enhanced by the local exhibition of posters, by public lectures, and by the distribution of leaflets. I am indebted to Colonel Garner, Under Secretary of State, Department of Public Health, for permission to reproduce the illustrated heading of one poster, which draws attention to the danger of infecting water.



An Egyptian poster heading designed to inculcate the danger of water-borne disease. The Arabic words above the picture signify, reading from right to left:—

The prevention of { Anæmia (Ankylostoma)
and
Hæmaturia (Bilharzia).

Conclusions.

1. The out-patient treatment of bilharziasis on a large scale is practicable and successful. 2. Due selection of cases and great care in giving the injections is necessary. 3. The primary effect of antimony is on the ova. 4. A full course of tartar emetic or alternative drug is required to secure a permanent cure in most patients. 5. Colloidal antimony and emetine are useful substitutes for tartar emetic when occasion demands. 6. Curative treatment must be combined with the widest measure of public instruction if the incidence of the disease is to be lessened.

References.—1. J. B. Christopherson and J. R. Newlove: Jour. Trop. Med. and Hygiene, July 15th, 1919. 2. Sir L. Rogers, Brit. Med. Jour., 1920, i., p. 596. 3. Diamantis: Journal d'Urologie, T. vii., No. 1. 4. A. Erian: Practitioner, November, 1919, p. 391. 5. Lasbrey and Coleman: Brit. Med. Jour. (in print).

MOSQUITO-NETS: THEIR USE IN THE PAST.

BY SIR PATRICK HEHIR, K.C.I.E., C.B., C.M.G., M.D., MAJOR-GENERAL, I.M.S. (RETIRED).

SOME months ago a very useful book on tropical medicine was reviewed in THE LANCET.[1] In tracing the history of malaria in that work it is stated, inter alia, that mosquito-nets were first used in India in 1881. I would ask the author's permission to allow me to correct this statement. The mosquito-net is much more venerable in India. We have it on record by Surgeon-Major (afterwards Sir James) Annesley, I.M.S., in his "Diseases of India," that mosquito-nets were used as a protection against mosquitoes by Europeans as early as 1828, when his book was published, and possibly they were used at an earlier date. They were then employed, Annesley tells us, to prevent the physical discomfort caused by the bites of mosquitoes, to exclude the "miasmata" that were supposed to give rise to malaria, and to "prevent chills from the night dew." Where the author of the first book referred to above got his date from I do not know; the practical application of Sir Ronald Ross's discovery of the direct relation of mosquitoes to malaria did not form part of routine life in India until the beginning of the present century.

Long before the discovery of malaria parasites by Laveran in 1881 nets were in use in several tropical and subtropical countries. We have it on record as a historical fact that almost a century ago some of our generals and sportsmen in India attributed their freedom from disease to the using of mosquito-nets. I can personally remember mosquito-nets being in use at Poona, Mhow, and Nasirabad when my father's regiment, "The King's," went out to India in 1868; their use was not general at that time, and they were not issued to British troops as they are now.

The native of India has always used his *chadar* (sheet) or other covering when asleep to protect himself from the attacks of mosquitoes. Even in the hottest weather we find him covering his head and exposed parts of his body with such a garment. I dimly recollect being told or reading somewhere that the Singhalese several centuries ago used some form of a net or covering to protect themselves from mosquitoes. I regret I cannot recall the reference.

Probable Early Antimalarial Measures.

It is possible that if we could ferret out the whole history of the mosquito-net we might find that through the ages the inhabitants of countries infested by mosquitoes have used some sort of protection against their attacks, either in the form of nets or covering, or as applications to the surface. The habit of anointing with scented oils practised by the Babylonians and other ancient Semitic nations may not have been without its purpose in repelling the attentions of insect life. The Tigris and Euphrates valleys must have been a paradise for insect life from time immemorial. One can never forget the appalling pestilence of insects that invaded the 6th (Poona) Division during the first week of June, 1915, at Ezra's Tomb on the Tigris, a place between Basra and Amara. We have the authority of history indicating that some form of mosquito-net was in use thousands of years ago by Egyptians, Greeks, and Romans.

Herodotus and Mosquito-Nets.

A few months ago I was reading Cary's English version of Herodotus and came across an interesting paragraph in this connexion (II., p. 94). Writing of the Egyptians who dwelt on the banks of rivers, lakes, and marshes, Herodotus says:—

> "*They have the following contrivance to protect themselves from* musquitoes (*sic*), which abound very much. The towers are of great service to those who inhabit the upper parts of the marshes; for the musquitoes are prevented by the winds from flying high; but those who live round the marshes have contrived another expedient instead of the towers. Every man has a net with which in the day he takes fish, and at night uses in the following manner: in whatever bed he sleeps, he throws the net around it, and then getting in, sleeps under it; if he should wrap himself up in his clothes or in linen the musquitoes would bite through them, but they never attempt to bite through the net."

One imagines that the Egyptian fisherman had either great faith in the protection afforded by his net, or he had more confidence in the guilelessness of the genera of mosquitoes inhabiting his neighbourhood than we now entertain as regards mosquitoes of tropical and subtropical countries.

The Roman Conopeum.

History likewise tells us that the *conopeum*, or mosquito-net, was used by the Romans. In an admirable résumé of this subject Sir Ronald Ross[2] quotes Varro, Horace, Propertius, Juvenal, and Paulus Silentiarius as referring to the mosquito-net, and tells us that Horace says: "And among the military standards, oh shame! the sun sees a mosquito curtain," and that Propertius calls these nets *foeda* (foul or disgraceful); it may be supposed he meant that it was unmanly for the hardy Roman soldier to indulge in the use of such protection against gnats. Personally, I feel that the man who devises a practicable and portable means of protecting troops who are fighting in endemic malarial areas from the attacks of mosquitoes will deserve the highest commendation.

The Possibility of Complete Protection.

The well-known experiment of Drs. G. C. Low, L. W. Sambon, and D. Rees, carried out in the Roman Campagna in 1900, proved beyond all equivocation that if the body is protected from the attacks of anopheles one may live in even the worst endemic malarial areas without becoming infected. If I remember rightly, Professor J. W. W. Stephens and Lieutenant-Colonel S. R. Christophers, I.M.S., found the same to be the case in their malaria work in the West Coast a short time afterwards.

In quite recent times one has often been asked seriously by civil servants, military officers, and other educated people in India whether mosquitoes really carried malaria. If some of the better classes entertain doubts of this kind, it is scarcely to be expected that the poorer, uneducated classes in India, including the village ryot, knows what a danger to his health the mosquito is. Yet we require the coöperation of all classes in the reduction of malaria. This points to the necessity of educating the people of India, especially the agricultural population, in the first principles of prevention, and to the fact that for many years to come we should patiently and persistently diffuse this knowledge by propaganda, placards, leaflets, lectures, magic-lantern, microscopical, and kinema demonstrations and other means. I gave lectures of this kind for years to various garrisons and other audiences in India.[3] They were usually associated with magic-lantern slide demonstrations of the different forms of adult anopheline and culicine mosquitoes, their larvæ and eggs, malarial parasites in the stomach walls of anophelines, in the blood, and of patients suffering from malarial enlargement of the spleen and malarial cachexia, and taking the classes or audiences to pools containing larvæ and eggs, and showing where adult mosquitoes hid in houses and huts during the daytime.

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[1] Essentials of Tropical Medicine, by Dr. Walter E. Masters, THE LANCET, 1920, ii., 406.

[2] The Prevention of Malaria, p. 5.

[3] Popular Lectures on Malaria in India (Higginbothams, Ltd., Madras).

Prospects of Reduction of Malaria in India.

Even in the most advantageous educational circumstances it will be many years before the poorer classes in India give their whole-hearted coöperation to antimalarial measures. The task of the antimalarial worker in India is so immense that it may sometimes seem too formidable to tackle, but I am convinced that eventually, it may be a generation or so hence, persevering effort will bring about a reduction of malaria. We know how it has been greatly reduced in a large number of cantonments, both in India and Burma; this has only been achieved by the continuous and persistent effort of a host of enthusiastic medical and military officers and engineers who had faith in the results of their work; were there to be any relaxation of antimalarial measures in garrisons our troops would soon be as seriously affected with malaria as they used to be antecedent to the discovery of the relation of anopheles to the disease.

In drawing attention to the history of mosquito-nets I should like to say that personally I do not consider their use the real solution of protection from adult mosquitoes. Lakhs of rupees are spent annually on them, and even when employed with care their life is seldom longer than three years. The universal introduction in endemic malarial areas of wire-gauze mosquito-proof material into all permanent buildings is much more efficient, and eventually much more economical, than ordinary mosquito-nets. There should be no difficulty in insisting that all new buildings are provided with such wire protection.

TREE-BREEDING ANOPHELINES.

BY B. BLACKLOCK, M.D. EDIN.

(*From the Liverpool School of Tropical Medicine.*)

DURING the war a case of indigenous malaria was reported from Belton Camp, Grantham. Professor J. W. W. Stephens, Lt.-Col., R.A.M.C., examined the camp on Sept. 29th, 1917, and found there at one spot, somewhat remote from the lines where the case was, larvæ of *A. bifurcatus*. A. Macdonald[1] found *A. maculipennis* adults in small numbers in stables and pigsties near Belton Park in July, 1918, and quotes a statement that *A. maculipennis* larvæ had been discovered at Belton in August, 1917, by Stephens. In January, 1921, I went to the site of this camp and found, in a pond across a road from the lines where the case occurred, numerous larvæ of *A. bifurcatus*, and also a few in a ditch near the boundary fence of the camp. The pond and ditch when examined by Stephens yielded no anopheline larvæ. Turning attention next to the trees I discovered within a short period cavities containing water in an oak tree in the centre, and in a Spanish chestnut tree at the top, of the lines in which the malaria case occurred. In the pooled fluid siphoned off *A. plumbeus* larvæ were found in numbers, and also larvæ of *O. geniculatus*. My visit was undertaken at Stephens's request, as he was not satisfied that his discovery of *A. bifurcatus* larvæ in 1917 was adequate proof that this was the probable carrier. At the time of my visit the camp buildings had been removed, and with them apparently the pigsties and stables referred to by Macdonald, as I saw no sign of them. The Belton Camp country contains very fine old trees in large numbers, and would at a glance be chosen as a place in which *A. plumbeus* should easily be found. There is no evidence that *A. maculipennis* was the carrier in this instance, and any statement which assigns to it the rôle of transmission here must obviously be based on the assumption that *A. maculipennis* is the only anopheline which is worthy of consideration in this country. That such an assumption is hardly justifiable will,' I think, be admitted when the subject is considered more fully.

The object of the present paper is to draw attention afresh to the necessity of taking tree-breeders into consideration, and to urge the view that even with our present limited knowledge of their powers of transmission they constitute a factor which must not be ignored, whether in making anopheline surveys or in dealing with anophelines from the sanitarian's standpoint.

Habitual and Occasional Tree-breeders.

The true tree-breeding anophelines comprise those which breed normally in trees. They are represented in America by *A. barberi*, Coq., in Europe by *A. plumbeus* Steph., and in India by *A. plumbeus*, *A. annandalei*, Prashad., and *A. culiciformis*, Cog. All these species breed in rot holes and cavities in trees, and although there have been occasional records apart from trees (there is a single record by F. V. Theobald of *A. plumbeus* in a peat bog, and H. Cogill,[2] 1903, states that *A. culiciformis* has been found breeding in forest puddles or pools) they show little or no adaptation in this respect. The South American bromeliaceous species—e.g., *A. lutzi*, &c.—are, like the tree hole breeders, limited to such habitats. The occasional tree-breeding anophelines include *A. costalis* and *A. eiseni*, which normally breed in ground waters, and it is not yet established to what extent they may acquire the habit of breeding in true rot holes, which are little exposed or at high levels in trees.

The amount of importance attached by observers to those anophelines which breed in trees has varied in such a degree at different periods and in different countries that it appears opportune to reconsider the subject. R. Ross[3] recognised early the importance of the tree factor, and that in prophylactic measures tree breeding-places should be considered. In a footnote to certain clauses which he drafted with a view to embodiment in the local ordinances of Mauritius he states:—

> "Some specific provision ought to be made to enable the sanitary authority to fill up with concrete, or otherwise to treat, holes and hollows in trees which breed, or are likely to breed, mosquitoes. Similar recommendations have been made in various countries and districts by the authorities."

C. F. Lasalle,[4] in his conclusions to his Report on Trinidad and Tobago, emphasises that what is to be aimed at in the elimination of malaria is to free all towns, villages, and inhabited portions of estates, as well as a surrounding area within a radius of not more than a quarter of a mile of all permanent or potential mosquito breeding-places. It is noteworthy that in his detailed instructions to inspectors the following occurs:—

> "Every collection of water, and every receptacle liable to contain water (holes in trees, water-retaining plants), should be carefully examined."

Macdonald, on the other hand, dealing with indigenous malaria in England and the mosquitoes which are responsible for it, in his paper of 80 pages devotes only half a page to *A. plumbeus*, which is a tree-breeding anopheline occurring in the British Isles.

Some Reasons for the Neglect of Tree-breeders.

If we take *A. plumbeus* as a type of the tree-breeding mosquito, we can quote the following, among other reasons, why they are not regarded seriously. The question arises whether these reasons justify the relative neglect of this species and others of similar habits.

(1) They do not appear to be numerous. There is a considerable array of evidence to show that the anopheline which is most numerous in any locality may be relatively harmless as regards transmission of malaria, while one which is much less numerous may cause real damage. Ross[2] mentions as an instance—

> "as we showed in the case of *Myzorhynchus mauritianus*, a species may abound in a malarious locality, although the disease is really being spread by quite another one."

(2) They do not appear to be domesticated mosquitoes in the sense that they commonly enter houses for the purpose

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[1] Macdonald, A., 1919: Observations on Malaria by Medical Officers of the Army and Others, War Office, p. 225.

[2] Cogill, H.: The Anopheles of Karwar, Jour. Bombay Nat. Hist. Soc., vol. xv., No. 2, Oct. 28th, 1903.

[3] Ross, R., 1910: The Prevention of Malaria, pp. 191 and 636.

[4] Lasalle, C. F., 1920: Report on Anopheline Survey of the Colony of Trinidad and Tobago.

of biting man and remain in houses after biting. The test of domesticity in this sense is liable to lead to error, because we have very little evidence to show that only those anophelines are important which choose to enter houses for food and remain there after feeding. The fact that a species—e.g., *A. rosii* in India—is commonly caught in houses and is obviously domesticated is not in itself sufficient to warrant an assumption that a species which is not thus domesticated has little importance as a carrier of disease. Christophers[5] has shown that females of *A. plumbeus* gorged with blood retire to the tree holes, which, besides forming ideal breeding-places, are also safe and dark resting-places for engorged females. We know that *A. plumbeus* will feed on man at any hour with the greatest avidity, in laboratory conditions, when enclosed in feeding cylinders, and also when allowed to fly free in a mosquito-proof room. Further, Christophers ascertained that females in nature enter houses and bite freely in the mornings and evenings, but more especially in the mornings. We know also that the bite of *A. plumbeus* is, to many people at least, so little painful that it is often difficult to feel the bite, whereas both *A. maculipennis* and *A. bifurcatus* usually leave no doubt in the mind on this subject. For these reasons it is clear that without being domesticated in the sense mentioned above, this species of anopheline may play a part in nature in the transmission of malaria.

(3) They are not known to carry in nature. To refer again to the War Office work, it may be said equally of the other two species that they are not known naturally to have salivary gland infection in England. It may be said, further, that in laboratory experiments done in England with the three British anophelines, only one has so far been proved capable of developing malaria sporozoites in the salivary glands, and that one is the tree-breeder *A. plumbeus*.

(4) They are sometimes difficult to find. This seems to be the real cause of their being ignored and depends to a great extent, in so far as the adults are concerned, on the foregoing considerations. There is reason to believe, however, that so far from their being a rarity, when looked for in a systematic manner, they will prove to be quite common everywhere in the British Isles. The fundamental difference between *A. plumbeus* and *A. maculipennis* appears to be that whereas an idea of the prevalence of the latter may be obtained without difficulty both in the aquatic stage and in the imago stage, the prevalence of the former can usually be estimated best in the aquatic stages. The estimation of their prevalence even from the aquatic stages is not an easy matter, as the following considerations show. Blacklock and Carter,[6] during investigations on the breeding-places of *A. plumbeus*, showed that in the examination of 2500 trees taken at random and tested up to a height of only 25 ft. breeding-places of this species were found 15 times. They draw attention to the fact that it is not sufficient to look for large apertures in trees visible at some distance, but that each tree must be most carefully scrutinised in order that small and inconspicuous holes may be discovered. In one Spanish chestnut, recently, an aperture of only 1 in. in diameter, situated at 7 ft. from the ground, gave admission to a large cavity containing numerous *A. plumbeus* larvæ. Branches of moderate size have presented small apertures which led into large cavities in the trunk containing larvæ of *A. plumbeus*; water-holes have been found at a height of 32 ft. from the ground. In view of these observations it is not overstating the case to say that no survey for anophelines and no measures directed against them are complete which do not take into consideration the tree-breeding forms.

Conclusions.

1. In a survey for anopheline mosquitoes in any area where trees, even in small numbers, are present, any forms which pass their aquatic stages in trees must be considered equally with the forms which pass these stages in the ground waters.
2. Without the information with regard to the tree-breeding anophelines the survey is incomplete and adequate remedial measures cannot be applied.
3. An examination of trees for the purpose of detecting possible anopheline breeding-places involves very close inspection of all parts of the tree and its larger branches to a level as yet not determined, but higher than 32 ft. from the ground.
4. Generalisation with regard to the rise or fall of malaria in any area (whether marshy or not) which contains trees may be very misleading if such effects on anopheline breeding-places as may result from tree felling, tree planting, and decay of trees are omitted from consideration.

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[5] Christophers, S. R., 1916: Ind. Jour. Med. Res., vol. iii., pp. 489-496.

[6] Blacklock, B., and Carter, H. F., 1920: Ann. Trop. Med. Parasit., vol. xiv., pp. 115-126.

A CONTROLLED
STUDY OF SANATORIUM RESULTS.[1]

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WHEN going over the results of sanatorium treatment which are so frequently published, the reader usually finds himself wondering what would have happened to these patients if they had not gone to a sanatorium. The present paper is an attempt to answer this question by comparing the after-results personally observed in 270 cases treated at sanatoriums with those in 597 cases treated by other methods. No research worker in physiology, or in any other field of science, would dare to draw conclusions without controls, yet the majority of our conclusions on the value of different forms of medical treatment are reached in this manner. There are, of course, notable exceptions, such as digitalis, antidiphtheritic serum, and vitamines.

In a prolonged discussion on the value of different treatments in pneumonia, which raged in the *British Medical Journal* some two years ago, most diverse remedies were praised, almost as specifics, by various writers, and the reader was led to ask himself what the mortality in A's and B's patients would have been if they had exchanged their specific remedies. Yet ample material to control our methods is at hand in the homœopathic hospitals and other institutions where some special line of treatment is followed. The surprising fact is that this has not already been done. Perhaps the General Practitioners' Association for Collective Research will one day take it in hand.

It must be admitted that Bardswell, in the report published by the Medical Research Council, points out the importance of a comparison of sanatorium results with the results of other forms of treatment.

Methods Employed.

In this inquiry the condition of 270 sanatorium cases two years after leaving the institution is compared with the condition of 597 controls two years after commencing treatment. This period is enough to allow the increase in weight and improved appearance manifest in most patients when they leave a sanatorium to have passed off, and gives a fair comparison. To gain further information, and to check the two-year results, a further series of 121 sanatorium cases, and 282 controls, is considered after a four years' period. The numbers are smaller because only cases seen personally have been considered, and sufficient time has not elapsed for me to follow up more cases for four years.

The controls were not sent to a sanatorium because they were unwilling or unable to go, because accommodation was not available, or because it was decided to keep them under observation for a while before sending them, and so avoid for them the sanatorium stigma.

The number of sanatorium cases lost sight of after two years is about 2 per cent., not sufficient to affect the result in any way, and I could, moreover, lay hands on reliable information about most of these, if time and energy allowed. Between the two and four years, another 1 per cent. may have been lost. Among the control cases rather more have been excluded for this reason, because visitors and other birds of passage are seen from time to time, but practically all the genuine Devonian cases can be traced.

A few words as to the method of classification are necessary.

When reporting on insured cases to the Devon Insurance Committee, in order to convey as accurate and intelligible a prognosis as possible to the lay mind, we express in percentages the prospect (*a*) of complete recovery, (*b*) of partial recovery, sufficient to allow the patient to resume his old work or some other employment, and (*c*), which applies only to those who are working, of continuing at the present work for a reasonable time.

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[1] Being a paper read at a recent joint sessional meeting of the West of England Branch of the Society of Medical Officers of Health and the Royal Sanitary Institute.

Thus, in a slight case seen for the first time, one might well say "50 per cent. prospect of (*a*)"; in a worse case, when there seemed an even chance of a partial recovery, the prognosis would be "50 per cent. of (*b*)"; while in a working case, but with the health precarious and a breakdown possible at any moment, one might say "50 per cent. of (*c*)." Varying circumstances would, of course, raise or lower the percentage figures correspondingly. Now, in making our periodical returns to the county sanatorium about the condition of patients after discharge, this scheme is made use of and a number is placed against the patient's name as follows:—

Class 1.—Patient at work—90 per cent. prospect of (c) or more. (This may be considered a cure.).
„ 2.—Patient at work, but health somewhat uncertain—60-90 per cent. prospect of (*c*).
„ 3.—Working, but health precarious—40-60 per cent. of (*c*).
„ 4.—Too ill to work.
„ 5.—Very ill.

These numbers have been used in my classification of results. 1 and 2 I have bunched together, also 4 and 5, partly to simplify matters and partly to bring my results into line with other workers who classify patients as full work (1 and 2), part work (3), and no work (4 and 5).

A classification on the basis of "at work" or "not working" is not altogether satisfactory, as so much depends on the sort of work; a manual labourer may have to give in, whereas a clerk or artist, who is much worse, may easily continue at work. I have known a clerk in one case and a journalist in another who continued at work almost to the last. Such cases have been classed as (4) in one or two instances, even though the patient was working. Nearly every case is classified from a personal knowledge of his condition; once or twice only have I been satisfied with a postal inquiry; in a few more instances I have relied on a report from the patient's doctor or from relatives in a position to know. A postal inquiry is usually insufficient, a patient may report himself "very well" and yet be found on further investigation in Class (4).

The sanatorium cases were treated mostly at our County Sanatorium, but a good many elsewhere. The treatment adopted was modern sanatorium treatment—fresh air, good food, and graduated labour. Several different medical superintendents were concerned. The treatment of controls was for the most part advice only. Some continued for the whole period under their doctor, but the majority were only occasionally seen by him, and many not at all.[2] Not more than one or two had tuberculin treatment, a few had special treatment of different kinds such as I.K., and others tried patent remedies. I have never been angry or ceased observing a patient because he was under "Dr." Stevens or "Dr." Alabone; but it must here be said that for a tuberculosis officer to keep all patients under observation requires more tact and perseverance than to keep patients in private practice. Patients who left the sanatorium under a month are counted as controls; there are only a few of these.

Stages of disease.—Three stages are recognised: (1) slight; (2) medium; (3) extensive. Very few Stage 3 cases were sent by me to a sanatorium, but a good many are found among the controls, because all those of whatever stage are included who might *arguably* be considered as suitable for a sanatorium. I have cut out, on the one hand, moribund and bedridden cases, obviously too ill to be sent, and, on the other, cases of old arrested disease calling for no treatment. A special heading has not been made for patients with tubercle bacilli present in the sputum, for it is difficult to ensure a satisfactory report. The results are misleading unless a suitable specimen is examined carefully, and on several occasions, which can only be done properly in an institution with its own pathologist. All ages and both sexes are included.

Results.

The detailed results appear in the following tables. Of the 270 cases in all stages of disease, two years after sanatorium treatment 119 (44 per cent.) come under classes 1 and 2; 44 (17 per cent.) under 3; 71 (26 per cent.) were classed as 4 and 5; and 36 (13 per cent.) were dead. It will be generally agreed that these are good sanatorium figures.

It might be said that as there are only 15 of Stage 3 in the sanatorium series and 116 in the controls, that these cases should be eliminated from both series; this has been done in Table II. On the other hand, it might be urged that among the slight cases used as controls are several discovered as contacts, who might be considered by some observers as cases of pathological and not clinical tuberculosis; therefore Stage 2 cases in each series are similarly compared. Again, the sanatorium results are not bad.

TABLE I.—*Results After Sanatorium Treatment Compared with Cases Otherwise Treated. All Stages of Disease.*

—	1 and 2.	3.	4 and 5.	Dead.	Total
Sanatorium cases after two years	119 (44)*	44 (17)	71 (26)	36 (13)	270
Controls after two years ...	321 (54)	86 (14)	113 (19)	77 (13)	597
Sanatorium cases after four years	55 (46)	21 (17)	15 (12)	30 (25)	121
Controls after four years ...	139 (50)	30 (11)	40 (14)	73 (25)	282

TABLE II.—*Sanatorium Results Compared with Controls at the Same Stage of Disease.*

Sanatorium cases, Stages 1 and 2, after two years ...	118 (49)	42 (15)	64 (24)	31 (12)	255
Controls 1 and 2	316 (66)	69 (14)	63 (13)	33 (7)	481
Sanatorium, Stage 2, after two years	54 (35)	31 (20)	43 (28)	25 (17)	153
Controls 2	110 (44)	51 (20)	56 (23)	31 (13)	248
Sanatorium, Stage 1, after two years	64 (62)	11 (11)	21 (21)	6 (6)	102
Controls 1	206 (88)	18 (8)	7 (3)	2 (1)	233
Sanatorium, Stage 3, after two years	1 (6)	2 (13)	7 (49)	5 (32)	15
Controls 3	5 (4)	17 (14)	50 (43)	44 (39)	116
Sanatorium, Stages 1 and 2, after four years	55 (48)	21 (18)	13 (11)	26 (23)	115
Controls 1 and 2	139 (65)	20 (9)	26 (12)	31 (16)	216
Sanatorium, Stage 2, after four years	18 (30)	15 (25)	7 (11)	20 (34)	60
Controls 2	44 (43)	11 (11)	19 (19)	28 (27)	102
Sanatorium, Stage 1, after four years	37 (67)	6 (11)	6 (11)	6 (11)	55
Controls 1	95 (83)	9 (8)	7 (6)	3 (3)	114
Sanatorium, Stage 3, after four years	—	—	2 (33)	4 (67)	6
Controls 3	—	10 (16)	14 (21)	42 (63)	66

* Figures between parentheses are percentages.

TABLE III.—*Cures obtained in Sanatorium and Control Cases.*

—	Stage 1.			Stage 2.		
	Total.	Cures.	%	Total.	Cures.	%
Sanatorium cases after two years	102	30	30	153	9	6
Controls after two years	233	107	46	248	17	7
Sanatorium cases after four years	55	16	31	60	4	7
Controls after four years	144	62	54	102	10	10

We may now consider the number cured; only those coming under Class 1 (90 per cent. prospect of (*c*) or more) can justly be called cures. These are among the sanatorium Stage 1 cases after two years out of 102, 30 cures (30 per cent.); after four years, 16 out of 55 (31 per cent.). Among 233 Stage 1 controls after two years, 107 are counted cured (46 per cent.) and after four years 144 cases, 62 (54 per cent.). Among Stage 2 sanatorium cases, after two years, a total of 153 gives 9 cures (6 per cent.); and after four years, 60 cases, 4 cures (7 per cent.). Controls at Stage 2, 248 cases, after two years yield 17 cures (7 per cent.); and after four years, 102 cases, 10 cures (10 per cent.).

The stability of the percentage of cures after two and four years shows that this represents something definite. The majority of cases discharged from sanatorium with "disease arrested" relapse within a short time.[3]

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[2] Some 12 to 15 were treated as dispensary out-patients by the assistant tuberculosis officer.

[3] Bardswell found that patients, at an average age of 33, discharged from Midhurst "arrested," had the same expectation of life as the average individual of 60, and those "much improved" the same as at 74!

A large number of patients reach Class 2 and there remain indefinitely, tuberculosis not defeated and yet not gaining ground, or gaining very slowly. There occurs in certain of these a race, so to speak, between tuberculosis and senility as the ultimate cause of death.

Discussion.

Believing, as most of us believe, that the sanatorium provides a useful method of treating tuberculosis, I should have preferred the figures to show a little bias in its favour, but the reverse is the case. Allowing a wide margin for error, and supposing that the error is all on one side, remembering also that patients who have been treated at home and have gone down hill are then sometimes sent to a sanatorium, it cannot even so be said that sanatorium results, at the end of two or four years, are in any way better than those obtained in patients who have not been there. If it had been a question of comparing my control figures with someone else's sanatorium figures, it might have been urged that the diagnosis was made differently, or that some such fundamental difference existed, but all these cases have been seen and classified by the same observer, and if errors of diagnosis have been made in one series so also in the other. Cases in which the diagnosis of tuberculosis seemed incorrect after further observation have been struck out of both series. Acute cases, with slight signs, but perhaps some fever and tachycardia, do not tell against the sanatorium, for they would not be sent until observed a little longer.

The patients here considered came from rural, semi-rural, or small urban districts, although frequently living under bad conditions; it would be interesting to learn the results of a similar investigation among a purely urban population. Moreover, my cases are drawn almost entirely from the poorer classes; I cannot speak of sanatorium results among well-to-do patients as the number of these observed personally is too small. True it is that not very much is claimed for the sanatorium nowadays as far as the individual patient is concerned; Newman emphasises this, and so does Bardswell, but Bardswell says also, "physicians of long and intimate experience of the disease are unanimous ...... that residence in a sanatorium represents the best treatment available at the present time." Some years ago a physician of just repute, and whose opinion I respect, told me that perhaps two out of ten early cases are cured or materially relieved by sanatorium treatment; I agreed with this observation at the time, but further experience has driven me to believe that even he over-estimated their value. Our ideas about sanatorium results are partly created by the appearance of patients on discharge (often only a masking of symptoms), and partly by a perusal of the reports from sanatoriums of the condition of patients on their discharge; a large number being reported as disease "arrested," a large number "much improved," with quite a small number stationary, and a very small number "worse."

It is acknowledged that the majority of patients leave a sanatorium stouter, and of better appearance in every way, than on admission; it is further generally acknowledged that the majority of these lose ground quickly on return to their old surroundings; but it is not, perhaps, recognised that they lose ground so rapidly that after two years they have frequently fallen below the level they would then have reached had they never been to a sanatorium. The reason is that the patient had become more or less adapted physically and mentally to fighting the disease under adverse conditions, but after a stay in a sanatorium he has lost this adaptation and may never regain it. Often enough sanatorium treatment is advised for patients who are continuing at work, although far from well. They go away and return after a few months, but never work again; whereas had they been left alone they might have continued the running fight indefinitely. If a tree growing feebly in a poor soil is transplanted to a good soil and then, after improvement, returned again to the bad soil it will not resume its feeble growth, but will probably die.

It is said that a longer period of sanatorium treatment would make all the difference, but this has still to be proved; certainly the patients who remained longest in my series did not give such good results as those who were there a short time; but this observation is hardly fair, for patients who are ill, but appear to be gradually picking up, are often kept a long time, while the slighter cases, who seem well, are sent out at the end of three months. Similarly, if I control sanatorium results by the results in patients treated with quack or special remedies (unluckily the figures are too small), the sanatorium comes out much better, but then patients often turn to these special remedies just when they are becoming hopelessly ill. Possibly if patients were kept at the institutions for a year or more we should then have our authorities urging for a period of three to five years instead of one.

Hitherto all sanatorium results have been published by medical superintendents or those concerned in various ways with sanatorium administration, whose views are often limited to the selected class of patients sent there, and who must, therefore, find it difficult to visualise tuberculosis as a whole. So much is the sanatorium considered to be the basis of all tuberculosis work that no tuberculosis officer is considered properly trained until he has worked there. Private practice might prove a better training ground. Retreating from the standpoint of physical benefit, it is often held that the educational value of a stay at a sanatorium is all-important and makes the patients do better afterwards; it is undoubtedly of great assistance to a patient to know something about the disease, and to recognise his own limitations, but still this does not seem to make his condition, after two years, compare favourably with a patient who has never been there. Probably, however, there is a real value in teaching a patient how to protect others from infection.

The Uses of a Sanatorium.

I do not for a moment advocate the scrapping of all sanatoriums, but the view that a sanatorium as at present conducted is a curative institution, contrasted with the tuberculosis hospital, used mainly for isolation purposes, must be abandoned, convenient though it was. The chief use of a sanatorium lies in prevention, for by this means a number of potential sources of infection are removed for a time from contact with the rest of the community. Moreover, a sanatorium is a kind of mission station, and it is partly to its influence that such an improvement in popular ideas of domestic hygiene has taken place in the last 20 years. A sanatorium with a tuberculosis colony attached has the advantage that it keeps patients away longer; time will show if it benefits the individuals. A place like Davos is the ideal tuberculosis colony. An isolated but busy health resort, with a few minor industries, peopled mainly by those who have active or arrested tuberculosis; shopkeepers, shop-assistants, bandsmen, waiters, and doctors, in this respect nearly all alike. I believe there are similar places in the United States, but we have none here, and it would naturally be difficult to build one up, if labelled from the beginning as a tuberculosis settlement.

Improved Sanatorium Methods.

Undeniably a few cases are definitely and permanently improved by sanatorium treatment and it is worth considering if this number can be increased by improved methods of treatment. First, it must be remembered that the success of a sanatorium depends more than anything else on the personality of the medical officer in charge (as, indeed, do most forms of treatment). Secondly, measures should be taken, especially in the winter months, to keep patients warm and comfortable. I know that Dr. Leonard Hill has shown experimentally that metabolism varies directly as the rate of cooling of the skin (in other words, man is a warm-blooded animal), but his subjects were healthy and probably robust. There must be a limit to the process; in any case a point will be reached at which the body ceases to react to cooling. This limit will surely vary in healthy individuals, and may conceivably be reached very soon in a patient enfeebled age or disease. Such a patient may need still, warm air rather than a cold wind. It may even be questioned if increased metabolism is invariably advantageous. And when the individual is stimulated to exercise in order to counteract chill, no doubt it is beneficial if he sends a full stream of healthy blood surging through his tissues; but if instead of healthy blood he sends a mixture of blood and toxins the effect may be different.

Some years ago I pointed out to our county medical officer that sanatorium results would be much improved by warmth, and added that this would be generally recognised within 20 years. "Why wait 20 years?" he replied. So a county conference was arranged at which we were to decide what measures for heating the rooms should be taken, when the Local Government Board said that they would not consent to heating, and the matter had to be dropped. I noticed recently, however, that the new Liverpool Sanatorium is heated throughout, apparently with permission of the Ministry of Health. It is conceivable that better results would be obtained in airy buildings erected on ordinary hotel lines. The majority of patients in Davos are treated in hotels. They have balconies where they can lie out during the day, but they can close up as they wish at night, and the rooms have a heating apparatus, while all dining- and sitting-rooms are comfortably warm—sometimes too warm for British tastes.

Another improvement would be to abolish systematic auto-inoculation as introduced by graduated labour, which is to-day the standard treatment at most sanatoriums. Its introduction was owed to an excellent piece of original work within the sanatorium orbit, but after prolonged trial it has failed to make good. It is uncertain if patients are benefited any more by auto-inoculation than by injecting tuberculin, a treatment now rarely used. I have never met anyone who was convinced that graduated labour had improved his results. It is mentally helpful, no doubt, the gradual increase in work gives the patient a sense of improvement, but this could surely be achieved by other means. I have been told that "the best part of graduated labour is absolute rest," and even in this matter it may be questioned if the rest need be so absolute, for a patient will exert himself more in a single fit of coughing than by feeding himself at meal times for a whole day. Then, again, more attention should be paid to the mental side of treatment. The importance of this has been recognised since the war, but there is a danger it will be forgotten again.

Selection of Cases.

Our view as to the real use of sanatoriums being altered, our conception of what case is suitable for treatment there must also be modified. Each case, of course, must be judged on its merits, but it hardly seems justifiable, in the light of the present investigation, to send every slight case of tuberculosis to a sanatorium as soon as diagnosed, which is the standard advice now given (all forms of treatment ask for early cases, and it is not surprising in view of how well most of them do with very little treatment of any kind). It would appear better to treat such a case at home, possibly after a short "change of air," then to consider sanatorium again if there is no improvement after three months or so. No case that seems to be improving at home should be sent to a sanatorium. On the whole, the case likely to do best there is one with high resistance (but not necessarily slight disease) just failing to hold his own in the face of adverse conditions of work and surroundings—a type doubtless commoner in urban districts than in Devon. For instance, there are tuberculous women living under slum conditions, with several children, who have, may be, never had a holiday since marriage, and these often pick up satisfactorily after the country holiday which a sanatorium affords.

Conclusion and Suggestions.

At a recent discussion I heard a sanatorium authority advise, as they so often do, a further increase in the umber of sanatorium beds. He even named 500,000 the ideal in this country. I take the view that fore any extension of the existing sanatorium accommodation is made the whole matter should be carefully reconsidered. No claim is made that the present study settles the problem; it is only an attempt to throw light from a new standpoint on this difficult matter. I do think, however, that we are too much hemmed in by tradition and authority in considering tuberculosis, and that the time has come for free-thinking in this respect if we are to progress.

The distinction has already been mentioned between the sanatorium to which patients are sent for their own benefit and the hospital whither advanced cases are sent for the benefit of others; the hospital seems the more useful institution, although there are far fewer hospital beds available and no prospect of more hospitals being built (many sanatoriums already combine the two functions). I suggest that steps be taken to modify sanatorium treatment with a view to improved results; also that certain sanatoriums should be reserved for isolation purposes, to which mainly cases with tubercle bacilli in the sputum should be sent, at whatever stage of disease; while others, which might be called preventoriums, should be reserved for slight cases and suspects, no patient being admitted there with tubercle bacilli in the sputum. At the preventorium a patient would stay only for a short time, say a month, under convalescent home conditions, while at the sanatorium he would stay indefinitely, the longer the better.

We are, indeed, drifting towards this state of affairs, for the mixing of cases, as it now exists in many sanatoriums, means that sooner or later early cases refuse to go and the sanatorium becomes in effect an isolation hospital.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF

"IDIOPATHIC" DILATATION OF THE BLADDER AND URETERS.

BY STANLEY R. TATTERSALL, M.R.C.S., L.R.C.P.LOND.

THE term "idiopathic dilatation of the bladder" was used by S. G. Shattock[1] for those cases of dilatation occurring without any of the usual causes for this condition being found. The obscure nature of the ætiology of this class of case may be sufficient excuse for this brief record of an example.

A. E. T., aged 18, a turner's improver, when first seen gave the following history. Since May, 1919, he had suffered from attacks of vomiting in the morning (before breakfast). These had not been accompanied by pain or hæmatemesis. There had not been vomiting at other periods of the day, and he had been able to continue his work till August 8th. A week later he complained of sore-throat, diarrhœa, and vomiting, and was confined to bed. He came under observation on Sept. 1st, when he was markedly anæmic and drowsy. He did not at this time complain of any pain. On examination the aortic second sound was markedly accentuated and the peripheral arteries thickened. The blood pressure was 140-110 mm. Hg. There was neither œdema nor ascites. The urine was acid, and showed a heavy cloud of albumin on boiling. Pus, blood, and sugar were absent. A few granular casts were demonstrated on microscopical examination. There was no sign of organic disease of the central nervous system.

While under observation the vomiting continued, becoming more frequent and occurring at irregular times throughout the day. On Sept. 4th a complete blood count showed no abnormality beyond a moderate diminution in the number of red blood cells. On the 7th it was observed that there was slight enlargement of both parotid glands. On the 8th this was more evident, and accompanied by a tenderness on pressure, with rise of the evening temperature to 100·8° F. The parotid swelling gradually diminished, but his general condition deteriorated. The vomiting became more frequent, and on the 13th retention of urine developed. Until this time no complaint with regard to micturition had been made, and this retention required the use of a rubber catheter, which passed without any difficulty. The urine now contained 2 g. of albumin per litre, with a little blood. Lumbar puncture on this date showed the cerebro-spinal fluid to be clear and not under abnormal tension. There was no excess of cells; globulin was absent, and the Wassermann reaction was negative. On the 15th signs of œdema of the lungs were evident, and the patient died on the 16th. With the exception of the evening pyrexia on the 8th the temperature chart showed no departure from the normal.

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[1] S. G. Shattock: Proc. Royal Society of Medicine, December, 1908 (numerous references to literature).

Necropsy (28 hours after death).—The body was that of a fairly well-nourished youth. The parotid regions showed slight swelling bilaterally. There was extensive marginal ulceration of the gums. The scrotum contained one testis. There was no phimosis.

Head and neck.—No macroscopic abnormalities of brain or meninges; a bilateral suppurative parotitis, with abscess formation in the left gland; larynx, trachea, and œsophagus were normal.

Thorax.—Pleural and pericardial cavities normal; lungs bulky, engorged, and very œdematous; heart showed moderate hypertrophy of left ventricle; cardiac valves all healthy; cardiac musculature appeared in good condition.

Abdomen.—Liver and spleen normal; left testis small and atrophic and lying in left iliac fossa: intestines empty and collapsed. On inspection of renal regions kidneys could not be located; adrenals, however, in usual position; kidneys found to be lying on alæ of sacrum, each organ between psoas magnus and vertebral column, and partly in abdomen and partly in pelvis. Psoas muscles did not arise from the vertebral column lower than the third lumbar vertebra, and in order to accommodate the ectopic kidneys were placed much further from the mid-line than is usual. Ureters short, situate entirely within cavity of true pelvis and markedly dilated, measuring about 3 cm. in circumference. Bladder distended and hypertrophied, containing about 18 oz. of clear urine with a high colour; no calculi. Dissection of prostatic urethra showed normal verumontanum without any enlargement of prostate. Kidneys small, showing marked lobulation; on section they were of a pale brown colour. No differentiation between cortex and medulla visible; the capsule was firmly adherent, leaving when stripped a rough pitted surface. As a whole the organ felt very firm and fibrous. Neither hydronephrosis nor dilatation of the pelvis.

Microscopical examination of the kidneys revealed a very advanced degree of chronic interstitial nephritis, the organs being converted practically into a mass of fibrous tissue. The penile urethra was not examined directly, but as micturition for the first 14 days was natural and unimpeded it would appear to exclude the existence of "valves" of the urethra. There was, as stated, no phimosis, and the easy passage of a soft rubber catheter would negative the suggestion of the existence of a stricture.

Hypertrophy of the bladder with dilatation of the ureters consequent upon obstruction of the urethra is well known, but several instances have been recorded of this combination without any such obstruction having been found.[2] A further item of interest in this case is the ectopic position of the kidneys. It would also appear to be distinctly unusual for dilatation of the ureters to occur to a marked degree without a corresponding involvement of the kidney.

A CIGARETTE-HOLDER IN THE LARYNX.

BY N. HAY BOLTON, M.D. EDIN.

THE following case, which was treated at the Shantung-road Hospital, Shanghai, is sufficiently uncommon to be worthy of record.

Loo Va Le, a Chinese boy, aged 10, was admitted to hospital on Jan. 10th with the history that four days previously he had been sucking a Chinese wire cigarette-holder and had suddenly "swallowed" it.

Examination.—The patient was somewhat breathless and cyanosed; his temperature was 102·4° F. and he could only speak in a whisper. With the laryngeal mirror he was found to have an infantile type of epiglottis, but it was just possible to see the upper end of the cigarette-holder, apparently tightly gripped between the false cords; the lumen of its tube evidently constituted all the available space through which he could breathe. The upper aperture of the larynx appeared to be very red and inflamed.

Operation.—I thought it might be possible to extract the foreign body from above, and so (having put the tracheotomy instruments on to boil) proceeded to cocainise the throat; but the patient becoming more cyanosed, he was placed on the table and tracheotomy was performed under chloroform anæsthesia. In opening the trachea I cut right down on the cigarette-holder, and by extending the incision downwards was able to get hold of the lower end and pull it gently down and out through the wound. I put the tracheotomy tube in place, but at this point the patient stopped breathing, and we had an anxious three or four minutes performing artificial respiration until normal breathing recommenced. I left the tracheotomy tube in place for 48 hours in order to give time for the traumatic laryngitis to subside, and then withdrew it. The temperature came down gradually until it reached normal on the sixth day after operation; the neck wound healed up perfectly and there were no chest symptoms.

After about 10 days the patient's voice began to acquire tone, and on leaving hospital 24 days after operation he could speak with a fairly clear but weak voice; the true cords, however, were still thickened and inflamed.

The cigarette-holder was 2½ in. long, ⅜ in. in diameter at the wider end, and ¼ in. in diameter at the narrow end; the lumen at the narrow end was barely ⅛ in. in diameter.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY: SUBSECTION OF ORTHOPÆDICS.

EXHIBITION OF CASES AND SPECIMENS.

A MEETING of this subsection of the Royal Society of Medicine was held on March 1st, Mr. E. LAMING EVANS, the President, being in the chair.

Recurrent or Habitual Dislocation of the Shoulder-joint.

The PRESIDENT, in opening a discussion on this subject defined the condition as one in which a joint, after dislocation has occurred and has been reduced and has remained reduced, offers a subnormal resistance to redislocation, and, in fact, suffers repeated dislocations by slight force. The shoulder is by far the most common joint affected. This is accounted for by the fact that 50 per cent. of all dislocations occur in the shoulder, by the reduction by unskilled hands, by defective after-treatment, and by the normal anatomical structure of the joint and the damage inflicted by the initial injury. The pathological lesions were discussed in detail.

The following methods of treatment have been employed: (1) Palliative, by the use of appliances to limit the joint movements. (2) Physiological, by increasing the tone of muscle, tendon, and ligament. (3) By reefing operations upon the capsule: (*a*) plication; (*b*) excision and overlapping. (4) By repair of ruptured tendons and musculo-tendinous insertions. (5) By muscle transplantation. A fair trial of mechanical support and physiological toning should be tried first, as they have cured cases. Reefing operations had been followed by many successes and not a few failures. Muscle transplantation has been performed by detaching the posterior fibres of the deltoid, passing them forwards inside the neck of the humerus and fixing them in front. Opinions differ as to whether the graft retains its contractile power, or undergoes fibrous degeneration.

He showed the following case treated by this (Clairmont's) muscle transplantation operation:—

Major ——, aged 41 years. Left shoulder dislocated at football in 1899, and redislocated 19 times since. When seen in 1920 even sneezing would produce dislocation, which was always attended by much pain and required surgical assistance for reduction. The dislocation was subcoracoid. Clairmont's operation performed in August, 1920. The "quadrilateral space" is defined through an anterior incision, some fibres of the pectoral major and latissimus dorsi being divided. Through a posterior incision a strip of the deltoid, with its nerve and blood-supply intact, is separated and its insertion divided. Not more than a quarter of the deltoid should be used. The free end of the flap is passed forwards through the quadrilateral space and sutured to the anterior fibres of the deltoid in front. The tension on the graft must be sufficient, but not excessive. The shoulder was fixed for six weeks when active and passive movements were begun. The result has been satisfactory so far. He can go into a practice scrum and demonstrate to his pupils how to get the ball.

Mr. T. H. OPENSHAW showed a man, the subject of epilepsy, on whom he had operated first 15 years ago. The right shoulder had been "out" 50 times and the left 35 times. Dealing with the right shoulder, he tried injections of irritants—e.g., iodine, carbolic, &c.—on four occasions; he cut the pectoralis major and teres major, he plicated the capsule, he performed an arthrodesis, all of which gave only temporary, if any, benefit. Finally, he cut the subscapularis and this cured him. On the left he did an arthrodesis and later cut the subscapularis. The result was spoilt by a fall, which produced a traumatic dislocation, and the recurrent trouble returned; he had the shoulder out three times in ten days. A second arthrodesis cured him. He said he had operated on ten cases of this sort, doing nothing but divide the subscapularis, and all had been successful, and he knew of others treated in a similar manner with equal success.

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[2] C. R. Box: Proc. Royal Society of Medicine February, 1909.

Mr. **A. H. TODD** referred to two cases upon which he had operated. He uses an abduction splint.

Mr. **W. ROWLEY BRISTOW** showed a case affecting both shoulders. He was an epileptic and each shoulder had dislocated 16 times. Both joints were operated upon by the Clairmont-Ehrlich method, the right in August, 1919, and the left in November, 1919. The result is that the right is perfect. He has bowled 34 overs in one game without bad result. The left shoulder has dislocated again some five or six times. The first was reduced by a doctor, but the others he reduced himself. He feels as if it comes partly out but not right out, and the pain is not so severe as formerly. He thinks abduction splint unnecessary, and doubts whether the graft really functionates as a muscle as it is passed through a rough space.

Mr. **A. W. SHEEN** showed a case, a male, aged 43, who dislocated the left shoulder in June, 1915. Redislocation had occurred 19 times since; sneezing had produced dislocation. When seen eight months ago movements, particularly abduction, were restricted. He had been treated by physical methods and now had a strong arm with full movement. There is some grating in the joint and X rays show some irregularity in the region of the greater tuberosity. There has been no redislocation for 14 months.

The **PRESIDENT**, in reply, said the discussion had brought out two good methods of treatment—viz., division of the subcapsularis (hitherto unpublished) and transplantation of muscle. He thought that abduction in the after-treatment, as suggested by Mr. Todd, might make the graft act as a lever to lift outwards the head of the humerus.

Recurrent Dislocation of the Patella.

Mr. **ROWLEY BRISTOW**, in opening a discussion on this subject, said the displacement was to the outer side. The two cases shown presented no sign of knock-knee, and the ligamentum patellæ did not seem to be elongated, and only one had quadriceps insufficiency. These three are given as the causes of the condition, but do not seem sufficient, as knock-knee and quadriceps insufficiency are extremely common yet dislocation of the patella is rare. He suggested anatomical causes, the ridge on the external condyle of the femur being at fault. Goldthwait describes the condition as peculiar to young girls and women. Both his (Mr. Bristow's) cases were in men.

Treatment.—Redevelopment of the vastus externus should be tried and may suffice. If operation becomes necessary, what should be done? 1. If knock-knee is present, correct it. 2. Pleating of capsule on the inner side seems bound to fail; Goldthwait's three cases treated by this method relapsed. 3. Shortening of quadriceps (Tubby) is not considered a sound method. 4. Transplantation of half or all of the patellar tendon to the inner side. 5. The operation performed in the two cases shown consisted in transplanting the tibial tubercle well to the inner side, and then driving an osteotome into the femur immediately behind the ridge on the outer condyle, levering this forward to make it more prominent. This position is maintained by the insertion of a small wedge of bone taken from the original site of the tibial tubercle. The capsule on the outer side is incised and left open. Fixation for five or six weeks in full extension, followed by physical treatment.

In both cases, operated upon about a year ago, the result is satisfactory. The first case dislocated his left patella jumping over trenches in March, 1917, since when he could not straighten the knee. He walked with the dislocation unreduced for two years. Operation as above, January, 1920. Result: no relapse. Movement: full extension to 80 degrees. Walks well. The second case had his left patella dislocated in 1915 by a kick from a horse. Recurrence on four or five occasions. It was sometimes reduced by the patient and sometimes by a friend. Operation as above, February, 1920. Result: no relapse. Full range of movement of joint. Tender on pressure over transplanted tubercle.

Mr. **O. L. ADDISON** showed a boy of 7 years. He had loose knee-caps for two years before operation. He fell wn when walking. It was first noticed three months ter a fall downstairs. Plaster had been applied for months. Vastus internus was very wasted. On ending knees 35 degrees there occurred complete dislocation of patella to outer side of condyle. ? poliomyelitis affecting mainly vastus internus. Operation: reef of inner side of capsule and gracilis tendon inserted through a slit in the patellar ligament. Apparatus limiting flexion worn for six months. There has been no relapse.

Mr. **A. H. TODD** showed a woman of 37 with recurrent dislocation of both patellæ. At 10 years she fell and hurt one knee. Recurrent trouble ever since, associated with attacks of synovitis. The other patella began luxating without obvious cause. No knock knee. Both patellæ can be luxated easily by manual pressure. Operation is advised.

The **PRESIDENT** showed a case of a man who had had synovitis after injury in September, 1917. The patella had dislocated on flexion ever since. The displacement begins at 30 degrees flexion and becomes suddenly complete at 60 degrees. Operation in May, 1920. The tubercle of the tibia was transplanted inwards to a bed prepared for it, and fixed with catgut. Result: no recurrence; extension of joint full; flexion to 80 degrees.

Mr. **H. A. T. FAIRBANK** had operated upon three such knees. He transplanted the tibial tubercle and overlapped the capsule on the inner side. In transplanting the tubercle he carried the incisions in the periosteum on either side of it down along the skin, and raised this strip of periosteum with the tubercle. This strip being left attached below, the continuity of the insertion of the quadriceps into the tibia was unbroken. In a child with habitual dislocation dating from birth, although there was no genu valgum when the knees were extended, there was definite valgus when the knees were flexed. Macewen's osteotomy was performed as well as the operation on the joint, and the result in both legs was entirely satisfactory when seen two and a half years later.

Mr. **ROWLEY BRISTOW** briefly replied.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

EXHIBITION OF CASES AND SPECIMENS.

A MEETING of this section of the Royal Society of Medicine was held on March 3rd, Professor **HENRY BRIGGS**, the President, being in the chair.

Dr. **H. RUSSELL ANDREWS** showed two specimens of

Sarcoma of the Uterus,

the first of which seemed to afford clear clinical evidence that a fibroid had become sarcomatous.

The patient, a single woman aged 65, for three months had complained of frequency of micturition, difficulty in emptying the bladder, and a sensation of pressure on the rectum, and had been losing weight. She looked rather cachetic. For two months she had noticed increase in the size of the abdomen; there had been no bleeding or discharge since the menopause. She had been told 12 years previously that she had a uterine fibroid, but she was never conscious of the presence of a tumour until ten days before she was seen by Dr. Andrews. Sir John Phillips wrote that six years previously there was a subserous fibroid, the size of an orange, not palpable per abdomen. Dr. Andrews found a very prominent, firm, rounded tumour rising out of the pelvis to a point two inches below the umbilicus. Vaginal examination was impossible. On rectal examination it was found that a good deal of the tumour lay in the pelvis and was almost fixed. The cervix was normal; the body of the uterus could not be differentiated. There was infiltration of the right utero-sacral ligament, and the diagnosis lay between sarcoma of the uterus and malignant ovarian tumour. During examination under anæsthesia the body of the uterus could be made out lying to the left of the tumour and blended with it. When the abdomen was opened hysterectomy was found to be impossible, so the right broad ligament was incised and the tumour shelled out, leaving the right cornu with tube and ovary on one side, and the rest of the uterus, which contained no other tumour, on the other side. There was much induration of the cellular tissue in the right side of the pelvis, and a large fixed gland on the right iliac vessels. The patient made a good recovery.

The description of the tumour from the pathological department of the London Hospital was as follows:—

An almost rounded tumour, partly fixed in formalin 15 × 13 × 10 cm. The outer surface shows rounded well-defined bosses, and is smooth except for fibrous tags. It appears to be encapsulated. There is one projecting nodule devoid of capsule. On section the tumour is divided into lobules that vary in size. These lobules have a homogeneous grey, brain-like appearance. A few of the lobules show a very faint whorling, with faintly differentiated translucent grey and pearly white bundles. Towards one end is a large area which is opaque and yellow. At one point on the surface of the growth there is a cord, 2·5 c.cm. long, of white tough tissue (growth) projecting from the surface. This is seen to project from a smooth lined, blood-stained tube, evidently a vein in the growth.

Dr. Andrews said that the naked-eye appearance of the tumour was characteristic of sarcoma. Mr. A. C. Palmer had supplied him with the following microscopical description:—

The section is taken from the most homogeneous portion of the tumour. The greater part of the section is occupied by atypical muscle tissue. In some areas bands of typical muscle fibre and connective tissue can be seen running through the section. In the atypical areas, muscle fibres are very abundant and they have their long axis disposed in all directions. Collagenous fibre is for the most part absent, but a few small areas of fine pink fibrils occur among the muscle fibres. The muscle nuclei vary greatly in size and shape, and multinucleate formations are frequent. In another section, taken from a portion of the tumour which showed faint whorling, there are numerous interlacing bands of pink collagenous fibre. In the spaces between the collagenous fibre, atypical muscle cells are relatively scanty.

In the second case, a necrotic sarcoma of the uterus, a large amount of the tumour, of jelly-like consistence, was discharged into the peritoneal cavity through a hole in the posterior surface of the uterus.

The patient, aged 51, had been married six months and had noticed her abdomen getting larger for 12 months. She had always suffered from menorrhagia, had had occasional floodings for a year, and almost continuous hæmorrhage for six months, often passing large clots. For two months she had noticed a lump protruding from the vagina, and for a week or two had had a foul discharge. She was profoundly anæmic, hæmoglobin 35 per cent., red blood corpuscles 1,900,000. On examination a hard, tender, rounded swelling was found which filled the lower part of the abdomen, reaching to just above the umbilicus. A necrotic, lobulated, pedunculated tumour the size of a large walnut protruded from the vulva, the pedicle being attached just behind the orifice of the urethra; the cervix was normal. The large tumour was evidently uterine; the vulval tumour was thought to be a sarcoma. There was a horribly offensive discharge. The vulval tumour was removed by Mr. S. G. Luker, and was first thought to be an inflamed, very œdematous fibromyoma, but on further examination proved to be a myosarcoma. The blood count improved slightly, but the foul discharge continued, the abdominal tumour became more tender, and the evening temperature varied from 99° to 101° F. It appeared probable that the tumour was undergoing necrosis, and as hysterectomy seemed dangerous Mr. Luker dilated the cervix and inserted two Carrel's tubes, through which the uterine cavity was irrigated with eusol. The temperature dropped and the odour of the discharge diminished. The tumour became smaller until it reached only two-thirds of the distance to the umbilicus, although no growth had been discharged into the vagina. Thirteen days after the insertion of the tubes hysterectomy was performed by Dr. Andrews after he had packed the uterine cavity with iodine gauze. In the peritoneal cavity was a quantity of soft, translucent, jelly-like material, inodorous, exuding from a hole in the posterior surface of the uterus. Glands along the common iliac vessels on the right side were enlarged. The wound healed well, but septic thrombosis ensued and the patient died four weeks later.

The pathological report was as follows:—

A uterus much enlarged, 14 × 11 × 4·5 cm. Peritoneum smooth throughout except for a soft red gelatinous nodule 1 cm. in diameter in right posterior wall of body. Uterus feels somewhat soft and doughy. The cavity is much distorted. In the right anterior wall, pushing the cavity to the left, is a large nodular mass which has broken through the endometrium. It is 9 cm. across and is made up of soft nodules, grey or greenish-brown in colour, separated by narrow sunken lines. The green nodules have a somewhat ulcerated surface. Others appear to be covered by endometrium. On section this mass consists of grey nodules, semi-translucent, and separated by narrow zones of white firmer tissue. The cut surface bulges slightly, and around the nodules in the wall are similar small areas. The mass is for the most part definitely encapsulated. There are other small masses raising the peritoneum on the posterior wall, some of which have hæmorrhage in them.

Microscopical section: (1) Œdematous, leio-myo-sarcoma of body of uterus; (2) cellular, atypical, œdematous fibromyoma; (3) normal uterine wall.

Dr. ANDREWS also showed a case of

Lipomatosis of the Stroma of a Uterine Fibromyoma.

The patient, a multipara, aged 38, had had menorrhagia since a miscarriage four or five years ago, and this had increased in severity during the last two years. The abdomen had been increasing in size for a year or more. For two months there had been swelling of the legs and puffiness of the face in the mornings. Patient was gravely anæmic, lemon-yellow in colour; Hb. 20 per cent., colour index 0·3, red corpuscles 3,100,000. The urine contained albumin but no casts. A large tumour, apparently a tense cyst, rose out of the pelvis to a point above the umbilicus. The cervix was almost out of reach, and a soft, apparently fluctuating swelling bulged deeply into the pelvis. The tumour was so soft that the resident thought at first that it was a distended bladder, and after passing a catheter that it was an ovarian cyst, whereas Dr. Andrews took it for a degenerate fibroid. After two and a half weeks, the patient's general condition having improved, Dr. Andrews performed subtotal hysterectomy, removing one enlarged ovary. The cavity of the uterus was enormously enlarged by a tumour 8 in. in diameter in the posterior wall. On section it was a mass of golden-yellow fat with a few white fibrous areas towards the centre. The patient made an uninterrupted recovery.

The following is a report of the tumour after it had shrunk:—

The tumour is rounded and as far as can be accurately measured is about 14 cm. in diameter. It lies in and occupies the posterior wall of the body. It bulges into the cavity and apparently fills it, the cavity being convex anteriorly and stretched over the tumour. The endometrium is smooth, grey, and thinned out over the tumour, slightly thicker elsewhere. Cavity 13 × 13 cm. Wall of uterus from 1·8 to 2·5 cm. thick. The cut surface of the tumour bulges and is bright yellow and translucent. Tumour is elastic and tough; it looks like lipomatous tissue. There are a few slits in it, and a few white fibrous areas towards its centre. It is everywhere enclosed by a thickness of at least 1 cm. of muscular tissue. Peritoneum smooth. No other nodules. Ovary 5·5 × 3 × 3 cm. It contains a few follicular cysts up to 1·5 × 1 cm.

Dr. Andrews anticipated some difference of opinion about the manner in which fat became deposited in this tumour. In some places the fat could be clearly seen to be in the connective tissue. In other places there were small groups of unaltered muscle fibres lying surrounded by fat. He personally would have been content to call the tumour a fibro-myo-lipoma of the uterus, but Professor H. Turnbull had said:—

"I should call the condition lipomatosis of the stroma of an intramural fibro-leio-myoma of the uterus. It is an example of fatty infiltration of fibrous tissue."

Mr. PALMER had supplied a description of the microscopical appearance of the tumour.

The section is taken from the centre of the tumour. The greater part of the section is occupied by lipomatous tissue. The fat is deposited as a large single globule which fills the cell. There are also areas and strands of tissue partly or completely free from fat cells. In these areas the muscle fibres are sparse and lie in a matrix which is, to a large extent, homogeneous and stained yellow, but contains delicate yellow and, less abundantly, pink fibrils. The appearances are those of an œdematous fibro-myoma. Very small areas of such œdematous fibro-myomatous tissue are seen between fat cells of the lipomatous tissue. Further, single muscle fibres or small groups of muscle fibres frequently lie between the fat cells of the lipomatous tissue. These appearances favour the view that it is the cells of the interstitial tissue that have become lipomatous cells.

Dr. CUTHBERT LOCKYER recalled a specimen from the London Hospital showing a similar condition of lipomatosis. There were about 12 cases on record and the point of interest lay in the doubtful origin of the condition. It might be a superimposed neoplasm or it might be a degenerative lesion. Dr. Lockyer had decided that the latter was more probable and that muscle cells shared in the degeneration.

Dr. HERBERT WILLIAMSON spoke of the paper published by him with Dr. R. St. L. Brockman.[1] His own specimen had shown a quite circumscribed tumour with a capsule in the centre of a fibro-myoma. He had been given an opportunity of examining the tumour described by Dr. Lockyer and he had found evidence of globules resting on the muscle but none within the muscle.

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[1] THE LANCET, 1920, i., 873

Mr. Palmer agreed with Dr. Williamson on this point.

Dr. Andrews briefly replied.

Dr. Geoffrey Evans read a paper on the Study of the Condition of the Arteries in a Uterus removed 24 days after delivery.

Mr. Aleck Bourne read a paper on Puerperal Salpingo-peritonitis.

SECTION OF OTOLOGY.

A meeting of this section of the Royal Society of Medicine was held on Feb. 18th, with Sir Charles Ballance in the chair, when Dr. A. R. Friel read a paper on

Zinc Ionisation and Electrolysis in the Treatment of Chronic Otorrhœa.

He dealt in detail with the results of the ionisation of 217 ears. The outstanding fact was the rapidity with which the suppuration cleared up under the method, in many cases within 24 hours. Ionisation was also an aid to diagnosis. In six of the cases the application of the method did not result in the cessation of the discharge. These had granulations and polypi in addition to the ordinary septic discharge.

Sir James Dundas-Grant supported, from his own experience in the clinic in which Dr. Friel practised the method, all that the author claimed for it. The results seemed best and speediest in cases having a large central perforation rather than a marginal one, though under the ordinary treatment even these seemed to be very obstinate.—Dr. W. Salisbury-Sharpe, who brought some cases from the clinic of the Central London Throat and Ear Hospital, confirmed all that had been advanced by Dr. Friel. One of his unsuccessful cases had complete obstruction in both ears due to perichondritis; as the electrode was unable properly to penetrate the obstruction, improvement had only been temporary. Another case had obvious disease of the mastoid bone, with granulations and a profuse discharge.—Mr. W. Stuart-Low said he had used the method in cases in which there were granulations, but for these he had discontinued it and reverted to the employment of a very fine actual cautery, the results of which were very satisfactory.—Dr. Andrew Wylie spoke of the good and rapid results achieved by the method in some cases he sent to Dr. Salisbury Sharpe.—Dr. P. Watson-Williams said he had been disappointed in one or two cases for which he had tried the method, perhaps because of the presence of complications or some fault in the technique employed. He spoke of cases of old-standing infection of the upper end of the Eustachian tube, and asked how contact of the electrode with the diseased tissue could be ensured. In the light of the present paper he intended to give the plan a further trial.—Mr. Sydney Scott remarked that 17 years ago Mr. West and he used the method at St. Bartholomew's Hospital on the suggestion of the late Dr. Lewis Jones. It was discontinued because it did not succeed in complicated cases in which there were granulations, and because the cases in which it succeeded were those which did not need any surgical treatment at all. He asked whether the cases referred to by Dr. Friel and Dr. Salisbury-Sharpe had been previously examined bacteriologically.

Dr. Friel, in his reply, said the cases now described were not bacteriologically examined before treatment. The method was not intended for the remedy of any factor except sepsis which was accessible to the zinc solution. Granulations and polypi should be removed surgically before ionisation was applied.

Mr. W. M. Mollison described two cases of

Paralysis of Eye Muscles with Mastoiditis

in boys aged 12 and 10 respectively, in which paralysis of the eye muscles occurred in the course of mastoiditis; the first after operation for acute symptoms arising he course of chronic suppuration, in the second in course of simple acute mastoiditis. In the second lumbar puncture did not reveal increased pressure cerebro-spinal fluid. In the first case this fluid was under pressure and was slightly cloudy. Recovery was eventually complete in both. The symptoms in these cases suggested meningitis, and the evidence seemed to point to the eye paralyses being due to metastatic infection rather than to the spread of infection to the tip of the petrous bone, and so to the nerves as they cross to the wall of the cavernous sinus.

Mr. Arthur Hutchison narrated a case of somewhat analogous nature in a boy aged 7 years, though in this the termination was fatal. The trouble seemed to have started with measles. There was pain in the left ear and over the left eye and the temperature was 101°F. After paracentesis of the left tympanic membrane the pain ceased and the temperature became normal. A week later, however, a sudden rigor occurred, with a temperature of 102°. This was of only short duration. A fortnight later there was further ear discharge, with pain, and a squint developed. Mastoid operation revealed red inflamed bone, but no pus, except in the antrum and attic. Five days later the temperature was 103·8°, the pulse 148, the boy vomited three times, and the neck became stiff. Lumbar puncture showed turbid fluid under pressure, which yielded streptococci. Daily injection of antistreptococcal serum did not avert the fatal issue. A post-mortem examination was not allowed.

Mr. Hunter Tod discussed the cases. He said the reason paralysis of the external rectus occurred in cases of acute otorrhœa and mastoid disease was not yet clear, and until that was understood it was difficult to know what was the best line of treatment, and especially whether or not the dura mater should be opened. In his own practice he found cases of paralysis following mastoid disease had been very few. He related two or three. In the presence of sixth nerve paralysis lumbar puncture should be performed, and if a septic focus was discovered it should be removed, care being taken to remove the bone well over the tegmen tympani and the anterior portion of the petrous bone.—Mr. Stuart-Low referred to a case with seventh nerve paresis and sixth and third nerve paralysis simulating cerebellar abscess, which cleared up under increasing doses of potassium iodide.—Mr. W. C. Wilkinson thought most of the cases of the kind were of the pneumatic type. In one fatal case an abscess was found at the apex of the petrous bone, and a large collection of pus at the base of the skull.—The President related some cases in his practice, and said that when a pathogenic organism, such as streptococcus, could be grown from the milky cerebro-spinal fluid, the case usually proved fatal.—Mr. Scott said he looked upon sixth nerve paralysis in ear conditions as an indication of increased pressure of cerebro-spinal fluid. In some the fluid was full of organisms, but in others such were absent.

Epithelioma of Auricle.

Mr. Norman Patterson showed again a patient, a man, aged 67, from whom an epithelioma was removed from the auricle nine years ago by a very extensive operation on account of the widespread glandular involvement.—The President congratulated Mr. Patterson on the case.

Cirsoid Aneurysm Involving Temporal Bone and Neck.

Mr. Patterson also showed a case presenting this condition, in a woman, aged 46, on whom two operations had been performed for removal of polypus from the post-meatal wall, at which the hæmorrhage was very severe. She now had a pulsating expansile swelling in the left anterior triangle with a systolic thrill. Pressure on the common carotid stopped the pulsation. The polypus removed showed no signs of malignancy.

SECTION OF TROPICAL DISEASES AND PARASITOLOGY.

PREVENTION OF TROPICAL DISEASES AND THE RESPONSIBILITY OF LONDON: PRESIDENTIAL ADDRESS.

A meeting of this section of the Royal Society of Medicine was held on Feb. 24th, when Sir Leonard Rogers, C.I.E., F.R.S., delivered the Presidential Address, taking as his subject the future of the study of tropical diseases, and the responsibility which lay upon London in that regard.

He commenced by stating that the claims upon medical attention of tropical diseases were being fully recognised in the pre-war period, especially in this country, inasmuch as a large number of the British population, for public or private reasons, pursue their careers in our dependencies, where only too often they are the prey of parasitic disorders of a tropical nature. The Section of Tropical Diseases and Parasitology of the Royal Society of Medicine, he said, had been started before the war, but full organisation had not been secured when the war arrived, rendering the work of the section imperative on account of the large number of medical men who were brought into contact with every variety of tropical and subtropical disease while serving with the navy and army. Sir Leonard Rogers pointed out that the research work done at the Calcutta Medical College, where he had been professor of pathology, and at the large hospital of 600 beds affiliated, had led to vast public benefit by the prevention of disease, as well as to the promotion of the spirit of research. He described the methods employed to make intelligent appeal to the Home and Indian Governments and to wealthy individuals for money to equip and support this work. Large contributions for the upkeep of the institutions, he said, had come from Indian rajahs and Indian merchants, while subsidies for scientific research had been received from English men and business firms as well, to mention two names, from Sir David Yule and Sir Dorab Tata, of Bombay. He proposed that London, the wealthiest city in the world, having before it the examples of Calcutta and Bombay abroad and Liverpool at home, and the stimulating actions of philanthropists like Mr. H. S. Wellcome and the late Sir Alfred Jones, should endow the London School of Tropical Medicine, so that research laboratories in British tropical countries could be founded in connexion with the school. He believed that the support of the Colonial Office would be forthcoming for such a movement, and suggested that the start should be made by obtaining annual contributions towards the support of research workers to proceed to certain British colonies. He considered that the colonial authorities should supply laboratories wherein the researches should be carried on, these being adjacent to the largest available hospital. The men to do the initial work should, he pointed out, be selected by a strong organising committee, and it was particularly important that their early choice should fall on the right man, as the first five years of work would be critical. This plan, he said, would eventually ensure that all important British tropical possessions would obtain permanent laboratories and the services of scientific workers whose efforts could be supplemented, in accordance with urgent or special need, by temporary workers sent out from the London School.

Sir Leonard Rogers concluded a highly sensible address as follows:—

"I trust I have made it quite clear that I am not criticising the earlier policy, which was doubtless correct in the first stages of the evolution of our home schools of tropical medicine, but I do wish to suggest, in the light of my long Indian experience, that the time has come for the further advance I have indicated. Indeed, I think this has been necessitated by the very success of recent researches in this field, including all the work done on dysenteries during the war, for now so many of the simpler problems have been solved the remaining problems of tropical medicine will require much more prolonged and detailed inquiries, including team-work, such as is being provided for in the Calcutta school, the liberal public support of which would serve as a stimulating example to London philanthropists, and especially to those whose firms or companies trade with tropical countries. Their young assistants have to live in such climates exposed to unnecessary dangers to their health from the lack of the safeguards provided by research laboratories, and I appeal to their employers for support for the proposals I have ventured to bring forward."

MEDICO-LEGAL SOCIETY.—A meeting of the society will be held at 11, Chandos-street, London, W., on Tuesday, March 15th, at 8.30 P.M., when a paper will be read by Sir John Collie on The Plaintiff: a Psychological Study.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

A MEETING of this society was held at 11, Chandos-street, London, W., on Feb. 18th, with Professor W. J. R. SIMPSON, the President, in the chair.

Some Observations on the Pathology of Relapsing Fever.

Lieutenant-Colonel J. C. KENNEDY, R.A.M.C., in his paper on this subject, prefaced a detailed account of the minute pathology found in a single case by alluding to relapsing fever as endemic in Mesopotamia, and the cause of much sickness, particularly amongst Indian troops of the Mesopotamian Expeditionary Force. Its seasonal incidence was most marked during the first quarter of the year 1918–19, the majority of cases occurring in March. The disease was certainly louse-borne, and the organism was either *Sp. obermeieri* or *Sp. carteri*. He referred to a variety probably conveyed by a tick, which was prevalent in Persia but not in Mesopotamia. Early in 1919 there were many cases at Bagdad with considerable mortality. Between October, 1918, and June, 1919, the total case mortality was 3·6 per cent. (British 6·5, Indian 4·5, local 2·5 per cent.). The cases presented marked cerebral symptoms, delirium, and coma—features in common with those recorded by recent writers, including Vandyke Carter. Colonel Kennedy had found but scanty reference to the pathology of the disease in text-books, and quoted from Mackie's review of the subject up to 1908, which failed to demonstrate any characteristic changes other than those of severe septicæmia, such as fatty degeneration of the heart muscles, enlargement of spleen and liver with necrotic areas due to infarction or local concentration of spirillar toxins, hæmorrhages not uncommonly, especially in the kidneys, some bronchitis, and patches of necrosis in the bone marrow possibly due to infarction. Spirilla were demonstrated in the tissues with difficulty, appearing in the blood-vessels and about the hæmorrhages. His own observations were derived from examination of material from a fatal case in an Arab coolie in the isolation hospital at Bagdad.

The patient, who was semi-conscious, showed spirilla in the blood, enlarged spleen, general purpuric rash, marked jaundice and debility, and he died on the day of admission after five days' illness. The autopsy was held 12 hours after death. On microscopical examination spirilla were found only in smears of the surface of brain and in sections of the cortex. The brain also showed much meningeal engorgement and to a less degree of the cortex, superficial cortical hæmorrhages, and small areas of round-celled infiltration under the pia-mater, extravasation of red cells into the perivascular spaces of the pia-arachnoid, proliferation of large mononuclear (endothelial) cells around the meningeal vessels. Much brown pigment, both amorphous and crystalline, was found free in the blood-vessels and spaces and in the large endothelial cells. These showed phagocytosis, particularly in the cerebellum. The liver was large, fatty, and, microscopically, showed cell destruction, round-celled infiltration, engorgement of intralobular capillaries, proliferation of large endothelial cells of Kupffer type, deposition of much pigment, and the presence of many round or oval bodies of uncertain nature. These occurred both free and within the vacuolated gland cells, together with pigment particles, similarly also within the endothelial cells, which showed proliferation and phagocytic power, as in the brain preparations. It was suggested that these "bodies" were either of a specific nature, possibly protozoal, or a phase in the degeneration of polynuclears, but so far neither of these views had been verified. The discovery of spirilla in small numbers in the post-mortem material of the case was limited to the brain surface, and superficial layers of the cortex as revealed by Levaditi's method. Many of them showed a terminal granule or spore-like body, which in his opinion probably provided the clue to the cycle of development of the spirillum responsible for the relapses of spirillar fever. The spleen was large and showed pigmentation, necrotic areas, and large endothelial cells. The condition of the enlarged kidneys and bone marrow added nothing further to what was already known and described, and, with the heart's blood, had failed to show presence of spirilla.

Dr. C. M. WENYON had had the opportunity of careful study of Colonel Kennedy's interesting preparations, and was of opinion that the "bodies" described were possibly degenerated leucocytes of unfamiliar appearance as the result of section in different planes.

point, he thought, could only be cleared up by a thorough examination of a number of serial sections. He regarded the marked endothelial cell proliferation and the phagocytic and wandering properties as in no way characteristic of spirillar fever alone, being a common feature in other infections.

Dr. S. A. **POWELL** spoke of his considerable experience of relapsing fever in Bombay in 1902, when he had carried out as many as 200 autopsies on natives dying of the disease, a number of them collapsing in the streets and being brought in dead, or escaping from hospital when delirious, wandering for miles into the country till finally dropping from sheer exhaustion. In such cases the diagnosis to be determined by post-mortem examination rested between plague and relapsing fever. Splash-like hæmorrhages over the various serous membranes were a common feature, and fatty degeneration of the liver and heart was most marked in cases which had relapsed. He had never found spirilla for longer than six hours post mortem; in fact, they usually disappeared from the circulation within a couple of hours. Past malarial attacks, he suggested, might explain the large amount of pigment found in the material examined by Colonel Kennedy.

Lieutenant-Colonel S. P. **JAMES** (I.M.S., retired) questioned the validity of the diagnosis of relapsing fever, and also regarded past malarial attacks as possibly accounting for the presence of pigment.

Surgeon Rear-Admiral P. W. **BASSETT-SMITH** disregarded pigment as characteristic of relapsing fever, and drew attention to the frequency with which pigment bodies were found in intense toxic infections such as malarial and blackwater fevers.

Dr. W. H. **WILLCOX** referred to his paper on Relapsing Fever in Mesopotamia in 1916–18, read before the Royal Society of Medicine in 1919. The case mortality among Arabs was 8 per cent., among Indians 1 per cent., but there was a negligible mortality among Europeans. Louse infection was the prevailing form of conveyance. At Miani there was a tick infection producing Miani fever, very similar to relapsing fever, which he had met with in North Persia, attacking particularly newcomers.

Dr. G. C. **LOW** inquired as to the number of autopsies on cases of relapsing fever Colonel Kennedy had performed, and alluded to the comparative frequency with which the endothelial cells and pigment were found in malarial infections.

Colonel **KENNEDY**, in his reply, owned that the large amount of pigment present in his case might have been due to past malarial attacks, but no malarial parasites had been found. He regarded the greater part of the pigment as due to relapsing fever, and the great endothelial reaction was, in his opinion, a striking feature. The inclusions of pigment seen in blackwater fever and toxic hæmorrhages were not the same as in relapsing fever. Dr. Powell's experiences bore out the observations of Vandyke Carter, fatty degeneration of organs being most marked in relapsing cases.

The **PRESIDENT** proposed a cordial vote of thanks to Colonel Kennedy for his paper, which he thought might eventually prove an important discovery in the pathology of relapsing fever.

Five Cases of Fasciolopsis Infection.

Dr. A. F. **COLE** (Ningpo, China), in a paper on this subject, alluded to the rarity of the infection, although the five cases he described by no means represented all the cases seen in the wards of the C.M.S. Hospital, Ningpo. From study of sections he had been unable to observe any important differences between the types *F. buskii, rathouisi*, and *goddardi*. He referred to the importance of examining the fresh fluke and to the errors which had arisen from attempting to classify the dead and degenerated fluke. As a result of his own observations he was inclined to believe that it had not been clearly shown that there was more than one species, *Fasciolopsis buskii*, in the part of the Che-kiang province where he had lived. As regards clinical facts, his five cases suggested that: (1) The parasites lived in the stomach, duodenum, and the first part of the intestine only; when found in the large bowel they were nearing the end of their existence. (2) Their ill-effects were not in the direction of blood destruction, but were produced by toxic absorption leading to secondary anæmia, dyspnœa, general œdema, ascites, and skin changes, but without directly causing fever. (3) No melæna had been noted, but diarrhœa was common though blood had been stated to have been passed, but the freshly passed fluke readily resembled blood-clot in a mass of fæces. (4) No cases were observed in infants or young children. This was due possibly to weaning being delayed to the third or fourth year. (5) Unless the parasites were expelled by art or accident the disease might prove fatal, but rapid recovery followed evacuation of the parasites, unless in the later stages of exhaustion. Reference was made to the importance of fæcal examination and re-examination for the characteristic fasciolopsis ova and to the marked motility exhibited by freshly passed flukes in many cases. He thought the epigastric discomfort and irregular diarrhœa might be due to migratory movements of the parasite within the bowel, the change of position being possibly brought about by the cuticular spines and the musculature of the flukes. The size of the flukes varied considerably, in one case ranging between 53·3 and 25·4 mm. in length, and 16 to 9 mm. wide. Courses of thymol amounting to 45 g. in three doses proved the most efficacious treatment.

Colonel **CLAYTON LANE** referred to the importance attached by Goddard to the unity of species of fasciolopsis, who also maintained that the subdivision into *F. buskii, F. cuspei*, and *F. goddardi* represented a series of gradations of type. The question of nomenclature was one of priority. *F. fülleborni*, larger and more oval in shape, met with in Calcutta showed no armature, but Leiper had found spines; he himself had found similar specimens in Assam. The fluke was capable of powerful blood sucking, and was difficult to distinguish in the fæces from blood-clot. The symptoms were largely due to massive infestation and the blood sucking exerted by the parasites with consequent loss of blood. Thymol rapidly caused disinfestation and amelioration of symptoms. He did not consider the symptoms of anæmia, emaciation, &c., as due to simultaneous infection by ankylostoma, as Goddard had only found 2·9 per cent. of fluke disease infected with ankylostomiasis.

Dr. **POWELL** was satisfied that *F. fülleborni* and *buskii* were distinct species; he had met with the five cases of fluke disease in India also infected with ankylostoma.

Dr. **COLE**, in reply, did not regard the differentiation into species as warranted. Professor H. B. Ward had described the species *F. goddardi*, but this was now repudiated by Goddard himself. Concurrent infection with ankylostoma he regarded as rare and could be excluded from his Case 729, in which a total of 485 flukes had been passed while under treatment during a period of two months. Fluke disease in India was undoubtedly very uncommon, and this was borne out by Sir Leonard Rogers, who had not met with any cases.

Dr. A. **CONNALL**, W.A.M.S., in a paper on the results of

Examination of Chrysops for Filaria in West Africa,

said that Sir Patrick Manson had first suggested *Chrysops dimidiata* as a possible carrier of *Loa loa*, and this suggestion Leiper had ascertained to be well founded. Dr. Connal's observations had been made in 1917 and a number of feeding experiments had been carried out in the Medical Research Institute at Lagos. No fewer than 2255 specimens of *C. dimidiata* and *C. silacea* had been dissected, work which had been almost entirely conducted by Mrs. Connall. The district was one heavily infested by mangrove flies and the natives showed heavy blood infection by embryos of *Loa loa*. In the course of the dissections of 2255 specimens of Chrysops, of 2006 *C. silacea*, 16 had been found infected, and of 249 *C. dimidiata* 6 were found infected with *Loa loa*. Examinations were also made of the monthly results of Chrysops infection. May and June, the wettest months, provided the heaviest incidence of infection.

The **PRESIDENT**, in praising the value of Dr. Connall's observations, paid tribute to the excellence of Mrs. Connall's work at the London School of Tropical Medicine.

Dr. **LOW** stated that the host of *F. loa*, though not yet proved, might probably be Chrysops. Feeding experiments were attended by very great difficulties from the necessity of raising the insect from the pupa owing to the uncertainty of obtaining an insect free from previous animal filarial infection. The geographical distribution of the fly and *F. loa* was very exact. Intermediary stages of filaria had been found in the muscles of Chrysops and not in the Malpighian tubes. The embryo of *F. loa* measured 1/16th inch in the proboscis of the fly, just as in the case of *F. bancrofti* and the mosquito.

TUBERCULOSIS SOCIETY.

A CLINICAL meeting was held at the Margaret-street Hospital for Consumption, London, W., on Feb. 28th, Dr. NATHAN RAW, M.P., the President, in the chair.

Dr. JOHN SORLEY showed a case of Bilateral Fibroid Phthisis in a girl aged 7, complicated by unusually extensive hairy pigmentary nævus, involving a large part of the trunk and thighs. This was followed by a demonstration of X ray plates of tuberculous cases.

Dr. WILLIAM GORDON (Exeter) read a paper on

Rain-bearing Winds and Tuberculosis.

The paper dealt in brief with the evidence in favour of two main contentions, that exposure to strong prevalent rain-bearing winds (1) increases the prevalence of phthisis, and (2) has an injurious effect on existing cases.

The starting-point of the observations was the fact that those rural sanitary districts of Devon which faced south and west—that is, with the aspect then considered ideal for a phthisis health resort—were just those which showed the highest death-rates from the disease. The influence of soil, rainfall, sanitation, and social conditions was excluded and the matter investigated further by taking a series of parishes classed as "sheltered" or "exposed," when it was found that the phthisis death-rate was much higher in the latter than in the former. To the obvious objection that small numbers tend to produce large exceptions to any law of incidence, could be opposed the fact that exceptions were so few as thereby only to increase the cogency of the law. In the Okehampton rural district the average death-rate in the exposed parishes was nearly five times as great as that in the sheltered, and the disproportion was equally striking in the Barnstaple district, results which have been confirmed recently by Dr. J. Brownlee. Equally decisive results were obtained in respect of the sheltered and exposed streets of Exeter. By applying to these investigations the principle of "the approximate isolation of influences," by which is denoted the systematic enumeration of all the known influences involved and their successive elimination as far as possible from the problem, Dr. Gordon considers that the rain-bearing prevalent winds have emerged from this severe test as one of the most powerful of all influences known to affect the death-rate from the disease. Corroboration of this view has come from Japan, the Sandwich Islands, the Falklands, the Faroe Islands, and Iceland. It explains, as nothing else can do, the exceptions and difficulties met with by other investigators who have endeavoured to account for the prevalence of phthisis on the basis of soil, geographical distribution, occupation, density of population, or other factors. Further, Delépine found, on mapping out the situation of 1524 farms which supplied Manchester with milk, that great differences existed with regard to the prevalence of bovine tuberculosis in them. Using the data so ascertained, the lecturer showed that tuberculosis was from twice to five times as prevalent in farms which were exposed, partially or fully, as in those which were similarly sheltered.

As to the influence of these winds on the course of the disease, evidence, though far from complete, is yet very suggestive. Records from sanatoriums in different localities, under varying conditions of wind and rain, in sheltered and exposed situations, and comparison of collective results are suggested as the lines on which future inquiry should run. Already, however, they point to such an influence being manifested, while as regards the average duration of fatal cases under the contrasted conditions it is found that a higher proportion of cases of shorter duration (short cases, those lasting 9 months or less; long, 15 months or more) occurred in the exposed areas and a higher proportion of longer duration in the sheltered areas. Somme has recently drawn attention to the evil effects of wind and rain on sanatorium patients in Norway, the number of those discharged as improved being lessened after exposure to a period of persistently bad weather. The limits of effective shelter may be approximately defined in terms that a ridge 100 ft. in height will afford effective shelter to half a mile of flat country level with its base and more or less shelter to nearly half a mile further.

Dr. CAMPBELL MCCLURE cited the fate which befell the establishment of an annexe for consumptive patients in connexion with the French Hospital at Brighton. Being on the sea-front, it had to be closed as the results were found to be bad. Transferred to more sheltered conditions at Hastings the results have been good. Moral—the sanatorium should not always be blamed for bad results.—Dr. H. A. ELLIS stated that he had, when at Middlesbrough, to stop sending his patients to Redcar and Saltburn on the Yorkshire coast as the results were so uniformly disastrous, due to the effect of the prevalent north-east wind. He suggested that Ceylon, with its two monsoons, would be an admirable locality for the study of the effects of the winds on phthisis.—Dr. JANE WALKER considered that the fact that the patients in the Norwegian sanatorium, alluded to by the lecturer, were allowed to struggle against driving rain during their walks should be discounted in estimating the evil effects of the treatment.—Dr. F. RUFENACHT WALTERS commented on the exhausting effects of walking against strong winds, and the carrying of wet clothing in the case of ambulant patients, and the tendency to keep windows closed in streets exposed to such winds.—Dr. HORACE WILSON, from personal experience of practice in the Isle of Man, stated that phthisis was much more prevalent south of a ridge which separates the island into two parts than north of it, the latter being more sheltered and protected from the prevailing winds.—Dr. SORLEY pointed out that, despite the continuance of prevailing winds, the death-rate from tuberculosis was rapidly decreasing, and probably the disease itself was also less prevalent nowadays, so that other factors must be involved.

SHEFFIELD MEDICO-CHIRURGICAL SOCIETY.

A MEETING was held on Feb. 17th, Dr. F. J. SADLER, the President, in the chair.

Dr. J. S. FAIRBAIRN (St. Thomas's Hospital) opened a discussion on the question

Does Midwifery Practice and Teaching Require Reformation on Physiological Lines?

He said that midwifery was an integral part of medicine, being part of the larger subject of reproduction, and the importance, so tardily recognised, of the care of the rising generation to the national health and welfare, has given it a new and enhanced value. The present-day tendency in medicine is to study disease from the physiological side and discover the earliest evidence of disturbed function, and this tendency ought also to be our attitude towards midwifery practice. Dr. Fairbairn pointed out that this had not been the case in the past, as shown by the neglect of the physiological feeding of the infant for the perfecting of substitute feeding, at which great success has been attained, but along non-physiological lines. Considering the application of physiology to the conduct of labour, Dr. Fairbairn said we had hitherto concentrated on the artificial termination of labour by instrumental aid; the attendant's biceps had been the substitute for the uterine muscle in cases of indifferent uterine action. We should not argue on the sterile question as to when and when not to use forceps and the factors that interfere with good uterine action. We should discuss how their use may be eliminated, forceps delivery being regarded as the result of a failure to secure normal and physiological parturition. The two factors to which most of the cases of delayed labour in otherwise normal cases could be ascribed were emotion and fatigue. The discussion should turn on suggestions as to how these factors could be avoided, and whether the use of sedative drugs to diminish sensitiveness and secure rest was less physiological than operative interference. Dr. Fairbairn concluded by a reference to the future of midwifery practice, to the respective spheres of the practitioner and the midwife, and to the training and teaching of students.

The PRESIDENT emphasised what the speaker had said as to the importance of controlling the emotional factors which tend to disturb labour.—Mr. MILES PHILLIPS considered the pathological aspect of labour as being the one most calling for practical attention.—Mr. W. W. KING also thought that labour, from the point of view of the practical obstetrician, was best regarded as pathological.—Dr. SAMSON MATHEWS and Dr. W. E. HOULBROOK also spoke.

Corrigendum.—In our last week's issue lines 9 and
top of first column of p. 488 should read "the total
might be anything from the *15 per cent.* given by S
Hale-White to over *30 per cent.*"

Reviews and Notices of Books.

EXOPHTHALMIC GOITRE AND ITS NON-SURGICAL TREATMENT.

By ISRAEL BRAM, M.D., Instructor in Clinical Medicine, Jefferson Medical College, Philadelphia; Physician on Visiting Staff of Philadelphia General Hospital. London: Henry Kimpton. 1921. Pp. 438. 32*s*.

THE author of this work says in his preface that although "many books have been written on exophthalmic goitre—some mediocre, others very valuable—but little, if any, thought or space is given to remedial measures which do not require the knife." He hopes, among other things, to convince the reader that exophthalmic goitre does not belong to the realm of surgery. The burden of the book is "the futility of surgery in the therapeusis of the disease." In Dr. Bram's opinion any improvement that may be noticed after operation is of short duration.

Dr. Bram has been neither generous nor just to surgeons, and has reviewed surgical treatment with bias. His indictment is founded on certain premisses which are at present too controversial to be admitted as a basis for argument, such as the mortality of the operation, which he considers to be higher than the stated 5 per cent., while other authorities contend that with suitable precautions and care in selecting cases the surgical mortality is practically nil. Moreover, the mortality of the disease, apart from operation, must be taken into account. To say that patients only die from exophthalmic goitre when non-surgical treatment is "too greatly postponed" is contrary to all experience. That "many patients succumb to immediate post-operative acute exacerbations of hyperthyroidism" is quite untrue for this country if it means to imply that many patients who survive the operation so succumb. Dr. Bram states that "recurrences of goitre and symptoms mean multiple operations with the attending dangers." It is true that more than one operation may be necessary to attain the best result. But this is not because there is a recurrence of the goitre, but because a sufficient amount of the gland has not been removed at the first or even the second operation. It really amounts to doing the operation in stages for greater safety, for there is less risk with the second operation than with the first. Another apprehension put out by Dr. Bram is that the patient, "hypersensitive to the extreme degree, may die of fear or worry over the operation or even by light infection following surgical procedures." This is seldom encountered in practice; any great fear or dread of the operation in the patient is a well-recognised contra-indication to operation. The meaning of Dr. Bram's statement that "the frequent presence of sugar in the urine is a contra-indication to surgical procedure" is not clear to us. Certainly, if there is evidence of diabetes operation is contra-indicated, but this is not common. The danger of death by status lymphaticus, so dreaded by him, can be avoided by employing local anæsthesia, and that of tetany as a sequela due to the removal of the parathyroid glands is sufficiently remote; an eminent surgeon has observed it only once in 700 cases. Injury to the recurrent laryngeal nerve directly through the operation or subsequently by pressure of scar tissue does, as Dr. Bram says, sometimes occur, but it does not lead to serious disability as only one cord is paralysed. Post-operative myxœdema is rare, and can be effectively treated with thyroid preparation. It is certainly less distressing to have myxœdema than Graves's disease. A loss of initiative to get well and a general disgust with life and the medical profession after operation have not been met with in our experience.

The author has conjured up a number of bogeys hich have no real substance, and his use of quotations ot always disingenuous. He says "far-sighted ons in all parts of the world are now becoming ical with regard to their accustomed method of treatment of this disease and are beginning to lag in enthusiasm with respect to surgical interference in exophthalmic goitre." He then quotes the following words from the writings of Mr. James Berry, whose reputation as a thyroid surgeon is world-wide.

> "Reviewing the whole subject of the operative treatment of exophthalmic goitre, it seems to me that it may reasonably be doubted whether surgical treatment is not on the whole worse than useless. ...... None of the operations that have hitherto been practised upon the gland, the thyroid vessels, or the sympathetic are free from risk. Actual proof that any of them actually cure the disease is at present wanting. The sympathetic operation, although it may, and probably does to a slight extent, diminish the exophthalmos, does not usually cure it completely, and may be followed by very serious results, such as inflammation of the eye and even blindness. The larger operations upon the gland itself, such as extirpation, are attended with so much danger as to make them undesirable. ...... With regard to ligature of the thyroid vessels, it still seems to me doubtful whether this proceeding is followed by cure sufficiently often to justify its performance."

These words are taken from Mr. Berry's treatise on "Diseases of the Thyroid Gland and their Surgical Treatment," published as long ago as 1901. This work is entered in the bibliography, but its date is omitted. Comment is needless. Since 1901 Mr. Berry's views have very much altered, as the author could have seen for himself had he referred to Mr. Berry's Lettsomian lectures,[1] or his review of the present position of surgical treatment of exophthalmic goitre.[2] Dr. Bram's account of surgical treatment is grossly incorrect as a representation of present day practice. He jumbles together all the various operations which have ever been suggested, and adds some which have never been even entertained, and gives the lot as specimens of what surgeons have been "doing in the past decade in different parts of the world and during moments in the career of the same surgeon." The recent discussions at the Royal Society of Medicine show how few of these operations are now used by surgeons.

We have quoted enough to show that Dr. Bram does not present fairly the pros and cons of surgical treatment of Graves's disease. Judgment must follow results, and while the time may come when exophthalmic goitre may be always successfully treated by medical means, surgical treatment at present affords in some cases better results than any other known treatment. The treatment which Dr. Bram himself favours has been in use for many years, and is what is known in the middle west of America as the Forcheimer treatment. It consists essentially in the administration of hydrobromide of quinine in 5 gr. doses three times a day. According to Dr. Bram it should be continued day after day for at least a year after all symptoms have disappeared, and so if a patient has already had the disease three years when the treatment is started, it will take three years more before a relative cure is effected. Dr. Bram combines the quinine with other remedies and gives 12 formulas for capsules, so that the practitioner can ring the changes during the long period of treatment. A little veronal may be added if there is nervousness; a little ergotin if vascular disturbance; a little iron or arsenic if anæmia; lecithin if debility, and so on. This persistent quinine treatment, combined as it is with other methods commonly employed, may, in some cases, be followed by a relative cure.

We do not in any way underrate the importance of medical treatment, and physicians are more or less agreed as to the lines on which this should be carried out. The basal metabolic tests increasingly used in this country as well as in America will serve to indicate the progress of the patient with an accuracy formerly unknown. Many cases get well under medical treatment only, and all cases should first have a fair trial of medical methods. It is agreed that everything should be done to put the patient on a higher plane of health. If Dr. Bram were to control his prejudices, cut out his redundancies, and thus compress the book to half its present size, he might still transform it into a useful handbook for the general practitioner, and we hope he will do so.

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[1] Transactions of the Medical Society, vol. xxxvi.

[2] British Journal of Surgery, vol. i., No. 4, 1914.

PHYSIOLOGICAL CHEMISTRY.

A Text-book and Manual for Students. Third edition. By ALBERT P. MATHEWS, Ph.D., Professor of Biochemistry, University of Cincinnati. London: Baillière, Tindall, and Cox. 1921. Illustrated. Pp. xiv. + 1154. 40*s.*

THIS new edition of Professor A. P. Mathews's well-known book on physiological chemistry is slightly disappointing, for it appears to be only a revised edition of the former work with a few additions, mostly in connexion with the practical section which forms the last 250 pages. Otherwise the main change is in the chapter on vitamines. This subject is developing so rapidly at present that it is scarcely possible to write an up-to-date account of it. It is a subject, too, about which so much has been written and spoken that the task of the author is all the more difficult. The various experiments and writings require the most careful sifting before we can arrive at the truth. Professor Mathews has, however, given a very lucid introduction to the subject. The practical portion is overloaded for the ordinary student, but of the utmost value to the honours or post-graduate student. It would have been a help if some distinction had been made in the type between elementary and advanced exercises. Among the small amount of new matter introduced we notice particularly the method of Dakin for separating the amino-acids, which is sure to be extensively tried by other workers in due course; also the formula by Kendall for thyroxin, the active principle of the thyroid gland.

The book can be thoroughly recommended. Professor Mathews is particular to present the real facts of a subject and omits or severely criticises unsupported theories. His chapter on blood coagulation is the best example of this. All the facts as observed by Wooldridge are carefully described, and it is explained how they represent the actual process. The author finds no use for the extravagant theories of the German workers to explain this complex phenomenon. In another edition all biochemists will wish Professor Mathews to give in a similar way the facts about immunity; here again theories are so interwoven with experimental data that it is almost impossible to ascertain the real position.

We can all understand what a laborious task it has been to write a large text-book and keep the whole of it up to date, especially in a subject like bio-chemistry, which is extending so rapidly in all directions. This text-book is really the only modern one actually written in our language, the others being translations, though we have numerous books on the practical part. Finally, we regret to see so many misprints.

CROWLEY'S HYGIENE OF SCHOOL LIFE.

Fourth edition, revised. By C. W. HUTT, M.A., M.D., D.P.H. London: Methuen and Co., Ltd. 1921. Pp. 450.

THE fact that within four years three editions of this work have been issued, is sufficient proof alike of the interest and importance attaching to the subject, and of the ability with which Dr. Hutt has met the need of a cheap and handy guide for the school medical inspector and administrator. The passing into law of Mr. Fisher's Education Act of 1918 has greatly widened the possible range of school medical activities, and Dr. Hutt has taken advantage of the present re-issue to introduce references to some of the most important questions arising out of this Act. The bearing of the new provisions on the employment of school children in wage-earning occupations is shortly discussed in Chapter XIV.; while among the appendices are reproduced the gist of the circulars issued by the Board of Education regarding the establishment of nursery schools and in connexion with the medical inspection of pupils in secondary and continuation schools. In view of the probability that most of the sections of the new Act will lie fallow for some time owing to the present need for rigid economy, no doubt Dr. Hutt has done well to restrict himself merely to indicating these possible extensions of the school doctor's work without discussing them in any detail in the text.

Brought thus up to date, the work remains the best handbook we possess at present for the use of the school medical inspector.

REGIONAL SURGERY.

De Ruyter und Kirchhoffs Kompendium des Speziellen Chirurgie. Neu bearbeitet von Dr. F. ERKES und Dr. B. O. PRIBRAM. Berlin: Karger and Co. 1921. Pp. 422.

THIS surgical vade-mecum is now in its fourteenth edition and has undergone considerable revision at the hands of its present editors. The 118 "illustrations" are all simple diagrams and help to elucidate the text, which is necessarily condensed. The book has evidently found a secure place in the category of "potted" works on surgery, though the index appears to us to be inadequate for a manual which must be primarily useful for purposes of rapid revision before examination.

SURGERY OF THE COLON.

La Chirurgia del Colon. By Professor ARISTIDE MATTOLI. Rome: War Office Stationery Department. 1920. Pp. 137.

THE author's series of 64 cases of operation on the colon forms the basis of this monograph. The operations are classified under 10 headings, one of the chief of which is, of course, colectomy. Professor Mattoli does not, however, practise this operation for intestinal stasis; his records show that for this condition he prefers appendicostomy, lateral anastomosis (transverso-sigmoid or cæco-sigmoid), or ileo-sigmoidostomy. The monograph forms a full and useful summary of the operative treatment of diseases of the colon.

THE HORTON WAR HOSPITAL.

The Story of the Horton (County of London) War Hospital, Epsom. By Lieutenant-Colonel J. R. LORD, C.B.E., M.B., Officer Commanding. London: W. Heinemann. 1920. With 7 plates and a plan. Pp. 264. 12*s.* 6*d.*

BEFORE the war Lieutenant-Colonel J. R. Lord was the medical superintendent of the Horton Asylum at Epsom, afterwards converted into a military hospital, and he has now compiled an interesting record of the work done there for sick and wounded soldiers. The first batch of patients arrived in May, 1915, and when the hospital closed in the autumn of 1919 some 45,000 patients of all ranks (including naval officers and men) had received treatment in the institution. The conversion of an asylum into a large military hospital necessarily involved difficulties; these were successfully overcome, and the book tells a story of services generously rendered to our wounded soldiers by all sorts of people. Any profits that may accrue from its sale will be devoted to the erection of a war memorial in the hospital chapel.

PERSONAL BEAUTY AND RACIAL BETTERMENT.

By KNIGHT DUNLAP, Professor of Experimental Psychology in the Johns Hopkins University. London: Henry Kimpton. 1920. Pp. 96. 6*s.*

IN the first part of this book the author maintains the vital importance of beauty to the race, and in the second part develops the theme that beauty should be conserved by the pursuit of certain ideals. To Professor Dunlap the main importance of marriage as an institution is its primary function of the procreation of children; the spirit of comradeship which arises between two people whose lives and interests are so closely interwoven does not impress him so strongly. He regards the common assumption that the maternal instinct is far stronger than the paternal as fallacious. The Greek ideal of physical beauty admired by Professor Dunlap is assuredly desirable, but beauty belongs not to form alone, and connotes other qualities which human betterment demands.

JOURNALS.

British Journal of Dermatology and Syphilis.—In the February number is an extended version of the Case of Human Glanders by Dr. F. H. Jacob and others which appeared in THE LANCET of Nov. 6th, 1920 (p. 941). The illustrations include an excellent coloured plate of the cutaneous lesions of the trunk. Professor H. M. Turnbull describes in great detail the different cells found in the inflammatory foci, and shows that, although the lesions resemble those caused by other pyogenic microbes, they differ in certain important particulars. Vascular lesions are conspicuous, and the inflammatory reaction is strictly vascular in its distribution. Further, the dense leucocytic infiltration is associated with great activity of the fixed tissue cells, which exhibit a high degree of phagocytic power. The giant cells, often described as characteristic elements in the glanders lesion, were, apparently, absent. It is remarkable that all attempts to isolate the infecting organism failed, and the diagnosis was only established by the demonstration in the lesions of organisms morphologically resembling the *Bacillus mallei* and the similarity of the inflammatory reactions to those occurring in cases of proven glanders, which is something of a triumph for the histologist. Pathologists will welcome this description by a recognised authority of this rare and most difficult type of inflammation.—In a brief article Professor C. Rasch, of Copenhagen, describes the effect of the sun's rays upon a syphilitic eruption in a girl of 19. Macules and papules, otherwise almost general, were absent on the upper part of the chest and back left uncovered by a low-cut blouse. He raises the general question of the value of insolation in the treatment of syphilis.

Journal of Industrial Hygiene. London: Macmillan and Co., Ltd. 30*s.* annually; single copies, 4*s.*—A series of articles dealing with the dust hazard in industry have recently appeared in this journal. The first, by Messrs. E. S. Longfellow and A. C. Fieldner, published in the September number, discussed the efficiency of the Palmer apparatus for determining dust in air. The method employed in this apparatus, which is being used extensively in the United States, is to wash the dust from a measured flow of air with a water spray. Two tests were applied: the first was the Tyndall light effect in which one stream of tobacco smoke, after passing through the Palmer apparatus, was admitted to a Tyndall box, while another stream passed directly into another box. Similar beams of light were passed through these boxes, and the proportion of pure air necessary to dilute the unfiltered smoke until the light effect was the same in the two boxes was determined. Only 13 per cent. of tobacco smoke was found to have been removed, while, when air containing finely divided silica dust was filtered, 30 per cent. of the dust disappeared. The second method was to weigh the dust retained from a dusty air sample in the Palmer apparatus and compare it with the weight of dust removed from a similar sample by the Cottrell method of electric precipitation. The Palmer apparatus retained about 45 per cent. by weight of the dust. Clearly the value of this apparatus is for comparative rather than for absolute determinations of the amount of dust present, and statements as to the dust content of air are unreliable unless the method of determination used is stated.

Two other articles by Dr. C. E. A. Winslow and L. Greenburg in January and February deal with industrial tuberculosis and the control of factory dust. These authors, when discussing the prevalence of phthisis in industry, are certainly in advance of some American authorities, since they appreciate the paramount influence of age-distribution when considering statistics; but they show a tendency to ascribe excess of phthisis in any industry to dust without considering whether dust capable of predisposing to phthisis exists in the industry. The argument goes in a circle; industrial phthisis is due to dust, therefore there must be dust; therefore the dust causes the phthisis. America will presently discover that there is not always harmful dust present, that some types of phthisis in industry have nothing to do with dust, and that the type caused by dust (silicosis) is always associated with other forms of pneumonoconiosis. At present there is much loose thinking and writing, for the most part based on Hoffman's unfortunate statistical data regarding mortality from respiratory diseases in dusty trades—a fair proportion of which are not dusty at all. We recommend to the writers the excellent summary of the position contained in the second Report of the Royal Commission on Metalliferous Mines and Quarries published in 1914, which seems to be quite unknown in the United States.

Their second article reports a valuable set of determinations made under comparative conditions as to number of particles and weight of dust found under various processes. The determinations were made with the Palmer apparatus; and the plea is put forward for standardisation, since weight alone is a fallacious guide; particles of a diameter greater than 10 microns cannot enter the pulmonary alveoli, and should not be considered. The number found per cubic foot of air varied from 7000 to 50,000 on different days in the country, reached 153,000 in city air, and 50,000,000 in an axe-grinding shop. The authors establish the value of efficient exhaust systems for dust removal, and show how a reduction in suction head in the exhaust ducts is quickly followed by an increase in air dustiness. Special attention was directed to protecting men employed in the unusually dusty process of sand-blasting; and the method employed in this country of protecting the worker by a helmet into which a supply of fresh air is driven was found to give an efficiency only slightly increased by the additional use of a respirator. The authors suggest as a practical standard that the dust in the air of workshops should be kept down to an average of 0·03 mg. per cubic foot of air and should never exceed 0·06 mg.; and, further, that such dust content of the air should be kept under a maximum of 300,000 one-fourth standard unit (1/10 micron) particles per cubic foot, and should not average over 200,000 particles. This paper is of considerable interest.

Another article worthy of note, by J. P. Baumberger and E. G. Martin, on Fatigue and Efficiency of Smokers in a Strenuous Mental Occupation, appeared in the October number. Definite results were obtained by no means favourable to the use of tobacco. Telegraph operators were observed; heavy smokers failed to maintain the level set by light smokers, they exhibited a lessened ability to sustain output to the end of the working day and a diminished capacity for reacting by increased effort to an increase in volume of business. But somewhat unexpectedly the heavy smokers showed a better output during the first hours of the day, although not nearly enough to compensate for their lowered efficiency toward the close of the day. The subject of fatigue also receives attention in the January issue, which contains a reply by Josephine Goldmark and Mary Hopkins to a criticism of Dr. Drinker's on their report upon comparison of an eight-hour plant and a ten-hour plant.[1] The reviewer had expressed greater appreciation of the pioneer work done by the Health of Munition Workers Committee in this country than of the American report. The reply, while not entirely convincing, makes out a good case for reconsideration; but we regret to find no attempt made to answer the criticism which appeared last August in THE LANCET upon this report. Here we would again emphasise that we find again and again writers in this Anglo-American journal apparently quite unaware of work carried out on this side of the Atlantic; surely the British editors ought to keep the contributors better up to date.

Closely associated with the subject of fatigue is an article by D. S. Gates, which appeared in December, on a Statistical Study of Accidents in Certain Textile Mills. Accidents were found at a maximum at 9 A.M. and 3 P.M., and appeared to be influenced by high speed of work rather than fatigue. Youths, aged 18 years, sustained the greatest number of accidents. Males had nearly twice as many accidents in proportion to their numbers as females; but they undertook processes with greater accident risk. Certain overseers were found with an undue proportion of accidents among their groups of operatives, the excess depending on the risk of the processes. Mr. Gates's paper, although not establishing any new underlying factor in accident causation, is an excellent example of the way in which any industrial concern may ascertain by simple investigation where accidents are occurring and why. The engineer thereby is guided in his work to important points.

One of the most important of recent articles was contained in the December issue on Experimental Trinitrotoluene (T.N.T.) Poisoning, by Dr. S. R. Haythorn. This article summarises the experimental work done in America on this question and its appearance fortunately synchronises with that of the recent report of the Medical Research Council on T.N.T. poisoning and the fate of T.N.T. in the animal body. Dr. Haythorn experienced the same difficulty as British workers in obtaining typical pathological lesions in animals. Nevertheless, his experiments led him to conclude that the respiratory tract, through the inhalation of T.N.T. in the form of fumes or dust, was negligible as a portal of entry for the poison; on the other hand, both the skin and the alimentary tract appeared important. Feeding was the form of administration adopted; and 19 out of 28 guinea-pigs exhibited liver lesions, but only one instance could justly be called acute yellow atrophy. Simultaneous administration of alcohol had no effect on the progress of toxic symptoms. Although toxic jaundice was difficult to obtain, severe anæmia, not unlike aplastic anæmia as seen in human beings, was readily produced in guinea-pigs. The author details the result of examining the various organs of the body, laying stress upon blood changes. His summary is:—

> "The chief factors leading to the terminal pathological findings appeared to be hæmolysis, probably associated with the formation of methæmoglobin, hypersecretion of bile, general asphyxiation of all tissues, direct toxic action of T.N.T. on the liver, bone-marrow hyperplasia, and final failure of kidney function."

This paper, which contains a useful bibliography, is a valuable contribution to knowledge of T.N.T. poisoning.

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[1] Public Health Service Bulletin, No. 106.

THE LANCET.

LONDON: SATURDAY, MARCH 12, 1921.

The Dangerous Drugs Act and the Draft Regulations.

THE Dangerous Drugs Act, it will be remembered, was the outcome of an International Conference, when it was agreed that measures should be taken to limit and control the distribution of certain dangerous drugs. Primarily, this limitation was intended to check the sale and exportation of these drugs to nations where, it was alleged, grave physical deterioration was resulting from their employment. Recent events, however, appeared to indicate that it was necessary for restrictions upon the distribution in the British Empire to be made more stringent, in spite of the protection given by the Poisons and Pharmacy Act of 1908, with the Schedule attached thereto, which together had hitherto been deemed sufficient safeguards. Hence the scope of the Draft Regulations under the Dangerous Drugs Act was extended, and although several versions have appeared in the press,[1] we believe the final form is not yet ready to be placed before Parliament. It is to be regretted that these Draft Regulations have not been more sympathetically received. They have been made almost a party question, and instead of being greeted by serious attempts to improve them or to seek to understand their scope and their effect both on the medical profession and on the dispensing chemist, a chorus of condemnation has occurred which may gravely imperil the working of a valuable Act.

The insufficiency of the powers claimed under the Pharmacy Act scarcely needs demonstration. That they have not led to the genuine control of the distribution of such drugs as morphine and cocaine has been shown again and again in the published records of cases of poisoning. Numerous fatalities have indicated that the existing regulations have been interpreted with great laxity. In a fairly recent case it was evident that although the inordinate quantity of the drug supplied might have caused suspicion, no steps were taken to question the validity of the prescription, which purported to be written by a doctor, but was suspected to be a forgery. While the dispensing chemist is undoubtedly the individual who is primarily affected by any regulations under the Dangerous Drugs Act, it must be remembered that, in his business, he has in past times been the chief agent for the distribution of drugs connected with the so-called drug habit. It is only comparatively recently that in this connexion morphine has been largely replaced by cocaine or by derivatives of morphine or cocaine, and an illicit traffic in these drugs has given rise to numerous prosecutions outside the ordinary channels through which they might have been expected to enter this country.

Any regulations to check the importation, the possession, and the unauthorised employment of these drugs, must be wide enough in scope and yet sufficiently detailed to cause a certain respect for the law, and for the penalties entailed through reckless carelessness or disobedience. When the Draft Regulations have passed through a process of adjustment they will not, we believe, be found irksome to the medical prescriber in private or in hospital work. They have been misrepresented by persons with imperfect acquaintance with their details, or by persons who prefer that the past conditions, with all their risks, should be maintained. As will be seen from our Parliamentary report, the Home Secretary has offered to exempt medical prescriptions containing narcotics from revelation of contents, and to meet the difficulties of the dispensing doctor. Further consultation with doctors, dentists, pharmacists, and veterinarians should ensure the removal of hardships, and to this end a watching committee of Members of Parliament has been appointed.

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Bilharziasis and its Treatment.

THE article by Professor H. B. DAY in this issue of THE LANCET, dealing with the treatment of bilharziasis in Egypt upon an extensive organised basis, constitutes another landmark in the therapeutics of a widespread and distressing malady. We note that an analysis of this large series of cases—one thousand in all—confirms the specificity of antimony tartrate for bilharziasis by the intravenous route, a method introduced by Dr. J. B. CHRISTOPHERSON in Khartoum and published in a series of papers in this journal over two years ago. An interesting addition is made to the series to-day, in which Dr. CHRISTOPHERSON sums up his experience upon the intravenous injection of antimony tartrate in the range of conditions for which it is appropriate. Meanwhile, during the last year the treatment of bilharziasis has been organised on an extensive scale in the Kasr-el-Aini Hospital, Cairo. Intravenous injections of antimony tartrate are now given as a routine method of treatment in the out-patient department. That no untoward symptoms have been noted and that this method has been successful in curing the majority of disease would indicate that the toxic effects of antimony, when properly given, have been somewhat overestimated, for we learn that the majority of patients returned to work immediately after treatment. Although the number so far treated has been comparatively large, and although the system instituted at Kasr-el-Aini is to be expanded throughout other parts of the Delta, Professor DAY holds out no hope that this disease will be extirpated from Egypt by any such curative measures. The proportion of the population infected with bilharziasis in one form or another is so high and the chances of reinfection in such an agricultural population so great, added to the fact that rats and other lower animals are susceptible to infection, that there is little possibility of banishing the disease, save by a combination of vigorous sanitary measures directed against the intermediary hosts of the parasite, together with wholesale intravenous therapy.

In treating the Egyptian fellaheen in the out-patient department Professor DAY and his colleagues were bound to encounter many difficulties arising from various causes. We learn that one-third of the patients ceased attending after one to three visits; 313 received less than 5 gr., only one-quarter of the total more than 15 grs. Directly amelioration of their more urgent symptoms sets in—that is to say when the activities of the bilharzia parasites are but temporarily suspended—patients would cease to attend. In order to achieve a permanent cure at least 13 gr. of antimony tartrate are necessary, though still larger amounts are desirable; only 19 cases of the series received more than 30 gr. As CHRISTOPHERSON originally pointed out, the effect of the antimony is primarily exerted upon the ova themselves, and they become shrivelled and blackened. Upon the parent trematodes the action of the drug is cumulative, and does not take effect till a total of 9 gr. has been administered. Treatment must be continuous, for if interrupted for any length of time the parasites are given a chance of recovery from the primary intoxication. For an adult daily injections of 1 to 2 gr. are advocated during the first week, followed during the second and third by 2-gr. injections given on alternate days. Antimony tartrate has the same effect upon intestinal bilharziasis—that is to say, upon *Schistosoma mansoni*—as it has upon the vesical disease caused by *S. hæmatobium*. The drug has been given in a more concentrated form than has hitherto been customary with perfect safety—that is, in a strength of 6 per cent. (1 gr. to water 1 c.cm.). Emetine also appears to be toxic to the bilharzia parasites, as has been claimed by DIAMANTIS and ERIAN; it is indicated more particularly in the infantile form, but more exact observations are required before this point can be settled. It has been suggested that it may exert a deleterious effect upon the ova but not upon the adult trematodes. At any rate there is little probability of this drug supplanting antimony tartrate in the routine treatment of this disease, as the cost of emetine injections on a large scale would be prohibitive. Intramuscular injections of colloidal antimony are said to have given encouraging results, and the advantages of the intramuscular over the intravenous route of injecting antimony in out-patient practice are so obvious in dealing with an illiterate population as to need no further comment. At present, however, this method is not likely to be utilised on a large scale, these preparations being unstable in the tropics and their cost is considerable. It will be interesting to learn whether the first favourable impressions of this preparation will be borne out by further experience. A few of Professor DAY'S cases suffered from a coincident infection with *Filaria bancrofti*, and it is stated that a temporary diminution in the numbers of circulating filarial embryos was noted after the antimony injections. A considerable amount of caution should be observed in attributing the fluctuations to any direct effect of the drug upon the embryos; as has been pointed out by Dr. G. C. LOW in recent numbers of THE LANCET,[1] unaccountable variation is commonly noted in untreated cases of filariasis. Therefore the claim of Sir LEONARD ROGERS that antimony tartrate is lethal to some extent to microfilariæ, rests at present upon a rather insecure foundation. It may be, as Dr. CHRISTOPHERSON suggests, that their sheaths are quite impermeable to the drug.

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[1] THE LANCET, Jan. 15th, p. 134.

We are glad to note that the Ministry of Pensions are applying the lessons gained in the Soudan and Egypt to sufferers from this hitherto intractable disease amongst ex-Service men in this country. We understand that the majority of recent infec·ns—that is to say, men infected with bilharziasis ing the recent war—have so far been effectively treated and cured in the special clinic established under Dr. CHRISTOPHERSON, from which some of the records in his present article have come, but there is no reason why the 500 or so ex-soldiers who are still in receipt of disability allowance on account of this disease should not largely disappear from the pensions list. We understand that a considerable number in receipt of pensions still await treatment. The ruling of the Ministry appears to be that only those who contracted the disease during the recent war, or those originally infected previous to 1914 whose condition has been aggravated by recent war service, are entitled to receive free treatment, together with allowances and the other benefits bestowed upon disabled soldiers. There remains, however, quite an appreciable number of pre-war cases, dating in some instances from the South African War or attributable to service in Egypt or South Africa at some time previous to 1914, who are precluded from benfiting under the scheme. These men, in the present circumstances, cannot possibly afford treatment at their own expense, and consequently they must continue to draw their pensions, to the ultimate disadvantage of themselves and at the expense of the tax-payer. If any rule precluding a body of deserving men from treatment exists, we would recommend its reconsideration in order that these equally meritorious cases should receive the benefits of the antimony treatment. The matter is a humanitarian as well as an economic one. A sum estimated at some £10,000 per annum is at stake, and we suggest this could be saved.

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Personal Precautions against Encephalitis Lethargica.

THE Memorandum[1] on encephalitis lethargica issued by the Ministry of Health concludes with a clear statement of the precautions which it is advisable for the individual to take against infection:—

> The other occupants of a house in which a case of encephalitis has occurred or is being treated may be assured that the disease is one of low infectivity, and that very little risk is run by association with the patient. At the same time it is desirable that such association should be limited to what is necessary for proper care and nursing, and the patient should be well isolated in a separate room.
>
> School-children *in the affected household* may be kept from school, as a precautionary measure, for three weeks after the isolation of the patient. There is no necessity to place restriction on the movements of other occupants provided they are frequently examined and remain well. Those in contact with the case, however, should be advised to use antiseptic nasal sprays or douches, and to gargle the throat with solutions such as those advised for influenza.
>
> For example, any of the following may be used: (1) 1 per cent. solution of peroxide of hydrogen; (2) a solution of permanganate of potash, 1 in 5000, in 0·8 per cent. solution of chloride of sodium (common salt); (3) liquor sodæ chlorinatæ, 0·5 per cent. These solutions can be used as ordinary throat gargles or snuffed up the nostrils, or applied by an efficient spray.
>
> It is desirable that any persons in the infected household who suffer from sore-throat or other symptoms suggesting an abortive attack should be treated from this point of view and isolated as far as possible until they have recovered. The sick room should be thoroughly cleansed and disinfected at the end of the illness.

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[1] THE LANCET, Sept. 11th, 1920, and Jan. 29th, 1921.

[1] Memo. 45/Med. H.M. Stationery Office

Annotations.

"Ne quid nimis."

INSURANCE MEDICAL RECORDS.

IN the House of Commons on Monday last a categorical question was put to Dr. Addison concerning the insurance medical records. He was asked whether he had received any complaints regarding the new form of medical card under the National Health Insurance scheme; whether he was aware that objection was taken to the new card on the ground that it was too inquisitorial; and whether he would give this objection his consideration. To this question Dr. Addison replied that the number of complaints which he had received about the insurance medical records was quite insignificant, consisting of representations from five out of 10,000 Approved Societies and branches, none from any of the insurance committees, and nine, mainly on points of detail, out of the 150 panel committees representing the medical men on the panel. The card, he said, was in substitution for two others used since the commencement of the Act, and had been designed mainly to give to insured patients the advantages enjoyed by private patients in those practices where doctors kept records, and were thereby enabled to be guided in treating current symptoms by reference to the patient's previous medical history.

To a further question he repudiated having invented the form of record card, or rather the revisions of the card, putting the responsibility on a Committee consisting solely of members of the medical profession—a large percentage of them being men in insurance practice. The accuracy of the latter reply has since been challenged on the grounds that there are three lay civil servants on the Committee, that the card was not designed wholly by doctors, and that 17 or 18 per cent. of panel doctors on the Committee could not be called a large percentage. The gist of Dr. Addison's reply should do away with the contentions in the lay press that the medical profession is seething with discontent—as we have read in one quarter; and that many thousands of protests have been formally registered—as we have read in another. There is a certain amount of dissatisfaction, as our readers know, but there has been no reflection whatever of such a large agitation in the medical journals, where the improvement of public health, the advance of science, and the maintenance of a right professional status form the single programme for advocacy; and the inference is that this story of wide disapproval has its origin in, or is supported by, political partisanship. When the Ministry of Health came into being, as the result of unanimous feeling that the institution of such a State Department had been too long delayed, medical men hoped that on questions of public health the party politician would be content to subordinate his views to the general good. That was sanguine, but even now the hope is alive with some of us. Undoubtedly the early work of the Ministry of Health has been hampered by complaints based upon ignorance of medical affairs, but in Medicine the truth sooner or later always emerges from misrepresentation. We are not asking, because the Ministry of Health is concerned with medical interests, that its sayings and its doings should be regarded as without the pale of public judgment; nor can we be blind to the fact that every Ministry of Health must be associated with a Government, when the party politician will assuredly attack it, if by so doing that Government can be discredited. But we are urging that such attacks should be taken at their value, when they will not be found to damage the public health more than temporarily.

REINFECTION IN SYPHILIS.

ACCORDING to Dr. Charles Mallory Williams, associate professor of dermatology at the Post-Graduate Medical School, New York, who records an illustrative case, the improvement in the treatment of syphilis during the last ten years has been accompanied by a great increase in the number of reported and apparently authentic cases of reinfection. Benario, who collected 96 cases from the literature in 1914, laid down the following requirements to establish a diagnosis of reinfection: (1) a positive clinical diagnosis of the primary lesion; (2) demonstration of *Spirochæta pallida*; (3) satellite adenopathy: (4) repeated performance of the Wassermann reaction; and (5), if possible, recognition of the source of infection. Forty-one of Benario's cases satisfied these requirements, and of the remainder 13 were probable and 28 possible examples of reinfection. White in 1917 in a series of 10,500 cases of syphilis, observed ten instances of reinfection, the diagnosis of which was based on the following grounds: (1) in the first attack spirochætes were found in the chancre or in syphilitic lesions, or the blood gave a positive Wassermann reaction; (2) in the second attack the spirochætes were found in a new chancre, which appeared at a site different from that of the first chancre, the blood at the same time giving a negative Wassermann reaction. In the cases reported by Dr. Williams the diagnosis in the first instance was made both by clinical and laboratory methods; treatment by arsphenamin and mercury was carried out, and all the symptoms, clinical and serological, disappeared. Two years later exposure was followed by the development of a sore in which spirochætes were demonstrated. It is true that a tertiary lesion may exactly simulate the appearance of a chancre; it may coexist with a persistently negative Wassermann reaction, it may be contagious, although the demonstration of spirochætes is rarely possible, and it may be accompanied by a satellite adenopathy. But, as Dr. Williams remarks, all these unusual phenomena rarely occur in the same person at the same time, and such cases may with greater probability be regarded as examples of reinfection in patients who have been cured.

THE R.A.M.C. ROLL OF HONOUR.

THE Official Roll of the officers of the R.A.M.C. who laid down their lives in the Great War is now published. The total number of names given is 709, divided as follows:—

Old and New Armies.		*Territorial Force.*	
Major-Generals ...	1	Colonels	2
Colonels	8	Lieutenant-Colonels	13
Lieutenant-Colonels	17	Majors	16
Majors	25	Captains	77
Captains	360	Lieutenants	5
Lieutenants	185		
	596		113

The Officers' Roll, comprising over 40,000 names in all, may be purchased from His Majesty's Stationery Office through any bookseller. It would be invidious to select any of the well-known names for particular mention; all these men deserve our perpetual honour and gratitude.

ANTITUBERCULOUS VACCINATION.

WE have previously drawn attention[1] to the antituberculous vaccine prepared in Italy by Professor Martinotti, of the University of Bologna. Some new evidence came to hand in *Annali di Medicina Navale*, the organ of the Italian Naval Medical Department, at the end of last year. The Director-General, Lieutenant-General F. Rho, was so much interested in this vaccine that he gave orders it should be examined in the Naval Hospital at Spezia, and the report by Professor Medical Lieutenant-Colonel (Surgeon-Commander) Dr. L. Sestini is now published. Professor Sestini discusses the 23 cases that were treated at Spezia in 1918-19 by Martinotti's vaccine, of whom 3 were cured, 9 were improved, 4 had no benefit (3 of these died), 1 patient was found unsuitable, and 6 withdrew themselves from treatment. The evidences of cure were disappearance of fever and tubercle bacilli, as well, gain in weight. Twenty-five further cases of also treated by this vaccine, but at Modena, are tioned, of whom, all ambulant cases, 17 were and so remained during the two years following, 3 showed no effect, and 5 proved unsuitable. These results are distinctly encouraging, but it is to be regretted that in this, as in other investigations of new treatments for consumption, no endeavour is made to report on other cases treated at the same time, but by the more usual methods, as controls for comparison. The recovery of tuberculous patients seems to depend so much on climate, food, and the clinical acumen of the physician that, consequently, a table of recoveries of patients under a special specified treatment may really be due to the greater skill of their physician. If, however, the cases of consumption entering a hospital, or some particular physician's clinic in that hospital, are numbered consecutively, and the even numbers, for example, are all treated with this remedy, while the others receive the treatment hitherto current, all being under the care of the same physician, marked improvement in the results observed could be ascribed with some confidence to the specific treatment. The profession would become instantly curious, and would at once give trial to the method.

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[1] THE LANCET, 1920, ii., 563 and 1105.

MEDICINE, INDUSTRY, AND RESEARCH.

THE industrial welfare movement is one of the few good things which during the war received the impetus necessary for expansion, and which has survived. Previously in this country there had been small beginnings made by a few far-seeing and enlightened employers. The Ministry of Munitions seized upon these beginnings as a base from which to commence large-scale operations; but their activities ceased with the armistice. Since then the Home Office through Welfare orders made under Sec. 7 of the Police, Factories, &c. (Miscellaneous) Act, 1916, have consolidated much of the ground won. But without doubt the life of the movement to-day lies outside official circles. An instance of this was given by the Conference held at the Mansion House by the Industrial Welfare Society which was addressed by its president, the Duke of York. This society, which is keen and active and supported by the majority of male welfare workers, approaches the subject from the social and psychological side; its point of view is expressed every month in the *Journal of Industrial Welfare*, a publication the progress of which we have been watching with interest. During the past six months this journal has greatly improved, and it may not have been mere coincidence that the improvement followed hard upon certain friendly criticisms which appeared in these columns. Practical articles dealing with such subjects as industrial fatigue, psychology, and ventilation have appeared; a key to current literature is given; and informing reviews are published. Nevertheless, we still look in vain for any record of research undertaken by welfare workers. Another instance of welfare activity is the Welfare Workers' Institute, which receives the support of women welfare workers, and also publishes a useful journal—*Welfare Work*. But here, too, the social side of the work predominates, and little attention is paid to research as the foundation of welfare as a science. The tendency to look upon welfare as an art or mystery is pronounced, and equally pronounced is the absence of any clear recognition of the importance of health in welfare.

The welfare movement as a whole must gain further power from Sec. 20 of the Mining Industry Act, 1920. Under this section a fund is gathered from a levy of one penny per ton of coal raised, which must be applied for purposes connected with the social well-being, recreation, and conditions of living of workers in or about coal-mines, and with mining education and research. A small expert committee has recently been appointed by the Secretary for Mines to allocate the fund. Research is definitely included in the subjects upon which this fund may be expended, and one member of the committee is a medical man. We may hope that the mining industry the welfare movement will rt with a scientific and medical bias. No one who tches the development of the industrial welfare vement can fail to be struck with the rapidity th which it is spreading and with the small part which the medical profession is taking in it. Yet the movement is aimed at obtaining for the worker a healthy mind in a healthy body. So far as can be judged the tendency in America is in the opposite direction. Workshop after workshop continues to appoint whole-time doctors, who select healthy workers by preliminary examinations, and keep them in health when obtained. These factory medical officers initiate in every direction welfare activities based on knowledge of what is required. In this country we have a band of medical men, certifying factory surgeons, brought intimately into touch with industry, and we naturally look to them for light and leading. The annual report of their association for 1920 is before us; it contains no word of a forward constructive policy. To judge from the report this association is mainly concerned with the inadequacy of fees allowed for carrying out the few duties entrusted to them. No reference is made to the important part which industrial medicine should be taking in the life of the community.

The world is moving fast, and under our eyes a new science, the science of health in industry, is emerging. The publications of the Industrial Fatigue Research Board have been disclosing principles underlying human activity and indicating how health may be maintained. The hasty decision to extinguish the excellent work of this Board on the plea of so-called economy has been reconsidered. Wiser counsels have prevailed. In the past the maintenance of health has never had a practical economic interest for any definite group of persons; now in industrial employment it has. For there is to-day no more paying proposition than to engage a factory medical officer who knows his work. America has been quick to make the discovery and to seize the opportunity. Unless we follow we shall fall behind in industrial competition—and in national health.

A WATER-BORNE TYPHOID FEVER EPIDEMIC.

WATER-BORNE epidemics of typhoid fever on a large scale are, fortunately, not now so frequent in this country as they were some years ago. The efforts made by local sanitary authorities to protect their water-supplies from contamination have proved eminently successful. Typical water-borne epidemics of typhoid fever are often preceded by a period of heavy rainfall or a rapid thaw, by which surface and other impurities are carried, sometimes considerable distances, to water-supplies, this mode of pollution being of a sort that in ordinary circumstances would not have been anticipated in many instances. Often the first indication that such an epidemic is impending is the occurrence of a sudden and widespread prevalence of diarrhœa of varying severity, affecting a large proportion of the population; the outbreak of typhoid fever follows in about three or four weeks' time, corresponding to the incubation period of the disease, with an added week or so to give the medical practitioner time to arrive at a diagnosis before notification. Although such water-borne epidemics, as has been said, are now of comparatively rare occurrence with us, they are not uncommon in the United States. An interesting and typical instance on a somewhat extensive scale occurred towards the end of 1920 at Salem, an industrial town of about 10,000 inhabitants in the State of Ohio (not to be confused with the famous old Massachusetts city), a report on which was published in the *Journal of the American Medical Association* for Nov. 27th last. The water-supply of this town is derived from several groups of deep wells, from which the water is pumped to conduits which convey it by gravitation to a covered service reservoir. Repeated analyses showed the supply to be pure and of good quality. There are still some 400 privies in use in and on the outskirts of Salem. For some years typhoid fever had been practically absent from the town, and not a single case had been reported in the 12 months ended August, 1920. Towards the end of that month and beginning of September, however, three cases came under observation. Very heavy and prolonged rainfall took place at the end of September and beginning of October, immediately after which a widespread prevalence of "enteritis" occurred, affecting, it is said, more than half of the whole population of Salem. Some three weeks later cases of typhoid fever began to be notified in rapidly increasing numbers until Nov. 1st, when the height of the epidemic was reached. On that day 54 fresh cases were reported, the total attacks up to Nov. 20th amounting to 785, or nearly 9 per cent. of the inhabitants. After this the epidemic rapidly declined. The type of the disease was not severe, for only 12 deaths were recorded up to Nov. 20th. It was expected, however, that other fatal cases would occur, for on the last-mentioned date there were many persons still in the acute stages of the disease. The sudden and widespread occurrence of "enteritis" in the town during the early part of October cast suspicion on the water-supply as the source of the trouble. Bacteriological investigations showed that one of the conduits from a group of wells was conveying contaminated water to the service reservoir; it was therefore at once cut off from the public supply, and an emergency chlorinating outfit was installed, warning notices at the same time being issued to householders to boil all water used for domestic purposes. No doubt these measures helped to control the spread of the infection, but before they came into action the polluted water had already been drunk by many persons who afterwards developed the disease. The precise manner in which the water became polluted has not yet been stated, as at the time the report was published the investigations had not been completed. Among the other measures employed by the local health authority to control the spread of the disease was the offer of antityphoid inoculation, and this was accepted by about a fourth of the inhabitants of the town. Four emergency hospitals were established for the reception of the fever patients. The sewage of Salem is treated on intermittent sand filters, from which the effluent is discharged into the Beaver Creek, a tributary of the Ohio River. As soon as it was apparent that typhoid fever was becoming epidemic this effluent was chlorinated, with the object of protecting from infection the communities using the river water below Salem. One of the lessons to be learned from this epidemic is the necessity for constant and vigilant supervision of all sources of water-supply, no matter how pure these originally may have been.

"SACRALISATION."

A NEW word has been recently coined by French orthopædists to describe a condition which has long been known to the anatomist but has been strangely neglected by the surgeon. By "sacralisation" is understood the overlapping to a greater or less degree of the wing of the sacrum by the overgrown lateral process of the fifth lumbar vertebra. Ledouble, indeed, describes six varieties, the first two consisting of enlargement of the lateral process with overlap. The various papers contributed on this subject are ably summarised by Professor P. Mauclaire in the *Paris Médical*,[1] who points out that as a rule the condition gives rise to no pain. Curiously enough, when pain is present it appears, as a general rule, after the complete development of the pelvis during the third decade of life. Various hypotheses have been put forward to account for the pain, the favourite explanation being pressure on the lumbo-sacral nerve or on the nerves of the cauda equina. As for the cause of hypertrophy of the lateral process, this also remains undetermined, though an attractive theory has recently been put forward by Dr. E. Landoux and G. Caillods.[2] These investigators suggest that the transverse process of the last lumbar vertebra assumes the osteogenetic function of a sacral vertebrum. The practical conclusion would appear to be that in every case of backache of uncertain or unknown origin the lumbar region of the spine should be investigated under X rays. Resection of the enlarged process alone offers a satisfactory cure.

FEES FOR LIFE ASSURANCE WORK.

FROM time to time protests reach us in regard to the remuneration offered by life assurance companies to their medical referees. We have just received the specific complaint that to be paid half a guinea for a £100 policy or less and a guinea for policies of more than this amount is illogical and unfair, because the work involved is the same in both cases. The annoyance is natural, for no professional man likes to be asked to give his best work for an insufficient fee, or to be obliged to offer less than his best because the fee is inadequate. But there is something to be said on the other side. The companies state that reports they receive from their medical referees are often perfunctory, whatever the amount of fee paid, while they may lack data necessary for a just assessment of the risk or contain statements that are contradictory and mutually destructive. Some actuaries go so far as to assert that the protection afforded by medical examination lasts only for the first three years, and that, apart from these three years, a medical report might be dispensed with altogether; and it is admitted that were it not for adverse selection no medical examination of any kind would be necessary at all, for the risks could be worked out accurately from life tables on an actuarial basis. For this and other reasons many companies are extending largely their non-medical tables with apparently satisfactory results, and there is a real danger of this procedure increasing. We say "danger" advisedly, because we feel that non-medical insurance, while dealing a severe blow at medical prestige, would not be in the best interests of the community. No doubt in the past the fees offered may have been quite inadequate, and it was a public duty to resist them. Now when it is a question of standardising the examination fee at a higher level certain facts must be borne in mind. The premiums paid in the smaller insurances allow no margin for heavy medical expenses, and a disparity, though illogical, may be unavoidable. In ordinary practice the squire's daughter and the gardener's wife may demand equal care and attention, and yet the fee cannot be the same for each. The demand for larger fees would command a greater prospect of success in the case of policies for large amounts. Again, it must be remembered that individual prognosis remains fallible whatever the skill and care devoted to the examination, and no one knows this better than those responsible for the management of life assurance companies. Referees may rightly claim that the remuneration for work done should reward them fairly for their time and trouble; they should also have a care to convince business men that medical reports are essential to the economic working of life assurance schemes.

VENTILATION OF THE HOUSE OF COMMONS.

WE do not know the exact date of the first complaint concerning the ventilation of the debating chamber and other parts of the House of Commons—the House of Lords has apparently never required similar attention—but the subject probably came up within a very few years of 1852, when the legislature took possession of its present quarters. From time to time questions have been asked, select committees appointed, reports presented, and alterations undertaken—as, for example, the substitution of fans for exhaust furnaces—but close proximity to the river and the structure of the building itself seem to have been the main obstacles to any great improvement. In 1893, for instance, we noted in our columns that in spite of "electric light and purified air" Members of the House still suffered from "lassitude." It had already been pointed out that the floor matting which covered the air inlets, or lay near them, was a source of atmospheric pollution; during 1905 Dr. Mervyn H. Gordon issued a full report in which the air of the debating chamber was shown to be too dry, and, together with the air below the inlets, demonstrably contaminated by the matting. It was hoped that the gradual disappearance of horse traffic from the London streets would improve the bacteriological condition of the air. In 1906 it was made evident from a further report by Dr. Gordon that little was to be said against the quality of the air-supply, but Members still found it lacking in freshness. A vacuum cleaner was intoduced at about this time, and half a hundredweight of dirt thereby removed from the floor and precincts of the House each week. During the influenza epidemic of 1908 it was suggested that the disease was endemic in the debating chamber; active debate doubtless favoured the dissemination of infected air-borne material which was not efficiently removed by ventilation. In the same year a question was asked which drew in reply the statement that the admission of air otherwise than by the floor could only be effected by radical reconstruction of the chamber. Dr. Leonard Hill, who made a thorough investigation of the subject for the Select Committee appointed shortly before the war, recommended introduction of air at the top of the back of the benches and at the face of the gallery, with closure of the floor perforations; the Committee agreed to an experimental trial at a cost not to exceed £2000, and although the matter was set aside during the war a model is now under construction at the National Physical Laboratory in order that the Office of Works may test the movement of the air-currents according to Dr. Hill's plan. Sir A. Mond, First Commissioner of Works, was recently questioned concerning the proposed test, and stated in his reply that the result would be of general scientific value.

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[1] La Sacralisation douloureuse de la 5^{e} vertèbre lombaire, Paris Médical, Jan. 29th, 1921, p. 81.

[2] La Presse Médicale, Feb. 12th, 1921, p. 123.

In the light of fresh complaints the ventilation of the debating chamber and its precincts still leaves something to be desired; until the temperature and humidity are properly controlled, and perhaps so long as reliance is made on quantity and velocity of air-supply alone, it will remain unsatisfactory. It is, however, doubtful if any means can be found of providing air, at once uncongenial to pathogenic organisms and altogether suited to human comfort, to a considerable number of people gathered in a large chamber.

THE SPAHLINGER SERUM.

OUR Swiss correspondent writes on March 6th: The sensational news in your daily press regarding the effects of the Spahlinger treatment in tuberculosis has occasioned some mild surprise in this country. Here the treatment is practically unknown, nor do we find its author on the list of registered medical practitioners in Geneva. So far as I have been able to ascertain, the serum has not been extensively tested in any of our Alpine sanatoriums. One wonders therefore at its fame abroad. Dr. Hector Cristiani, professor of bacteriology at, and director of, the Service d'Hygiène at Geneva University, asked by a representative of the *Journal de Genève*, stated that he had only heard of the new treatment through the daily press, Mr. Spahlinger never having made any communication to either of the learned societies of Geneva or elsewhere in Switzerland. His former communication to the Académie de Médecine and his recent communication to the Académie des Sciences, both in Paris, contained the clinical histories of certain patients under the observation of British physicians, and treated with his remedy, but they gave no indication of the method of preparation of the remedy nor of the nature of the substances injected. In such circumstances Dr. Cristiani felt it impossible to form any opinion of its value. Swiss law does not put any control on the manufacture of curative serums. Mr. Spahlinger, therefore, did not require any official authorisation to make his experiments. The Department of Public Hygiene of Geneva has had no occasion to intervene, as the preparation is not on sale in that city. Dr. Cristiani concluded by saying that it would only be possible to know something of its action when the composition and method of preparation of the Spahlinger serum were revealed. Control experiments over a period of years would then be needed. In the case of other serums their authors had lost no time before publishing details; it was then possible for others to repeat the experiments and to confirm their value. It was open to Mr. Spahlinger to do likewise.

THE COLLECTIVE VOICE OF MEDICINE.

THE old diplomacy had this to be said for it: its deliberations being held in secret it was easy for its pronouncements to be authoritative, the smooth phrases giving no hint of the struggles and compromises of which they were the net result. Doubtless medicine could speak with such an agreed though falsetto voice if its representatives felt it worth while. But no one supposes that the process would throw much light on the broad principles of health administration, which is what the public is desirous of learning from the professors of medicine. Open discussion has its own drawbacks in that the diversities may lead the unthinking to conclude that there is no underlying unity. Even the credentials of a would-be spokesman may be called in question. We dealt a fortnight ago with some aspects of this evergreen problem, and return to it to state that no organisation which has accepted membership in the Federation of Medical and Allied Societies has subsequently withdrawn from federation. The Royal Society of Medicine, the British Dental Association, the Medico-Psychological Association, the Chartered Society of Massage, the Pharmaceutical Society, amongst others, are, we learn, all glad to use this Federation for expressing a collective opinion on matters which concern them in common. The British Association of Radiology and Physiotherapy has recently applied to be federated. The Federation seems likely to make good its claim to guide public opinion without interference in the internal affairs of its constituents. Those who prefer substance to formality can hardly fail to wish it well.

THE PROMOTION OF INTERNATIONAL MEDICAL INTERCOURSE.

Dr. G. Monod's efforts to bring about closer coöperation between representative bodies of French and British medical men have not been fruitless. At a recent meeting of the Executive Committee of the Fellowship of Medicine and Post-Graduate Medical Association three different aspects of the question were considered, and the resolutions passed should at any rate clear the ground for the discussion of more definite proposals in the future. It was resolved, as a preliminary step, that the Information Bureau of the Fellowship of Medicine should be brought into closer communication with the Bureau of the Association pour le Développement des Relations Médicales (A.D.R.M.), in order that those desiring to take post-graduate courses in either country should more easily acquire detailed information as to their scope. The Committee next recorded its approval of the principle of reciprocal visits of lecturers on special subjects and its readiness to give assistance in the promotion of such occasional lectures. Lastly, the A.D.R.M. were invited to make suggestions as to how the exchange of medical literature could best be encouraged, and these we await with interest. The coöperation of great teachers should increase if such visits as that now being paid to Paris by Scottish students become more general. The 35 undergraduates of the University of Edinburgh who are at present taking a course of practical midwifery under the direction of members of the Faculty of Medicine of Paris will certainly want to keep in touch with their French teachers. It is at an early stage in medicine as in life that friendships and alliances are most easily formed, and a series of organised study excursions, as part of the curriculum of universities on both sides of the Channel, would probably do much to promote the desire for intercourse in later medical life.

THE death, at the age of 77, of John Fletcher Moulton deprives the world not only of a brilliant mathematician and scientist, but of a man of wide interests and varied achievements. Senior Wrangler and First Smith's Prizeman in 1868, a Fellow of the Royal Society in 1880, Queen's Counsel and Member of Parliament in 1885, an Appeal judge and Privy Councillor in 1906, Life Peer as Lord Moulton of Bank in 1912, he was the first chairman of the Medical Research Council and during the war Director-General of the High Explosives Committee.

THE LANGHAM TELEPHONE EXCHANGE:

MEDICAL MEN'S NEW NUMBERS.

THE new Langham Exchange, situated at the Western District Post Office, Wimpole-street, London, W. 1, was opened at 2 P.M. on March 5th, when the circuits of a large number of medical men and dentists practising in the Harley-street area were transferred from the Mayfair Exchange. Since the new numbers cannot appear for some weeks in the Telephone Directory we are giving a list, so far as can be traced, of the doctors and dentists on the new exchange with their new numbers. The direction of the London Telephone Service is in the meantime doing what can be done to mitigate inconvenience. All callers asking for the old Mayfair numbers will be connected to a special inquiry officer at the Mayfair Exchange, provided with a card index, who will advise the caller of the new number. The calling subscriber's telephonist will also *be advised of the change and instructed to complete* the connexion to the new Langham number.

Mayfair.	Subscriber.	Langham.	Mayfair.	Subscriber.	Langham.
6545	*Aarons, J.*	1396	4353	*Colman, W. S.*	1852
6691	Abraham, J. J.	1348	3842	Corbett, W. J.	1978
3619	Abrahams, Adolphe	2038	6180	Corner, E. M.	1456
3376	Adams, J. E.	2108	1993		1993
1878	Adamson, H. G.	1878	4677	Cotton, T. F.	1778
5851	Addison, O. L.	1514	4263	Cowell, E. M.	1872
3086	Allen, R. W.	2161	285	Cox-Moore, P. G. H.	1064
2707	Anderson, Sir M. A.	2707	2686	Craig, Sir Maurice	2686
560	Armour, D. J.	2218	1065	Critchett, Sir Anderson	1065
2407	Armstrong, R. P.	2407			
5824	Armstrong, W. E. M.	1520	1694	*Critchley, H. G.*	1694
3993	Ash, E. L.	1949	3805	Crookshank, F. G.	1985
2055	Ashdowne, W. C. G.	2055	466	Cruise, R. R.	1139
215	Atkinson, J.	1042	1887	Cumberbatch, A. E.	1887
6646	Bach, Edward	1373	5620	Cumberbatch, E. P.	1562
133	Back, Ivor	2345	3306	Cunning, J.	2123
1044	Badgerow, G. W.	1044	2342	Cunningham, J. F.	2342
1311	Ball, W. G.	1311	1439	Curtis, G. H.	1439
6073	Banting, Cecil	1467	823	Curtis, H.	1243
2610	Barber, H. W.	2610	2697	Dally, J. F. Halls	2697
4681	Barker, F. J.	1775	1068	Daniel, P. L.	1068
821	Barlow, Sir Thomas	1242	2935	Davies, Arthur	2935
5096	Barrett, Lady	1691	160	Davies, Trevor B.	1028
2807	*Barrington*-Ward, L. E.	2807	6749	Davies-Colley, R.	1341
			642	Davis, E. D. D.	1178
4915	Barrows, E. D.	2277	4423	Dawson, Lord	1838
4831	Bathurst, L. W.	1752	5096	Day, J. Roberson	1691
4353	Batten, Rayner, D.	1852	2243	Day, Kendrew J.	2043
1484	Bayly, H. Wansey	1484	953	Denne, F. Vincent	2670
764	Berkeley, Comyns	1219	2537	De Vine, G. M.	2537
4115	Blaaberg, C. J.	1911	4288	Dickson, W. E. Carnegie	1867
4222	Blacker, G. H.	1882			
361	Bolton, Chas.	1082	4681	Doble, F. C.	1775
2908	*Bolton, Elizabeth*	2908	1917	*Dodd, Stanley*	1917
6655	Bonney, Victor	1363	2011	Drew, D.	2023
1419	Bookless, J. S.	1419	1892	Dundas-Grant, Sir J.	1892
3599	Bradshaw, R. G.	2055	1036	Eccles, W. McAdam	1036
4463	Braund, H.	1827	2868	Eckenstein, K. E.	2940
1889	Briscoe, J. C.	1889	557	Eddowes, A.	1157
1714	Bristow, W. R.	1714	4514	Elmslie, R. C.	2202
2319	Brook, Francis	2319	1611	Elphick, G.	1611
88	Browdy, M. W.	1018	3888	Fairbairn, J. S.	1967
6038	Browning, S. H.	2946	391	Fairbank, H. A. T.	1093
3985	Bruce, W. *Ironside*	2337	342	*Farmer, Sir F. M.*	1078
1611	Bryan, C. W. G.	1611	4764	Feldman, W. M.	1706
3590	Bull, H. C. H.	2047	1083	Fenton, W. J.	1083
1090	Burford, G. H.	1090	1287	Fenwick, B.	1287
4299	Burghard, F. F.	1865	210	Fenwick, W. S.	2168
3057	Burnet, E.	2167	4869	Finzi, N. S.	1743
4545	Burnford, J.	1808	1482	Firth, A. C. D.	1482
1855	Burrell, L. S.	1855	1122	*Fisher, J. H.*	1122
3960	Buzzard, E. F.	1954	1858	Flett, Alexander	1858
314	Canney, H. E. L.	1066	326	Forsyth, D.	1076
5011	Canti, R. G.	1712	2244	Forsyth, H. A.	2240
1519	Cantlie, Sir J.	1519	837	Forsyth, J. A. C.	1250
4092	Carling, E. R.	1922	1349	Fox, R. F.	1349
2804	Carr, A. A.	2804	4434	Freeman, J.	1834
5590	Castellani, Aldo	1148	1414	Freshwater, D.	1414
441	Cathcart, G. C.	1124	1349	Friel, A. R.	1349
1837	Chadburn, Maud M.	1837	3665	Gask, G. E.	2027
1313	Chaldecott, J. H.	1313	4443	Gaster, A.	1831
1155	Chaplin, A.	1155	645	General Medical Council	2500
3509	Chapple, H.	2065			
2243	Chesser, Elizabeth S.	2043	3577	Gibbes, C. C.	2061
404	Chetham-Strode, R.	1099	1495	Gillespie, Edward	1495
1244		1244	6330	Gilliatt, W.	1436
4545	Chubb, Gilbert	1808	5019	Gillies, H. D.	1711
2476	Cleminson, F. J.	2476	993	Giordani, D.	1278
1450	Cline, E. C.	1450	2291	Goodall, J. S.	2291
1693	Cobb, I. G.	1693	598	Gould, E. L. P.	1170
1858	Cockayne, E. A.	1858	5011	*Gow, A. E.*	1712
438	Cole, P. P.	1120	52	Graham, C. I.	1013
1693	Colledge, Lionel	1693	5011	Graham, G.	1712
84	Collier, James	1019	4490/1	Gray, H. T.	1814/5
1174	Collins, E.	1174	953	Greeves, R. A.	2670

Mayfair.	Subscriber.	Langham.	Mayfair.	Subscriber.	Langham.
5304	Griffiths, H. E.	1645	218	Miles, W. E.	1045
4353	Gunn, A. R.	1852	4994	Miller, H. Crichton	1720
5922	Guthrie, A. C.	1497	2749	Miller, R. H.	2749
1035	Hadfield, C. F.	1035	95	Milne, Robt., jun.	1020
748	Hadley, W. J.	1208	4386	Mills, C. H.	1749
320	Haire, Norman	1200	1855	Mitchell, E. J. D.	1855
3492	Halliburton, W. D.	2068	2334	Moir, Byres	2334
1632	Hamill, P.	1632	4883	Moore, H. J.	1740
3407	Hamilton-Pearson, E. A.	2098	4362	Moore, R. F.	1848
			4680	*Morris, Sir Malcolm*	1776
810	Handley, W. Sampson	1237	1769	Morrow, D.	1769
188	Harbord, E. A.	1032	2754	Morton, R. A.	2237
2342	Hare, Dorothy C.	2342	3380	Mowat, H.	2107
2643	Harley, Vaughan	2643	2697	Myers, B.	2597
63	Harman, N. Bishop	1015	3868	Nabarro, D. N.	2236
3488	Harmer, Douglas	2071	4543	National Hospital for Diseases of the Heart	1810
213	Harris, P. T.	1038			
564	Harris, W.	1159			
160	Hart, Bernard	1028	6639	Newmarch, J. H.	1378
5824	Heald, C. B.	1520	4054	*Nicoll, Maurice*	2338
290	Heath, C. J.	1063	3380	Nicoll, P. J. S.	2107
3670	Hedley, J. P.	2026	3815	O'Donovan, W. J.	1982
3671	*Hernaman-*Johnson, F.	2025	6239	Oliver, James	1417
			4016	Oliver, M. W. B.	1939
4119	Herring, H. T.	1909	5191	Openshaw, T. H.	1675
4086	Hett, G. Seccombe	1925	2610	Ormond, A. W.	2610
3407	Hicks, Braxto	2098	4222	Owen, S. A.	1882
2935	Hollander, B.	2935	7183	Page, C. M.	1284
4607	Holmes, Gordon	1794	4556	Palmer, F. S.	1807
2319	Holyoak, W. L.	2319	4764	Palmer, J. I.	1766
5423	Hope, C. W. M.	1644	213	Palmer, P. H. H.	1038
4220	Horder, Sir T. J.	2200	4545	Parkinson, J.	1808
6620	*Horsford, Cyril*	1384	31	*Paterson, H. J.*	1006
5824	Howell, B. W.	1520	5031	Paton, L. J.	1708
3292	Howell, C. M. H.	2128	3781	Patterson, N.	1989
2029	Hughes, E. C.	2029	4048	Peacock, W. E.	1951
4927	Hurst, A. F.	1731	454	Pegler, Hemington	1128
674	Hutchinson, J.	1196	6073	Perkins, J. J.	1467
4043	Hutchison, R.	1036	3550	Pernet, G.	2000
2993	Hyslop, T. B.	2993	614	Phear, A. G.	1051
2246	Ibbotson, W. T.	2246	3760	Phillips, G. R.	1990
834	James, W. W.	1248	6503	Phillips, H. R.	1399
1056	Jenkins, G. J.	1056	2991	Pinchin, A. J. S.	2991
320	Jenson, E. T.	1200	3651	Pisani, L. J.	2030
2618	Jewell, W. H.	2618	3615	Porteous, A. B.	2040
1009	Jewesbury, R. C.	1009	4964	Potter, B. E.	1724
5824	Jobson, T. B.	1520	2419	Potter, J. C.	2419
1062	Johnson, Raymond	1062	2755	Powell, W. Wyndham	2755
357	Joly, J. S.	1080			
631	Jones, Ernest	1177	776	Power, Sir D'Arcy	1226
5255	Jones, Sir Robert	1660	1932	Poynton, F. J.	1932
5340	Jordan, A. C.	1626	4370	Pritchard, G. E. C.	1816
5340	Jordan, Rose	1626	854	*Pritchard, H.*	2211
6097	Kellock, T. H.	1465	1640	Quartley, S. W.	1173
5909	Kendall, P. E.	1501	454	Raw, Nathan	1128
808	Kidd, F.	1234	5851	Rea, R. Lindsay	1514
5096	King, C. Alice	1691	4803	Redding, J. M.	1758
797	King, D. B.	1230	285	Relph, H. J.	1064
2913	Kinsey-Taylor, A. E.	2913	4262	Riggall, R. M.	1872
5291	Knox, R.	1653	1480	Ripman, C. H.	1480
2502	Knox-Shaw, C. T.	2502	1611	Rivett, L. C.	1611
1434	Laboratory of Pathology & Public Health	1434	4660	Riviere, C.	1762
			3590	*Roberts, C. H.*	2047
5200	Lake, R.	1670	1744	Robertson, R. C.	1744
6418	Lakin, C. E.	1413	5363	Robinson, R. H. O. B.	1618
798	*Lawson, Sir Arnold*	1232	4170	Roll, G. W.	2412
3341	Layton, O. F.	2299	3987	Rose, F. A.	2283
5824	Leahy, M. P.	1520	5759	Roth, P. B.	1526
2366	Leathem, A. N.	2366	2537	Rouse, R. E.	2537
3590	Lees, Kenneth	2047	1310	Rouw, R. W.	1310
1628	Legg, T. P.	1628	4764	Roxburgh, A. C.	1766
397	Leslie, R. Murray	1098	4170	Russell, A. E.	2412
4579	Levick, G. Murray	1803	3560	*Russell, H. G. B.*	2186
3923	Levy, A.	2233	5381	Ryall, Sir Charles	1612
586	Lewis, Emily C.	1163	5061		2708
5313	*Lister, T. D.*	1643	817	Ryland, A.	1239
3433	Little, E. Graham	2222	1126	Sachs, A. L.	1126
1236	Locke, W. Lindsay	1236	3447	Sainsbury, H.	2074
6276	Lockyer, C. H. J.	1445	6833	St. Aubyn-Farrer, Claude	1330
4251	Longinotto, M. J.	1874			
4636	Low, V. W.	1786	7150	Santi, P. R. W. de	1256
1750	Luker, S. Gordon	1750	3602	Sargent, Percy	2044
1481	*Lyle, J. D.*	1481	3996	*Saunders, P. W.*	1948
6332	Lyon-Smith, H. L.	1435	2610	Savill, Agnes F.	2610
5542	McCall, Alexander	1570	2477	Schofield, A. T.	2177
4556	McCann, F. J.	1807	3407	Scott, J. MacNaught	2098
323	McClure, James	1075	673	Sharkey, Sir J. S.	1195
4289	McClure, J. Campbell	1866	215	Sharpe, Salisbury W.	1012
4587	McCrea, H. Moreland	1795	246	Shaw, H. Batty	2460
1768	McDonagh, J. E. R.	1768	1480	Shaw, L. E.	1480
3619	MacDonald, Greville	2038	2537	Shenton, E. W. H.	2537
5427	Mace, A. H.	1388	5217	Sheppard, Amy	1638
6270	McHoul, J.	1446	2197	Sherren, James	2294
4635	McKenzie, Dan	1787	2291		2295
2357	Maclehose, N. M.	2357	1658	Shirley, H. J.	1658
439	MacLeod, J. M. H.	1121	5334	Simpson, A. Malcolm	1634
4781	Macnamara, E. D.	1762	3921	Simpson, W. J. R.	1952
2213	Macnaughton-Jones, M.	2013	1030	Sinclair, A. M. Ross	1090
			6793	Snowden, E. N.	1332
4306	MacNish, D.	1864	2326	*Society for the Prevention of Venereal Disease*	2326
213	Mansbridge, J.	1038			
753	Markus, C.	2232			
1167	Marriage, H. J.	1167	3299	Society of Tropical Medicine and Hygiene	2137
5424	Maybury, B. C.	2207			
1043	Med. Soc. of London	1043			
1482	Melville, Stanley	1482	593	Spencer, H. R.	1171
2999	Metcalfe, J.	2993	1858	Spicer, F.	1222

Mayfair.	Subscriber.	Langham.
3880	Stevens, T. G.	1972
4124	Steward, F. J.	1908
1623	Stewart, G. B.	1623
321	Stewart, K. T.	1073
241	Still, G. F.	1050
3560	Stone, D. M.	2186
5737	Stott, Arnold W.	1534
2834	Stowers, J. H.	2834
4795	Stuart-Low, William	1759
465	Swanton, J. H.	1138
993	Tallarico, G.	1278
630	Thompson, Theodore	1176
1275	Thomson, H. C.	1275
103	Thomson, Sir St Clair	1022
63	Thorne, L. Thorne	1015
5412	Timberg, R. T.	1595
3950	Trewby, J. F.	2311
5633	Trotter, Wilfred	1560
4457	Turner, P.	1828
4047	Turner, William	1933
5322	Turney, H. G.	1637
4036	Tweedy, Sir J.	1937
1619	Viner, Geoffrey	1619
441	Wainwright, Lennox	1124
2908	Walker, Jane	2908
70	Walker, J. W. Thomson	1016
3560	Walker, Kenneth	2186
1554/5	Wall, Cecil	1554/5
2084	Wallace, Abraham	2340
1371	Wallace, Sir C.	1371
3104	Walsham, Hugh	2157
1229	Walton, A. J.	1229
598	Ward, G. E. S.	1170
3560	Ward, R. O.	2186
6925	Warren, Richard	1316
1279	Waterhouse, Sir H. F.	1279
4948	Watson, Sir Gordon	2343
4370	Watts, J. E. Price	1846
4532	Waugh, G. E.	1812
598	Webb, C. H. S.	1170
5412	Webb-Johnson, Cecil	1595
3304	Weber, F. Parkes	2126
3590	Wells, A. P. L.	2047
2130	Westman, C.	2130
1899	White, Clifford	1899
2124	White, W. Henry	2124
586	Wilks, Elizabeth	1163
1058	Williams, Sir Dawson	1058
4188	Williams, E. U.	1895
5275	Williams, G. E. O.	1656
4455	Williamson, Herbert	2289
3606	Wilson, Albert	2360
5549	Wilson, Harold	2228
5504	Wilson, Justina	1576
392	Woakes, Claud	1094
4262	Woods, H. Fergie	1872
6925	Woods, J. C.	1316
2033	Woodwark, A. S.	2033
160	Woolf, A. E. M.	1028
5315	Worrall, E. S.	1642
4771	Worth, C. A.	1763
2165	Wylie, A.	2165
5959	Yearsley, P. Macleod	1487
4054	Young, J. C.	2338
6073	Young, R. A.	1467
1855	Young, W. A.	1855

The list, despite all the care taken, may be incomplete, and we should like to receive notice of any corrections that may be necessary.

CONTROL OF VENEREAL DISEASE.

Venereal Disease Clinics.

WHEN the atmosphere of discussion enveloping the expediency or possibility of prophylaxis of venereal diseases becomes close and sultry, it is well to remember the development of widely spread and well-organised efforts towards the reduction of these diseases. If we consider that in this country until a few years ago not a single authorised centre was in existence, it becomes obvious that much has already been achieved in a comparatively short period. The difficulties encountered were many and in some instances formidable, and the way they have been surmounted in the past gives hope that, if only all parties will work together, enormous strides will be made in the eradication of venereal diseases in the future. From a study of the list of treatment centres approved by the Ministry of Health under Article III. of the Public Health (Venereal Diseases) Regulations, 1916, we note that there are now in existence 176 recognised centres, at nearly all of which treatment is administered to both men and women. Taking into regard the difficulties which still exist, criticism would be out of place, but we offer certain suggestions in a spirit of hopeful commentary. We note that in 31 clinics there are no evening sessions for men. This is a serious omission, since the industrial classes are usually prevented by economic reasons from attending during the earlier part of the day. It is true that in certain instances clinics are open on Saturday afternoons, but this does not satisfy the need. Every clinic should be open at least three times a week, and at hours when the majority of patients can reasonably expect to attend. Moreover, the provision of irrigation treatment between the actual sessions of the clinics is most important; there are still very many clinics at which this convenience is not afforded. We may hope that the next year will see a great improvement in this respect, as well as increased opportunities for female patients to obtain this valuable adjuvant treatment.

Marriage of Syphilitic Women.

We have already commented[1] on a recent discussion at a special meeting of the Société Française de Dermatologie et de Syphiligraphie on the marriage of syphilitic women. As a preliminary the following two recommendations were made: (1) Unification of methods of treatment; (2) unification and standardisation of technique in the performance of the Bordet-Wassermann reaction. Dr. Louis Bory, in a communication to the *Progrès Médical* of Jan. 15th, divides cases for consideration into two groups: First, those who present themselves for treatment in the early primary stage before the appearance of a positive blood reaction; and second, those who start treatment subsequent to the development of a positive W.R. As a suitable course of treatment for the first-named group he advocates the following: A preliminary course of an arsphenamine preparation with a total dosage of 3·5 g. for medicaments of the 606 type, and of 4·5 g. for those of the 914 type, the course lasting two months—a month's rest—and a W.R.; a second course "de sécurité" identical with the previous course lasting two months, another month's rest, and a W.R. Following this an additional treatment with mercury lasting six months. Mercury is given in weekly injections of grey oil or of calomel in courses of two months with a month's interval between them. At the end of this mercurial treatment a lumbar puncture and examination of cerebro-spinal fluid are performed. The year of treatment having terminated, a year of observation is carried out with periodic examinations of the blood, and a second lumbar puncture. If all these examinations prove negative the patient is allowed to marry at the end of this second year. For those who have not come under treatment until a positive W.R. has developed a second year's course is prescribed. If at the end of these two years the blood reactions and examinations of the cerebro-spinal fluid prove negative a two years' period of observation is recommended. During this time regular examinations are performed and a provocative W.R. done at the end of each year. A lumbar puncture terminates the period of observation. If this is negative marriage is permitted. In the opinion of Dr. Bory the same tests should be used for the male as for the female.

Return of the Far East Commission.

The Commission appointed by the National Council for Combating Venereal Diseases and sent out to the Far Eastern ports under the ægis of the Colonial Office has completed its itinerary, and will arrive in England on March 14th.

Conference of Public Health Authorities.

A conference of public health authorities took place at 5, Cadogan-gardens, London, on March 1st, Lord Askwith presiding, to consider the prevention of venereal disease. Dr. A. Mearns Fraser proposed:—

> That, in view of the terrible effects of venereal diseases on the health of the nation, and especially because of their effects upon women and children, there is urgent need for health authorities to institute active measures to protect the inhabitants of their districts against these diseases. Of these measures by far the most important is education of the public as to the dangers of venereal diseases, as to the manner in which they are spread, and above all, education in the methods of immediate self-disinfection, by which venereal diseases can be largely prevented.

Dr. Fraser said that the Society for the Prevention of Venereal Disease was anxious to induce local authorities to make known the methods of self-disinfection to the public, and he detailed the action already taken in this direction by the Portsmouth Health Committee. Dr. Charles Saunders, in seconding the resolution, said that among the 300,000 inhabitants of West Ham there were more than 1000 new known cases of venereal disease every year.

Dr. E. W. Hope, Dr. W. A. Bond, Dr. J. Holroyde, and other medical officers of health and prominent municipal officers supported the resolution, which was then put to the meeting and carried unanimously with the following addendum:—

> Resolved further that this resolution and opinion be forwarded to health authorities throughout the United Kingdom, with the request that they take the subject at once into consideration.

Sociological Teaching to Medical Students.

On Tuesday, March 1st, the first of a course of lectures on gonorrhœa was delivered at the London Hospital by Mr. Hugh Lett, director of the Gonorrhœal Clinic, who gave an admirable résumé of the subject of venereal disease as viewed from the sociological standpoint. He pointed out how necessary it is for medical practitioners to evince such an interest as will enable them to reply with authority and confidence to the inquiries to which, as medical men, they will certainly be subjected. Further, he showed how important it is that medical men should possess such a knowledge, in order that they may be able not only to offer information and guidance but also at times to restrain well-meaning but ill-considered attempts to reduce venereal disease. Mr. Lett drew a comparison between the prurient and false modesty adopted in the mid-Victorian era and the more wholesome candour which marks the present day, epitomising the activities of the Royal Commission on Venereal Diseases, the National Council for Combating Venereal Diseases, and the Society for the Prevention of Venereal Disease. He explained and dealt in a judicial manner with the controversy concerning immediate self-disinfection and early preventive treatment, ending with a consideration of the difficult subject of notification. Such a lecture, we believe, is something of a novelty in a teaching school, and the example of the London Hospital might well be followed in bringing before medical students and practitioners the necessity for developing a sociological interest in these diseases. If once the sympathy and coöperation of the medical profession as a whole were enlisted it would be a far easier task to influence popular opinion.

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[1] THE LANCET, Feb. 26th, p. 447.

LUNACY IN EGYPT.

THE Twenty-fifth Annual Report on the Government Hospital for the Insane at Abbasayi and the Eighth Annual Report on the Asylum at Khanka are, as usual, full of interest, and give evidence of the steady progress which has been made in Egypt in the treatment of the insane, notwithstanding the very trying experiences of the last few years. The period covered by the reports coincides with the financial year 1919–20. The number of beds on the establishment is 1581—i.e., 1181 at Abbasayi, 400 at Khanka. The admissions, exclusive of transfers between the asylums, reached a total of 919. Besides cases admitted to the two asylums, many patients were admitted to the local hospitals of the Department of Public Health. We must once again point out the importance of having other asylums scattered about in different parts of Egypt.

The total number of cases of insanity brought under official cognisance during the year is found to be 1098, which, compared with the 1281 in 1918, shows some diminution. 635 cases were discharged, of whom 175 had recovered, and 26 were found not to be insane; 430 cases were handed over to their relatives—while still insane—in most instances because accommodation was needed for new and more acute cases. The reduction of 159 in the admissions did not result in any relief of the pressure for room, owing to a reduction of 200 in the number of beds. The old troubles have arisen from want of accommodation, there being on the one hand a considerable amount of crowding, and on the other the necessity to discharge many patients who are only, apparently, convalescent. Discharge of convalescent patients to their old and in many cases unhealthy surroundings has as usual led to the patients being later returned under the head of criminals. Again, it has to be noticed that there is no real criminal asylum, and that the majority of the people who are reported to be criminally insane are sent to Abbasayi.

Diet and Mental Disease.

The death-rate among the insane patients has diminished from 21 per cent. in 1918 to 11·9 per cent. in 1919; calculated on the total treated, it has dropped from 13·4 per cent. to 8·2 per cent. The reduction in the deaths affected nearly all causes given in Table 10, except general paralysis. The greatest reductions were as follows:—

Pellagra … … … … … … … … … … … …	66
Dysentery and diarrhœa … … … … … … …	25
Exhaustion from brain disease and epilepsy … …	28
Lung and heart disease and tuberculosis … … …	33
Influenza … … … … … … … … … … …	30

The great reduction in the deaths from pellagra and from other diseases is evidently due to some common cause, and this cause seems to be the improvement in the diet proposed in last year's report, and put into force on May 1st, 1919—namely, an increase of 45 g. of meat and 50 g. of milk daily in the diet of each patient. The importance of this fact is manifest, in view of the doubt recently thrown upon the relationship existing between pellagra and diet, certain investigations having pointed to infection and dysenteric troubles as ætiological factors. But the observations of Dr. J. Warnock and Dr. H. W. Dudgeon confirm the impression that pellagra is chiefly associated with defective diet. These should be read in connexion with the special report on pellagra among the Turkish prisoners of war, published by the British War Office, in which the conclusion was reached that lack of sufficient biological value of protein stands in ætiological relationship to pellagra, certainly as an exciting factor, and possibly as a determining factor, while the low biological value of the protein of maize was suggested as the reason for the frequency of pellagra among maize consumers.

The Causes of Insanity.

As usual, pellagra appears as the chief cause of mental disorder in Egypt—or, at all events, as being an associated cause in the production of insanity—and when the different groups are analysed it is found to be equally represented in each. Thus, of the forms of insanity of 52 male and 5 female accused persons—i.e., those accused of crimes—10 of the 52 owed their insanity to pellagra. Table 5 gives the forms of insanity admitted, and there again it is noteworthy that hashish and alcohol play an important part, although that part is small in comparison with pellagra. Epileptic insanity is also frequent. General paralysis of the insane occurred in a considerable number of patients, and, as we have pointed out before, a very large number of female patients—in fact, a much larger proportion of female to male patients—is met with in Egypt than in England. As usual, the large proportion of general paralytics is furnished by the cities, such as Cairo and Alexandria; whereas pellagra occurs more commonly in the country districts. Cairo provides most of the cases of insanity due to hashish. Table 9 attempts to give the causes of insanity, and suggests the relationship of heredity to the production of mental disorder; difficult as it is in England to obtain any trustworthy history where heredity is concerned, that difficulty is greatly increased in Egypt among illiterates. Syphilis is given as a very definite cause, occurring both in men and women, not only producing general paralysis, but also other forms of disorder.

A striking fact as seen from the tables is the length of residence in hospital of patients who recovered, a considerable number being discharged who had been in asylums for seven years and upwards. Seclusion had to be resorted to in a fair number of cases, depending to a great extent upon the crowded condition of the asylum. No mechanical restraint was employed during the year, and hypnotics were used to a limited extent. Five patients sustained fractures from falls or struggles with other patients; one patient sustained a fracture of the humerus, another a fracture of the clavicle. None of the fractures was fatal. Post-mortem examinations were made in only 16 instances. The staff, both English and Egyptian medical officers, has been increased, and has been maintained in its efficiency.

The Khanka Report.

Turning to Dr. Dudgeon's report at Khanka, it appears that for some considerable part of the year he was taking the place of Dr. Warnock, who was in Europe. Dr. Dudgeon provides interesting tables, showing the rate of admissions, the percentage of pellagra admissions, and the death totals; graphic schemes are given showing these facts in relationship to the Khanka institution. Steady progress is recorded in regard to the farms and the supply of water, and the planting of trees is being carried on satisfactorily. At Khanka are received the more quiet patients, and no women—a rather special class, from whom more work can reasonably be expected than from patients elsewhere. Careful examination was made of stools in reference to dysentery and diarrhœa. The results bear out the findings in last year's report as regards the presence of intestinal worms. Dr. Dudgeon has succeeded, during the past year, in maintaining the standard of no seclusion or restraint; he has also been able to reduce the administration of sedatives to a very satisfactory point.

The reports, considered together, make clear the facts that lunacy in Egypt is being satisfactorily treated, and that, with time, the further development of lunacy legislation, and the establishment of local asylums, with the separation of criminal lunatics, will have a very beneficial effect. The reports themselves are models of care and accuracy, both from the medical and the economical point of view.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

District Medical Officers for Scotland.

THE Scottish Board of Health announce the appointment of the following district medical officers:—Senior district medical officers: Western District (headquarters, Glasgow), Dr. R. Buchanan; South Eastern District (headquarters, Edinburgh), Dr. A. M. McIntosh, C.M.G. Junior district medical officers: South Western District (headquarters, Glasgow), Dr. John Gilmour; Northern District (headquarters, Aberdeen), Dr. John Jeffrey; Eastern District (headquarters, Dundee), Dr. J. Murray Young. These officers will act as medical referees in cases referred to them on questions of incapacity of insured persons for work, and as consultants in questions of diagnosis and treatment. They also have important administrative duties in connexion with the Insurance Medical Service and other work of the Scottish Board of Health.

Annual Dinner of the Royal Medical Society, Edinburgh.

This, the first post-bellum revival of an important Edinburgh medical function, was held on Feb. 22nd, in the hall of the Royal College of Surgeons of Edinburgh, by the kind courtesy of the Council. The chair was occupied by Dr. J. Davidson, senior president of the society, who welcomed the guests. The guest of the evening was Professor Robert Muir, M.D., F.R.C.P., F.R.S., of Glasgow University. After the loyal toasts had been drunk, the Lord Provost of Edinburgh proposed the toast of "The Imperial Forces"; Admiral Sir Herbert Heath replied for the Navy, and Lieutenant-General Sir Francis Davies for the Army. The chairman, in proposing the toast of "The Guest," said that Professor Muir was an old member of the society. Twenty years ago he went to Glasgow, where he gathered round him a body of workers, and gave to Glasgow her reputation as a school of pathological research. Professor Muir, in reply, said that such gatherings tended to a spirit of generosity and exaggeration; they had honoured him beyond his merits, and ever afterwards when he looked back there would be nothing he would prize more highly than the night on which he had been the guest of the Royal Medical Society. In proposing "The Royal Medical Society," he said, he had the difficult task of making two speeches in the one evening. He referred to the early history of the society, to its formal institution in 1737, its activities, and the fact that at an early period the society came to regard itself as an essential part of the medical school. In spite of disputes and quarrels from time to time there was no doubt that the Medical Society had very great influence in the growth and development of enthusiasm for the good of the school, and in 1778 the society was incorporated by Royal Charter. Professor Muir then referred to his own connexion with the society and wished all success to the younger generation in their conduct of its affairs. He ressed the wish that the spirit and the motive existed from the opening of the society might evail, and that honest inquiry, free criticism, and mutual help would always dominate in all that the society did. Dr. J. Lewis Owen, in reply, said that in common with other great bodies the society had passed through its times of adversity, but that it still continued to carry on the good work. Dr. J. M. Watt proposed the toast of "The University and Royal Colleges," and spoke of the great numbers of students who came to the Scottish schools of medicine from overseas. Principal Sir Alfred Ewing, replying for the University, said that the association of the University and the Royal Colleges was one of close and friendly partnership, and referred to the scheme for the commemoration of Lister and also to the scheme for raising funds for the University. Sir Robert Philip, replying for the Royal College of Physicians of Edinburgh, referred to the early foundation of the latter and to the close association between it and the Royal Medical Society. Dr. George MacKay, replying for the Royal College of Surgeons, Edinburgh, took the opportunity of expressing the pleasure which it gave his College to provide its hall for such a banquet. Dr. Freeland Fergus replied for the Royal Faculty of Physicians and Surgeons, Glasgow, and said that Edinburgh had once taken a good man from Glasgow in the person of William Cullen, but that Glasgow had now made up for this in its possession of Professor Muir. Dr. J. F. C. Haslam, in proposing the toast of the "Sister Professions," spoke of the high missions in this life which the Church, the law, and medicine, each in its own sphere, must keep before them. The Dean of the Thistle replied for the Church and the Solicitor-General for the law. Mr. Miles then proposed the toast of "The Chair," and the banquet concluded with "Floreat Res Medica."

University of Aberdeen War Memorial.

The University of Aberdeen is preparing a record of the services of its members during the war, and memorials to those of them who fell in action or went down with their ships, or died of wounds or disease. The record contains about 3000 names of graduates, alumni and members of the staffs, with particulars of the service of each, and of the distinctions gained. It is to be preceded by brief biographies with portraits of the 337 who laid down their lives for their country. A large part of the volume has gone to the press and the rest is rapidly nearing completion. The memorials which have been planned consist of a stained-glass window in the ante-chapel of the University Chapel at King's College with oak panels on the walls bearing the 337 names; of another window in the chancel; and of a memorial porch in Marischal College. The total cost of these memorials has been estimated at between £9000 and £10,000. Up to this time £4700 have been subscribed, but further subscriptions are necessary and may be sent to the principal or to the honorary treasurer, Mr. D. M. M. Milligan, 12, Dee-street, Aberdeen.

March 7th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Further Researches on Encephalitis Lethargica.

AT a recent meeting of the Société de Biologie MM. C. Levaditi and P. Harvier have given the results of further experiments carried out on animals, with special reference to the inoculation of encephalitis lethargica to rabbits. Some of their findings may have a direct application to the prophylaxis of encephalitis lethargica, since they have observed that the virus of the disease remains active for a long period in water and in milk.

Medical Aspects of Conscription.

The Minister of War in a letter to the members of the Académie de Médecine has set forth the following three questions: (1) At what age between the ages of 19 and 21 should conscription most suitably take place from a medical point of view? (2) What is the best season for men to join the colours? (3) Is resistance to fatigue and diseases diminished in men who have been rationed during the war? A committee was appointed to consider the three answers and Mr. Léon Bernard has recently submitted its report. The committee recommends the age of 21 as the most suitable for incorporation of men into the army, and has decided that the end of April is the best time of the year for calling them up. On the last point the conclusion reached was that the resistance of men who had been rationed during the war was diminished. In the course of the debate on the report Mr. H. Vincent gave statistics referring to contagious diseases (scarlet fever, measles, mumps, diphtheria, cerebro-spinal fever, typhoid fever, and paratyphoid) which occurred in the French army in recent years, showing that the morbidity was 5·78 per 1000 amongst men of 20 years of age and 5·25 per 1000 amongst men aged 21; these figures indicated that resistance was about the same in both groups. Other members were in favour of the age of 20 for the enrolment of conscripts providing the recruits were properly selected and properly cared for. The answer to the Minister dealt first with recommendations concerning the welfare of young recruits, more especially with regard to their training, clothing, feeding, and to hygienic conditions in barracks. The members of the Académie de Médecine finally declared that in their opinion men could join the army at 20 if these recommendations were carried out. The matter is of some importance; Mr. G. H. Lemoine points out in an article in the *Revue d'Hygiène* that in the event of mobilisation the contingent of the French army is increased by 200,000 men when the age of conscription is 20 instead of 21.

The Société de Neurologie.

Mr. Henry Meige, the general secretary of the Société de Neurologie, has announced at a recent meeting that the Réunion Neurologique Annuelle de la Société de Neurologie de Paris will be held in Paris on June 3rd and 4th. The subject for discussion will be the Syndrome of Parkinson's Disease, to be opened by Mr. A. Souques.

International Congress of Medical History.

An International Congress of Medical History will be held at the Faculté de Médecine de Paris from July 1st to 5th. Professor E. Jeanselme and Professor P. Ménétrier will preside over the Congress, which will consist of meetings, conferences, and visits to hospitals and museums. A museum of medical history will be inaugurated. The committee of the Congress invites any body in possession of historical medical curiosities (instruments, medals, engravings, pictures, sculptures, books, &c.) to lend such articles for a temporary retrospective exhibition. Further information can be obtained from Mr. Laignel Lavastine, Secrétaire-Général du IIe Congrès International d'Histoire de la Médecine, 12 bis, Place de Laborde, Paris (VIIIe).

Modification of the Internat Competition.

It has been finally decided to modify the form of the "Concours de l'Internat" on the lines indicated in my last letter. By order of Mr. Louis Mourier, Directeur de l'Assistance Publique, the modification will be applied to this year's competition.

March 5th.

ROUMANIA AND HUNGARY.

(FROM OUR OWN CORRESPONDENT.[1])

Cholera Prophylaxis in Bessarabia.

THE high degree of efficiency which characterises the work of the Medical Department of the Roumanian Army has been well illustrated in Bessarabia, where in the fiscal year of 1920 there was not a case of cholera among the Roumanian troops, although the disease was common amongst the natives and in the neighbouring Russian provinces. In numerous towns adjacent to military posts the disease was epidemic at some period during the year. The achievement of the Medical Department is said by the Surgeon-General in his annual report to be due to the thoroughness and effectiveness of the sanitary measures employed. The Roumanian soldiers have been thoroughly trained to abstain from eating uncooked native vegetables, and from drinking any but sterilised water. In the old Bessarabian (late Russian) soldiery there were only 9 cases with 7 deaths; these figures testify to the influence of the army system of sanitation, even with people accustomed for centuries to conditions of living that foster such diseases as cholera.

Hostels for University Students in Bucharest.

The question of hostels and residences for students has occupied the attention of the educational authorities in Bucharest for a considerable time. The existing conditions are anything but satisfactory. Students are frequently unable to get convenient apartments, and during the last two years the position has become more and more difficult. Even in the suburbs exorbitant rents are charged. Financial and other considerations have hindered the provision of hostel accommodation. The financial committee of the University wishes to establish a number of small hostels, each to accommodate some 50 students. This scheme would enable them to erect the hostels in different districts, possibly outside the city area, so that students might have the benefits of country residence with easy access to their training centres. So far, nothing definite has been done in the matter of securing sites beyond the inspection of certain pieces of ground, but the committee anticipates making an early start with whatever scheme may be decided upon. Meantime, several houses have been taken for temporary residences, and the committee hopes soon to be able to have accommodation for 200 students. These hostels will probably be opened in time for next session.

Epidemic of Sore-Throat in Kisenew.

An extensive epidemic of sore-throat has been prevalent in Kisenew, a large industrial and commercial centre in Bessarabia, during December, 1920, and January, 1921, and in many cases entire households have been attacked. The sore-throat was generally accompanied with painful and sometimes suppurative tonsillitis, and with enlargement of the glands of the neck. Attacks were often ushered in with rigor, and cases are recorded with a temperature of 39·8° C. The attacks were generally followed by marked depression and weakness lasting for several weeks. Streptococci and some staphylococci were found, but no diphtheria bacilli. The great majority of the cases occurred in outlying parts of the town inhabited by the poorer classes. Antistreptococcic serum did not seem to be of much use, and it was reported that in only one or two instances did vaccine made from the actual organisms appear to relieve symptoms. Only a few cases of acute rheumatism are known to have followed the attacks; the best results seem to have been given by aspirin, together with local antiseptics.

Pasteurisation and Grading of Milk in Budapest.

The department of health of the city council of Budapest at its meeting on Jan. 31st adopted resolutions which provide that all milk and cream offered for sale in the city, except that used for manufacturing or cooking purposes, must be of the grade technically recognised by the Board of Health as certified or guaranteed milk, or must be pasteurised under the conditions prescribed by the Board, following the system long employed in America. Grade A, for infants and children, is to be sold in bottles only. (This includes certified milk, guaranteed milk, or milk pasteurised under special regulations.) Grade B, milk safe for adults, to be sold in bottles or drawn from containers, not dipped. (This includes Grade A and pasteurised milk produced under the regulations of the [illegible]) Grade C, milk suitable for cooking and baking [illegible] to be sold from bottles or from cans. (This [illegible] milk complying with the [illegible] No one should use milk inferi[illegible] A [illegible] an infant or child. Every person purchasing milk for drinking purposes is entitled to receive milk not inferior to Grade B. The efforts of the department of health in the supervision of milk should be especially concentrated on Grades A and B.

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[1] Our correspondent lives in Transylvania, which was in Austro-Hungary and is now in Roumania. Hence his familiarity both with Budapest and Bucharest which has misled some of our readers into thinking that we were imperfectly informed of the present geographical boundaries of Central Europe.—ED. L.

Traumatic Lesions of the Eye.

Dr. Mulgund, who during the war had under his care an eye hospital accommodating 600–800 eye cases, besides 1000 trachoma cases, has issued a little book on the above subject, comprising his war experiences. In this book he presents the general principles of treatment of trauma of the eye, remarking with regard to prognosis that all nervous disturbances in the orbit resulting from pressure of extravasated blood in the region are capable of complete retrogression, while direct lesions of the nerves usually persist unchanged. Special care must be taken to prevent drying or ulceration of the cornea when the eyeball protrudes or the lids do not close perfectly. If inflammation develops in the orbit from infection from the nose the prognosis is almost inevitably bad. Emphysema, on the other hand, has an excellent prognosis. Treatment of all fractures deep in the orbit should be exclusively conservative. With much suggillation a compressive bandage, ice-bag, and complete repose may be indicated. Only with extreme protrusion of the eyeball or very severe emphysema is it necessary to relieve by evacuation of the blood at the most swollen part of the orbital tissue. Direct operative measures are necessary if there is a fracture of the walls of the orbit with dislocation. Compound fractures should be treated on the usual surgical principles. Mulgund adds, in conclusion, that in every extensive compound fracture of the orbit, as also in every case of extensive injury of the soft parts in which contamination with soil cannot be absolutely excluded, a preventive injection of tetanus antitoxin should be given.

A Note on Antimalarial Operations in Albania.

The country of Albania is partly mountainous and partly a plain intersected by a network of rivers and streams, and abounding in pools, swamps, and forests. The latter is a paradise for mosquitoes. During the occupation of Albania by the Austro-Hungarian Army in 1916 the Surgeon-General deputed a native doctor, Dragomir Petrovic, to survey the country for the purpose of devising measures for the suppression of malaria. The suggested undertakings included improvement of drainage, destruction of the mosquito's breeding-places, and distribution of quinine during the fever season at an estimated cost of 3,500,000 kronen (quinine being at that time excessively dear). His report for the five years, 1916–20, published in January, 1921, indicates that these suggestions were put into active operation during this period. Drains were levelled and cleared or filled up, forests cut down, compounds cleared, pools abolished, tanks and watercourses systematically oiled by gangs of soldiers and ex-soldiers, and quinine lavishly distributed. This work appears to have been strenuously carried out at a cost of over 7,500,000 kronen. Dr. Petrovic considers that the statistics for 1920 show a slight diminution of malarial disease; but these statistics are not very reliable, and the present chief sanitary inspector of the district thinks that it is still too early to form any definite conclusions. Similar operations were carried out in Bosnia with still more doubtful results. Screening houses with wire gauze was tried there, but the inhabitants objected on account of interference with ventilation.

Feb. 18th.

SCOTTISH WOMEN'S HOSPITALS HONOURS.—The King has granted to the following medical members of the Scottish Women's Hospitals for Home and Foreign Service permission to wear decorations of the Order of St. Sava, conferred upon them by the King of the Serbs, Croats, and Slovenes in recognition of their services to the Serbian ick and wounded in the late war:—*Fourth Class:* Dr. trice A. McGregor. *Fifth Class:* Dr. Lilian M. Chesney, Janet McVea, Dr. Elizabeth Brook, Dr. Catherine L. bett, and Dr. Janet S. Laird.

Public Health.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

COUNTY OF BEDFORD.

Dr. H. Kenwood, in his annual report for the year 1919, explains that for the statement of birth- and death-rates respectively two somewhat different estimates of population are employed. The "death-rate population" excludes all non-civilian males, whether serving at home or abroad. This is necessary for the purposes of local death-rates, because it has proved impossible to transfer the deaths of non-civilians to their areas of residence, or to deal in any other satisfactory manner with the local mortality of this element in the population. These estimates are based mainly upon the rationing returns placed at the Registrar-General's disposal by the Ministry of Food. The "birth-rate population," on the other hand, is intended to include all the elements of the population contributing to the birth- and marriage-rates. It consists, therefore, of the "death-rate" for civilian population plus all non-civilians enlisted from this country, whether serving at home or abroad. This non-civilian element has been distributed over all the districts in the country in proportion to their estimated civilian population. The county birth-rate for the year under review was 15·9, as compared with a rate of 15·5 in 1918 and 16·0 in 1917. The general death-rate was 11·0. It is interesting to note that the death-rate for the rural districts exceeded that for the urban districts, a circumstance which doubtless is sufficiently explained by the considerable exodus from the rural districts of persons from 15 to 30 years of age, among whom the death-rate is exceptionally low.

Dr. Kenwood makes some interesting remarks on the recent *influenza* epidemic, which caused a civilian mortality throughout the country at the rate of 4774 per million per annum, an epidemic mortality not hitherto equalled in Britain since registration commenced. Nor does this heavy mortality truthfully represent the ravages of the disease; for the deaths attributed to pneumonia, bronchitis, heart disease, and phthisis were also markedly increased as the consequence of the influenza infection. Moreover, the age distribution of the attacks and of the deaths markedly departed from that of previous epidemics. From 15 to 35 were the years of highest mortality in the epidemic of 1918–19; whereas the most fatal years of previous epidemics were those of 55 and over. In Dr. Kenwood's view inoculation against the disease is of value in protecting against fatal complications rather than against attack of the disease. The Ministry of Health has made a vaccine available for distribution through medical officers of health to medical practitioners, and doubtless in the event of another epidemic this precautionary measure will be widely adopted. The epidemic showed the need of a promptly available supplementary personnel for temporary employment in time of public health emergency. Nurses are required in epidemics of influenza, measles, and whooping-cough who can visit all the poorer homes in which it can be ascertained that such disease has occurred, and it would be well if these services could be supplemented by a voluntary personnel suitably trained to offer good advice and to make inquiry with the view of ascertaining which cases are really necessitous. Our recent war experience has shown that there are in every community persons who would be able and willing to volunteer for such emergency services if they were invited to do so. Dr. Kenwood thinks that the suffering and mortality in an influenza epidemic could be materially reduced by adequate nursing assistance; a provision of fuel, food, and clothing to really necessitous cases; by hygienic advice, more particularly as to ventilation and the spacing out of the rest of the family; the distribution of a suitable disinfectant with directions as to its use; and the provision of more hospital isolation and treatment.

On the subject of the prevention and treatment of *tuberculosis* Dr. Kenwood remarks that the causes of the disease are largely economic, and the prevention is therefore largely in the hands of the social reformer. Better housing and the means to secure a more hygienic standard of living, the avoidance of excessive strain and too prolonged hours of work in badly ventilated premises, will all operate toward the reduction of the incidence of the disease by reducing the numbers of those with lowered resistance. But lowered resistance must be associated with exposure to infection if a person is to acquire tuberculosis, and it is in connexion with the advanced cases that these two factors assert themselves most prominently. The subject of advanced phthisis is very often an individual who has been for some time incapable of earning a living wage, and therefore he and those dependent on him are frequently on the border-line of poverty. He is giving off large numbers of germs in surroundings which favour their transference to others, and these others, who are exposed to such "massive infection," have had their resistance lowered by all the circumstances associated with poverty. As Dr. Kenwood has pointed out in previous reports, our national scheme for the treatment and prevention of tuberculosis provides no effective remedy for this state of things; and, indeed, the real remedy is both difficult and costly. It is to be found in powers for compulsory removal of those thus exposing others to grave risks, and in suitable provision for their isolation in hostels.

Tuberculosis schemes are deficient in another important respect. The average stay in the sanatorium provided for the poorer section of the community is about 12 weeks. This period is valuable in several respects, but it is doubtful whether anyone is ever cured in much less than 12 months of sanatorium treatment, which, of course, implies abundance of fresh air, abundance of good food and rest, carefully regulated exercise or work, and skilled medical supervision. A patient who is not in very comfortable financial circumstances cannot maintain those essentials after his discharge, and so he gradually loses what he has gained on the road to recovery, and he mostly dies from tuberculosis within two years from the date of his discharge from the sanatorium.

JUVENILE EMPLOYMENT AT CARDIFF.

Occupational legislation, first by adopting the principle that there should be a minimum age for employment, and later by raising this age from time to time until the present limit was reached, which in its turn, when the Education Act of 1914 is in full swing, will be further advanced, has been in the interests of health aimed at removing from industrial influences those of tender years. Simultaneously education authorities have extended the scope of their activities, and in recent years have further found it necessary to supervise the health of those attending school. The parting of the ways, the moment when the juvenile leaves school and enters upon occupation, is one of peculiar interest to the medical sociologist. Up to the present the medical profession has taken but little part in directing the future of the youth. We should, however, take our part, and no apology is needed for commenting here on what is being done, especially by Juvenile Advisory Committees. One of the most efficient efforts in this direction is described in the fifth report[1] (for the year ending July 31st, 1920) of the Juvenile Employment and Central Care Committee of Cardiff, upon which all interests concerned are represented.

The report points out that conditions have not been normal during the past year owing to the exigencies of war creating conditions which gave the younger persons too great a degree of independence; in consequence they lost the sense of fairness and responsibility, and got an inflated sense of their importance. Welfare work in factories has proved of value, but in the Cardiff area work in this direction has recently been somewhat stationary. Acting under the City by-laws, a scheme has been adopted as from July 28th, 1920, under which among other things: (*a*) morning employment of scholars on school days is prohibited; (*b*) registration at the Juvenile Employment Bureau of all child employees and employers of children is obligatory; (*c*) employment cards must be used, containing records of school time and of various subsequent employments; (*d*) the hours of possible employment are restricted to from 5 P.M. to 7 P.M. on week days, to five hours on Saturdays, and 8 A.M. to 10 A.M. on Sundays; and (*e*) the minimum age for street trading is raised to 15 years. This scheme is one of the most advantageous yet adopted, and special officers are appointed to enforce compliance with its requirements. Evidence is given in the report that abuse of child employment in the past demanded action; one instance will suffice: "I met with one case where a boy regularly had nothing to eat between 8 A.M. and 5.30 P.M. owing to being employed in the dinner hour (lad since died)." The regulation which now prevents juveniles from leaving school except at the end of the term during which they attain the age-limit, is causing some inconvenience because employers have not yet learned to arrange that vacancies shall synchronise with term-ending periods; this inconvenience is probably temporary. Visits during school hours of parties of senior scholars to works and factories have proved of value in enabling them to make a better choice of occupation. For the moment tailoring is reported to be unpopular, and to be falling to the alien population; on the other hand, mechanical trades are much sought after, probably because they are controlled by unions able to secure good remuneration and conditions.

The Juvenile Employment Bureau is increasing in popularity with girls; during the period reported upon fresh applications were received from 2731 girls as against 1780 during the previous year. The bureau arranged 148 apprenticeships for girls (44 to tailoring) as against 165 for boys; in future training for domestic service is to be a feature of the work. The figures given indicate that many juveniles are not well placed at the first trial; thus, for boys 1721 vacancies were filled, of which only 468 were first places. Girls apparently settle down easier, since out of 1280 vacancies filled 512 were first places. Unfortunately no information is given as to length of service which follows placing. Here, rather than in the number of vacancies filled, lies proof of the employment bureau's work. We hope that the committee will look into this matter and publish results, laying stress on the length of employment which follows at different trades and occupations.

URBAN VITAL STATISTICS.

(Week ended March 5th, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18½ million persons, the annual rate of mortality, which had increased from 12·3 to 15·5 in the five preceding weeks, fell to 15·2 per 1000. In London, with a population of 4½ million persons, the death-rate was 14·8, or 0·3 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 7·1 in Edmonton, 7·6 in Grimsby, and 9·2 in Wimbledom and in Bury, to 22·4 in Wakefield, 23·4 in Cambridge, and 25·3 in West Hartlepool. The principal epidemic diseases caused 259 deaths, which corresponded to an annual rate of 0·7 per 1000, and comprised 89 from infantile diarrhœa, 68 from whooping-cough, 62 from diphtheria, 20 from measles, 14 from scarlet fever, and 6 from enteric fever. Whooping-cough caused a death-rate of 1·3 in Sunderland, 1·4 in Edmonton, and 2·3 in Wigan. The deaths from influenza, which had increased from 61 to 138 in the four preceding weeks, further rose to 167, and included 45 in London, 9 in Hull, 8 in Newcastle-on-Tyne, and 6 in Leeds. There were 3738 cases of scarlet fever and 2809 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 3845 and 2800 respectively at the end of the previous week. During the week ended Feb. 26th 9 cases of encephalitis lethargica were notified in the County of London, and comprised 1 each in Battersea, Bermondsey, Bethnal Green, Greenwich, Hackney, Hampstead, Kensington, Paddington, and Woolwich. The causes of 30 of the 5422 deaths in the 96 towns were uncertified, of which 7 were registered in Birmingham, and 3 each in London and Gateshead.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had increased from 14·9 to 19·4 in the four preceding weeks, fell to 18·0 per 1000. The 413 deaths in Glasgow corresponded to an annual rate of 19·6 per 1000, and included 40 from whooping-cough, 21 from influenza, 6 from infantile diarrhœa, 4 from diphtheria, 3 from scarlet fever, and 1 from measles. The 152 deaths in Edinburgh were equal to a rate of 17·8 per 1000, and included 11 from influenza, 4 from measles, 2 from diphtheria, and 1 each from whooping-cough and infantile diarrhœa.

Irish Towns.—The 153 deaths in Dublin corresponded to an annual rate of 18·9, or 0·8 per 1000 above that recorded in the previous week, and included 4 each from influenza and infantile diarrhœa and 3 from diphtheria. The 141 deaths in Belfast were equal to a rate of 17·5 per 1000, and included 10 from whooping-cough, 4 from infantile diarrhœa, and 3 from influenza.

EASTBOURNE EAR, NOSE, AND THROAT HOSPITAL. This hospital was opened at a house in Pevensey-road in the autumn of 1917. The demands made upon it soon overtaxed the accommodation, and on March 2nd last new premises were opened in Cavendish-place, the accommodation including two wards, operating theatre, consulting-room, and out-patients' waiting-room. In-patients can now be admitted, and many friends have come forward with generous help towards equipping the hospital with up-to-date appliances.

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[1] South Wales Printing and Publishing Co., Ltd., Cardiff.

Correspondence.

"Audi alteram partem."

CHILDREN'S DIET.

To the Editor of THE LANCET.

SIR,—I was much pleased with the kind allusion to the "Nem-System" in Professor Gowland Hopkins's Huxley lecture (THE LANCET, Jan. 1st) and with the interest taken in the research work which is being done at my clinic by Dr. Elsie Dalyell, Dr. Harriette Chick, and their assistants. Dr. Hopkins appears to consider my opinion on the question of nutrition very different from his own; I do not think that there is such a contrast. He takes a special scientific interest in the different particular foodstuffs; I have specially studied their energy value: only the combination of both our systems can solve the problem in a satisfactory way.

In order to avoid the difficulty of the separate structural elements I treated protein as an undefined substance. I require at least 10 per cent. of the Nem-quantity to be given in the form of protein. Thus, when taking an ordinary human diet into consideration, there is a probability that all the necessary kinds of the structural elements are contained in it. I must own, however, that it is only a probability. In order to be quite sure all the foodstuffs would have to be examined in order to find out their content of structural elements. In the practice of everyday life this does not seem necessary; for, in combining the customary foodstuffs of our daily fare into a diet, varied according to the difference of days and of meals, we get so large a collection of single substances that we may be quite certain of their containing structural elements of all kinds.

I must remind you of the fact that none of the nutritive systems have hitherto been based on the exact *quantity* of structural elements. If we wanted to do this we should not only have to think of protein, but also of the mineral components, such as chlorides, potash, chalk, iron, &c. At certain periods in the past doctors were rather anxious as to whether one or the other substance was contained in the food in a sufficient quantity. Think of the time when medical science thought an addition to the food of iron, chalk, or phosphorus desirable. But this has not become a lasting custom, from which fact I should like to draw the following conclusion: the food of the omnivorous of all civilised nations will rarely completely lack single structural elements that are necessary, or contain less than the minimum, so that it would not be worth while to make their calculation a daily rule. Only water, the most important element of structure, was, as a matter of principle, taken into consideration by the Nem-System. I refer to Nobel's excellent experiments,[1] an abstract of which is to be found in my "System der Ernährung," Vol. IV., p. 393, in which the laws relating to the minimum content of water in diet are explained.

It is a little different with the vitamines. Even an abundant and varied menu may be without vitamines, for example, if it is composed of preserved foodstuffs. We have made it a practical rule that the diet must contain fresh vegetables or potatoes at least once every day. This rule was based on experience, as also the rule ensuring a certain coarseness or cellulose content of the diet, which is of such vital importance for the movement of the bowels, except in the first years of babyhood. I admit that in these two cases of the vitamines and of coarse food, instead of a vague recommendation, there ought also to be a quantitative rule, expecially in a system that requires such a detailed and graduated administration of food as the Nem-System prescribes. This quantitative rule might be determined by finding out the approximate content of cellulose and of the three important vitamines in all foodstuffs and then by summing them up, determining [illegible] necessary minimum that must be present in the [illegible], as I have done in the Nem-System for protein. I shall be glad if the English workers here will make practical proposals of this kind. and I am quite willing to incorporate them in the Nem-System.

With regard to the observations that are being made by the mission of the Lister Institute at my clinic I think I can already make the following statement:—

Especially when tried on bigger children, there is no essential difference between our diets, composed according to the Nem-System, and containing at least 10 per cent. protein, and a diet purposely rich in vitamines, and this for the very good reason that diets, arranged according to the Nem-System, do not consist merely of caloric elements, theoretically calculated, but of the customary mixture of ordinary foodstuffs. For the feeding of babies, however, I hope to draw much benefit from the result of the English researches. We have been giving to the babies a rather unvaried food, and we are ill-informed as to the vitamine content of milk, which forms the chief article of their diet. It has happened more than once that infants have acquired scurvy under our eyes because we gave them a diet that was poor in vitamines. Our bigger children have only once suffered from a real epidemic of scurvy, and that was in the time of the worst malnutrition, when, owing to the war, our kitchen could not be supplied with fresh vegetables and meat. I must admit, however, that the criticism with regard to our practice of overcooking vegetables is justified and we will follow the advice given in that direction.

If at that time we had known what we are now learning from the English school of nutrition, we should not have been so inactive in providing the necessary fresh foodstuffs, contenting ourselves with the fact that they did not arrive on the market of their own accord; but, like our English colleagues, we should have tried to get the necessary foodstuffs direct from the peasants. On the other hand, I hope, our English colleagues will have learned from us how to base their observations of nutrition upon a quantitative caloric foundation. It is not possible to regulate the details of *qualitative* feeding of human beings without first having discovered the caloric requirements of the child apart from the irregularities of preparation and of the child's appetite.

Thus we may both learn from each other, and I hope that these international studies will have good practical results which will make it clear to both the British and the continental practitioners who have hitherto disregarded the vitamine theory as well as the principles of quantitative nutrition, that the results of the new work on this subject are now ready to be carried into practice.

I am, Sir, yours faithfully,
Vienna. CLEMENS PIRQUET.

⁂ Professor v. Pirquet writes from an unrivalled experience. The only adverse comment to be made upon the Nem-System is its apparent neglect of the fat supply. In the diet of children can fat be replaced by sugar of the same caloric value?—ED. L.

THE CONTROL OF BIOLOGICALS.

To the Editor of THE LANCET.

SIR,—Whilst the subject of standardisation of therapeutic substances is occupying the attention of scientists is it not incumbent upon us, in our own sphere, to remove an unnecessary inaccuracy in therapeutic usage by standardising the dosage of the product derived from thyroid gland more accurately than is at present the case? As has been pointed out elsewhere,[1] a considerable confusion has arisen in the administration of thyroid gland substance, which confusion is due, in part, to the discrepancies existing between the standard unit of dose used respectively in the British Pharmacopœia and by the commercial houses which supply the product; and, in part, to a lack of uniformity in the terms used in prescribing the substance. In the B.P. the dose is stated in terms of the dried gland; whereas, commercially, it is, with only one exception I believe, stated in terms of the fresh gland, which, bulk for bulk, contains much less of the active principle than does the desiccated substance. If thyroid tablet, gr. v., be prescribed, this can be rightly dispensed in terms either of the dried gland or of the fresh gland; and upon the same prescription a patient may receive a dose equivalent to thyroideum siccum B.P. gr. i. from one chemist and a dose equivalent to thyroideum siccum B.P. gr. v. from another chemist. This error is constantly occurring and must potentially continue so long as the two units of dosage are available; but the difficulty would be entirely overcome if the nomenclature of the B.P. only were adopted by the profession. In this connexion such terms as thyroid extract, thyroid tablet, thyroid gland, or thyroid substance have no exact meaning, and the use of them leaves the intention of the prescriber a matter of uncertainty and doubt, which is neither scientific nor conducive to attainment of the best clinical results.—I am, Sir, yours faithfully,

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[1] Zeitschrift für Kinderheilkunde, vol. xxii.

[1] Brit. Med. Jour., 1917, ii.

Torquay, March 5th, 1921. A. E. CARVER.

AS OTHERS SEE US.

To the Editor of THE LANCET.

SIR,—The letters on this subject in your issues of Feb. 26th and March 5th are of psychological interest. If we class our profession as a *mixed group*,[1] "partly traditional and partly purposive," its spirit appears disturbed by threats at the tradition that the interest of the patient must come first and at the purpose of ameliorating the lot of humanity. It recoils from the attempt of the commercial spirit to lower the group ideal to a selfish financial level. This is an old trouble. The strength and truth of our traditions so ably upheld by your correspondents should soon reduce it again to unimportance.

Our group spirit seems to find a threat also in the various proposals for a (whole or partial) State service of medicine. Is this justifiable? The implied object of a State service should be to further the ideal objects of the profession. Experience suggests that this might be overlooked if the service had not the advantage of an inspiring declaration of ideals from leaders like Sir George Newman and Lord Dawson. The group ideal would be obscured or annihilated if the primitive altruistic tendencies of the individual doctor were not encouraged and utilised. Crude individualism would then triumph. I gather that this has happened to some degree in the panel service.

Again, recent experience suggests that such systems tend to subdivide into (1) an administrative, (2) a clinical service. The first rules the second. They become divided sharply in sentiment and purpose. Disaster to professional ideals follows. With administration as a detached end—a thing of supervenient forms, statistics, and costs—the interests of the patient disappear, and the amelioration of the human lot sinks to a secondary level. The clinician finds himself paralysed. He may submit to see his clinical and ethical standards destroyed. He may protest and starve. Perhaps then our group spirit is rightly perturbed. It wishes to be sure that no possible State service will injure our traditions and purpose in the slightest degree. Its anxiety is not allayed by critical examination of such experiments in State service as are now in progress. Without unity of spirit and purpose no group service can flourish; without declared and re-declared ideals it must fail. Once declared, ideals spread by "example, suggestion, and emotional contagion." The responsibility of maintaining them by appeal to the group spirit lies with those who occupy positions of prestige.—I am, Sir, yours faithfully,

March 6th, 1921. H. LAING GORDON.

To the Editor of THE LANCET.

SIR,—The letter of Dr. Harry Roberts in your issue of Feb. 26th lays bare the sad position into which the profession has fallen in the esteem of the public. Can anyone wonder when the public sees how doctors treat each other? Take a striking example. There are doctors with anything from 1000 to 4000 panel patients (I write with personal knowledge), and with good private practices, increased when we were on active service, remaining on the Pensions Medical Boards, absolutely indifferent to the struggle which many ex-Service men are having to make ends meet. These doctors have apparently no qualms in competing with the hard-hit ex-Service men, though they remained at home in safety of body and security of practice.

I am, Sir, yours faithfully,

March 4th, 1921. AN EX-SERVICE MAN.

REFERRED PAIN.

To the Editor of THE LANCET.

SIR,—There are two statements in Mr. J. E. Adams's letter in your issue of Feb. 19th which, I feel, call for comment: 1. That when the appendix is abnormally placed the cutaneous hyperalgesia has always been over the situation of this organ, as revealed by subsequent abdominal section. This has certainly not been my experience. I have operated upon many abnormally placed appendices, and have always found the cutaneous hyperalgesia, if present, to be over the typical "functional" area in the right iliac fossa, my observations in this respect agreeing with those of Ligat. The most striking instance was in an early case of acute appendicitis with epigastric pain, cutaneous hyperalgesia limited to the right iliac fossa, but with no deep tenderness anywhere. Operation revealed the entire absence of the cæcum, appendix, and omentum from the right iliac fossa. Eventually the cæcum and appendix were found deeply placed in the region usually occupied by the splenic flexure of the colon; the appendix was hugely and tensely distended with mucopus and its mucosa quite gangrenous. 2. That in assessing the value of clinical observations "negatives are surely of the same relative value as positives." It depends upon what one understands by "relative." As a positive clinical observation the presence of the sign of "loss of liver dullness" is of undoubted importance in the diagnosis of perforation of the alimentary canal, whereas its absence is of no value whatever in excluding such. Surely in a suspected case of early renal tuberculosis one positive finding of the tubercle bacillus in the urine is of greater value than 50 or more negative findings. As positive findings I consider the hyperalgesic "functional" areas of great value in determining the viscus primarily responsible in both acute and chronic abdominal lesions; I pay no attention whatever to negative findings. My experience is mainly with the "appendix," "gall-bladder," "gastro-duodenal," and "small intestine" areas, but last Friday night I was interrupted in my reading of Mr. Adams's letter of condemnation by a call from a practitioner in a neighbouring town to see with him an acute abdominal crisis, which we recognised as an intraperitoneal hæmorrhage from rupture of an ectopic gestation, but with absolutely no clue as to which Fallopian tube was concerned. The application of the "cutaneous hyperalgesia" test to the "functional" area for each Fallopian tube gave a most striking response on the left side, and at the operation the left tube was found to be the one ruptured.

I am, Sir, yours faithfully,

Manchester, Feb. 21st, 1921. ARTHUR H. BURGESS.

VITAMINES AND COMMON SENSE.

To the Editor of THE LANCET.

SIR,—Professor W. D. Halliburton, in the course of his letter on this subject in THE LANCET of March 5th, takes the opportunity of raising again the much-debated question of heated *v.* unheated milk. He says that he cannot see that "the simple process of pasteurisation is the danger that some extremists allege it to be from the point of view of vitamines." This, no doubt, is true as far as the vitamines are concerned, but Professor Halliburton has forgotten one or two essential facts in the biological properties of milk and of the infant. Escherich and Baginsky showed over 30 years ago that there is a direct antagonism between the fermentative and putrefactive organisms in the child's intestine, and Bienstock in 1901 demonstrated the fact that raw milk cannot be made to putrefy by inoculating it with putrefactive germs, whilst if the fermentative germs are destroyed by heating the milk putrefaction at once takes place.

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[1] The Group Mind, by McDougall, 1920, p. 92.

Since these observations were first made numerous investigators have studied the problem and have in the main confirmed the results, but recently Lorenz described an outbreak of Y dysentery in a Hamburg orphan asylum, which he believes, as the result of clinical and experimental evidence, to have originated from boiled milk infected with *Bacillus dysenteriæ Y* in the orphanage kitchen. It is true that pasteurisation will afford some sort of protection against such diseases as diphtheria, scarlet fever, and enteric, but taking into consideration the fact that young infants are more or less immune against such diseases in virtue of their harbouring a considerable number of immune bodies transferred to them by the mother during their intra-life, the danger of communicating such diseases during non-epidemic periods, at any rate to very young infants, is almost insignificant. Whilst therefore the risk of conveying infectious diseases by means of raw milk is very slight, the danger of setting up intestinal putrefaction in infants on administering heated milk is very considerable.

I am, Sir, yours faithfully,

London, W., March 7th, 1921. W. M. FELDMAN, M.D.

DANGEROUS DRUGS ACT, 1920.

To the Editor of THE LANCET.

SIR,—A perusal of the Draft Regulations, made under the Dangerous Drugs Act, 1920, indicated they were rather unsuitable for hospital practice for reasons which need not now be stated. Representations were therefore made on behalf of hospitals, and a series of interviews took place at the Home Office at which the question was fully discussed, with the result that special regulations are being evolved which should prove quite acceptable to these institutions.

Although it is at the moment not permissible to give details, yet it may be stated that these new regulations will not add to the duties of the members of the medical and surgical staffs, and that for the hospital pharmacist they will involve very little more than the adaptation of the existing organisation of the hospital dispensary to meet a special set of circumstances.

I am, Sir, yours faithfully,

F. A. HOCKING,

March 3rd, 1921. Pharmaceutist to the London Hospital.

To the Editor of THE LANCET.

SIR,—The Council of the London and Counties Medical Protection Society, Ltd., which represents over 6000 members of the medical and dental professions, at its last meeting decided to offer strenuous opposition to the proposed Regulations under the Dangerous Drugs Act, 1920.—I am, Sir, yours faithfully,

HUGH WOODS,
General Secretary, London and Counties Medical Protection Society, Ltd.
Craven-street, Strand, W.C., March 4th, 1921.

PSEUDO-COXALGIA.

To the Editor of THE LANCET.

SIR,—I should like to associate myself with some of the remarks of my friend, Mr. A. S. Blundell Bankart, on the nature of the "recovery" in pseudo-coxalgia. It is true that in this disease during childhood, with a radiographic picture showing an extreme deformation of the head of the femur, there may be a complete absence of limp and shortening, and the limitation of abduction may at the moment in no way cause any true disability. Out of 17 cases I have under observation at the present time this grade of "recovery" is present in eight. But it is essential to remember that such an alteration in the mechanics of the hip-joint is likely to produce trouble in adult life. The radiographic end-result in these cases is an enlarged flattened head which is far too big for the acetabulum. This is shown quite conclusively in a number of my radiograms of hip-joints in adults who give a clear history of pseudo-algia in childhood. In later life such hip-joints wear and tear badly, and may progress towards steo-arthritic stage. The limitation of abduction w a serious defect.

For this reason I hold with Mr. Bankart that it is advisable to treat all cases of pseudo-coxalgia in the early stage by complete relief from weight-bearing, and, further, to maintain for a considerable time the position of abduction. This was originally recommended by Mr. Muirhead Little in 1915. I must confess that in my earlier cases I adopted a laissez-faire attitude, but in my more recent cases I have felt constrained to treat them as one does the initial stages of true tuberculous arthritis.

I am, Sir, yours faithfully,

Manchester, March 5th, 1921. HARRY PLATT.

To the Editor of THE LANCET.

SIR,—Mr. A. S. Blundell Bankart has done service to many patients by pointing out that in the above condition the advice, "No treatment is necessary," is wrong. Because the disease is not the ordinary hip disease, and may not be tuberculous, surgeons have hastened to excuse their patients from prolonged and perhaps irksome immobilisation, with regrettable results in shortening, limitation of movement, and consequent limp. Mr. Bankart, I think, is not alone in the method of treatment he adopts. Dr. Rollier, in his heliotherapy clinic at Leysin, has for years given up making any distinction as regards treatment between these cases and the ordinary cases of hip disease. All alike are treated by recumbency and extension until a radiogram shows regeneration of the head of the bone.

I am, Sir, yours faithfully,

Harley-street, W., March 5th, 1921. PAUL BERNARD ROTH.

TREATMENT OF DIPHTHERIA CARRIERS.

To the Editor of THE LANCET.

SIR,—In bringing my correspondence on the above subject to an end, I thank Dr. A. G. B. Duncan for recapitulating his "views and intentions" (THE LANCET, Feb. 26th, p. 459). Let me say that I still find myself unable to appreciate the necessity for his differentiation between "carrier" and "positive throat," and my hope is that with the more universal application of vaccine therapy (which Dr. Duncan agreed was effective in the "positive throat") the necessity will no longer arise for the term "carrier," as it does not appear wise to allow any "positive throat" to persist for such a length of time as would warrant the former "distinction." It would be matter for real regret if inaction in the first instance provided material for future experiment.—I am, Sir, yours faithfully,

JAMES LAW BROWNLIE.

Glasgow Corporation Laboratory, March 5th, 1921.

THE INTERNATIONAL UNION AGAINST TUBERCULOSIS:

A CONFERENCE IN LONDON.

To the Editor of THE LANCET.

SIR,—The next International Conference will be held in London from Tuesday, July 26th, to Thursday, July 28th, inclusive. The Conference will be open to members of the International Union against Tuberculosis and to delegates from countries within the League of Nations, and from the United States of America. The president of the International Union for the current year is Mons. Léon Bourgeois, President of the French Senate, who will be succeeded on the occasion of the Conference in London by Professor Sir Robert Philip of the University of Edinburgh. It is hoped that the opening address of the Conference will be given by Mons. Léon Bourgeois. The arrangements for the Conference are under the charge of the executive committee of the International Union in correspondence with the Council of the National Association for the Prevention of Tuberculosis.

The subjects proposed for discussion include the following: (1) The Modes of Diffusion of Tuberculosis throughout the Races of the World, to be opened by Professor Calmette; (2) the Rôle of the Medical Profession in the Prevention of Tuberculosis.

In the name of the International Union,

I am, Sir, yours faithfully,

LEON BERNARD,
March 3rd, 1921. Secretary.

Obituary.

SIR FELIX SEMON, K.C.V.O., M.D. BERLIN, F.R.C.P. LOND.,

SOMETIME PHYSICIAN FOR DISEASES OF THE THROAT, ST. THOMAS'S HOSPITAL.

Sir Felix Semon, who died at his residence, Great Missenden, Bucks, on March 1st, at the age of 72 years, was the son of a Berlin stockbroker, and was educated at Heidelberg, where his medical studies were interrupted by the Franco-Prussian War in which he served as a volunteer. Graduating M.D. Berlin in 1873 and obtaining the German States Diploma in the following year, he continued his medical studies in Vienna and Paris, devoting special attention to diseases of the throat on which the introduction of the laryngoscope was throwing a flood of light. Finally he came to London and entered at St. Thomas's Hospital, becoming in 1875 clinical assistant at the Throat Hospital in Golden-square. He was admitted a Member of the Royal College of Physicians of London and was elected a Fellow in 1885. In 1877 he became physician at the Throat Hospital, in 1882 physician in charge of the Throat Department at St. Thomas's Hospital, and in 1888 laryngologist to the National Hospital for Epilepsy, Queen-square.

His outstanding contributions to laryngology are his work on laryngeal paralysis and that on malignant disease of the larynx. The former research, begun in 1878, extended over a great number of years and was the subject of numerous papers. As a result there was established the law that goes by Semon's name regarding the proclivity of the abductors to paralysis in lesions of the nerve trunks and centres. Further researches both on his own account and with the late Sir Victor Horsley did much to elucidate the central motor innervation and showed, among other things, that it is probably impossible for a one-sided cortical lesion to produce laryngeal paralysis. As a result of these and other researches a most valuable generalisation was arrived at—namely, that laryngeal paralysis which involves the abductors (sometimes in association with the adductors, it is true) is due to organic disease, whilst motor paresis of the adductors is in the large majority of cases functional, more rarely myopathic, and then usually due to catarrh. Semon's work on malignant disease of the larynx was begun at a time when the subject was in a chaotic state. He first established the fact that of all parts of the larynx the cords were most liable to be attacked. His next undertaking was an investigation of symptoms and appearances facilitating the early recognition of the disease, and finally, with regard to the treatment of the condition, he advocated and practised the operation of laryngo-fissure which Sir Henry Butlin was beginning to revive as a result of Semon's work.

In addition to his neurological work and that on malignant disease Semon made numerous contributions which are collected in his two volumes, "Forschungen und Erfahrungen," published in 1912. Of these, the most important from a clinical point of view would seem to be the one concerning septic infections of the throat entitled, "On the Probable Pathological Identity of the Various Forms of Acute Septic Inflammation of the Throat and Neck hitherto described as Acute Œdema of the Larynx, Œdematous Laryngitis, Erysipelas of the Pharynx and Larynx, Phlegmon of the Pharynx and Larynx, and Angina Ludovici." His presentment of the clinical picture was striking, and his conclusions have since proved sound. Another paper of permanent value is entitled, "The Therapeutic Value of Complete Vocal Rest during Sanatorium Treatment of Laryngeal Tuberculosis." His advocacy of this method of treatment did much to bring about its employment at every sanatorium.

Semon's work for laryngology was not, however, only scientific. He devoted a large amount of time to the advancement of the position of the specialty, and did a great deal to bring about its recognition as an important section of surgery. In 1884 he originated the *Centralblatt für Laryngologie* and edited it for 25 years, making it a most valuable publication. In 1893 he founded the Laryngological Society of London, and later helped it to become, as a section of the Royal Society of Medicine, a virile organisation. As a delegate at international congresses he continued to uphold his view of the specialty, and I think it may fairly be said that each step of his career was marked by an increase of the esteem in which British laryngology in general was held by the medical profession.

Sir Felix Semon's reputation as laryngologist brought him many honours, and he held the honorary presidency or fellowship of laryngological societies of the principal countries of the world. In 1894 the German Emperor conferred on him the title of Royal Prussian Professor and in this country at the Diamond Jubilee in 1897 he received the honour of knighthood, and in 1902 the C.V.O. from which he was promoted to K.C.V.O. in 1905. In 1901 he became Physician Extraordinary to King Edward VII. On his retirement from London in 1911 British and foreign laryngologists testified their esteem by the gift of a purse containing £1010, which he presented to the University of London for the establishment of "The Semon Lecture Trust."

Of Semon's personal attributes Dr. F. de Havilland Hall, one of his oldest friends, writes:—

"Semon was of a singularly affectionate nature, and though quick-tempered his wrath was soon over, and his sunny nature reasserted itself. That which first inspired me with admiration for his ability was the masterly way in which he managed the subsection of laryngology at the great International Medical Congress held in London in 1881, when the late Dr. James Walker, of Peterborough, and I were his colleagues. At the beginning of each sitting Semon gave out in English, French, and German the programme for the morning, and also added a few words in Italian. For many years his neighbour, I had the fullest opportunity of seeing how honourably he acted up to the best professional ethics. On all sides I heard of his skill and kindness. Mention should be made of his musical gifts. While encamped outside Paris in 1870-71 he composed a march to the strains of which his regiment of Uhlans entered Berlin after peace was declared. One of the great treats of his friends was to hear him accompany his wife, who was a celebrated vocalist. He was also devoted to hunting, shooting, and fishing, and his friends will remember him for the staunchness of his friendship and his loving nature."

Of his three sons, all of whom held commissions in the British army, one is a medical man—Dr. Henry Semon, physician for diseases of the skin to the Great Northern Hospital.

THE LATE DR. J. WILSON ADAM.—The death took place at Aberdeen on March 5th of Dr. J. Wilson Adam, a well-known local practitioner. Dr. Adam, who was 61 years of age, was a very active man. During the war he did much relief work, and this, added to his own large practice, told severely on his health. He was suddenly seized with illness on March 1st, and never rallied. Dr. Adam was a son of the late Mr. John Adam, of Aberdeen. He graduated M.B., C.M. at Glasgow University in 1890 and started practice at Tarbolton, Ayrshire, where he remained for ten years. He returned to Aberdeen in 1900 and soon built up a large practice. He was at one time medical officer to the Aberdeen Dispensary. Dr. Adam is survived by a widow and a large family.

THE LATE DR. J. E. BULLOCK.—The death has occurred from pneumonia of Dr. J. E. Bullock, of St. Leonards, at the age of 67. He was educated at University College Hospital, and practised for many years at Ladbroke-grove, London. More recently he took up the special study of tuberculosis, and was for some time on the staff of the Eversfield Chest Hospital, St. Leonards-on-Sea. During the last period of the war he was engaged as tuberculosis medical officer for Northamptonshire. It was when filling a temporary vacancy there that he met his death. He translated Cornet's work, "Skrofulose," with marked success, and published numerous articles in the medical journals. He was recognised by all who knew him as a man of high character and extensive knowledge of medicine, kind and painstaking with his patients, and he will be greatly missed by a large circle.

Parliamentary Intelligence.

HOUSE OF COMMONS.

MONDAY, FEB. 28TH.

Dentists Bill.

Dr. ADDISON informed Mr. F. THOMSON that he was not in a position to name any definite date for the introduction of the Bill to amend the Dentists Act, 1878, but if there was a general desire in the House that the Bill should be introduced without delay, and if it would be treated substantially as an agreed Bill, the Government would be prepared to introduce it in the House of Lords at an early date.

TUESDAY, MARCH 1ST.

Feeding of Children in Central Europe.

Mr. KELLAWAY (Secretary to the Department of Overseas Trade) informed Sir H. BRITTAIN that British institutions were feeding over a quarter of a million children daily in Central Europe, and he was informed, though he could not vouch for the accuracy of the figures, that 2,750,000 children were being fed under the auspices of the American relief administration, and further numbers of children by other American organisations.

Remuneration of Panel Practitioners.

Captain Sir DOUGLAS HALL asked the Minister of Health if it was proposed to increase the remuneration of panel doctors owing to the burden of increased work which was thrown upon them in connexion with the compilation of the new medical records; and whether such increased remuneration would be met by larger insurance payments or smaller benefits, or whether it would fall upon the general taxation of the country.—Dr. ADDISON replied: The keeping of medical records has always formed part of the terms of service of insurance practitioners, and was taken into account when the rate of remuneration was settled by arbitration last year. No question, therefore, of increasing the remuneration arises.

Medical Men and the New Medical Records.

Captain Sir DOUGLAS HALL asked the Minister of Health whether his attention had been drawn to expressions of opinion which had recently been uttered by medical men and representatives of the profession regarding the uselessness, in a statistical scientific view, of the information which it was proposed to collect from the new records of insured patients; and whether, in face of that adverse opinion, he would withdraw the new rules and so prevent further waste of taxpayers' money and medical men's time, and the irritation of the working classes.—Dr. ADDISON replied: I am aware that some individual medical practitioners have criticised the form of medical record presented under the insurance terms of service, but nearly four-fifths of the members of the Departmental Committee, presided over by Sir Humphry Rolleston, which designed the form of the record, were members of the medical profession, and had regard not only to the statistical scientific uses of the records, but also, and indeed mainly, to their utility in the treatment of insured persons. The Panel Committees, which are the statutory bodies appointed to express the views and wishes of insurance practitioners, have decided, not unreasonably, to defer any formal expression of opinion in regard to the records until the insurance practitioners have had adequate experience of the arrangements.

WEDNESDAY, MARCH 2ND.

Medical Man's Indian Contract.

Mr. THOMAS GRIFFITHS asked the Secretary for India whether he was aware that Dr. A. D. Denning, of Stafford, entered into a contract with the Indian Government for five years' service in India; that at the end of three years the contract was terminated on medical grounds which were afterwards found to be erroneous; that subsequently it was claimed and upheld that, despite any contract, the services of a servant could be terminated at the will and pleasure of the Crown; that the India Office had since granted Dr. Denning £500, which was not sufficient to cover his costs in the legal action, and that consequently Dr. Denning was without compensation for the loss of his appointment; whether this case would have further consideration; and whether, in order that men of ability might be encouraged to enter into these contracts, he would consider the advisability of abandoning the claim that service could be terminated at the will and pleasure of the Crown.—Mr. MONTAGU replied: The facts referred to in the first two parts of the question are generally as stated, except that edical grounds on which Dr. Denning's contract was ed were not found to be erroneous. As regards part of the question, Dr. Denning subsequently an action for breach of contract, or, in the alternative, for wrongful dismissal; the Secretary of State for India in Council contended that Dr. Denning's service was *terminated in accordance with his agreement by which he* undertook to obey the rules prescribed for his branch of the public service; these rules provide for the termination of an officer's duty on grounds of ill-health; but the case was settled on a preliminary point of law that no action can lie against the Crown for the termination of such service at the pleasure of the Crown; in view of certain comments made by Mr. Justice Bailhache on the form of the agreement (an old form which was altered some years ago), Dr. Denning was granted, by the Secretary of State for India in Council, £500 on account of his costs; I am not aware that this sum is insufficient for the purpose, nor that he has any claim, on the merits, to compensation for the loss of his appointment. I do not think that this particular case calls for further consideration. As regards the last part of the question I am advised that it would be improper to introduce in the contracts referred to any words purporting to limit the right of the Crown to dispense with the services of its officers, but this right would naturally be used, if at all, only in very exceptional circumstances.

Security of Tenure for Medical Officers.

Sir PHILIP MAGNUS asked the Minister of Health what progress had been made in giving effect to the promise made in his letter of May 21st, 1920, in pursuance of a previous promise of the Local Government Board, to proceed with an Order to give security of tenure to whole-time medical officers and to his proposal to include sanitary inspectors and inspectors of nuisances in the Order on the same terms.—Dr. ADDISON replied: This matter has been under consideration. I am advised that legislation would be required to give security of tenure to existing officers, and the Order which will shortly be issued must therefore be confined to new appointments of the classes mentioned.

Public Health Officials at Bromley.

Dr. ADDISON, in reply to Lieutenant-Colonel JAMES, stated that the whole-time public health staff employed by the Bromley borough council consisted of two inspectors of nuisances and two health visitors, acting under the general supervision of the medical officer of health. There were in addition certain officers employed on school medical services. The appointment of a medical officer of health rested with the borough council and the original proposal to employ a whole-time medical officer of health came from them. In addition to performing the duties of medical officer of health the officer in question would act as supervising school medical officer and would be in charge also of the maternity and child welfare work of the borough. He was advised that the proposed arrangement would be both economical and useful, and he did not therefore see his way to withhold his general approval of the proposal. The only protest he had received was from the honourable and gallant Member himself.

Medical Record Cards.

Mr. FORREST asked the Minister of Health whether he was still receiving any protests from panel doctors as to the work entailed by filling up the new forms of cards; and, seeing that the time so employed diminished the amount of attention which could be given to individual patients, would he inquire into the whole matter to see how the system is working.—Dr. ADDISON replied: I would refer the honourable Member to the answers to the questions which I gave yesterday on the subject of the medical record cards to Captain Sir Douglas Hall. I cannot accept the view that the keeping of records must detract from the time available for giving adequate medical treatment. In the majority of insurance practices the practitioner is responsible for less than one-fourth of the number of insured patients for which, in the view of the doctors' own representatives, an ordinary practitioner can safely assume responsibility. I may say that the number of objections to the record cards from medical men and others concerned in working the system is insignificant. Out of some 150 Panel Committees, representing some 12,000 medical men on the panel, I have only received protests from 9, and those are mostly on points of detail, although every effort has been made to stir up *discontent in this matter by certain persons.*

The Spahlinger Treatment of Tuberculosis.

Mr. DEVLIN asked the Minister of Health whether the British Consul at Geneva recently sent to the Foreign Office a communication calling attention to the new treatment for tuberculosis, known as the Henri Spahlinger's method; whether this communication had been referred to him; whether eminent medical specialists in Switzerland, France, and other countries had testified to the remarkable percentage of cures effected by this treatment; what action, if any, the Department of Health had taken in this matter; and whether, in view of the attempts to stamp out this scourge, which levied such a heavy toll of lives in Great Britain and Ireland annually, he was prepared to say that a full and prompt official medical investigation of this new treatment would be held.—Dr. ADDISON replied: I am aware of the communication to which the honourable Member refers. It appears that so long ago as 1913 to 1914 the serum in question was prepared and the matter was carefully explored by the Medical Research Council and by independent physicians, but the trials have not been sufficiently exhaustive to justify any definite and reliable conclusions. If and when supplies of the serum become available in this country I will certainly see that its efficacy is exhaustively tested. But I understand that a supply of the serum is not likely to be available for this purpose for some months, and that on account of the secrecy maintained as to its constitution and method of preparation it has hitherto been found impracticable for the recognised research laboratories in this country to investigate its properties and effects.

Fraudulent Cures.

Captain TUDOR-REES asked the Minister of Health whether his attention had been called to the advertisements of alleged cures for cancer and other diseases; and whether, with a view to protecting the public from the frauds and deceptions of these advertisers and from the ill-effects of their supposed remedies, he would introduce legislation to render such advertisements illegal.—Dr. ADDISON replied: The Proprietary Medicines Bill, which was introduced last session, was intended to give effect to the recommendations of the Select Committee which reported on this question in 1914. The Bill is now being revised to meet certain objections of the commercial interest concerned, and I hope it will be possible to reintroduce it during the present session, but I am unable at present to give any definite date.

Venereal Disease and Self-disinfection.

Lieutenant-Colonel FREMANTLE asked the Minister of Health whether his attention had been called to the Report of the Special Committee on Venereal Disease recently published, and to its recognition of the value of immediate self-disinfection; and what steps were proposed to be taken by his Department in the matter.—Dr. ADDISON replied: Yes, Sir. The matter to which my honourable and gallant friend refers is now under consideration, and all the relevant documents and evidence, including the Report mentioned, will be considered.

Maternity and Child-Welfare Centres.

Dr. ADDISON, replying to Sir K. FRASER, said that according to the last available information 43 persons (of whom 25 were men) were appointed during 1920 specifically as medical officers of maternity and child-welfare centres, the rate of remuneration not exceeding £1 11*s.* 6*d.* per session, and amounting in the aggregate to £3660 per annum. In addition 36 persons (of whom 10 were men) were appointed by local authorities during this period as whole- or part-time medical officers for maternity and child-welfare work generally at salaries ranging from £150 to £750 per annum. Their duties included in every case more or less direct supervision of the work of centres, but it was not possible to make any apportionment of their salaries to that specific purpose or to estimate even approximately what proportion of the total annual cost of welfare work was attributable to this branch of the service. Milk, and in special circumstances other food, might be provided at less than cost for expectant and nursing mothers and for children under 5 years of age where such provision was certified by the medical officer of a centre or by the medical officer of health to be necessary and where the case was necessitous.

Industrial Fatigue Research Board.

Mr. MILLS asked the Minister of Health whether his attention had been drawn to the decision of the Treasury to withdraw financial support from the Industrial Fatigue Research Board, and suggesting that any important work on hand might be transferred to industrial or voluntary organisations; whether he was aware of the valuable work done by the Board since its inception in 1918; that there were no organisations in existence capable of taking over the Board's work; that if the Treasury decision was carried out the last year's work of the Board would be wasted; that it would result in a set-back in the whole movement of the study of human efficiency, and would involve the discharge of about 20 investigators who had specialised in the work; and whether, having regard to all the circumstances, the Treasury decision would be reconsidered.—Dr. ADDISON replied: The expenditure on the Industrial Fatigue Research Board is naturally being reviewed with all other public expenditure in the light of the imperative need for economy. The Board itself will in any case be continued, and I think I can safely promise that sufficient funds will be provided to secure its efficiency. The Government are very fully alive to the considerations mentioned by the honourable member.

The Question of Attributability.

Lieutenant-Colonel Sir JOHN HOPE asked the Minister of Pensions whether, in the case of a soldier who was passed into the service as fit for general service and served overseas and on discharge was declared by a medical board to be unfit for general service, the burden of proof as to whether the disability was attributable to or aggravated by service lay on the soldier or on the Ministry.—Mr. IAN MACPHERSON replied: In the circumstances stated the burden of proof would lie on the Ministry rather than on the man. The fact that the man had gone overseas fit, and returned unfit, would raise a presumption that his unfitness was due to his service, and unless there was good evidence, on the facts of the particular case, that it was not so due, the Ministry would accept the liability.

THURSDAY, MARCH 3RD.

Disability Pension Awards.

Captain REGINALD TERRELL asked the Minister of Pensions how many cases there had been in which an ex-Service man or his widow had claimed a pension which had been refused on the ground that the disability was not the result of war service; and whether he was aware of the dissatisfaction which some of these decisions were causing.—Colonel GIBBS (Lord of the Treasury) replied: The number of cases in which pension has been refused to an ex-Service man on the ground that the disability was not due to service was 257,000. In the case of widows the records of the Ministry do not show refusals before April 1st, 1920. The number of rejections since that date is 6900. In all cases of refusal, whether of men or of widows, there is a right of appeal.

Mr. TREVELYAN THOMSON asked the Minister of Pensions if he was aware of the dissatisfaction felt both by local pensions committees and by ex-Service men as regards the awards of disability pensions; and could he see his way to recommend the Government to so remodel the present system as to ensure a greater feeling of confidence in the public mind with the ultimate awards.—Colonel GIBBS replied: I am not aware of any grounds for dissatisfaction with the present system under which pensions are awarded in accordance with the amount of disablement due to service, the man having the right of appeal to a medical appeal board on the question of assessment and to an independent tribunal on the question of attributability.

Mr. WATERSON asked the Minister of Pensions whether he was aware that many demobilised Service men had died from various diseases which they had contracted during war service, the final stages only developing in civilian life; if anything could be done for the widows and children of such deceased men beyond the appeal to the House of Lords Appeal Tribunal; and if he would state the number of such appeals dealt with, stating the number successful or otherwise.—Colonel GIBBS replied: The Appeal Tribunals have heard and decided 1978 appeals lodged by widows against decisions by the Ministry that the disease from which the husband died was not contracted in or aggravated by his service. Of these appeals 523 were allowed and 1253 rejected. The decisions of the Tribunals are declared by the War Pensions (Administrative Provisions) Act, 1919, to be final.—Mr. WATERSON: Is the honourable gentleman aware that many of these appeals that have gone to the Appeal Tribunal have been turned down thereby inflicting great hardship on the widows, particularly when the doctor's certificate of death certifies that the disease was contracted during military service.—Colonel GIBBS: These Appeal Tribunals consist of one doctor, one lawyer, and an ex-Service man.—Mr. LAWSON: Does the Tribunal consider the man's medical sheet during his service, and is due weight given to the local medical man's opinion?—Colonel GIBBS: I must ask the honourable Member to put any question down.—Dr. MURRAY: As the honourable and gallant gentleman cannot answer, why is not the Minister of Pensions here. Is he electioneering?—No answer was given.

Pension Suspensions.

Major GLYN asked the Minister of Pensions whether he was aware that in the event of a dependent entering a rate-aided institution, for instance, a lunatic asylum, the pension to which such an individual was entitled was suspended during such period as the dependent remained an inmate of the institution; whether the ratepayers under these circumstances in fact had to shoulder a responsibility that was really the State's obligation; and whether, in such circumstances, he would consider the desirability of providing that in lieu of suspension of the money to which the individual was entitled it should be paid to the local authorities in relief of the rates until the inmate emerged from such an institution.—Colonel GIBBS: The facts are substantially as stated in the first part of the question. The matter is at present under consideration.

Mortality from Tuberculosis.

Lieutenant-Colonel RAW asked the Minister of Health whether the exposure and hardships to which large numbers of healthy men were subjected to on active service had resulted in an increase in the mortality from tuberculosis.—Dr. ADDISON replied: Although the conditions of acti service no doubt increased the mortality from tuberculosis in weakly men and in those already suffering from tuberculosis, I am advised that there is no evidence to show that there has been an increased mortality from this disease among men who were healthy on entering upon naval or military service. I am glad to say that the latest statistics indicate that there was in 1919 a very large decrease in the number of deaths from tuberculosis in England and Wales, including both pulmonary and non-pulmonary forms; the figures for 1919 being 46,312, as compared with 58,073 in 1918 and 55,934 in 1917. I am glad also to say that the figures for 1920 so far as they are at present available indicate another decrease.

Housing and Tuberculosis Bills.

Dr. ADDISON informed Mr. Ormsby-Gore that he proposed to reintroduce the Housing Bill and the Tuberculosis Bill before Whitsuntide. He was not at present able to say whether he would introduce any other Bills affecting public health or local administration this session.

MONDAY, MARCH 7TH.

Disability Pension Awards.

Lieutenant-Colonel Sir JOHN HOPE asked the Minister of Pensions whether in assessing disability percentage medical boards took into consideration a soldier's previous occupation or trade in which he was skilled; and if a miner who had a stiff knee which would prevent him working at the coal face would be assessed at the same percentage of disability as a soldier who had been employed in a sedentary occupation, and in whose case a stiff knee would not force him to learn and take up a new occupation.—Mr. IAN MACPHERSON replied: The flat rate disablement pension is awarded without reference to previous occupation. In substitution for it, however, and subject to the conditions stated in the Warrant, a man may claim an alternative pension which is based on actual loss of earning capacity, having regard both to his former occupation and to that which his disablement permits him to follow.

Insurance Medical Records.

Mr. MYERS asked the Minister of Health whether he had received any complaints regarding the new form of medical card under the National Health Insurance scheme; whether he was aware that objection was taken to the new card on the ground that it was too inquisitorial; and whether he would give this objection his consideration.—Dr. ADDISON replied: The number of complaints which I have received about the insurance medical records is quite insignificant, consisting of representations from five only out of 10,000 approved societies and branches, none from any of the insurance committees, and nine, mainly on points of detail, out of the 150 panel committees representing the medical men on the panel. The card is in substitution for two others used since the commencement of the Act and has been designed mainly to give to insured patients the advantages enjoyed by private patients in those practices where doctors keep records, and are thereby enabled to be guided in treating current symptoms by reference to the patient's previous medical history.

Mr. D. HERBERT asked if at least one of the cards to which the right honourable gentleman referred was given up because it was found practically impossible for the doctors to keep it.—Dr. ADDISON: That is quite true; that is one of the reasons why the revised card was designed. The old card was quite useless.—Mr. D. HERBERT: Am I to understand that the new card is supposed to give the doctor less trouble than the old one?—Dr. ADDISON: It certainly gives him much less trouble. I will send the honourable Member a copy.—Mr. D. HERBERT: I have seen and studied one of these cards with several doctors, who take a different view.—Dr. ADDISON: It was designed by doctors, and mainly panel practitioners, with a view to assisting themselves in their work. It is not an invention of mine.—Sir W. H. DAVISON asked if any of the members of the medical profession were consulted before the card was issued?—Dr. ADDISON: I have said that the card was designed by a committee consisting solely of members of the medical profession—a large percentage of them being men in insurance practice.

Standardisation of Potent Drugs.

Sir J. D. REES asked the Minister of Health whether he was devising a series of expensive measures relating to the control of sera and therapeutic substances, including a controlling authority, a big central laboratory, and other machinery, in consequence of a report of a recent departmental committee appointed to consider that subject.—Dr. ADDISON replied: My honourable friend's question clearly refers to a report contained in a leading article of the *Times* of Friday, Feb. 25th. There is no truth in the suggestion that I am devising any measures of the kind indicated. From 1909 onwards suggestions have been made by the General Medical Council and other influential bodies for some hods for securing a certain measure of standardisation era and other potent drugs and substances which ot be tested by ordinary chemical means. In this I may say the responsible drug-manufacturing firms appear to concur, and it must be remembered that some of these substances are made abroad as well as in this country. The Committee reported to me during January of this year, and the chairman, Sir Mackenzie Chalmers, on his own responsibility suggested a draft Bill. When the matter came before me in January I took the view that action on the lines indicated of the proposed Bill was not practicable. So far as I have examined the subject, the Committee appeared to contemplate that the Medical Research Council, which already has laboratory equipment, should supervise the carrying out of whatever tests might prove to be required. No action whatever has been taken upon the report or any recommendations made to my colleagues, and the intentions attributed to myself to which my honourable friend refers are entirely fanciful.

TUESDAY, MARCH 8TH.

Medical Practitioners and Drug Regulations.

Major BARNETT asked the Secretary for the Home Department whether the draft regulations proposed to be issued under the Dangerous Drugs Act, 1920, required all persons dealing in morphine, cocaine, ecgonine, and heroin to keep four separate and distinct poison books, to enter in such books from day to day particulars of drugs purchased and of drugs supplied, and to make returns to the Secretary of State from time to time, and as and when required, of drugs so purchased and stocks held; and, if so, whether he would consider the desirability of exempting duly qualified medical practitioners who dispensed their own prescriptions from regulations which must necessarily prove irksome and oppressive, and involve an intolerable tax upon their time.—Mr. SHORTT replied: I have received representations from the British Medical Association as to the records which would require to be kept by medical practitioners who dispense their own prescriptions, and I have communicated to them certain modifications which I should be prepared to make in the draft regulations. The matter is still under consideration.

Major BARNETT asked the Secretary for the Home Department whether the draft regulations proposed to be issued under the Dangerous Drugs Act provided that any package or bottle containing certain specified drugs should have plainly marked upon it the name of the drug and the amount which it contained, whether the effect of this provision would be to give patients information which, in many cases, it was desirable that they should not possess; and, if so, whether he was prepared to exempt from its operation the prescriptions of duly qualified medical practitioners.—Mr. SHORTT replied: I have received representations from the British Medical Association on the point and have informed them that I am willing to agree to the exception suggested.

Farmers and Drug Regulations.

Mr. KILEY asked the Secretary for the Home Department if he would state in what way he proposed to provide, under the Dangerous Drugs Act Regulations, for farmers to procure drugs coming under the regulations for the use of their cattle; whether he proposed that such cattle medicines should be denaturised; and, if so, whether the Chancellor of the Exchequer had been consulted.—Mr. SHORTT replied: The whole question, including a suggestion as to the possibility of denaturing the drugs supplied for use by farmers, is under consideration, but I am not in a position to make any statement at present.

Insured Persons and Sanatorium Benefit.

Mr. WIGNALL asked the Minister of Health whether, now that sanatorium benefit had been eliminated from the health insurance scheme, he could state when it was proposed to take the necessary action to carry out the pledge that insured persons would not suffer any deprivation of the benefit.—Dr. ADDISON replied: The date fixed for the termination of sanatorium benefit in England and Wales is April 30th next, and I am hoping to introduce shortly a Bill dealing with the arrangements to be made for the treatment of tuberculosis after that date.

Pension Appeals.

Mr. CAPE asked the Minister of Pensions how many appeals had been heard by the House of Lords Appeal Tribunal during the period Feb. 28th, 1920, to Feb. 28th, 1921; and how many of the tribunal decisions had been in favour of the applicants and how many against.—Mr. IAN MACPHERSON replied: The number of appeals heard by the Pensions Appeal Tribunals during the period stated was 14,487. Of this number, 4384 were allowed and 10,103 rejected.

Cost of Medical Pensions Administration.

Lieutenant-Commander KENWORTHY asked the Minister of Pensions what was the total annual cost of the administration of the Ministry of Pensions divided into general and medical, the number of pensioners, exclusive of widows, children, and dependents, in receipt of disability pensions on August 1st, 1920, and on Feb. 1st, 1921, and the sums paid to these disabled men at these rates; the annual expenditure incurred in respect of the medical boards for examining disabled pensioners, the amount of the salaries and fees paid to whole-time medical officers and part-time medical officers engaged on this duty; how many whole-time medical officers were employed by the Ministry on August 1st, 1920, and on Feb. 1st, 1921; how many disabled men who were in receipt of disability pensions on August 1st, 1920, had now ceased to draw pensions by reason of death, being settled by gratuity or a final weekly allowance in lieu of pensions, and of their disability having become less than 20 per cent.; how many disabled men were in receipt of disability pensions of 20 and 30 per cent.; and what was the Parliamentary authority, if any, for the constitution of medical boards composed of three medical men.—Mr. MACPHERSON replied: The expected total annual cost of administration for the current year approximates to £6,500,000, £3,000,000 of that amount relating to general administration, £2,300,000 to medical services, and £1,200,000 to Local War Pensions Committees. The number of persons (excluding widows, children, and dependents) in receipt of pensions at August 1st, 1920, was 1,117,000, and at Feb. 1st, 1921, 1,060,000; and the respective annual cost thereof £61,598,000 and £60,484,000 approximately. The annual expenditure incurred in respect of medical boards is £1,712,000, the cost in salaries and fees to medical officers being £994,000. There were 565 whole-time medical officers employed on August 1st, 19.0 (215 being engaged at institutions) and 592 employed on Feb. 1st, 1921, of whom 267 were engaged at institutions. The number of disabled men who were in receipt of pensions at August 1st, 1920, and whose pensions have ceased for the reasons stated is 103,000. The number of 20 and 30 per cent. pensions in payment at Feb. 1st, 1921, is 300.000 and 245,000 respectively. With regard to the last part of the question, my honourable and gallant friend will no doubt recollect the agitation in Parliament and elsewhere, which led to the formation of three-men boards for national service.

Health of the Troops in Cologne.

Lieutenant-Colonel BUCKLEY asked the Secretary of State for War whether his attention had been called to grave allegations concerning the Army of the Rhine which had been made by the Rev. W. Talbot Hindley, a chaplain of the Territorial Force; and, in particular, whether there was anything to justify the statements that the conditions of life in Cologne made a death-trap for our soldiers; that 95 per cent. of one unit had been through hospital; and that there was a cemetery which was largely filled with suicides and victims of venereal disease.—Sir L. WORTHINGTON-EVANS replied: My attention has been called to the allegations in question, and the Army Council are in communication with the reverend gentleman concerning them. There is no justification whatever for the statements attributed to him. During the period from Jan. 1st, 1920, to Jan. 31st, 1921, the monthly average of admissions for venereal disease was 1·4 per cent. of the total strength; there were 85 deaths from all causes, but none from venereal disease, and only 5 from wounds self-inflicted.

The Services.

ARMY MEDICAL SERVICE.

Col. L. P. More is placed on half pay.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. M. P. Corkery is placed on retired pay on account of ill-health contracted on active service.

Major T. E. Harty relinquishes the acting rank of Lieutenant-Colonel.

Major C. Kelly is placed on the half-pay list on account of ill-health.

Major J. B. Clarke retires on retired pay.

Temp. Major J. H. Spencer to be Captain and to retain the temporary rank of Major.

ARMY DENTAL CORPS.

Temp. Major J. P. Helliwell, from Special List, to be Lieutenant-Colonel and to be Inspector of Dental Services.

SPECIAL RESERVE OF OFFICERS.

Capt. R. T. C. Robertson to be Major.

Capt. P. Walsh relinquishes the acting rank of Major.

Capt. E. T. H. Lea relinquishes his commission on appointment to the R.A.M.C. (T.F.).

TERRITORIAL FORCE.

Capts. J. L. Menzies and E. T. H. Lea to be Majors.

Capt. B. E. A. Batt (late R.A.M.C.) and Lieut. H. G. Kilner (from 5th Battalion Suffolk Regiment) to be Captains.

Capt. L. H. Taylor (late R.A.M.C.) to be Lieutenant, and to relinquish the rank of Captain.

Capt. L. D. B. Cogan resigns his commission and is granted the rank of Lieutenant-Colonel.

INDIAN MEDICAL SERVICE.

Temp. Lieut. D. T. P. Gay to be temporary Captain.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At a congregation held on March 5th the following were appointed members of the board of electors to the Sir William Dunn Professorship of Biochemistry:—

Professor Sir W. J. Pope, Mr. F. F. Blackman, St. John's; Professor T. B. Wood, Mr. W. B. Hardy, Caius; Professor W. M. Bayliss, Professor J. N. Langley, Professor J. S. Gardiner, and Professor C. J. Martin.

The following degrees were conferred:—

M.D.—E. J. Bradley, Jesus.
M.B. and B.Ch.—A. G. Shurlock, Jesus; N. W. Jenkin, Christ's; H. B. Yates, Downing.
M.B.—E. E. Llewellyn, Christ's.
B.Ch.—F. N. Sidebotham, Clare.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held in February the following candidates passed in the subjects indicated:—

Surgery.—W. A. Bryce (Sects. I. and II.), Birmingham; A. R. Crane (Sect. I.), London Hosp.; Z. Khaled (Sect. II.), Cairo; G. G. Rigby (Sect. I.), Manchester; B. W. Roffey (Sects. I. and II.), St. Mary's Hosp.
Medicine.—W. A. Bryce (Sects. I. and II.), Birmingham; O. G. Fisk (Sects. I. and II.), Cambridge and London Hosp.; M. Foley (Sect. I.), Charing Cross Hosp.; B. W. Roffey (Sect. I.), St. Mary's Hosp.; H. W. Swann (Sects. I. and II.), St. Mary's Hosp.; J. Solomonoff (Sect. II.), London Hosp.; M. Tcherny (Sects. I. and II.), Zurich.
Forensic Medicine.—W. A. Bryce, Birmingham; E. C. T. Clouston, London Hosp.; O. G. Fisk, Cambridge and London Hosp.; M. Foley, Charing Cross Hosp.
Midwifery.—A. G. L. Brown, Westminster Hosp.; R. E. Williams, Guy's Hosp.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: Z. Khaled and H. W. Swann.

UNIVERSITY OF LONDON.—The ceremony of Presentation Day will be held in the Royal Albert Hall on Thursday, May 5th.

THE Croonian lecture will be delivered at the Royal Society on May 5th by Dr. Henry Head, F.R.S., on Release of Function in the Nervous System.

LONDON (R.F.H.) SCHOOL OF MEDICINE FOR WOMEN: APPEAL FUND.—An "At Home" was given by Lady Emmott, J.P., Mrs. Anstruther, and Dr. Christine Murrell on March 3rd, when the laboratories and lecture theatres were open to the guests, and short talks on the past, present, and future of the school and hospital were given by Lady Barrett, Dr. Louisa Garrett Anderson, Professor Winifred Cullis, and Dr. Dorothy Hare. An appeal for £500,000 is being made by this school, where an obstetric and gynæcological unit, directed by Professor Louisa McIlroy, has just been initiated.

ROYAL INSTITUTION.—Among the lectures to be given at the Royal Institution after Easter are four lectures by Professor A. Keith on Darwin's Theory of Man's Origin. Dr. C. S. Myers will give three lectures on Psychological Studies, one on Localisation of Sound, and two on Appreciation of Music. Dr. H. H. Dale will lecture on Poisons and Antidotes, and Mr. E. C. C. Baly on Chemical Reaction. The Friday evening meetings will be resumed on April 8th, when Dr. R. H. A. Plimmer will deliver a discourse on Quality of Protein in Nutrition. Discourses will be given in the course of the session by Sir James Walker, Professor W. Bateson, Professor E. H. Starling, Dr. Leonard Huxley, and others.

MEDICAL SOCIETY OF LONDON.—At the next meeting on Monday, March 14th, at 8.30 P.M., a discussion on Non-operative Treatment of Surgical Tuberculosis will be opened by Sir Henry Gauvain, followed by Sir A. Bowlby, Mr. T. H. Kellock, Dr. W. T. Gordon Pugh, and Mr. W. H. Trethowan.

Anniversary Dinner.—The 148th anniversary dinner of the Medical Society of London was held at the Wharncliffe Rooms, London, on Tuesday, March 8th, Sir William Hale-White presiding. After the usual loyal toasts the chairman gave an entertaining outline of the movements in the eighteenth century which gave rise to a number of medical societies, the Medical Society of London among them. As one who had stood out against compelling students to go to bad lectures he was a convinced supporter of the oral method in teaching and of the value of free discussion. Sir Anthony Bowlby proposed "The Imperial Forces," giving striking instances of what a medical service could do for an army, and what might be the results of its failure; Sir Robert Hill and Air-Commodore Fell replied. Sir John Bland-Sutton wittily proposed "The Visitors," Lord Justice Atkin and Dr. Russell Wells replying. Sir D'Arcy Power paid graceful tribute to the President. The occasion was one of good fellowship and happy reunion.

Chelsea Clinical Society.—The annual debate will be held on April 19th, instead of as previously arranged.

King Edward's Hospital Fund for London.—Hospitals situated in the County of London or within nine miles of Charing Cross and desiring to participate in the grants made by this fund for the year 1921 should make application before March 31st to the honorary secretaries at 7, Walbrook, London, E.C.4. Applications will also be considered from convalescent homes within the above boundaries or which, being situated outside, take a large *proportion of patients from London ; also from sanatoriums* for consumption which take patients from London or which are prepared to place beds at the disposal of the fund for the use of patients from London hospitals.

Edinburgh Undergraduates in Paris.—A class composed of 18 men and 17 women students of the University of Edinburgh left England on March 5th for a four weeks' course of practical midwifery. The distinguished French teachers who will give lectures and demonstrations include Professor A. Couvelaire, Professor P. Bar, Professor M. Chauffard, Professor J. L. Faure, Dr. Legris, Dr. Vaquez, Dr. Bouffe de St. Blaise, Dr. J. Funck-Brentano, Dr. Latulle and Dr. Besançon, Dr. Margan and Dr. F. Widal. The students will work at the Clinique Tarnier, the Clinique Baudelocque, the Clinique de la Pitié, and will visit laboratories, museums, maternity and infants' hospitals. At the end of the course a certificate will be issued to those who have taken part.

Donations and Bequests.—The late Mr. William Morrice Ledingham, of Aberdeen, has left personal estate of the value of £154,423 5*s.* 3*d.*, the residue of which is to be divided into 17 parts—four parts for the Aberdeen Royal Infirmary; two parts for the Aberdeen Royal Hospital for Sick Children; one part each to the Morningfield Hospital, the Ophthalmic Institute, the Aberdeen Dispensary, Maternity Hospital, and Vaccine Institute, the Aberdeen Nursing Association, the Aberdeen Ladies' Sanitary and Rent Aid Association, Newhills Convalescent Home, the Association for Improving the Condition of the Poor, Spurgeon's Home, Dr. Barnardo's Homes, Aberdeen Asylum for the Blind, and the Ophthalmic Hospital.—The residue of the property of the late Colonel Francis John Ryder, which will exceed £25,000, is to be divided between the Leeds Infirmary, London Hospital, Guy's Hospital, St. Thomas's Hospital, St. Bartholomew's Hospital, Charing Cross Hospital, and the University of Edinburgh.—The late Mr. Thomas Burnett Middleton, of Watson-street, Aberdeen, has left, free of legacy duty, £50 to the Aberdeen Royal Infirmary and £50 to the Royal Aberdeen Hospital for Sick Children.—The late Mrs. Eliza Bruce, or Wallace, Gowanlea, Ellon, leaves, free of legacy duty, to the Aberdeen Royal Infirmary £50.—As the result of a concert given by the staff of Messrs. John Falconer and Co., drapers, Union-street, Aberdeen, a sum of over £200 was handed over to the Sir James Taggart Fund for the Royal Aberdeen Hospital for Sick Children.

Liverpool Royal Infirmary. — The annual meeting of governors was held on March 4th, when Dr. Richard Caton, the President, occupied the chair, and was supported by the Lord Mayor and the Vice-Chancellor of the University. Mr. Holford Harrison, the honorary treasurer, in submitting his report stated that during 1920 there had been 4193 in-patients and 27,110 out-patients, the average daily attendance of the latter being 528. There had been a great increase in the attendances at the massage department. The number of pensioners in respect of whom payments were received from Government had decreased, but civilians had come forward in large numbers for massage treatment, and the necessary increase in the staff of masseuses had added to the expenditure of the hospital without any commensurate financial return. There was also a greater demand for treatment in the X ray department, and to bring the equipment up to present-day requirements a special expenditure of £1000 for new apparatus had been sanctioned. The total expenditure for the year amounted to £55,337, an excess of £6906 over the receipts. The balance-sheet would have shown a greater deficiency had it not been for a special contribution of £9000 from the Lord Mayor's Appeal Fund and receipts of £2802 from legacies. The financial position was a source of serious anxiety, and if the hospital was to continue its usefulness greatly increased assistance was necessary. Owing to the increased cost of maintenance the committee had found it necessary to raise the charge to "outside radius" in-patients to 20*s.* per week, and the desirability of making what contributions they could to the cost of their maintenance was being systematically laid before in-patients. The need for a new nursing home was becoming ore and more urgent. Of the out-patients, 26 per cent. re insured persons making weekly contributions to the tional Health Insurance scheme, from which the infirmary did not receive a penny. Dr. Caton, in moving the adoption of the report, said that the old class of generous subscribers to the voluntary hospitals were at present labouring under the burden of heavy taxation and could not be expected materially to increase their subscriptions. He hoped that the day was far distant when the hospitals would have to rely entirely on the State or the municipalities for their support, as such a change would be followed by diminished efficiency and probably trebled expenditure. If the infirmary was obliged to accept State or municipal aid he trusted it would be only a small defined proportion of their voluntary funds, so that voluntary support and the present method of government could be continued. Not a farthing of the National Health Insurance Fund was paid to the hospital, though many insured persons were treated there. This grievance should be pressed on the notice of the Government; the hospital might hope to receive £3000 or £4000 annually from this source. Voluntary contributions from in-patients might yield from £4000 to £5000. The Lord Mayor, in seconding the adoption of the report, agreed with the principle of asking patients to contribute towards their maintenance according to their ability. Mr. G. H. Melby was elected president for the ensuing year, and Mr. Holford Harrison was re-elected honorary treasurer. The report showed that the ordinary income was £2948 above that of the previous year—every source of income having shown an increase except the receipts in respect of ex-Service men. But, owing to the increased cost of commodities and the expenditure on long delayed works of cleaning and repair, the ordinary expenditure was £7030 above that of last year. The total ordinary income was £36,983, and the total ordinary expenditure was £24,361. A grant of £7500 was received from the Lord Mayor's Special Appeal Fund, but the amount from legacies was only £1807 as compared with £14,335 in 1919. There had been an increase in payments by, or in respect of, patients of £4652. Part of this very satisfactory improvement was due to the appointment of an almoner.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

Alexander, R. C., M.B. Edin., F.R.C.S.E., has been appointed Visiting Surgeon to Dundee Royal Infirmary.

Gerrard, Dora W., M.B., Ch.B. Edin., Junior House Surgeon at the Children's Hospital, Sunderland.

Ivens, Frances, M.B., M.S. Lond., Honorary Surgeon to the Liverpool Maternity Hospital.

Lyster, R. A., M.D., B.Ch. Birm., D.P.H., a Member of the Central Midwives Board.

Middleton, E. L., M.D. Edin., D.P.H., Medical Inspector of Factories and Workshops.

Rivett, L. C., M.C. Cantab., F.R.C.S. Eng., Obstetric Surgeon to Out-Patients at Queen Charlotte's Hospital.

Stannus, H. S., M.D. Lond., M.R.C.P. Lond., Medical Adviser to the Board of Inland Revenue and Physician to Out-patients, French Hospital, London.

Tanner, W. E., M.S. Lond., F.R.C.S. Eng., Surgeon to Out-patients, The Evelina Hospital for Children, Southwark.

Certifying Surgeons under the Factory and Workshops Acts: **Laurie, A. M.**, L.R.C.P. & S. Edin. (Bridge of Weir and Kilmacolm); **Mackenzie, J. J. R.**, M.B., Ch.B. Edin. (King's Cliffe); **Sugden, F.**, M.B., Ch.B. Vict. (Wansford).

Medical Referees under the Workmen's Compensation Act, 1906: **Edington, G. H.**, M.D. Glasg., and **Rutherford, H.**, M.B., C.M., for the Sheriffdom of Lanark.

Vacancies.

For further information refer to the advertisement columns.

Birmingham and Midland Homœopathic Hospital.—Res. H.S. £125.

Birmingham General Dispensary.—Res. M.O. £400.

Birmingham, Queen's Hospital.—H.P.'s, H.S.'s, Obstet. and Ophth. H.S., and Cas. H.S. £90 each.

Birmingham, St. Chad's Hospital.—Res. M.O. £100.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. £150.

Bristol Education Committee.—Asst. Sch. M.O. £600.

Bristol Royal Infirmary.—Hon. Registrar and Hon. Surg.

Canterbury, Kent and Canterbury Hospital.—Res. M.O. £175.

City of London Hospital for Diseases of the Chest, Victoria Park, E.—H.P. £100.

Deptford Maternity Home and Maternity and Child Welfare Clinics.—Asst. M.O. £600

Dewsbury and District General Infirmary.—H.S. £250.

Dunrossness Parish.—M.O. and Vaccinator. £40.

Durham County Education Committee.—Asst. Oculist. £600.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Anæsth. £50. Also Ophth. S.

East Sussex County Mental Hospital, Hellingly.—Sec. Asst. M.O. and Path. £450.

Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Female Dentist to In-patients. £10 10*s*.
Enfield Education Committee.—Sch. Dent. S. £500.
Epsom, Manor Certified Institution for the Mentally Defective.—Med. Supt. £1000.
Freemasons Hospital and Nursing Home, 237, Fulham-road, S.W.—Res. M.O. £250.
Glamorgan County Asylum, Bridgend.—Jun. Asst. M.O. £415.
Great Northern Central Hospital, Holloway, London, N.—P. Also Anæsth. £10 10*s*.
Guildford, Royal Surrey County Hospital.—H.S. £150.
Holborn Union, Finsbury Hospital, Archway-road, N.—First Asst. M.O. £400.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Med. Registrar. £100.
Huddersfield Royal Infirmary.—Sen. H.S. £250. Two Jun. H.S.'s. £150.
Laboratories of Pathology and Public Health, 6, Harley-street.—Asst. Path. £450.
Liverpool, Brownlow Hill Poor Law Hospital.—Res. Asst. M.O. £300.
Liverpool, David Lewis Northern Hospital.—Two H.P.'s. Three H.S.'s. £120.
Liverpool Royal Infirmary.—H.P.'s., H.S.'s., and Sen. Cas. O. £60 each.
Liverpool, Royal Southern Hospital..—Two H.P.'s and three H.S.'s. £100 each.
London Homœopathic Hospital, Great Ormond-street and Queen-square, Bloomsbury, W.C.—Asst. S.
Maidstone, Kent County Ophthalmic Hospital.—H.S. £300.
Middlesex Hospital, W.—P.
National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—H.P. £150.
Newark Hospital and Dispensary.—Res. H.S. £200.
Newcastle-upon-Tyne City Mental Hospital, Gosforth.—Jun. Asst. M.O. £350.
Nottingham City Asylum.—Sec. Asst. M.O. £400.
Nottingham General Hospital.—H.S. £200.
Richmond Borough, Surrey.—M.O.H. £800.
Rochester, Kent, St. Bartholomew's Hospital.—Jun. Res. M.O. £200.
Royal Air Force, Air Ministry, Kingsway, W.C.—M.O.'s.
Royal General Dispensary, Bartholomew Close, E.C.—Res. M.O. £175.
Salford Royal Hospital.—Res. Surg. O. £250. H.P. £200. H.S.'s, *and Cas. H.S. £150. Also Anæsthetist. £50.*
Salop County Council, Medical Inspection of School Children, Maternity, and Child Welfare.—Asst. M.O. £517 10*s*.
Samoan Medical Service.—Three Jun. M.O.'s. £600.
Sheffield Royal Infirmary.—H.S. £150. Ophth. H.S. £150.
South Shields, Ingham Infirmary and South Shields and Westoe Dispensary.—Jun. H.S. £175.
Swansea County Borough.—Asst. M.O. £500.
Tiverton Hospital.—H.S. £100.
Tunbridge Wells General Hospital.—H.S. £160.
West London Hospital, Hammersmith-road, W.—H.P. and Two H.S.'s. £50. *Also Asst. Anæsth.*
West Riding County Council.—Asst. M.O. at Cardigan Sanatorium, Carr Gate, near Wakefield. £500.
Wolverhampton and Staffordshire General Hospital.—Hon. Specialist.
York Retreat.—Med. Supt. £800–£1000.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Horsforth, Clevedon, and Frome.

Births, Marriages, and Deaths.

BIRTHS.

ABRAHAM.—On March 4th, at 59, Cambridge-terrace, W.2, Lilian Angela (née Francis), wife of J. Johnston Abraham, C.B.E., D.S.O., F.R.C.S., of a daughter (Joan Lilian).

ASH.—On March 6th, the wife of H. Arnold Ash, M.R.C.S., L.R.C.P., of 59, Madrid-road, Barnes, of a son.

COURTNEY.—*On March 6th, the wife of J. M. Courtney, M.R.C.S., L.R.C.P., of Bocking*, Braintree, Essex, of a daughter.

MILLIGAN.—On Feb. 19th, at Woodlands-road, Ansdell, Lytham, Lancs, the wife of W. E. Milligan, M.B., B.S., of a son.

ROUTH.—On March 6th, at Norwich, *the wife of Captain L. M.* Routh, M.D., R.A.M.C., Military Hospital, Norwich, of a son.

MARRIAGES.

HUGHES—POLLOCK.—On March 1st, *at All Saints' Church, Marseilles*, Cecil H. M. Hughes, M.B., to Anne Athol, widow of W. Rivers Pollock, M.D., F.R.C.P.

WOOLRICH—BALLARD.—On March 3rd, at All Saints' Parish Church, Sanderstead, Surrey, William Grant Woolrich, M.A., M.R.C.S., to Lorna, eldest daughter of Mr. and Mrs. M. J. Ballard, Sanderstead.

DEATHS.

ARMSTRONG.—On Feb. 24th, at Quetta, of enteric fever, Captain (temp. Major) Edward Randolph Armstrong, M.D., D.P.H., D.T.M., I.M.S., D.A.D.M.S. (Sanitary), Quetta Division, in his 36th year.

DUKE.—On *March 6th, at Eastbourne, Edgar Duke, M.D., M.R.C.S.* (late Captain, R.A.M.C.), of Hove.

FRY.—On March 4th, at his residence, Tonbridge-road, Maidstone, Kent, John William Fry, M.R.C.S., L.S.A., in his 90th year.

GATLEY.—On Feb. 28th, at Mill Vale House, Bratton, Westbury, Charles Alexander Robertson Gatley, M.R.C.S., L.R.C.P., aged 31 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

CASSELL AND CO., London.
Manson's Tropical Diseases. Edited by P. H. Manson-Bahr, M.D. 7th ed. Pp. 960. 30*s*.

CHAPMAN AND HALL, London. J. WILEY, New York.
Laboratory Manual of Organic Chemistry for Medical Students. By M. Steel, Ph.D. Pp. 284. 9*s*. 6*d*.
Diseases of the Ear. By P. D. Kerrison, M.D. Pp. 596. 35*s*.

CHURCHILL, J. AND A., *London.*
Poverty and its Vicious Circles. By J. B. Hurry, M.D. Pp. 411. 15*s*.
Health of the Industrial Worker. By Professor E. L. Collis and Major Greenwood, M.R.C.P. Lond., M.R.C.S. Eng. With a Chapter on the Reclamation of the Disabled by A. J. Collis, M.D. With introduction by Sir George Newman. Pp. 450. 30*s*.

SAUNDERS, W. B., COMPANY, LTD.
A Text-book of the Practice of Medicine. By Professor James M. Anders, M.D., and John H. Musser, Jnr., M.D. 14th ed. Pp. 1284. 45*s*.
Chemical Pathology. Being a Discussion of General Pathology from the Standpoint of the Chemical Processes Involved. By Professor H. Gideon Wells, M.S. 4th ed., revised and reset. Pp. 695. 35*s*.
Practical Preventive Medicine. By Professor Mark F. Boyd, M.D. Pp. 352. 20*s*.
Collected Papers of the Mayo Clinic, Rochester, Minnesota. Edited by Mrs. M. H. Mellish. Vol. XI., 1919. Pp. 1331. 60*s*.
The Roentgen Diagnosis of Diseases of the Alimentary Canal. By Russell D. Carman, M.D., Professor of Roentgenology (Mayo Foundation). 2nd ed., revised. Pp. 676. 42*s*.
Bandages and Bandaging for Nurses. By M. Cordelia Cowan, President of the Colorado State Board of Nurse Examiners, Pp. 177. 10*s*. 6*d*.

Communications, Letters, &c., to the Editor have been received from—

A.—Mr. H. P. Anderson, Edinburgh; Association for the Prevention of Tuberculosis, Lond., Hon. Sec. of; Dr. A. C. Alport, Cape Town.

B.—Prof. J. M. Beattie, Liverpool; Dr. A. H. Burgess, Manchester; Dr. J. L. Brownlie, Glasgow; Dr. Boudreau, Bordeaux; British Dental Association, Lond., Dental Sec. of; Mr. G. Bethell, Lond.

C.—Carnegie United Kingdom Trust, Dunfermline, Sec. of; Crown Agents for the Colonies, *Lond., Chief Engineer of; Dr.* H. P. Cholmeley, Forest Row; Mr. A. E. Chisholm, Dundee; Chemical Catalog Co., New York; Dr. A. E. Carver, Torquay; Mr. G. C. Chubb, Lond.; Dr. J. B. Christopherson, Lond.; Chelsea Clinical Society, Lond.

D.—Sir J. Dundas-Grant, Lond.; *Daily Gazette*, Lond., Editor of; Mr. E. W. Dewey, Portsmouth.

E.—Ex-Service; Mrs. M. L. Eyles, Milford; Mr. M. J. Exner, New York.

F.—Mr. W. *Felce, Bristol*; Mr. C. H. Fagge, Lond.; Dr. T. Fraser, Aberdeen; Dr. W. M. Feldman, Lond.

G.—Dr. H. L. Gordon, Lond.; *Guild of Health*, Lond., Sec. of; Mr. E. H. Hey Groves, Bristol; Dr. M. Greenwood, Lond.

H.—Dr. F. Hancock, Norfolk, Virginia; Prof. W. D. Halliburton, Lond.; Dr. F. de H. Hall, Lond.; Mr. B. W. Hudson-Rycroft, St. Andrews; Dr. H. *Herd, Stockport; Harveian* Society of London; Mr. W. Howarth, Lond.; Prof. F. G. Hopkins, Cambridge; Dr. E. Hughes, Liverpool.

I.—Imperial War Relief Fund, Lond., Organising Sec. of; Industrial Welfare Society, Lond.; *Illuminating Engineering* Society, Lond.

J.—*Journal of Industrial Welfare*, Lond.

K.—Dr. A. F. S. Kent, Manchester; Incorporated *Association* of Kinematograph Manufacturers, Lond., Sec. of.

L.—Mr. T. B. Layton, Lond.; London and Counties Medical *Protection Society*; Dr. J. E. A. Lynham, Lond.; Dr. R. B. Low, Lond.; Liverpool Medical Institution; Liverpool Maternity Hospital and Ladies' *Charity, Sec. of.*

M.—Manchester French Hospital, Hon. Sec. of; Major A. Macdonald, R.A.M.C.; Medico-Legal Society, Lond.; Middlesex Hospital Medical School, Lond., Sec. of; Mr. W. H. Martindale, Lond.; Manchester *Medico-Ethical Association*, Hon. Sec. of; Dr. P. H. Manson-Bahr, Lond.; Mr. M. Meredith, Liverpool; Dr. J. C. McClure, Lond.

N.—Mr. W. G. Nash, Bedford; Dr. E. Nash, Maidenhead; Newport, Town Clerk of.

O.—Mr. L. F. O'Shaughnessy, Newcastle-on-Tyne.

P.—Mr. V. Pauchet, Paris; Mr. H. *Platt*, Manchester; *Dr. J.* Peters, The Hague; Mr. G. A. Ponsonby, Lond.; People's League of Health, Lond.

R.—Mr. P. B. Roth, Lond.; Dr. J. D. Rolleston, Lond.; Royal *Free Hospital Appeal Fund*, Hon. Sec. of; Royal Society of Arts, *Lond.; Dr. T. Rovsing*, Copenhagen; Mr. J. H. Ryffel, Lond.; Dr. H. Roberts, Lond.; Royal Institution of Great Britain, Lond.; Mr. L. C. Rivett, Lond.; Royal Society, Lond., Asst. Sec. of; Royal Society of Medicine, Lond.; *Royal Statistical Society, Lond.*

S.—Scottish Board of Health, Edinburgh; Scientific and Industrial Research, Department of, Lond.; Prof. W. Stirling, Manchester; Mr. T. Y. Simpson, Plymouth; Société des Sciences Médicales et Biologiques de Montpellier; Mr. E. G. Slesinger, Lond.; Society for the Prevention of Venereal Disease, *Lond.; Society of* Apothecaries of London.

T.—Dr. G. de B. Turtle, Lond.; Miss M. A. Turner, Stoke Green; Dr. W. B. Tomson, St. Leonards-on-Sea; Sir N. Tirard, Lond.

V.—Miss M. Vince, Lond.

W.—*Dr. E. Ward*, Paignton; War Office, Publicity Department, Lond.; West London *Post-Graduate College*; Mr. A. J. Walton, Lond.; Dr. A. Whitfield, Lond.; Workers' Educational Association, Gen. Sec. of; Dr. L. Williams, Lond.; Sir G. Woodhead, Cambridge; Mr. H. I. Woolf, Le Havre.

Communications relating to the editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, March 14th.

GENERAL MEETING OF FELLOWS: at 5.30 P.M.

Discussion:

On "The Eradication of Tuberculosis in Men and Animals." To be opened by Sir John McFadyean, followed by Sir Clifford Allbutt, Dr. Arthur Latham, Professor Hobday, Dr. A. C. Inman, Mr. Cyril Nitch, Sir Sims Woodhead, and others.

Tuesday, March 15th.

GENERAL MEETING OF FELLOWS: at 5 P.M.

Ballot for Election to the Fellowship. (Names already circulated.)

MEETINGS OF SECTIONS.

Friday, March 11th.

CLINICAL SECTION
SECTION OF MEDICINE } at 5.30 P.M. (Cases at 5 P.M.)
SECTION OF SURGERY

Cases: The following will be shown by—

Sir Thomas Horder: Diffuse Sclerodermia.

Dr. Maurice Cassidy: Specimens from Neoplasm of Lung.

Mr. Paul Bernard Roth: Arterio-venous Aneurysm.

Mr. Kilner: Three Cases illustrating Plastic Surgery of the Face.

Adjourned Discussion:

On "The Medical and Surgical Treatment of Graves's Disease" will be continued by Mr. Joll, Dr. Leonard Williams, Dr. C. M. Wilson, Dr. Thorne Thorne, Mr. Dunhill, and Dr. Hector Mackenzie.

SECTION OF NEUROLOGY
SECTION OF OPHTHALMOLOGY } at 8.30 P.M.

Adjourned Discussion: On "Ocular Palsies."

Monday, March 14th.

WAR SECTION: at 5.30 P.M.

Paper: Colonel H. E. R. James: The Best Form of Instruction for Medical Students to Fit them to take their Part in Case of National Emergency.

Tuesday, March 15th.

SECTION OF THERAPEUTICS AND PHARMACOLOGY: at 4.30 P.M.

Paper:

Mr. Paul Bernard Roth: The Uses of Heliotherapy (illustrated by two cinematograph films and lantern slides).

Members of other Sections who are interested are cordially invited to attend the above meeting.

SECTION OF PATHOLOGY: at 8.30 P.M.

Communications:

Sir Lenthal Cheatle: Parenchymatous Inflammation of the Breast.

Dr. J. A. Murray and Dr. W. H. Woglom: Experimental Tar Cancer.

Dr. A. J. Eagleton: The Standardisation of Antipneumococcal Serum.

Dr. Nathan Raw: Attenuated Tubercle Bacilli.

Wednesday, March 16th.

SECTION OF HISTORY OF MEDICINE: at 5 P.M.

Papers:

Professsor G. Elliot Smith: Ancient Egyptian Pathology and Medicine.

Mr. Geoffrey Keynes: The Unpublished Letters of Sir Thomas Browne.

Mr. Marshall Montgomery: The Identity of "Cursed Hebenon" in Shakespeare's *Hamlet* with Lignum Vitæ.

SECTION OF STUDY OF DISEASE IN CHILDREN: at 8.30 P.M.

Adjourned Discussion:

On "The Diagnosis and Treatment of Congenital Syphilis," to be reopened by Dr. Morley Fletcher, and continued by Mr. John Adams, Dr. Jewesbury, Mr. McDonagh, Mr. Neame, Dr. Pitts, and others.

Thursday, March 17th.

SECTION OF DERMATOLOGY: at 5 P.M. (Cases at 4.30 P.M.)

Communication:

Mr. T. C. Benians: The Presence of Catalytic Enzymes as an Aid to Diagnosis of Hair Infections.

Cases: The following will be shown by—

Dr. Knowsley Sibley: Monilethrix.

Dr. Hannay: Two Cases of Pityriasis Rubra Pilaris.

Friday, March 18th.

SECTION OF OTOLOGY: at 5 P.M.

Demonstration of Pathological Specimens by Dr. Albert Gray.

Paper: Mr. Jefferson Faulder and Mr. Colledge: Ears under Modern War Conditions.

Cases will be shown by—

Mr. Mollison, Mr. Cleminson, Mr. Colledge, and others.

SECTION OF ELECTRO-THERAPEUTICS: at 8.30 P.M.

Mackenzie-Davidson Memorial Lecture:

Professor W. D. Halliburton: Physiological Advance—the Importance of the Infinitely Little.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, March 14th.—8.30 P.M., Discussion on Non-operative Treatment of Surgical Tuberculosis, to be opened by Sir Henry Gauvain, followed by Sir A. Bowlby, Mr. T. H. Kellock, Dr. W. T. G. Pugh, and Mr. W. H. Trethowan.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

MONDAY, March 14th.—8 P.M., Cantor Lecture:—Major G. W. C. Kaye: X Rays and their Industrial Applications. (II.)

PVEIAN SOCIETY OF LONDON, at the Town Hall, Paddington en, W.

THURSDAY, March 17th.—8.30 P.M., Harveian Lecture:—Dr. L. Williams: The Thymus Gland in Every-day Life.

LONDON DERMATOLOGICAL SOCIETY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, March 15th.—4.30 P.M., Pathological Specimens. Cases sent for Consultation. Clinical Cases will be shown by Dr. J. L. Bunch, Dr. W. Griffith, Dr. W. K. Sibley, Dr. L. G. Pearson, Dr. A. C. Ribello, Dr. M. G. Hannay, and Dr. D Vinrace. Paper:—Dr. R. Craik: The Ringworms—some Observations on their Mycology.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, at the Royal Army Medical College, Grosvenor-road, S.W.

FRIDAY, March 18th.—8.15 P.M., Laboratory Meeting. Demonstrations:—Col. P. S. Lelean: Models of Some Sanitary Devices for the Tropics. Lt.-Col. J. C. Kennedy: The Pathological Histology of Tropical Sore. Lt.-Col. H. Marrian Perry: A Helminthic Infection in Relation to Bacterial Invasion of Tissues. Major F. N. Coppinger: Preliminary Work in Connexion with Detoxicated Dysentery Vaccines. Dr. J. G. Thomson and Dr. A. Robertson: Association of Charcot-Leyden Crystals with *Entamœba Histolytica*. Dr. H. St. J. Brooks: *Leptospira Icteroides* and *Leptospira Icterohæmorrhagiæ*. Dr. P. Manson-Bahr: *Bacillus Coli* Infections of Tissues. Miss E. M. Baxter and Dr. A. J. Eagleton: Can Syringes be Sterilised by Means of Oil? Dr. A. Castellani and Dr. F. E. Taylor: Identification of Sugars and Other Carbohydrates by a Mycological Method. Mr. Cecil A. Hoare: Demonstration of Trypanosomiasis of British Sheep. Lt.-Col. S. P. James: A Case of Leprosy. And others.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, March 14th.—12.15 P.M, Dr. Burnford: Pathological Demonstration. 2 P.M., Dr. S. Pinchin: Medical Out-patients. Mr. B. Harman: Eye Department. 5 P.M., Lecture:—Dr. G. Stewart: Syringomyelia.

TUESDAY.—10 A.M., Dr. McDougal: Electrical Department. 2 P.M., Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. Mr. T. Gray: Surgical Out-patients. 2.30 P.M., Dr. Pritchard: Demonstration of Cases (Surgical Wards). 5 P.M., Lecture:—Dr. Pernet: Acquired Syphilis in Infancy and Childhood, with Remarks on Late Tertiary Congenital Syphilitic Manifestations.

WEDNESDAY.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 2 P.M., Dr. Owen: Medical Out-patients. Mr. Addison: Operations. Dr. Morton: X Ray Department. 5 P.M., Lecture:—Mr. Gibb: Glaucoma.

THURSDAY.—10.30 A.M., Dr. Simson: Gynæcological Demonstration. 2 P.M., Mr. Baldwin: Orthopædic Department. Mr. D. Armour: Operations. 5 P.M., Special Lecture:—Dr. B. Ball: Nasal Suppuration (with lantern slides) (open to all medical practitioners).

FRIDAY.—10 A.M., Dr. G. Stewart: Neurological Demonstration. Mr. D. Buxton: Dental Department. 2 P.M., Dr. Pernet: Skin Department. 5 P.M., Lecture:—Mr. Steadman: Dental Sepsis in Relation to the Alimentary Tract.

SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Dr. Owen: Medical Out-patients.

Daily:—10 A.M. Ward Visits. 2 P.M., In-patient, Out-patient Clinics and Operations.

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MONDAY, March 14th.—2 P.M., Out-patient Clinic: Dr. Collier. 3.30 P.M., Lecture:—Dr. Saunders: Friedreich's Ataxia.

TUESDAY, March 15th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Dr. Risien Russell: Syphilis of the Nervous System. (II.)

THURSDAY, March 17th.—2 P.M., Out-patient Clinic: Dr. Farquhar Buzzard. 3.30 P.M., Lecture:—Dr. Saunders: Occupation Neuroses.

FRIDAY, March 18th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Dr. Hinds-Howell: Disseminated Sclerosis.

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MIDDLESEX HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON).

FRIDAY, March 18th.—3 P.M., Sir James Kingston Fowler: The Treatment of Tuberculosis.

KING'S COLLEGE (DEPARTMENT OF SCIENCE), Strand.

Nine Lectures on Problems of Modern Science.

WEDNESDAY, March 16th.—5.15 P.M., Lecture (IX.):—Prof. E. Barclay-Smith: Anatomy.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, March 17th.—4 P.M., Lecture:—Dr. Hutchison: Disorders of the Liver.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W.

MONDAY, March 14th.—5.30 P.M., Post-Graduate Lecture:—Dr. S. Goodall: Practical Points in Treatment.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

TUESDAY, March 15th.—3 P.M., Lecture:—Prof. A. Keith: *Darwin's Theory of Man's Origin.*

THURSDAY.—3 P.M., Dr. G. C. Simpson: Meteorology of the Antarctic.

SATURDAY.—3 P.M., Lecture (III.): Sir Ernest Rutherford: Electricity and Matter.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

TUESDAY, March 15th.—4.30 P.M., Lecture:—Mr. H. H. Rayner: Surgical Disorders of Infancy and Early Childhood (contd.)

SALFORD ROYAL HOSPITAL AND ANCOATS HOSPITAL POST-GRADUATE DEMONSTRATIONS, at the two Hospitals alternately.

THURSDAY, March 17th.—4.30 P.M., Dr. White: Diseases of the Eye. (At Salford Royal Hospital.)

Notes, Short Comments, and Answers to Correspondents.

COLONIAL HEALTH REPORTS.

Somaliland.—In a report on the Protectorate for the year 1919-20, signed by Mr. D. J. Jardine, Secretary to the Administration, it is stated that the average number of Europeans resident was 36, and the total of them on the sick list was 30, of whom 4 were invalided to England. During 1919 2064 patients were admitted to hospitals, as compared with 2421 in 1918 and 1039 in 1917. In 1918 the numbers were raised by an epidemic of influenza, and in the year under review there was a small-pox epidemic. The number of out-patients was 19,916, which differs little from the figures for previous years. There was a further decrease in the number of malarial cases, 500 being reported as against 558 in 1918, and 1 death from malaria as compared with 13 in 1918. Relapsing fever, on the other hand, is on the increase. The disease occurs at Hargeisa, where the *Ornithodorus moubata* tick is found. In the early stages of the disease intravenous injections of a salvarsan preparation, such as neo-kharsivan, have proved very successful. There were 132 cases of scurvy, as compared with 47 in the previous year. Most of the cases were slight and occurred amongst the Indian troops owing to the difficulty of obtaining a regular supply of fresh limes and fruit from abroad. There were no deaths from this disease. There were 5260 cases of ulcer treated during the year as compared with 4614 cases for 1918. The majority of cases appear to be the ordinary tropical ulcer, or "Aden ulcer," as it is sometimes called, which is very common on the Red Sea littoral. Small-pox was present in epidemic form during the whole of 1919. The first recorded case came from Abyssinia to Hargeisa, whence, owing to the nomadic habits of the people, the disease spread throughout the country. 662 cases were admitted to the isolation camps, where there were 296 deaths. The outbreak was not severe; but there must have been many cases and deaths in the interior which never came to the notice of the medical department. Some villages, indeed, where the disease was rampant, were abandoned by the inhabitants. There were 104 cases of chicken-pox, as compared with 20 cases in the previous year. The influenza epidemic of 1918 did not recur in 1919; there were only 69 cases of this disease, mostly at the coast, and 4 deaths. There were 59 cases of dysentery, some of which were definitely amœbic and appear to have been brought by troops from East Africa. Venereal diseases were still on the increase, 262 cases of syphilis and 516 cases of gonorrhœa being recorded, as against 143 and 339 respectively in the previous year. Tuberculosis, chiefly of the lungs, is also steadily increasing, 300 cases being recorded during the year. The total rainfall in Berbera in 1919 was 2·31 inches, as against 1·93 in 1918. In the interior the rainfall is considerably more than this, but up to the present it has not been practicable to keep records except in Berbera. The highest shade temperature recorded at that station was 116° F. in August, and the lowest 63° in January.

Swaziland.—A census taken in 1911 showed that the total population was 99,959, comprising 1083 Europeans, 143 coloured, and 98,733 natives. The European population is now about 1800. The births amongst Europeans in 1919 numbered 50, the deaths 25, and the marriages 10. The births and deaths of natives are not registered. The general health of the territory during 1919-20 was fairly good, and no epidemic of any importance occurred. During and for some months after the rainy season malarial fever was above the normal, especially in the low-lying parts. In some cases it was associated with influenza, but deaths were confined to natives out of touch with medical attendance. Leprosy has not increased, but the necessity for segregation of the few existing cases is receiving attention. The natives are still loth to report cases of venereal disease, but the coöperation of the police in bringing cases to light has been of great assistance, and many cases have been treated with satisfactory results. The average rainfall in 1919, as recorded at 17 stations throughout the territory, was 38·42 inches—considerably below the normal. Both rainfall and temperature vary considerably with the altitude of the station. At Mbabane, which lies at an altitude of 4000 feet, the highest screen temperature recorded was 95·3° and the lowest 35°. At Croydon, in the low veldt, the maximum was 106° and the minimum 35·5°. The only Government hospital in the territory is at Mbabane. It contains one European and two native wards. There were 123 admissions during the year, and nearly 3670 out-patients were treated.

Bechuanaland.—Mr. J. Ellenberger, Government Secretary, reports that the health conditions throughout the Protectorate for the year ended March 31st, 1920, were of average incidence and not remarkable for any feature of special prevalence. 2300 cases received hospital treatment. Of these, 44 were indoor. Of the outdoor cases, the prevailing disease was malaria, or conditions directly or indirectly due to it; the remainder, general, medical, and surgical affections. Several outbreaks of malaria were reported from the remote and outlying districts; and at some of these places there was a high death-rate from intercurrent diseases, such as pneumonia. There has been no recurrence of epidemic influenza anywhere throughout the territory, and there has been a complete absence of outbreaks or isolated cases and other general epidemic diseases.

Uganda.—In the latest official report on this Protectorate the following remarks appear under the heading "Climate and Meteorology": Uganda cannot be considered healthy, but its recent notoriety due to the ravages of sleeping sickness can now be safely neglected; it is neither a "white man's country" nor the "white man's grave." For a family man the country possesses distinct disadvantages. European children as a rule thrive well in infancy, but considerable risk is attached to bringing them out when they are over 2 or 3 years old, as they are liable to attacks of malaria and the resultant anæmia. The health of adults depends mainly on their mode of life, and with care constitutional health should not be impaired irremediably, but if physical fitness is maintained the altitude and proximity to the equator combine to produce nervous strain after prolonged residence. A holiday in a temperate climate is desirable at least every two or three years. Outdoor manual labour is dangerous for Europeans, and on plantations a manager's or owner's duties are for the most part supervisory. The mean maximum temperature for most districts averages 80°, and the mean minimum 60°. On the Ruwenzori range there is extreme cold with perpetual snow, and it is also cold on the higher slopes of Mount Elgon. In the Nile Valley, near Lake Albert, on the other hand, the mean maximum temperature is 90° and the mean minimum 74°. The favourite localities for European plantations are the Buganda Province, the Toro district of the Western Province, and the Bunyon district of the Northern Province. There are a few estates in Busoga (Eastern Province), but this area is not so popular. Statistics taken at Entebbe, the seat of the Government, give the following results: Average rainfall for the last 19 years, 58·64 inches; average temperature for the last 15 years, maximum 78·5°, minimum 62·8°; mean daily sunshine, 5 hours 36 minutes. Two main rainy periods are anticipated annually. The first, the "long" rains, usually begin in March and may continue through June. The second, or "short," rains begin in September and extend through October and occasionally November. Much of the rain falls during the night or early morning and seldom continues throughout the day.

Zanzibar.—The population of this Protectorate according to the last census was 196,733. The birth-rate in 1919 was 18·5 per 1000 of population, as against 19·4 in 1918. The report omits to give the death-rate, but states that the islands of Zanzibar and Pemba were free from any severe epidemic of disease during the year, except a slight recurrence of influenza in October, and the health of the community has been fair. There were 37 deaths from tuberculosis, 21 from malaria, 14 from dysentery, 2 from small-pox, and 1 from cerebro-spinal fever.

THE TEMPERATURE FACTOR IN THE ONSET OF PUBERTY.

IT is generally accepted that the onset of puberty begins earlier in the tropics than in temperate zones, and is correspondingly delayed in the extreme north or south. It is recognised that the period of onset bears a relation to the temperature of the geographical area. At first glance it might appear that in North America the temperature does not play this rôle, for missionaries have recorded many cases of Eskimo women at Point Barrow in Alaska, 300 miles north of the polar region, who have been delivered of their first child at 12, or even at 11 years of age. Vilhjamur Stefansson, in the *Journal of the American Medical Association*, lxxv., 1920, can from his own observations confirm the statement that in Eskimo girls maturity arrives at from 10-13 years. The explanation, however, appears to lie in a consideration of the conditions under which the girls are brought up and live. It appears that the temperature of the interior of their dwelling places is maintained at about 80° to 90° F., even when the external temperature is 40° to 50° below zero. The fur coverings in which the Eskimos envelop their bodies protect them fully against these low temperatures, so that they actually live in a temperature akin to that of [illegible] where early maturity seems to be largely [illegible] on the high temperature. In their dwelling[illegible] —so hot are they—the Eskimos put aside [illegible] coverings, all except a pair of pants, and the [illegible] that even then there is an almost constant outpour of sweat over the body. Possibly the artificial heat, like the sun's heat in tropical climes, greatly modifies the metabolism. Amongst the Eskimos the heat acts directly more on the women than the men, because the former live more in their dwellings. Amongst the Doy-Rib and Yellow-Knife Indians maturity of the girls occurs about the same time or later than amongst the white races of Northern Europe. This condition stands in relation with the mode of life of these tribes, living in less heated tents, wearing lighter clothing, and exposed more directly to their cold raw climatic influences.

AN INSULATED VESSEL.

WE have received from the Aladdin Industries, Ltd., 130, Southwark-street, London, S.E.2, a specimen of a "Thermalware" jar, which looks like a useful addition to the equipment of the housekeeper and of the traveller, or indeed wherever it is required to keep food or drink hot or cool. The apparatus consists of an outer aluminium jacket of barrel shape and an inner vessel of silvered glass holding a gallon, the space between the two vessels being filled with a non-conducting material. The mouth of the vessel is 4 inches wide, thus allowing the insertion of the hand for packing the container with solid food or for cleaning purposes. The insulation is effective, the fall in temperature of the contents of the jar not exceeding 7° in an hour. For the sick-room the vessel suggests many possibilities—e.g., the storage of ice for packs, of hot flannels for fomentations, or of blood-warm fluid for transfusion. The apparatus is artistically finished, it is constructed on sound hygienic lines, and risk of breakage is reduced to a minimum.

THE QUEEN'S NURSES AT BRIGHTON.

THE Brighton, Hove, and Preston District Nursing Association, to which the Queen's Nurses are affiliated, has had to reduce its staff owing to the lack of funds, and after 24 years' work the annual report announces:—

> "The chief sources of income—voluntary subscriptions, public health work, patients' payments, and training fees for candidates—do not even cover the salaries of staff, uniform, and board."

Another extract from the report says:—

> "It would appear as if in the future the steady income from voluntary subscriptions will no longer be reliable, and the only way to keep the association solvent will be by organising popular functions and amusements to raise funds."

It cannot be said that the decrease in funds is due to any slackness on the part of the nurses, for 1920 was a record year, the number of cases showing an increase of 325 over 1919, the patients nursed being 2406, and the visits paid 80,792. The balance-sheet demonstrates that there has not been a corresponding response on the part of the general public, and the Queen's Nurses will thus be unable to form an important unit in the provident scheme now being organised in Brighton and Hove. A tribute to the work of the Queen's Nurses was paid at the recent annual meeting by Dr. Duncan Forbes, M.O.H., Brighton, who stated that whereas 30 per cent. of the cases admitted to the Blind School owed blindness to inflammation of the eyes just after birth, since the nursing had been undertaken by the Queen's Nurses no further recruits from that cause had been under treatment at the institution. Earnest appeals were made by several speakers for more financial support.

INDUSTRIAL RESEARCH ASSOCIATIONS.

BELOW is a list of research associations which have been approved by the Department of Scientific and Industrial Research as complying with the conditions laid down in the Government scheme for the encouragement of industrial research, and have received licences from the Board of Trade:—

British Boot, Shoe and Allied Trades Research Association, Technical School, Abington-square, Northampton. Secretary: Mr. John Blakeman, M.A., M.Sc.

British Cotton Industry Research Association, Shirley Institute, Didsbury, Manchester. Secretary: Miss B. Thomas.

British Empire Sugar Research Association, 3/5, Old Queen-street, S.W. 1. Acting Honorary Secretary: Mr. H. T. Pooley.

British Iron Manufacturers' Research Association, Atlantic Chambers, Brazennose-street, Manchester. Secretary: Mr. H. S. Knowles.

Research Association of British Motor and Allied Manufacturers, 15, Bolton-road, Chiswick, London, W.4. Director of Research: Mr. H. S. Rowell, O.B.E., A.R.C.Sc., Wh. Sch.

British Photographic Research Association, Sicilian House, Southampton-row, London, W.C. 1. Secretary: Mr. Arthur C. Brookes.

British Portland Cement Research Association, 6, Lloyd's-avenue, London, E.C. 3. Secretary: Mr. S. G. S. Panisset, A.C.G.I., F.C.S.

British Research Association for the Woollen and Worsted Industries, "Torridon," Headingley-lane, Leeds. Secretary: Mr. old Frobisher, B.Sc.

ish Scientific Instrument Research Association, 25, Russell- . W.C. 1. Secretary: Mr. J. W. Williamson, B.Sc.

arch Association of British Rubber and Tyre Manufacturers, Messrs. W. B. Peat and Co., 11, Ironmonger-lane, E.C. 2.

Linen Industry Research Association, "Glenmore House," Lambeg, Belfast. Secretary: Miss M. Burton.

Glass Research Association, 50, Bedford-square, W.C. 2. Secretary: Mr. E. Quine, B.Sc.

British Association of Research for Cocoa, Chocolate, Sugar Confectionery, and Jam Trades, 9, Queen-street Place, E.C. 4. Secretary: Mr. R. M. Leonard.

British Non-Ferrous Metals Research Association, Athenæum Chambers, 71, Temple-row, Birmingham. Secretary: Mr. E. A. Smith, A.R.S.M., M.Inst.M.M.

British Refractories Research Association, 14, Great George-street, S.W. 1. Secretary: Mr. R. C. Rann.

Scottish Shale Oil Scientific and Industrial Research Association, 135, Buchanan-street, Glasgow. Secretary: Mr. H. R. J. Conacher.

British Leather Trades Research Association, 26, Thomas-street, S.E. 1. Secretary: Miss M. A. Stevens.

British Launderers' Research Association, 62-5, Bank Chambers, 329, High Holborn, W.C. 2. Secretary: Mr. J. J. Stark.

British Electrical and Allied Industries Research Association, 19, Tothill-street, Westminster, S.W. 1. Director of Research: Mr. E. B. Wedmore.

British Silk Research Association, The Silk Association of Great Britain and Ireland, Incorporated, Kingsway House, W.C. Secretary: Mr. A. B. Ball.

British Motor Cycle and Cycle Car Research Association, "The Towers," Warwick-road, Coventry. General Manager: Mr. H. R. Watling.

British Cutlery Research Association, P.O., Box 49, Sheffield. Secretary: Mr. J. M. Denton.

British Music Industries Research Association, Northern Polytechnic Institute, Holloway, N. 7. Director of Research: Dr. R. S. Clay.

There are other research associations approved by the Department not yet licensed in which schemes for the establishment of research associations have reached an advanced state of development, and yet others only in the proposal stage, or engaged in the preliminary consideration of schemes for forming research associations.

BELGIUM AND MEDICAL RECIPROCITY.

THE abandonment of reciprocity in medical practice between this country and Belgium, mentioned in a leading article in THE LANCET of Feb. 26th, is the subject of a letter in a recent issue of *Le Scalpel* from Dr. Clément Philippe, the President of the Belgian Society of Medicine in England. Our colleague recalls the formation of this society on Nov. 15th, 1914, "during the first days of the exodus." He recounts the rising prosperity of this society, the granting of facilities by the General Medical Council, and his own attempts to secure reciprocity from the Belgian Government in August, 1920. Dr. Philippe has evidently not yet given up hope of ultimate success.

Bees' Wine is apparently an alternative name for the "ginger-beer plant" described by the late Dr. H. Marshall Ward in the Proceedings of the Royal Society for 1891. The so-called plant, which bears superficial resemblance to pearl barley, belongs to the class of symbiotic ferments in which a yeast and bacterium unite, as in such ferments as those used to produce kephir or koumiss. The ginger-beer plant can ferment saccharose, maltose, dextrose, and lævulose, but not lactose, being inferior in this respect to the other ferments named. Mr. E. M. Holmes, F.L.S., gives illustrations of the plant itself and of the symbiotic yeast and bacterium in the *Pharmaceutical Journal* for Jan. 3rd, 1920. The plant appears to be used largely in the North Riding of Yorkshire, to prepare an alcoholic drink, 4 ounces each of sugar and treacle being mixed with half a pint of warm water to which the plant is added, the mixture being kept in a warm place and a teaspoonful of sugar added each day. The plant itself increases, and can be used to prepare fresh batches of liquor. The name "Bees' Wine" may be derived from the apparently purposeful circulation of the fragments of the plant in the fermenting fluid, which are alternately buoyed up to the surface by CO_2 bubbles and sink again after their discharge.

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THE LANCET, MARCH 19, 1921.

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A Clinical Lecture

ON

SUBPHRENIC ABSCESS.

Delivered at Guy's Hospital on Jan. 12th, 1921,

BY C. H. FAGGE, M.S. LOND., F.R.C.S. ENG.,
SURGEON TO GUY'S HOSPITAL.

THE inferior concave surface of the diaphragm is so extensive that in a detailed consideration of the ætiology of abscesses in relation to it we must take into account all the inflammatory conditions of the solid and hollow viscera which lie, even in part, above the level of the infracostal line. Even then we have omitted one organ, the appendix, which formerly, if not now, was regarded as the most common agent in the causation of subphrenic infection. No paper on this subject written during the past 12 years has failed to draw from the store of information which Barnard[1] accumulated from analysis of 76 cases at the London Hospital. From these and others available in 1909 when I lectured[2] on this subject, I was led to the conclusion that about half the cases of subphrenic infection arose from appendicitis. If to-day I suggest that nearly 80 per cent. of such abscesses are due to gastric or duodenal ulceration, we may perhaps venture to argue that the general undertaking of early operation for appendicitis and the adoption of the Fowler position after such operations have been the two chief factors in diminishing the importance of this affection in this relation.

As is obvious from a consideration of the relations of the under surface of the diaphragm, it has been customary to point out that such collections may be intraperitoneal or extraperitoneal. While it has always been admitted that the latter are relatively rare, I should venture to question the existence of a true extraperitoneal abscess arising primarily from an infective process in one of the abdominal viscera, if we accept those which may arise in the retroperitoneal tissues after gunshot wounds, or the rare occurrence of infection of the non-peritoneal surface of the diaphragm by extension from a liver abscess or some other similar condition. Such abscesses, particularly the chronic ones, are so well shut off that their original formation in a loculus of the general peritoneal is easily lost sight of. I can recall only one case on which I have operated in which there was finally any real doubt that it began as an intraperitoneal collection.

CLINICAL TYPES OF ABSCESS.

We have to look for two clinical types of abscess:—

1. The subphrenic abscess, which results from what Moynihan called the subacute or chronic perforation of a hollow viscus, is sometimes acute in onset. Owing to former localising peritonitis, the neighbourhood of the base of an ulcer of the duodenum or stomach is shut off from the general peritoneal cavity and either by direct perforation or extension of infection through the wall of the affected viscus, an abscess forms which is at first limited by the adjacent organs, and as it enlarges points on the abdominal wall. Such an abscess originating from a duodenal ulcer is usually subhepatic, that due to gastric ulceration may point to the right of or to the left of the suspensory ligament, may be perisplenic, or if the perforation has occurred into the lesser sac a retrogastric abscess arises. Similar abscesses may arise from extension of infection from any of the subphrenic organs; thus cases have been recorded from the Mayo Clinic,[3] in which such an abscess resulted from rupture of or operation on the gall-bladder. It is conceivable that some of the subphrenic abscesses originating from diseased appendices —not only of the intraperitoneal variety but those which formerly were described as extraperitoneal—were of a similar pathology and due to the subacute perforation of a hollow viscus. I am inclined to regard the latter of no great practical importance at the present time, for owing to early operation we do not see such cases now.

During the late war perforation of the viscera of the upper abdomen by infected missiles not infrequently led to abscess formation which was usually on the left side owing to the frequency of involvement of the stomach.

Capt. R. was operated on by Captain Owen Richards at a C.C.S. for a gunshot wound of the left epigastrium on Dec. 21st, 1915—a through-and-through wound of the stomach was sutured and the peritoneum drained. He was admitted to Fishmongers Hall Hospital on Feb. 6th, 1916. He vomited up pus on the morning of admission and on the 7th his temperature was 103° F. The left base was dull up to the scapula and a needle withdrew pus; an abscess was drained by excision of part of the tenth left rib. A week later this was explored further and proved to be subphrenic and perisplenic. In March he coughed up two ounces of pus. He still continued to run an irregular temperature and did not pick up. In July he was readmitted to hospital with pyrexia and cough. Much difficulty was experienced in the interpretation of his physical signs and of an area opaque to X rays at the left base, but finally exploration disclosed pus, and an empyema of 10 ounces was drained by resection of part of the ninth rib. His ultimate complete recovery was due to Captain Richards's skill.

2. However, it is not as a primary lesion that the presence of pus under the diaphragm is so often in question in surgical practice, but as a complication in the after-treatment of a patient who has gone through an operation safely for an abdominal lesion, usually an emergency but sometimes an upper abdomen operation of some severity. As I have suggested, these cases differ somewhat in type from those under the first heading; they are more insidious and tax one's diagnostic skill to the utmost. Such a complication in appendix cases is now unusual. If pus forms after operation it usually gravitates into the pelvis, where it is more easily recognised and certainly does less harm than pus in relation to the diaphragm.

Capt. C. was seen with Dr. K. L Bates on Jan. 26th, 1920. He had been ill about a week with pain in the right iliac fossa, which after two or three days diminished and then again increased and passed into the right loin; a lump appeared and pyrexia increased to 101° each night. A large retrocæcal abscess was drained, the appendix, gangrenous terminally, was removed with a large concretion. His temperature was never quite normal and on Feb. 26th rose to 104°. The right loin was tender and the right base dull up to the angle of the scapula. The track of the drainage-tube was opened up and drained into the loin, the chest was explored in three places without result. On March 8th Dr. H. French drew off 42 ounces of clear fluid from the right chest and later Dr. Bates evacuated 30 and 20 ounces, but pyrexia of 100° to 101° continued, and on the 19th there was an area of œdema over the liver. On the 20th I opened up the old wound, evacuated a small collection between the liver and the diaphragm, and drained a right empyema of 20 to 30 ounces by resection of the seventh right rib. Finally, he rewarded Dr. Bates and the nursing staff by getting well.

Recently a trained nurse was sent into my ward with a perforated gastric ulcer, which was closed within five hours; suprapubic drainage was carried out. Her temperature remained up and the pulse was rapid. Impaired resonance at the left base led to exploration and the evacuation of clear fluid. She developed a tender area below the left costal margin, which was incised, and a left subphrenic abscess was drained, but ultimately she died.

The first of these two cases serves well as an example of what Barnard termed a right anterior intraperitoneal abscess, which is due either to perforation of the duodenum or stomach, to liver abscess, or to appendicitis. If the latter, usually the case will be of the type outlined above, where rather late operation evacuates a retrocæcal abscess. When a perforated duodenal or gastric ulcer gives rise to such an abscess usually it points in the right hypochondrium to the right of the falciform ligament; its margins are to the right and above the right costal margin, to the left the bulging falciform ligament, and below a band of rigidity and tenderness extending from the umbilicus to the right ribs where a band of omental adhesions shuts it off from the general peritoneal cavity. Gas either escapes from the stomach, or is formed in the abscess cavity, so that the centre of the dull area is tympanitic and amphoric sounds are heard over it. Similarly had the abscess in the last case I quoted been allowed to remain a few days it would have extended to the right, pushing the falsiform ligament before it, and might have pointed in the left hypochondrium as a gas-containing abscess.

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[1] Brit. Med. Jour., 1908.
[2] Guy's Hosp. Gaz., 1909.
[3] Judd: Papers of Mayo Clinic, 1915.

DIAGNOSIS.

In my experience few conditions have given me so much difficulty as the diagnosis of this condition.

History.—We have as our first guide the history. Thus a story of continued indigestion may suggest a lesion of the stomach or duodenum as the origin of the abscess, and therefore its probable location. We may have carried out an operation for the suture of a perforated duodenal ulcer and so be suspicious of infection under the right leaflet of the diaphragm. We know from X ray evidence and from actual observation during operations that injuries of the diaphragm of which operative manipulations even of the gentlest possible degree form no inconsiderable part lead to a temporary paralysis of the affected half of the muscle, just as does any inflammatory lesion in its neighbourhood. We have to assess the importance of this factor in the causation of subphrenic infection after major upper-abdomen operations such as difficult and prolonged common bile-duct operations in fat subjects or partial gastrectomies in enfeebled elderly patients. We must constantly bear the possibility of such a result of any undue trauma and must set our ingenuity to work to devise a means by which such a paralysis may be eliminated.

As I have pointed out above, the onset of formation of subphrenic infection from a subacute perforation of a gastric ulcer may be acute, whereas the post-operative variety sets in in a most insidious manner. This is not entirely accounted for by the diminished power of reaction of such patients, and it is not easy to suggest an adequate explanation. Barnard laid great stress upon a difference in the mode of onset between the intraperitoneal abscesses from perforation and the extraperitoneal collections which result from a spreading cellulitis. The former were acute, the latter much slower. My personal experience of the latter is so small that I cannot criticise his observation.

Symptoms.—The initial symptoms are: pain, usually the first, and often localised to the spot where later pus is found. It occurs in a large majority of cases, and finally is associated with deep tenderness over the same area. Vomiting may occur once or twice in the perforative type, and hiccough is a very frequent and suggestive symptom. Several times I have seen it most troublesome and persistent until the abscess has been drained adequately.

General signs.—It is upon the general signs of suppuration that we have chiefly to rely, continued or increasing pyrexia of the rocking type, continued or increasing rapidity of pulse, a dirty dry tongue, increasing anæmia, with a complexion of the muddy kind which Barnard so happily termed "the purulent complexion." Sweating is met with frequently, but there is no characteristic change in the bowels as is met with in pelvic abscesses where diarrhœa is so suggestive a sign. I have not seen rigors in uncomplicated cases, and leucocytosis, though always marked, is usually of little value, as it may be due to the antecedent condition, and therefore cannot definitely be attributed to the subphrenic abscess. At the same time, a white count should always be done as soon as the suspicion that all is not well has been aroused. It can then be repeated, probably several times, before occasion for operation arrives. If these examinations show that the white count has fallen after operation for the initial disease—for example, appendicitis—and again risen to a high level, it affords an indication of the presence of pus of no mean value. When we have the clinical picture outlined above, we have usually no difficulty in feeling sure that pus is present somewhere. The difficulty rs in locating it and, having done this, in finding it.

l signs of subphrenic abscess.—In the early stages rigidity with deep tenderness alone may be in ce, then a swelling gradually appears over which abnormal dullness may be elicited. This may be an extension of normal liver dullness downwards and to the left, but if an abscess is present between the diaphragm and liver the latter is usually not pushed downwards, so liver dullness is not increased downwards as it is with an abscess of the liver, owing to adhesions between the lower liver margin and the parietal peritoneum. For the same reason such a swelling does not move freely on respiration. If of large size the lower thorax may bulge on the affected side, and the circumference of that side may be shown with the tape measure to be increased. Should the abscess become secondarily infected with *B. coli* or other gas-producing organisms the note over the most prominent part will become tympanitic and amphoric and coin sounds may be obtained. Rarely a peritoneal friction sound may be heard over the margins of the swelling. Usually such patients are too ill for a systematic X ray examination and often for any such examination at all, but when it can be undertaken, it may elicit most valuable information by showing that the arch of the diaphragm on the affected side is unduly raised and is immobile. Sometimes the abscess may be demonstrated as a localised dark shadow.

Thoracic signs.—The early signs are those of compression of the base of the lung, which later pass into evidence of pleural effusion which is at first serous and finally becomes purulent. Thus diminished resonance, absence of breath sounds, diminished vocal resonance and tactile vocal fremitus, with possibly a pleuritic rub, may occur in an uncomplicated subphrenic abscess. In such it may be possible to map out the dull area so as to show an upper convex margin at the level of the raised diaphragm, but shortly, as happens in two-thirds of all cases, a secondary pleurisy with effusion will complicate the simple picture of subphrenic abscess. The extent upwards over which the chest signs exist may point to the presence of an effusion, as will a horizontal upper margin of the dullness and displacement of the apex beat to the side opposite to the signs will confirm this suspicion, as such displacement never occurs with an uncomplicated collection below the diaphragm.

Spontaneous Rupture of Subphrenic Abscess.

Of Barnard's 76 cases 23 ruptured into one of the thoracic or abdominal viscera, usually the stomach or bronchus. With more exact methods of diagnosis now at our disposal this is less likely to be allowed to happen as operation will be earlier undertaken, but its possibility must be borne in mind, and when it occurs before an exact diagnosis has been possible it may help to localise the abscess. Such a method of evacuation of the abscess is not to be waited for or counted upon. As in the case of Captain R., it is often difficult to decide whether the pus is coughed up or vomited up, and if the latter, to know which part of the alimentary tract it burst through—i.e., stomach, œsophagus, or duodenum. Further, such subphrenic abscesses which as soon as they become tense can evacuate themselves are exceedingly difficult to locate, as they never become large enough to produce definite signs, and as when the air-passages are involved the pus is replaced by air, the physical signs may often become indefinite or misleading.

Value of the Exploring Needle.

Whenever signs are present which indicate that pus is tracking towards the surface either in the epigastric angle or in the loin, free incision with the knife under general anæsthesia will be the safest method for the drainage, but this condition is unfortunately rare, and in obscure cases the routine use of a wide-bore needle under general anæsthesia on a definite plan has proved a great advance. In either case under a general anæsthetic, of which gas-oxygen is the best, the patient is placed on the affected side and turned three-quarters over on to the face. The use of the exploring needle is particularly indicated when we have to deal with abscesses hidden under the right cupola of the diaphragm; here the needle is introduced boldly to a full three inches and vertical to the surface, deeply through the intercostal space where the signs are most suggestive, in the posterior scapular or mid-axillary line. *If no pus is located it may be* inserted in the space above and below up to the upper margin of dullness and as low as the costal margin. *This is repeated until all the spaces over the dull area* have been explored in the nipple, mid-axillary, and posterior scapular lines. It is often difficult to determine whether the point of the needle is above or below the diaphragm; if the blood which is drawn back into the barrel of the syringe is bright and frothy it certainly comes from the lung, though darker blood may come either from the liver or from compressed lung. Again, a sense of resistance is experienced as the diaphragm is pierced, and the exposed part of the needle or the syringe will, as pointed out by Fürbringer, move with respiration when the needle has passed through the muscle. I have not noticed that temporary inflammatory paralysis of the muscle has vitiated this sign, but this possibility must be borne in mind.

May we not assume that even under normal conditions *a needle passed into the lower four spaces to the* extent of 3 inches passes through the diaphragm, and when this is raised the subphrenic space will be reached *by such a needle even two spaces higher?* When clear or turbid is withdrawn at one depth and pus still further in, the diagnosis is clear. I have no experience *of any danger through injury to vessels or viscera.* or risk of carrying infection from the chest to the abdomen by this means. If clear fluid is drawn from the chest alone, *this is aspirated by gravity through a long fine* tube. If nothing is withdrawn the patient is returned to bed; if pus is found the needle is left in situ and *another needle introduced into the space below; if pus* is found there the first needle is withdrawn, cleansed, and inserted into a still lower space. The rib to be resected will be that below the lowest space in which pus was found. In any case this must not be higher than the eighth, as above this level it is difficult to shut off the pleura by suturing *the diaphragm to the chest* wall.

GENERAL OUTLINES OF OPERATION.

Usually there is a positive indication for preference of a particular route, but if none exist the posterior transpleural thoracic route should be chosen. By considerable practice during the war very many surgeons learnt of the value of this route in abdomino-thoracic surgery. In this instance it will be assumed that pus has been found below the diaphragm, and that the needle is still in position. At least 3 inches of the rib below the space in which the needle has been inserted is resected and the diaphragm is incised, but not cut completely through for the same extent. The upper edge of the incision into the diaphragm is then carefully sutured with a continuous catgut stitch to the upper margin of the wound through the parietal pleura and intercostals so as to shut off the pleura; then the abscess may be incised freely and a large rubber tube inserted. In spite of the above precaution on at least two occasions a secondary infection of the pleura, necessitating drainage through the same wound, has ensued in my hands. If pus has been located either by incision or with a needle through the front of the chest or the anterior abdominal wall it is best to establish counter-drainage in the loin at the most convenient spot.

CONCLUSION.

It may be often that the diagnosis of subphrenic abscess is not definitely settled until pus is found and drained. As I pointed out in the case of Captain R., *even then one may be in error* as to the relation of the abscess to the diaphragm. If an abscess is found and drained below the diaphragm it may be difficult to be *sure that it is not within the liver* and that one is, in fact, draining an amœbic liver abscess. Again, the needle may enter one of the multiple abscesses which occur in suppurative pylephlebitis, but in the stage of this disease in which abscesses of any size exist the patient is much more ill, rigors are common, and jaundice is present in its later stages. A suppurating hydatid cyst may give rise to the same signs, but its nature will at once be recognised as soon as the cyst is opened.

THE VALUE OF THE QUASI-CONTINUOUS TEMPERATURE RECORD

IN THE EARLY DIAGNOSIS AND PROGNOSIS OF TUBERCULOSIS.

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REPORT TO THE MEDICAL RESEARCH COUNCIL.

SOME years ago,[1] supplementing the observations made by the late Professor Arthur Gamgee, we drew attention to the value of quasi-continuous *(half-minute) temperature records in the study of tuberculosis* and published a number of typical temperature charts taken from tuberculous patients. We had not then sufficient experience of these records to be able to determine their exact value as an aid to diagnosis and prognosis, but certain oft-recurring features appeared to us to be characteristic of the temperatures induced, not merely by the artificial introduction of tuberculin but also by the auto-inoculation that goes on during the progress of the disease in a consumptive patient. We have been able to follow up to Jan. 1st, 1921, the cases then described and have had the opportunity of noting not only which of them have done well but which of them, not responding to treatment, have gone steadily or intermittently from bad to worse. We have thus accumulated much information as to the value of these quasi-continuous temperature records *not only in diagnosis but in prognosis.* To the histories and temperature charts of the cases already recorded may now be added the experience gained from the study of a number of typical cases[2] which, of great interest in themselves, constitute a broader basis on which to found an opinion as to the value of the method.

Features in the Record of Diagnostic Value.

In our earlier paper in THE LANCET we called attention to the peculiar character of the auto-inoculation temperature curve, and pointed out how *closely* it corresponds to the post-tuberculin curve. Of its value as a diagnostic feature we had little doubt, and we were inclined to think that its value in prognosis might be almost as great, but for that opinion we had not, at the time, any very sound or sufficient basis. The features in these quasi-continuous records on which we laid stress as of diagnostic value were: (*a*) Somewhat sudden rise of the afternoon and evening temperature, not necessarily steady, but in jerks—*temporary* exacerbations—and with a general trend upwards; (*b*) continuation at a somewhat high level—above 99° F.—for 8 or 10 hours; (*c*) followed by a *rapid fall*, sometimes to a subnormal level; (*d*) during the whole day response of the temperature to agents inducing rise or fall—exercise, food, cold or warm drinks—much more readily and through a much wider range than in the healthy individual. A combination of certain of these features gave us (*e*) what we call a "plateau"—a long-continued temperature above 99°, commencing with a sudden rise and ending with a sudden and prolonged descent—which we *considered* to be diagnostic of tuberculosis; (*f*) elevations more or less marked on the plateau—these we compared to mountain peaks on a highland plateau. *Before taking* up the general consideration of the importance of these features it may be well to give an account of certain cases, *the early* histories of which have already been published, and of a number of other typical cases, the history of which affords corroborative evidence of the diagnostic and prognostic value of the quasi-continuous temperature record.

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[1] THE LANCET, 1916, i., 435.

[2] In all over 200 of these quasi-continuous 12-, 24-, and 48-hour temperature records of 68 patients have been made and analysed.

CASE 1.—This patient[6] had been kept under observation from June 11th, 1914, until September in the following year. He had passed through a sanatorium, had then been placed under domiciliary treatment for a time, and allowed to do but a certain amount of work. Put on full work the patient at once began "to do badly," for though there were fewer signs of active disease than had been present when he first came under treatment he ceased to put on weight. In September the patient was still working full time, and by the ordinary methods of clinical investigation it would appear that he was holding his own, but from a study of the continuous temperature charts it was evident that the disease was progressing. These temperature curves, we now find, may be taken as representative of those obtained from some dozens of similar cases, and appear to be associated with a progressive tuberculous process. In Fig. 22 the effect of the tuberculous condition on the temperature is characteristic. A fever giving rise to a slightly convex temperature curve extends from late afternoon until 12 midnight or later. The diurnal range of variation is somewhat greater than normal, but here the rise is gradual, as is also the fall, though with this latter are associated fluctuations altogether absent from a normal temperature curve. These fluctuations appear to be due to the disturbed sleep of the patient during the earlier hours of the night. As the disease progresses there is marked alteration in the character of the curve and its diurnal variations. In place of the gradual ascent there is a sharp rise, followed at the end of the plateau by a still more rapid fall to the normal level. On the injection of a small therapeutic dose of tuberculin a "plateau" curve develops at once, the temperature remaining at or above 99°4 for ten hours, though the greatest diurnal range is only 1·3° (Fig. 23). Three weeks later, *under similar* conditions, a similar plateau (Fig. 24) is developed, and on the following day, though the plateau is still present, the diurnal range is 2·3° (Fig. 25). All this was looked upon as indicating an unsatisfactory state of affairs as regards the progress of the disease. Four months later when, though the condition of the patient's lungs appeared to be satisfactory, he was found to be working too hard, *the patient commenced to lose weight, his temperature curve* became irregular and ran too high, and the exhibition of a therapeutic dose of tuberculin was followed by a definite "plateau" reaction.[5]

Temperature Instability a Feature of Tuberculinisation.

The instability or irregularity appears to be a marked feature of tuberculinisation, whether the result of auto-intoxication or artificially produced by "tuberculin." We have since noted that, in this as in other cases, as the disease progresses the "plateau" gradually becomes more and more characteristic, until finally we have a perfect reproduction of the curve—with its daily variations and its peaks—that results from the injection of tuberculin into a tuberculous subject, human or bovine. In the case under consideration, where from the temperature curve an unfavourable prognosis was given at a very early stage, the course of the disease was carefully observed until the final issue. Here not only was the plateau a more and more distinctive feature as the disease progressed, but finally a complete inverse temperature curve, a grave prognostic indication, was obtained some time before the patient died.

CASE 2 first came under observation in 1914.[6] The patient was at work in September and October, 1915, and temperature curves on which a steadily developing plateau was recorded were obtained at intervals.[7] Following the publication of this case several other curves were obtained, all of them, unfortunately, showing a progressive development of the plateau, with well-marked fluctuations, *high peaks, and deep* depressions. From *these* temperature indications an extremely unfavourable prognosis was argued. At that time there was neither hospital nor sanatorium accommodation sufficient for our Cambridge patients, and although the man was advised to cease work he would not or could not follow this advice, and the disease progressing he succumbed to a severe hæmorrhage some few weeks later.

CASE 5.[8]—The further study of another case (G. de R.) affords additional evidence of the prognostic value of the quasi-continuous temperature curve. With physical signs of tubercle in the apex of the right lung, and marked dullness and many crepitations at the left base, the patient was transferred to the colony at Little Abington. Up to November, 1915, living an open-air life, he put on weight, and the disease became quiescent; the sputum, large in amount and swarming with bacilli when the patient was first seen, steadily became less abundant, and finally was almost negligible in quantity. The note over both lungs improved; there was a gain of 3½ st. in weight and the chest measurement increased. When the patient was beginning to improve several continuous temperature records were obtained.[9] The temperature was then somewhat high, especially between 10 A.M. and 9 P.M., rising to 99·5° at 6.15 P.M. and then falling steadily until the early morning, but was also very unstable, a glass of cold milk causing a rapid and definite depression. This patient was under continuous treatment at the colony for a period of two and a half years, some dozen records being taken during that period. He engaged in fairly strenuous work and his general condition remained so good that, at the end of the European war, on discharge from the colony he was able to return to Belgium, where he attempted to resume work. He found, however, that he was able to do a limited amount of work only, was easily fatigued, and soon broke down He was then admitted to a French sanatorium, where, under treatment, he again improved slightly. He has had several attacks of hæmoptysis, there is now marked loss of weight, and the disease is still progressing. The disease was undoubtedly retarded during his stay in the colony, but was immediately roused to activity on his return to normal life. While a refugee in Cambridgeshire he was kept under strict observation and during the whole time the disease continued to progress, though slowly. He was last heard from on Jan. 5th, 1921, when he was in fair health.

[Since the above was in type the expected announcement of the death of this patient has been received.]

Plateau with Peaks and Depressions.

The accompanying additional charts were taken from this case on Feb. 3rd and 4th, 1917. In the first (Fig. 1) the plateau is well developed, the temperature remaining at or near 100° from 3 o'clock in the afternoon until nearly 8 o'clock in the evening. There is then a gradual fall till 5 A.M., after which comes a steady rise. No very marked irregularities, peaks, or depressions appear in this record, though it is by no means so regular as a normal curve, seeming to be fairly easily affected by external influences. On the following day—at 2 P.M.—a minute dose (1/25,000 mg.) of bacillary emulsion was injected subcutaneously, and although the temperature rises no higher than on the previous day, the character of the curve is altered (Fig. 2). The plateau is more marked, the rise commencing at 2.30 P.M., and is maintained until 11 P.M., when a sudden fall is associated with a severe night sweat. Here almost the lowest point of the curve is reached between 1 and 2 A.M., after which comes a slight rise, but the lowest point (97·6°) is reached at 6 A.M. Between 9 and 10 (owing to displacement of the thermometer before micturition the curve is interrupted between 7 and 8 o'clock) the temperature is again nearly 100°, and continues between 99° and 100° until 11 P.M. In this curve steep depressions and peaks are very prominent features, and although *the* rapid fall between 7 and 8 A.M. is probably due to *slight* displacement of the thermometer, the fall from the P.M. *temperature and the rapid* rise *after the* A.M. temperature are very characteristic of a somewhat active and progressive tuberculous process, that can be held in check or delayed only by the exercise of the greatest care.

CASE 6 (M. S.) was admitted to Bourn Colony, Nov. 16th, 1916, with a temperature of 103° F., pulse 100, marked breathlessness, and great loss of weight. The patient, an orderly at a military hospital, was one of six men who had slept in bunks in one small room.[10] During his stay at the colony the patient's condition improved considerably, the signs of actively progressing disease in the right upper lobe gradually subsided, and the man was placed upon graduated work. From time to time a slight rise in the evening temperature was determined by the ordinary mercurial thermometer. A quasi-continuous temperature record extending over 48 hours was taken only when there appeared to be some indication—slight rise in temperature or complaint of fatigue after work—that such was necessary. During the whole time this patient was under observation little clinical evidence as to the course of the disease could be obtained, the physical signs giving no indication of any increased activity. After admission the patient gained weight for a time, then his weight became, and remained, stationary for several months. After 12 months' treatment and training at the colony the patient was ordered to do some little light work on the land, partly with the object of ascertaining how far a patient in this condition could perform such work, and partly with a view to testing the efficiency of the system of the After-Care Association, and arrangements were made for the reception of the patient on a farm. Hours of work, which did not exceed six a day, were planned out and a start was made. For a time all went well. Clinically the patient's condition remained much the same, but gradually, as there was some loss of weight, it was concluded that there was extension of the disease and the patient was readmitted to the Papworth Colony, where more exact observations could be made and further temperature records taken.

The first of these temperature curves (Fig. 3), obtained six days after the return of the patient to the colony, at once afforded evidence that the disease was progressing. Early in the day the temperature rose to 99° and continued above that point for 12½ hours—to 10.15 P.M.; then followed a broken, irregular fall to 98° at 6.30. A second temperature curve (Fig. 4), taken 24 days later, was equally discouraging. The plateau, extending from 12.30 P.M. to 11.45 A.M., with a break of two hours, during which the temperature fell to 98·7°, was imperfect, but the "toothed," "peaked," or "wavy" character of the curve was very marked. It was evident that here auto-inoculation was responsible for the "temperature," for when a minute dose of bacillary emulsion was injected no greater reaction was obtained, though the

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[5] Figs. 22 to 25, loc. cit., pp. 496-497.

ll temperatures are "rectal," and are recorded in degrees nheit.

[6] Loc. cit., Fig. 26, p. 497.

cit., p. 497.

[7] Loc. cit., Figs. 27, 28, 29, pp. 497-498.

[8] Loc. cit., p. 498.

[9] Loc. cit., Fig. 34, p. 499.

[10] Subsequently, though at different dates, all the other five were admitted to the colony, each with some evidence of tuberculous disease.

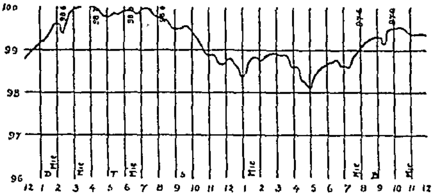

FIG. 1.—G. de R., aged 23. Record taken Feb. 3rd-4th, 1917. This shows a ten hour "plateau," with no well-marked peaks. The diurnal range of temperature is only 2°, but the curve indicates the presence of a somewhat active tuberculous process. This and the following quasi-continuous records are all taken with the thermometer in the rectum. *The figures at the upper margin of the diagrams indicate the mouth temperatures.* The temperatures are given from noon to noon in degrees Fahrenheit. B = breakfast; D = dinner; T = tea; S = supper; MIC = micturated.

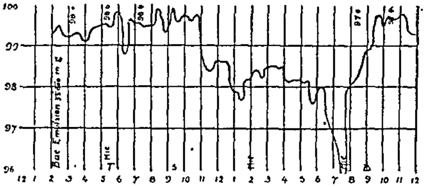

FIG. 2.—G. de R. Record taken Feb. 4th-5th, 1917, after the injection of 1/25,000 mg. *bacillary emulsion. There is little alteration* in the period over which the plateau extends, but the temperature is less stable, the peaks are more marked, and at the end of the plateau there is a sudden fall, synchronous with the development of a night sweat.

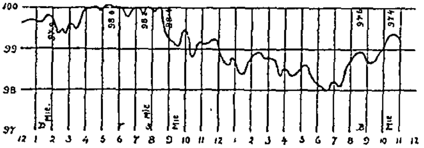

FIG. 3.—M. S., aged 18. Record made Jan. 25th-26th, 1917. Shows a plateau extending over a period of (more than) eight and a half hours. There is also some irregularity of the curve, but there are, *as yet, no marked "peaks." The diurnal range is only 2° so long* as the patient is confined to bed. The curve is that associated with a progressing tuberculosis and unfavourable prognosis.

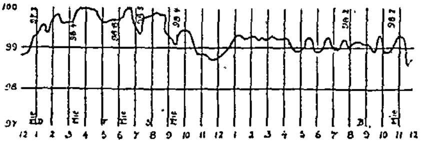

FIG. 4.—Another record from M. S. three weeks later, Feb. 19th-20th, 1917, in which the plateau is (eight and three-quarter hours) marked, peaks are more prominent, and the diurnal variation is only 1·3°, but the general level is very high. There is only slight remission during the night and morning hours.

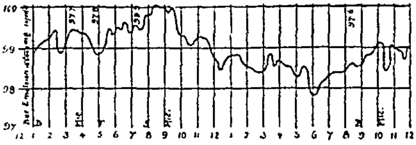

FIG. 5.—Another record from M. S. taken Feb. 20th-21st, 1917, after *24 hours' complete rest and the injection of 1/100,000 mg. bacillary* emulsion. The plateau is still marked, though at two periods the temperature falls a couple of points below 99°. The diurnal variation is 2·2°. *In all three records* the minimal temperature is considerably higher than normal.

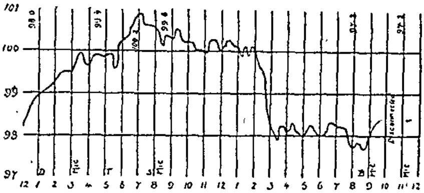

FIG. 6.—*Another record from M. S. made on April 11th-12th. Here* the disease is progressing rapidly, as evidenced by high temperature, broad plateau, well-marked peaks, and sudden fall where night sweat occurs. *Disease very advanced and actively* progressing. Diurnal variation 3°.

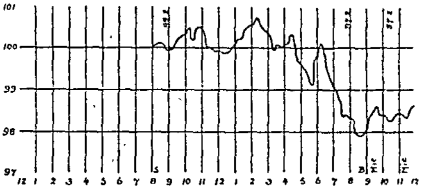

FIG. 7.—Record from M. S. made five days later, April 16th-17th, 1917, with plateau prolonged to later morning hours, well-*marked peaks, and depressions and sudden fall, with late night* sweat. Diurnal variation, 2·9°. Inverse temperature; patient nearing end.

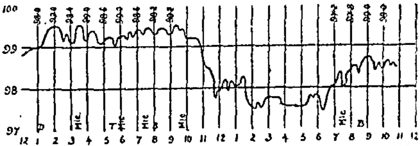

FIG. 8.—W. T., aged 15. Record made June 10th-11th, 1917. Plateau nine and a half hours, with well-marked peaks and rapid *night-sweat fall. Diurnal variation 2°,* and some instability throughout the day. Prognosis unfavourable.

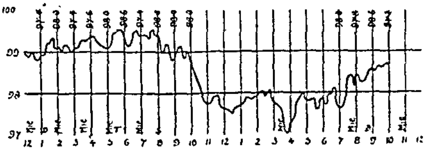

FIG. 9.—A second record from W. T., made June 13th-14th, 1917. Plateau seven hours, with night-sweat fall at 10 P.M. Curve very irregular throughout, easily affected. Diurnal range of variation 2·5°.

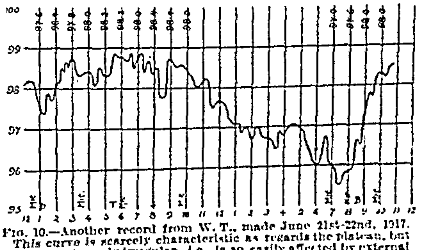

FIG. 10.—Another record from W. T., made June 21st-22nd, 1917. This curve is scarcely characteristic as regards the plateau, but it is so extremely irregular—i.e., is so easily affected by external influences, meals, micturition, &c., and the diurnal range is so great (3·3°), that without the plateau this curve must be looked upon as indicative of a progressing tuberculosis.

curve (Fig. 5) became slightly more irregular. The plateau in this instance extended over a period of 11 hours, after which the temperature fell slightly and irregularly from 99·3° at 11.15 P.M. to 97·8° at 6 A.M.

On April 11th–12th further evidence of the progressive nature of the disease was obtained (Fig. 6) in the plateau—on which well-marked peaks developed—followed by a rapid fall during a night sweat and an irregular line marking long continued low temperature. There is no rise between 3.30 and 9 A.M., probably because the patient is asleep. The plateau period (temperature above 99°) lasts for 13 hours—1 P.M. to 2 A.M. The highest point is reached, 100·9, at 7.15 P.M. The sudden fall from 101·1° to 98·9° between 2 and 3.3 A.M. is very typical of a night sweat fall. The whole curve is curiously toothed and the chart again resembles very closely that of a tuberculin reaction temperature of a bovine suffering from extensive progressive tuberculosis. On April 16th–17th, 1917, an "inverse" temperature (Fig. 7) makes its appearance. The patient's temperature was high, 100° at 8 P.M., when the tracing was commenced. The line followed a regular plateau course, at or above 100°, from 8 P.M. to 7 A.M., at 2.20 A.M. running up to 100·7°. At 6.15 A.M., after a "night sweat," there was a sudden fall to 97·9° between 8 and 9 A.M.; this was followed by a rise to 99·4° at 6 o'clock on the afternoon of the 17th.

Temperature Record More Trustworthy than Signs and Symptoms.

We are convinced from a study of the series of quasi-continuous temperature records here figured that considerably more reliance is to be placed on them than on physical signs and clinical symptoms however accurately noted and carefully interpreted. The instability of the temperature, especially when a plateau is developed must, apparently, be accepted as a reliable indication of increased activity of the disease, whether physical signs can be made out or not. These records, it is true, were made only after some special indication of the necessity for so doing had arisen, but in each instance the special curve appears to result from auto-intoxication or auto-inoculation. This, however, is exactly the factor we wish to determine, and here the records indicate most clearly the successive doses of tuberculin which the patient has, from time to time, administered to himself through the work or exercise prescribed for him. On readmission to the colony some improvement in the general condition of M. S. took place, but from such time onwards the clinical signs began to point to an extension of the disease, the temperature records continuing to substantiate our deductions from the clinical signs. Again and again "tuberculin temperatures" were recorded, highly irregular plateaus made their appearance and, finally, a true inverse temperature curve was obtained. The plateau had taken complete control of the range of temperature and, as in other fatal cases, gave an indication of the approach of the end, many weeks—nay months—before the final issue was determined, April 19th, 1919. The case is interesting from the fact that the period of observation extended throughout the whole course of the disease—some years; and also that quite early in the disease the character of the continuous temperature record enabled us to make not only a diagnosis as to the extent of the disease but to anticipate its probable course, for it has been found that in all records of a number of fatal cases of tuberculosis collected during the past eight years the persistence of a plateau temperature, especially when on this are superposed marked fluctuations, is a sure indication of active disease, whether this can be diagnosed by means of the stethoscope or not.

CASE 7 (W. T.) was admitted to Bourn Colony, May 11th, 1917, as an early "contact case" of pulmonary tuberculosis; not only has his mother since died from pulmonary tuberculosis, but a sister has recently succumbed to the same disease. In this patient the consumption early assumed a very virulent form, for although the activity of the process was retarded by rest and treatment—the patient gained 17½ lb. in 2½ months—the disease again began to progress as soon as the patient was allowed to work anything beyond very short hours. Temperature records were taken during the 2½ months between 11/5/17 and 31/8/17, at the time the patient was putting on weight. Eighteen month later, February, 1919, the patient died.

In Fig. 8 we have the first of a series of curves showing, in the continued and regular level of the "plateau" between 2 P.M. and 10 P.M., the effects of the auto-inoculation of the patient, followed by a steep fall of a degree and a half within two hours, after which, at 6.20 A.M., the lowest point is attained. A similar record was obtained three days later and again ten days later (Fig. 9). Instead of the usual diurnal variations, we have here a prolonged period during which the temperature remains at almost one level, broken only by sharp peaks and depressions such as are so commonly met with when tuberculin is injected into tuberculous cattle. The A.M. temperature usually falls (Fig. 10) and behaves very much as does the normal temperature, but in a record taken June 24th–25th the difference between the A.M. temperature and the P.M. temperature is less than normal (Fig. 11).

CASE N. was admitted to Bourn Colony on April 21st, 1917, with definite signs of extensive tuberculous disease of the lungs and peritoneum. The patient's whole physique was flabby and his general condition very poor. After keeping him under observation for a month it was decided, as accommodation was then limited, to discharge him from the colony, and on May 25th, 1917, he was sent home and placed under domiciliary treatment. He was dead within six months.

Curve of Rapidly Progressing Tuberculosis.

The temperature curves from this case are very characteristic and of great interest. Taken 12 and 13 days after admission, they indicate a rapidly progressing tuberculosis. Though the temperature only once reached 100°, the plateau (above 99°, Fig. 12) extended for 11 hours during the first 24 hours, May 3rd and 4th, and 8 hours on the following day. The temperature then fell to subnormal, 96·2° at 5.30 P.M. on the first day and 96° on the following day at 8.30. Here the plateau, the range of the diurnal variation, 5·8° on May 3rd–4th and 3·6° on May 4th–5th (Fig. 13), combined with the extreme irregularity of the curve left no doubt as to the active and progressive character of the tuberculous process.

CASE S. D. was admitted Dec. 23rd, 1916, in a very advanced stage of pulmonary tuberculosis, both lungs being considerably involved. So ill was the patient that he was confined to bed during the whole of his stay at the Bourn Colony, suffering from severe night sweats, commencing when the night temperatures were at the highest. He remained under observation in the colony for about a month only, and died shortly after discharge—Feb. 25th, 1917.

In the three records here given we have ample evidence of the extreme activity of the disease in its later stages—five or six weeks and then four weeks before the death of the patient. In Fig. 14 it is seen that the temperature rises rapidly, but very irregularly, from 98·4° at noon to 100·9° at 7.15 P.M. It then falls, with a severe "night sweat," to 100° at 9.30, from which point there is a steady rise to 103·7° at 4.30 A.M., giving a diurnal range of 5·3°, followed by a somewhat intermittent fall to 99·7° at 10.40 A.M. This complete inversion of the usual curve is, as already noted, very characteristic of the late stage of a rapidly progressing pulmonary tuberculosis. The second record (Fig. 15), made 11 days later, is especially interesting in that not only is there a high temperature, an irregular curve, a wide range, and a very rapid fall after a night sweat at 3 A.M., but a very high plateau (over 102°) extending between the hours 2 P.M. and 5 A.M., apparently the result of severe auto-inoculation. The fall from the highest point of the plateau at 3 A.M. is both rapid and irregular. Here we have a semi-inverse temperature extending from 101·3° at 12 noon to 103·6° at 3 A.M. and falling with breaks to 99·3° at 11 A.M. On the following day a curve (Fig. 16) of a somewhat different type, but still very characteristic, is obtained. Commencing at 98·2° at 1 P.M. there is a continuous and regular rise to 101·5° at 6 P.M.; after this the rise becomes irregular, with marked dentations, until at 12.30 A.M. it reaches 103·6°. At 1.30 A.M. a night sweat commences and the temperature begins to fall, though slowly, reaching 103° at 2–4 A.M., 102·2° at 5 A.M., 102° at 7 A.M., 100·3° at 9.30 A.M., and 100° at 12 noon. In 12½ hours there is a rise of 5·6°, followed by a fall of 3·8° in 10½ hours, the temperature remaining at or over 100·3° for a period of 21½ hours. This curve corresponds very closely to the post-tuberculin curve obtained from a calf in an advanced stage of tuberculosis.

CASE L. P. was admitted to Bourn Colony June 26th, 1916, as a case to be kept under observation. Two months previously he had suffered from a severe attack of influenza, but when admitted was quite convalescent. Owing, however, to the *length of time* that the influenza symptoms had persisted it was feared by his medical attendant that the patient might have developed pulmonary tuberculosis. During his stay at the colony he had no cough and no rise of temperature, though frequent records were taken. There was a gain of 9½ lb. weight, the patient reaching his normal weight in a very short time. He was able to do a full day's work without the slightest fatigue, and was soon discharged fit to continue his trade of cycle repairing. Since leaving the colony he has not had a day's illness, and at the present date (5/1/21) he is well and strong and doing a full day's work.

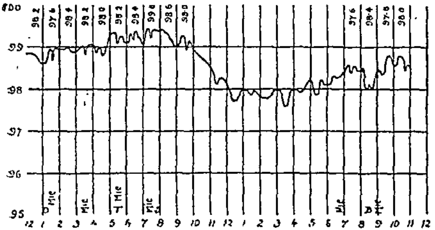

FIG. 11.—A fourth record from W. T., made June 24th-25th, 1917. Nine hours' plateau, with many peaks and depressions followed by a night-sweat fall. Diurnal range 1·8°, but high mean.

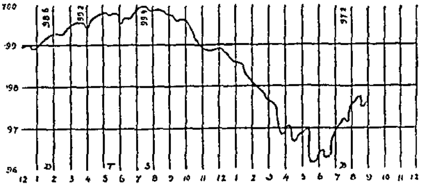

FIG. 12.—N., aged 20. Record made May 3rd-4th, 1917. Plateau eleven hours, but with no very marked peaks or depressions. The fall from 10 P.M. is very steady and regular until 3.30 A.M., when period of profound sleep is past. Diurnal range 3·8°. Prognosis very unfavourable.

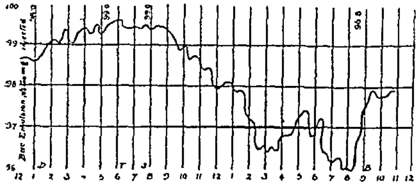

FIG. 13.—A second record from N., made May 4th-5th, 1917, after the injection 1/100,000 mg. bacillary emulsion. Seven and three-quarter hour plateau, irregular curve, early morning sweating, with rapid fall of temperature between 1.30 and 2.30 A.M. Diurnal range 3·6°. Here the natural tuberculinisation is so great that the addition of the comparatively small amount of bacillary emulsion affects the curve but slightly.

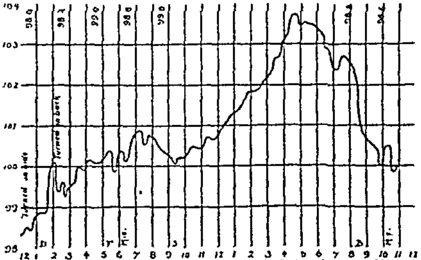

FIG. 14.—S. D., aged 25. Record made Feb. 2nd-3rd, 1917. Characteristic "inverse temperature." Prognosis very bad.

A Normal Temperature Record.

In the record (Fig. 17), taken from this patient at the Pathological Laboratories on June 20th, 1916, before he was admitted to Bourn, we have a characteristically normal temperature curve. There is no plateau and little irregularity of the curve, and although the diurnal range is nearly 2° it is obvious that no auto-inoculation effects are present. To further test the matter a diagnostic dose of bacillary emulsion was injected at 12 noon on June 21st. This *gave rise to no*

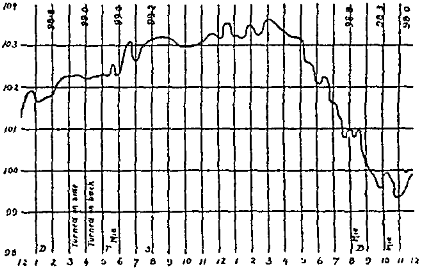

FIG. 15.—A second record from S. D. 11 days later, Feb. 13th-14th, 1917. Even though temperature runs between 93·3° to 103·6° during the 24 hours, the plateau, with peaks and depressions, still persists. The movement of the plateau to the right is here very characteristic of the "inverse" or "half inverse" temperature.

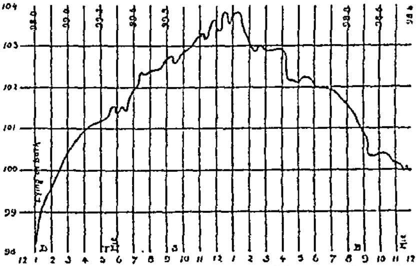

FIG. 16.—Another record from S. D. resembling very closely the post-tuberculin curve taken from a calf in a very advanced stage of tuberculosis. *Diurnal range, peaks, and depressions well marked.* Diurnal range 5·6°.

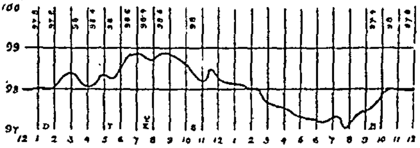

FIG. 17.—L. P. Admitted as doubtful case of post-influenzal tuberculosis (?) Record taken June 20th-21st, 1916. A "normal" temperature curve. *Regular curve with normal* diurnal range and variations with no exaggerated peaks or depressions. Diurnal range 1·8°.

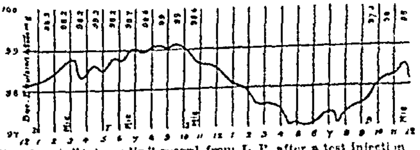

FIG. 18.—A "tuberculin" record from L. P. after a test injection of 1/100,000 mg. of bacterial emulsion. No plateau, merely a very slight and temporary rise of about three points. Still a "normal" curve in all respects. Diurnal range 2·1°. Diagn [illegible] tuberculous," afterwards confirmed.

plateau temperature (Fig. 18); the fall from the highest point at 9.30 to the lowest at 5.30 A.M. is well graded, the rise of the A.M. temperature is equally gradual and steady, and there is little or no exaggeration of the "teeth" of the curve, which, even after the injection, shows nothing but an immediate slight rise of 0·3°. The whole curve undoubtedly justifies a negative diagnosis —absence of any tuberculous process.

CASE K. S.—This patient, a scientific instrument maker, the brother of M. S. (Case 6), was examined in December, 1916, as a "contact" of his brother, for though he had not been working with him at the Military Hospital, he had shared a room with him at their own home. The general appearance of the patient was far from robust. He was thin and not well developed, his frame being considerably slighter though more wiry than that of his brother; indeed, he looked the more delicate of the two. He protested, however, that he was "quite well." In the chest there were no physical signs, and no definite evidence of pulmonary mischief. It was thought, however, that here was a suitable case for observation, especially as there was a strong probability that infection might have taken place. This, coupled with the delicate frame of the patient, made him a suitable subject for a control observation, and he was sent to the colony, where for 5½ months he was kept under close inspection in surroundings and under conditions similar to those in which his brother was living. Quasi-continuous temperature records were made at intervals. During the above period he gained 16¾ lb. in weight, and at the end of it he returned to his work with the Cambridge Scientific Instrument Company, coming to the dispensary for examination from time to time. No signs of tuberculous disease have ever been found, and at the present date the man enjoys good health and is doing a full day's work.

On Jan. 23rd–24th, 1917, the temperature of the patient running about 99° from 12 noon until 7.15 P.M., a small dose (1/100,000 mg.) of bacillary emulsion was injected just before 8 P.M. This was followed (Fig. 19) by a slight rise to 99·7° at 8 P.M., and then by a steady fall to 99° at 11.50 P.M., and by a further fall, following a normal line until 2.45 A.M., when the lowest point, 97·3°, was reached. Then began a rise, at first slow until 7 A.M., and then more rapid until 11 A.M., when 99·7° was reached. On Feb. 7th–8th 1917, in the same case (Fig. 20), the temperature, 98·2° at 12 noon, rose at 2.30 P.M. to 99°, reaching 99·9° at 6 P.M. Then followed a fall to the lowest point reached, 96·4°, at 12.15 A.M., followed by a slight rise to 97·3° at 1 A.M., a fall to 96·8° at 4 A.M., and an irregular rise to 99·7° at 11 A.M. It will be noted that here there is no continued "plateau," and that although the curve is irregular it is by no means characteristically "tuberculous" in any other respect. In a second group of curves any well-defined plateau is still absent, for although the temperature on Feb. 24th–25th (Fig. 21) runs above 99° for nearly ten hours between 12 noon and 12 midnight, it twice falls below that level—at 5 o'clock in the afternoon and between 9.30 P.M. and 10.45 P.M. At no time does it rise beyond 99·7°, and during the greater part of the period it is below 99·3°. Between 12.30 A.M. and 1.15 A.M. there is a fall of 0·7°., the temperature then going down steadily until 7 A.M., when it reaches 97·9°, and then rises equally steadily to 99·6° at noon. With the object of confirming or correcting these observations another temperature record was taken on April 2nd–3rd, 1917. Here, again (Fig. 22), no plateau is seen; the rectal temperature does not continue above 99° for more than six hours; 98·8° at 12 noon, 99° at 2 P.M., it reaches the highest point, 99·6°, at 6.30 P.M. By 8 P.M. it had fallen to 99°, at 10 P.M. to 98·3°, and then, with slight intermissions, to 96·8° at 5.45 A.M. and 96·6° at 8 A.M., after which there is a steady rise to 98·6° at noon. In the afternoon, between 3 and 4 o'clock, the injection of 1 mg. of old tuberculin was followed by no tuberculin reaction (Fig. 23). There was a slight—practically normal—rise of temperature to 99·5°, followed by a steady, though irregular, fall to 97·6° at 11.20 P.M. and a further fall to 96·9° at A.M., after which the temperature began to rise, and at noon had reached 98·7°. During the whole period none of the characters of a true tuberculin temperature were noted. The records obtained from this case, K. S., a non-tuberculous patient, served as admirable controls for comparison with those of his brother, M. S., a markedly tuberculous patient. Both had been and were observed under exactly similar conditions. All records were taken at similar intervals, and external rs, diet, temperature (summer and winter) were ical.

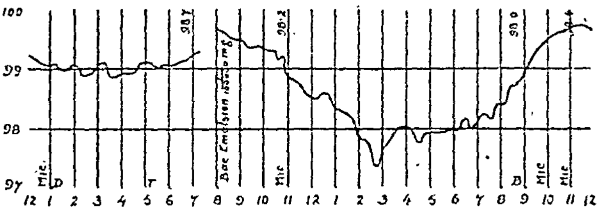

FIG. 19.—K. S., aged 20. Record made Jan. 23rd–24th, 1917. A contact case, brother of M. S. (Figs. 3–7). Tested with 1/100,000 mg. bacillary emulsion. Diagnosis doubtful.

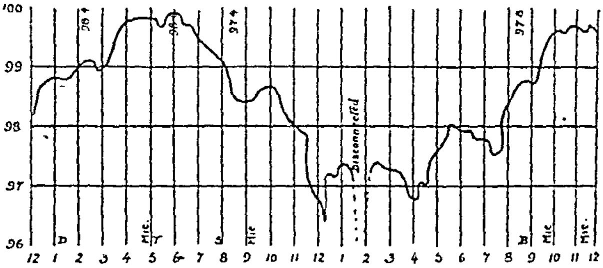

FIG. 20.—Record from same case (K. S.), Feb. 7th–8th, 1917. Plateau only four and a half hours, and curve very steady and regular. Diagnosis still "doubtful, but, if tuberculous, prognosis favourable."

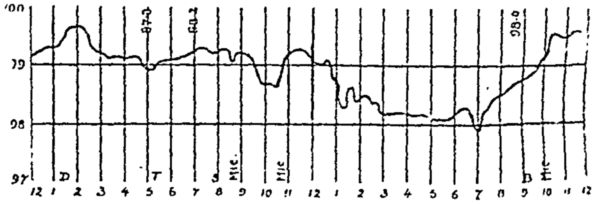

FIG. 21.—Record from same case (K. S.), Feb. 24th–25th, 1917. Morning temperature rather high. Diurnal range 1·7°. Plateau (?) but temperature is steady and not much affected by external influences. Diagnosis still "doubtful, but, if tuberculous, prognosis good."

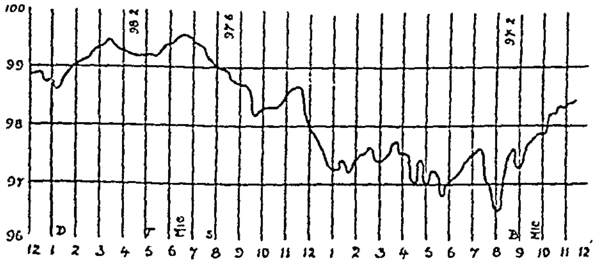

FIG. 22.—Record from same case (K. S.) five weeks later, April 2nd–3rd, 1917. Plateau contracted to seven hours. No marked peaks or depressions. Irregularities in the curve occur only when patient is restless or awake. No night sweat with early morning fall. Diurnal range 3°.

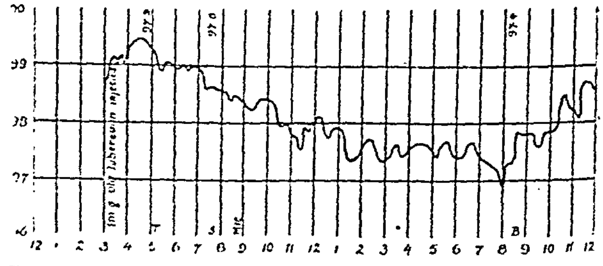

FIG. 23.—Test record from same case (K. S.), April 2nd–4th, 1917, after injection of a test dose of bacillary emulsion 1/100,000 mg. No plateau, curve somewhat more irregular than usual, but the curve now follows quite normal lines. Diurnal range 2·6°. Diagnosis: No tuberculosis.

The Advent of Thermometry.

Fever or pyrexia has long been associated with various forms of pulmonary consumption and tuberculosis, but with the advent of thermometry it assumed a special importance. Aitken,[11] following Wunderlich,[12] drew attention to the fact that in tuberculosis, especially in its acute form, the persistence of a uniformly high temperature, quite apart from other signs, is sufficient indication that there has been no arrest in the progress of the disease. Aitken, however, realised the difficulty of making a definite diagnosis or prognosis on a single observation. In a series of unsigned articles dealing with Wunderlich's thermometrical work[13] the importance of a rise of temperature in tuberculous conditions —e.g., "while tubercle is being deposited in any of the organs of the body the temperature of the patient is preternaturally raised"—is strongly insisted upon, this rise being "a measure of the rapidity with which tubercle is being deposited in any of the organs of the body." Again, in 1860 Ringer and Rickards[14] demonstrated that the temperature of the body is always preternaturally elevated, while tubercle is being deposited in any of its organs. They hold, moreover, that if there be a chronic elevation of the temperature, and this be not due to rheumatism, ague, suppuration, or chronic induration of the lung, it must be looked upon as being due to a tuberculous deposit in the body. With the advent of the tubercle bacillus temperature records became of still greater importance, especially as bearing on the progress of the disease.

In 1893 J. Kingston Fowler[15] made a valuable contribution to our knowledge of this subject, drawing attention to the indications as to the progress and activity of the tuberculous process offered by the degree and type of pyrexia. He pointed out that the "tuberculosis" daily temperature curve is usually characterised by pyrexia commencing in the afternoon, gradually increasing to a maximum at 8 or 10 P.M., and then falling continuously until the early morning, when the thermometer may register one, two, or even three degrees below normal. He admits that this type of pyrexia is not confined to tuberculous disease, although it certainly occurs in connexion with it with special frequency, *its presence often first indicating the real nature of a doubtful case.* He is of opinion that no satisfactory explanation of this pyrexia has ever been given, although "when occurring in a case of pulmonary tuberculosis with a rapid disintegration of the lung, it is generally ascribed to septic absorption," though a similar rise in cases of tuberculous pleurisy and tuberculous peritonitis may be met with. He looks upon this fever as the "expression" of an attempt on the part of the organism to deal with and destroy the product of the *Bacillus tuberculosis*, or of "a direct effect on the heat-regulating centres of the absorption of the toxic material ...... a sudden increase in the area of lung affected, or an accession of activity of the morbid process without definite signs of extension, is almost invariably marked by the occurrence or increase of pyrexia."[16]

A moderate rise with a distinct morning fall "indicates a progress of infiltration, with foci of softening, or, again, when the regularity of the evening rise and the morning fall is disturbed in any way; as when there is a sudden increase in the evening fever associated with a less marked morning remission, or when, on successive days, the lowest point touched gradually recedes from the base-line and regularity is replaced by marked variability, we are rarely wrong in concluding that an extension of the morbid process has occurred, and conversely it is scarcely necessary to state that between such periods of pyrexia there may be long intervals marked by absence of fever during which there is either partial or complete arrest of the morbid process."[17]

"Normal" and "Inverse" Types of Pyrexia.

He notes, too, that in fibroid tuberculosis, a chronic condition in which tuberculous foci, even when present, are isolated, the disease is sometimes "characterised by hypopyrexia which may persist almost throughout the case even during periods of extension of the disease within the lungs,"[18] the temperature in certain of these cases never rising above 98·4° F. In an equally exhaustive paper, Dr. S. Vere Pearson[19] records a number of observations of great interest and value. He divides the temperature met with in his cases of tuberculosis into four groups, for each of which he constructs a curve; one for a type of temperature which he speaks of as "normal," a second as "half-normal," a third as "half-inverse," and a fourth as "inverse." He maintains that if a sufficiently large number of cases of pulmonary tuberculosis be studied, examples will be found coinciding with, or approximating to, one or other of the following types: (i.) the lowest temperature is met with at 12 noon instead of first thing in the morning; (ii.) the highest temperature is reached at 9.45 P.M. instead of 6.45 P.M.; and (iii.) an entirely erratic type of temperature, sometimes inverse, sometimes highest at noon and sometimes lowest at noon. The third of these groups he looks upon as indicating a bad prognosis, the late high temperature (ii.) as being of less grave significance and (i.) of least grave significance.

Dr. Pearson was evidently confronted with the same difficulty that early presented itself to us during the course of our work—the difficulty of determining the early morning temperature of his patient, a difficulty which led us to search for the *normal diurnal variation.* We then found that temperature is, to a certain extent, even in the normal individual, a matter of custom and habit, but that, speaking generally, the lowest temperature is usually recorded when the bodily and functional activities of the individual are at their lowest ebb, and if, for any reason whatever, these have been subject to excessive stimulation or have been compelled to pass through an abnormal cycle there may be, during the period of exhaustion, a lower or the lowest temperature at a period other than that at which it is usually met with under normal conditions. It has been generally accepted that the early morning temperature of a patient with quiescent or healed tuberculosis is lower than that of a healthy person, and that the rectal temperature after recovery from a relapse may be several points lower than the temperature met with, as a rule, after recovery from the primary trouble. Sometimes it is the morning temperature alone that is lower; sometimes *all the rest-temperatures are lower*—indeed, Vere Pearson lays stress on the small excursion that occurs after a return to health, but we are inclined to the opinion that no such restriction of the excursion may take place and that the mistake involved has arisen because after rest and treatment the "minimum" temperature *is usually recorded after the morning rise has commenced.* No definite and reliable temperature curve can be built up on observations taken at fixed times, even when taken every four hours, and certainly not when taken only four times a day.

Healthy Diurnal Variation and Range.

When we first took up our investigations on the temperature of the animal body we long remained in considerable doubt as to what should be looked upon as a normal temperature and what its normal diurnal variations and range. Most of the earlier observers, finding themselves confronted with the same difficulty, made efforts, in many instances very successful efforts, to obtain information on these points, and some have recognised the relative movements of the several temperature points, noting that under certain conditions the highest point might be attained an hour or two earlier or an hour or two later than usual in the evening and, similarly, the lowest point an hour or two earlier or later in the morning. In spite of this we find that the times at which temperatures are taken are usually "fixed." Consequently the highest and lowest points are frequently missed, and deviations from the normal indicative of altered conditions, remain unobserved.

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[11] Science and Practice of Medicine, second edition, 1863; third edition, 1864, vol. i., pp. 32–63.

[12] Das Verhalten der Eigenwärme in Krankheiten, Leipzig, 1868, Trans. New Syd. Soc., 1871.

[13] Medical Times and Gazette, 1866, vol. i., pp. 177, 201, 228, 311, 394, 418, 666.

[14] Ibid., 1866, vol. i., p. 250.

[15] The Varieties of Pulmonary Tuberculosis, Practitioner, 1893, vol. ii., p. 256, et seq.

[16] Loc. cit., p. 260.

[17] Loc. cit. p. 262.

[18] Loc. cit., p. 268.

[19] The Temperature as a *Guide to the* Treatment and Prognosis of Phthisis, THE LANCET, 1909, ii., 852. At the time the part of our first paper dealing with clinical cases was written (THE LANCET, 1916, i., 496, et seq.) we had, owing to war conditions, no access to much of the literature of the subject. We have since read Dr. Pearson's article in which he gives his observations on the fever of phthisis and describes most fully an erratic type of temperature which corresponds very closely to the fluctuating temperatures of our records.

In his paper Vere Pearson sets up a somewhat arbitrary standard which, however, in the absence of continuous records, probably affords a good "working rule"; he says that fever is present when the morning temperature reading is above 98°, the evening record above 99·4°, and that a call for care and rest is then indicated. "The heightening evening temperature," he says, "may be the indication of the slight remains of activity, but a raised morning temperature means more than this."

To the series of normal temperature curves already published[20] we now add others; two (Figs. 16 and 17), obtained from a patient who, after an attack of influenza, was kept under observation as a suspected case of pulmonary tuberculosis; and five others from a "contact" who never developed tuberculosis (Figs. 18–22). In the former case the highest temperature attained is between 7 and 9 P.M., 98·8° on the one day, and between 7 and 10 P.M., 99° and 99·1° at 7.45 A.M. on the first day, and 97·1° at 4.30 A.M. the next day. The injection of a dose of bacillary emulsion causes a rise of only 0·2° at the highest point, though there appears to be a slightly higher temperature for a period of eight hours. There is no sudden rise at any point, the gradient of the fall is very gentle, no "plateau" is developed, and the irregularities characteristic of a tuberculin curve are absent.

Time of Highest and Lowest Daily Reading.

In the healthy individual any temperature of 98° or below has been accepted as a normal morning reading. We should place the figure for a rectal temperature nearer 97°, but it is evident, from a study of the various records of healthy individuals of different ages, that even in the same person the minimum reading varies on different days at the same hours in the morning even under similar conditions, except as regards the period at which the individual is enjoying his most profound sleep, the time at which all the bodily functions and activities are most in abeyance. It must, of course, be borne in mind that as a rule whilst the quasi-continuous records are being taken the patient is confined to bed, and that he is only kept in bed because there is need for rest during the course of treatment. The measure of rest, however, complete or incomplete, can be accurately determined by a study of the curves obtained.

It is obvious, from what has been stated above, that the difficulty of determining the exact time at which the temperature should be taken is completely eliminated by the adoption of the continuous or quasi-continuous method. Vere Pearson draws attention to the fact that the lowest temperature for the 24 hours, not only in the healthy individual, but in most cases of tuberculosis in which the disease is not active, occurs between the hours of 1 and 4 A.M. Our experience enables us to agree with this, except that this lowest point may be reached as much as three or four hours later. Again, although we are in *general* agreement with his statement that the highest daily reading is usually between 3 P.M. and 8 P.M., our experience is that the highest daily reading is sometimes earlier than the above and sometimes later.

Deductions from Morning and Evening Rectal Measurements.

We have made careful study of the information as to the temperature changes recorded by later observers, amongst others, F. Burton-Fanning and S. G. Champion,[21] K. Turban,[22] F. R. Walters,[23] Arthur Latham,[24] and A. C. Inman,[25] as occurring in different types of pulmonary tuberculosis. There appears to be a consensus of opinion that where rectal temperatures are taken—and all, with the exception of Burton-Fanning, agree in insisting that the rectal temperature, and that only, is reliable—(i.) any slight daily repeated rise above the evening normal must be accepted as indicating the presence of active tuberculous disease; (ii.) a morning rise, even comparatively slight, whether accompanied by an evening rise or not, may be a still graver sign. Most observers draw attention to the fact that this morning rise is frequently the indication of an inverse temperature such as may be associated with cases of acute miliary tuberculosis or very advanced cases of rapidly caseating catarrhal pneumonia—the terminal phase of so many types of pulmonary tuberculosis.

Vere Pearson maintains that here there may be but slight difference between morning and evening temperatures and, further, that were single morning and evening temperature only taken at the usual times they would almost certainly be accepted as normal. There appears, however, to be general agreement that patients in whom the temperatures show little variation, even at a low level, during the 24 hours, often possess little reactive power and "have to be dealt with very cautiously." (iii.) The continuous temperature in which though morning and evening temperature are both somewhat higher than normal, that of the evening not being raised so much as is that of the morning, indicates a commencing inversion. A marked evening rise, especially when accompanied by irregularities—remittent and intermittent; (iv.) is characteristic of acute caseating tuberculosis; (v.) a normal or subnormal temperature is met with in cases of chronic fibroid tuberculosis and, especially in somewhat more active disease, following a raised evening temperature.

It has been pointed out, repeatedly, that in acute miliary tuberculosis there is an increase of pyrexia usually occurring after midday and marked by great irregularities "the maximum being observed between 8 and 10 P.M., followed by a remission accompanied by profuse sweats in the early morning." Again, the "inverse type" in which the evening temperature is lower than the morning temperature is said to be characteristic of this form of tuberculosis. All are at one, further, in holding that wherever the type of temperature curve has become changed in any way—i.e., has departed from the normal, ever so slightly—the patient must be advised to "make haste slowly." We agree[26] with Vere Pearson, that by a careful study of rectal temperature the onset of relapses and complications are recognised more readily and certainly than by any other method:—

> "It is of particular importance in respect of the early recognition of a relapse to remember that not infrequently the physical signs of the extension of the disease in the chest are only to be found after the symptoms of the set-back have subsided. Hence, anything which helps towards an early recognition of tendency to relapse is of the utmost importance in treatment, because with skill the inclination towards renewed activity or extension of the disease can be checked, and thereby often, I feel sure, a definite set-back warded off.[27]

Temperature Observation as an Aid to Early Diagnosis.

We go further, however, for, from our own experience, these temperature observations are of even greater importance in the *early diagnosis* of tuberculous disease, and we hold that the commencement of the process assumes to the infected organism the same relation that a relapse bears to the patient with the developed disease. In the one case we are on the outlook because we have already obtained evidence of the presence of the disease, in the other we may frequently obtain the evidence do we but search for it.

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[20] THE LANCET, 1916, vol. i., Figs. 5 and 6, p. 285, and Figs. 16, 17, 18, p. 450.

[21] Comparative Value of the Mouth, the Rectum, the Urine, a, and the Groin for the Observation of the Temperature, NCET, 1903, i., 856.

[22] Beiträge zur Kenntniss der Lungen-Tuberkulose, Wiesbaden: 1899, and Die praktische Bedeutung der Opsonischen Index bei Tuberkulose, Münch. med. Wochenschr., 1908, Bd. lv., p. 1933.

[23] Tuberculin and the Sanatorium, Brit. Jnl. Tuberculosis, 1912, vol. vi., p. 107; Practitioner, 1913, vol. xc., p. 69.

[24] The Uses of Tuberculin in Pulmonary Tuberculosis, Proc. Royal Soc. Med., 1912, vol. v., Pt. 3, Therap. Sect., p. 55.

[25] The Specific Diagnosis of Pulmonary Tuberculosis, THE LANCET, 1910, ii., 1747.

[26] Loc. cit., Figs. 16, 17, 18, and 19, p. 450.

[27] Pearson: THE LANCET, 1909, ii., 853.

It will be readily understood, then, from what we have stated, *that it is not always an easy matter* to determine by single routine morning and evening temperature readings whether a febrile condition is present or not. Further, *it is now recognised that in night* workers who rest during the day a "normal inverse" temperature obtains as soon as a habit is formed. We are of opinion, moreover, that the inverse temperature met with in acute miliary tuberculosis of the lung and similarly present in the advanced and rapidly progressing *catarrhal pneumonic type of pulmonary* tuberculosis is due, in part at any rate, to the disturbance of the cycle of the functional activities that accompanies the rapid extension of the tuberculous process. In both types of tuberculosis the presence of the inverse temperature affords evidence that the disease is assuming an acute progressive form and that *there is little prospect of any permanent arrest* of the disease.

Marcus Paterson has long held *that the patient with* large cavities—cavities bounded by walls of fibrous tissue—in the lung must be looked upon as an individual resistant to the disease. *In such a patient the disease has progressed slowly*; there may have been several or many exacerbations, but these have given rise to *comparatively slight* constitutional or physical manifestations but to *marked* proliferation of the connective-tissue cells. *So consistent have been our observations on the* cases treated at the Bourn and Papworth colonies that, taking the cases collectively, fibroid, miliary, and pneumonic caseous cases, the slowly developing and resistant or fibroid cases, and the more rapidly progressive cases, we *think it may now be accepted that the pyrexia varies almost directly with the rapidity* and extent of the breaking down of the tissues through the activities of the tubercle bacillus, the breaking down of the bacilli, and the absorption of the products of these lytic processes by the surrounding *tissues and inversely* as the "resistance" of the tissues of the patient. It is obvious that if this be correct fibroid tuberculosis, *under ordinary* conditions, will be characterised by comparatively little rise of temperature, though as the result of a dose of tuberculin injected *artificially it may* be possible to set up a well-marked reaction. The same holds good of those lesions in which the caseous masses, surrounded by a fibrous capsule, are cut off or isolated from the surrounding tissues. Only when there is some *disturbance of the fibrous tissue, some acute inflammatory* process, some lysis of the bacilli present, some violent exercise inducing absorption of the caseous tuberculous material and the products of bacteriolytic action and auto-inoculation of the patient is any marked rise likely to occur. Moreover, as soon *as the tuberculous* focus is emptied of its degenerated content pyrexia becomes less marked—there is less auto-inoculation reaction. In the somewhat rapidly progressing caseous tuberculosis where the tuberculous process extends beyond a quiescent or *fibrous lesion and* where, in addition to the interstitial tuberculous process, there is a rapidly extending catarrhal pneumonic tuberculosis, the process of auto-inoculation goes on much *more rapidly and completely, giving rise to* severe constitutional changes, *amongst* which continued pyrexia during the working hours of the day is a marked feature, varying according to the extent of the lesion (the amount of "tuberculin" available), the readiness with which the tuberculin may escape from the *caseating lesion, and the activity* and extent of the factors—work, movement, &c.—concerned in the diffusion of the "tuberculin." That tuberculin alone is capable of exciting a rise of temperature in a tuberculous patient appears to be beyond question. The *heat-regulating centres then* become unstable, overworked, or irritable, whilst when the products of septic or other bacteria act as adjuvant factors—and this occurs specially in the later stages of the disease—the temperature variations undoubtedly become exaggerated, and, very frequently, considerably altered in general character. For the present, however, we confine our observations to what may *be termed* a "*pure tuberculin reaction.*"

Quasi-continuous temperature records of the cases now under consideration have been made over a period of eight years, but most of them have been made on patients treated at *Papworth*. Some of the patients studied have succumbed to tuberculosis, others are still at work, but in all the conditions have been carefully *noted*. *Some of the contacts of these* cases serve as controls and are still under observation, and the earlier deductions made from a study of the various temperature charts are thus capable of verification by subsequent experience.

The "Plateau" Curve is Pathognomonic of Tubercle.

The most important of our observations is that as in tuberculosis in cattle, so in pulmonary tuberculosis of the human subject when the disease is progressive, a continuous temperature chart shows *a* characteristic curve—the "plateau" already described[28]—a curve which can always be reproduced in the tuberculous subject by *over-exercise* or by the injection of a suitable dose of tuberculin. Further, on reference to the *notes of the cases here recorded it will be found that in* all the doubtful cases in which the patient ultimately did badly this "plateau" temperature curve developed even *during the* early stages of the disease. This plateau, as we have seen, is characterised by a more or less rapid rise of temperature, 99° or more, a temperature which remains above 99° for a period of from 8 to 12 hours, the plateau commencing usually, though not *invariably, about* 2 P.M., *and* extending until 10, 11, 12 o'clock at night or later, when there is usually a sudden fall, often with, but sometimes without, a "night sweat."

The indication so afforded is so reliable that it may *be accepted as almost pathognomonic* even when other *aids to diagnoses are wanting and a series of curves* taken from a suspect embody information which will almost certainly eliminate doubt as to the diagnosis, whilst in a diagnosed case the "plateau" curve *indicates the need of further treatment*, in that it supplies definite evidence of the activity of the morbid process.

In all the cases in which the plateau is well developed the up and down lines are well accentuated, very slight *physical movement or mental* disturbance causing sudden rises, rest and ingested cold fluids determining equally rapid falls, whilst a restless night with disturbed sleep invariably gives rise to an irregular curve. In tuberculous patients, as in the healthy individual, the *temperature is lowest at a time when sleep* is most profound, and when the various functions appear to be least active. Another important feature is *that as the* disease progresses the plateau becomes more and more extended, and as this occurs there is a tendency for *the summit to move* more and more to the right, that is, to be prolonged into the morning hours; consequently in very advanced *stages of the disease* this may become so marked a feature that we have practically an "inverse" temperature.

In all the advanced cases and in some of those progressing but not yet advanced, "peaks" appear at intervals along the plateau, and *for short periods the* temperature may run to 102°, 103°, or even 104°—1°, 2°, *or 3° above the general level of the plateau.*

The evidence of auto-tuberculinisation is invariably most marked at the times at which the various functions of the body are *most active*, the night sweats ushering in the rapid fall of temperature at the end of the plateau, in certain cases, *to subnormal*. We look upon a sudden fall as associated not only with the night sweat but with the exhaustion of the patient induced by *the tuberculin reaction*, a process quite distinct from the disappearance of the pyrexia on the formation of a well-defined cavity, *the result of softening* and the evacuation of the caseous material—the tuberculinising centre. As the disease advances the variation *between evening* and morning temperature up to 103° and down to 96° or lower appears to be nothing but an exaggeration *of the tuberculin* reactions from auto-inoculation, as we find that in cases in which the tuberculin plateau is well developed *the fall of temperature* is sudden during the night and the point reached is extremely low; consequently the diurnal variations as measured by the ordinary clinical thermometer must be great. It is only towards the end that the increase of the pyrexia becomes continuous, the highest point sometimes being separated from the lowest by a single degree only.

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[28] Loc. cit., pp. 435, et seq.

Conclusion.

We maintain that the quasi-continuous temperature record of a reaction is a valuable diagnostic indication as to (1) the tuberculous nature of the disease; (2) the activity of the process; and (3) the prognosis. As to the type of the disease, however, "acute miliary," "caseous pneumonic," "chronic fibroid," &c., though, as seen above, the temperature may give some indication, the physician will find that physical signs afford considerably more specific information.

The temperature indications as to the resistance, or lack of resistance of the tissues of the patient are of extreme interest, especially in regard to prognosis. Instability of the temperature affords evidence of (*a*) a high toxic absorption; (*b*) ready reaction of the tissues to the toxic stimulation; and (*c*) marked interference with the rest function of the patient. A restless night is reflected in the temperature curve, and it appears that the inverse temperature is, to a large extent, the result of a continued auto-inoculation, during which a minimum stimulus produces a maximum reaction both as to amount and duration.

In the night sweats we have evidence of some interference with the autonomic nerve centres, leading to dilatation of the surface blood-vessels, great radiation of heat from the cutaneous surface, and a rapid lowering of the general temperature.

At the outset of our observations we thought it well to compare the rectal temperatures with a series of temperatures taken in the mouth with the ordinary mercury clinical thermometer, but, as will be seen from the figures marked on the charts, these temperatures bear little relation to the rectal temperatures. In the advanced stages of the disease some information could certainly be obtained from these readings, but we are now satisfied that they give little indication of the extent or progress of the disease or, in its earlier stages, of its presence.

To the Medical Research Council we are indebted for a grant to enable us to continue this investigation, and we wish here to tender our hearty thanks for the assistance so afforded.

HELIOTHERAPY IN THE HIGH ALPS.

BY A. ROLLIER, M.D.,

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THE therapeutic action of the sun has for a long time been attributed to the invisible rays of the spectrum, especially to the ultra-violet, of which the bactericidal action has been demonstrated by a number of eminent bacteriologists (Arloing, Luclos, Tyndall, and others). Experiment has also shown that it is to the ultra-violet rays again that the production of cutaneous pigment must be attributed; this is considered a defensive reaction, preventing chemically active rays from penetrating deeply into the tissues. The ultra-violet rays are absorbed by the melanin of the epidermis, by the lipochrome of the adipose tissue, and by that of the blood plasma. Absorption by lipochrome can be proved by the spectroscope. The amount of energy derived from the rays absorbed, and the use made of it by the body, form interesting subjects for speculation, but lack of experimental evidence makes it impossible for any definite conclusions to be formed. Reference should, however, be made to the experiments of Dreyer, which showed that certain fluorescent substances, such as eosin and erythrosin, have the power of transforming rays of short wave-length into those of longer wave-length. In a paper published in 1908[1] Dr. Rosselet and I drew attention to the indications for attributing the same power to cutaneous pigment. Inability to find a solvent capable of dissolving melanin made definite proof of this hypothesis impossible.

The experiments of Weissner, demonstrating the powerful bactericidal action of the infra-red rays, show that it is not only the ultra-violet which are of therapeutic importance. On account of their greater wave-length and amplitude, these infra-red rays give out a considerable amount of heat when they impinge on the surface of the body, and in comparison with the superficial action of the ultra-violet rays they have quite remarkable powers of penetration. Malgat claims to have demonstrated their passage through hand, arm, and even thorax, but his experimental methods, especially with regard to the thorax, were not very satisfactory. On account of their heat the infra-red rays are also active in vaso-dilatation, which favours phagocytosis, and tends to relieve the congestion of the internal organs. Although it cannot be denied that excellent therapeutic results have been obtained with artificial light, especially with ultra-violet rays produced by the mercury vapour lamp, I am strongly of opinion that up to the present science has not yet invented an adequate substitute for sunlight; on this point I have the support of Finsen himself, who admitted that the ideal treatment for lupus was heliotherapy at a high altitude. In view of the fact that in nature we so frequently meet with organic substances or living cells which are affected only by rays of wave-lengths varying between definite and comparatively narrow limits, it seems not improbable that similar conditions apply to the human body, and that certain rays act on one type of cell and quite different ones on another. Were this the case, the advantages found in practice from the use of the total solar radiations would receive an easy explanation.

Climate.

Heliotherapy may be carried out in any place where the sun shines; but different points on the earth's surface show great variation in the quality of the sunlight which reaches them, and also in other factors affecting the cure.

To reach sea-level the sun's rays have to pass through the whole thickness of the atmosphere; over all our big cities the latter is rich in mists, dust, and micro-organisms of every kind, which absorb both heat and light-rays in a proportion sometimes as high as 95 per cent. This absorption not only deprives the patient of a large number of useful rays, but by heating the air may give the sun-bath a relaxing instead of a stimulating effect. At high altitudes, on the contrary, the air is transparent, free from solid particles, and easily traversed by the sun's rays, which pass through without absorption, and warm and invigorate the body of the patient while leaving the air cool and fresh. For this reason a much greater intensity of direct sunlight can be borne at high altitudes, and heliotherapy may be practised in every month of the year.

The Skin.

I feel it necessary at this point to make a plea for that much ill-used organ, the skin. We Europeans are apt to regard with a complacent superiority the way in which less enlightened races maltreat their bodies (e.g., the feet of Chinese women), but we ourselves would do well to imitate more closely certain less cultivated races with regard to the treatment of the skin. The paramount importance of this organ cannot fail to be realised when we consider the complexity of its functions.

It is, in the first place, an admirable protection against pathogenic organisms; it is the seat of cutaneous sensation, and an excretory organ second only in importance to the kidney; it is very closely concerned in the delicate mechanism regulating the temperature of the body; and finally, as a very vascular layer it plays an important part in the nutrition of the underlying tissues. By covering the body with clothes every one of these functions is interfered with to a greater or lesser extent. I have frequently noticed that the resistance of a patient against disease is closely proportional to his degree of pigmentation, and pigmentation does not take place under clothes. It is a well-known fact that cutaneous sensation is much more delicate in the uncovered regions of the body, and it is equally obvious that clothes, by preventing free evaporation, interfere with the excretory functions of the skin. The contrast between the tolerance to wide ranges of temperature shown by the face and hands and the extreme sensitiveness of the rest of the body gives some idea of the extent to which disuse atrophy of the heat-regulating mechanism has taken place. The increased vascularity of the skin produced by the sun's rays causes considerable thickening of the organ itself, and also appears to result in an increase of the adipose tissue beneath the skin. The splendid muscular development usual with heliotherapy, even in patients confined entirely to bed, is more difficult to explain; direct stimulation (possibly of electrical nature) by certain solar radiations may perhaps be involved, as vascular changes alone would hardly seem a sufficient explanation. When these facts are borne in mind, the frequently quite remarkable results obtained by heliotherapy are to a large extent explained, as it is only to be expected that the return of these numerous and important functions to the skin would have a most beneficial effect on the general health.

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[1] Sur le rôle du pigment épidermique et de la chlorophylle. (Bulletin de la Société vaudoise des Sc. Nat., vol. xliv., 1908.)

Action on Pathological Processes.

The secret of the sun's action on pathological processes is that while highly toxic to micro-organisms in general (and to the tubercle bacillus in particular), the solar radiations are not only harmless, but actually beneficial to the cells of higher animals. This specific action of sunlight was of great assistance in the treatment of suppurating war wounds.[2] The sun thus appears to increase the rate of disintegration of cells damaged beyond repair, while stimulating the activity of the undamaged cells. A torpid lesion (such as varicose ulcer) demonstrates particularly well this cicatrising action of the sun. Anæmia and rickets, essentially diseases of deficient sunlight, are similarly amenable to heliotherapeutic treatment.

Surgical Tuberculosis.

It is, however, in tuberculosis, and especially in the surgical varieties (bones, joints, glands, peritoneum, &c.) that the action of the sun is seen to its fullest extent.

It has long been realised that the severity of a tuberculous infection does not depend solely on the severity and extent of the anatomical lesion, but also, and to an even greater degree, on the state of the natural defences of the body; general treatment is therefore tending more and more to replace local interference of a surgical nature. In heliotherapy the results obtained are, in my opinion, at least as much to be attributed to the general as to the local action of the sun's rays, the complementary action of the mountain air being a further primary factor in the cure. The various stages in the reparative processes which heliotherapy causes tuberculous lesions to undergo are best followed by means of X ray plates taken at intervals of a few months. The decalcifying action of the tubercle bacillus is particularly well shown in these plates, but is apt to be rather misleading, as complete disappearance of a bone on the plate does not indicate that it is entirely destroyed. For instance, in hip disease the first plate often shows no signs of either head or neck of the femur or of the acetabular margin; after some months of treatment signs of recalcification appear and vague outlines become evident; these gradually become more definite and may eventually be as sharply defined as on the healthy side. In other patients, in whom the head of the femur has perforated into the pelvis, radiography permits us to follow, in some cases, the formation of a new joint. The first hopeful sign is the reappearance of a bony septum, vague at first in outline, between the head of the femur and the pelvic cavity; this becomes more compact and a new articular space between it and the reappearing head of the femur becomes evident; the new joint formed in this way may give considerable return of articular function in cases where this could hardly have been hoped for. In spinal caries similar changes may be observed, and tuberculous abscesses may be seen to disappear altogether, or, as is more frequently the case with adults, calcification of the residue may take place. It is in tuberculous dactylitis that changes in the calcium content of the bones cause the most striking results; phalanges which have entirely disappeared may be so completely recalcified as to be indistinguishable from the normal bones. The differentiation due to heliotherapy which takes place between irreparably damaged cells and their healthy surroundings is well illustrated by the behaviour of sequestra; sharp demarcation followed by spontaneous elimination is frequently observed.

Technique.

In order that the best results should be obtained from heliotherapy it is necessary that a definite technique should be employed. There are great individual differences in the adaptability of patients to this form of treatment, and in order to avoid excessive and possibly harmful reactions in every case it is necessary that progressive insolation should be carried out cautiously and any symptoms of intolerance taken into account.

Exposure always begins with the feet, the legs, thighs, abdomen, and thorax following in this order with an interval of a varying number of days between each. Only a few minutes' exposure is allowed to each part on the first day of insolation; this amount is gradually increased until at the end of a period of time which varies with each subject—degree of pigmentation and absence of excessive reactions being the criterion—the patient is able to expose the whole body to the sun for several hours daily without any inconvenience either in summer or winter. Secondary infection without free drainage, pulmonary and abdominal tuberculosis, are conditions in which increased caution are necessary. Far from contra-indicating heliotherapy, however, they are greatly benefited by this form of treatment if properly carried out. Plaster apparatus is a great hindrance to heliotherapy and is almost invariably discarded, as not only does it interfere with the local action of the sun on the diseased part, but it also causes muscular atrophy, which is a great disadvantage when return of function begins, and compares most unfavourably with the thick covering of well-developed muscle, which is usual with heliotherapy, and forms an admirable support for a weakened vertebral column or joint. These cumbersome devices of plaster should be replaced by simple arrangements of webbing straps which give complete immobilisation and adequate extension while permitting free access of air and sun. I have no space here to describe in detail the orthopædic technique used for each localisation of the disease, and must refer the reader desirous of further information to my book, "La Cure de Soleil."

The Work Cure.

This most valuable factor in the treatment of tuberculosis was, I believe, first introduced by M. Paterson at *Frimley Sanatorium.*

As an adjunct to heliotherapy its value would be difficult to over-estimate; for in surgical tuberculosis the psychology of the patient is apt to be seriously affected by enforced immobilisation for many months, and mental depression invariably has its counterpart in the physical condition of the patient. Even in serious cases of tuberculosis of the vertebral column, hip or knee, much benefit can be derived from such handicrafts as wood-carving, weaving, basket-making, metal-work, painting on wood, toy-making, &c. Not only does this work cure benefit the patients mentally, but by enabling them to continue earning during their treatment it has in many cases made it possible for patients who would otherwise have left only partially cured owing to financial difficulties to continue treatment until cure was complete.

Prognosis.

Although the prognosis of surgical tuberculosis is exceedingly favourable when the lesion is closed, this can hardly be said to be the case when secondary infection with pyogenic organisms—on which the sun has a much less specific action—has taken place.

Cases of meningitis hardly ever occur, not one per annum, and in unfavourable cases death is almost invariably due to the secondary infection and the resulting amyloid degeneration or cardiac failure of toxæmic origin. Closed cases of pelvic or sacro-iliac tuberculosis invariably progress favourably with heliotherapy; but when secondary infection has once taken place the anatomical structure of these parts makes drainage so difficult and retentions so frequent that the prognosis becomes much more grave. Experience with cases of this type has made me more than ever insistent on the necessity of beginning active heliotherapeutic and altitude treatment as early as possible in all cases of surgical tuberculosis. It has been suggested that heliotherapy is more effective with children than with adults; I have always had a considerable majority of adult patients and have not been able to support this view, except, perhaps, in certain synovial infections of the knee and in genito-urinary tuberculosis.

Giving the results obtained with children and adults in separate columns my statistics since 1914 for osteo-articular tuberculosis only are as follows:—

—	Children.	Adults.	Total.
Cured	681 (86·5%)	1065 (77·2%)	1746 (80·5%)
Improved	51 (6·5%)	191 (13·8%)	242 (11·2%)
Stationary	43 (5·5%)	104 (7·5%)	147 (6·8%)
Worse and deceased	12 (1·5%)	20 (1·5%)	32 (1·5%)
—	787	1380	2167

These results were subjected to a strict radiographic control. Older statistics, up to 1914, dealing with all types

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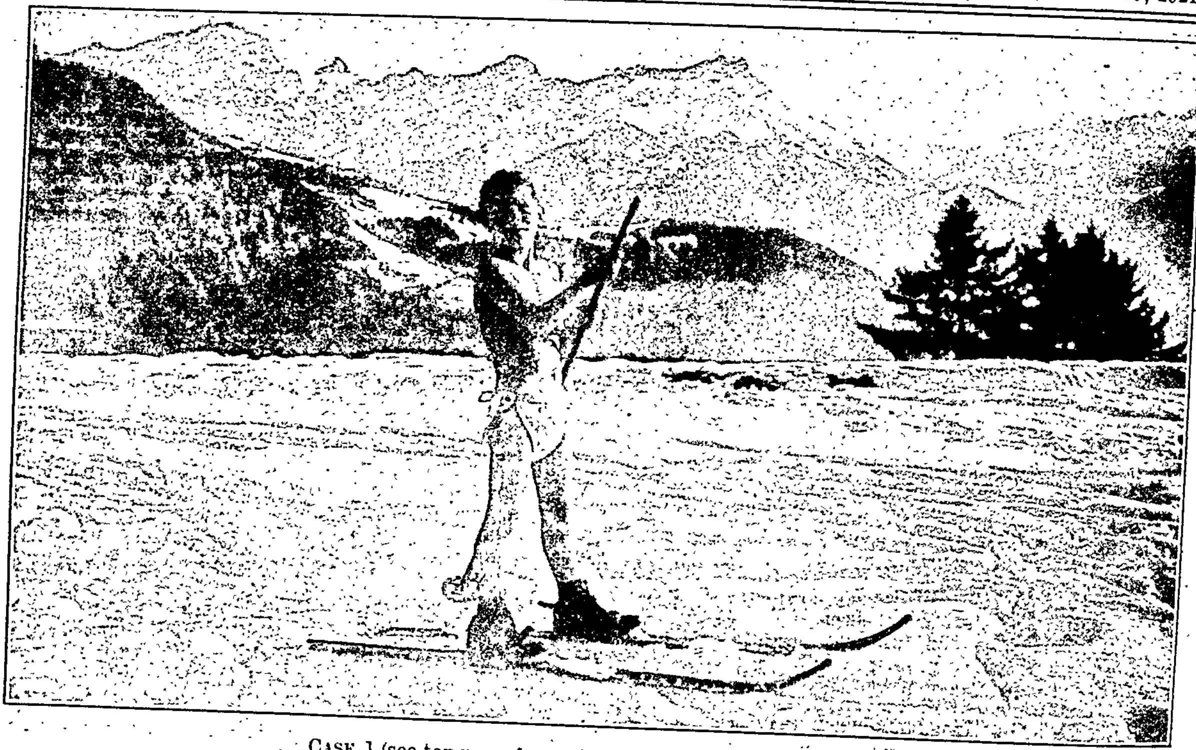
[2] Reinbold: Revue méd. de la Suisse Romande. Grangée: Paris Médical, 26 déc., 1916. Rollier: Le Pansement solaire.



CASE 1 (see top row of page illustrations), aged 8½, on ski.

of surgical tuberculosis, gave the following proportions out of 1129 patients (662 adults, 477 children):—

Cured	945 (83·7%)	Stationary	41 (3·6%)
Improved	112 (9·9%)	Deceased	31 (2·8%)

In these statistics, as well as in the preceding, the cases that remained stationary, got worse, or died, are nearly all cases who suffered from secondary infection.

Maintenance of Cure.

No treatment, however rapid its effects, is really good unless it yields permanent results. It is obvious that if recently cured patients return immediately to those conditions of life which fostered the development of their disease a relapse is only to be expected; in every case, therefore, it is advisable that for some years at least the patient should work in suitable surroundings.

For children an open-air school where sun cure can be continued is the ideal half-way house for the convalescent, and the one under my direction has fully justified its existence. With regard to adults, my experience with farm colonies has confirmed my opinion that agricultural work has an admirable effect in consolidating a cure, and I am advocating their widespread establishment.

I have recently been occupied in preparing statistics to illustrate the permanence of cures reached by heliotherapy; unfortunately, the fact that my former patients are scattered all over Europe has greatly interfered with this work, and I regret that the figures are not yet ready for publication. I have already succeeded in obtaining photographs of a large number of patients whose cure was completed 10, 12, or 14 years ago; these, together with previous photographs taken before and after the treatment, were shown at the annual assembly of the "Association suisse contre la Tuberculose" on Nov. 14th, 1920. A few selections from the series are here given.

Prophylaxis.

"Dove non va il sole, va il medico" (where the sun does not go the doctor goes), is an old Italian saying, the truth of which is very evident to all those concerned in the treatment of tuberculosis. We know now that surgical as well as pulmonary tuberculosis is in the great majority of cases secondary to infection of the tracheo-bronchial or mesenteric glands; this usually takes place in childhood and may remain latent for many years, only becoming active when, for some reason, the resistance of the body is lowered. For these delicate or predisposed children I am applying the same treatment as for convalescents. The children have as much fresh air as possible day and night, with plenty of good and simple food, of which fresh farm produce forms a large proportion. School work is reduced to a subsidiary position, its object being merely to keep the mind in discipline; the use of very light folding desks and stools makes it possible for lessons to be held in the fields and the woods, the site being varied according to the heat of the day. In summer the children spend the whole day in bathing kit, and even in winter clothes can often be dispensed with, at all events during rest hours in the solarium. Much attention is given to Swedish drill, as I believe proper expansion of the chest and nose-breathing to be a most useful prophylaxis against a multitude of diseases. The results obtained by this open-air school have been most encouraging, and give reason to believe that in almost every case the disease may be completely eradicated before any manifestations take place, thus avoiding much suffering and expense.

We know that there is no surer way of building up the resistance of the body than life in the open air and sun, yet we are very slow to apply this knowledge to the conditions of our everyday life, and until we do so tuberculosis will continue to exact its heavy toll of victims each year.

DESCRIPTIONS OF ILLUSTRATIONS

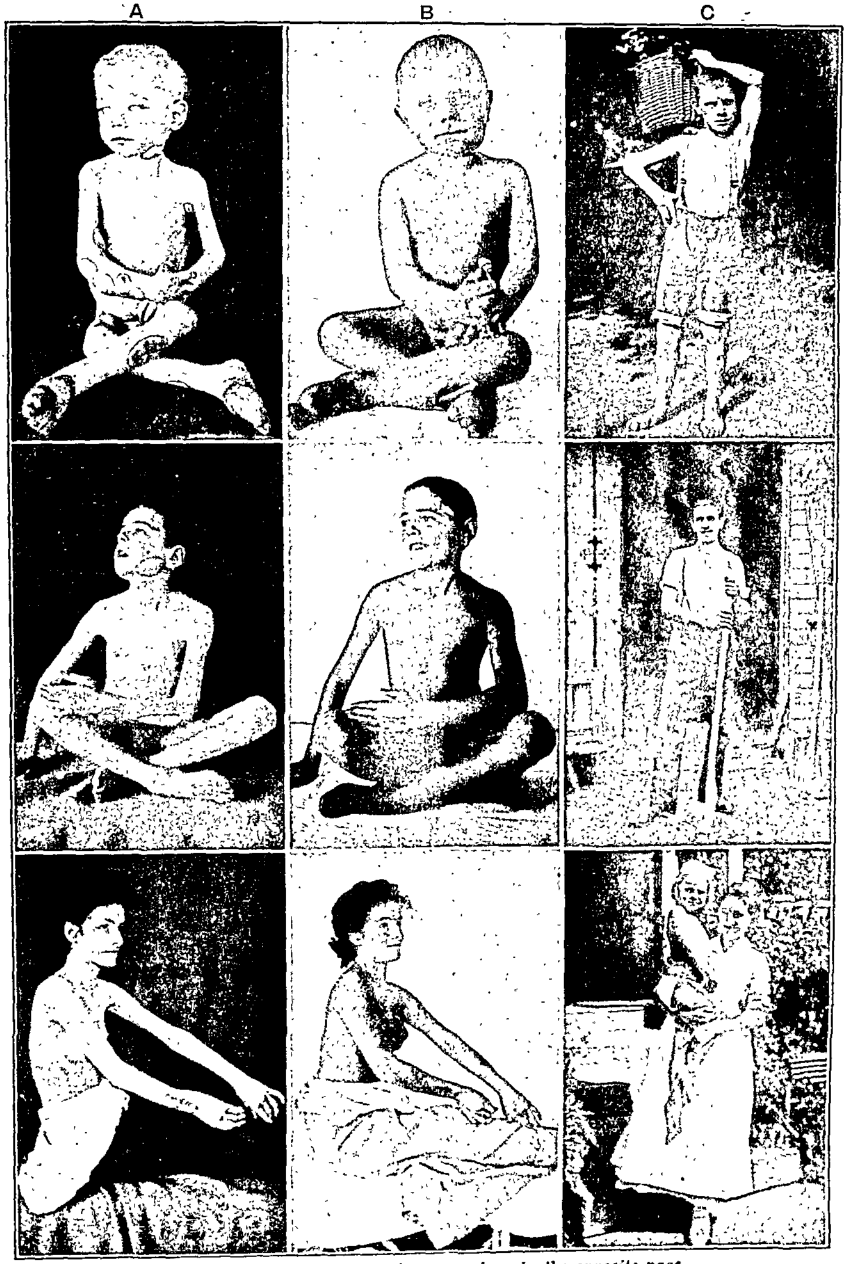
(*see opposite page*).

In each row (A) shows the patient at the beginning of treatment; (B) shows the effects of from six months' to a year's treatment; (C) shows the patient in home surroundings after periods of from 10 to 14 years from the taking of the first photograph.

CASE 1 (top row).—(A) Child, age 4½, arrived with 34 tuberculous foci, osteitis, periosteitis, adenitis, multiple fistulæ, tuberculosis of both feet, right hand, peritonitis, and advanced tuberculosis of left lung. General condition very poor, advanced cachexia, high temperature, and albuminuria. (B) One year later—all tuberculous foci cured and fistulæ closed. General condition completely transformed. (C) At age of 14½; cure completely maintained in spite of the patient having lived throughout the war in Germany, where he underwent considerable privation.

CASE 2 (second row).—(A) Child with 17 tuberculous foci on arrival, osteitis, periostitis, adenitis. One lesion in temporal region had been curetted. Secondary infection, fistulæ; affection of tracheo-bronchial glands and infiltration of right apex. (B) Complete cure six months later. (C) 13½ years after establishment of cure. Wheelwright and agricultural labourer. Did more than a year of military training without a day's illness.

CASE 3 (bottom row).—(A) Case of tenosynovitis and tuberculous arthritis of wrist, recurring after operation. Secondary infection, fistulæ; renal tuberculosis, nephrectomy, tuberculous peritonitis; tuberculosis of right apex, small lupus on right cheek. General condition poor; habitus phthisicus. (B) The same patient one year later. (C) The same patient 13 years after establishment of cure. In good health and very active as a nurse.



Descriptions of these illustrations are given in the opposite page.

THE CHEMICAL ESTIMATION OF GASTRIC FUNCTION

BY THE TEST MEALS OF EWALD AND BOAS.

BY J. H. RYFFEL, B.CH. CAMB., F.I.C.,
CLINICAL CHEMIST, GUY'S HOSPITAL.

MANY test-meals have been employed in the investigation of gastric function, but I propose to consider only the results of the two which have been most generally used—namely, that of Ewald, which consists of tea and toast, and that of Boas, which consists of oatmeal and water. The modified test-meal of Ewald consists of one pint of tea with a little sugar and milk, if desired, and about 2 oz. of toast, given as the first meal in the day, and removed about one hour afterwards. Some observers allow a little butter with the toast, but to omit the butter has the advantage that, if much fat is found in the contents of the stomach after the meal, its presence affords evidence of a considerable degree of gastric delay, as the fat must be a remnant from a previous meal. In removing the meal without the addition of water Senoran's aspirator is a very considerable aid. When obtained, the contents of the stomach are measured and filtered, the solid part being examined for blood, bile-pigment, organisms, and food materials, while the filtrate is subjected to various titrations.

Determination of Acidity.

For determining the acidity different indicators have been proposed. Total acidity is usually determined by titration with caustic soda, using phenolphthalein as indicator. The earliest indicator for free HCl was that of Günzberg. This has been shown to give results comparable with those of physical measurements, but as the test involves evaporation it is not convenient for purposes of titration. Töpfer introduced dimethylaminoazobenzene, which has been widely used, but the region of change for this indicator lies between N/1000 and N/10,000 HCl, and the end-point as ordinarily employed about N/5000 HCl, which is distictly too low in the acid scale for a determination of free HCl.

Although the term "free HCl" is in this connexion a misnomer, the indicator is of great utility, as organic acids produced by the Oppler-Boas bacillus, or by acid streptococci, never attain either in the stomach, or in culture in the presence of sugar, an acidity great enough to affect dimethyl, so that this titration is not affected by organic acids. Rolph proposed to use instead tropeolin 00, which reacts at N/200 HCl, while recently Cole and Adie have urged the use of thymol-blue working to an end-point $= \text{HCl.N} \times 10^{-2{\cdot}6}$, or about N/500. This indicator would leave a large gap between the total acidity and the free HCl, so that it would surely be better to retain dimethyl, and, in addition, adding a suitable indicator to the filtered contents to compare the tint obtained with a series of tubes containing known quantities of free HCl, so as actually to determine the concentration of hydrogen ions present. This procedure would overcome the difficulty that with dimethyl, owing to the presence of buffers in the liquid, a high result by titration does not necessarily denote a high degree of acidity, but it would be necessary to use Boas's test meal to avoid dealing with a pigmented fluid; the procedure would be practically impossible to apply to a blood-stained or bile-stained fluid. B. Moore employed the rate of hydrolysis of methyl acetate to determine the free HCl. The method is sound physically, but somewhat laborious.

Willcox developed the determination of a quantity of a different kind, the "active HCl." This is based on the method originally employed by Prout to demonstrate the presence of free HCl in gastric juice. It is essentially a determination of the loss of chloride on ignition, and includes free HCl and HCl combined with proteins and other volatile bases. Active HCl corresponds closely th the result of the titration of total acidity, unless nic acid be present, when the difference between two measures the organic acid. Graham pointed out that the estimation of mineral, or non-volatile, chloride, which is involved in the estimation of active HCl, was itself of value, as this quantity was notably increased in carcinoma of the stomach and in regurgitation of duodenal contents into the stomach.

Table showing Results obtained by the Method of Willcox and Graham.

—		Grammes per 100 c.cm.				Blood.	Lactic acid.
		Free HCl.	Active HCl.	Acidity as HCl.	Mineral HCl.		
Normal		0·10	0·15	0·15	0·10	–	–
Hyperchlorhydria... ...		0·25	0·36	0·37	0·12	+	–
Carcinoma ventriculi.	1	0	0·0094	0·079	0·315	++	+
	2	0	0·05	0·196	0·27	++	++
	3	0	0·079	0·115	0·14	+	+
	4	0	0·106	0·13	0·24	+	–
	5	0	0·031	0·029	0·117	–	–
	6	0·14	0·24	0·25	0·17	++	–

The table shows results obtained on the lines recommended by Willcox and by Graham—namely, a typical normal result, a typical instance of well-marked hyperchlorhydria with pyloric ulcer, and six examples obtained from proved cases of carcinoma ventriculi. Of these 1, 2, and 3 are instances of pyloric carcinoma in which the presence of blood and lactic acid with absence of free HCl, low active HCl, and high mineral chloride leave no doubt as to the diagnosis; 4 is an instance of carcinoma without obstruction in which the presence of blood, absence of free HCl, active HCl below normal, and high mineral chloride are suggestive of the diagnosis. In 5, as there is no blood and the mineral chloride is not appreciably above normal, there is nothing to distinguish the case from other instances of hyperchlorhydria such as that found in pernicious anæmia; blood, however, was found in a later test-meal and in the fæces. In 6, an instance of carcinoma with HCl above normal, the mineral chloride is high but less than the active HCl. Besides the mineral chloride, the only other point to distinguish from ulcer was that the growth bled freely and that the bleeding did not respond to treatment.

Sources of Error.

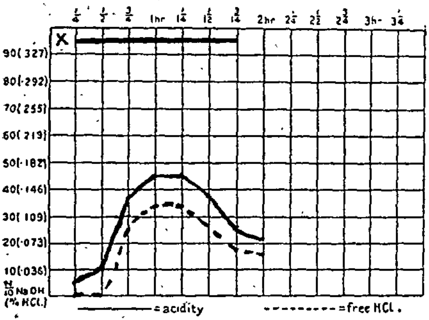
In test-meals of this type there are two principal sources of error: If the stomach empties quickly, as it frequently does in cases of duodenal ulcer, a small amount of material is obtained, which is rich in mucus, poor in toast, and contains HCl less than normal and a high mineral chloride. The remedy is to shorten the time so as to obtain a true sample of the meal. The other source of error is that aspiration is liable to cause some bleeding; there the remedy is to insist on examination of the fæces for blood in every case. If the blood in the test-meal is due to trauma it will not be found in the fæces; moreover, blood may be found in the fæces where it is not appreciable in the gastric contents. In this connexion I may note that a spectroscopic examination of the fæcal extract for acid hæmatin and hæmatoporphyrin, in addition to the ordinary tests for blood, is most desirable, and, when it gives positive results, removes all doubt that the blood found may have been introduced in the diet. Apart from sources of error, the principal difficulty is to distinguish, on the one hand, between carcinoma and ulcer of the body of the stomach, as in the latter the HCl may be relatively low and the mineral chloride somewhat high, and, on the other, between carcinoma and other cases with hypochlorhydria, as the indications obtained from the mineral chloride are not absolutely consistent, being occasionally normal in carcinoma and occasionally high in gastric atrophy.

The Ewald test-meal is notably lacking in two respects: it gives only the roughest indications of the rate at which the stomach empties, and, if the gastric secretion is abnormal in its time relations, entirely misleading figures as to acid may be obtained. These difficulties are obviated by the procedure introduced by Reyfuss and Hawk, in which the patient swallows a narrow tube, by which samples of contents are

CHARTS OF GASTRIC ANALYSIS.

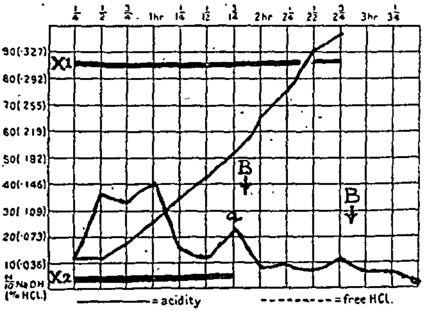
In the charts B = bile, X = starch, Y = sugar, Z = blood.

CHART 1.



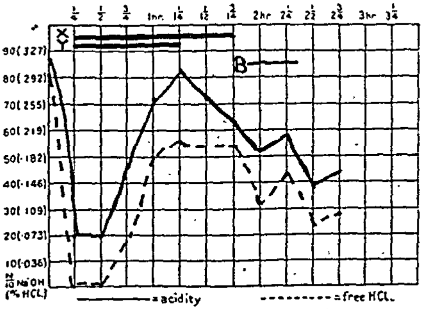
Showing the ordinary normal as given by Crohn and Reiss. In certain apparently normal individuals the acid may be much lower or much higher, and the stomach may empty more quickly. Bennett gives two and a half hours as the normal limit of time for disappearance of the meal. On the whole, the curve is characteristic of the individual, but it is subject to certain influences, of which the most important in practice are discomfort on the part of the patient, nausea, retching, and attempts to vomit.

CHART 2.



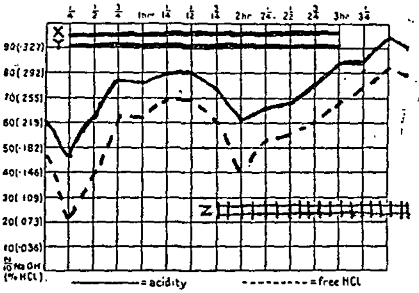
Showing two very different results obtained from the same individual—a case of hysterical vomiting; on the second occasion the patient did not take kindly to the use of the tube.

CHART 3.



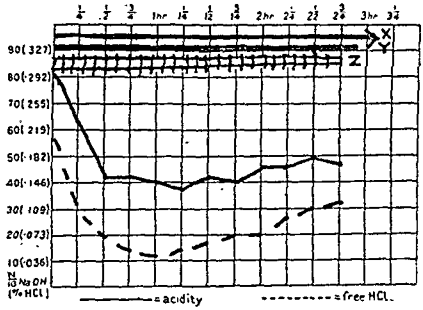
Duodenal ulcer confirmed by operation; showing the highly acid-resting juice and rapid secretion of acid with rapid emptying stomach, which is characteristic of this condition.

CHART 4.



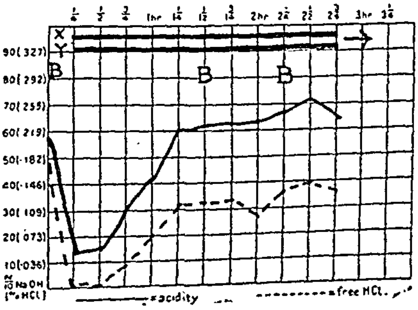
Pyloric ulcer without stenosis.

CHART 5.



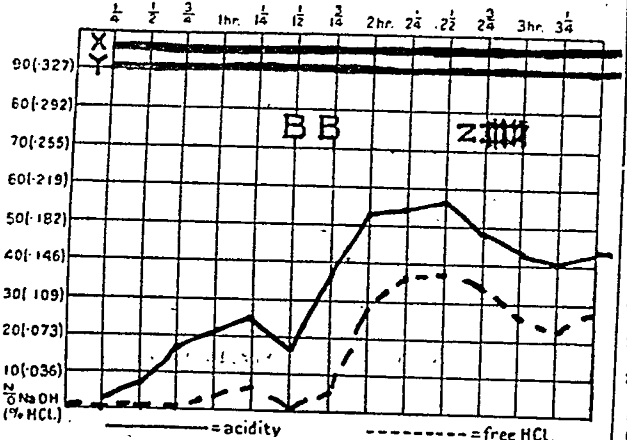
Pyloric ulcer with stenosis, in which the resting juice contained food materials, and the stomach was by no means empty in 2¾ hours.

CHART 6.



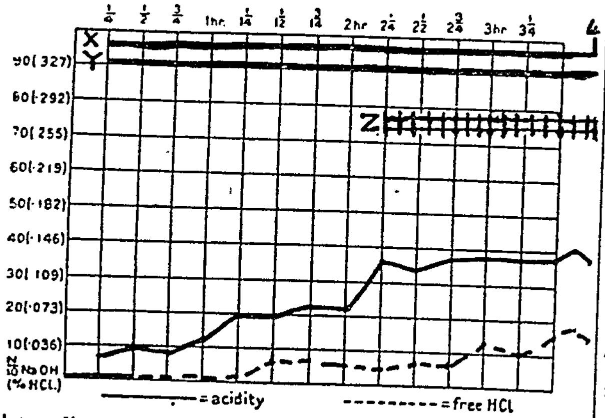
A similar type of curve to 4, except that there was no bleeding but at operation large gall-stones were found in the gall-bladder and no ulcer.

CHART 7.



Gastroptosis, with well-marked gastric delay.

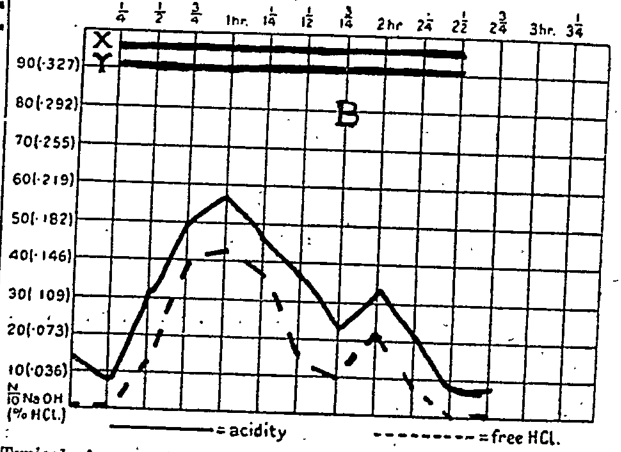
CHART 8.



A case diagnosed as carcinoma of the stomach. Charts 4 to 8 have two features in common: delay in emptying of stomach, and a continued rise in acidity as the meal proceeds. These two features serve to show that the stomach has difficulty in emptying, whether from spasm or stenosis of the pylorus or atony of the stomach with a normal pylorus. Other features serve to make the diagnosis between the different conditions showing this characteristic, thus the essential difference between 8 and 7 is that the former shows blood in the stomach and fæces, while the latter does not, except from trauma. Chart 6 is not characteristic of cases of gall-stones, but suggests that there may occasionally be pyloric spasm in this condition.

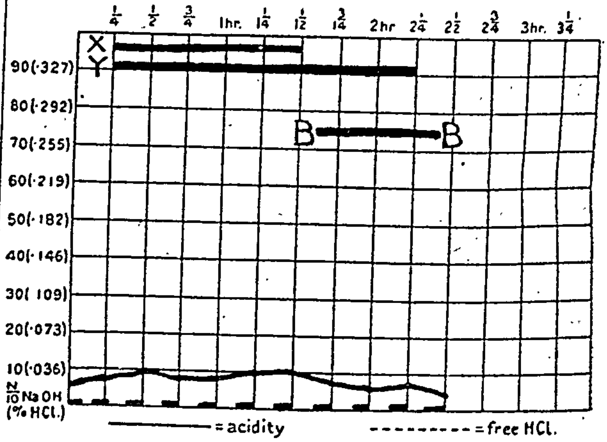
removed before the meal and for every quarter of an hour afterwards, until either the stomach is empty, or a sufficient time has elapsed to show that there is gastric delay, or continued secretion after the meal. The tube used is either Einhorn's duodenal tube, Reyfuss's tube, or Ryle's tube. Einhorn's tube is inclined to block and may cause slight bleeding from trauma. Reyfuss's tube is somewhat difficult to swallow. Ryle's tube is easier to swallow and less liable to block or to cause trauma. The meal used is either that of Ewald or that of Boas. Following Crohn and Reiss, we have used a modified Boas meal consisting of two tablespoons of oatmeal mixed with a quart of water, boiled down to one pint, strained through muslin, and given warm with salt to taste. The samples taken are between 5 and 10 c.cm. They are titrated with dimethyl and phenolphthalein indicators and examined for blood, bile, starch, and sugar. Disappearance of the starch is taken ordinarily as evidence that the meal has entirely left the stomach, but some of the starch is converted to maltose by the ptyalin of the saliva. If the acidity of the gastric contents rises sufficiently the action of the ptyalin is arrested, but if the acidity be low the action of the ptyalin proceeds, and sugar may [illegible] longer than starch. In this case disappearance [illegible] is the end-point. Results of the examination [illegible] expressed as Charts 1 to 10.

CHART 9.



Typical of cases of ulcer of the body of the stomach. Except for evidence of bleeding, which in this case was obtained from the fæces but not from the stomach, there is no chemical evidence of ulcer.

CHART 10.



Typical of marked lack of acid. In this case blood was present in the fæces and at autopsy a carcinoma of the stomach was found, but there is nothing in the chart to distinguish it from one of achylia gastrica.

Conclusion.

In conclusion, one may say that the fractional test meal gives results that are of great interest, but it serves rather for arranging the cases in various groups than for individual diagnoses. The actual diagnosis must be completed from further considerations, and especially by a clinical study of the individual case.

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THE DUBLIN HOSPITALS.—The result of the united appeal and fete on behalf of the associated Dublin hospitals was announced a few days ago. Some £35,000 have been realised, of which £15,000 were due directly to the fete. The appeal had aimed at obtaining £100,000. Its comparative failure should prove finally that if the Dublin hospitals are to keep open they must look elsewhere than to voluntary contributions for the means. The sum recently realised can hardly do much more than make up the deficit on a year's—or perhaps a year and a half's—working.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF GUNSHOT WOUND

IN WHICH THE BULLET WAS REMOVED BY MEANS OF THE ŒSOPHAGOSCOPE.

BY G. N. BIGGS, M.B., B.S. DURH.,

LIEUTENANT-COLONEL, R.A.F.M.S.; CONSULTING AURAL SURGEON, EVELINA HOSPITAL AND ROYAL AIR FORCE; SURGEON IN CHARGE, EAR AND THROAT DEPARTMENT, SEAMEN'S HOSPITAL AND ROYAL WATERLOO HOSPITAL.

THE following case is of interest and worthy of record in order to demonstrate for future use the advantages of the method adopted for the removal of a bullet in the neck. The only alternative was a deep dissection.

The patient, a private in the Irish Guards, was under the care of Colonel A. Fullerton, C.B., C.M.G., at that time senior consulting surgeon to the Boulogne Base. He first came under my notice as the result of a gunshot wound; the bullet had entered the right side of his face, penetrated the right antrum, fractured the septum, passed through the hard palate, missed the soft palate, and having entered the posterior wall of the pharynx about 1 inch above the cricoid cartilage had tracked down into the soft tissues, and was shown by X rays to be lying embedded in the muscles about 1½ inches below the cricoid cartilage exactly in the middle line.

Removal of the bullet would have had to be by an extensive dissection in the neck unless another method was found; it was desirable to avoid dissection, for the operation was bound to be followed by infection of the wound, since the bullet was lying in an abscess cavity. The latter fact was proved by the presence of a discharging sinus in the deep pharynx; the opening of this sinus closed from time to time, with the result that a swelling developed in that region and ruptured after a few days, with the free discharge of pus.

I was asked to see the case, and found, on examination with the laryngeal mirror, that there was a small sinus on the posterior wall of the deep pharynx in the middle line, from which protruded some small granulations. At Colonel Fullerton's suggestion I decided to make an attempt to remove the bullet with the œsophagoscope, and had the patient removed to No. 54 London General Hospital.

A general anæsthetic was administered and an œsophageal tube passed down until the opening of the sinus was reached; with great difficulty this sinus was enlarged and the tube passed down it until the bullet could be easily seen. This operation was a long and tedious one owing to the free oozing of blood from the granulations lining the wall of the sinus. The bullet was seized with forceps, and the tube, forceps and bullet slowly withdrawn; unfortunately, just as I was removing the instrument and the bullet the patient coughed violently, the smooth bullet slipped out of the forceps and was swallowed by the patient, but was passed per rectum four days later. The nasal opening of the antrum was enlarged under the same anæsthetic to allow of free drainage and portions of necrotic septal cartilage were also removed.

The patient made an uninterrupted recovery and was evacuated to England about three weeks later; in addition to the condition described he had also a gunshot wound in the right forearm, with a bad compound fracture of the radius and ulna.

I should like to express my thanks to Colonel Fullerton for referring the case to me, and to Captain A. T. Swan for the excellent way he administered the anæsthetic in what proved to be a long and difficult case.

A NOTE ON

PERIARTICULAR ABSCESS AFTER SCARLET FEVER.

BY BERNARD E. MYERS, C.M.G., M.D. EDIN., M.R.C.P. LOND.,

PHYSICIAN TO OUT-PATIENTS, ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN.

THE following case was observed at the Royal Waterloo Hospital, and is of sufficient interest to be recorded.

P. R., a female, aged 5 years, was admitted to hospital on Jan. 11th last suffering from a distinctly swollen right ankle, which was very tender and painful. The swelling extended to the knee; pain was felt all over this region and in the right hip. The child was pale and looked extremely ill; temperature on admission 99·6° F., pulse 130, and respirations 27; the urine showed a slight trace of albumin, but was otherwise normal.

The history showed that seven weeks previously she had been taken ill with scarlet fever and admitted to a special hospital for treatment. Nothing of importance was noted except a slight albuminuria, and also four weeks after admission a rash developed which was alleged to be chicken-pox. Shortly after this occurred the patient manifested pain in the right ankle, which became steadily more swollen and painful. She had suffered from whooping-cough a year previously and had continued to cough, more or less, since then.

Upon examination of the child, who looked distinctly toxic, the condition of the ankle and leg was as described above, the former being very swollen, red, and exquisitely tender and painful. Pitting was observed over the leg, and fluctuation was felt over the lower part of the fibula. A few râles were heard in the lungs. The albumin noted upon admission soon disappeared and did not return.

It was decided to open up the area of fluctuation and this was done by Mr. J. R. M. Whigham within two hours of admission. From 2 to 3 ounces of pus and blood were evacuated from around the anterior and external surfaces of the joint capsules. It was noted by the surgeon that the subjacent bone and ankle-joint were red and appeared to be involved. It was decided, however, to await developments for from 24 to 48 hours before opening into the joint cavity. The temperature falling at once and the swelling, pain, and tenderness greatly subsiding it was deemed inadvisable to do anything further. In short, the patient made an uninterrupted recovery and left the hospital on Feb. 7th looking really well and able to walk without pain. The pus grew *Streptococcus longus.* The chicken-pox (?) rash, which was still present on admission, had the appearance of a streptococcal rash, and was not chicken-pox.

The interest in this case is the periarthritis and septic rash occurring about five weeks after the onset of scarlet fever and the evident non-involvement of the ankle-joint in the septic process. The question occurs; Was the scarlet fever responsible for the above-mentioned condition? It would be of great interest to hear of others who have had experience of similar cases.

A CASE OF

DOUBLE DORSAL TRAUMATIC DISLOCATION OF THE HIP.

BY ALAN RANDLE, M.C., M.D. LOND.,

ASSISTANT MEDICAL OFFICER, BERMONDSEY HOSPITAL.

ALTHOUGH the mention of a double traumatic dislocation of the hip conjures up visions of patients very seriously mangled and shocked, yet the record of the following case will show that, given the most favourable causative factors, such injury may be productive of little pain or shock and may necessitate only a short absence from a wage-earning existence.

William A——, aged 44, was admitted to Bermondsey Hospital on Nov. 8th, 1920, with a history of accident. He was working near a concreted pit about 22 feet deep, used for storage of coal at a gas works. The pit was practically empty and there was only a little loose slack coal lying at the bottom. A truck being pushed along hit him in the back and he fell into the pit, turning a complete somersault and landing in a stooping position on both feet with his legs slightly apart; after which he pitched forward on to hands and forehead. Hence the heads of the femora were subjected to a force consisting of the weight of the trunk, increasing with every yard fallen, and to my mind also increased by the somersault turned in mid-air, which would give an action like swinging a hammer. The loose coal acted as a shock absorber, and the stooping position favoured a dislocation. The man was raised from the pit on a stretcher with ropes tied to the four corners—a matter evidently requiring very careful supervision—and was brought straight to the hospital.

The patient was suffering very little from shock; there was a small cut on the forehead and considerable bruising of the right foot. I shall not forget the appearance of his lower limbs when the bedclothes were turned up. The inner borders of the patellæ were touching, and the feet were rotated inwards strongly. The thighs would flex slightly, but in an inward as much as a forward direction. On the dorsum of the ilium each side could be felt a hard rounded tender lump. X ray screening showed double dorsal dislocation of the hip, and with considerable difficulty I managed to get a photograph of the two hip-joints on the one plate. In view of the extreme rarity of the injury I was determined to obtain lasting evidence, and the plate[1] is now in the possession of the Museum of the Royal College of Surgeons of England. The os calcis was found to be fractured also, a piece having apparently been torn off by a sudden strain on the long plantar ligament. Under ether anæsthesia reduction of the dislocations was very easily effected by flexion, slight internal rotation, circumduction and external rotation, and finally extension. At the end of the circumduction and external rotation on each side reduction was felt to take place, and neither took longer than half a minute. Slight traction was made by hooking the right arm of the operator under the flexed knee of the patient, and counter extension was provided by an assistant pressing with the hands on the anterior parts of the crests of the ilia. The joints were rested for three days after reduction, and then massage and passive movements were commenced. The right foot was put up in plaster and the patient was allowed to take his discharge on crutches three weeks after admission.

On referring to the literature on the subject I find that the injury has been recorded about 30 times, the nearest description to the accident above recorded being a case of the late Mr. A. E. Barker's. The dislocation is practically always of a mixed type, and this is the only instance I can find of the double dorsal variety.

I am obliged to the chief medical officer, Mr. R. C. Harkness, for permission to publish the case.

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[1] We have seen a print which bears out the author's contentions, but which cannot be effectively reproduced.—ED. L.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

COMBINED MEETING OF CLINICAL, MEDICAL, AND SURGICAL SECTIONS.

GRAVES'S DISEASE: ITS MEDICAL AND SURGICAL TREATMENT.

THE adjourned discussion on this subject was concluded on March 11th, Sir ANTHONY BOWLBY, President of the Clinical Section, being in the chair. Previous reports of the discussions appeared in THE LANCET of Feb. 19th (p. 379) and March 5th (p. 486).

Influence of Operative Measures on Mortality.

MR. C. A. JOLL said that reference had been made to the views of Lieut.-Col. R. McCarrison and others that Graves's disease was due to intestinal stasis or some obscure sepsis. The evidence for this conception of the ætiology of exophthalmic goitre was extremely meagre and unsatisfactory. He had sought carefully among his own patients for septic foci, and had obtained the help of his colleagues in investigating those areas which were in the province of the special departments, and had arrived at the conclusion that there was no ground for believing that Graves's disease was caused by intestinal or any other type of septic absorption. In attempting to estimate the mortality of Graves's disease statistics were quite valueless unless we rigidly excluded all those forms of hyperthyroidism which were not associated with the histological change so typically seen in Graves's disease. Nothing had more tended to obscure the truth than the attempt to group all forms of hyperthyroidism together by introducing such terms as "false Graves's disease" or "formes frustes," &c. No disease had a more definite clinical and histological picture than Graves's disease, and it was very seldom that one had any real difficulty in referring a given case to its proper group, yet he was constantly seeing patients whose case had been diagnosed as Graves's disease and who had been treated for months by rest, X rays, &c., but who were really suffering from encapsuled tumours in the thyroid gland which should have been removed without delay. In true Graves's disease the danger of the operation and the degree of benefit likely to follow depended very largely upon the length of time during which the disease had been present. No surgeon who had had an extensive experience of this work would deny that absolute cures were not to be expected if those toxic changes in the various viscera, which were so well known to occur in the later stages of the disease, were already advanced. On the other hand, he had found that complete cure in the most rigid sense was possible if the operation was done sufficiently early and an adequate amount of the gland removed. He was convinced that if every case of Graves's disease were treated surgically on sufficiently radical lines within three to six months of the onset of the disease the mortality would fall to a negligible figure and cure would be absolute. Unfortunately, at present we did not always see these patients at this early stage, and therefore special precautions were necessary to determine whether an operation could be undertaken with reasonable safely, and further, what type of intervention was wise. He entirely agreed with those who advised a period of rest in bed before the operation, and this might be as much as six months or as little as a week. He was sure that local anæsthesia was not the panacea for operations in Graves's disease. He used it, however, where the patient preferred it, and he employed it in the presence of advanced myocardial disease, but the plea that its use was a dominating factor in reducing mortality could not be maintained, since the results under light open ether in skilled hands were quite as good as those claimed by the advocates of local anæsthesia. The latter, too, was often unsatisfactory.

Treatment by Ligation of Thyroid Arteries.

Very little had been said during the discussion on ligation of the thyroid arteries as a method of treatment. He was a convinced advocate of the ligation of the superior thyroid arteries in very mild cases, which he had seen cured by this method of treatment, and as a preliminary step in grave and advanced cases. The operation was simple and was very suitable for local anæsthesia; a striking degree of improvement often followed. It was generally necessary to resect a part of the gland three to six months later, and such could be done at this stage with less risk than would have been involved in immediate resection. He had only once injected boiling water into the gland, as advocated by Porter. The patient had been operated on elsewhere before and apparently the operation had had to be abandoned owing to hæmorrhage. When he attempted to expose the gland he found that it had become so bound up with the muscles that no plane of cleavage could be found, and he therefore adopted Porter's method as a pis-aller. He was surprised to hear a few months ago from the patient that she was perfectly well. It was to the gentle handling of the gland that he would ascribe the improvement in the statistics at certain clinics. It had been suggested that local anæsthesia helped in this, but it should be recognised that to avoid hæmorrhage was the essential point in this class of surgery, and that this could only be obtained by absolute gentleness, and that the type of anæsthesia had nothing to do with the delicacy of the surgeon's manipulations. The amount of gland to be removed could not always be decided before the operation, as it might be necessary to modify one's plans as the operation proceeded, but he set out, as a rule, to excise three-quarters to four-fifths of the whole gland. Hemithyroidectomy would not cure Graves's disease, though it would generally improve the patient's condition. He was unable to understand those who claimed that it was necessary to remove every scrap of gland tissue in the neighbourhood of the recurrent nerve. If a small portion of the gland were left in this situation cases of recurrent nerve paralysis did not occur, and he understood that the incidence of this disastrous complication was very high where this precaution was not adopted. He had often examined this little piece of gland during secondary operations for the removal of a further portion of gland, and in no case had he seen any evidence of its hypertrophy. The solution of the problem of the treatment of this disease seemed to him to lie in the direction of earlier operation, more extensive resection, and avoidance of hæmorrhage during the operation.

The Present Deadlock.

DR. C. M. WILSON said that there had been a disquieting similarity between this debate and that of 1912. For the most part it was necessary to refer to the date at the top of the page to assign this or that speech to its proper period. Small advances in surgical technique had certainly occurred, and a field that was then the province of a few surgeons was now tilled by many. But in the main a decade had gone without bringing final answers to questions which vexed them then. And while they were marking time they had remained divided into two camps, and not only were the two camps unable to convince each other, but they had not found it possible to present their facts in such a manner that those who belonged to neither could sit in judgment between them. And this was the position not with regard to some difficult and intricate problem of causation, but about the actual results of treatment. What was the secret of this confusion? Was it not because the terms used to describe the condition of a case or group of cases either before or after operation did not succeed in conveying to others the type of case they had in mind? They were in doubt as to what was included under the term Graves's disease and what was excluded. And even when they knew that they were baffled by what was meant by mild, moderately severe, and severe cases. They needed standards. The rational way of ending this state of affairs, if it could be ended, was to express in figures the degree of severity of a case of Graves's disease at any one time, so that all might know the type of case described and be in a position to compare accurately the results of different methods of treatment. It was these considerations, he said, that had led him nearly a year ago to check his clinical observations by measurements of basal metabolism by a modification of the method in use at the Mayo Clinic. This method possessed the advantage that it was admittedly more accurate, and the apparatus more portable, than Benedict's instrument, which, however, had the advantage that it did not require the technique of gas analysis; but he could not enter here into the respective merits of the two different methods of obtaining measurements of the basal metabolic rate. The point was that mathematical measurements could be made by either method of the toxicity of a case of Graves's disease at any one time. These measurements would, he hoped, provide the missing link between the worker and the reader of his printed results. For example, if a case was admitted to hospital with a metabolic rate of 70 per cent. above normal, and this rate was brought down by treatment to 35 per cent., those figures conveyed to others the exact toxicity of the case before treatment and the measure of success achieved. But if, on the other hand, a case which they would now label moderately severe became after treatment a so-called mild case of Graves's disease, no one except those in charge of the patient was really much the wiser.

The Importance of Early Diagnosis.

But these measurements were not only valuable in the selection of the type of treatment, and in following its results as they watched a case of diabetes by estimations of the percentage of the urinary sugar. They were particularly helpful in early diagnosis, of which they had heard too little in that debate. At the present time if unusually favourable results were reported in the treatment of Graves's disease they were met with the criticism that those cases were not Graves's disease at all, because they lacked this or that sign of the complete classical picture, till they were led to question whether this disease had a youth at all, or whether it sprang into being fully formed, like Pallas Athene from the brain of Zeus. The term pulmonary tuberculosis was not confined to cases with cavity formation, and it was no more rational to restrict the name of Graves's disease to a late and intractable stage of the malady. Basal metabolic measurements would provide an incentive to the early treatment of this disease by carrying assurance to the physician that there was actual over-activity of the thyroid, and by convincing him that at such a stage the over-activity could be rapidly reduced to normal limits. They might therefore look for a time when severe and moderately severe cases, around the treatment of which that discussion had so largely hinged, would become clinical curiosities. Pending that time they must evolve some rational procedure in the selection of the line of treatment of such cases. The type of patient to which he was referring generally improved with rest in bed. The metabolic rate fell, for example, from 60 per cent. above normal to 35 per cent., but in many cases after a variable period no further fall occurred, the basal metabolic rate remaining stationary. There were then two alternatives—to trust to time in the faith of Sir William Hale-White that it would prove a reliable ally, and that meanwhile no great harm would befall the patient or the patient's tissues, or, on the other hand, to seek by surgery or X rays to reduce further the basal metabolic figure to normal. It was the choice between these two alternatives that was the difficulty. It might be profitable to consider certain factors that appeared to be delaying the solution of the problem.

The Rôle of the Physician in Graves's Disease.

Primarily, as he had already said, the lack of standards impeded them, but the solution was not brought nearer by a certain lack of detachment very noticeable in that discussion. He would enter a plea that the rôle of the physician in Graves's disease was not as the advocate of this or that method of treatment, but that he should speak as from the bench and with a like authority. There were too many advocates. Some speakers, for example, had contended that the desired result in that disease was more certainly and more permanently attained by operation than by any other means. This was a comparative claim. It implied that the surgeon either had personal and prolonged experience of these other methods or, in default, that he had access to published statistics with which he could compare his own results. But, as they knew, no such data existed. Without such intimate experience of alternative measures those surgeons' results had only the value of uncontrolled experiments. Then there were other speakers who had never seen any improvement from X rays. He would invite them to check their clinical observations by metabolic measurements. They would find that when rest had done all that it could do in many cases X rays would effect a further fall, often to normal. In America, such careful workers as Means and Aub affirmed that when the cases were followed for several years there was very little to choose between the end results of surgery and X rays. He could not escape the feeling that when the same time and thought had been given to working out the dosage and other details of technique as had been devoted to elaborating surgical methods, a more favourable verdict would be passed.

Finally, there was the physician who was averse to surgical interference in any circumstances whatever, on the ground that operation was both unsafe and unnecessary. Such a view, though apparently at variance with the clinical experience of most, had not been finally dismissed, because the criticism directed against it had been vague and ineffective. Surgeons brought to these meetings patients and photographs of patients to prove that thyroid over-activity could be controlled by operation. But that was not the point. The immediate benefits of surgery were not in question; they were rather concerned with the permanency of such results and with the necessity of operation. The case against the surgeon was that operation was unsafe and that it was unnecessary. The risk might be immediate or remote. But if the results of surgery were all that had been claimed, he confessed that he was not greatly perturbed by a 5 per cent. mortality after operation. Those who were had been more fortunate in the results of conservative treatment than he could claim to have been. He, however, was much more concerned with the more remote danger of hypothyroidism. The more they worked in this field the more they came to question not how much of the gland they might safely remove, but whether, taking a wide view of the thyroid's activities, they dared remove any. On the other hand, certain observations in metabolism that he had made demonstrated that this risk of hypothyroidism was not confined to cases treated surgically, but was present after X rays and even after the cure that nature brings about. The point they had to settle was, Did a certain degree of hypothyroidism short of classical myxœdema, but involving a measure of impaired health of which we had taken too little notice in the past, commonly occur, and in that event was surgery the most frequent offender? They might look to basal metabolic measurements to enlighten them on this point. Finally they came to the question, Was operation necessary? and if they were not greatly intimidated by the mortality they would want to know whether Mr. Dunhill's contention that a comparatively large number of patients with this disease suffered grave and permanent damage to their tissues held against Sir William Hale-White's contention that few in fact did so suffer. If they agreed with Mr. Dunhill it was clear that if they shunned surgery altogether many were deprived of the chance of complete recovery. But if they agreed with Sir William Hale-White, then all they stood to lose by adopting conservative measures was a period of invalidism extending perhaps over some years, and the fact that such a period of enforced idleness was for many economically impossible. But even if they agreed with Mr. Dunhill, surely the way to prevent such irreparable damage to tissues lay in early diagnosis, and not with the scalpel. He had made frequent measurements of basal metabolism in 140 cases suffering from hyperthyroidism, the results of which he could not give there. For the moment he was concerned to rescue the method of measuring basal metabolism from the charge that might be formulating in some minds that it was the latest fad in instruments. They needed standards; basal metabolism supplied them. There was a natural reluctance to replace clinical observation by laboratory methods, and the value of any procedure was directly proportional to its simplicity and its general applicability. If records of the pulse and weight of the patient provided what was necessary there would be no place for those measurements, but the pulse, though fairly accurate as a relative gauge, of the patient's condition from day to day, was far from an absolute measure of the toxicity in a particular case; it did not furnish the standard for which they were seeking, while the weight was a singularly erratic index to the patient's progress. The criticism that basal metabolic measurements were too complicated to win a permanent place in the physician's everyday methods came curiously from those who had employed the electrocardiograph in selecting cases for operation. He hoped that these measures would come into general use, so that before the next discussion it would be possible for results to be expressed in a manner understood of all.

Not a Disease of the Thyroid Gland.

Dr. **LEONARD WILLIAMS** contended that cutting operations on the thyroid gland were altogether inadmissible in Graves's disease. Graves's disease was not only not a hyper-thyroidism, but it was not a disease of the thyroid gland at all. There were cases, and many of them were very severe, of Graves's disease in which there was no enlargement of the thyroid. The most outstanding features of the complaint—namely, exophthalmos and cardiac troubles—were due to the implication of other glands. As Maurice, of Lyons, had pointed out, exophthalmos was due to adrenal excess. The cardiac symptoms were due to enlargement of the thymus gland. Graves's disease was due to a toxæmia in which all the members of the endocrine hierarchy were involved. The only way of treating the disease was by discovering the source of the toxin and eliminating it. The toxin was gastro-intestinal in a large percentage of cases, and could only be successfully dealt with by dieting and, if necessary, intestinal antiseptics. The responsibility of the thymus was a point too much neglected. It was enlarged in about 85 per cent. of the cases, and its enlargement caused not only the cardiac symptoms by direct pressure on the base of the heart and the great vessels, but also many of the nervous symptoms by pressure upon the pneumogastric, the sympathetic, the phrenic, and the mental symptoms by interfering with the drainage system from the brain. There was no more justification for the ablation of one lobe of the thyroid in Graves's disease than there would be for the removal of one kidney in diabetes.

Dr. **S. A. K. WILSON** said that he was disappointed that so little had been said of the pathology of a disease, for which so many methods of treatment had been advocated. He was absolutely in agreement that exophthalmic goitre was not a disease of the thyroid gland, but regarded it as a neuro-glandular disease. Changes were well recognised as occurring in the intermediolateral tract of the spinal cord. In seven fatal cases changes had been found in this tract. It was impossible to dissociate the nervous side from the picture of Graves's disease, nor should it be ignored. At present the disease was being treated from without, but he hoped that later it would be treated from within.

X Ray Treatment of the Disease.

Dr. **MARTIN BERRY** spoke of the advantages of X ray treatment which, he said, could be carried out in most cases without taking the patient away from work, without admission to a nursing home or confinement to bed. He recorded a series of cases in which prolonged [illegible] had not been found necessary to effect a cure with X rays. He considered cases as cured when the nervous symptoms disappeared and did not return. The treatment was not contra-indicated, except in cases where there was actual pressure on the trachea. His principle in general had been to administer small doses at short intervals to acute cases, and larger doses at longer intervals to those more chronic. The cases he narrated he said were representative of many others, and were brought forward to show that in some cases it was possible to cure exophthalmic goitre by means of X rays, and that they merited some place in the treatment.

Reply to the Discussion.

Dr. **HECTOR MACKENZIE**, in reply, said that he could not agree that the present discussion showed no advance on that of 1912. The safety of the operative treatment had been enormously increased. Of the cases in which he had coöperated with Mr. Dunhill, none had been lost and all had benefited. The operation was now comparatively safe. He was disappointed in Mr. Joll's view of the importance of local anæsthesia, and that of Mr. J. Berry and Mr. Joll on ligature of the arteries. He had never seen a satisfactory result from ligature, but had met with disaster. It was not worth while tying the vessels, when far better results followed thyroidectomy. He thought that the fact that treatment applied only to the thyroid cured the disease showed also its source. Dr. Florence Stoney's series of cases treated by X rays was a very important contribution to the discussion; in his view X rays or operation formed a part and not the whole of treatment. Estimation of the metabolic rate was no doubt of the highest value, but he was always afraid of any procedure which made treatment more difficult and did not think it would be of permanent utility. Mr. A. J. Walton, he felt, was inclined to underrate the good results of medical treatment; it must be remembered that surgeons only saw the medical failures, as a rule. The outlook for these patients was better than at any previous time. Every effort should be made to cure by medical means, but a considerable number with this alone drifted into invalidism, and for these surgical treatment was especially of value.

Mr. **T. P. DUNHILL**, in reply, doubted the wisdom of including all cases under one term "hyperthyroidism," and said that he made a point of differentiating the various forms as clearly as possible. He had especially not referred to operative technique. In his view ligature of the vessels if necessary was not easy, and if easy was not necessary. He could not accept Mr. J. E. Adams's suggestion of inserting radium into a part of the gland left in situ, and thought that any tinkering with this part was unsafe and materially increased the risk. Nor could he agree with Dr. Leonard Williams that the thymus had a very important influence, since the symptoms disappeared altogether after an operation in which the thymus was not touched. The discussion led to the conclusion that the physician was the person to be in charge of cases of Graves's disease, to direct the various kinds of treatment; if he found that a case was not progressing as it should he should call in a surgeon. With regard to Sir William Hale-White's statistics, he maintained that cases of Graves's disease did not appear in the Registrar-General's reports under their appropriate heading, but as acute mania, renal disease, &c.

SECTION OF LARYNGOLOGY.

A **MEETING** of this section of the Royal Society of Medicine was held on March 4th, Dr. **JOBSON HORNE**, the President, being in the chair.

The late Sir Felix Semon.

The **PRESIDENT** made sympathetic reference to the recent decease of Sir Felix Semon,[1] founder of the old Laryngological Society of London, and for 30 years a distinguished laryngologist in London. He said members of the section could never forget the work which Semon did for laryngology and for the advancement of the specialty. A resolution of condolence with the members of the family was passed.

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[1] An obituary notice of Sir Felix Semon appeared in THE LANCET of March 12th.

EXHIBITION OF CASES AND SPECIMENS.

New Growth in Bronchus.

Sir J. **DUNDAS-GRANT** showed a middle-aged man from whom he removed a new growth of the left bronchus. He was seen 13 months ago because of cough and shortness of breath of 12 months' duration, the last few days streaks of blood occurring in the expectoration. He had been in a sanatorium, and had wasted somewhat. The dyspnœa was accompanied by stridor, which was mainly inspiratory, and without excursion of the larynx. Tubercle bacilli were never found. Bronchoscopy showed a pale, flapping growth, with fimbriation. The growth was removed by bronchoscopy, and breathing was so much easier that the patient soon left the hospital, with the tracheotomy wound closed. The patient had remained comfortable until a few weeks ago. On direct bronchoscopy a smooth rounded growth was seen, apparently growing from the outer wall. With Killian's forceps only a fragment could be brought away, and as there was now greater comfort the patient was averse to further procedures at present.

The Canfield Operation for Suppuration of Antrum of Highmore.

Sir J. **DUNDAS-GRANT** also showed a patient on whom the Canfield operation had been performed for antral suppuration. In the discussion on the case most of the speakers expressed their preference for the route through the canine fossa.—Mr. **LAWSON WHALE**, however, pointed out an advantage in the Canfield operation in that it gave a better view into the cavity than did the canine fossa route, hence it was better for removing any polypi which might be present.

Cystomata of the Larynx.

The **PRESIDENT** demonstrated, by means of the epidiascope, a number of specimens of cystoma of the larynx. He said cysts of the larynx were not common, but there was much difference of opinion on the point. Sir Morell Mackenzie regarded them as the rarest of the laryngeal tumours. Moure, of Bordeaux, however, considered cysts of the larynx to be the most common form of innocent neoplasm met with in the larynx. He (the President) also showed a retention cyst of the epiglottis, and one of the vocal cord, and a traumatic cyst, which latter developed on the site of a laryngo-fissure operation.—Dr. **IRWIN MOORE** showed a drawing of a cyst of the larynx which was recently discovered accidentally by Professor Shattock, and illustrations of several other cases. He remarked that Cohen stated he had not seen a cyst of the larynx until 1919 in 20 years of out-patient work, and this one originated in the anterior part of the ventricle.—Mr. **HERBERT TILLEY** referred to a very large cyst which he encountered in his practice, and which twice nearly suffocated the patient. The man, at these crises, relieved himself for two or three weeks by putting his finger down and bursting the cyst. Mr. Tilley punctured the cyst and removed most of its wall; but in a few weeks a cyst was again there, as large as ever, and a swelling was present in front of the neck. Mr. W. Trotter thereupon, by a long operation, dissected out the cyst, which included the thyroid bursæ, and was traced into the larynx. This showed that cysts which appeared to be intra-laryngeal might be there only by accident, and have their origin outside the larynx; they might be due to defective fusion of branchial clefts.—Sir W. **MILLIGAN** spoke of two cases of blood cyst on the vocal cords in his practice, both of which he removed.—Dr. J. **DONELAN** mentioned an interesting case of multiple cysts of the larynx which occurred in the practice of Sir Morell Mackenzie in 1889. There were in the patient three cysts in the epiglottis, of fusiform shape, and they were stowed away in the gullet.

Bilateral Paralysis of Internal Tensors.

Mr. **PHILIP FRANKLIN** showed a girl, aged 12, who suddenly lost her voice six months ago. Ever since her fourth year she had had short periods of aphonia. On expiration the arytenoids were seen to meet, the cords being bowed. The mucosa of the nose and pharynx was atrophied. He asked whether the condition was functional or a sequel of nasal infection.—Dr. **DONELAN** did not regard it as true paralysis, but wasting of the internal tensors probably due to myositis the result of over-functioning.—Mr. **WHALE** thought there was posticus paralysis as well as tensor.

Case of Lingual Thyroid.

Dr. G. W. **BADGEROW** showed a woman singer with a lingual thyroid, which was discovered accidentally.—Mr. W. G. **HOWARTH** referred to three similar cases which he had shown at various dates. If these caused trouble and operation was contemplated the operator should first satisfy himself that the patient would have sufficient thyroid tissue left. If the tissue involved was all the thyroid the patient possessed, one could only take away the top of it and treat with the galvano-cautery. He had found 95 cases recorded.

Obstruction of Œsophagus by Foreign Body.

Mr. **SOMERVILLE HASTINGS** related two cases of obstruction of the œsophagus by a foreign body acting as a ball-valve. The first was that of a woman, aged 30, who 13 years ago was found to have constriction of œsophagus, with marked dilatation above it. She improved somewhat and took food better. Eight years ago, however, she had another attack, but improved in six weeks. In September, 1920, the trouble having recurred, the œsophagoscope was passed and a cherry stone was found 11 inches from the incisor teeth; it rested like a ball-valve on a smooth fibrous stricture of the œsophagus. The stone was removed, and swallowing had been normal since, and the patient soon increased in weight. The second case was that of a woman, aged 52, who for several years had had occasional difficulty in swallowing, which manipulation of the neck relieved. Œsophagoscopy revealed, 8 inches from the upper incisor teeth, a large hard pea. Its removal led to disappearance of all symptoms.

MEDICAL SOCIETY OF LONDON.

THE CHEMICAL ESTIMATION OF GASTRIC FUNCTION.

AT a meeting of this society, held on Feb. 28th, with Sir **WILLIAM HALE-WHITE**, the President, in the chair, a discussion on this subject was opened by Mr. J. H. **RYFFEL**, whose paper appears in full in this issue of THE LANCET.

Dr. J. A. **RYLE** briefly described the results of his experience with the fractional test-meal based on personal experiments and employment of the test in out-patient and private practice, and also on an extended investigation of normal subjects in concert with Dr. T. I. Bennett. He claimed that the information afforded by the test, both in respect of gastric motility and gastric chemical function, made it a superior test to the one-hour test-meal of Ewald, and considered it to be the best single method of estimating gastric efficiency. He emphasised the importance of measuring and otherwise studying the resting secretion, and of macroscopic inspections of the serial specimens, and showed charts illustrating the diagnostic features of curves obtained in cases of pyloric stenosis due to ulcer and to growth, of duodenal ulcer and achylia gastrica. With further curves he demonstrated the application of the method in determining the mechanical and chemical efficiency of the operation of gastro-jejunostomy. In summarising, he stated that the method, by combining a 12-hour and a continued test, was most valuable in the diagnosis of pyloric obstruction and its cause; that curves characteristic of duodenal ulcer were very constantly obtained; that in achylia gastrica there was also a characteristic curve; and that in many other unclassified dyspeptic conditions, information of help to the physician from the therapeutic point of view, was frequently obtained by a fractional gastric analysis.

Mr. E. C. **DODDS** said that he had found that measurement of the alveolar CO_2 tension before and after a meal showed a rise in such tension, followed later by a fall; he showed diagrams taken from normal and pathological cases demonstrating this phenomenon, particularly one showing how, in a subject on whom gastrectomy had been performed, the initial rise was absent, but the later fall—which he believed was due to secretion from lower portions of the alimentary tract—was well marked. He said that the evidence that the degree of such changes in alveolar CO_2 tension was quantitative would be brought forward during Dr. Izod Bennett's communication.

Dr. T. IZOD BENNETT began his communication by stating that he did not consider that any really valuable estimate of gastric function could be obtained by any analysis made at one fixed period in the cycle of gastric digestion. He showed diagrams to illustrate how, at the end of one hour, the acidity of many stomachs gave the same reading, whilst at a later period the curves of percentage acidity might become widely divergent in such cases. He then showed the results of the investigation of gastric secretion in normal men made by himself and Dr. Ryle; he drew attention to the four normal types, and demonstrated the curves of alveolar CO_2 tension in each of these types made by Mr. Dodds; he emphasised the striking confirmation of these results, and the enormous variations in alveolar CO_2 tension after a meal seen in certain hypersecretory types.

Dr. R. L. MACKENZIE WALLIS said that his experience had so far been confined to the one-hour test-meal, using the well-known Ewald meal for this purpose. This test-meal enabled one to make a complete analysis of the meal, including the estimation of total acidity, free hydrochloric acid, physiologically active hydrochloric acid, inorganic chlorides, total chlorides, organic acids, nitrogen content, and ferment activity. In carcinoma of the stomach free hydrochloric acid was usually absent, and the active hydrochloric acid much diminished. In addition, there was one very characteristic feature—the relative increase of mineral chlorides. This increase of mineral chlorides in carcinoma of the stomach was due, in his opinion, to interaction of the hydrochloric acid secreted with organic acids derived from the growth. In a series of nearly 2000 cases where this complete test-meal analysis had been carried out several interesting points had been revealed. The test-meal diagnosis had been found to be correct in 70 per cent. of cases of early carcinoma of the stomach—i.e., operable cases. If one included the cases where clinically there was no doubt as to the diagnosis, which had been confirmed by operation or autopsy, the percentage would be considerably raised. In all the cases the tests for occult blood in the stools had been made and proved to be positive on three successive days in all the 70 per cent. correct cases. A number of cases with malignant disease where the stomach was *not* involved had shown normal values or even hyperchlorhydria in test-meal analyses. There was, however, one type of test-meal where the mineral chlorides were raised to the same extent as in carcinoma of the stomach; this occurred when for any reason there was regurgitation of intestinal contents into the stomach. There was thus a definite neutralisation of some of the hydrochloric acid with the production of sodium chloride. This neutralisation affected the physiologically active hydrochloric acid, with the result that this was diminished, and the inorganic chlorides and total chlorides increased. In carcinoma of the stomach there was no such neutralisation since there was very little hydrochloric acid secreted, and further ferments were markedly diminished, or entirely absent, whereas in regurgitation test-meals they were unaffected. The necessary stimulus to produce regurgitation was provided in every case by an excessive secretion of hydrochloric acid. These regurgitation test-meals had been found in chronic gastric ulcer, duodenal ulcer, gall-stones, and appendicular gastralgia, and also after gastro-enterostomy. It was a natural mechanism to produce neutralisation of the excess of hydrochloric acid in the stomach. The fractional test-meal method failed to detect regurgitation test-meals. Regurgitation of bile at the end of a meal was normal occurrence, but the appearance of bile was necessary since by direct observation a clear watery alkaline fluid had been seen to regurgitate into the stomach. This type of regurgitation occurring before the end of one hour after the meal had been consumed was, in his opinion, definitely pathological. The fractional test-meal in its present form was limited in value in that the material obtained was insufficient for a complete analysis of each fraction, and the estimation of the mineral chlorides was as important as the estimation of total acidity and free hydrochloric acid. The combination of the one-hour test-meal with frequent examination of the stools for blood provided a considerable amount of information in the early diagnosis of carcinoma of the stomach—which was likely to remain the most important function of test-meal analyses.

Dr. GEORGE GRAHAM said that he thought a good case had been made out for the use of the continuous test-meal, but the chemical methods employed were not the best available. It was clearly impossible to make a complete chemical analysis every 15 minutes, but it should be possible to do so once in the course of the experiment, preferably at the end of one hour. He understood from Mr. Ryffel that it would be possible to draw off 15–20 c.cm., which should give enough filtered fluid to do a complete analysis of the chlorides by the Prout-Winter method. Mr. Ryffel had not represented his work on the increase of the mineral chlorides in carcinoma quite correctly. The mineral chlorides were usually increased, though not necessarily, but were always greater than the active HCl. This method was not infallible, but, as was shown in the original series of cases and in Dr. Wallis's recent series, it was of great value in the diagnosis of malignant disease. In order to avoid errors due to regurgitation of the contents of the duodenum the test-meal should not be given until the patient's bowels had been thoroughly cleared out. He had recently seen three cases in which the whole character of the chemical analysis had been altered after the bowels had been well opened.

Dr. W. H. WILLCOX was of opinion that the ordinary test-meal, in which a pint of weak tea and toast were given and the gastric contents withdrawn in an hour's time, still retained its value as a method of diagnosis. This meal, from the quantity of liquid available, permitted a much more complete and more accurate analysis than was possible with the small quantities of liquid available with the fractional test-meal. Dr. Willcox advocated the determination of the active hydrochloric acid by the modified silver nitrate titration described by him in THE LANCET in June, 1905, since this gave results more accurate chemically than methods depending on the change of colour of aniline dye indicators such as were employed in the analysis of fractional test-meals. In his experience the presence of organic acids in considerable quantity, as was the case in growths of the pyloric portions of the stomach, materially affected the accuracy of the titrations for HCl with the usual colour indicators. The determination of mineral chlorides as advocated by Dr. Graham was an important part of a gastric analysis and could always be carried out on an ordinary test-meal, but with the fractional meal this was not usually possible. Dr. Willcox emphasised the importance of determining the ferment activity of the gastric contents, and called attention to the method which he described in THE LANCET in July, 1908. By this method the rennin activity could be determined quickly and accurately, and the process was one which had been in constant routine use on all the test-meals analysed in the pathological chemistry laboratories at St. Mary's Hospital for the last 12 years. It had given uniformly reliable results and was a very useful practical method. He had pointed out in 1908 that the quantitative determination of the rennin present in the gastric contents probably gave a fairly accurate representation of the pepsin present. In cases of gastric and duodenal ulcer and hyperchlorhydria a high figure was given for the rennin activity, while in gastric carcinoma and hypochlorhydria the rennin activity was low, and in achylia gastrica the rennin ferment was absent. Dr. Willcox considered that the fractional test-meal gave valuable evidence, and the type of curve given by the free HCl present formed a useful help to diagnosis in such conditions as gastric and duodenal ulcer, gastric carcinoma, and achylia gastrica. Also the fractional test-meal enabled a valuable determination to be made of the time of emptying of the stomach, which was not given by the ordinary test-meal. He was of opinion that the fractional test-meal should supplement and not replace the ordinary test-meal. The combination of the two methods gave very important chemical information as regards the gastric function.

LIVERPOOL MEDICAL INSTITUTION.

AT the last meeting of the Pathological Section of this society, Dr. J. E. GEMMELL, the President, in the chair, the discussion was resumed of Professor J. G. ADAMI'S paper on

The Pathology of Influenza.[1]

Dr. R. J. M. BUCHANAN, who opened the discussion, said he could only speak on the subject from the clinical side. In the epidemic of 1918 about 450 cases of the disease from among the U.S.A. troops were admitted to three of our auxiliary hospitals, to which he was appointed consulting physician. The outbreak was serious. It soon became evident that the cases could be divided clinically into four groups: (1) the mild catarrhal type; (2) the pneumonic type; (3) cases with physical signs of bronchiolitis; (4) cases of profound toxæmia with little or no respiratory phenomena in whom coma-vigil was the rule, and who with few exceptions died. Among the complications profuse epistaxis was not uncommon. Empyema was not common, but occurred in prolonged cases. One double empyema, one pneumothorax, and cases of pleurisy, suppurative pericarditis, and peritonitis occurred. A few developed otitis media and some mastoid abscess. Subcutaneous abscesses were not uncommon. When arthritis occurred it was generally in the knee. One patient had pelvic abscess which burst through the bowel shortly before death. Symptoms of meningitis were present in a few cases, and he understood that in such the pneumococcus is present in the cerebro-spinal fluid. He saw one case of fatal pneumococcal spinal meningitis in which the body was absolutely rigid as in rigor mortis, with marked delirium and no pulmonary infection. The blood in life contained the organism. His clinical observations of the recent epidemic led him to the conclusion that we had to deal with a triple or multiple infection process. Dr. Buchanan then briefly described the history of the previous epidemics, and showed that the same division into groups was seen, even in the 1889–92 epidemics. He thought this similarity in classification in different epidemics supported the theory of multiple infection, and in support of this he quoted Washbourn, Lister, Gochez, Gillespie, Cole, and Sutton and Sevier.

Professor ERNEST GLYNN referred to 7 children in one family who contracted influenza early in September, 1918. Four died, 3 with very marked tracheitis; pneumococci and bacilli of the influenza group were demonstrated. He quoted some experiences of the influenza epidemic among the American soldiers in Liverpool; direct films from the sputa of 13 cases showed pneumococci and influenza group in 5, influenza group in 2; blood cultures from 70 cases showed pneumococci in 9, pneumococci and streptococci in 2, influenza group in 2; 22 post-influenza empyemas showed pneumococci in 9, streptococci in 8, pneumococci and streptococci in 1, pneumococci and *Staphylococcus aureus* in 2, streptococci group in 1, while one was sterile. He quoted several cases in which the bacilli of the influenza group were numerous in the trachea and bronchi, but pneumococci scanty, whereas in the pneumonic lung alveoli the reverse obtained. A mixed influenzal pneumococcal and streptococcal vaccine which he had made was extensively used for treatment of the American troops, but he had no reliable data as to its value. As "influenzal pneumonia" was often accompanied by septicæmia, vaccines seemed inadvisable on theoretical grounds.

Dr. E. CRONIN LOWE, by means of a series of lantern slides and sections, pointed out the well-recognised importance of the post-nasal space and accessory sinuses as the focus of primary infection in influenza. He showed that in the simple pyrexial cases the intensely influenzal mucosa of those areas gave rise to frequent epistaxis, &c., and was associated with a toxæmia. In other cases which developed later the severe fulminating type of influenza, the condition was due to a generalised bacteriæmia, originating in the infection of the congested pharyngeal veins and extravasated blood in the submucosa of this region and carried probably often in the form of minute infective emboli. These, travelling by the normal anatomical route, would be arrested in the terminal arterioles of the pulmonary artery, which are situated around the terminal bronchioles. In this way he considered, as Dr. Herbert French had suggested elsewhere, the rapid and earliest lung infection took place, giving rise to a peri-bronchiolitis of hæmic origin, which would account for the pathological appearances so constantly found present in these more rapidly fatal cases. The protective functions of the ciliated lining epithelium having been thus damaged, a later infection by direct extension from the upper air-passages along the bronchial tract might ensue. He pointed out that from this point of view the three important factors in treatment lay in the promotion of hygiene of the post-nasal space, prophylactic vaccination against the three organisms principally concerned—namely, *B. influenzæ*, streptococci, and pneumococci—while in the actual treatment of the septicæmic type of case the prompt, early, and adequate administration of curative streptococci or pneumococcal sera should from the biological point of view be the right treatment; generally 50 to 100 c.cm. of serum given intravenously and twice daily would be required.

Dr. A. GORDON GULLAN said that when on service with the B.E.F. in the spring of 1916 he observed an outbreak of influenza of a mild type without any respiratory complications, which was chiefly classified as P.U.O. or trench fever. Early in 1917 he noted cases of influenza complicated with pneumonia and other respiratory affections, but in 1918, when he was officer in charge of the Military Hospital, Gibraltar, two severe outbreaks of influenza occurred; the first, in June, was in several cases accompanied by respiratory complications, but in no instance ending fatally; the second, in October, was much more virulent and patients showed signs of marked toxæmia. In this latter epidemic the respiratory type was much more prevalent, especially in the form of lobar pneumonia, often accompanied by general bronchitis and most severe cyanosis; in 355 cases 77 developed pulmonary complications, and of these 16 terminated fatally. It was noticeable that no soldier affected in June contracted the disease in October. In the sputa which were examined the bacillus of influenza and the pneumococcus were found. Dr. Gullan concluded by saying that Professor Adami's admirable review would stimulate clinicians to further pathological investigation.

Professor J. M. BEATTIE also spoke, and Professor ADAMI replied.

LIVERPOOL MEDICAL INSTITUTION AND MANCHESTER MEDICAL SOCIETY.

A JOINT meeting of these societies was held on March 3rd to which Professor E. S. REYNOLDS, Sir WILLIAM THORBURN, Sir WILLIAM MILLIGAN, and Dr. A. E. BARCLAY made interesting communications. These will be published in our next issue.

MIDDLESEX HOSPITAL MEDICAL SOCIETY.—The annual conversazione will be held at the hospital on Monday, March 21st, at 8.30 P.M., when Dr. Charles Singer will deliver an address entitled "Medicine in Ancient Greece."

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[1] THE LANCET, Jan. 1st, p. 27.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.

A MEETING of this association was held on March 8th at the Elizabeth Garrett Anderson Hospital, with Mrs. FLEMMING, M.D., in the chair, when Dr. M. ESTHER HARDING read a paper on

The Circulation During and After Acute Infection.

Dr. Harding pointed out that the duty of the circulation is to serve metabolism in all parts of the body. The problem of the effects of acute infection on the circulation therefore involves a discussion of the condition not only of the heart and myocardium, but also of the blood-vessels, the nervous mechanism, central or peripheral, controlling the blood-vessels, and of the blood. She maintained that all these four great divisions of the circulatory mechanism are affected, primarily or secondarily, in acute infections. Her data were gathered chiefly from a study of diphtheria and influenza, but probably similar effects could be demonstrated in many other diseases—e.g., acute rheumatism, typhoid, pneumonia, cholera, &c.

Diphtheria was particularly suitable for studying circulatory changes, because in this disease they are well marked and the complication of pyrexia is practically absent. In severe cases there is a gradual fall of blood pressure, which in the worst cases proceeds up to death. Brodie reproduced this condition experimentally and showed that the fall of systolic pressure was not due to heart failure and that the vaso-motor mechanism was also intact. By a study of the alteration in diastolic as well as in systolic pressure Dr. Harding had been able to show that during the early toxæmic stage of diphtheria, while the systolic pressure falls steadily the diastolic pressure is much more stationary —i.e., the output per heart beat is reduced, but the peripheral vessels maintain their tone. The ratio between systolic, diastolic, and pulse pressure varying from the normal 3 : 2 : 1 to a ratio even of 6 : 5 : 1. These clinical observations had been confirmed experimentally.

Observations on the specific gravity of the blood in toxæmic cases further showed that the slight general œdema, so-called "lymph-logging," was accompanied by definite increase in the specific gravity of the blood due to the actual loss of part of the fluid content which leads to a decreased volume of the blood in circulation. This fact suggested that the circulatory failure of diphtheria might be, in part at least, due to a condition resembling the oligæmic phenomenon described by Zandell Henderson in cases of shock. Dr. Harding described recent experimental work which confirmed this observation.

The indication for *treatment* seemed to be to attempt to dilute the blood and increase the volume in circulation. Saline injections, while temporarily improving the condition, had been found of no lasting value. Experiments with injections of gum saline, hypertonic saline, and with fresh citrated blood had been performed, and with the latter injection good results had been obtained.

Effects of Infection on the Heart.

In discussing the effects of infection on the heart Dr. Harding gave details of the study of the size, rate, rhythm, and quality of heart sounds. Recognisable dilatation of the heart was rare in fever hospitals, probably because of the complete rest enjoined on the patient, but very rapid dilatation might occur where over-exertion was allowed at too early a stage of convalescence. Quickening of the heart, related either to myocardial insufficiency or to low peripheral blood pressure, occurred during most fevers. Slowing of the heart was the rule in certain fevers—e.g., typhoid; it also occurred often in severe diphtheria, and was usually of grave significance. Of abnormal rhythms, curtailed diastole frequently accompanied increased rate. Sinus arrhythmia tended to disappear as the heart quickened. Sir James Mackenzie taught that its reappearance might be taken as a sign of the return to normal, but Dr. Harding found an irregularity which she took to be sinus arrhythmia practically always present in cases of diphtheria with slowed heart-rate. However, Sir James Mackenzie, to whom she had submitted tracings of the condition, suggested that the condition was not of true sinus type and might be peculiar to diphtheria. Extra-systoles not in themselves dangerous were yet a sign of myocardial trouble if they occurred with great frequency. Heart-block and auricular fibrillation were sometimes seen and were more serious. Heart sounds tested with differential stethoscope showed in the early stages of infection, progressive diminution of audibility of first, and progressive accentuation of the second. The pitch of the second sound also rose from day to day during infections. Taking the normal musical interval for a man to be a minor third, for a a major third, and for a child a fourth, Dr. Harding found that the interval might alter to a sixth or even a seventh during circulatory impairment.

The late effects of infection might be grouped under two headings: (*a*) Myocardial weakness; (*b*) weakness of peripheral circulation which might, or might not, be vasomotor in origin. The differential diagnosis between the two types was important from the point of view of treatment. In both the patient complained of feeling slack. In both there was some breathlessness, palpitation, fatigue after mental exertion, and irritability; in both there was an excitable heart, shortened diastole, and poor exercise response.

In the myocardial group the patient was at his best in the mornings after a night's rest, and got more and more tired as the day went on. In the peripheral weakness group, the patient was tired in the early part of the day, but improved with exercise. The myocardial group were breathless all the time and the breathlessness was of the anoxæmic type with curtailed expiratory pause. The peripheral type were only breathless after exertion. In the myocardial group the patient nearly always complained of some pain and tenderness in varying amount. Cold seemed to shrivel up patients of this type, whereas a patient with peripheral weakness often benefited when cold is applied to the body surface. In the myocardial group prolonged rest was necessary, bromides and digitalis being very useful. Strychnine, cold baths, and adrenalin by the mouth first thing in the morning were often very helpful in the second type.

It was important in dealing with long-continued debility following acute infection, not to forget the possibility of functional weakness dependent on a psychological cause. When a patient's resistance was lowered as the result of infection his psychological repressions were rendered less complete, so that his repressed complexes were given a chance to make themselves unpleasantly felt. This condition could be recognised in the relation between overwork or infection and a nervous breakdown. Here rest and seclusion, with freedom from worry, would often result in a return to health, but there were many cases where the disability was unnecessarily prolonged and where a little psychological treatment would put the patient on the road to recovery.

SHEFFIELD MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this society was held on March 3rd, Dr. F. J. SADLER, the President, in the chair, when Sir D'ARCY POWER read a paper on

The Palliative Treatment of Aneurysms by Wiring.

He showed Colt's apparatus for the rapid and aseptic introduction of wire into aneurysms and pointed out various points of practical importance in its use. He then gave details of the more recent cases of thoracic and abdominal aneurysm in which he had employed this method of treatment, and the subsequent history of the patients whose cases had been recorded in the Proceedings of the Royal Society of Medicine in 1912. One of the cases was illustrated by a very complete series of X ray photographs showing the wires in position and the changes undergone by the aneurysm during a period of two years. He arrived at the general conclusion that in the majority of cases there was evidence of cure, as the patients were alive and at work 10 and more years after the wire had been introduced. He also appended an interesting table of cases compiled by Mr. G. H. Colt, showing the duration of life from the first recorded symptoms to the time of death in 133 men and 8 women suffering from thoracic or abdominal aneurysms.

The PRESIDENT, Professor A. J. HALL, Professor A. M. CONNELL, Dr. A. E. BARNES, and others took part in the discussion which followed.

QUEEN'S HOSPITAL, BIRMINGHAM.—The accounts for 1920 show a deficit of £20,499, and the committee in their report make a strong appeal for increased support. The income amounted to £24,228, being an increase of £831 on that of the previous year. The expenditure was £44,727, being £7843 more than for 1919. The average cost per bed occupied was £191 9*s.* 10*d.*, compared with £153 15*s.* 7*d.* in 1919, and with £84 19*s.* 5*d.* in the last pre-war year. The most urgent needs of the hospital are an additional sum of £10,000 per annum to meet the increased working expenses, a new medical out-patient department, and an up-to-date operating theatre. Owing to the large debt the hospital was compelled to allocate the legacies received to the current account instead of investing them, unless they were earmarked for a specific purpose. The number of in-patients was 3235, an increase of 317 on the number in 1919. There were 20,868 out-patients and casualties compared with 21,354 in 1919. In the X ray department there were 2903 new patients and 2164 treatments. An electro-cardiograph was installed in October, the cost being defrayed by Mr. and Mrs. Lionel Spiers as an additional memorial to their son, Lieutenant Archibald Spiers.

Reviews and Notices of Books.

PSYCHOLOGY AND PSYCHOTHERAPY.

By WILLIAM BROWN, M.A., M.D. Oxon., D.Sc. Lond., Reader in Psychology in the University of London, Clinical Assistant in Neurology, King's College Hospital, &c. With a Foreword by W. ALDREN TURNER, C.B., M.D. London: Edward Arnold. 1921. Pp. 196. 8*s.* 6*d.*

INTO a small volume of some 200 pages Dr. William Brown has packed as much sound psychological and psychotherapeutic doctrine as is to be found in many larger volumes of a more pretentious nature. He has given us less a mere clinical description of the familiar phenomena of the psychoneuroses than an exposition of the underlying psychological mechanisms and of the principles of a successful treatment. Accepting the method of psycho-analysis in the investigation and treatment of the psychoneuroses, the author is unable to subscribe to Freud's views in their entirety, and indicates in a few closely argued sections the lines of divergence he is compelled to take. Further, he shows how vague and incomplete is Freud's theory of the emotions in contrast with those associated with the names of Ribot, Shand, and McDougall. It is gratifying to note that Dr. Brown is fully aware of the insufficiency of a solely psychological explanation of the phenomena of hysteria; its peculiar physiological disorders cannot be ignored in any causal explanation that claims completeness; yet it is precisely these disorders which the psychologist tacitly neglects. Absence of the plantar reflex in a case of hysterical paraplegia is as integral a symptom as amnesia, but while the latter is accounted for by Freudian theory the former remains unexplained. It is only fair to observe that Freud himself is well aware of the lacunæ in his hypothesis, and Dr. Brown has done useful service in directing attention again to this matter, for it is one which is too frequently passed by. In the chapters on psychotherapy the reader will find succinct recapitulations of the methods developed by Dr. Brown, and already published in various medical journals; and in a last section is a brief yet lucid and critical re-examination of the theories of the interaction of mind and brain, to no one of which, however, does the author seem to commit himself.

Amid all sorts and conditions of modern psychological and psychotherapeutic monographs and text-books this unambitious volume of Dr. Brown's takes rank with the best.

MENTAL TESTS.

1. *Standard Method of Testing Juvenile Mentality by the Binet-Simon Scale.* By NORBERT J. MELVILLE, Assistant Director, Mental Hygiene Committee, Public Charities Association of Pennsylvania. London and Philadelphia: J. B. Lippincott Company. 1921. Pp. 162. 12*s.* 6*d.*

2. *The Intelligence of School Children.* By LEWIS M. TERMAN, Professor of Education, Leland Stanford Junior University. London: Harrap and Co. 1921. Pp. 317. 8*s.* 6*d.*

1. THIS book does for the Binet-Simon scale what Professor Terman's book on the "Measurement of Intelligence" did for the Stanford revision of that scale; it provides definitely standardised methods of stating the problems to the subject and of scoring results. In one respect the standardisation is more complete, for it extends also to the order in which the tests are presented. This order, it must be stated, is somewhat complicated, and possibly equally accurate results might be obtained by a simpler procedure. In the first enthusiasm for intelligence tests the limitations of the Binet scale as indicative of a child's mentality were sometimes ignored. Dr. Melville definitely recognises that the scale gives no reliable criterion of a child's innate intelligence; it shows only "how much an individual has profited from some typical forms of experience and training which the majority of children in civilised countries undergo not only in school but also in the home and on the playground." He insists, further, that the Binet findings must be "corroborated by a thorough psychobiological study of the case," laying stress on the fact that emotional attitude and factors of character, will, and even of attention are quite inadequately, if at all, measured by this scale. Complete directions are given for the carrying out of each test and for recording its results. The pictures and other diagrams required are embodied in the volume itself instead of on separate cards—an arrangement not without disadvantages. Of special value to English readers is the incorporation in an appendix of the complete set of Porteous maze tests which, testing as they do the foresight, the capacity to plan, the practical judgment, and concentration of the child, supply a marked lack of the Binet scale.

In regard to one cardinal point the book provokes criticism. There is fairly general agreement that many of the Binet tests are misplaced in the scale, some by as much as two years. Many revisions have been published—Goddard's, Kussmaul's, Bobertag's, the Yerkes-Bridge scale (which discarded age-tests), and the Stanford revision—but the author of this book frankly prefers to return to the original scale, with all its faults. Admitting that it was based by Binet on the examination of the poorer children in the Paris schools, he maintains that it only requires correction tables for race and social status to make it available for general use, with the possibility of comparable results. From a scientific point of view one cannot but feel that it is desirable to adopt as a basis a scale of more universal validity, and not one based on children of one race and of one social grade. With so many psychologists of different countries at work on these problems the compilation of such a scale should be possible in the early future.

2. Professor Terman's new book is an analysis of the examination by means of the Stanford revision of the Binet scale of children in various grades of American schools, with the double purpose of demonstrating the great differences of capacity existing among children in each grade, and of indicating better methods than at present exist for the classification in schools of exceptional children. It is therefore primarily a book for teachers, but is also of considerable interest to school medical officers who are using the Stanford scale in their examinations of backward and defective children. Of more general biological significance is Professor Terman's claim that, while the social and educational environment of a child contributes to his success or failure with the tests, yet the chief factor is the original endowment, a claim to some extent supported by the fact that the intelligence quotient in children removed to a superior environment was not found to increase in value. Another investigation of medical interest showed that over a third of the cases gave a reduced intelligence quotient after the removal of tonsils and adenoids, while the increase of the others averaged only two points. Both results, however, must be received with caution, for the number of cases tested was too small to justify any general conclusion.

THE OPERATIVE STORY OF GOITRE.

By WILLIAM S. HALSTED. *The Johns Hopkins Hospital Reports*, Baltimore. Vol. XIX. Pp. 71.

HOW many surgeons watching or even performing the simple operation with practically no operative mortality that removal of an adenoma of the thyroid has now become realise that scarcely more than a generation ago this operation was of so great a severity that it was almost considered unjustifiable. The whole history of this change has been most ably traced by Professor Halsted, who has lived and worked at the subject through the whole of this period. The modesty which characterises all his writings allows but little evidence in this monograph of the fact that he has contributed more than any living surgeon to the success which is obtained from the modern operations. So much credit is given to other surgeons that it may hardly be realised that the author is an active participator rather than an historian. The story has been most carefully written, and an enormous amount of trouble must have been taken in searching the earlier literature. Professor Halsted gives accounts of the first more or less experimental operations, and the inclusion of long abstracts from the original papers adds greatly to the interest of the survey, besides showing clearly what wonderful progress has been made in this and other branches of surgery. Even up to 1860-70 any operation upon the thyroid was apparently condemned by the majority of surgeons as a dangerous and unjustifiable procedure. From this time onwards progress was rapid, but in the early days great difficulty was experienced owing to the danger of hæmorrhage. Hence a partial thyroidectomy was regarded as an almost fatal procedure, most frequently the whole thyroid was removed. It was not until several years had elapsed that it was gradually realised that removal of the whole gland was certain to be followed by deleterious effects. Step by step the slow increase in knowledge and the gradual improvement in the operative results is traced, long and careful accounts being given of the work of such men as Kocher, Billroth, Mikulicz, and many others. Real progress dates, however, from about 1879, when artery forceps were introduced and surgeons were thereby enabled to obtain an almost certain control of hæmorrhage. It is difficult to realise that the introduction of these instruments ranks almost with the discovery of anæsthesia and antiseptics in surgical importance, for the three grave dangers to operation were shock, collapse, and sepsis. If anæsthetics overcame the shock by relieving pain and antiseptics overcame sepsis, so also did the artery forceps, by giving a sure means of controlling hæmorrhage, prevent fatal collapse.

The monograph terminates with an account of the author's operation—firstly for partial thyroidectomy and secondly for the enucleation of adenomata; the steps of each operation are beautifully illustrated. Professor Halsted's work must be regarded as one of the classics of surgical literature, which it is essential for every surgeon to read if he habitually operates upon the thyroid gland. Like the rest of Professor Halsted's contributions to medical literature, it is so interesting that the attention of the reader is engaged from beginning to end, and although the bibliography is complete and the abstracts are many there is no portion which can be regarded as dry or irrelevant.

FOR THE LIMBLESS.

A Handbook compiled by Captain H. H. C. BAIRD, D.S.O. The Disabled Society, 48, Grosvenor-square, London, W. 6*d*.

THE aims and objects of the Disabled Society are certainly worthy of public support, being, briefly, the collection and dissemination of knowledge useful to the limbless. The pamphlet now issued is described as a skeleton edition only, later to be amplified in the light of the actual experience of the disabled; in addition, illustrated home exercises for the guidance of wearers of artificial arms and legs are promised in the next edition. Such information should prove of value to the limbless, and we hope that those who for one cause or another do not wear an artificial limb will not be forgotten, as for them exercises are of the greatest importance.

We regret to see no medical name on the executive committee of this society, though there are honorary consultants, and the council includes distinguished members of the profession. The next edition of the Handbook might well receive some attention from one of these, because among some most useful tips and hints by legless men there is one at least of doubtful value. The limbless are advised to treat their stumps with sea-water, methylated spirit, alum and water, and no guidance is afforded as to the efficacy of these washes. The treatment of a stump is in ciple the same as that of any other surface osed to continued pressure, such as the back of a patient suffering from enteric fever. Essentially it must be protected from chafing—that is, in the case of a stump, the artificial limb must fit. Good treatment for any areas subjected to unavoidable pressure is gentle rubbing with the soapy hand in order (*a*) to make the part clean and (*b*) to promote circulation. Only after this should the skin be thoroughly dried to discourage bacterial growth, and only with this object should methylated spirit be used exclusively as a volatile drying lotion. The old idea of hardening the skin instead of keeping it soft and pliable gives results as pernicious to the stump as to the back, or to the nipple of a suckling woman. But on the whole the hints will be found useful.

The information as to the help to which limbless service men are entitled from various Government departments is clearly set out. One further point might be worthy of the consideration of the society. There must be many service men who have not lost their limbs, but have retained practically useless ones. If these could be brought into touch with the society they might also receive and impart much valuable information.

PRACTICAL BACTERIOLOGY.

Blood Work and Animal Parasitology, including Bacteriological Keys, Zoological Tables, and Explanatory Clinical Notes. Sixth edition. By E. R. STITT, M.D., LL.D. London: H. K. Lewis and Co., Ltd. 1921. Pp. 633. 20*s*.

THIS is the sixth edition of the best known work of its kind. The author set himself the task of presenting as much useful information as could possibly be given in the space allowed. All who have ever used the book agree that he succeeded, and all who during the war were engaged in bacteriological work in improvised laboratories far away from libraries were, and are, full of its praise. Every page contains facts and descriptions of methods; even the covers are used for tables. The purchase of this volume will be a useful investment to anyone who wishes to save the time so often wasted in looking up an established fact, a description of a parasite, or an account of a method. He will find in Dr. Stitt's book most of the information he requires.

DISEASES OF CHILDREN.

Aids to the Diagnosis and Treatment of Diseases of Children. Fifth edition. By JOHN MCCAW, M.D. R.U.I., L.R.C.P. Edin. London: Baillière, Tindall, and Cox. 1920. Pp. xii. + 404. 6*s*.

LIKE general medicine, the study of disease in children does not lend itself readily to compression into tablet form, for it is not a limited and clearly circumscribed speciality, but general medicine confined to a particular period of life. The author of this volume of the Student's Aid Series has therefore attempted a difficult task, with what degree of success is demonstrated by the fact that a fifth edition has already been called for. Within its modest limits and at a very moderate cost a surprising amount of information is supplied. To some it may appear to be too concentrated to be easily assimilated, but it is clear that the many have found it palatable. The present edition for the most part has been brought well up to date. We note, however, that no mention is made of the "vitamine" theory of the ætiology of rickets, for which, though still contentious, there is much to be said. On the other hand, the merely speculative view that hypertrophic stenosis of the pylorus is due to hyperadrenalism is given considerable prominence. The statements that "during the first month the child should be nursed every two hours during the day and twice during the night," and that "in infants over a month old one night nursing is sufficient" belong, we think, to an earlier period and mar an otherwise valuable description of breast-feeding. In the section on artificial feeding of infants exception may be taken to the eulogistic mention of a particular kind of dried milk to the exclusion of others, especially as it is not stated that it is a dried milk with modifications. Under the diagnosis of intussusception the absence of a reference to rectal examination or to examination under an anæsthetic constitutes, we think, a serious practical omission. But when all is said it remains true that the author has overcome the initial difficulties of his project with marked ability, and there are few flaws in his book. The title is somewhat misleading, for a good deal more is included than diagnosis and treatment.

BLOOD PICTURES.

Second edition. By CECIL PRICE-JONES, M.B. Lond. Bristol: John Wright and Sons, Ltd. 1920. Pp. 66. 6*s*. 6*d*.

THE second edition of this handbook differs scarcely at all from the first, and the author has wisely refrained from any attempt at elaboration. As it stands the book is a useful guide to the general practitioner, setting forth briefly and lucidly the information which he may fairly expect to obtain from an ordinary examination of the blood. Inasmuch as the general practitioner without previous training is scarcely likely to make the blood examinations himself, the short section on technique might have been omitted. In any case we would suggest that all save experts in constant practice would do well to use separate mixing pipettes for the red and white cells; also that a more viscid diluent than normal saline is easier to work with and gives more reliable results.

FIRST AID.

First Aid to the Injured and Sick. An Advanced Ambulance Handbook. Eleventh edition, revised. By F. J. WARWICK, M.B. Cantab., M.R.C.S., and A. C. TUNSTALL, M.D., F.R.C.S., L.R.C.P. Edin. Bristol: John Wright and Sons, Ltd.; London: Simpkin, Marshall, Hamilton, Kent, and Co. 1920. Pp. 246. 2*s*. 6*d*.

THAT this little book has gone through 11 editions in 20 years is sufficient testimony to its popularity, while the fact that its authors are experienced lecturers and examiners to the St. John Ambulance Association ensures its utility as a text-book. The new edition has been thoroughly revised, some of the illustrations have been improved, and a picture of the diaphragm viewed from the under surface has been added.

PSYCHIATRY.

1. *Psychiatrie.* Tome I.: Traité de Pathologie Médicale et de Thérapeutique Appliquée. Publié sous la direction de EMILE SERGENT, L. RIBADEAU-DUMAS, et L. BABONNEIX. Tomes VII. et VIII.: Par RITTI, JUQUELIER, J. DURAND, MIGUARD, SÉRIEUX, CAPGRAS, LOGRE, BRISSOT, et MALLET. Paris: A. Maloine et Fils. 1921. Pp. 425. Fr.25.

2. *Manual of Psychiatry.* Fifth edition. By AARON J. ROSANOFF, M.D. New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd. 1920. Pp. 634. 22*s*.

1. THIS volume of a monumental treatise forms the first of two devoted to psychiatry, and is of a high order of merit, and worthy of the eminence of its various contributors. It is remarkable to note the critical attitude adopted with regard both to psycho-analytic theories and procedures. In the matter of hysteria the Freudian methods are held to have enriched and systematised one of the least happy results of the Salpêtrière school, the culture of hysteria. M. Durand, in the chapter on melancholia, advances a novel idea as to its ætiology. The author adopts Bergson's views as to the *élan* of consciousness, and ascribes the symptoms of melancholia to its enfeeblement and arrest. The whole book illustrates the position of a psychology not as yet influenced by the analytic movement, but based nevertheless upon very solid acquisitions.

2. The French "Manuel de Psychiatrie" of J. Rogues de Fursac has grown considerably since it first appeared in English in 1905, and has been adapted to meet the special demands of American students. The present edition has been strengthened by a chapter very successfully epitomising the theory and practice of psycho-analysis and by 48 pages of frequency tables, to be used in the free association test. There is also a useful appendix, containing intelligence tests graduated for the examination of children aged 3 and subsequent ages up to adult life. One of the most remarkable chapters is that on hysteria, for the most part as Dr. Rosanoff has observed it in a U.S. military hospital. He maintains "that hysterical manifestations can be actuated by motives other than sexual," and defines the hysterical personality as characterised by a total lack of pure or æsthetic morality; that it is at best actuated by prudent morality, and in its typical manifestations entirely by imposed morality. He places the hysterical individual in close relation to the criminal with a certain difference. "Most hysterics are characterised by a trait which is foreign to many criminals—indolence." Such a view is at least robust, and qualifies the rather mawkish attitude which prevails at present towards this affection.

THE STORY OF MY LIFE.

BY W. D. SPANTON, F.R.C.S. Edited by ERIC E. YOUNG, M.S. Lond. London: The Connoisseur 1920. Pp. 403.

AUTOBIOGRAPHIES are many and of varying excellence and importance. Some rank among the treasures of literature and the great documents of human life, as, for instance, St. Augustine's Confessions. Some are merely records of prostituted talents and of how easily a plausible adventurer can take in his fellows, as exhibited in Casanova's Memoirs. Many, including the majority of those which have appeared of recent years, are of no value from the point of view of literature or of anything else; and some, like the work before us, are just a simple tale of an ordinary life lived by a man or woman who has striven to do his or her duty in whatever position of life he or she may be. Mr. Spanton has been a well-known practitioner in the Midlands for many years, and has succeeded in his profession, and done eminently useful work in not purely professional fields. He is best known, perhaps, to the medical profession in general by his having invented an instrument something like a corkscrew for the radical cure of hernia, but the operation which he devised is now practically obsolete.

Mr. Spanton gives us an interesting picture of his early days as an assistant both in the provinces and in London. His memory has played him false in one place, where he says on p. 9 that he met Douglas Jerrold, for he tells us that he was born in 1840 and came to London when he was aged 19, while Douglas Jerrold died in 1857. Spanton completed his medical education at the Middlesex Hospital and after spending some time at the Sheffield Infirmary settled in Hanley in 1866, where he remained until retirement in 1911. The book is an account of a professional life and recalls nothing of any particular importance. In one place Mr. Spanton has forgotten the rules of reticence which should be observed by every medical man, for he goes into considerable detail of various events happening to a certain family, which events were only learned by him in the exercise of his professional duties, and we must express surprise that his editor, Dr. Young, allowed the passages in question to appear in print. Also Dr. Young should have cleared up the following statement (p. 13), which is incomprehensible:—

> "Dr. Morgan mentioned in one of his lectures on physiology that he had observed that, contrary to the usual teaching of that day, during the heart's systole it became shortened. On the contrary, it became elongated. And ..... I set to work to watch the heart's action in frogs ..... and my rather rudimentary observations served to confirm his view."

We can congratulate Mr. Spanton on gaining the confidence and affection of his patients, and one proof of this is given by a poem written in gratitude to him when he was resident surgeon at the old North Staffordshire Infirmary. It will be found on pp. 216-218.

Not only Mr. Spanton is praised, but also his three resident pupils, as follows:—

> "Whether in medical or surgical art,
> May these pupils far excel;
> May Israel's Great Physician's eye
> Round these young gentlemen watch,
> And may it yet be said of them,
> Death nearly met his match."

There is a great deal more of the poem, which is an altogether delightful composition and a tribute which any man might be proud to receive.

The last hundred pages of the book are mainly made up of records of holiday voyages with which Mr. Spanton wisely recruited his activities, both mental and bodily, during his years of practice. He now lives in retirement at Hastings, and we wish him many more years of restful existence.

JOURNALS.

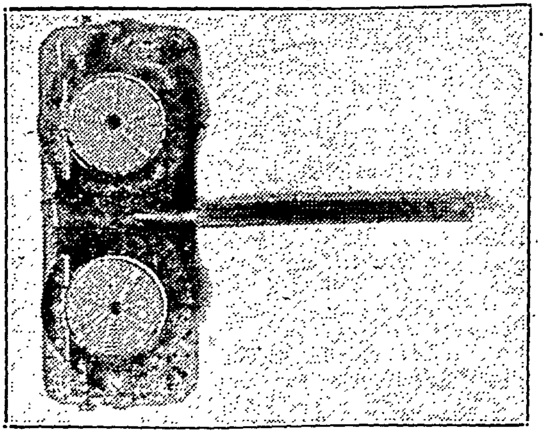
Proceedings of the Royal Society of Medicine, February, 1921. In Dr. Arnold Chaplin's communication to the Section of Epidemiology and Public Health are some interesting statistics of illness and mortality in the Merchant Service, the outcome of his 16 years' experience with shipping companies trading to the East. He found the sick-rate to be 1 in 300. [In the Royal Navy the sick-rate for 1913 was 7 for 300; it is obvious that the statistics are gathered on a different system.] According to Dr. Chaplin, the total mortality stated by the Board of Trade for 1912 was 3·5 per 1000 amongst some 200,000 white seamen, but 5·4 per 1000 amongst the 45,000 lascars; whereas his own experience in the Eastern trade gives 2·6 per 1000 white sailors, and 4·2 per 1000 lascars. The most dangerous disease was pneumonia, the death-rate being 0·3 per 1000 Europeans, 0·8 per 1000 natives. Pulmonary tuberculosis also had a serious mortality, and "all climates appear to favour this complaint in equal degree"; the death-rates are 0·14 per 1000 Europeans, 0·47 per 1000 natives. Dr. Chaplin thinks the spread of the disease is associated with the determination of the native to exclude fresh air from his quarters. He notes that the medical statistics of the Merchant Marine can only be taken as approximate, for it is only ships carrying 100 persons or over which must carry a surgeon, and these form only 600 of the 10,000 ships on the British Register; the statistics of the others depend on the medical knowledge of their captains. To supply these 600 ships with surgeons, about 1000 qualified men are required annually, and their accommodation, Dr. Chaplin says, is, "as a rule, all that can be desired." He proceeds to discuss hospital accommodation, which, in ships carrying third-class passengers, must be provided on the upper passenger deck, and must have 18 square feet for every 50 passengers. No such accommodation is required in other ships, but according to Dr. Chaplin it is nevertheless always provided. The isolation hospital should be aft on a raised deck or over the steering engine-house, and should be built of iron, wood-lined, protected by a double roof, and provided with radiators and plentiful ventilation. The ordinary hospital cabins should be outside cabins, at the end of the alley-way, with the dispensary and surgeon's cabin near by. He hopes a good and safe system may be developed for fumigating ships with hydrocyanic acid; that kills vermin. For ordinary disinfection he uses formalin and permanganate of potassium. In the report of the discussion there are hints of a new Merchant Shipping Bill which will require for each sailor 140 cubic feet of space instead of 120, and 18 square feet of deck instead of 15; hopes were expressed that all questions of the health of seamen should be taken over by the Ministry of Health from the Board of Trade. Several speakers hinted that sailors, so prejudiced against draughts would endure artificially supplied ventilation with warmed air, and General Sir William Macpherson declared that "the prevention of respiratory disease on board ship depended entirely upon the question of ventilation." This has always been urged in THE LANCET. Dr. Major Greenwood drew attention to Sir Gilbert Blane's paper in the Medico-Chirurgical Transactions a hundred years ago, when pneumonia and phthisis were the leading diseases in his statistical returns for the Navy; Blane went on to emphasise the importance of ventilation in ships.

La Médecine.—The first half of the January number of this periodical is devoted to ophthalmology and the second half to oto-rhino-laryngology. Dr. M. Lannois writes on the laryngeal complications of tabes, which are of three kinds—sensory, spasmodic, and paralytic. Of these, the first is unimportant, but the spasmodic affections are of great moment because they occur in the pre-ataxic stage and tend to disappear when the disease has become established; paralyses are more common; energetic treatment with [illegible], and the novoarsenical preparations often does much —Dr. H. Bourgeois discusses tuberculosis of the tonsils; besides miliary tuberculosis and lupus, there are two types, the tuberculous ulcer and latent tuberculosis. The former is rare and is usually secondary to pulmonary phthisis; the latter is found especially in children, the tonsil is normal in appearance, and affection is suspected only from the presence of tuberculous adenitis. The conclusion is that chronic cervical adenitis is not in itself an absolute indication for removal of the tonsils, which should be performed only when they are enlarged or chronically infected.—Dr. L. Dufourmentel is optimistic on the results of treatment of cancer of the œsophagus by radium; he gives a dose of 50 mg. of radium bromide for ten hours, repeated on occasion up to 24 or even 36 hours, and in two-thirds of his cases has obtained immediate diminution of pain with improvement in deglutition and increase of weight, this improvement lasting on an average four or five months; in a third of the cases the improvement was less marked, but very rarely absent. Two patients died of pneumonia respectively, 11 and 9½ months after the application, and two other patients with growths high up in the œsophagus developed, six hours after the application, a kind of paralysis of deglutition with entry of food into the air-passages.—Dr. M. Ramadier has an article on Complete Tonsillectomy interesting to English readers by reason of the light it throws on the totally different practice prevalent in France. Partial removal by morcellement is the operation of choice in those cases where hypertrophy of the tonsils produces mechanical disturbances—that is, chiefly in children—whereas tonsillectomy is preferable in cases where the tonsils are infected, and is usually indicated when the tonsils of adults require operation. The writer prefers local anæsthesia and removal by dissection; the guillotine is not mentioned. There are also articles on the indications for the radical mastoid operation, cancer of the antrum, and several shorter papers. Appended to each is a summary in remarkable English, but too short to be of much value.

New Inventions.

A DOUBLE RETINOSCOPE.

Dr. R. C. Macdonald has brought to our notice a double retinoscope which he has specially designed for refraction work. The shadows are more vivid and the illumination better than with the single instrument, while the operator has the benefit of binocular vision and can correct to an eighth of a dioptre or less any error of his own. Before use the instrument is adjusted to the operator's interpupillary interval for the distance, say one metre, at which he is working. The instrument would be less suitable for fundus examination where the observer's own interpupillary distance is constantly changing. The retinoscope can be used with the usual illuminants; an electric model is also made, and the instrument can be obtained with either concave or plain mirrors according to choice. It is made by Mr. Robert Whitelaw, surgical instrument maker, Woolmanhill, Aberdeen.



THE *Warm Ether Bomb*, described by Dr. S. R. Wilson and Dr. K. B. Pinson in THE LANCET of Feb. 12th (p. 336), is placed when in use in a bowl of boiling water.

THE LANCET.

LONDON: SATURDAY, MARCH 19, 1921.

The Cerebro-spinal Fluid as an Aid to Diagnosis.

THE study of the cerebro-spinal fluid may not as yet have been raised to the dignified level of inclusion in the "ologies" of medicine, but its present-day vogue far exceeds the expectations of the pioneers of twenty years ago. There are few departments of medicine in which diagnosis or treatment is not on occasion materially assisted by resort to the aid furnished by the cerebro-spinal fluid. It has attained the distinction of having books devoted to itself: microscopist and chemist vie with each other in elaborating new tests or discovering new properties to add to the sum of knowledge and, incidentally, to harass the already overburdened student. Serological, immunological, and physico-chemical principles are being applied with zest to the study of the fluid, and no one dare assert that the field has yet been fully reaped, for we do not even know that it has all been sown.

Problems of the origin, formation, and absorption of the cerebro-spinal fluid are not settled, though the general impression derived from experimental observations is that its source is the blood, whence it is separated out by the choroid plexus; its absorption proceeds by diffusion from the subarachnoid spaces and also by lymphatics. Even its function or functions still elude specific determination, apart, perhaps, from its mechanical effect in equalising cerebro-spinal pressure; and as for its precise nature, opinion is still divided on its being a filtrate, transudate, secretion, or dialysate. Fortunately, however, the practical purposes to which its investigation may be put are independent of theoretical uncertainties, though one undecided question is fraught with important therapeutic possibilities—viz., whether the meninges and choroid plexus are permeable. Experiment does not here assist as much as might have been a priori supposed, for the permeability of these structures seems to be very different in disease from what it is in health, and the artificial conditions of experimentation bear but a remote resemblance to what obtains in pathological states. Clinical experience demonstrates the ease with which the fluid can become infected by organisms or impregnated with toxins, since the subarachnoid spaces are continuous with peripheral lymphatics via the spinal and cranial nerves; but the therapeutist is not apparently able to reach the system with equal facility, the choroid plexus, at least in health, offering great resistance to the passage of drugs from the circulation to the fluid. On the other hand, it is well recognised that drugs are absorbed from the fluid into the blood with remarkable rapidity. For this, among other reasons, recourse is had to the more effective, if less natural, method of lumbar puncture. The profession as a whole must by this time be familiar with the diagnostic value of lymphocytosis, positive globulin test, and positive Wassermann test in cases of neurosyphilis, though it is doubtful whether fluid investigation by itself serves to differentiate the clinical varieties of tabes dorsalis, general paralysis, and cerebro-spinal syphilis. Less well known, perhaps, is the syndrome of Froin, consisting of spontaneous coagulation of the fluid, xanthochromia, and a more or less normal cytology, or, in slighter degrees, an increase of the albumin content without xanthochromia; indicative of spinal compression, the syndrome is of the utmost practical importance. In cases of meningitis of whatever kind microscopical examination of the fluid is a diagnostic necessity, and certain changes in glucose content, chlorides, and albumin or globulin are coming to be recognised for their differentiating import. A recent advance has been made by the discovery of the Lange gold-sol test, the essence of which is that colloidal gold in solution is not affected by normal fluid when diluted with a weak solution of sodium chloride, whereas pathological fluid produces characteristic changes for various diseases, recognisable by alteration in the colour of the solutions. The test is peculiarly sensitive and is regarded as of much significance. A "paretic curve," for example, in the coloration of the series of solutions used in the test, has been found with constancy in fluid from cases of general paralysis, which is a spirochætal disease; and the appearance of a more or less similar "curve" in disseminated sclerosis is one of the arguments advanced within the last year or two for an analogous origin for the latter. Still more elaborate investigations by physico-chemical methods to determine specific gravity, viscosity, freezing-point, and H-ion concentration, may serve diagnostic purposes, but have not as yet been shown to be of special practical value.

From the therapeutic standpoint the results obtained in epidemic cerebro-spinal meningitis by treatment via the spinal fluid have been nothing short of brilliant, but in other varieties of meningitis disappointment is too often the outcome. Relief of tension by lumbar puncture has proved efficacious in not a few cases of meningitis serosa circumscripta, in hydrocephalus, and in some forms of cerebral tumour, yet the procedure is merely palliative and of limited applicability in these diseased conditions. Various forms of headache, similarly, are relieved by occasional withdrawal of fluid, and some cases of Méniére's syndrome. Intraspinous treatment of neurosyphilis, in spite of essays innumerable, has given good, bad, and indifferent results alike, and is not yet established on a secure foundation. In fact, there seem to be limitations to spinal fluid therapy as at present practised, and it is conceivable that better results will be obtained if and when the cerebro-spinal fluid system is reached from within rather than from without.

The Bristol Small-pox Outbreak.

THE country as a whole has kept so clear of small-pox lately that it is well to consider the lessons to be learned from any outbreak such as that which has recently taken place at Bristol and fortunately has now subsided. It is quite certain that our security against small-pox and other infectious diseases largely depends upon the constant vigilance of the sanitary authorities, and especially of port sanitary authorities, for it is notorious that a large proportion of the population has not received even the limited protection conferred by vaccination in infancy. It is, of course, quite common for an outbreak to begin with a mild case, modified by vaccination, but in the case of the Bristol dock labourer the attack was so mild than an examination of his face, body, and arms at the time when his wife and baby were down with the disease, revealed no signs of any recent eruption. His arm bore four good scars of infantile vaccination, his age was 29, and his denial of having had any recent indisposition was emphatic. It was only after careful search had failed to discover the source of infection, that an admission by his wife that he had been off work sick for four days after long nightwork early in December led to a second careful examination, and the discovery of the single pustule under the thick skin of the sole of the left foot. It seems fairly certain that had medical advice been called in for this man early in December the nature of his indisposition would not have been suspected. Few practitioners nowadays have much experience in diagnosing small-pox, and these single pustule cases are extremely likely to be missed. Until symptoms give rise to more decided manifestations diagnosis must be very difficult. Fortunately the infectivity of such extremely modified cases is probably slight and limited to the immediate contacts. In the present instance the infection only spread to bed-contacts. The Leicester system, we believe, rather relies upon the fact that with an unvaccinated community the first case is not likely to be missed. Thus the first case runs the chance of a severe attack for the good of the community; the disease is recognised, and the contacts are vaccinated in time to modify or prevent the disease. In the Bristol outbreak the second crop of cases included a severe fatal case in an unvaccinated infant, which led to the disease being recognised.

It is hardly profitable to speculate as to whether, in the public interest, it is better for the first case to be unmodified and diagnosed, or to be modified and liable to escape notice. Medical skill must work towards rendering each person of the community as safe as possible. We have to recognise that a great proportion of the population are combustible material either from being unvaccinated or only vaccinated in infancy, and that, should they contract small-pox, these modified cases are liable to be missed. Vigilance by sanitary authorities in speering back for the original case, and searching out and vaccinating contacts, must therefore be our safeguard. It seems improbable that we shall adopt an efficient system of vaccination and revaccination in this country, at any rate for a long time. Fortunately each individual can protect himself, herself, or their dependents, and no one need have small-pox. The Bristol outbreak ended with the third crop, which consisted of four cases. Of these, one, aged 36, had one good scar of infantile vaccination, and the other three, aged, respectively, 8, 23, and 24, had not been vaccinated at the time of exposure to infection. All four were vaccinated after exposure to infection, one of them (unvaccinated) on the fourth day after exposure, but in the other cases vaccination may not have been secured until five or six days after exposure to infection. The vaccinations all took. Three had a modified and discrete attack, including the girl who was vaccinated on the fourth day. One had a severe semi-confluent attack. All made good overies. Bristol is to be congratulated on its ape.

We must expect many similar outbreaks in the present unprotected state of the community. The Bristol small-pox hospital was in use at the time of the outbreak for early cases of tuberculosis in children, and the children, of course, had to be sent home. Small-pox hospitals are for long periods not needed for small-pox, and possibly more permanent use could be got out of them if, in these days of motor ambulances, groups of sanitary authorities combined to use one of their small-pox hospitals for the reception of the first cases of an outbreak in any of their districts. There would thus be a possibility of dealing with small outbreaks, like that at Bristol, with a minimum waste of hospital accommodation and without having to disturb hospital inmates of a different character.

The Dangerous Drugs Act and the Draft Regulations.

THE announcement of the appointment of two influential committees in connexion with the Draft Regulations under the Dangerous Drugs Act may cause apprehension lest conflicting advice lead to confusion. The conditions of election of the one and the terms of reference of the other should relieve anxiety. The first consists of 10 Members of the House of Commons, who practically form a watching committee pledged to secure the fullest consultation and consideration before the Dangerous Drugs Act Regulations are settled. This committee was the outcome of a large meeting of Members of Parliament recently convened to meet representatives of various interests affected by the Draft Regulations. Before the proceedings commenced the Home Secretary had stated in the House that he was prepared to appoint a small committee "to consider and report, in cases in which the Home Office had not been able to come to terms with the interested parties, what further modifications, if any, can safely be made, having regard to the main principles on which the Regulations are based and which are essential in the public interest for safeguarding the use of the drugs." The names of those forming this Official Committee have now been made public. It includes representatives of the Home Office and four Members of Parliament, one of whom was formerly secretary of the Pharmaceutical Society of Great Britain.

What is needed under the new Act is a schedule to secure public safety, and the Regulations must be drafted with that object, and with no other. But it goes without saying that they should give as little trouble as possible to those who have to work under them, whose professional position must be considered. We hope that the Committee will keep these two big issues steadily before them, trusting medicine and pharmacy to sink differences of opinion for the common good.

RED CROSS SUNDAY.—The Archbishops and the heads of the churches have recommended that the collections on Sunday, Nov. 13th, the Sunday following Armistice Day, should be given to the Red Cross and Order of St. John. The Navy and Army and the Archbishops of Ireland and Wales also join in the appeal. A letter has been sent to the clergy of all denominations announcing this fact and stating that the scheme of the Joint Council of the Order of St. John and the British Red Cross Society covers the case of ex-Service men and cripple children, voluntary hospitals, convalescent homes, and nursing associations, motor transport of sick and injured, infant and child welfare, medical supply depôts, and educational propaganda for the prevention of disease. Donations and subscriptions should be sent to the Joint Council Finance Committee, 19, Berkeley-street, London, W. 1.

Annotations.

"Ne quid nimis."

A QUI MIEUX MIEUX.

THE ancient French proverb, with the suggestion of emulation which it contains, might well be chosen as the watchword of two international bodies at present in the throes of a conflict as to who shall be foremost in well-doing. We refer to the League of Red Cross Societies and the Comité International de la Croix Rouge. It had been hoped that the resolution passed at the meeting of the general council of the League in March, 1920, a meeting attended by representatives of the International Committee, had precluded all possibility of duplicating work. The objects of the League, as defined in this resolution, were as follows:—

I.—To encourage and promote in every country of the world the establishment and the development of the duly authorised voluntary national Red Cross organisation, having as purposes the improvement of health, the prevention of diseases, and the mitigation of suffering throughout the world, and to secure the coöperation of such organisations for these purposes.

II.—To promote the welfare of mankind by furnishing a medium for bringing within the reach of all the peoples the benefits to be derived from present known facts and new contributions to science and medical knowledge and their application.

III.—To furnish a medium for coördinating relief work in case of great national or international calamities.

However, the International Committee now point out that their members attended without any voting rights, and that they never intended to express agreement with the above arrangement. One unfortunate result which has drawn attention to the need for further conference is that recently appeals on behalf of the same object were received by the national Red Cross societies from both international organisations. An article[1] by Sir David Henderson, Director-General of the League, explains the present situation from the League's point of view. The committee have a courteous but weighty rejoinder in their own official organ.[2] There is no doubt either that perfect harmony is possible or that it can only be achieved by a round-table conference. It is equally clear that the Red Cross societies should make themselves vocal at such a conference. Although national Red Cross societies appoint their representatives on the board of governors of the League, neither organisation can be said to have a democratic constitution. At the same time both bodies are democratic in spirit and anxious to consult their constituents, who may well insist that the control of international organisation shall be carried on in peaceful coöperation at Geneva. To the League is deputed the right of organising or building up Red Cross societies. The production of the *International Journal of Public Health* is one of the League's best achievements, and the journal has no competitor. Many of the other activities of both bodies are separate and distinct, and the field of overlap is comparatively small. Nevertheless, the right solution of present difficulties may be an organic union of the two societies. The main objection to this course, mentioned by Sir David Henderson, is that the same international body cannot properly combine the duties of a central agency for the societies both in war and in peace, the war-time function being more properly carried on by such a committee of neutrals as the present International Committee. This difficulty could, however, easily be met by appointing a neutral subcommittee on the occasion and for the duration of the next war, a contingency for which the Red Cross must, however unwillingly, provide.

The meetings of the councils of both bodies in Geneva at the end of this month will give the necessary opportunity for the Red Cross societies to make known their opinions concerning the respective duties of the two central organisations which, as Sir David Henderson says, exist only by their will and for their service. We have every hope that an economy in righteousness will result.

LIGHT AS A REMEDIAL AGENT.

THE Londoner, who, after months of winter gloom, receives the baptism of spring sunshine may be excused for accepting uncritically the therapeutic value of the yellow rays of the solar spectrum. We are brought up to believe that sunshine brings colour to the child's cheek and to deduce therefrom, however rashly, that hæmoglobin, no more than chlorophyll, is properly developed in the dark. Dr. A. Rollier, of Leysin, in bringing the remedial effects of Alpine sunshine before our readers this week, takes some trouble to set out the physical as well as the clinical data upon which his claims are based. Attention has long been directed to the ultra-violet rays of the spectrum in producing cutaneous pigmentation, these rays being absorbed by the melanotic cells of the epidermis and by the lipochrome of subcutaneous tissue and blood plasma, with what fate we do not know, but Dr. Rollier gives reason for not neglecting the less-known bactericidal action of the penetrating infra-red rays, recalling the interesting fact that certain fluorescent substances have the power of transforming short light waves length into long ones, a property which has been claimed for quinine when circulating in the blood. Solar radiations as a whole are not only harmless but seem to be actually beneficial to the cells of the higher animals. Patients undergoing heliotherapy, even when confined to bed, retain good muscular development, which Rollier suggests may be due to direct stimulation of an electrical nature. Varicose ulcers yield to the cicatrising action of the sun, while anæmia and rickets are particularly amenable to sunlight treatment in the Alps. Whole sunshine is thus coming into favour, as distinguished from particular components of sunshine, in somewhat the same way as whole bark and total opium alkaloids are establishing themselves above quinine and morphine. Whole sunshine fortunately, even if thin, is accessible also in the lowland, and the results of conservative treatment of surgical tuberculosis at Alton, as related by Sir Henry Gauvain to the Medical Society of London on March 14th, are not inferior to those of Dr. Rollier at Leysin.

There may not be much to say on the other side and not very gracious to say it, but Dr. R. Crawshaw Holt, tuberculosis officer to the Derbyshire County Council, has had the courage to denounce sunlight as a harmful agent in the human economy at a recent debate before a northern medical society. He might have begun with the classical example of the survivors of the Sicilian expedition, whose eyelids were removed by their inhuman adversaries, and who died miserably from exposure to the full glare of the Mediterranean sun. Dr. Holt regards sunshine as a cause not only of sunstroke, but of anæmia, chorea, and poliomyelitis, and as standing in special relation to such epidemic diseases as typhoid, measles, and scarlatina. He thinks that accident cases admitted to hospital during the dark hours have a better chance of recovery than those admitted during the daytime, and he warns the surgeon against exposing the deep parts to light during operation. Three of his tuberculous patients whose chances of recovery were otherwise good, succumbed to the extra dose of sunlight due to the Summer-Time Act of last year. Incidentally he explains in a delightful manner why children are never so happy as when they are dirty. Dirty hands are not so transparent as clean hands. The dirt protects the delicate subjacent skin sensitive to the malignant rays of the sunlight. It is, of course, in the tropics that sunlight has been most convincingly accused of harmful properties, and it was Dr. L. Sambon who photographed the spectrum of an electric arc after its rays had passed through the skin of an Indian native in order to determine the material to be worn by white-skins to have the same protective effect. Five thousand suits and 5000 hat-linings of orange-red colour were actually issued for American troops in the Philippines on the advice of the Surgeon-General's department. Of late years, however, the actinic theory of sunstroke has been overshadowed by the greater probability of the condition being due to heat exhaustion.

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[1] Bulletin of the *League of Red Cross Societies*, December, 1920.

[2] Revue Internationale de la Croix Rouge, Feb. 15th, 1921.

The truth is that little exact work has been done on the effect of light on the human organism. No attempt has been made to separate the various causal factors. Obviously in a health resort many other agents are at work: altitude, surroundings, wind, air temperature, and finally change of scene, that mysterious and potent factor that invalidates all uncontrolled climatic experiments and makes every new method or remedy almost certain of immediate success. It would certainly be well to clarify our ideas of what we mean by the effect of light by excluding both infra-red heating rays and ultra-violet chemical rays. A useful piece of experimental work at Johns Hopkins University is recorded in the first issue of the new American *Journal of Hygiene* (January, 1921). Dr. Janet H. Clark has investigated the action of light as emitted by the iron arc on the rabbit's ear. She cites the observation that exposure of rats to darkness, or to red light, causes an initial decrease in the red count and hæmoglobin index which is evened out in a few weeks by the increasing concentration of the blood. She controverts the prevalent idea that the solar spectrum extends further into the ultra-violet in the tropics, quoting experiments by A. Miethe and E. Lehmann, who found the limit of the spectrum on the violet side precisely the same, whether measured at Assouan, Berlin, or Zermatt. Her own results are to the effect that the far ultra-violet rays agree with the visible rays in producing lymphocytosis, while the near ultra-violet rays have a depressing effect on the lymphocytes and the long waves no apparent effect at all. There is much more work to be done on lines such as these before the application of light as a remedy is placed on a firm scientific basis.

FRACTURE-DISLOCATION OF THE NECK WITH PARALYSIS; RECOVERY.

Dr. L. A. O. Goddu has recently reported[1] the following remarkable case. On Oct. 27th, 1919, a man was hit by a bag of wool in the back of the neck and thrown on the floor. He lost consciousness, and when he revived found his left arm completely paralysed. For a few days there was a great deal of pain in the back of the neck and left shoulder. He remained at home for four weeks and was examined by Dr. Goddu on Nov. 26th. Both arms were extended along the side of the body, with the fingers in a slightly claw-shaped position. He could not move his arms, but could move the terminal phalanges of both hands. The respiration was 45, and attended with some difficulty. Movements of the head, particularly lateral ones, were restricted. There was no grip in either hand. Reflexes were diminished, especially in the left arm. There was moderate atrophy of the muscles of the arms, especially of the left. Sensation on the left side of the neck, left shoulder, and left side of the chest to the level of the second rib was diminished. The X rays showed a forward dislocation of the third cervical vertebra on the fourth. It seemed that to attempt reduction under an anæsthetic, either by open operation or manipulation, would be dangerous. The trouble with the phrenic nerve, which already was interfering with respiration, might be made worse. Therefore, the following method was adopted. Traction with a 6 lb. weight was applied to the head and kept on night and day for three days. Then an attempt was made by pressure in the right direction to reduce some of the pressure symptoms. This manipulation immediately changed the rate of respiration. After 48 hours another manipulation was performed. At this time the patient said that the neck felt better. Next day he was able to use the right arm with a little help. Examination on Dec. 10th showed in the right arm fair strength in the fingers, forearm, and hand, and weak movement of abduction of the arm from the side and of the external rotators of the humerus. On left side grasp, movements of the fingers, wrist, pronation and supination, and extension at the elbow were fair, though weaker than on the right; of flexion at the elbow, abduction, and external rotation there was only a trace. On Jan. 7th, 1920, he could use his arms in all directions, and their strength was greatly improved. Traction was taken off and a Thomas collar applied at the end of the third week; this was worn night and day, and then a permanent collar of leather and steel was worn until the fracture had become firmly united. A second X ray examination on Dec. 15th, 1919, showed that the angulation at the site of the fracture was less and that there was more space between the third and fourth cervical vertebræ, thus relieving the pressure on the cord. At the time of the report—Nov. 23rd, 1920—the patient had practically full use of the arms, though the strength of the left was a little less than that of the right, and there was only slight limitation of rotation and lateral bending of the head.

DISAPPEARANCE OF CONGENITAL SYPHILIS IN THE SECOND GENERATION.

ONE of the many problems of syphilis which is still obscure concerns the possibility of transmission of congenital syphilis to the second generation. Some observers have investigated the histories of children with congenital syphilis with a view to ascertaining whether their parents suffered from acquired or congenital syphilis. Professor Sidler-Huguenin, of Zurich,[1] has attempted to throw light on this problem from another direction. He has examined the progeny of persons born with syphilis, and of 250 such persons he found that 50 had married, and that 36 of these marriages had been followed by the birth of only 65 children. Of the remaining 14 marriages, not one had been fruitful. Incidentally the interesting observation was made that only nine of the 250 subjects of congenital syphilis were known to have attained the age of 60. Only in two cases had as many as four children been born to the subjects of congenital syphilis. With a view to finding out whether congenital syphilis affects the fertility of both sexes equally or not, Professor Sidler-Huguenin classified his material according to sex, and he found that, of 27 marriages, only five were sterile when the wife suffered from congenital syphilis. The remaining 22 marriages had yielded 48 children. On the other hand, as many as nine out of 23 marriages proved sterile when the father suffered from congenital syphilis. The remaining 14 marriages yielded only 17 children. Thus it would seem that congenital syphilis impairs the reproductive capacity of the male considerably more than that of the female. Of 20 mothers with congenital syphilis, 16 gave a positive Wassermann reaction, yet, with only one exception, all their 45 children gave a negative reaction and showed no X-ray signs of syphilis. Of 12 fathers suffering from congenital syphilis, nine gave a positive reaction, yet none of their 15 children gave a positive reaction. Again, none of the 12 women who had married men suffering from congenital syphilis gave a positive Wassermann reaction. Thus it would seem that congenital syphilis is not as a rule, and perhaps never, transmitted from husband to wife or vice versa, or from parent to child. Although the 65 children born to the subjects of congenital syphilis were searchingly examined for evidence of syphilis, it was found only in one case. On the other hand, there appears to be little doubt that the fertility of the subjects of congenital syphilis is much reduced, and that though they do not transmit syphilis itself to their offspring, a few of these are apt to show poor development, rickets, and other signs of inferior quality. Among many other observations of interest was this, that as many as eight women suffered from manifest signs of congenital syphilis at the time of pregnancy, yet none of their 14 children was syphilitic. Professor Sidler-Huguenin recommends a vigorous course of specific treatment before the marriage of a woman whose congenital syphilis is marked by a positive Wassermann reaction.

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[1] Boston Medical and Surgical Journal, Feb. 17th, 1921.

[1] Schweizerische medizinische Wochenschrift, Jan. 20th, 1921.

A MEDICAL TARIFF THEN AND NOW.

WHEN a tariff of medical fees was first promulgated by the Manchester Medico-Ethical Association, not as an authoritative pronouncement but as a guide to medical men, we gave it cordial welcome[1] in terms that showed its issue to be opportune. A further tribute to its usefulness was a letter, published a few weeks later, from the embarrassed secretaries of the Association, admitting inability to cope with the demands for the pamphlet and announcing that in future it would be obtainable only through a bookseller. The brief explanatory preamble to the suggested tariff does not appear to have suffered or indeed needed much alteration in nearly 70 years. Now, as then, the Association pleads the difficulty of attempting to put forward a fair scale of charges for a profession which, "unlike all other trades and professions, continues to claim its remuneration not only according to the abstract worth of its services, but also with regard to the financial status of its clients"; but adds the modest hope that a recommendatory tariff may serve at least as a reference in disputes, and as a useful guide to the young practitioner. The present is the fifth edition; no revision has been made for 28 years, and in view of the enormously increased cost of living the difference between even the original and the present scale can scarcely be described as excessive. The patients are divided into classes according to the rent they pay; the classification of landlords, lodgers, shopkeepers, "notoriously wealthy men of penurious habits," and presumably also of notorious spendthrifts with no reserve fund for illness, is and must be left to the discretion of the practitioner.

1865. SCALE A: GENERAL PRACTITIONERS. *1921.*

—	Class 1.	Class 2.	Class 3.	Class 4.	—	Class 1.	Class 2.	Class 3.	Class 4.
1.	2/6 to 3/6	3/6 to 5/-	5/- to 7/6	7/6 to 10/6	1. Ordinary visit	3/6 to 5/-	5/- to 10/6	7/6 to 21/-	21/-*
2.	A visit and a half.				2. Special visit	A visit and a half.			
3.	Double an ordinary visit.				3. Night visit (8 P.M. to 9 A.M.) ...	Double an ordinary visit.			
4.	2/6 to 3/6	3/6 to 5/-	5/- to 7/6	7/6 to 10/6	4. Detention †	5/- to 7/6	7/6 to 15/-	15/- to 31/6	31/6*
5.	1/6	2/-	2/6	3/-	5. Mileage ‡	2/6 in each class.			
6.	2/6 to 3/6	3/6 to 5/-	5/- to 7/6	7/6 to 10/6	6. Advice at surgery	3/6 to 5/-	5/- to 10/6	7/6 to 21/-	21/-*
7.	2/6 to 3/6	3/6 to 5/-	5/- to 7/6	7/6 to 10/6	7. Advice by letter or telephone	3/6 to 5/-	5/- to 10/6	7/6 to 21/-	21/-*
8.	2/6	2/6 to 3/6	3/6 to 5/-	5/- to 7/6	8. Attendance on domestic servants	3/6 to 5/- in each class.			
9.	21/-	21/- to 63/-	42/- to 105/-	105/-*	9. Midwifery	42/- to 63/-	63/- to 105/-	105/- to 210/-	210/-*
					10. Vaccination at surgery	5/-	5/- to 10/6	7/6 to 21/-	21/-*
					11. Anæsthetics	31/6	42/-	63/-	84/-
					12. Certificates	1/6* in each class.			

* = and upwards.
† = per hour in 1865, over ½ hour in 1921.
‡ = per mile, beyond 2 miles from home in 1865, beyond 1 mile in 1921.

SCALE B: CONSULTANTS.

1865. For the purposes of this Tariff, a Practitioner is considered a Consultant, when his habitual charges are made according to this scale. *1921.*

—	Class 1.	Class 2.	Class 3.	Class 4.	—	Class 1.	Class 2.	Class 3.	Class 4
1.	21/-	21/	21/-	21/-	1. Advice or visit alone or letter of advice	42/-	42/-	42/- to 63/-	42/- to 63/-
2.	21/-	21/- to 42/-	21/- to 42/-	21/- to 42/-	2. Advice or visit with another practitioner	42/-	42/- to 63/-	42/- to 63/-	63/-
3.	10/6 in each class.				3. Mileage beyond two miles from consulting-room	15/- in each class.			

Tariff of fees for general practitioners.—Scale A compares the more important items of the tariffs of 1865 and 1921. Class 1 comprises patients whose house rental does not exceed £26. Class 2: rental between £26 and £50. Class 3: rental between £50 and £100. Class 4: rental over £100.

The tariffs in Scale A are recommended irrespective of the supply of medicine. Surgical operations are not assessed, but the fees allowed by the Poor-law authorities are regarded as minimal. It will be noticed that the tariffs for ordinary visits in Classes 1 and 2 are not even doubled in 1921; also that a much greater latitude is allowed in Class 3, where the majority of non-panel patients will now belong. The inclusion of a tariff of visits to servants reminds us that the panel system is not everywhere regarded with favour, and that people still often require their own doctor to attend their servants. A guinea for a visit to patients in Class 4 may seem excessive in London, where many people are forced by the house shortage to spend much more than the orthodox 10 per cent. of income on rent, but in the provinces this scale would probably work out approximately correct. When all restrictions on rent are removed some allowance may have to be made for a higher rent-to-income proportion throughout the country. Even now the practitioner in his own interests will have to satisfy himself that some fortunate possessors of a long lease are not wrongly classified. The difference in the detention per hour tariff is interesting, the doctor's actual time being assessed higher in 1921; doubtless routine examinations are less extensive and prolonged now that the physician does not depend exclusively on clinical evidence. It is curious that, in spite of improved means of transport, the distance beyond which an extra fee should be chargeable was formerly a radius of two miles, and now is only one mile, from the doctor's place of residence.

Tariff for consultants.—The tariff of fees for consultants in 1865 and 1921 is shown in Scale B.

On the modern tariffs taken by themselves we have little criticism to offer. We rejoice that advice by telephone or letter is assessed at exactly the same figure as oral advice, but are surprised that, in the opinion of the Association, a call at the patient's house should cost him no more than a consultation at a surgery or at the house of the consultant. Pathological investigations, X ray examinations, and so forth are not assessed. The pamphlet concludes with Scale C—special charges in medico-legal cases, life assurance, lunacy, and so forth. We note that the charges suggested for attendance as witness on behalf of any private party vary, according to circumstances, from 3 to 25 guineas, and that a doctor should receive 3 guineas for making or attending a post-mortem examination. It is time that the fee for attendance at a coroner's court as expert for the Crown and for a post-mortem examination ordered by the coroner should be raised from the absurdly inadequate figure of a guinea each, and we recommend a revision of this scale of fees to the consideration of the authorities.

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[1] THE LANCET, 1865, ii., 125.

RADIUM TREATMENT OF LEUKÆMIA.

IN a recent communication to the Académie de Médecine[1] MM. Rénon and Degrais report that since 1910 they have treated eight cases of leukæmia by applications of radium to the spleen. Although all the patients ultimately died at dates ranging from two months to six and a half years after the commencement of treatment, the immediate effects were remarkably good. Spleens which had filled the whole of the abdominal cavity rapidly diminished from day to day under this treatment, and finally resumed their normal size. The number of leucocytes fell from 320,000 to 70,800, then to 20,000, 7000, and even lower. The myelocytes disappeared and the number of red cells increased. The general condition improved, the fever subsided, the weight increased, and after four to six weeks' treatment a cure seemed to have been effected. Recovery, however, was more apparent than real, for from two to 18 months after cessation of treatment signs of myeloid leukæmia reappeared. Applications of radium were resumed, but with hardly any effect, and death took place in a time ranging from two months to some years after the commencement of treatment. The occurrence of the relapses is attributed by MM. Rénon and Degrais to progressive resistance of the myelocytes on which radium had no longer any effect, whether this was due to habituation of the myelocytes to radium like that of spirochætes to arsenic, or to a fibrous change in the leukæmic spleen under the influence of treatment. The writers think that the best way to retard the appearance of relapses and to diminish their gravity is to apply the radium treatment less frequently, and to make it as intense as possible each time.

PLEURAL REFLEX OR GAS EMBOLISM?

IN the March number of *Medical Science* Mr. W. G. Spencer has contributed a critical review to the subject of air embolism following thoracocentesis. It is curious that though this complication has been known and studied for many decades, it still presents several unsolved problems. Only a few years ago Professor Forlanini was inclined to interpret many, if not most, of the alarming symptoms following puncture of the chest to pleural reflex alone. Professor Brauer, on the other hand, has time and again pointed out that these symptoms can better be explained on the assumption that they are due to gas embolism of the brain and medulla oblongata. A bibliography of the papers dealing with this controversy, and published during the past 20 years, would fill many pages, but to judge by the latest pronouncements most authorities now consider gas embolism to be responsible for practically all the sudden deaths, and not a few of the disturbances from which patients recover after an interval of variable duration. With regard to gas embolism, it appears that it can be caused simply by the escape of inspired air into a ruptured pulmonary blood-vessel. It is, in other words, possible to provoke fatal gas embolism simply by wounding the lung without introducing gas through a hollow needle from without. In *Acta Medica Scandinavica* (1921, Vol. LIII., fasc. vi.) there is a suggestive report of a discussion in which Professor Saugman adumbrated the possibility of a pleural reflex giving rise to signs of hemiplegia. His patient was a woman, whose large pneumothorax had been induced several years earlier. Before a refill, the contour of the collapsed lung was determined by stethoscopic and X ray examination. A pneumothorax needle was inserted at a point far from the lung which could not possibly have been wounded by it. The intrapleural pressure was typical at first, but after some 500 c.cm. of gas had been introduced, the pressure suddenly rose to about 30 cm. of water, although at previous refills it had seldom risen to more than 17 cm. The injection was at once discontinued and the intrapleural pressure lowered, but these measures did not avert signs of hemiplegia on the right side. Paræsthesia developed, but by the third day the patient had recovered. Professor Saugman assumed that pleural reflex had set up focal spasm of the vessels of the brain. This explanation was challenged by Professor Petrén, who pointed out that it is contrary to accepted views that a reflex from an organ should act only on one hemisphere, giving rise to signs of hemiplegia. Professor Saugman's hypothesis as to localised vaso-motor changes in the central nervous system as a result of pleural irritation is interesting, but is it supported by convincing experimental and clinical evidence?

FILARIA LOA AND ITS INSECT HOST.

AN important link in the life-history of *Filaria loa* and its association with certain species of the mangrove fly (Chrysops) were described by Dr. A. Connall at a recent meeting of the Royal Society of Tropical Medicine and Hygiene.[1] That Chrysops was a possible host of *F. loa* had already been suspected by Manson and others, and sufficient proof that this is the case is supplied by the results of Dr. Connall's observations made in Lagos, West Africa, in 1917. The work consisted entirely of dissections of mangrove flies caught at Sapele, near the coast, about two days' journey from Lagos, during the period of eight months between March and October. The laborious work of dissection was carried out by Mrs. Connall, and in all 2255 specimens of *Chrysops silacea* and *dimidiata* were examined, 2006 belonging to the former and 249 to the latter species. Sixteen specimens of *C. silacea*, or 0·8 per cent., and six of *C. dimidiata*, or 2·4 per cent., were found to be infected with *F. loa*. The wettest months of May, June, and July provided the largest number of flies. The positive specimens were nearly always heavily infected, the filariæ being usually present in hundreds, for the most part in the thoracic muscles, and in one insect to the number of 427. In two flies filariæ were found among the mouth parts. The creek district of Sapele, it was pointed out, provided a population a considerable percentage of which is infected with *F. loa*, carrying the adult filariæ in their tissues and showing the presence of embryos in the peripheral blood, and many of the Europeans also contract Calabar swellings. In this area there also exist Chrysops in large numbers, a certain percentage of which have been shown to be infected with filaria. There is therefore justifiable ground in regarding Chrysops as an intermediary host of *F. loa*. No feeding experiments were carried out, and they are likely to be attended by considerable difficulties in the raising of the adult insect from the pupa; the use of an insect free from previous filarial infection has to be insured, and reliable experimental results obtained from feeding the uninfected fly on an infected patient.

THE HANDICAP OF THE LEFT-HANDED.

IN a paper on Sinistrality in Relation to High Blood Pressure and Defects of Speech, Clarence Quinan[2] reviews the literature and brings forward the results of observations made with regard to these points on 142 inmates of the San Francisco Home for the Aged. In addition to the ordinary form there are crossed forms of left-handedness which are latent and do not attract attention unless they are sought for; left-eyedness is not uncommon in the right-handed, and, conversely, right-eyedness is common in sinistrals. The ætiology of the mixed forms is obscure, but in some instances it may be due to a compulsory change of handedness in early life. Approximately 4 per cent. of normal persons are left-handed, and it appears that there is some evidence to show that sinistrality is hereditary and implies a relative inferiority in the organisation of the central nervous system, for stammering occurs from three to seven times more often in sinistrals as compared with dextrals. Among 600 men between the ages of 44 and 89 years there were found to be 42, or 7 per cent.; sinistrals—namely, 14 pure (left-handed and left-eyed), 14 crossed (left-handed and right-eyed), and 14 crossed (left-eyed and right-handed). Comparison of the systolic blood pressure in these sinistrals with that of 100 dextrals showed that a high systolic blood pressure is more frequent in left-handed than in right-handed persons. Thus among 100 pure dextrals with an average age of 69 years 54 per cent. had a systolic blood pressure under 150 mm. Hg, whereas in the groups of sinistrals, all with a lower average age than the dextrals, the percentage of cases with a systolic blood pressure of less than 150 mm. Hg was always under 30. Quinan does not refer to right- or left-leggedness, and as we are ignorant of how much has been written on this subject, Dr. W. K. Sibley's article,[1] now more than 30 years old, may be recalled; he concluded that the majority of people are naturally or artificially right-handed and left-footed, and that as the left leg is stronger than the right there is a tendency to turn to the right in walking, as is shown by the almost universal direction to "Keep to the right"; this right-handedness and left-footedness of most human beings is, in his opinion, an attempt on the part of Nature to preserve as far as possible a bilateral individual, for if the body were wholly right-sided asymmetry would probably result.

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[1] Bulletin de l'Académie de Médecine, Feb. 15th, 1921.

[1] THE LANCET, March 12th, p. 299.

[2] C. Quinan: Arch. Int. Med., Chicago, 1921, xxvii., 255-251.

THE MORPHOLOGICAL DIAGNOSIS OF PLAGUE.

THE case of bubonic plague described in our columns on March 5th by Dr. V. M. Synge and Dr. J. W. Bigger is of special interest from the public health standpoint, as it occurred in a woman who lived a quarter of a mile from the docks and no source of infection could be discovered. The authors were inclined to incriminate a cat known to be of an adventurous nature. Obviously similar cases may come to the notice of any practitioner in a maritime town, and it may well be borne in mind that the diagnosis of plague can be made in many cases by microscopic examination alone. In no condition other than plague do bacilli with the morphological characters of the plague bacillus occur in large numbers in the lymphatic glands. We reproduce again the micro-photographs of the Dublin case, as these were not printed clearly in some copies of the previous issue.

Plague Bacillus in its Various Forms, as seen in Direct Films and after Culture, in the Case of Plague occurring in Dublin described by Dr. V. M. Synge and Dr. J. W. Bigger.

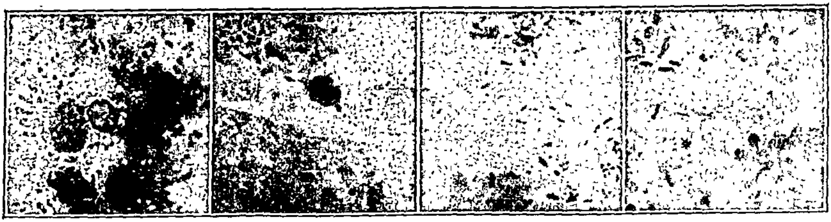

FIG. 1.—Smear from patient's gland. FIG. 2.—Smear from guinea-pig's gland. FIG. 3.—24-hour agar culture. FIG. 4.—Involution forms, 72 hour culture on salt agar.

THE THYMUS GLAND IN GRAVES'S DISEASE.

IN his Harveian lecture delivered on March 17th Dr. Leonard Williams took as his subject the Thymus Gland in Everyday Life, proposing to reinstate as an important member of the endocrine group an organ which had recently fallen into neglect. After sketching the development of the gland and its relation to asthma, he went on to discuss the relationship between the adrenals and the enlarged thymus gland, with special reference to Graves's disease. Dr. Williams said:—

> In this curious and disfiguring malady, disfiguring both physically and mentally, there are two facts so salient that any intelligent understanding of the condition demands not only that they be recognised, but definitely co-related. The one is the enlargement of the thymus; the other is the over-activity of the suprarenals. The former, the enlarged thymus, which occurs in about 85 per cent. of the cases, is an astonishing event, for Graves's disease is to all intents a female disease and the thymus to all intents a male organ. The latter, the over-active adrenal, is a fundamental event, for without it the full clinical picture of the disease would not exist. Now the adrenal contribution to the liquor sanguinis makes for masculinity; it produces energy and increases the combative instinct. Here, then, you have two organs, the thymus and the adrenal, both of which are predominantly male, playing leading parts in a disease which is predominantly female. What is the explanation?
>
> I have been seeking the answer to this question for a very long time, and I now believe it to reside in the histological fact which I have already quoted from Sir Edward Sharpey-Schafer—namely, that "an accessory thyroid is often met with in the substance of the thymus." This, then, would seem to be the train of events. In response to a toxic stimulus, almost invariably of intestinal origin, the external thyroid hypertrophies. In those women who have an accessory thyroid embedded in the thymus this hypertrophies too. This in its turn stimulates the thymus into recrudescence, and there is produced what is practically a new growth situated in the critical space between the manubrium sterni and the vertebral column, which presses upon the various important structures converging into that anatomical Clapham Junction. The part of the adrenals is not so clear. It may be that they are stimulated into increased action by the same toxin which provokes a hypertrophy of the thyroid, or it may be that the pressure of the enlarged thymus upon the cervical sympathetic calls forth an increased adrenal activity, for the association between the sympathetic or autonomous nervous system and the adrenals is so close that they are grouped into one under the name of the chromaffin system. Or, again, it may be that the mere hyperactivity of the thyroid produced by its endeavours to fight the toxin evokes a concomitant hyperactivity of the adrenals, for the thyroid and suprarenals are known to act synergically. Which, if any, of these suggestions be the right one, the fact remains that in Graves's disease the suprarenals are in riotous activity, which explains the exophthalmos when it is bilateral, and the alteration in character from docile to aggressive, which is such an outstanding feature of the disease. When the exophthalmos is unilateral or more pronounced upon one side than another irritation of the sympathetic by the pressure of the thymus is the cause.

The remaining portion of the address was devoted to the thymus in relation to chlorosis and headache, and the treatment of the resulting conditions.

A National Health Week, organised by the Royal Sanitary Institute, will be held during October next.

THE House and Library of the Royal Society of Medicine, 1, Wimpole-street, London, W., will be closed from Thursday, March 24th, until Tuesday, March 29th both days inclusive.

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[1] W. K. Sibley: Nineteenth Century, 1890, xxvii., 773-778.

THE LANGHAM TELEPHONE EXCHANGE:

MEDICAL MEN'S NEW NUMBERS.

WE gave last week a list, as complete as possible, of the telephone circuits of medical men and dentists practising in the Harley-street area which were transferred on Saturday, March 5th, from the Mayfair to the Langham Exchange. We anticipated that the list supplied to us was not quite complete and now make the following additions:—

Mayfair.	Subscriber.	Langham.	Mayfair.	Subscriber.	Langham.
5146	Baly, C. Peyton	1686	3407	Goodwin, Aubrey	2098
4262	Biggs, G. N.	1872	4209	Gow, John	1184
1858	Burrell, L. S.	1858	3815	Gray, A. M. H.	1982
3560	Chandler, F. G.	2186	933	MacCormac, Henry	2670
3929	Clayton-Greene, W. H.	1960	2631	Pitts, A. T.	2631
4117	Coffin, Stephen	1910	2084	Rees, J. R.	2338
1349	Fox, R. Hingston	1349	285	Vlasto, M.	1064
6180	Gauvain, Sir H.	1456	88	Wilson, S. A. K.	1018

We shall be glad to publish any further necessary corrections.

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

AT an Executive Committee held recently a number of matters of public interest came up for consideration.

Reappointment of members.—Official notification was read of the reappointment of the following members of the Council: Dr. Benjamin Bloomfield Connolly, as representative of the Society of Apothecaries of London for one year from Dec. 10th, 1920; Sir Arthur Chance, F.R.C.S.I., as representative of the Royal College of Surgeons in Ireland for one year from Feb. 6th, 1921; Dr. Sydney Russell Wells, as representative of the University of London for one year from Feb. 24th, 1921.

Restoration of names to the Register.—The Registrar reported that the names of the undermentioned practitioners had been restored to the Medical Register, from which they had been erased on account of failure to communicate their addresses to the Registrar:—

Addinsell, Augustus W.
Dakin-Smith, William H.
Ellis, Robert S.
Ennis, John C.
Fuller, Ashbury J. S.
Fyzee, Ali A. H.
Griffiths, Alfred T.
Hawkins, Charles T.
Hayward, William H.
Herbert, Charles A.
MacLaren, James P.
Milne, John B.
Nash, Charles H.
Oldham, Ralph S.
Somerset, Vere E.
Strong, Clement P.
Turnbull, Arthur
Wright, Reginald H.

Reciprocity with Spain.—A communication was received from the Privy Council enclosing a translation of a Royal Decree relating to the practice of medicine and dentistry in Spain, with a view to applying to Spain the provisions of Part II. of the Medical Act, 1886. The Decree sets out that, henceforth, only doctors and dentists who have obtained their qualifications in countries with which Spain has reciprocal relations will be authorised to practise; and that temporary authorisations now in force will terminate as soon as the period expires for which they were granted. It was resolved to inquire (1) what privileges of practising in Spain would be afforded to registered British medical practitioners in the event of reciprocity being established with that country, and (2) into the course of study and examinations prescribed for the Spanish diploma.

Indian universities and midwifery.—After considering the replies received from Indian universities and colleges to a circular letter regarding the course of study in midwifery pursued by candidates for Indian medical diplomas, it was resolved that such diplomas under existing conditions did not furnish a sufficient guarantee of the possession of the requisite knowledge and skill for the efficient practice of midwifery within the meaning of Section 13 (i.) of the Medical Act, 1886, and that unless the requirements are forthwith brought into accordance with the Council's resolutions recognition of the respective medical diplomas must cease.

The buff telephone book.—The question of the appearance of names in this book was informally under the consideration of the Committee in November. The Bar Council had sent a communication stating that it considered the book to be issued for advertising purposes, and that it had resolved that it is not in accordance with the etiquette of the profession for barristers to insert their names in the book. The Law Society had so far felt a difficulty in expressing an opinion that it was contrary to the etiquette of the profession that solicitors should insert their names in the book. The view the society had always expressed upon the question of directory advertising was that so long as a directory was open to the whole profession without distinction, whether for payment or not, there was no objection to a solicitor allowing his name to appear in it. The Royal College of Veterinary Surgeons desired to be informed of any decision to which the Council might come. It was resolved:—

> That the insertion of the name of a medical practitioner for payment, whether with or without typographical display, in a list issued to the public, and purporting to be a list of local medical practitioners, which is not open to the whole of the profession without such payment, is not in accordance with profesfessional standards in respect of advertising, and might be held to bring a practitioner so advertising himself within the terms of No. 5 of the Council's warning notices.

The Registrar was directed to bring this opinion to the notice of all persons making inquiry respecting their professional position in regard to this question.

Correction of the Medical Register.—The Registrar reported that as the result of the issue of voting papers for the elections of direct representatives for the three divisions of the United Kingdom in November, 1919, 2277 papers in all were returned through the dead letter office. Although there was no legal obligation to do more than send an inquiry under Section 14, very great pains were always taken to prevent the unnecessary removal of names. By the courtesy of the editors a list of those who could not be traced was published in *The Lancet* and *British Medical Journal*. As a result only 484 names had to be erased; in other words, 1793 practitioners were saved from the consequences of their own neglect to keep a correct address in the Register. In consequence of the close relationships which have been established between the Ministries of Health and Pensions, the Boards of Education and Trade, Insurance Committees, chemists, &c., and the Council, it was far more difficult now than it used to be for persons whose names did not appear upon the Register to continue to practise as if registered. The system which was in force before the war for correcting the Register had now been followed again, and circulars of inquiry had been sent to all practitioners from the letter "P" to the end of the Register who did not communicate with the office in the course of the year 1920. These would be followed up and the necessary corrections or removals made.

VITAL STATISTICS OF 1919.

REGISTRAR-GENERAL'S ANNUAL REPORT.

THE birth- and death-rate conditions in 1919 were in some respects exceptional. During the first half of the year the birth-rate fell to the lowest point on record, although in the latter half of the year it recovered considerably. The birth-rate for the entire year stands at 18·5 per 1000, which is 5·3 below the rate for 1914—the last year unaffected by war conditions. The death-rate in 1919 was 13·7, being the lowest on record with the exception of the rates for 1910 and 1912, notwithstanding the heavy influenza fatality in the spring. Among common infectious diseases, the death-rates from enteric fever, measles, and whooping-cough were the lowest on record. From tuberculosis, likewise, the mortality was the lowest hitherto observed, in spite of the influenza epidemic. From cancer the death-rate in 1919 was the highest yet recorded. This disease presents the one great exception to the general tendency to decline of mortality.

In 1919 the excess of births over deaths was 188,235, as compared with 362,354 in 1914—the last year influenced by peace conditions. The very low excess in 1918, which took no account of war casualties, except 3827 deaths at home from wounds, was due to the great mortality from influenza, in conjunction with the unprecedentedly low birth-rate. In 1919 both factors were still operative in keeping down the natural increase, although births had slightly increased, and influenza mortality was much less formidable than in the previous year. It is important to note that there was not in 1919, as there had been in the preceding year, a large mortality from warfare abroad. The statistics of 1919 support the general belief that the best criterion of the health of a people consists in the mortality in the earlier days and weeks of life. It is probably for this reason that Dr. T. H. C. Stevenson, in his present review, returns to an examination of this question. He not only obtains additional support for the general belief, but supplies a series of instructive tables which will be appreciated by medical officers of health, and which throw new light on the whole question of mortality and its causes in early life.

Saving of Life in Infancy and Childhood.

Of the deaths registered in 1919, only 12·2 per cent. were those of infants under the age of 1 year. The proportion has fallen rapidly in recent years because of the reduction both in infant mortality and in the birth-rate. So recently as 1901–10 the percentage was no less than 22·6. Infant mortality, in terms of total births, was equal to 89 per 1000, and was 15·2 per cent. below the average in the ten years immediately preceding. It is the lowest rate hitherto reported.

The results of life-saving efforts vary considerably in different stages of the first year. The outstanding feature of the year's record is that the mortality of the first four weeks of life was higher in 1919 than in any year since 1911, while at the succeeding ages it was unprecedentedly low, notwithstanding the prevalence of influenza. The deaths above the age of 1 month have long been recognised as the most preventable, and success in reduction of infant mortality has mainly depended on this circumstance. But until the setback in 1919 the recorded rates afforded grounds for hope that the first weeks of life were also beginning to participate in the improvement, as the result of administrative effort in recent years. The decline in mortality at ages above four weeks is noteworthy, but in this case the most remarkable feature in the year's record is the unusually low mortality from infectious disease. The importance of this cause of mortality increases with age, and if infectious disease be omitted from comparison the advantage of 1919 over previous years practically disappears. The only infectious diseases specially important at this age in 1919 were measles and whooping-cough, the loss of life from both of which was exceptionally low. As already stated, infant mortality varies enormously in different parts of the country, the rate ranging from 108 per 1000 births in the larger towns of the north of England to 64 in the rural districts of the south. From the very first day after birth the excess of mortality in the north is well marked. After the first day the regular increase from south to north becomes the rule. In each of three years cited for comparison much the highest rate for the first day of life has been returned from the rural districts of the north, so that it seems as though the birth risk is for some reason at its maximum there. In Wales there was a similar rural excess, but not in any part of England. Therefore, if defective midwifery service in remote districts be the cause, this does not apply to the midlands or the south.

The increased mortality of the first four weeks after birth is now shown to be limited to the first two, the third and fourth having remained almost stationary. The increase in the first two weeks is very general, applying with few exceptions to all types of area throughout the country.

Causes of Infant Mortality.

From an analysis of the causes of infant mortality we learn that in each period after the first four weeks the mortality from the principal causes, except influenza and the respiratory affections, was lower in 1919 than in the years immediately preceding the war. It was lower than in 1918 from all the specified causes. In the case of whooping-cough and the other common infectious diseases the reduction was very great; specially noteworthy were the further large decreases from tubercle and convulsions, beyond the low records for these causes in 1918. The mortality ascribed to tubercle was less than one-third, and that to convulsions was less than half of that so returned 14 years previously. It may be said of these causes, and this is equally true of diarrhœa, that they are gradually disappearing from our returns.

The London mortality from convulsions was, as usual, much below, and that from Wales was above, that of the country generally. London has for years led the way in the elimination of this unsatisfactory form of return. Among other causes deserving mention the following may be selected. Diarrhœa and enteritis with the lowest infant mortality except that of 1912; syphilis, which has declined since the startling rate for 1917, although the pre-war level has not yet been regained; overlying, which has presented a remarkable fall since 1914, so that the 1919 rates were less than half those of a few pre-war years; and atrophy and debility, which shows the lowest mortality ever returned for England and Wales. The unusually high mortality in London from these causes, noted in last year's report, has now disappeared, the rates being again as usual, much below the average. We find that each of the principal causes contributes to the excessive mortality of the north of England and to the favourable position of the south, and this is true for each class of area in both cases. In proportion to the mortality thus returned, convulsions is the chief contributor to the difference, for while its share in the total mortality is less than 7 per cent. it accounts for 22 per cent. of the difference between north and south. Atrophy, with a share of 16 per cent. in mortality, accounts for 26 per cent. of the difference, and prematurity, to which half of the total mortality is due, accounts for 41 per cent.

The great excess of mortality in the rural districts of the north, and the fact that it exceeds that of the northern towns, great or small, are features common to the statistics of recent years. This large excess is mainly attributable to the indefinite headings atrophy and convulsions. There is no appreciable excess from premature birth. In the case of rural Wales, however, the heavy excess of mortality from convulsions must largely represent deaths which elsewhere would be attributed to other causes, and so possibly to prematurity.

Mortality in the First Five Years of Life.

Notwithstanding the continuance during the spring of the influenza epidemic, which had quite exceptionally raised the mortality of 1918 at these ages, the rate in 1919 was very low. With the possible exception of 1916, there has been no year recording so low a figure, and if influenzal fatality be deducted the rate of 1919 is reduced much below that of any previous year.

It is curious to observe that mortality at age 0-1, measured in terms of estimated population at that age, shows no decrease from the corresponding rate of the preceding year, notwithstanding the decline in infant mortality. The anomaly is explained by the history of the birth-rate during the year. The exceptionally scanty births of the first two quarters alone contributed to the mid-year population on which the rate is founded, whereas the numerous births of the last quarter are taken into account in fixing the infant mortality-rate. The population basis exaggerates the mortality of 1919, and that in proportion to births diminishes it; in the one case because more deaths of very young infants accompanied the relatively high birth-rate of the last quarter than the mid-year population would account for, and in the other because the births of the last quarter, which naturally yield a lower mortality within the year than those of earlier quarters, were in exceptionally high proportion. Mortality in the second year of life was lower in 1919 than in any other of the last few years, and therefore almost certainly the lowest yet experienced, but at each of the three succeeding years, 2–3, 3–4, and 4–5 lower rates were recorded in other years. The tabulation of deaths of infants by separate months of age has been continued throughout the second year of life. The process has not been continued beyond the second year because of difficulties connected with the estimates. The data for the first two years have been obtained by deduction of deaths from births, without any allowance for migration.

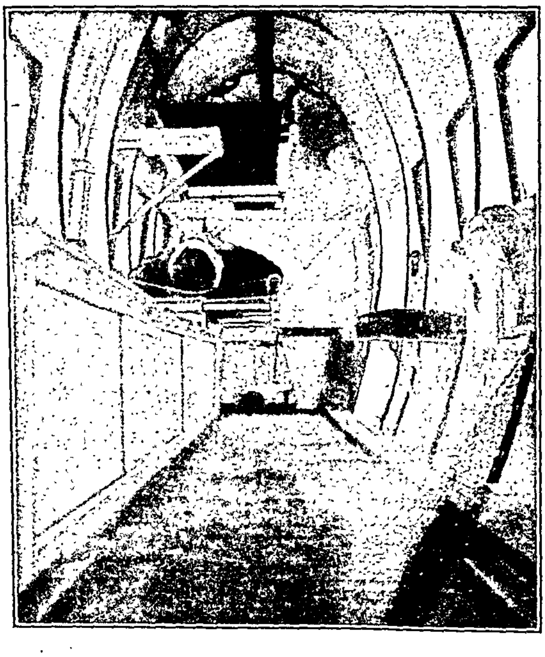
Migration becomes increasingly important with increase of age; and in view of the approach of the Census it has been thought best to limit the estimates to the first two years of life.

Dr. Eustace Greaves has been appointed an Official Member of the Legislative Council of the Island of Saint Vincent.

AEROPLANE AMBULANCES.

THE idea of removing wounded men from the field of battle by means of air service is no new one. It originated in 1910 from Dr. de Mooy, of the Dutch Medical Service, was further ventilated before the war by Mr. Ch. Julliot, of the French Service de Santé, and under pressure from Dr. A. Chassaing, who was both médicin-major and Parliamentary deputy, was nearly realised on the French front in 1918. After an interval of three years French Ministers of State are now reported to be considering the provision of numbers of large medical aeroplanes for use in colonies where other transport is difficult. A machine recently officially inspected at the Villacoublay aerodrome is a Bréguet biplane to carry two stretcher or four sitting cases in charge of a nurse and is provided with steriliser and operating-table.

The aviation department of Messrs. Vickers, Ltd., have sent us details of a machine of the Vickers Vimy commercial type, modified to fulfil the duties of an aeroplane ambulance, and constructed in accordance with the requirements of the Air Ministry; it is capable of carrying at a height of 6500 feet, and at a speed of 109 miles per hour for five hours, the following load: 1 pilot, 1 mechanic, 1 doctor, 1 nurse, 4 stretcher or 8 sitting cases, and 100 lb. weight of medical stores. Fitted with two Napier Lion 450 horse-power engines, and carrying a wireless installation, the machine can climb with full load to the above height in 10 minutes; it can also fly with one engine out of action. The shell is watertight and specially constructed in case a descent on the sea is necessary; an opening is provided in the front of the luggage compartment (under the pilot's seat) whereby stretchers may be loaded and unloaded without any turning of corners. Sitting and walking cases can be admitted through the ordinary doors in the side, which are constructed of a size adequate for rapid evacuation in case of emergency. In the photograph of the interior here given the stretcher racks (which can be folded out of the way of seated cases) are shown in position to hold stretchers. Clearance and lateral floor spaces are allowed for sufficient to facilitate in every way the handling of stretcher cases; ventilation is provided by a fan fitted in the front wall of the cabin; this fan drives air through a screen, which is kept moist, and can be operated when the aeroplane is stationary on the ground. Regulation of the flow of water down the screen will admit the maintenance of an even and cool temperature in tropical countries. A lavatory pan is provided, supplied with a 15 gallon water-tank, and flushed into a receptacle which is easily detached for emptying and disinfecting; a wash-basin is included, and there are separate smaller tanks for washing, drinking, and cooling water.



Interior of the Vickers Vimy ambulance aeroplane, showing a stretcher case in position for transport.

The uses of such ambulance aeroplanes will be considerable in areas where roads do not exist, or where they are too crowded to admit of rapid transport of urgent cases. For small tropical or mountain expeditions a supply of such aeroplanes might be very helpful.

MEDICINE AND THE LAW.

Riders at Coroners' Inquests.

AT a recent inquest held before the deputy coroner at Brixton, the subject of inquiry was the cause of death of an infant. As to this there was medical evidence founded upon post-mortem examination, and a verdict was found in accordance with it. Evidence was, however, also given that a medical man who was not present as a witness, Mr. E. Nundy, had been sent a message asking him to call at the house where the mother lived. This he had done on the following day, as he was attending to the practice of a colleague on whose panel the woman alleged herself to be. When Mr. Nundy came he found that he was being asked to certify as to the cause of death of a child which had died some hours before the summons to attend had reached him, and he quite properly refused to give any certificate, satisfied himself that the child was dead, and recommended that the mother should be removed from her unsuitable surroundings to the infirmary. She refused to go to the infirmary, but Mr. Nundy, nevertheless, as he informs us, took considerable trouble in arranging for her removal thither. The woman, however, complained at the inquest on account of his not having treated her, with the result that the jury added a rider to their verdict asking that Mr. Nundy should be censured for not having given her proper attention. Clearly this was a most improper finding upon a subject quite outside the scope of the inquiry. Apart from the obvious injustice of censuring a man who had been given no opportunity to give his own version of the occurrence in question, the inquest was held in order to ascertain the cause of the death of the child. The mother's health and her grievances, real or imaginary, against an absent doctor were not the concern of the jury or the coroner.

It is a curious coincidence that Mr. Nundy should have found himself the subject of a rider to a verdict at an inquest, arrived at in his absence, in a case in which he had no evidence to offer as to the death the subject of inquiry. In a pamphlet before us, entitled "Coroners' Courts: Their Uses and Abuses,"[1] he has made his principal topic for criticism and protest the licence accorded to coroners' juries to find "riders." It is to be noted that Mr. Henslowe Wellington in his work on coroners[2] can find no authority justifying the addition of the "rider," as an expression of opinion accompanying a verdict which latter is a finding of fact. Nor do they appear to have any history, but have probably grown up and increased in frequency more or less unnoticed. They do not seem either to have any great effect in promoting legislation or otherwise. Perhaps, when the long-postponed reform of the law relating to coroners takes place, this detail of the procedure in their courts may receive consideration. There seems to be no parallel in other courts for the rider, except perhaps the recommendation of a prisoner to mercy at a criminal trial. That, however, deals with a topic of limited scope, and relevant to the matter in hand. The rider at inquests frequently is neither, and if not used with more restraint may work grave injustice.

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[1] Reprinted from the Medical World.

[2] The King's Coroner, vol. ii., p. 74.

Everett v. Griffiths and Anklesaria.

The House of Lords recently dismissed the appeal of the plaintiff Everett in this action. It will be remembered that he sued the first-named defendant, the chairman of the board of guardians of St. Mary, Islington, and Mr. K. A. Anklesaria, the medical officer of the workhouse, for damages in respect of his alleged false and unlawful certification as a person of unsound mind. At the original trial the Lord Chief Justice, upon the jury failing to agree, entered judgment for the respondents on the law. The Court of Appeal, by a majority consisting of Lords Justices Bankes and Scrutton, Lord Justice Atkin dissenting, refused to grant a new trial, and dismissed the plaintiff's appeal. In the House of Lords Lord Haldane delivered a judgment of considerable importance, in which he reviewed at length the evidence given and the law governing such cases. In holding that there was no evidence to go to the jury that the respondent Griffiths, empowered by the Lord Chancellor to sign orders in the case of pauper lunatics, or the defendant Anklesaria had failed to observe the law, Lord Haldane pointed out that their lordships were not trying the question whether the appellant was actually of unsound mind at the time of the inquiry, but the different question whether, on the facts as they stood, there was want of reasonable care in coming to the conclusion expressed in the certificate and the reception order. He had already laid stress on the fact that the justice has to act promptly in ordering the temporary care of an alleged lunatic and to be guided by consideration of the safety not only of the person in question but of the public. After referring to the Rules of the Supreme Court governing the powers of the House of Lords in such matters, Lord Haldane laid down that the question was not whether there was literally no evidence to go to the jury on the issue as to want of proper care, but whether there was none that ought reasonably to satisfy the jury that in point of fact such care was not taken. With regard to the respondent Griffiths, he added that assuming that he had actually satisfied himself, acting honestly and bona fide, in arriving at his conclusion and proceeding upon it, he had done the very thing which the statute told him to do and no further question arose. Four other Lords of Appeal, including Lord Moulton, whose regretted death has since occurred, gave judgment to the same effect as Lord Haldane.

A Dangerous Woman.

Una Hanley, 29 years of age, who was recently fined for falsely representing herself to be a registered medical practitioner, has since been sentenced to six months' imprisonment for bigamy. In marrying Mr. Hanley in 1911 she gave her name as Bowen, and her father's name as David Bowen Bowen, Gentleman. In going through the form of marriage in 1920 at a registry office, the subject of the charge of bigamy, she described herself as Margaret Patricia Crawford, M.B., B.S. London, and gave her father's name as Major-General James William Keogh, deceased. As a matter of fact she was the illegitimate daughter of a woman named Bowen. Her desire to extract profit from falsely associating herself with the medical profession was not shown for the first time when she committed bigamy. While living with her husband, and without his knowledge, she had defrauded many people, and on one occasion obtained more than £3000 from an officer with the help of a story that she was about to open a nursing home and that she was to be helped in so doing by well-known medical practitioners.

DONATIONS AND BEQUESTS.—The late Mrs. Elizabeth Alcock Scott, of Fernbank, Sandrock-road, Tunbridge Wells, has left by will £500 to the Homœopathic Hospital, Tunbridge Wells; £1000 to the Zenana Bible and Medical Mission; and £500 to Dr. Barnardo's Homes.—The residue of the estate of the late Mr. J. E. Darby, of Claygate, Surrey, will be divided among hospital charities at the discretion of the trustees in the event of the failure of certain trusts.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

MADRAS PRESIDENCY.

Medicine and the New Legislative Council.

Now that the elections of the first Legislative Council under the new reforms are complete, medicine and sanitation, which are transferred subjects, have been taken over by the Minister in charge, Mr. Ramunnarengar, who assumed office early last month. This is, perhaps, as momentous a change as any which has taken place under the Reforms Act, although it must be added that during the last five years Sir P. Rajagopala Chariar, who has vacated his membership of the Executive Council to become President of the new Legislative Chamber, has held the medical portfolio with conspicuous success. There is no doubt that a very largely increased expenditure is necessary if curative and preventive medicine are to do all that is required of them in this Presidency. It remains to be seen whether the new Legislative Council will be prepared to impose increased taxation for the raising of the money required to erect new medical colleges, new hospitals and dispensaries, and for extensive campaigns against epidemic disease. Madras Presidency, with a population of 42 millions, is at present provided with one medical college, which can accommodate only about 500 students. There are in addition four or five medical schools for the training of sub-assistant surgeons, but the total number of medical men passing out yearly is terribly inadequate for the population.

On the preventive side, the sanitary department may be scarcely said to have any existence. The Sanitary Commissioner's post is at present vacant. There are three Deputy Sanitary Commissioners, all Indians, each with a population of about 14 millions under his sanitary charge. In face of the lethargy and passive resistance of municipal councils and district boards where public health measures are concerned, it is wonderful how these Deputy Sanitary Commissioners maintain their enthusiasm. But it is not surprising that even the largest towns in the Presidency have failed to keep health officers, as their position has been just as precarious as was the case in England until security of tenure was obtained.

The Public Health Board.

Meantime the new Minister has introduced a Public Health Board for the Presidency which meets once a fortnight for the discussion of important health problems. The Minister in charge is president, and the members include the Surgeon-General (chairman), the Chief Engineer to Government, the Sanitary Commissioner, the Sanitary Engineer, and the Secretary, Local and Municipal Department of Government, when matters connected with medical research, hospital administration, or medical education are discussed the Director, King Institute, Guindy, the Superintendent, Madras General Hospital, or the Principal, Medical College, as the case may be, will attend the meeting of the Board. The Board of Health has absorbed the existing Sanitary Board and the Malaria Board. These two last had been in existence for many years in this Presidency, and whilst during the years of war their activities were curtailed, they performed useful functions, and were the first attempts to coördinate measures for the improvement of public health. The new Health Board has already met on several occasions.

Personnel of the Consultative Council.

Probably as a result of its deliberations the following communiqué was issued to the press a day or two ago: "The Ministry of Local Self-Government has appointed the undermentioned persons as members of the Consultative Council of Public Health, Madras," and then follows 21 names, including the Surgeon-General, the sanitary commissioner, the chief engineer, the sanitary engineer, the secretary, local and municipal department, the Commissioner of

Labour, and 14 non-officials. The non-official members are most of them members of the Legislative Council, and are chiefly chairmen of district and taluk boards who have practical experience of the difficulties to be faced in carrying out public health work in the mofussil. Three local doctors have also been included. Dr. W. Rama Rao is a local practitioner of long-standing and one who has interested himself for years in public health; Dr. Macphail, one of the staff of the Christina Rainy Mission Hospital, has 20 odd years' experience among the women of the Presidency; and Dr. L. Vira Singhe has been the lady superintendent of the Madras corporation child welfare scheme since its inauguration nearly four years ago. The medical profession is, therefore, strongly represented on the consultative council, and should be able to bring considerable pressure to bear when a scheme for the betterment of public health is held up because of so-called lack of funds. It is to be hoped that with these developments more money will be available for public health work, and that the educated members of the Legislative Council, &c., will try to stimulate their more ignorant fellow-men to some interest in matters of sanitation and preventive medicine generally.

Madras, Feb. 10th.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Lieut. (Dental) W. E. A. Sampson to be Surgeon Lieutenant-Commander.

ROYAL ARMY MEDICAL CORPS.

Major G. W. Heron is seconded for service under the Foreign Office.

Capt. and Bt. Major J. D. Kidd relinquishes the acting rank of Major.

The undermentioned Lieutenants (temporary Captains) to be Captains: J. E. Measham, J. M. Savege, J. C. Burns, G. K. Fulton, and R. R. Evans.

E. C. Lindsey (late temporary Captain) to be temporary Captain.

Officers relinquishing their commissions:—Capt. H. D. Gardner (granted the rank of Major). Temp. Capts. E. C. Dimock (on ceasing to be employed as a Dental Surgeon), H. V. Lamb, F. M. Rorie, W. Andrew, H. Wands, and F. Cameron (retain the rank of Captain). Temp. Lieut. W. H. Steavenson (retains the rank of Lieutenant).

TERRITORIAL FORCE.

Major F. Loud, T.D., Sussex R.G.A. (temporary Major, R.A.M.C. T.F.), relinquishes his temporary commission in the R.A.M.C.(T.F.).

Capts. J. Taylor (late R.A.M.C., Spec. Res.), F. A. E. Crew (from 6th Battalion, Devon Regiment, and to remain attached to the Edinburgh University, O.T.C.), and V. Townrow (late R.A.M.C.) to be Captains.

Capt. H. B. Porteous relinquishes his commission in the T.F. on appointment to a permanent commission in the R.A.F.

Capt. J. R. Pooler to be Major.

Lieut. O. G. Misquith (late 24th Battalion, London Regiment) to be Lieutenant.

4th Northern General Hospital: Major E. C. Clements relinquishes his commission in the T.F. on appointment to a permanent commission in the R.A.F.

TERRITORIAL FORCE RESERVE.

Major G. L. L. Lawson resigns his commission and is granted the rank of Lieutenant-Colonel.

Capt. C. H. J. Fagan, from General List, to be Lieutenant-Colonel.

ROYAL AIR FORCE.

Medical Branch.—The undermentioned are granted permanent commissions as Flight Lieutenants, retaining their present seniority (subject to acceptance of final conditions of service): E. N. H. Gray, R. E. Bell, E. A. Lumley, D. G. Boddie, H. McW. Daniel, and A. E. Barr-Simm.

Flight Lieut. D. McLaren is granted a permanent commission, retaining his present substantive rank and seniority (subject to acceptance of final conditions of service).

Capt. (acting Major) G. Cranstoun is transferred to the unemployed list.

Dental Branch.—Capt. F. B. Stradling and W. Inman are transferred to the unemployed list.

MR. Charles Leolin Forestier-Walker, M.P., has been appointed a Commissioner (unpaid) of the Board of Control in the place of Sir W. H. Dickinson.

LITERARY INTELLIGENCE.—Messrs. Kegan Paul and Co. announce, by Miss Barbara Low, whose outline of the Freudian theory was well received, "The Gift of Psycho-Analysis to Education," a work dealing with the bearing of psycho-analysis on general educational problems.

Correspondence.

"Audi alteram partem."

A CONTROLLED STUDY OF SANATORIUM RESULTS.

To the Editor of THE LANCET.

SIR,—Dr. E. Ward's paper on this subject in your issue of March 12th contains so much that is contrary to the facts of experience that it should not be allowed to pass without criticism, for it is only too evident that unfortunate sufferers from tuberculosis at the present time have not only to fight against a grave malady, but also to struggle along in many areas without the wise judgment of a wide experience to aid them. The gist of Dr. Ward's conclusions is that better results are obtained in cases of pulmonary tuberculosis by the giving of "advice, by treatment at home, or by supervision at a dispensary, than by sanatorium treatment." Now sanatorium treatment may be defined as the best that can be done for a tuberculous patient under the best conditions by a physician who is devoting his whole time to the study of the disease; and if that is not infinitely superior to treatment elsewhere it would follow that the sanatorium physician must be a "mental defective." Yet Dr. Ward has come to the remarkable conclusion, and supported it by statistics, that after the lapse of four years 54 per cent. of patients in Stage I. who have not received sanatorium treatment are "cured," and only 31 per cent. of those who have undergone this special treatment. The former percentage would lead a casual reader to look upon pulmonary tuberculosis as a comparatively benign disease, but the experience of former generations did not give any ground for such an opinion; and while it may be said that the National Health Insurance Act provisions advanced the opportunity of treatment for the mass of tuberculous patients by ten years, I am not aware that it lessened the virulence of the tubercle bacillus. I have never previously come across any statement of figures by a reputable clinician of special experience which made any approach to the claim by Dr. Ward for the results of non-specialised treatment. When statistics lead to an absurd conclusion the compiler of them should really give pause. From the statement that "patients who left the sanatorium under a month are counted as controls," it may be deduced that those who remained in the institution for two months—or little more—were included among the results, and if so, the poverty of the latter can be understood; for a limited period of treatment in a case which would require a 12 months' residence could not be expected to lead to any permanent benefit. In any statement of results cases in a comparatively early stage should be separated from those in which there is little or no prospect of securing arrest of the disease, the former being classified as the results of "sanatorium" and the latter as those of "hospital" treatment: the sanatorium expert being in the best position from close observation to judge of the prognosis. Among the fallacies which Dr. Ward enunciates attention might be called to the statement that ex-sanatorium patients "lose ground so rapidly that after two years they have frequently fallen below the level they would then have reached had they never been in a sanatorium"; for this implies a prescience on Dr. Ward's part which is beyond understanding. The argument he employs, that "had some patients been left at work instead of being removed to a sanatorium for a few months they might have continued the running fight indefinitely," would almost lead one to despair of the effort to secure the arrest of tuberculous disease. The suggestion to allow a patient to continue at work "though far from well" displays an entire failure to realise the serious nature of tuberculous disease, and only a pessimistic attitude towards beneficent sanatorium treatment could account for it.

Dr. Ward damns sanatorium treatment with the faintest of praise, and as far as one can judge from his paper, his attitude is due to the fact that he does not realise the length of residence in an institution which the stage of disease in a particular patient necessitates. He appears to imply in one place that as this form of institutional treatment is baneful, the less of it a patient submits to the better; for he writes sarcastically: "Possibly if patients were kept at the institutions for a year or more, we should then have our authorities urging for a period of three to five years instead of one." An indefinite stay in a sanatorium or hospital would produce some surprising results; and if Dr. Ward had observed, as I have, a patient in Stage III. with T.B. in sputum reach a condition of complete arrest after a three years' residence and regain his capacity to work as a teacher for two and a half years (with every prospect of continuance), his opinion of the value of sanatorium treatment might rise. It is surprising, in contrast with the general tone of Dr. Ward's paper, to find towards its conclusion the suggestion that "a patient while at the sanatorium would stay indefinitely, the longer the better"; indeed, one would think that another hand had penned the words, for, if he accepts his own statistics, it would be much better to save the expense of sanatoriums and to treat patients "by advice only for the most part, under their own doctor, or not at all, except (by footnote) as dispensary out-patients." From experience in general practice, from attempts by myself to carry out treatment in private on sanatorium lines, and from 20 years' close association with patients in sanatoriums, I have formed a totally different opinion from Dr. Ward, and it is that other treatment of pulmonary tuberculosis stands to sanatorium treatment somewhat in the relation that moonlight does to sunlight.—I am, Sir, yours faithfully,

THOMPSON CAMPBELL, M.D.,
Medical Superintendent, West Riding County
March 12th, 1921. Sanatorium, Ilkley.

THE PELLAGRA OUTBREAK IN EGYPT.

To the Editor of THE LANCET.

SIR,—As I presume that Professor W. H. Wilson's letter[1] completes the series of criticisms which my article on pellagra in THE LANCET of May 8th, 1920, has prompted, I venture to offer a short collective reply.

While agreeing with the first of my critics, Dr. H. M. Woodcock,[2] that the origin of pellagra cannot be solely explained on a dietetic basis, I cannot subscribe to the hypothesis that the *Ascaris lumbricoides* has any ætiological bearing on this subject. In the routine performance of numerous autopsies on pellagrins neither Dr. Manson-Bahr nor myself were able to establish the invariable presence of these helminths in the intestinal canal. With regard to my other critics, Dr. J. Goldberger,[3] Professors Wilson and Lelean,[4] who deal with the subject on similar lines, I confess that their objections, though not insuperable, cannot be so easily dismissed.

However, I must agree with my friend and colleague, Dr. A. D. Bigland,[5] that the view put forward by Dr. Goldberger that the prisoners did not partake of the diet provided is an untenable one. At least, I am quite sure that they ate the hospital diet which was stated to have been supplied. Of course, I cannot vouch for the accuracy of the camp diet, which I extracted from the Report of the Committee of Inquiry on Pellagra among Prisoners of War.[6] With reference to the canteen extras of that diet, Professor Wilson states that the prisoners had not enough money to purchase them, while Professor Lelean expressed himself in his letter thus: "Careful investigation showed that practically the whole of the 2*s.* supplied to the Germans passed through the canteen accounts, &c." But apart from these canteen extras the B.P.V. (biological protein value) of their diet, even according to the report, was deemed adequate.

Now the principal blot on my "escutcheon" rests in the occurrence of two cases of scurvy among these German pellagrins. Admittedly scurvy is a food deficiency disease, and its presence in even two cases only is naturally suggestive that some deficiency might also have been operative in the coincident pellagra. With all due respect to my critics who reason in this manner, I humbly submit that the deduction is quite erroneous. In the recent well-known examples of voluntarily enforced abstention from food I believe that symptoms of scurvy were observed, but I have not heard of any reference to the onset of pellagra. Of course, I make this statement without official knowledge on the subject. At all events, I can still see no reason for not believing that the German pellagrins did not—except for the canteen extras mentioned by Professor Wilson—actually eat the diets which I originally detailed. Undoubtedly, they did not all derive the same value from them, as in addition to the variations in the powers of assimilation in normal individuals must be added the lowered assimilation consequent on debilitating diseases. I fail to appreciate the relevancy of Professor Lelean's allusion to my "missing the cardinal essentials underlying the word 'relative' applied in our report to food deficiency."

Professor Lelean juggles with calories and B.P.V.'s as if they were ponderable entities. Who can say that the nutrition of the body is so "nicely calculated less or more"? Contrast the diet of an Eskimo with that of a Hindu. Why did not pellagra occur among the British or Allied prisoners of war in Germany, Asia Minor, or Bulgaria? None of my critics have satisfactorily answered this apparent anomaly. We are all familiar with the terrible plight of the British garrison of Kut-el-Amara, and yet there is so far no record of a disease resembling pellagra having been observed among them. I assume that there is no reason to suppose that the B.P.V. of their diet approached even by a long distance the last figure of 52 given by Professor Wilson. The association of extensive damage to the intestinal tissues with the appearance of pellagrous symptoms as an argument in favour of the protein-deficiency theory has never appealed to me as convincing. Is one to assume that the incidence of dysentery in the Southern United States was greater than that among the British troops in the East during the war? This certainly cannot be the case. Nor is there any reason to suppose that the incidence of intestinal disease among the German troops was any greater than among our own. Finally, I ask if pellagra has been observed in those who have subjected themselves to a voluntary abstention from all forms of food, as in the recent instances of political prisoners.

It appears to me, Sir, that until all these apparent anomalies can be satisfactorily explained, the protein deficiency theory as the main ætiological factor in pellagra cannot be accepted.

I am, Sir, yours faithfully,
J. I. ENRIGHT.

*** Dr. Enright writes in a covering letter: "From your annotation entitled Recent Researches on Pellagra in Egypt of Jan. 22nd I glean that the conclusions of the recent R.A.M.C. committee[7] appointed to investigate the pellagra outbreak in Egypt are not in accord with those of the previous committee, presided over by Professor Lelean and Colonel Boyd, A.M.S.,[8] and are confirmatory of the opinions which I expressed on the rôle of the food deficiency factor in my original article."—ED. L.

REFERRED PAIN.

To the Editor of THE LANCET.

SIR,—Contributors to the discussion on referred pain now appearing in your columns have overlooked certain points. Reflex visceral symptomatology is divisible into two parts; the first part relates to spasm of

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[1] W. H. Wilson: THE LANCET, Oct. 2nd, 1920, p. 720.
[2] H. M. Woodcock: Ibid., May 29th, 1920, p. 1195.
[3] J. Goldberger: Ibid., July 3rd, 1920, p. 41.
[4] P. S. Lelean: Ibid., July 17th, 1920, p. 156.
[5] A. D. Bigland: Ibid., July 10th, 1920, p. 98.
[6] Boyd and Lelean: Inquiry into the Incidence of Pellagra among Prisoners of War in Egypt, 1918, Cairo.

[7] Report on Investigations of Pellagra among Turkish Priso
War in Egypt in 1920, Alexandria.
[8] Boyd and Lelean: Inquiry Regarding the Preval
Pellagra among Turkish Prisoners of War in Egypt, 1919, Ca

visceral muscle, the second to conditions affecting investments and mesenteries of organs and subserosæ of their containing serous sacs. Unless spasm occur in the muscular tunic, or unless outlying structures are involved in the visceral lesion, visceral disease of grave import may remain undiscovered. Viscera themselves are innervated from segmentary centres of the cord, often far distant from sources whence their investments derive their central neuronic supply, consequently viscero-sensory impressions from an affected organ are felt in one zonal region, while viscero-sensory impressions, from investments of the same organ, are manifested at another place.

For instance, viscero-sensory impressions from muscular tunics of stomach and duodenum follow the track laid down by great splanchnic strands, and their deflections on the spinal system are manifested as referred pain and algesia at points of outcrop and at terminals of upper intercostal nerves, as witness so-called hepar or shoulder liver pain, described with much accuracy by John Hilton in his lectures upon "Rest and Pain." Whereas when gastric or duodenal ulcerations invade investments of these organs or encroach upon their peritoneal coverings viscero-sensory impressions are felt in epigastric or in hypochondriac regions.

I give only a single example, but it is sufficiently illustrative to explain differences which too frequently divide authoritative opinion upon the reliability of new methods of clinical research in the differential diagnosis of visceral disease.

I am, Sir, yours faithfully,

H. WALTER VERDON, F.R.C.S.

Streatham Hill, S.W., March 14th, 1921.

THE FULL USE OF ARTIFICIAL LIMBS.

To the Editor of THE LANCET.

SIR,—Your annotation of March 5th referring to Dr. M. Dockrell's letter is of the greatest interest to those who have lost limbs, and holds out hope that medical opinion is awakening to the fact that muscle training and education of the senses are all-important and indeed imperative to those who have lost limbs before they can return to a normal existence. My personal experience is a thigh amputation, of which I believe there are thousands. The limb-makers are perfectly frank, and there is no disguise that as regards war cases the aim and object of the authorities was to clear the limb hospitals and to send home the men as soon as possible with the best limb available at the time; and of all the mechanical appliances invented the central knee-control with harness over the shoulders was the simplest to avoid the use of muscles, wasted by weeks in bed, and to give a certain amount of confidence to men who had got to regain their balance. Speaking from personal experience since 1916, and quoting from an experience of over 20 years, I know that a mechanical knee worked from the shoulder is entirely unnecessary, and that with a light, well-fitting limb the stump and the stump muscles can develop an easy natural walk with perfect balance, and that the benefit to the general health of the patient is tremendous. Freedom from harness over the chest and shoulders, freedom from mechanical aid is something, but the very fact that the muscles must be developed normally and brought into daily use means much more. The system of training you mention varies with each case, and where one man whose stump muscles had been trained during the period his limb was being made was perfectly ready to go home three days after his limb was fitted, another who had acquired bad habits and a flexed stump required several weeks of careful supervision, though many of the exercises can be carried out at home. An occasional case may require only eight or nine days, some two or three weeks, while a few may require as much as three months. The greater number of men whom I have met have received little or no instruction, and that is why they rise up on the good toe and sling the artificial limb along anyhow, rising and sinking with each step. Many of them are on crutches or pegs, some to this day because they cannot drag 8 lb. along with a short stump. Quoting from one of the ex-Service societies, a number in the streets like a bit of sympathy and prefer not to wear a limb, but I believe firmly that if it was once brought home to them that they could quite simply return to nearly all their pre-war activity they would never ask for sympathy. It has been my privilege lately to help out of my experience a case that had not walked more than half a mile for ten years. A light limb was obtained, a short course of training undergone, and to quote the patient, "What it means to find that one can walk normally, to get to the shops, and carry out household duties, and, above all, to have the use of both hands, because no stick or crutch is necessary, is beyond words." The surgeons in charge of limb hospitals have no time, naturally, but if the need of training were once established there could be no better way of finding employment for some of our disabled men than in making them efficient and in establishing them in the limb centres as trainers of all those who need it.

I am, Sir, yours faithfully,

GEORGE A. PONSONBY.

Wellington Club, S.W., March 12th, 1921.

THE LABELLING OF THYROID TABLETS.

To the Editor of THE LANCET.

SIR,—We have read with great interest Dr. A. E. Carver's letter in your issue of March 12th, and we desire to say that we agree with every word of it. In the early days of thyroid medication our own practice in the matter of labelling thyroid gland tablets was based on the content of desiccated thyroid—i.e., a tablet containing 1 gr. of desiccated thyroid was labelled "1 grain," with the statement that this was equivalent to 5 gr. of the fresh gland. Later we found that there was much misunderstanding as to the dosage and nomenclature of thyroid, and on making inquiries of a number of prescribers as to what they meant when they wrote "Tab. thyroid 1 grain" we found that, without exception, every doctor consulted by us meant 1 gr. of the fresh thyroid, or 1/5 gr. of the desiccated gland. In view of the importance attached to dosage of a potent drug like thyroid, it was felt that if any doubt existed as to the doctor's intention it was safer to err on the side of giving too small, rather than too large, a dose, and, hence, our practice was reversed and our labels altered accordingly. The labels now read thus: "Compressed Tablets Thyroids. Each tablet represents 1 grain of fresh thyroid gland equal to 1/5 grain of Thyroideum siccum B.P.," and medical men who see our labels, or who read our literature, can be under no illusion as to the actual thyroid content of any tablet.

Our experience suggests that writers, and possibly teachers, fail to make clear the distinction between fresh and dried thyroids. It would undoubtedly be better were one rule universally adopted, but in view of the fact that some generations of medical men think in terms of the fresh gland only, it will be difficult to induce them to alter their practice, and the question for manufacturers is how best to carry out the intentions of the prescriber. It has also to be borne in mind that the Pharmacopœia designation is "thyroideum siccum," and where a prescriber writes "thyroid" only, no one can say that it is wrong to give the fresh thyroid. Obviously, when a prescriber writes "thyroid extract" a tablet representing the B.P. substance should be dispensed.—We are, Sir, yours faithfully,

March 15th, 1921. PARKE, DAVIS AND CO.

AS OTHERS SEE US.

To the Editor of THE LANCET.

SIR,—The letter from my old and long lost-sight-of friend, Dr. Wilson Parry, shows a misunderstanding of the point which my previous contribution was intended to make. I certainly have no personal reason to complain of the lack of "worship" among the town wage-earners; rather the reverse. But what disturbs me is that, by the bulk of working people with whom I come in contact, I am regarded as an exception in appearing to possess any public spirit at all. It was not the attitude of the public of which I complained, but the increasing justification for that attitude afforded by our public manifestations. It was the beam in our own eye to which I referred. The original title of my communication, "The Cad in Medicine," would perhaps have prevented Dr. Parry from misinterpreting my meaning. If we all approached our work in the spirit with which he approaches his, we should hold a very different place in the public mind from that which we actually do occupy at the present time.

Dr. Laing Gordon's letter in your last issue suggests the one direction in which we may look with hope.

I am, Sir, yours faithfully,
HARRY ROBERTS.

Harford-street, Stepney, March 12th, 1921.

DANGEROUS DRUGS ACT, 1920.

To the Editor of THE LANCET.

SIR,—As one of the nameless 6000 medical and dental practitioners "represented" by the London and Counties Medical Protection Society, Ltd., as a subscriber to it for some 20 years, and, moreover, a believer that its Council intends to act in the best interests of the profession, I nevertheless suggest that Dr. Hugh Woods may be mistaken if his letter appearing in your columns on March 12th intends to imply that his Council voices the medical opinions of the society's contributors, inasmuch as they are not in any way consulted.

I am, Sir, yours faithfully,
A MEMBER.

March 15th, 1921.

URBAN VITAL STATISTICS.

(*Week ended March 12th, 1921.*)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18¼ million persons, the annual rate of mortality, which had been 15·4, 15·5, and 15·2 in the three preceding weeks, was again 15·2 per 1000. In London, with a population of 4½ million persons, the death-rate was 15·1, or 0·3 per 1000 above that recorded in the previous week, while among the remaining towns the rates ranged from 4·9 in Swindon, 8·5 in Bootle and in Dewsbury, and 9·1 in Bournemouth, to 22·4 in Aberdare, 22·5 in Middlesbrough, and 23·3 in Tynemouth. The principal epidemic diseases caused 231 deaths, which corresponded to an annual rate of 0·6 per 1000, and comprised 76 from infantile diarrhœa, 68 from diphtheria, 41 from whooping-cough, 25 from measles, 18 from scarlet fever, and 3 from enteric fever. Measles caused a death-rate of 2·5 in Stockton-on-Tees, and diphtheria of 1·8 in Tottenham. The deaths from influenza, which had increased from 61 to 167 in the five preceding weeks, declined to 149, and included 27 in London, 10 in Sheffield, 9 in Leicester, 6 in Birmingham, and 5 in Hastings. There were 3730 cases of scarlet fever and 2818 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 3738 and 2809 respectively at the end of the previous week. During the week ended March 5th 6 cases of encephalitis lethargica were notified in the County of London, and comprised 1 each in Camberwell, Hampstead, Kensington, Lewisham, Paddington, and St. Pancras. The causes of 32 of the 5392 deaths in the 96 towns were uncertified, of which 6 were registered in Birmingham, and 3 each in London and Manchester.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2¼ million persons, the annual rate of mortality, which had been 18·2, 19·4, and 18·0 in the three preceding weeks, rose to 18·5 per 1000. The 407 deaths in Glasgow corresponded to an annual rate of 19·3 per 1000, and included 32 from whooping-cough, 17 from influenza, 7 from infantile diarrhœa, 3 from diphtheria, 2 each from enteric fever and measles, and 1 from scarlet fever. The 160 deaths in Edinburgh were equal to a rate of 18·7 per 1000, and included 5 from influenza, 4 each from measles and diphtheria, 3 from whooping-cough, and 1 from infantile diarrhœa.

Irish Towns.—The 147 deaths in Dublin corresponded to an annual rate of 18·1, or 0·8 per 1000 below that recorded in the previous week, and included 6 from influenza, 3 from infantile diarrhœa, 2 from diphtheria, and 1 from whooping-cough. The 161 deaths in Belfast were equal to a rate of 20·0 per 1000, and included 11 from whooping-cough, 3 each from infantile diarrhœa and influenza, 2 from enteric fever, and 1 each from measles, scarlet fever, and diphtheria.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Opposition to New Drug Regulations.

A MEETING of some 150 Members of Parliament was held in Committee Room 10 at the House of Commons on Wednesday, March 9th, to hear the views of the medical profession, the Pharmaceutical Society, and others in opposition to the Regulations proposed to be made by the Home Secretary under the Dangerous Drugs Act. Sir HENRY CRAIK, M.P., presided, and he was supported by Dr. A. COX, medical secretary, British Medical Association; Sir WILLIAM GLYN-JONES, secretary, Pharmaceutical Society of Great Britain; Mr. A. V. ALEXANDER, secretary, Parliamentary Committee of the Coöperative Congress; Mr. J. E. CONNOR, President, Pharmaceutical Society of Ireland; Mr. WALTER MCNAB, Vice-chairman, Scottish Pharmaceutical Federation; Mr. J. KEALL, President of the Retail Pharmacists' Union; Mr. WOOLCOCK, M.P., and Mr. KILEY, M.P.

The CHAIRMAN said he understood that the purpose of the meeting was inquiry rather than protest at the moment. Although the Regulations in regard to the sale of dangerous drugs were quite ripe for publication, they had not yet been submitted to the House of Commons. The Home Secretary had now stated in reply to a Parliamentary question: "I have decided to appoint a small Committee, including one or two Members of the House and a representative of the Home Office as suggested by Mr. WOOLCOCK, to consider and report to me in cases in which we have not been able to come to an agreement with interested parties what further modifications, if any, can safely and properly be made in the Draft Regulations, having regard to the main principles on which the Regulations are based, and which are essential in the public interest for safeguarding the use of the drugs." Sir HENRY CRAIK, said he thought that reply indicated that they had made some impression.

Sir WILLIAM GLYN-JONES then made a statement to the meeting. He pointed out that amongst the measures this country was committed to take under the International Opium Convention of 1912 were "to require persons manufacturing, selling, or using morphine, cocaine, and their salts to enter in their books the quantities manufactured, imports, sales, and all other distribution and exports of the said drugs," but the following significant words were added, "this rule shall not necessarily apply to medical prescriptions and to sales by duly authorised chemists." Having traced the progress of the recent negotiations with the Home Office in regard to the regulations to be made under the Dangerous Drugs Act passed last year, Sir WILLIAM GLYN-JONES said they could not accept as a reasonable explanation of the alarmingly unsuitable character of the Draft Regulations that they were only put up to be shot at. Had it not been for the intervention of the various societies interested, the Regulations as drafted would have been made operative in due course. They realised that Members of the House of Commons shared with their constituents a growing dislike of legislation by Regulation and Orders. Nothing but the most powerful reasons could justify the House of Commons deputing to a Government department the duty of legislating. The Draft Regulations were ill-conceived and badly drafted. Their publication caused grave concern to the medical, dental, and allied professions, and to the agricultural interests. They bore on their face convincing evidence that the Home Office were without the knowledge of the conditions surrounding the supply of the substances dealt with, or that the Regulations were prepared with a deliberate disregard of those conditions. They asked with great confidence that the House of Commons should insist that before making the Regulations the Home Office should take the steps, the necessity for which was the only justification for Parliament in this case deputing their legislative powers to the Home Office. They approached Members on behalf of constituents, highly trained and qualified, whose function it was to prescribe and dispense these substances. They represented those who regarded as a trust from the State the duty of protecting the public from the misuse of drugs, and they felt aggrieved that the Home Office did not welcome their suggestion. This was based on intimate knowledge of the difficulties, and was to the effect that the Home Office should have the assistance of an expert committee to whose judgment detailed suggestions could be submitted. Whether intentionally or otherwise, the attitude of the Home Office suggested an attitude of suspicion. Such an attitude might have been justified if there had been any ground to suppose that they were no
anxious as the Home Office to do everything in their
to assist the Government in carrying out any obli
they might have under the Opium Convention and of
all possible measures to prevent the formation
cocaine and opium habit, or any other misuse of th

in question. The methods hitherto adopted were those which were tried in vain by our late enemies—namely, an attempt to isolate the allies each in turn. The mistake of treating them as enemies andnot as friends of measures calculated to prevent drugging they regarded as far from complimentary. They submitted that their request all along had been a simple, straightforward, and businesslike one, and it was with great regret that the persistent refusal of the Home Office to grant it had rendered it necessary that they should trouble Parliament at this stage. The necessity having arisen they had every confidence in leaving the matter in the hands of the House of Commons.

Dr. ALFRED COX said the medical profession were not satisfied with the Regulations.

Dr. NATHAN RAW, M.P., moved:—

> "That this meeting agrees to take all possible steps to secure the fullest consultation and consideration before the Dangerous Drugs Act Regulations are made, and appoints a small committee to watch the matter and report; and in the opinion of this meeting any committee appointed by the Home Secretary should have wide terms of reference, and should be empowered to hear any evidence submitted to them on any matter affected by the Regulations, and should be sufficiently large to be fully representative."

Mr. A. M. SAMUEL, M.P., seconded the motion, which was supported by Mr. KILEY, and carried unanimously.

The following were appointed the members of the committee: Mr. J. HINDS, Sir HENRY CRAIK, Dr. RAW, Mr. ORMSBY-GORE, Sir J. BUTCHER, Mr. WOOLCOCK, Sir RICHARD WINFREY, Mr. WATERSON, Dr. MURRAY, and Mr. KILEY.

A Home Office Committee on the Regulations.

The Home Secretary has appointed a Committee to consider outstanding objections to the Regulations under the Dangerous Drugs Act, and to advise what modifications can safely and properly be made, having regard to the main principles on which the Regulations are based, and which are essential in the public interest for safeguarding the use of the drugs.

The Committee is constituted as follows: Mr. CHESTER JONES (Chairman), Sir MALCOLM DELEVINGNE, Captain W. E. ELLIOT, M.P., Major A. C. FARQUHARSON, M.P., Mr. GERALD A. FRANCE, M.P., and Mr. W. J. U. WOOLCOCK, M.P. The Secretary of the Committee is Mr. A. H. ANDERSON, of the Home Office.

HOUSE OF LORDS.

WEDNESDAY, MARCH 9TH.

Criminal Law Amendment Bill.

The Bishop of LONDON, in moving the second reading of the Criminal Law Amendment Bill, said in seeking for the third time to amend the criminal law his motive was to deal with a great and growing evil. Altogether he had received about 80 resolutions in favour of the measure from members of every denomination. He had left out of the present measure the compulsory detention of young girls in homes against their will. He had also left out the clause for the protection of boys because it was felt that no father would prosecute a woman of 21 or even older for misleading his son of 17. The age-limit of 18 in last year's Bill had been reduced to 17. Their lordships would be horrified if they could see some of the Salvation Army and Church Army homes full of children who had been indecently assaulted. The horrible idea of some men was that they could get rid of venereal disease by assaulting an innocent child. The Bill said that between the ages of 13 and 16 a child was incapable of consenting. It was provided that reasonable cause to believe that a girl was of or above the age of 17 should not be a defence. The time-limit was increased from 6 months to 12 months. The right reverend prelate gave figures to show the fearful extent of the evil of venereal disease, and said that it was the prostitution of young girls which was at the bottom of the whole thing. The societies for combating that disease with which Lord Willoughby de Broke and Lord Sydenham were associated had failed in their methods because they had not the courage to go to the real source. He would quote from a document which was not public yet, a report on the condition of London by two of the greatest authorities. This showed that in the clinics of London—and it should be remembered that only about one-tenth of the cases went to these clinics—there were 27,364 new cases in 1919 and 298,066 attendances. In the first half of 1920 there were 15,797 new cases and 214,659 attendances. At the London Hospital Clinic the numbers had increased from 658 new patients in 1918 to 1452 new cases in 1920. These medical authorities went on to report in their most interesting and careful summary that a large percentage of the patients were quite young—from 16 to 20 years of age.

The Earl of ONSLOW, Civil Lord of the Admiralty, said that the Government had hoped that the labours of the Select Committee would have resulted in a non-controversial measure, but it was clear that there were considerable divergences of opinion, especially regarding venereal disease and indecent advertisements. Although the Government left the matter to the unfettered judgment of the House they viewed the progress of the measure sympathetically. If it were passed by their lordships without material amendment the possibility of giving further facilities for its progress in the House of Commons would be considered. But in view of the pressure on Parliamentary time he could not give an undertaking that it would be possible to secure the passage of the Bill in the present session.

Lord PHILLIMORE said every form of protest should be made against the present state of immorality and he was quite content that some Bill such as this should pass. But he warned their lordships that if they took away the defence of "reasonable grounds to believe," and raised the age to 17, they would do in many cases much injustice and much hardship.

The Earl of MALMESBURY hoped that while their lordships would give the Bill a second reading they would support an amendment in Committee reducing the age of consent to 16.

Lord COLERIDGE said he thought that on the whole it would not be an unwise thing to raise the age to 17, but if they also deleted the defence of reasonable ground for belief they will go beyond public opinion and the law would break in their hands.

Viscount CAVE said he would rather have a clean-cut, retain the age of 16, and abolish the defence of reasonable belief than raise the age and leave the defence standing.

The Earl of DESART said the Bill would involve the danger of very great injustice.

Lord WILLOUGHBY DE BROKE said he was going to vote for the second reading of the Bill, but the right reverend prelate must not imagine that he had disposed of the arguments which he would venture to offer in reference to venereal disease.

Joint Responsibility of the Sexes.

Lord DAWSON OF PENN said when he put the evils on the one side and the Bill on the other he could not see that the measure was going to succeed in removing the evils they all so greatly desired to remove. He did not say that the Bill was not a good one, although he thought there were certain respects in which it was liable, quite unconsciously, to do evil. They needed to distinguish between the sexual instinct which was based on nature and the sexual instinct which was unnatural and perverted. Cases of older offenders, men and women, defiling young boys and girls could not be dropped upon with too heavy a hand; but Clause 1 seemed to him to include the possibility and perhaps the probability of sometimes bringing within its meshes the young, possibly a boy of 18, who was accused of defiling a girl of 16 or 15. An offence against such people was on an entirely different footing. That was a natural instinct which had overflowed its banks at an age at which restraint was deficient, and it seemed to him deplorable that young persons under the age of 18 should be liable to the criminal law for offences of that description. Such young people did not require the dock; they rather required education, uplifting and moral suasion. Some proviso should be inserted which would place the younger offender on a different footing from the older offender. When the legislature extended the age for carnal knowledge to 16 it did so because it took the view that a young person of 16 was too immature either to form a judgment or be what he would call a conscious and even instigating sexual agent. But when the age of 16 was passed the changes which took place in the girl were often very rapid, very capricious, and very marked. The girl was unlike the male. The male would develop steadily; the girl would often develop by leaps and bounds, and in the course even of three or four months she would pass from girlhood into apparent womanhood. And when that occurred it was extraordinarily difficult to tell her age. It would be quite easy to select five or six girls of the age of 17 in whom one could represent by appearance any age from 15 to 21. With a girl's quick development after 16 she became a conscious sexual agent. She might be more than that; she might become an intentional sexual instigating agent. That was where his difficulty lay in the raising of the age. He was as anxious as anyone to give all the protection that could be granted, but the very moment that the girl became a conscious and often an intentional instigating agent it seemed to him extraordinarily difficult to throw the whole blame for sexual misdoing on the man. It was a curious commentary to his mind that the large body of public opinion that was constantly maintaining that there should be an equal standard of responsibility for the two sexes—a view with which he had considerable sympathy—should now be willing to protect the girl at the expense of the man, and put the man on an inequality as compared with the girl. It did not seem to be right or fair, or likely to lead to the public good to throw the whole onus on the man. He was not concerned with the older man. The older man of 25 and upwards had developed a certain amount of stability. But take the example of a young man coming up to London for pleasure. He came up with innocent intentions but full of the impetuosity of youth. Supposing he happened to meet a precocious girl of the age of 16½ years, who might perfectly easily look 18, and who is accustomed to sexual intercourse. Notoriously, a young man was a bad judge of age. The girl formed an attraction for the youth. What did she do? She set to work to throw allurement after allurement over him. She used all the artifices of her sex to achieve her object. She gradually saw him being lashed into the elemental and aggressive male, and when that point was reached he was like a runaway horse; his control had gone. He pursued and he succumbed. It might be asserted, in that particular instance, that the more experienced and semi-professional girl was far more to blame than the youth. But she got off scot-free, while you converted him into a criminal and ruined his career. He was not going to contend that all the cases fell into that category, but those were his reasons for doubting whether it was wise, or possible, to raise the age to 17. There was another point of view which was of considerable importance, and which made one hesitate before placing responsibility for sexual intercourse exclusively on the male. Certain physical realities of life seemed to have been almost entirely ignored by many earnest social reformers. Sex attraction is one of the elemental things of life, and it would be agreed in regard to the instincts which moved men and women in sex matters the first outstanding instinct of the male was pursuit. It might be checked, and should be checked in civilised society, by moral and religious ideas; but there was the elemental instinct. The instinct of the female was resistance, reserve, followed, if she is won, by surrender. That instinct of reserve and resistance on the part of the female was the physical basis of woman's modesty, which was the most potent individual force that made for sexual morality in a community. There was no force which could adequately take its place. The second point was that the sexual desire of the woman was much more conditional than it was with the man. The average woman had to love before she had passion, or at any rate she had slowly to develop a strong liking for a particular individual before her passion was aroused. She had none of the promiscuous qualities of the male and, unconsciously or consciously, her sex instinct was associated with maternity. She was therefore much more protected by nature than the male. That must be taken into account when they were dealing with the borderland age between 16 and 17. They must do one of two things: either they must leave the age where it was, or they must make both male and female responsible before the law for illicit sexual intercourse.

The Widening Basis of Promiscuous Intercourse.

On the question of brothels, Lord Dawson said: I entirely agree with everything that the right reverend prelate has said. But, like a clever advocate, he carefully described a brothel of a particular type. What seems to me to be the true and proper description of a brothel is a place where the proprietor farms the earnings of the girls who resort there. That class of brothel, where the girls either live or resort, where their earnings are either handed to the proprietor, or the proprietor takes toll directly from the patrons, is a brothel according to the more strict conception of that word. And I cannot understand anybody disagreeing with any sort of provision which would lay the heaviest possible hand on such institutions. But we have to be cognisant of this—that according to legal practice, as I understand it, the word "brothel" has a very much wider application than the one which the right reverend prelate described. It is so wide that any place where women resort for promiscuous intercourse, however well conducted or ordered it may be, can be brought within the definition of a brothel. And so it arises that you may even have an hotel which is conducted in an orderly way where women resort, not always with the same men, for promiscuous intercourse, and that hotel can be brought within the arms of the law. Here, again, I feel doubts. It is always a serious thing to try to repress a manifestation of a disease unless you can reach its cause. And one of the most grave aspects, in my humble opinion, of the sexual evil of to-day is the widening of the base of promiscuous intercourse. And that widening of the base of promiscuous intercourse was not the result of the war, though, no doubt, it was aggravated by the war. It was obviously beginning to occur several years before the war, and, though it may be true that sentimental promiscuous intercourse with an amateur is less offensive to one's taste than promiscuous intercourse which is entirely bought from the professional prostitute, yet, viewed from the point of view of the interest of the State and the good of society, I am inclined to think that more harm is done to society by the amateur than by the professional prostitute. And when one sees the base of promiscuous intercourse being steadily widened, does not it make one ask oneself, Is not it worth inquiring why that has taken place; is not it worth inquiring whether it would be possible to check such widening of the base of promiscuous intercourse? I am not prepared to answer that question, but I would throw out the suggestion that if you adopt a policy of too much repression of the manifestation of a disease, you drive the disease inwards, and you alter its manifestations often for the worse, and you do not cure the disease. We have promiscuous intercourse as a fact. Unless we are prepared to make it illegal we have to accept it as a fact. By all means work to reduce it and remedy it by removing the cause, but it is there, and, as long as it is there, the people who indulge in it will find some place to which they can resort. And therefore, while I entirely agree with the very heavy penalties which are suggested for the kind of brothel described by the right reverend prelate, I should deplore if the same repressive policy were adopted towards that different type of place to which I have referred. It is not that I approve of it, but people who indulge in promiscuous intercourse are going somewhere, and I am apprehensive that, if legislation is too repressive towards that hotel type of house, you will still further widen your base of promiscuous intercourse and drive it into the back rooms of restaurants, into tea-rooms, into dancing places, and even into the home. For these reasons I think one requires to have caution, however much one may wish to bring about reform. One wants to inquire in the closest possible manner whether what one seeks to decree may not possibly bring about more harm than good.

Continuing, he said that he would not like it to be felt that he was taking up the attitude of no action. On the contrary, there were provisions in the Bill which he thought one could support with confidence. But he did not believe that the problem of promiscuous intercourse was to be met by legislation, but rather by social reform and betterment, by better houses, by encouraging community life, as was exemplified in the idea of garden cities, larger recreation grounds for the people, such as they got in the public schools, and the better education of youth, by facilities for earlier marriage, the return to the larger family, and the frank recognition that if people were going to marry they must have control over the output of their offspring. On these lines reform could be looked for more hopefully than by methods of legislation.

The Bill was read a second time.

TUESDAY, MARCH 15TH.

Criminal Law Amendment Bill.

The House went into Committee on the Bishop of London's Criminal Law Amendment Bill.

On Clause 2 Lord MUIR-MACKENZIE proposed to substitute for it the following: "reasonable cause to believe that a girl was of or above the age of 16 shall not be a defence to a charge under Section 5 or 6 of the Criminal Law Amendment Act, 1845."

The Bishop of LONDON and the Government expressed their willingness to agree to the amendment and the clause of Lord Muir-Mackenzie was substituted for that in the Bill.

The Committee stage of the Bill was completed, and the Bill as amended was reported to the House.

HOUSE OF COMMONS.

TUESDAY, MARCH 8TH.

Schemes for Welfare of the Blind.

Mr. JAMES BELL asked the Minister of Health whether he had received any protests against Paragraph (d) in Circular 182, which pointed out to local authorities that it must be clearly understood that in connexion with schemes for the welfare of the blind, he would find it very difficult to sanction expenditure on new buildings, and the general tenor of which was such as to discourage local authorities in exercising their duties under the Blind Persons Act in a proper manner; and whether, in view of the inadequacy of voluntary help for the blind which resulted in the Act being passed, he would revise the paragraph in question and encourage the local authorities to incur all necessary expenditure in the interests of these helpless people.—Dr. ADDISON replied: I have so far received only one protest of the kind indicated in the question. I see no reason to withdraw the reference to the welfare of the blind from the circular referred to, seeing that the existing buildings can usually be adapted. I can assure the honourable Member that I am most anxious to promote the interests of the blind, and I feel sure that the schemes which local authorities are required under the Act to prepare and submit to me will be designed to that end.

WEDNESDAY, MARCH 9TH.

Opium for Hong-Kong.

Mr. GILBERT asked the Secretary for India whether ther
was any arrangement in operation whereby the Ind
Government supplied opium to Hong-Kong, and what w
the terms and the duration of such arrangement.
MONTAGU replied: The agreement formerly existing f
supply by the Government of India of opium to the G

ment of Hong-Kong has been renewed for a further period of five years with certain modifications. Under the new agreement, which has effect for five years from Jan. 1st, 1921, Hong-Kong will be supplied with ten chests of opium a month, at a fixed price. No obligation rests on the Government of Hong-Kong to take any prescribed minimum quantity of opium.

India and Dangerous Drugs Act.

Mr. Gilbert asked the Secretary for India whether there were any Pharmacy Acts in operation in India similar to those in this country; and whether it was proposed to introduce legislation in India similar to that of the Dangerous Drugs Act with a view to limit the use of such drugs to legitimate medical and scientific purposes.—Mr. Montagu replied: There are no Pharmacy Acts in operation in India similar to those in this country. It is not proposed to introduce legislation in India similar to the Dangerous Drugs Act, as the regulation of the traffic in, and use of, such drugs is already strictly controlled under a variety of local and Imperial Acts. I may add for the information of the honourable Member that it is believed that the law and the practice in India in respect of all such drugs are entirely in accord with the provisions of the Hague Convention. The Government of India were, however, requested some time ago to examine the whole body of law and regulations on this subject, and to effect such amendments, if any, as might be required in order to bring their law and practice into precise conformity with the provisions of the Convention.

New Tuberculosis Treatment.

Colonel Sir Arthur Holbrook asked the Minister of Health whether, in connexion with the proposed transfer of tuberculosis treatment from the health insurance committees to county and borough councils, he would make provision to secure adequate and permanent representation for the members of health insurance committees upon the new committees to be appointed.—Dr. Addison replied: I am hoping to introduce legislation on this subject shortly, and the point to which the honourable and gallant Member refers will be borne in mind.

The Spahlinger Serum.

Mr. Higham asked the Minister of Health whether, in view of the interest among the many sufferers from the disease in this country, he had sent an expert to inquire at first hand into the Spahlinger serum for the treatment of consumption; and, if not, whether he would consider the advisability of sending an expert immediately.—Dr. Addison: This question has already been carefully explored and was before the Medical Research Committee in 1914. There would be no advantage in the adoption of the course suggested, as much of the work has been done in London.—Mr. A. M. Samuel: Will the right honourable gentleman publish as much as possible about the researches into this treatment, so that those who are suffering from tuberculosis may know whether it is worth their while to pursue any further investigations on these lines or not?—Dr. Addison: I will give all the information I have, but the preparation of this material is a secret, and it is quite impossible further to explore such suggestions and give any advice on the subject without proper clinical inquiry and other experiments. Until that material is available it is quite impossible to express any opinion.—Mr. Short asked if the treatment was really successful or not.—Dr. Addison: I have already said that the material is not sufficient to express any proper opinion. I am sure honourable Members will realise how important it is not to mislead thousands of sufferers from tuberculosis by holding out any hope which may not be justified.

Wellhouse Hospital, Barnet.

Lieutenant-Colonel Fremantle asked the Minister of Health the cost to the public of the erection of the Wellhouse Hospital, Barnet; the latest figures available as to the cost of maintenance and treatment; the proportion of such cost attributable to paying patients; the amount of fees received; the number of staff engaged; and the numbers, respectively, of Poor-law patients and paying patients treated.—Dr. Addison replied: A loan of £40,000 was sanctioned for the erection of this infirmary, and £38,505 was raised by the guardians. The infirmary was only opened recently and no figures of the running costs or of the amounts recovered from persons relieved in the infirmary have as yet been returned. According to a return made by the clerk to the guardians, the staff numbers 36, and there are also two consultants. I am obtaining from the guardians the further particulars required, so far as they may be available, and I will send my honourable and gallant friend these particulars as soon as I receive them.

Insurance Committees and New Medical Records.

Mr. Bartley Denniss asked the Minister of Health ...her he had received any representation from Insurance ...ttees with regard to the new medical record cards in use for insured persons.—Dr. Addison replied: I have received representations with regard to the medical record cards from four only of the Insurance Committees, which, as my honourable friend is no doubt aware, administer medical benefit in every county and county borough. In three cases the representations are on matters of detail, and in the fourth case the committee has sent me a resolution that the keeping of the records is desirable for securing a proper medical service for the insured population. I have also received a letter from the chairman of the National Association of Insurance Committees stating that the opinion of the Executive Council of that body is that the keeping of the medical records is unquestionably in the interest of insured persons.

Death-rate of Infants.

Mr. Trevelyan Thomson asked the Minister of Health how the death-rate of infants under one year of age during 1920 compared with the recent preceding years; and whether, as a part of promoting public economy, he proposed to reduce the number of infant welfare centres and maternity beds available for this service.—Dr. Addison replied: The death-rate of infants under one year of age per 1000 births during the years 1914 to 1920 is as follows: 1914, 104·62; 1915, 109·72; 1916, 91·21; 1917, 96·5; 1918, 97·16; 1919, 89·13; and 1920, 80. The figure for 1920, which is subject to verification, is the lowest yet recorded. The answer to the second part of the question is in the negative. Mr. Thomson: In view of the extremely satisfactory results achieved by the Ministry, will the right honourable gentleman consider the desirability of circulating the information among local authorities so that they may continue this good work?—Dr. Addison: I am preparing a statement which I hope to issue to the local authorities on this matter.

Vitamines.

Major Barnett asked the Minister of Health whether any and what steps were being taken to bring to the knowledge of the public the fact that vitamines, which constituted a necessary part of any sound diet, were essential to the diet of the young, and could be secured by utilising whole cereals and whole pulses, fruits, salads, and vegetables; and whether he would publish and disseminate as soon as possible a short practical leaflet which, without advocating any special system of diet, would draw attention to the value of these wholesome and economical foods.—Dr. Addison replied: I am considering whether it would be practicable to issue any statement on this subject. Any such statement would, of course, contain as full a reference to the part played by vitamines in nutrition as the present state of knowledge of the subject would permit. The honourable and gallant Member may be interested in the treatment of this matter on pp. 177–184 of the Report of the Chief Medical Officer of the Board of Education published in 1919 (Cmd. 420).

The Treatment of Cancer.

Mr. Gilbert asked the Minister of Health whether his attention had been called to the recent increase of deaths from cancer; whether he had any committee or officers in his department who were making any inquiries into the cause of and cure for this disease; whether his department made any financial grants to any hospital or institution which was providing research work or special wards and treatment for this disease; and, if not, whether, in the interest of the community and the need of combating this scourge, he would favourably consider granting financial help to any such hospital or institution.—Dr. Addison replied: I very much regret to say that the number of deaths attributed to cancer continues to rise. My honourable friend is no doubt aware that an extensive research into the causes of the disease has for some time past been undertaken by the Imperial Cancer Research Fund, and the Medical Research Council are facilitating research into the possibilities of radiotherapy and have been the means of providing a substantial quantity of active radium salt for the purpose. Cancer research funds are relatively well supported from voluntary sources, and I do not think that the issues are sufficiently clear for me to recommend grants in aid of the cost of the treatment of this disease at the present time.

Malaria in England.

Captain Elliot asked the Minister of Health whether, in consequence of the number of men in this country who still suffered from malaria contracted abroad during the war and of the abundance of mosquitoes present in many parts of England, malaria was now occurring in the civil population; and what steps were taken to prevent the spread of this disease in mosquito-infested areas.—Dr. Addison replied: The matter referred to in the question has received the close attention of the medical officers of the Ministry. The action taken is fully described in two separately issued "Reports and Papers on Malaria Contracted in England" relating to 1917 and 1918, respectively, and in the annual report of the Chief Medical Officer for 1919-20. The policy of prevention is based primarily on securing the early detection of all cases and carriers of malaria and arranging that they are thoroughly treated with quinine, thus removing, or greatly lessening, the risk of infection if they are bitten by mosquitoes which can spread the infection. Efforts are made at the same time to protect all such cases and carriers against mosquito-bite as far as possible. Special supervision for these purposes has been arranged in the Isle of Sheppey, where most of the infection arising in England has occurred. The measures taken have greatly lessened the risk of spread. The total number of locally contracted cases reported among the civil population in England was only 32 in 1920, as compared with 93 in the previous year.

Maternity and Child Welfare.

Captain ELLIOT asked the Minister of Health what grants were made by his department to local authorities towards the cost of maternity and child-welfare work, and what proportion of the total expenditure was represented by these grants.—Dr. ADDISON replied: Grants amounting approximately to £855,000 will be made during the current financial year towards the expenditure of local authorities on maternity and child welfare. The grants represent less than ½*d.* in the £ on the total sums voted by Parliament for the supply services of the country.

THURSDAY, MARCH 10TH.

Suggested Reduction of Medical Staff.

Lieutenant-Colonel Sir JOHN NORTON-GRIFFITHS asked the Minister of Pensions whether, in order to assist demobilised soldiers, and to make further economies by reducing the number of the existing staff of medical men and others, he would arrange to allow demobilised soldiers who were in employment or starting in business to commute their pensions.—Mr. MACPHERSON replied: I am unable to accept my honourable and gallant friend's suggestion. It is not my policy, nor was it that of my predecessors, to encourage commutation of pensions, and I am convinced that to do so would be to cause many pitiable cases of destitution in the future. Final weekly allowances which are granted to soldiers who are only slightly disabled are on a somewhat different footing, and although commutation of these allowances cannot be generally permitted, it is possible for the Ministry to consider a very exceptional case where payment of a lump sum is clearly in the man's interests.

Refusal of Disability Pensions.

Mr. TREVELYAN THOMSON asked the Minister of Pensions whether, in view of the dissatisfaction caused by the refusal of pensions on the grounds that disability was alleged to be not due to war service, he would take steps to remodel the royal warrant so that any man who on discharge from the army was classified in a lower medical category than that in which he was placed on enlistment could on that account be deemed to have a prima facie case for a disability pension.—Mr. MACPHERSON replied: I am unable to accept this suggestion. Under the present practice each case is considered on its merits in the light of all the evidence available, and if the claim is rejected on the ground that the disability is not due to service the man has a right of appeal to an independent tribunal.—Mr. THOMSON: Can the right honourable gentleman infuse some of his well-known sympathy into the administration of his department in dealing with these cases?—Mr. MACPHERSON: I hope I always do so.—Mr. A. SHORT: Is the right honourable gentleman aware of the great dissatisfaction with the results of these appeals to the Appeal Tribunal, and can he explain why it is that such cases are referred to this tribunal?—Mr. MACPHERSON: The House decided that such cases were to be referred to an outside appeal tribunal. I have no responsibility for that tribunal, nor is it under my jurisdiction, but I am bound both in the interests of the pensioner and the taxpayer to accept its decisions.—Mr. SHORT: Will the right honourable gentleman make representations to the Cabinet on the matter?—Mr. MACPHERSON: I think that is for the House to do and not for me. I am myself very often a defendant in cases.

Health Precautions against Unhealthy Aliens.

Sir HARRY BRITTAIN asked the Prime Minister whether he was aware that large numbers of alien emigrants of the most unwholesome description were being regularly conveyed across England for trans-shipment to Atlantic ports; and whether, seeing that such visitors were liable to bring disease into this country, he could see his way to safeguard our own people by imposing some such regulations as existed, for example, at the port of New York.—Mr. SHORTT (Home Secretary) replied: No, Sir. I cannot accept the first paragraph as representing the facts. The aliens who pass in large numbers through the United Kingdom to America have already before their departure from the continent come under the operation of the regulations which the honourable Member has in mind. The shipping companies which carry them are liable to heavy penalties in America for every diseased alien whom they take there, and are also required by the American law to take such passengers away again. The companies are also obliged, under the terms of what are known as transmigrant bonds into which they enter with the British Government, to see that no such alien remains in this country. All this is in addition to the general precautions taken by the Ministry of Health under the Aliens Order and by port sanitary authorities against the introduction of disease into the United Kingdom.—Sir H. BRITTAIN: Who is it that examines these aliens from the Central European countries which in many cases are glad to get rid of them; and is it any satisfaction to this country; are the shipping companies that take them to the United States of America or Canada fined for taking these people there, when the damage has already been done; and lastly, may I ask, in reference to the right honourable gentleman's statement that all these things are in addition to what the sanitary and port authorities do, if these individuals walk direct from the boat to the train, what does that amount to?—Mr. SHORTT: They do not without proper examination by doctors.

Amendment of Lunacy Laws.

Mr. ALFRED DAVIES asked the Minister of Health if his attention had been drawn to a resolution passed by the committee of visitors by the Isle of Ely and Borough of Cambridge Mental Hospital; that in the opinion of the visitors the use of the terms pauper lunatic and pauper lunatic asylum should be discontinued, and that the Ministry of Health be asked to procure an amendment for the Lunacy Acts, substituting the terms patient and mental hospital; and whether, in view of this essential reform, he would give this matter his careful consideration.—Dr. ADDISON replied: I am in sympathy with the spirit of the resolution, but it would require considerable amendment of the Lunacy Acts to eliminate these terms altogether, and I am afraid that any substituted terms would tend to acquire the same associations.

Dental Legislation.

Captain WEDGWOOD BENN asked the Minister of Health if he could state when he proposed to reintroduce the Dental Bill, and what provisions it would include relating to the admission of unqualified dentists to the profession.—Dr. ADDISON replied: I am hoping to confer shortly with the various representative organisations concerned with a view to the introduction of the Bill as an agreed measure, but I am not at present in a position to name any definite date for its introduction.

FRIDAY, MARCH 11TH.

Typhus in Eastern Europe.

The House went into Committee of Supply on a supplementary vote for diplomatic and consular services, Mr. WHITLEY in the chair.

Mr. CECIL HARMSWORTH (Under Secretary for Foreign Affairs) said the question of the means that had been taken by the League of Nations to meet the situation in regard to typhus in Eastern Europe had been much in the mind of the medical world of Europe, and had been the subject of the most careful inquiry by the highest medical authorities. The matter had been the subject of a special mission sent by the League of Nations to the affected areas. All the authorities dwelt upon the devastating effects of the disease in Poland and Russia, and on the risk of its spreading to Western Europe. Finally, a report in the name of the Canadian delegate to the League of Nations was submitted to the Assembly at Geneva. The Committee stated that the epidemic condition of typhus in Poland and Galicia was very grave and constituted a distinct menace, especially to Eastern Europe and in general to the world at large; that the resources of mechanical and medical equipment of Poland, though hitherto employed in an excellent manner, were altogether insufficient successfully to cope with the conditions in Poland itself; that the infection of typhus was widely distributed in Russia and other countries adjoining Poland, and opportunities for its distribution were constantly and continually increasing; that urgent necessity existed for an immediate and adequate effort, participated in by all the nations of the world, successfully to combat a menace which was international and world-wide. At first it was proposed to proceed on a very elaborate scale, and it was estimated that a sum of not less than £3,500,000 would be required in order to institute a thoroughly satisfactory health system all along the eastern frontier between Poland and Roumania and Russia. It was, indeed, intended to establish a real *cordon sanitaire* all along this line, and appeals were
the League of Nations, but he regretted to say
met with comparatively little response. It
decided that the greater scheme must remain
and that what could be done with whatever f
got together should be done quickly. Dr.
Chief Medical Officer to the Board of Health

no less strongly than any other medical authority the need for these remedial measures. He (Mr. Harmsworth) put himself in touch with Dr. Buchanan, who had written to him as follows:—

> "The case is a very strong one. If typhus, and still more cholera, gets to be imported wholesale by the return of refugees, prisoners, &c., or by the resumption of ordinary traffic between Soviet Russia and the countries of the West, we have (*a*) constant risk of importation of infection in this country, and (*b*) serious epidemic conditions superadded to the distress, starvation, and other troubles of the parts of Central Asia which it is in everyone's interest to see settled."

Typhus, he understood, often developed a case mortality of no less than 40 per cent. The Polish Government had done everything that could reasonably be expected of it, but it was not purely a national question. In August last the Lord President of the Council was requested by the League of Nations to issue a special appeal. In the case of that appeal again it was to be regretted that the response was not as large as one could wish. Very considerable sums, however, had been voted and promised. Greece had given £10,000, Japan £5000, Switzerland £2000. The Government of Canada had promised £200,000. Persia had given £2000, Belgium £1000, and Siam £1000. France had not yet given anything. In the United States it was being considered, but it was not possible to make forward grants in anticipation of a decision of Congress. Spain had promised £40,000, Germany 1,000,000 paper marks, Holland 100,000 florins, China £2000, and Uruguay and Peru were also contributing. He thought that a sum approaching £225,000 was more or less available. As recently as January, 1919, there was a great outbreak of typhus in and about Rotterdam. From his information there were 823 cases and 100 deaths, so that even in what was acknowledged to be one of the cleanest countries in the world they had an outbreak of typhus. This work was eminently suited to the League of Nations.

Major C. LOWTHER moved to reduce the vote by £49,000. It seemed to him a tall order to call upon the taxpayers of this country to provide £50,000 for combating typhus in Poland when there was so much disease at home on which money could be spent.

Captain ELLIOT thought that Major Lowther had not fully realised the enormous value of the medical maxim that prevention was better than cure. If they could stamp out this disease at its focus they made a tremendous difference to the health of Europe, which meant the trade of our own country. Until 1900 they groped in the dark in the treatment of typhus. They thought it was due to dirt and overcrowding or famine, but they were not sure. Then they found that it was due to a louse which bit an infected man and then carried the germ to a healthy subject. One of the chief factors in spreading a typhus epidemic was the railway. The railways of South Russia had a great deal to do with the continuous spread of typhus in that country. Every train was a travelling pest-house, because on the trains travelled the lice. The man who went into one of those trains was going into a place as deadly as a den of rattle-snakes. How could they expect our traders to move freely in a country where the conditions of transport were such that a man entering a train was literally taking his life in his hands? This was not merely a Polish question, but a British question as well. This sum was in the nature of an investment. If we could extend credit for rolling-stock, cotton goods, and for rubber to these devastated countries, the extending of credit for health must be one of the most immediate and practical investments. They were quite satisfied in the medical world that this sum was being properly and efficiently expended. But they were not satisfied that there was that unity of command which was necessary for stamping out the disease. If the Under Secretary could give them an assurance on that point they would have still more pleasure in supporting him.

Sir J. D. REES repudiated the doctrine of Captain Elliot. He was sure that all the honourable Member said about typhus was perfectly true, and he realised that the healthier Europe was the better off was England. But that England should therefore sanitate all Europe was a totally different proposition. Could the British taxpayer afford these counsels of perfection?

Mr. HARMSWORTH said he would certainly look into the matter of the unity of control, and if it was thought necessary would respectfully direct the attention of the Secretary-General of the League of Nations to the representations that had been made by the House.

Dr. MURRAY said that we had practically got rid of typhus in this country, and when he heard people in that House and elsewhere grudging money for combating things of that sort he must say their zeal for economy was much misplaced. He hoped they were now laying the foundation for a great sanitary effort which would go on till this [illegible] was eradicated in Poland.

jor LOWTHER withdrew his amendment and the vote agreed to.

MONDAY, MARCH 14TH.

Medical Staff of Pensions Department.

Brigadier-General WIGAN asked the Minister of Pensions how many medical officers were employed by his department; what their daily hours of work were; how many equipped beds the Ministry had in hospitals; the number now occupied; and what the total annual cost per bed was inclusive of all charges.—Major TRYON replied: There are 325 whole-time administrative medical officers whose hours are 44 per week and 274 whole-time institutional medical officers who are employed upon no fixed hours, being liable for duty at any time. There are 251 part-time medical officers whose hours of employment average 12 weekly. Members of medical boards are drawn from a panel of 4462 doctors who are employed as required on a sessional basis. The Ministry also make use of specialists and medical referees, numbering 3616, who are paid by fee for examination and report. The number of equipped beds in hospitals is 12,976, of which 10,995 were occupied at the date of the last return. The total annual cost per bed averages £175.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At a congregation held on March 11th the following degrees were conferred:—

M.D.—A. G. Evans, Trinity; R. R. Walker, St. John's.
M.B. and B.Ch.—E. P. Brockman, Caius.
M.B.—R. K. Merson, Emmanuel.

UNIVERSITY OF OXFORD: *Memorial to Sir William Osler.*—The fund to establish a memorial to the late Regius professor of medicine has now reached nearly £2000 and a list of subscribers will be published soon. Subscriptions may be sent to the honorary treasurer, Mr. A. P. Dodds-Parker, 2, Holywell, Oxford.

Diploma in Public Health.—The Board of the Faculty of Medicine gives notice that at the examinations for the Diploma in Public Health in Michaelmas Term, 1921, and afterwards the first part of the examination will comprise the Application of Chemistry and Physics to General Hygiene, and General Pathology with special relation to Infectious Diseases. The second part will comprise Practical Pathology and Bacteriology, General Hygiene, the Laws relating to Public Health, Sanitary Engineering, and Vital Statistics. The Examination in Michaelmas Term, 1921, will be conducted in accordance with a timetable published in the *University Gazette* for March 9th, 1921 (Clarendon Press, Oxford, 3*d.*). The effect of this announcement is to remove from Part 2 to Part 1 the examination in Systematic Pathology and Bacteriology; but to retain in Part 2 a practical and viva voce examination in those parts of the subject which are most closely related to public health.

Degree in Medicine.—At a congregation held on March 3rd the degree of Bachelor of Medicine was conferred on Philip Geoffry Doyne, Trinity College.

Degree days.—The following Degree Days are announced: To-day (Saturday), March 19th, at 10 A.M.; April 28th, May 21st, June 16th and 23rd, and July 9th, at 2.30 P.M.

UNIVERSITY OF EDINBURGH: TAIT MEMORIAL CHAIR.—The second chair of natural philosophy, promoted as a memorial to Professor Tait, will shortly be established. The funds collected before the war have recently been augmented, and the University Court have been able to arrange for the foundation of the Tait chair not later than the year 1925.

UNIVERSITY OF GLASGOW.—On March 11th Mr. Bonar Law was formally installed as Lord Rector of Glasgow University, and thereafter delivered his rectorial address on "Ambition, and the Qualities which make it Successful." He said that in the biographies of famous men it was constantly stated that they had in their youth set before them as their ambition some position which they afterwards attained. That was true, but it was forgotten that for each realised ambition there were very many unrealised ones. Life was an uncharted ocean, and there must always be uncertainty as to what would be found at the end of the journey. Mr. Bonar Law quoted the words of Cromwell: "He goes furthest who does not know whither he is going." Great men were not so much those who foresaw events as those who seized opportunities. Foresight was certainly a quality essential to success, but the possibilities of foresight were very limited and astute foresight was much rarer than was generally supposed. When a man seized the tide that led on to fortune he had only the vaguest idea of the nature of the voyage, or of the shore upon which he would finally disembark. The qualities essential to success were courage, hard work, the wish to succeed, and the love of good work for its own sake.

UNIVERSITY OF BRISTOL.—At examinations recently held the following candidates were successful:—

SECOND EXAMINATION FOR DEGREES OF M.B., CH.B.

Part II.—Hyne Catherine Barclay, Sydney H. Blacker, Arthur P. Bodman, Naomi Joan Bown, Ernest G. Bradbeer, Gilbert B. Bush, Ernest R. Clutterbuck, William L. Cossham, Mary Frances Dalton, Helen Mary Dixon, Robert H. Dummett, Lorna Dunn, Frank R. Edbrooke, Edward B. Eedle, Norman J. England, Herbert M. Golding, William A. Gornall, John L. Griffin, Rowland C. Hatcher, Alexander G. Heron, John A. James, Frederick G. Jenkins, Doris Ewing Joscelyne, Edgar F. King, Arthur H. Marshall, John R. Nicholson-Lailey, Arthur S. Prowse, Robert A. Sammons, Arthur E. Sherwell, Herbert Taylor, Robert E. Whitby, Cicely Faith Wilson.

Anatomy only (completing Examination).—George S. Mundy.

THIRD EXAMINATION FOR DIPLOMA IN DENTAL SURGERY.

Dental Anatomy only.—Robert H. Davies, Harold C. Hopes, Kenneth A. Hunt, Edwin H. Longney, Cyril G. Payne, Herbert W. Pidgeon, Montie Ritblat, Cecil R. Woods.

ROYAL COLLEGE OF SURGEONS OF ENGLAND: NEW FELLOWS.—An ordinary Council meeting was held on March 10th, Sir Anthony Bowlby, the President, in the chair. As the result of the Final Fellowship Examination, held from Feb. 11th to 19th, 19 candidates were approved and 30 were rejected. The following are the names and medical schools of the successful applicants upon whom the Council has conferred the diploma of Fellow:—

John Alban Andrews, Edinburgh and St. Bart.'s Hosp.; Lennox Ross Broster, Oxford Univ. and Guy's Hosp.; Victor Marcus Coppleson, Sydney Univ. and London Hosp.; Henry Evers, Durham Univ.; George Philip Buckingham Huddy, London Hosp.; James Alfred Jenkins, New Zealand Univ.; Roy Russell Kerr, Edinburgh Univ. and St. Bart.'s Hosp.; John Le Messurier Kneebone, Adelaide Univ. and London Hosp.; Charles John MacAuley, Dublin Univ.; Kenneth MacCormick, New Zealand Univ. and London Hosp.; George Perkins, Oxford Univ. and St. Thomas's Hosp.; Cyril Alban Raison, Birmingham Univ. and London Hosp.; Geoffrey Bower Richardson, St. Bart.'s Hosp.; Edward Stanley Smalpage, Sydney Univ. and London Hosp.; Henry James Drew Smythe, Bristol Univ. and London Hosp.; James Swan, Edinburgh Univ. and London Hosp.; Hugh Compson Trumble, Melbourne Univ. and London Hosp.; Cecil Pembrey Grey Wakeley, King's Coll. Hosp.; and John St. George Wilson, Liverpool Univ.

Licences in Dental Surgery were also conferred upon the following 38 candidates, who have passed the requisite examinations and have complied with the by-laws:—

J. H. Allwood, Liverpool Univ.; H. C. Apperly, Royal Dental; G. R. D. Bradfield, Guy's; L. H. Buchan, Bristol; E. Clark, Guy's; C. Cooke, London; J. M. Coplans, Edinburgh and St. George's; G. B. Cornwell, A. E. Croke, and J. W. Curtis, Royal Dental; F. W. Day and L. F. Fouraker, Guy's; C. H. Freeman, Royal Dental; F. D. Gratrix, Guy's; S. L. Hart, Univ. Coll.; A. L. Hyslop, P. Krige, and W. A. Krige, Guy's; E. H. Laurence, Univ. Coll.; F. H. E. Marston and T. A. Meldrum, Royal Dental; G. K. Moore, Guy's; H. S. H. Moore, Univ. Coll.; R. A. Moore, F. J. Myers, and F. D. Neal, Guy's; H. S. Paxton, Royal Dental; E. R. Pfaff, Bristol; H. K. Price, Guy's; A. Stafford, Sheffield; F. W. Stiven and G. M. Stuart, Guy's; M. H. G. Sturridge, Pennsylvania and Middlesex; C. S. Taylor, Durham and Royal Dental; W. A. Turner and H. C. Tweney, Guy's; C. P. M. Valette, Paris and Guy's; and J. W. E Warren, Guy's.

A report was read from the Dentists Bill Committee, and although the Council was of the opinion that the Bill was unsatisfactory in some respects, it had reason to believe that as a whole it was approved by most members of the dental profession, and for that reason did not propose to take steps to have amendments introduced.—The President reported that, in pursuance of the provisions of the Bradshaw Bequest, he had appointed Mr. H. J. Waring as Bradshaw lecturer for the coming year.—A letter was read from Mr. Robert Lindsay, Dental Secretary of the British Dental Association, who forwarded for the consideration of the College a copy of a scheme for the institution of a Diploma in Public Dentistry. This scheme was drawn up by the Dental Service Committee of the Association and approved by its Representative Board for circulation to all Universities of the United Kingdom and to all dental licensing bodies. The matter was referred to the College Committee for consideration.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the monthly meeting of this Faculty held on March 7th the following were admitted (after examination) as Fellows of Faculty—viz., Dr. Samuel Saxon Barton (Liverpool), and Drs. Ronald Thomson Grant, Noah Morris, and James Russell (Glasgow).

FEDERATION OF MEDICAL AND ALLIED SOCIETIES.—The executive council of the Southampton Medical Parliamentary Committee has passed a unanimous resolution, which has been forwarded to us by the Federation of Medical and Allied Societies with a request for publication, to the effect that the council approves of the position adopted by the Federation in the formation of a body representative of the medical and allied professions.

THE Wellcome Historical Medical Museum will be closed for redecoration and cleaning from April 1st to 30th, inclusive.

TUBERCULOSIS SOCIETY OF GREAT BRITAIN AND IRELAND.—A meeting of this society will be held at Colindale Hospital, Hendon, to-day, Saturday, at 3 P.M., upon the invitation of Dr. Marcus Paterson, who will show members round the institution and give a short address. A clinical meeting of the society will be held in April and the honorary secretary, Mr. F. J. C. Blackmore, 39, Woodland-terrace, S.E. 7, will be glad to receive the names of members wishing to show cases. It is proposed to hold a post-graduate course in Paris at the latter end of May if a sufficient number of members join. Further information may be obtained from Dr. W. G. Dickenson, 1, Ridley Villas, Newcastle-on-Tyne.

RONTGEN SOCIETY.—A general meeting was held on Thursday, March 17th, at 8.15 P.M., in the Architecture Theatre, University College, Gower-street, London, W.C., when a paper on X Ray Dosage, with Special Reference to the Barium Platino-cyanide Pastille was read by Mr. E. A. Owen, D.Sc., and Miss Phyllis K. Bowes. A special meeting of the society will be held on Friday, May 6th, at 8 P.M., at the University of Manchester, when Professor W. L. Bragg will deliver a paper and Professor A. V. Hill will give a demonstration of some electro-physiological experiments. On the following day it is hoped to arrange visits to works of scientific interest in the district. The gallery of the Royal Photographic Society of Great Britain has been placed at the disposal of the society during June, when it is hoped that a collection of radiographs, illustrating the different practical applications of X rays, will be furnished by members of the society. The President of the society, Dr. Robert Knox, offers a special prize for work submitted by lay assistants engaged in the production of photographic results, working either as hospital assistants or as assistants in medical radiology. Members wishing to read papers or to show apparatus or lantern slides are requested to communicate with the honorary secretaries, Dr. R. W. A. Salmond, 51, Welbeck-street, London, W.1, or Dr. E. A. Owen, The National Physical Laboratory, Teddington, Middlesex.

NATIONAL INSTITUTE OF INDUSTRIAL PSYCHOLOGY. This institute, which was formed for the practical application of science to the human conditions of industry and commerce, has now been incorporated, and the first meeting of the council was held at 329, High Holborn, on March 3rd. The chair was taken by Mr. H. J. Welch of Messrs. Harrisons and Crosfield, Ltd., who referred to the influential support which had been given to the institute by many leading psychologists and physiologists, and by prominent men in industry and commerce. He referred to the three sections of the proposed work of the institute: Vocational guidance and selection, fatigue research, and movement study, the purpose of all of which, he said, was the elimination of human waste. The adaptation of scientific knowledge to the human factor in work would not only increase production at lower cost, but would also increase the happiness and contentment of mankind. He pointed out that the institute, was established to combine scientific research with practical work in commerce and industry. It was not established for profit, and all the fees received would be used to promote the objects of the institute. Dr. C. S. Myers, F.R.S., director of the Psychological Laboratory, Cambridge, who has been one of the moving spirits in the foundation of the institute, emphasised the necessity for careful research work and supported the chairman's statements as to the need for a practical application of the results of such work. The meeting was also addressed by Mr. Kenneth Lee, director of Tootal Broadhurst Lee Co., Ltd., Mr. Robert C. Witt, and others. An executive committee was appointed with power to manage the affairs and business of the institute generally, and to appoint subcommittees; a scientific committee has been appointed, which includes psychologists and physiologists from the Universities of Aberdeen, Birmingham, Cambridge, Edinburgh, Glasgow, Leeds, London, Manchester, and South Wales, and from various colleges and societies. It was announced that several firms were negotiating with the institute for the commencement of practical work in their factories, &c. The institute will depend for its income from three sources: (1) members' subscriptions; (2) donations; (3) fees for work done. A sum of £10,000 a year is required from the first two sources, and of this approximately £2500 a year for five years has already been promised. The subscription for membership of the institute for ordinary members is £1 per annum and for life members £25; members will be entitled to receive the periodical it is proposed to publish and any other literature issued from time to time. Full particulars and application forms for membership can be obtained from the secretary, Dr. G. H. Miles, at the offices, 329, High Holborn, W.C.1.

London Homœopathic Hospital.—The seventy-first annual general meeting of this hospital was held on March 15th, Lord Cheylesmore, the President, in the chair. The President announced that the Duke of York had consented to become a patron. Lord Donoughmore, in moving the adoption of the annual report, reviewed the financial situation and reported that in consideration of the increasing difficulties attendant on the efficient administration of the hospital, they had, in common with many of the larger voluntary hospitals, instituted early in the year the system of patients' contributions. He announced further that a sum of £6450 had been received to date in response to the special appeal for £7690 required for long deferred repairs and essential alterations. The balance of £1240 had still to be raised, and Lord Dysart had promised the last £500 of this amount if the balance were subscribed by July 31st, 1921. The ordinary expenditure for the past year was £8885 in excess of the ordinary income, which, together with the accumulated deficits since 1916, had brought the total deficit to £17,702. Increased annual subscriptions are greatly needed and should be sent to the Treasurer, London Homœopathic Hospital, Great Ormond-street, London, W.C.1.

Scottish Board of Health.—An urgent circular has been issued to local authorities by the Board on the need for economy. It is pointed out that in public health matters the present policy must be to restrict expenditure to immediate necessities, and developments which in normal times would be proper must be slowed down, all unnecessary items being eliminated. Existing premises should be improved rather than replaced by new accommodation, and rearrangement of present staff to meet requirements should be attempted. No fresh capital expenditure should be undertaken which can be postponed without material risk to the public health. In maternity and child welfare work expense should be reduced by encouraging voluntary service and by fixing suitable scales of payment for food and other supplies. In the case of sanatoriums approved, but not yet commenced, work should, as a rule, be postponed. Additional centres for the treatment of venereal diseases would be provided only where there was obvious deficiency. In terms of the Blind Persons Act local authorities should continue preparation of their schemes; these would be considered by the Board, but expenditure on new buildings would not be sanctioned easily. At present every inducement should be given to the continuance of voluntary effort.

Liverpool Royal Southern Hospital.—The annual meeting of this hospital was held on March 7th, Alderman E. Russell-Taylor, the Lord Mayor, in the chair. The annual report showed that during 1920 2157 in-patients were treated—a reduction of 183 on the previous year. The diminution was due to the return to the pre-war establishment of 218 beds as compared with an average of 230 beds in 1919. In the out-patient department the work had increased, there being 974 more new cases, involving 5656 additional attendances as compared with the previous year. The figures were: 1919, 70,593; and 1920, 76,249. A considerable amount of work was still being done for the Ministry of Pensions. During the year 97 ex-Service men were treated in the wards, and 5095 attendances were registered in the out-patient department. The V.D. department, the tuberculosis department, and the X ray and massage and exercise departments had all been increasingly used. The children's out-patient clinic, which worked in close association with the Invalid Children's Association, had become one of the best known clinics of the kind in the country. A trained woman—an official of the association—attended the clinic to instruct mothers concerning the dieting and general care of their babies, and other women engaged by the association visited the homes to continue this instruction. By these means the clinic had attained a high degree of efficiency in child welfare work. A special neurological department was established in July, 1920. The report[1] showed that the ordinary income was £2948 above that of the previous year—every source of income having shown an increase except the receipts in respect of ex-Service men. But, owing to the increased cost of commodities and the expenditure on long delayed works of cleaning and repair, the ordinary expenditure was £7030 above that of last year. The total ordinary income was £36,983, and the total ordinary expenditure was £24,361. A grant of £7500 was received from the Lord Mayor's Special Appeal Fund, but the amount from legacies was only £1807 as compared with £14,335 in 1919. There had been an increase in payments by, or in respect of, patients of £4652. Part of this very satisfactory improvement was due to the appointment of an almoner.

University of London.—At a meeting of the Senate held on March 16th the question of closing the Physiological Laboratory at South Kensington was again considered, and it was resolved to continue the laboratory until the end of the session 1922–23.

North-East London Post-Graduate College.—A special post-graduate course, adapted to the needs of the medical man in active practice, will be held at the Prince of Wales's General Hospital, N. 15, from Monday, April 25th, to Saturday, May 7th. It will include each day demonstrations of clinical and laboratory methods in the morning, and in the afternoon demonstration of groups of selected cases and either a clinical lecture or a clinical consultation. Demonstrations will also be given in associated special hospitals. A syllabus will be issued in due course, and will be sent on application to the Dean.

Hospital Conditions in Bristol.—At the annual meeting of the Bristol General Hospital on March 14th it was stated that the total number of in-patients had been 4031, a record number, and of out-patients 27,049. The income had been £26,000, an increase of 10 per cent. on the previous year, but the expenditure had advanced by 20 per cent. to a total of £45,000. To meet this very serious deficiency a system of collecting payments from patients, which was still under discussion with the committee of the Bristol Royal Infirmary, would probably be adopted. Similar financial difficulties were reported at the annual meetings of the Children's Hospital and the Eye Hospital. At the latter there was urgent need for a rebuilding scheme, but this appeared to be out of the question at the present juncture. Some allusion was made at the General Hospital meeting to the possibility of combination between the institutions, but it did not appear that any formal agreement was at present contemplated.

The late Dr. E. H. Buckell.—Ernest Hook Buckell, who died recently at his residence in Chichester, was in his sixty-ninth year, being the second son of the late Dr. Leonard Buckell of the same city. He came from a medical family and was educated at Epsom College, whence he proceeded to University College Hospital. Here he qualified, after a successful career as a student, in 1875, since which time he practised in Chichester and the district, succeeding his father as medical officer to the Bishop Otter Memorial College and the Chichester Poor-law Institution, as well as in an extensive private practice. For over 30 years he was honorary physician to the Chichester Infirmary (now the Royal West Sussex Hospital), and, resigning in 1919, was appointed honorary consulting physician. He founded the X ray department at that hospital, and its present state of efficiency is due to his work of some years ago. He was President of the Chichester and Worthing Branch of the British Medical Association in the same year. He will be greatly missed by the poor of the city and district, for his personal acts in relief of distress were numerous and extensive, and his devotion to duty great. He took a keen interest in public affairs and was for many years a member of the city council and also a justice of the peace for the city. To mourn their loss he leaves a widow and four daughters, one of whom married her father's successor in the practice, Dr. Walter Dick, and two sons, Dr. Ernest Buckell, who practises at Newport, Isle of Wight, and Dr. Aston Buckell, who is assistant bacteriologist at Durham University.

BOOKS, ETC., RECEIVED.

- Appleton, D., and Co., London and New York.
  - The Psychology of Functional Neuroses. By H. L. Hollingworth. Pp. 260. 10*s.* 6*d.*
- Arnold, Edward, London.
  - A Manual of Cookery. By Florence A. George. Pp. 448. 8*s.* 6*d.*
  - Medicine for Nurses. By John Henderson, M.D. Pp. 263. 8*s.* 6*d*
- Bell, G., and Sons, London.
  - The Mother and the Infant. By Edith V. Eckhard. Pp. 256. 6*s.*
  - The Boy in Industry and Leisure. By the Rev. R. R. Hyde. Pp. 281. 6*s.*
  - A Guide to the Preparation of a Note-book of Biology. By E. W. Shann, B.Sc. Pp. 48. 2*s.* 6*d.*
- Chemical Catalog Co., New York.
  - The Chemistry of Enzyme Actions. By K. G. Falk. Pp. 136.
- College of Physicians, Philadelphia.
  - The S. Weir Mitchell Oration. By C. W. Burr, M.D. (November, 1919). Pp. 31.
- Hodge, William and Co., London and Edinburgh.
  - Trial of Thurtell and Hunt. Edited by E. R. Watson, LL.B. Pp. 217. 10*s.* 6*d.*
- Johns Hopkins Press, Baltimore.
  - Public Health and Insurance. American Addresses by Sir Arthur Newsholme, K.C.B., M.D. Pp. 270. $2.50.
- Kegan Paul, Trench, Trubner, and Co., London.
  - The Problem of the Nervous Child. By Elida Evans. With introduction by C. G. Jung, M.D. Pp. 299. 12*s.* 6*d.*
  - Psycho-analysis and Behaviour. By André Tridon. Pp. 354. 10*s.* 6*d.*

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[1] The concluding portion of this paragraph was attached last week in error to a paragraph dealing with the Liverpool Royal Infirmary. We repeat it now in its correct context.—Ed. L.

KIMPTON, HENRY, London.
Block Anæsthesia and Allied Subjects. With special chapters on the Maxillary Sinus, the Tonsils, and Neuralgia of the Nervus Trigeminus. By A. E. Smith, M.D. Pp. 895. 90s.

LONGMANS, GREEN, AND CO., London.
The Physiology of Protein Metabolism. By E. P. Cathcart, M.D. Pp. 176. 12s. 6d.
Hygiene. By J. Lane Notter and R. H. Firth. 9th ed. Pp. 540. 10s. 6d.

MACDONALD, ERSKINE, London.
Lays by the Way. By R. B. Greaves, M.D. Pp. 72. 3s. 6d.

MALOINE, A., ET FILS, Paris.
Traité de Pathologie Médicale et de Thérapeutique Appliquee, publié sous la direction de Emile Sergent, L. Ribadeau-Dumas, et L. Babonneix. Tome IX., *Glandes Endocrines et Sympathique.* Par MM. Lereboullet, Harvier, Guillaume, et Carrion. Fr.18.
Traité de Pathologie Médicale et de Thérapeutique Appliquée. Tome XXVIII. Hygiène and Régimes. Par MM. G.-H. Lemoine, Médecin Inspecteur Général, et F. Rathery, Professeur agrégé à la Faculté de Médecine. Pp. 590. Fr.28.

MARLBOROUGH AND CO., London.
Serbo-Croatian Self-taught. By J. J. R. O'Beirne. Pp. 112. 4s.

MILFORD, HUMPHREY (OXFORD UNIVERSITY PRESS), London.
Le Droit International Public Positif. Par J. de Louter, Professeur de Droit International Public a L'Université D'Utrecht. Dotation *Carnegie pour la Paix Internationale.* Tome I., pp. 576; Tome II., pp. 590. 22s. per vol.

ROCKEFELLER FOUNDATION, New York.
Annual Report of the Rockefeller Foundation. 1919. Pp. 449.

ROUTLEDGE, GEORGE AND SONS, London.
Germination in its Electrical Aspect. *By A. E. Baines.* Pp. 186. 12s. 6d.

ST. CATHERINE PRESS, Stamford-street, London.
This Concerns You. An article written for the Hon. Nathan Straus, of New York. Pp. 16. 2d.

SHAW AND SONS, London.
Clinical Disorders of the Heart Beat. A Handbook for Practitioners and Students. By T. Lewis, M.D., F.R.S. 5th ed. Pp. 128.

UNWIN, T. FISHER, LTD., London.
Why do we Die? By T. Bodley Scott, M.R.C.S. Eng., L.R.C.P. Ed. Pp. 123. 6s.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, March 21st.

SECTION OF ODONTOLOGY: at 8 P.M.
Paper:
Mr. J. G. Turner: Dental Sepsis in Relation to Rheumatism and Allied Conditions.

Tuesday, March 22nd.

SECTION OF MEDICINE: at 5.30 P.M.
Papers:
Dr. Parkes Weber: Thrombosis of the Inferior Vena Cava and both Renal Veins.
Dr. Nathan Raw: The Treatment of Tuberculosis with Attenuated Tubercle Vaccines.

ROYAL SOCIETY OF ARTS, John-street, *Adelphi*, W.C.
MONDAY, March 21st.—8 P.M., Cantor Lecture:—Major G. W. C. Kaye: X Rays and their Industrial Applications. (III.)

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West *London* Hospital, Hammersmith, W.

MONDAY, March 21st.—2 P.M., Dr. S. Pinchin: Medical Out-patients. Dr. Simson: Diseases of Women. 2.30 P.M., Dr. A. Saunders: Visit to Medical Wards. Mr. Baldwin: Visit to Surgical Wards.

TUESDAY.—10 A.M., Mr. Steadman: Dental Department. 2 P.M., Dr. Burnford: Medical Out-patients. Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Mr. Addison: Visit to Surgical Wards.

WEDNESDAY.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 2 P.M., Mr. D. Armour: Visit to Surgical Wards. Mr. Sinclair: Surgical Out-patients. Mr. Gibb: Eye Department.

THURSDAY.—2 P.M., Mr. B. Harman: Eye Department. Mr. MacDonald: Surgical Out-patients. Mr. Baldwin: Orthopædic Department. Mr. D. Armour: Operations.

FRIDAY.—10 A.M., Dr. Robinson: Gynæcological Operations and Visit to Wards. *Dr. McDougal:* Electrical Department. 2 P.M., Mr. T. Gray: Surgical Out-patients. Dr. Morton: X Ray Department. Dr. Pernet: Skin *Department.* 2.30 P.M., Dr. Pritchard: Visit to Medical Wards.

SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 2 P.M., Dr. Owen: Medical Out-patients.

Daily:—10 A.M. Ward Visits. 2 P.M., In-patient, Out-patient Clinics and Operations.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W.
MONDAY, March 21st.—5.30 P.M., Post-Graduate Lecture:—Dr. F. W. Price: Heart Block.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
TUESDAY, March 22nd.—4.30 P.M., Lecture:—Dr. D. E. Core: *Some Principles in the Treatment of Neurasthenia.*

Appointments.

GOODWIN, A., M.D., F.R.C.S., has been appointed Pathologist to *the Chelsea Hospital for Women.*

HIRSCH, C. T. W., late Captain, R.A.M.C., M.R.C.S., L.R.C.P., Anæsthetist to the Hospital for Epilepsy and Paralysis, Maida Vale.

JOHNSTON, W. H., M.D., F.R.C.S. Edin., Medical Superintendent to Highbury, Uffculme, and Sorrento Hospitals, Birmingham.

RICHARDS, H. A., B.Ch. Cantab., Junior Anæsthetist and Assistant *Instructor in Anæsthetics to King's College Hospital.*

Certifying Surgeons under the Factory and Workshop Acts: PIRRIE, R. R., M.D. Durh. (Eastbourne); BANKES-PRICE, H., M.R.C.S., L.R.C.P. Lond. (Chipping Campden); HOGAN, W. L., M.B., B.Ch. Dub. (Warminster); COULSON, T. E., M.D., Ch.B. Edin. (Wincanton); WILLIAMS, W. H., M.R.C.S., L.R.C.P. Lond. (Monmouth).

Vacancies.

For further information refer to the advertisement columns.

Aylesbury, Royal Bucks Hospital.—H.S. £200.
Birmingham General Hospital.—Asst. Visit. Anæsth. £50.
Birmingham, Rubery Hill and Hollymoor Mental Hospital.—Jun. Asst. M.O. £400.
Birmingham, St. Chad's Hospital.—Res. M.O. £100.
Birmingham, Queen's Hospital.—H.P.'s, H.S.'s, Obstet. and Ophth. H.S., and Cas. H.S. £90 each.
Blackburn and East Lancashire Royal Infirmary.—Third H.S. £250.
Central London Ophthalmic Hospital, Judd-street, W.C.—Path. £75
Charing Cross Hospital, Agar-street, W.C.—Surg. Registrar. £150.
Chelsea Hospital for Women, Arthur-street, Chelsea, S.W.—H.S. £120.
City of London Hospital for Diseases of the Chest, Victoria Park, E. H.P. £100.
Darenth Training Colony.—Jun. Asst. M.O. £422.
Dewsbury and District General Infirmary.—H.S. £250.
Dewsbury County Borough.—Asst. Sch. M.O. and Asst. M.O.H. £500.
Dumfries, Crichton Royal Mental Hospital.—Clin. Path. £400.
Durham County Education Committee.—Asst. Oculist. £600.
Ealing Borough.—Asst. M.O.H. £500.
East London Hospital for Children and Dispensary for Women, Shadwell, E.—Anæsth. £50. Also Ophth. S.
Glamorgan County Asylum, Bridgend.—Jun. Asst. M.O. £415.
Great Northern Central Hospital, Holloway, London, N.—P. Also Anæsth. £10 10s.
Greenwich, "Dreadnought" Hospital.—H.S. £150.
Guildford, Royal Surrey County Hospital.—H.S. £150.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Med. Registrar. £100.
Hospital for Sick Children, Great Ormond-street, London, W.C.—Asst. Cas. M.O., H.S., and H.P. £50 each.
Hospital for Women, Soho-square, W.—Clin. Assts. to Out-patients.
Huddersfield Royal Infirmary.—Sen. H.S. £250. Two Jun. H.S.'s £150.
Leicester Royal Infirmary.—H.P. £200.
Lewisham, St. John's Hospital.—H.S. £150.
Lincoln County Hospital.—Jun. H.S.—£150.
London Homœopathic Hospital, Great Ormond-street and Queen square, Bloomsbury, W.C.—Two Res. M.O.'s. £100.
Manchester, Ancoats Hospital, Mill-street.—Med. Registrar and Surg. Registrar. £100 each. Res. Surg. O. £250. Res. H.P. £200. Anæsth. 10s. 6d. per attendance.
Ministry of Pensions Hospital, Cannock Chase, Hednesford, Staffs.—S. £600.
National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—H.P. £150. Asst. P.
Newcastle-upon-Tyne City Mental Hospital, Gosforth.—Jun. Asst. M.O. £350.
Newport, Mon., Royal Gwent Hospital.—H.S. £200.
Norfolk Education Committee.—Asst. Sch. M.O. £500.
Northampton General Hospital.—H.S. £200.
Nottingham.—Asst. to City Pathologist. £500.
Nottingham City Asylum.—Sec. Asst. M.O. £400.
Oldham Royal Infirmary.—H.S. £200.
Paisley Parochial Hospital Lunatic Wards and Poorhouse, Craw-road.—Res. P. £300.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Cas. H.S., Asst. Cas. O., and H.P.'s. £100.
Rotherham Hospital.—Jun. H.S. £150.
Royal London Ophthalmic Hospital, City-road, E.C.—Refraction Asst. £100.
St. Bartholomew's Hospital Medical School.—Chair of Anatomy. £900.
Salford Royal Hospital.—H.S.'s, and Cas. H.S. £150.
Salop County Council, Medical Inspection of School Children, Maternity, and Child Welfare.—Asst. M.O. £517 10s.
Samoan Medical Service.—Three Jun. M.O.'s. £600.
Sheffield Royal Hospital.—H.S. and Asst. Cas. O. £150.
Sheffield Royal Infirmary.—H.S. £150. Ophth. H.S. £150.
Southampton Free Eye Hospital.—Asst. Hon. Ophth. Surg.
South Shields, Ingham Infirmary and South Shields and Westoe Dispensary.—Jun. H.S. £175.
Swansea County Borough.—Asst. M.O. £500.
Tiverton Hospital.—H.S. £100.
Wakefield, Clayton Hospital.—Sen. H.S. and Jun. H.S. £250 and £200.
Western Dispensary, 38, Rochester-row, Westminster, S.W.—Res. M.O. 100 guineas.

THE Chief Inspector of Factories, Home Office, S.W., of vacancies for Certifying Surgeons under the F Workshop Acts at Oldham and at Manchester.

Births, Marriages, and Deaths.

BIRTHS.

DEBENHAM.—On March 6th, at The Crescent, Scarborough, the wife of L. S. Debenham, M.B., B.S., B.Sc., of a son.

McCALL.—On March 10th, at Malton, Yorkshire, the wife of H. Dundas McCall, M.R.C.S., L.R.C.P., of a son.

WHITEHOUSE.—On March 13th, at Wickham-road, St. John's, S.E., the wife of W. H. Whitehouse, M.D., of a son.

MARRIAGES.

GWYN-DAVIES—GREENWOOD.—On the 28th February, at Holy Trinity Church, Folkestone, W. L. Gwyn-Davies (late Captain, R.A.M.C.), to Elvira, only daughter of W. Greenwood, Esq., Barrister-at-Law, of Folkestone.

WILLIAMS—COLLEY.—On March 15th, at St. Mary the Virgin, Speldhurst, Kent, Gwilym Ambrose Williams, B.A., M.R.C.S., L.R.C.P., to Dorothy, younger daughter of the late Robert Colley, of Paddington, and Mrs. Colley, Speldhurst.

YEO—DEWAR.—On March 12th, at St. John's Presbyterian Church, Kensington, Kenneth John Yeo, M.A., M.R.C.S., L.R.C.P., to Sheila, younger daughter of the late David Douglas Dewar and of Mrs. Dewar, Bourne End Cottage, Boxmoor, Herts.

DEATHS.

BRADLY.—On March 15th, at Crowborough, Norman Bradly, M.D., aged 36.

HOLLIS.—On March 12th, at Redenhall, Harleston, Norfolk, Harry Hollis, M.D., late of Wellingborough, aged 52.

STOREY.—On March 10th, at Southdene, Dunstable, James Alexander Storey, L.R.C.S.I. and L.R.C.P.E., late of The Lawn, Dunstable, aged 72.

SYMONS.—On March 11th, at Trevalga, Lansdown-parade, Cheltenham, John Trehane May Symons, Brigade Surgeon, M.D., in his 88th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. R. E. Apperly, Lond.

B.—Dr. A. M. Barford, Chichester; Dr. L. Boudreau, Bordeaux; Mr. G. N. Biggs, Lond.; Sir J. Bland-Sutton, Lond.; Dr. L. S. Burrell, Lond.; Board of Control, Lond.; Mr. H. W. Bayly, Lond.

C.—Dr. T. Campbell, Ilkley; Dr. A. E. Carver, Torquay; Dr. H. P. Cholmeley, Forest Row; Dr. A. E. Chisholm, Dundee; Dr. F. G. Chandler, Lond.; Dr. G. H. Clark, Glasgow; Dr. F. G. Cawston, Durban; Prof. E. L. Collis, Cardiff.

D.—Dr. E. Drybrough-Smith, Shebbear; Dr. W. Dyson, Manchester; Dr. D. S. Davies, Bristol.

E.—Mrs. M. L. Eyles, Milford.

F.—Mr. E. R. Flint, Leeds.

G.—Sir H. Gauvain, Alton; Mr. H. Gardiner, Lond.; Dr. A. Goodwin, Lond.; Dr. A. M. H. Gray, Lond.; General Medical Council, Lond.; Great Northern Central Hospital, Lond., Sec. of.

H.—Prof. W. Hall, Bristol; Prof. H. Head, Lond.; Harveian Society of London, Hon. Sec. of; Dr. E. Harding, Lond.; Dr. J. B. Hurry, Reading.

I.—Institute of Hygiene, Lond., Sec. of; International Labour Office, Lond.

J.—Messrs. W. Judd, Lond.; Col. H. E. R. James, Lond.

K.—Mr. W. H. Kesteven, Kingston-on-Thames; Messrs. Kegan Paul and Co., Lond.; Mrs. A. L. Kaye, Manchester; King's College Hospital, Lond.; King Edward's Hospital Fund for London.

L.—Dr. R. Larkin, Lond.; Dr. E. M. Little, Lond.; London Lock Hospital, Sec of; Dr. G. C. Low, Lond.; London Homœopathic Hospital.

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N.—National Institute of Industrial Psychology, Lond.; Dr. H. L. Noel-Cox, Lond.; Nurses' Co-operation, Lond.; National Health Week, Lond., Press Committee of.

P.—Dr. R. H. A. Plimmer, Aberdeen; Dr. A. T. Pitts, Lond.; Dr. E. E. Prest, New Cumnock; Mr. K. Q. Papafio, Accra; Dr. V. Pauchet, Paris; Messrs. Parke, Davis and Co., Lond.

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S.—Lt.-Col. J. H. Stanley, Lond.; Dr. Marie Stopes, Leatherhead; Mr. W. J. Y. Stevens, Lond.; Mr. H. W. Southcombe, Kingston-on-Thames; Mr. W. M. Scott, Bridgwater; Dr. I. D. Suttie, Glasgow; Dr. A. Spence, Lond.; Mr. G. Squeir, Hove.

T.—Dr. A. H. Thompson, Lond.; Major A. T. Todd, R.A.M.C.; Tuberculosis Society of Great Britain and Ireland, Lond., Hon. Sec. of.

U.—United States Public Health Service, Washington.

V.—Messrs. Vickers, Lond.; Dr. M. Vlasto, Lond.; Mr. H. W. Verdon, Lond.

W.—Dr. L. Williams, Lond.; Dr. S. I. Welsh, Lond.; Mr. R. A. Woodhouse, Romford; Dr. A. J. Whiting, Lond.; Dr. C. M. Wenyon, Lond.; Wellcome Historical Medical Museum, Lond., Curator of; Mr. S. R. Wilson, Manchester.

Y.—Dr. A. G. Yates, Sheffield.

Communications relating to the editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London W.C. 2.

Notes, Short Comments, and Answers to Correspondents.

THE IDEAL ELEMENT IN MEDICINE,[1] ILLUSTRATED BY THE LIFE OF JOHN HUNTER.

BY H. H. BASHFORD, M.D., B.S.LOND.

I MUST first of all thank you for the unexpected honour that you have done me in asking me to read this annual paper; and, at the same time, I must ask you to forgive me for not bringing with me anything at all original. But we are here primarily, I suppose, to do homage, to commemorate rather than to create, and there is no figure, perhaps, that has more worthily embodied what I have ventured to call the ideal element in medicine than the Scottish farm-boy in whose name this ancient society meets and has its being. That must be my excuse for embarking on what is obviously a dangerous topic. For most of us here, I suppose, are Anglo-Saxons, and it has been shrewdly said of the Anglo-Saxon that his genius has consisted in perceiving just how much of an ideal is comfortably workable. In the pursuit of abstract truth or social liberty he has generally been content to stand aside and let the more ardent and easily moved nations make the sacrifices of the pioneer; and the deduction from that is that, in any body of Englishmen, there will always probably be a considerable proportion that looks upon ideals and idealists with a rather grave suspicion.

It is also dangerous for another reason, to which I am a little diffident in referring. But some of you may recall that in a recent play a somewhat cruel test was propounded. Have you noticed, it was asked, how young the policemen look? Well, gentlemen, that is an observation that most of us here, I am afraid, must have made; and it was stated by the playwright—a member of our profession—to be an infallible sign of the presence of middle age; and middle age, as we have all been told, is the deathbed of idealism. But we have not always been middle aged, and there are crowding in behind us, and perhaps even looking to us for guidance, those younger men and women who are desirous of dedicating their lives to the Science and Art of Medicine.

The Doctor as Artist.

I am rather sorry that just at present we hear so little of Medicine as an art, since it is chiefly, I think, as we regard it from this standpoint that its ideal element becomes manifest. For, though Art has never yet, perhaps, been successfully defined, it is in any case a giving-out, a yielding-up, an expression—the concrete acknowledgment, in some shape or other, of the god-like privilege of consciousness. The true artist, whether he would or not, is thus always an altruist; and, though he is ever in pursuit of an ideal that he may never attain, he is yet the happiest man alive, whether renowned or obscure; and it is pleasant to think, and surely it is true, that, in a large proportion of cases, it is this embryo artist in them that is compelling our successors towards the arms of medicine.

About that there are probably many of you here far better qualified to speak than I. But the fact remains that somehow and somewhen Medicine has taken this high step; that it has assumed the distinction, and therefore the obligations, conferred by the banner of Art; and that it has thereby proclaimed in itself an ideal element lacking which it must surely die. That is why we may assume perhaps—even the most disillusioned of us—that it is still recruiting the young idealist; and why it may be not uninteresting, just for two or three minutes, to reflect upon the condition in which he will find it. In the contemporary life of our community to-day, in the minds and affections of our fellow men, in what sort of position, in what kind of regard will he find this great art of ours and its practitioners?

The World when Hunter was Born.

Well, there is no better way, perhaps, of answering such a question than to use the method of comparison; and it is one of the advantages of an occasion like this, when we meet to commemorate a great man dead, that we find in his person a past milestone naturally provided, as it were, for the purpose. Let us glance, therefore, for a brief moment at the world into which Hunter was born, and the sort of part in it then played by the physician and surgeon. He was, as you know, born in 1728, 21 years after the union between Scotland and England, but only 13 since a Scottish army had invaded England as far south as Preston. George II. was on the throne, and it is interesting at the present moment to recall that we were then united with France and Prussia in a triple defensive alliance. Both in India, indeed, and North America, the territories of France were more extensive than our own. The Cape of Good Hope was in the hands of the Dutch. Spain was predominant in South America, and only one ship a year was officially allowed to trade between this country and her pacific ports. Isaac Newton had been dead a year; Defoe was still living; Johnson and Sterne were in their teens, and Henry Fielding had just come of age; John Wesley was 25; Voltaire was in England as an honoured guest; Pope was publishing his Dunciad; and it was the year in which Swift lost his Stella.

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[1] Being the annual oration of the Hunterian Society delivered on Feb. 16th, 1921.

Hunter was born, as you will also recollect, about seven miles from Glasgow, then a little country town about the size of Banbury, and six days' journey from London in a fast chaise. By more usual methods the journey took nearly a fortnight, but a daily horse-post had just been instituted, the arrival of the postman from Edinburgh, at six every morning, being signalised by the firing of a gun. The chief industry of the town was weaving, and it had already made a small reputation for the production of blue and white check handkerchiefs, a novelty not long introduced from Germany. Many of these linen goods were shipped abroad, chiefly to the North American colonies, and the Glasgow merchants were making fortunes out of the tobacco that their ships brought back. They owned between them about a score of these ships; the first home-made one was already ten years old; and their total tonnage amounted to about one-ninth of that of the *Olympic* or *Aquitania*. There were also, I believe, 300 yards of pavement, upon which these merchants would take the sun, where doubtless the little Hunter looked with admiring eyes upon their cocked hats and scarlet coats.

But Glasgow was not typical of a country where payment in kind was still almost universal, although the paper money of the new Bank of Scotland was beginning to supply a crying need, and the union with England had already begun to react in an increased prosperity north of the border. Both countries still remained, however, predominantly agricultural, although the first stirrings of the coming industrial era were now beginning to be felt. Liverpool, for example, had just completed its first dock, and there were already 50 streets in Birmingham. But the day of the factory had scarcely dawned; industry, such as it was, remained chiefly domestic; and these islands slept, perhaps happily unconscious of all that lay hidden in their coal and iron. Roads were scarce, and a Scottish gentleman desirous of travelling from Edinburgh to London would have found no turnpike beneath the wheels of his carriage until he arrived at Grantham. It would have been highly necessary for him to be well armed, and the cost of the journey, had he desired a reasonable comfort, would have been equivalent in modern money to that of a first-class ticket to Australia to-day.

Social Conditions and Conventional Beliefs.

Throughout the journey he would have been passing through a country of which the majority of the people could neither read nor write;-wherein even the humanest could watch with equanimity a lad swinging on the scaffold for the theft of a shilling; and at his destination, if he had chanced to refresh himself at Lloyd's coffee house in Abchurch-lane, he would have met godly and generous merchants who were making their fortunes out of the African slave trade. As a Lowland Scot he would probably have been brought up in a lively apprehension of hell-fire, and the memory would have been fresh in his mind of the sentence of death passed only the year before upon a woman in Sutherland for having ridden upon the back of her daughter, who had been changed into a pony and shod by the devil. Had he postponed his journey till Hunter was six years old he might have been reading in his carriage the latest treatise on law by Professor Forbes, of Glasgow, in which he distinguished black witches, who did harm, from white witches, who performed cures, in both cases owing to their intimacy with the powers of darkness. Both he and the professor would probably have believed themselves, as members of the human race, to have been the products of a separate and special act of creation, and to have been the inhabitants of a world—according to the accepted notation of Bishop Ussher of Armagh—5732 years old.

I say probably because, like all ages, this early eighteenth century was transitional; and a picture confined to the little minority of the educated, travelled, and governing classes—and especially, perhaps, south of the border—would reveal a somewhat different mental environment. Tired and contemptuous of the theological quarrels of a couple of generations earlier, the prevailing habit of thought in these smaller circles was sceptical, tolerant, and lazily amenable to the newer speculations that had arisen from the researches of Copernicus, Kepler, and Newton. Largely recruited from these classes, the Anglican clergy—or at any rate their beneficed ranks—offered no very heart-felt opposition, and, indeed, to a great extent shared both in their relatives' materialism and the moral slackness that had resulted from it. This was the little but powerful England, of which Sir Robert Walpole was a representative figure. It was the England that was to shine through the letters of Chesterfield, then our ambassador at The Hague; it was the England of Squire Western, soon to be pictured for us in immortal colours by Fielding; and it was the England that provoked, just as it was to temper, the crusades of John Wesley.

But it was not from this small and privileged society that the majority of doctors was then recruited, and that is why, perhaps, the weeds of mediævalism still clung so perceptibly about their practice. Finally divorced from the ranks of the clergy and the jealous control of the Church, their recognition as members of an independent, authoritative, and learned profession was still far from complete. That was, perhaps, even more the case in these islands than in many parts of the continent, and especially, at the moment, in Holland, Italy, and France.

Great Men of the Time.

Here and there, no doubt, in every country particular men were standing out, men whose gifts had already procured for them a wide academic and social influence. Much the best known of these, in the popular sense, was, of course, the famous Boerhaave, then in the zenith of his activities at the University of Leyden, and perhaps the most sought-after physician of his own age or any other. There was probably well marked in him the quality that we have learned to describe in these days as "bluff." But he seems to have been a kindly and painstaking teacher, and possibly, indeed, the founder of modern clinical instruction. He it was to whom, without question, there is said to have been delivered a letter from the Emperor of China, merely bearing an address to the most famous physician in Europe; and he is also reported to have kept Peter the Great waiting a whole night for a consultation. Other great figures in the year of Hunter's birth were the surgeon Georges Mareschal, of Paris, with his record of eight lithotomies successfully performed in half an hour, Hoffmann at Halle, and Stahl at Berlin. But for the most part, and in every country, the village ancient and the strolling cure-monger still plied a trade often scarcely distinguishable from that of the more official medical practitioner.

Thus in Hunter's own country, at the time of his birth, all that was required before qualification—before the conferring, that is to say, of the title of surgeon apothecary—was a three years' apprenticeship to some surgeon apothecary already in practice, who was himself, in too many cases, a deeply ignorant person. The candidate had then to appear before the College of Barbers and Surgeons—the barbers, by the way, had recently dropped out—when he would be required to dissect a part, write a thesis, and make up a prescription. With regard to drugs, the properties of quinine and mercury were by then, of course, pretty well known; but the average prescription of 1728 affords plenty of evidence of the enormous ascendancy tradition still held over accurate observation.

A Popular Physician.

Perhaps the most popular physician, for example, then in Scotland was a Dr. Clark of Edinburgh, a man who was able, like his more famous contemporary, Dr. Mead of London, to command what was still, as a regular fee, the comparatively rare sum of a guinea. "The person suffering from pleurisy," he advised, "must take a ball of horse-dung, well dried, beat it into powder, drink it, and he will be cured." On another occasion he prescribed for a child "the juice of 20 wood-lice squeezed through a muslin bag, to be drunk twice a day." Universally the excrement of domestic animals and the juice of snails and wood-lice were advocated. A popular cure for whooping-cough was the application of five leeches behind the sufferer's ear; and whitlows were said to disappear after the affected finger had been thrust for half an hour into the ear of a cat. Tremendous stress, too, seems to have been laid upon the number of ingredients employed in a medicine, and even the great Sydenham, who a generation earlier had stood like a rock for sanity and simplicity, had employed no less than 18 herbs in the composition of a single ointment. Somewhere hidden up in all this there was doubtless an element of rough empirical wisdom. Perhaps more evidently there still lingered traces of the occult lore of the Middle Ages. But it is to be feared that the remainder was chiefly the stock-in-trade of a more or less unconscious charlatanism.

So Many Men, So Many Systems.

That is far from denying, of course, the profound and tonic influence of a mind like Sydenham's, or forgetting the results already achieved by exact and unbiassed experiment. In what may be called, perhaps, the higher circles of the very loosely knit medical brotherhood, the researches of Harvey, for instance, on the circulation had long been known and accepted. The thermometer had been discovered and tentatively used, here and there, as a clinical instrument; and the primitive microscope had revealed, 50 years before, the presence of red corpuscles in the blood. The French invention of the tourniquet, as distinct from the ligature, was of about the same age; and inoculation against smallpox had just been introduced into England by Lady Mary Wortley Montagu—that she-meteor, as Horace Walpole described her—although it was being strongly opposed by the clergy as an interference with the divine prerogative.

With but few exceptions, however, the mind of contemporary Medicine was still largely clouded by the mediæval legacy of formulating in advance some all-embracing hypothesis with which facts and treatment had to be made to square. Thus Professor Stahl, a chemist of renown, and one of Boerhaave's most brilliant pupils, refused to prescribe cinchona bark, because he held that the soul governed the organism by means of the circulation, and that fever was an expression of the soul's efforts to preserve the body from death. His contemporary, Hoffmann, on the other hand—the well-known Hoffmann of Hoffmann's anodyne—seems to have governed his treatment according to a theory that ether was the perceptive soul; that it resided in the medulla; and that fever was a spasm of the blood-vessels, with its origin in the spinal cord. So many men, so many systems, it seems to have been an age of systems, sired, as a rule, by some new fact, misinterpreted or over-exalted, and still mothered by a decaying, if not half-dead, theology.

The Era of Exact Observation.

Preserving our conception, however, of Medicine as an art, that is after all merely a question of method. Largely owing to the influence of Hunter himself, it has been succeeded by an era of exact observation, of the patient collection of innumerable facts, of a general dispersal of inquiry, of the careful tracking down of individual disabilities to their individual causes, and the consequent influx into the studios of Medicine of a hundred different kinds of specialist. Presently this method will change, and nothing is more probable than that some Hunterian orator, 200 years hence, will be marvelling at our blindness to the great synthesis already quivering to be born; at our assiduity in trying to stop up a hundred thousand separate leaks, when some basic principle was staring us in the face, whereby the whole vessel might be made water-tight. On the other hand, he will be unable to deny, I think, the enormous stride into general influence, into the recognition of the community at large, that the art of Medicine has made in these last two centuries.

(To be concluded.)

COLONIAL HEALTH REPORTS.

British Solomon Islands.—From March to May, 1919, there was a widespread epidemic of influenza, with characteristics not previously experienced in the Protectorate, but similar in kind to the pandemic disease found everywhere else. At Tulagi, out of 225 cases there were 8 deaths, but it is impossible to estimate the numbers who died on the other islands. The complications and sequelæ noticed after influenza were for the most part, so far as could be observed, bronchitis, broncho-pneumonia, and pleurisy. Recruiting was stopped for two months, and all indentured labourers were inoculated with vaccine supplied from Melbourne. The natives at large were without treatment except those in the vicinity of Government or Mission stations. Admissions to Tulagi Hospital numbered 520, of whom 35 were Europeans and 485 natives. The number of deaths was 30. 4436 out-patients were treated. Malaria in its various manifestations and dysentery affect Europeans and natives equally, and during 1919, a year of exceptional sickness, few escaped. The absence of any organised native administration and lack of transport make it impossible to obtain accurate returns of the population, but district officers have devoted much time and attention to the matter, and on some islands careful records of births and deaths have been made. They all show a diminishing birth-rate, the most serious loss being on San Cristoval with 401 deaths and 241 births. Depopulation is attributed to various causes, amongst which must be placed the epidemics of dysentery and influenza. Amongst non-natives 7 deaths were recorded during the year and amongst indentured natives 104 deaths, giving a death-rate of 19 per 1000.

Ashanti.—Mr. Arthur J. Philbrick, as acting Chief Commissioner, is responsible for a report recently presented to Parliament dealing with the affairs of Ashanti for the year 1919. He states that the population, which at the Census taken in 1911 was 287,814, has undoubtedly increased considerably since that year in spite of the large number of deaths from influenza in 1918. The population of Coomassie, the capital, is increasing, and may be estimated approximately at 26,000. The provincial medical officer reports that the general health of the European and native population continued good throughout 1919. There was no epidemic, with the exception of a mild form of influenza in November. The most prevalent diseases were those of the digestive system, bronchial affections, ulcers, and malaria. Venereal diseases were most pronounced amongst the soldiers in Coomassie. The native population suffer chiefly from gonorrhœa, &c., but the establishment of a venereal clinic in connexion with the native hospital cannot fail to give satisfactory results. Two cases of smallpox were treated in the Contagious Diseases Hospital. Leprosy is stated to be common. The natives are not alarmed at it, and mingle freely with lepers, for whom it is intended to provide an agricultural settlement. The total rainfall during 1919 was 37·08 inches at Coomassie (the lowest for ten years), 41·30 at Sunyani, 79·58 at Kintampo, and 45·28 at Obuasi. The number of European in-patients treated in hospitals during the year was 100, and that of native in-patients was 1511; the European out-patients numbered 34, and the native out-patients 11,706.

Gambia.—No complete vital statistics for the Colony or Protectorate are available, but in Bathurst, the chief town, the death-rate in 1919 was 35·28 per 1000 of population. Malaria has decreased considerably, but venereal disease, tuberculosis, and amœbic dysentery are stated to be on the increase. The tsetse fly abounds in many parts of the territory. The natives appear to have become immune to a great extent. Four cases of sleeping sickness, with 2 deaths, were reported in Bathurst in 1919. The area of the Gambia is 4132 square miles—rather larger than Cornwall and Devon together. The population is estimated at about 240,000, of whom 8000 live in the capital—Bathurst—at the mouth of the river. The inhabitants belong to a number of tribes with widely differing racial characteristics, and speaking different languages. The European population is less than 200, composed of officials, traders, and a few missionaries. The climate is less unpleasant than that of the other West African colonies, though it does not follow that it is more healthy. The mean temperature is 77°, with a mean daily range of 15°. Rain falls between June and October. For some cause which has not hitherto been explained the average annual fall is diminishing.

A TUBERCULOSIS RECORD CARD.

DURING discussion on the report recently drawn up by tuberculosis officers in the London area, the necessity became apparent for clinical records to be kept in a uniform manner in order to be interchangeable as well as comparable. In the course of the year many tuberculous patients pass from one district to another and without some simple and convenient record much time is lost and previous investigation wasted. The main facts to be recorded being agreed upon a card was devised on which the information about a case was divided into linear groups consolidating the records under the heads of: (1) Diagnosis, (2) Grounds for Diagnosis, (3) Important Dates, (4) Personal History, (5) Family History, (6) Social Conditions, and (7) Treatment. Provision is thus made for the compilation of statistics in each division, the figures for the year being readily calculable. The reverse of the card provides for a history of the treatment and its results with space for four sets of chest diagrams to be filled in at stated intervals: (1) condition when case is first seen; (2) condition on discharge from sanatorium; (3) after 12 months; (4) after 2 years. At the bottom of the card is a key to the uniform method of recording physical signs in the chest. Dr. H. E. Ellis informs us that Carter-Parratt, Ltd. (2, Farringdon-avenue, Shoe-lane, London, E.C. 4), have had the cards printed for their patent "Bizada" overlapping card system, whereby the names can be seen at a glance, and either side of the card consulted. The system of record marks an advance on the present practice, and it is hoped that the London County Council may recommend its adoption as a first step towards the unification of tuberculosis statistics.

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Mackenzie Davidson Memorial Lecture

ON THE

IMPORTANCE OF THE INFINITELY LITTLE.

Delivered before the Section of Electro-therapeutics of the Royal Society of Medicine on March 18th, 1921,

BY W. D. HALLIBURTON, M.D. LOND., F.R.S.,
PROFESSOR OF PHYSIOLOGY IN KING'S COLLEGE, LONDON.

IN 1798 there died in Bologna one who was born and lived there. His name, which has reverberated down the ages, was Aloysius Galvani. Destined for the Church of Rome, but later expelled from that body, he happily turned to science, and became professor of anatomy and physiology at the University of his native city in 1762. The story of his well-known discovery of what was later called galvanism is well known and does not need recapitulation here. Helmholtz, writing nearly a hundred years later in an appreciation of Galvani's pioneer work, said:—

> When Galvani touched the muscles of a frog with different metals and observed their contraction, who could have dreamt that all Europe would be traversed with wires flashing intelligence from Madrid to St. Petersburg with the speed of lightning? In the hands of Galvani, and at first even in Volta's, electrical currents were phenomena capable of exciting only the feeblest force, and could not be detected except by the most delicate apparatus. Had they been neglected on the ground that the investigation of them promised no immediate results, we should now be ignorant of the most important and most interesting of the forces of nature.

Had Helmholtz been alive to-day, how greatly might he have expanded this theme; for even he did not foresee the possibilities of electricity and its ramification into every branch of our daily life, including its applications for the detection and alleviation of many of our ills. Animal electricity in its medical aspect is, it is true, as old as galvanism itself. In its early days thinkers imagined the secret of life had been found, and attempts were made to convert dead into living bodies by its means. It soon lent itself to the worst forms of charlatanism and quackery. But as knowledge progressed and ignorance was dispelled it found its proper sphere, and the importance of the sphere is evidenced by the existence in our Royal Society of Medicine of a section devoted to electro-therapeutics.

To trace even in outline the various steps which have led to the present proud position in which this branch of science stands to-day would be a task beyond my powers and beyond your powers of endurance, but I may take as my text to illustrate one feature in the advance, if not its mainspring, a reminiscence of my own.

Attention to Minute Detail.

In 1888 I attended at Bath a meeting of the British Association, and as it was almost the first I had been to I listened to the presidential and other addresses with great attention. The president that year was the great engineer, the late Sir Frederick Bramwell, and well do I remember how he started his address. He began by alluding to a speech he had heard from the late Lord Iddesleigh, who charmed an audience for a whole evening by speaking on the very important subject, "Nothing." Sir Frederick Bramwell said he would not try to copy this feat, but would do his best to speak on "Next to Nothing." By this neat phrase he meant those little things which are of supreme importance. He gave numerous examples from his own subject to show how it was that attention to details had converted crude machinery into effective and useful instruments, whether they were guns or bridges, engines or ships. Among other subjects he took to illustrate his theme I remember he singled out the telephone as a triumph of science which the "next to nothings" had done so much to perfect. At that time he was naturally not aware of how in later years red-tapeism, and the like, would have taken upon itself to neutralise some of the excellent qualities that science had bestowed upon it. At the conclusion he ventured to prophesy that it would not be long before men were able to fly.

But gifted as Sir Frederick Bramwell was with the prophetic instinct he did not at that time, now 33 years ago, foretell the discovery of those vibrations which it is now customary to term X rays, nor of those other kinds of radiant energy which the name of radium calls up. Still less could he have predicted the value of these discoveries to medicine and to surgery, and least of all would he have pictured even in imagination the coming of a man who so fully illustrated the importance of attention to details, to the "next to nothings," a personality whose name we are met together to commemorate this evening. Sir James Mackenzie Davidson, whose sterling and genial character we all remember with affection, was first and foremost one who never spared trouble; he was one whose numerous inventions, the result of his painstaking attention to apparently small and trivial things, succeeded in making the bare bones of his subject live, just as his skiagrams represented them in life-like perspective.

The Physiologist in Medicine.

I wish that your section could have selected someone more capable than myself of dealing with this subject from the technical point of view. But you could not have chosen one who has a greater admiration for the genius and ability of our lamented friend. Your choice has fallen on a physiologist whose labours have been more directed into chemical than physical channels, and I regard it not so much as a compliment to myself as an honour to our band of quiet workers who are seeking out the ways of Nature by the way of experiment, and are doing their best to give to the art of medicine the sound basis of scientific knowledge. For too long the workers in the laboratory and those by the bedside have been groping out their own salvation in separate ways. Your request that a physiologist should address you to-night is evidence that the entente between us which is now happily growing needs still further strengthening. I feel that it does us all good to get at times out of our own special ruts.

Before coming to what, after all, is my main subject, there is one general consideration which I should like to place before you. The crowded condition of the medical curriculum in which the poor unfortunate student is presented with an ever-growing number of subjects for study while the length of the day still remains at the usual standard of 24 hours, is producing just now one of those attempts which recur periodically to revise his scheme of study. We are told that there is no need for him to learn his anatomy so thoroughly, that his organic chemistry must be reduced to a minimum; and, last and worst, his physiology course must be drastically shortened, and this in spite of the fact that all these subjects are growing fast, and that medical men are seeing more and more the truth that physiology is the corner stone around which the superstructure of medical science is built. Although physiology still figures on paper as quantitatively large, the restriction suggested is in the kind of physiology to be taught, and the word applied physiology designates that what is wanted for the student is physiology in its direct bearing on medical practice. The frog, which has served for so long as the object lesson of so many physiological precepts, is to be deposed from its high position, and, so far as is possible, experiments on man himself are to be substituted.

Value to Mankind of Purely Scientific Effort.

In speaking of Galvani's work, I have already given one example of how a subject of purely scientific interest, studied with no ulterior or utilitarian motive, was found to be of inestimable value to mankind. Such instances could be multiplied indefinitely. How would Lister's work have been possible without the preliminary academic labours of the chemist Pasteur? W
Miescher set out to investigate the chemistry of
roe of the salmon, did he think that it would be on
investigation that our knowledge of the pathol
gout would be founded? When Bayliss applied

to study colloids he could not have dreamed that a powerful weapon against wound shock would be discovered in that by-path. But I need not weary you with other instances. When a scientific man studies nature for the sake of pure knowledge, who can say to what practical use his followers may adapt it? In deciding in my own mind whether I approve or disapprove of these attempts to reform or revolutionise medical training, I am torn by conflicting emotions. On the one hand, I sympathise deeply with the student, and realise the impossibility of getting a quart into a pint jug; on the other hand, there is my love of pure science, and the conviction that any and every truth must ultimately bear practical fruit. I am not conservative by nature, and welcome every true reform, and I have little sympathy with the legendary professor at one of our ancient seats of learning, who, at the end of a life devoted to laborious research, thanked God he had never done anything that would be of the slightest use to anyone. One has in such an impasse to face facts and exercise one's common sense. A thorough grounding in general physiological knowledge must remain a sine qua non, but in the details of its many ramifications one must make a judicious selection, and the choice must naturally first fall on those parts of the subject in which the practical outcome is already realised rather than on those the application of which is still to seek. From the point of view of those in this section and of those who aspire to join its ranks later, one trusts that the electrical phenomena which are so easily demonstrated in all essentials on the muscles and nerves of frogs will not fall under the ban of those who are trying to limit the excursions of the student into the scientific aspects of the subject.

The occasion may not be inopportune to say a few words on some of the modern problems of physiology and tell you briefly the progress we have made and are making at the present time. To attack all these questions in the space of a single address would be impossible. Again, one has to make a selection, and I intend to limit myself to three. I think it will be found that in these three cases the importance of the "next to nothing" principle will be abundantly illustrated. This is the day of great things, because we are realising the importance of the infinitely little.

Hormones.

The invention of the word hormone dates from the discovery made by Bayliss and Starling of the chemical messenger which is elaborated in the intestine under the influence of the gastric acid, and which, after absorption, stimulates the pancreas to pour out its juice at the time when it is wanted to carry on to completion the digestive work begun in the mouth and stomach. Previous to this time we were imbued with the teaching that the harmonising or, to use Sherrington's phrase, the integration of the bodily functions is due to the activity of that ruling system of the body known as the "nervous system." The nervous system is not displaced from its high estate, but for the first time in the history of our science we realised to the full the valuable help rendered to the telegraphic service of the body by humbler but none the less useful ministers to our comfort which Starling aptly compared to the postmen.

Although the actual word hormone was not coined until secretin was discovered by Bayliss and Starling, the importance of chemical agents had been really recognised earlier, and more especially in relation to that group of formerly mysterious organs known then as the ductless glands, but now generally dubbed the endocrine organs; they are so called because they form an internal secretion—that is, a secretion which leaves by no specific duct, but by the blood or lymph that streams from the organ in question. It was no wonder that ignorance prevailed for so long as to their function, seeing that the new chemical principle each forms is masked by the protein-rich fluid which it enters. But now, thanks to the overcoming of this and other difficulties, we know a great deal about the thyroid, the adrenal body, the pituitary gland, the islets of Langerhans, the corpus luteum, and others.

Many details have still to be worked out, and some of our ductless glands are territories almost as unknown as Central Africa was in our youthful days. The chemical messengers are all grouped together under the general name hormone, a term which immediately "caught on." Attempts have been made to distinguish classes among the chemical messengers to indicate that some stimulate, some depress, and so forth. But the terms introduced with this object by Sharpey Schafer and more recently by Gley have not yet at any rate passed into general usage. Speaking of our French colleague, Professor E. Gley, reminds me that the term "internal secretion" was first employed by another great Frenchman, Claude Bernard, in relation to the liver's important work in pouring sugar into the blood stream at a steady pace. In most cases the index pointing the way to discovery has been the result of removing the organ and of injecting extracts of it into the blood and noting the results. Professor Gley has recently in one of his published discourses laid down the conditions which must be fulfilled in order that a gland may be admitted to the class of endocrine organs. He very properly decries trust being placed merely upon the results of ablation or the effects of injecting extracts. In addition, there are three main conditions which must be conformed to in order that a gland may be enrolled within this category: first, the anatomical—that is, the absence of a duct; secondly, the chemical, the recognition in the venous blood of such organs of a specific chemical product; and thirdly, the physiological, the possession by the venous blood of specific physiological properties, and this last is, of course, the superlative test. He takes the work of Bayliss and Starling on secretin as an example; it was not until Fleig, and Enriquez and Hallion actually worked with the venous blood coming from the duodenum that the probability of the truth of Bayliss and Starling's views founded upon the results of injection of duodenal extracts was rendered a certainty.

Professor Gley has done good service not only by his own experimental work, but in pointing out the way in which work on this subject must be continued. For we must confess that up till now our conclusions in reference to many of the endocrine glands do not rest on experiments which fulfil all of Gley's conditions. We must further recognise that it does not follow that because most of these ductless organs form internal secretions, all of them do so. Nature seldom works in one pattern, but her modus operandi varies. The parathyroids, for example, probably form no substance useful to the rest of the body's machinery, but probably act by removing or neutralising harmful products formed elsewhere. Noël Paton and his colleagues have shown that the poison they detoxicate is a guanidine compound derived from muscular metabolism, and if this is not removed tetany is the result.

Chemical Constitution of Internal Secretions.

Restricting ourselves, however, to the truly endocrine glands, let us dwell for a moment, not on what we know, but on the gaps in our knowledge. The chemical constitution of that iodine complex which is secreted by the thyroid has been unravelled by Kendall in America. The constitution of adrenaline secreted by the suprarenal medulla is so well recognised that it has even been synthesised by laboratory processes. The composition of pituitrin secreted by the posterior lobe of the pituitary body looks as though it will be the next to yield to the chemist's manipulations. But what do we know of the internal secretion of the part of the pituitary which is probably most essential to life, or of that of the suprarenal cortex, which is certainly the most important portion of that gland, or the nature of the internal secretion of the pancreatic islets, or of the corpus luteum in the ovary, and even of secretin itself?

I mention these few hiatuses in our knowledge to illustrate how much our wisdom is in its infancy, what fields are still to be tilled, and, lest we swell with undue pride at our present accomplishments. But, whatever gland we think about, we may be sure that quite minute quantities of their various secretions are sufficient to do the necessary work, and that these infinitesimally small amounts are indispensable, not only for our well-being, but for life itself. This, at any rate, has been proven for those secretions which can be quantitatively examined. Even although our knowledge of pituitrin is still over the border, we know that extreme dilutions of pituitary extract can exert marked power in causing plain muscle to contract vigorously, and, in the case of adrenaline, one can demonstrate that the injection of a few cubic centimetres of a solution containing only one part in a million or more of neutral saline diluent will provoke marked physiological effects on heart and blood-vessels.

Other examples of organic substances which call forth physiological effects in equally minute or even more attenuated concentrations might be given; there is, for instance, an acetyl derivative of choline, one of the constituents of our body, and the powerful amine known as histamine, which may be mentioned. In anaphylaxis, also, similar infinitesimal amounts of organic substances produce gigantic effects. Such minute doses make the doses of that product of a past generation known as homœopathists seem enormous in proportion—a reflection which will awake an echo in the hearts of those who deal with radium emanations.

Endocrine Balance.

From the days when we learnt physics we doubtless remember that important natural law which states that action and reaction are equal and opposite. The law holds in the opposing activities of our hormones, and an important branch of study has been to ascertain how such opposing actions are balanced so that they work together for good. The way in which the different organs, endocrine and otherwise, act and react upon each other has been one of the most instructive and interesting outcomes of the discovery of the internal secretions themselves. I do not think one could find any other subject which has in the present day so deeply influenced medicine as the hormone conception. Instead of remaining, as many physiological discoveries have remained, dormant as praiseworthy laboratory curiosities, the application to the practical study of disease has here been immediate, and medicine, surgery, gynæcology, and the numerous specialties of practice have all been profoundly influenced by the new doctrines. Among the specialties one must particularly allude to the one represented here this evening. Those who, on the one hand, are employing in diagnosis and treatment various electrical forms of energy, and those who are similarly engaged in radiology, have recognised that they have the power of controlling and influencing the endocrine organs to form more or less of these internal secretions for the benefit of their patients. I wish I had the special knowledge to dwell for a moment on this aspect of the problem, but those who are listening to me will be able to fill in the details of this part of the picture. The discovery of radium has been one of the greatest feats of modern science, but I need not tell my hearers that this new power for good may, like the X rays, be also in unwise hands an equally powerful agent for evil. When the activity of its emanations on living cells were first demonstrated there was perhaps naturally too great confidence displayed in its ability to cure every ill, including those which, like cancer, had defied every previous effort to conquer them.

That phase is now passed and the proper place of radium in our armoury is being adjusted to the facts. History is always repeating itself, and the story of radium is a repetition of what has occurred before when startling new discoveries had been revealed to the world. In the old days of the alchemists, who sought by magic and by the help of astral and similar agencies to discover the philosopher's stone and the elixir of life, the disappointments and failures were as numerous as the attempts to discover the secret of vitality. When alchemy was replaced by more exact science new revelations were wistfully and hopefully regarded as likely to yield the long-hidden secret; two of these epochs I have already alluded to to-night, one was the discovery of galvanism in the eighteenth century, the other of radium in the twentieth.

May I digress and linger a moment to mention one more which marked a similar epoch in the seventeenth century? I allude to the discovery of phosphorus. In the early years of that century a substance was prepared by heating heavy spar with combustible organic matter (egg white and charcoal) and this substance glowed in the dark, and for many years the name phosphorus or light-bearer was given to any substance which had the same property. The actual element we now call phosphorus was prepared by Brand about 1670, and was at first made in small quantities only from animal products—namely, urine and bones. Can it be wondered at, that in those days of superstition and mysticism the discovery in animal products of a substance which burnt and emitted light without ignition was hailed as a discovery which at last had hit upon the vital principle? Phosphorus played an important part in the development of the theory of phlogiston, which soon afterwards dominated philosophic thought, but in time died like so many other theories before and since. The furore created by the discovery of phosphorus had been paralleled by the discovery of radium in recent years. Only let us congratulate ourselves that the 250 years which intervened between the two events have taught us more wisdom, and we are not so likely to repeat the hysterical enthusiasm of our ancestors.

Accessory Food Factors.

This, however, is a parenthesis which originated from my mention of the fact that hormones and all that they connote are not simply of chemical interest, but that their importance is recognised as a factor in electro-therapeutics as in other branches of medical science. I do not think I can say the same thing about the second subject I have selected to bring before you. My only excuse for so doing is that it is one on which I can venture to speak at first hand. It may not interest you as electro-therapists, though it is not devoid of importance to you as human beings, for to all living creatures the question of food is of superlative value. The particular portion of this wide problem I intend to say a few words about is one in which also the quantitatively little is qualitatively great. I allude to those substances in our diet which we term the vitamins. The word "vitamin" is not as old as the present century, and although it is not an ideal term it has come to stay, and is certainly less cumbrous than the phrase "accessory food factor," which is its synonym.

[The lecturer then gave a brief summary of our knowledge of the vitamins, and alluded to the importance of the "next to nothing" principle there. Though accurate quantitative methods are still to be devised for their estimation, one thing is perfectly certain, and that is that the requisite amount is extremely minute, and this small amount is capable of converting a useless into a useful diet. He then continued:]

Before I leave the subject of food may I unburden myself of a suggestion? Empiricism is not always to be condemned. What we call empiricism is frequently the result of past experience. As an example, take a prescription of cod-liver oil, or of butter and cream. A few years ago it would have been impossible to explain why these forms of fat are superior, we will say, to olive and vegetable margarine. The mere fact that they are better was empirical, and now the practitioner has been fully justified, and research at last has told us the explanation—namely, the existence in the fats, which are the more valuable for remedying malnutrition, of a health-giving vitamin.

Empirical Experience and Scientific Foundation.

May not this in the future be repeated? If you
high blood pressure, why does your medical
you you may take fish and poultry and eggs,
you must abstain from beef and mutton? I can
a sceptical and argumentative physiologist
"Why? The materials you mention and I am
to take or refrain from taking are all in the
posed of protein, and surely it is not physiol-

give me such futile advice." My answer to this would be, "True it is not explicable yet on physiological grounds. It is the mere result of empirical experience. But wait a few years, and it is quite on the cards that by that time science may have stepped in and explained the puzzle, just as a few years ago it was able to explain why cod-liver oil is better than olive oil." There is probably in the harmful meats some hitherto unrecognised principle, unrecognised because it is present in minute quantities; or it may be the absence of an indispensable material. It is one of the "next to nothings," but it makes all the difference. "There is one kind of flesh of men, another flesh of beasts, another of fishes, and another of birds." I wonder if St. Paul ever imagined these pregnant words contained more than what he intended to convey by them?

[The third topic the lecturer selected to illustrate the importance of attention to apparently insignificant minutiæ was that of the capillary circulation, a subject which rose into importance during the war in relation to "shock." Here, again, especially in some forms of secondary shock where actual hæmorrhage may have been insignificant, but where crushed tissues were the usual accompaniment, it seems inevitable to accept the views urged by Dale and others that it is a toxæmic condition. The poison is produced from tissue breakdown, and operates by reducing capillary tone, so that the blood is stagnant and side-tracked in the capillary lake. Whether histamine, which certainly produces a shock-like state in this way, is the actual poison in secondary traumatic shock, or the only poison, is a question still to be answered. But, whatever the poison is, it is one of which a very small quantity produces a very large result.]

In conclusion, I must thank you for the patience you have exhibited in listening to me for so long. I wish I could have chosen a subject, or subjects, more akin to your own specialty. But if anything I have said in my disjointed remarks will help you to realise how widespread is the importance of the infinitely little my task will not have been in vain.

CONGENITAL SYPHILIS.[1]

BY HERBERT MORLEY FLETCHER, M.D. CANTAB., F.R.C.P. LOND.,

PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL.

IN reopening the discussion on congenital syphilis I propose to follow in the main the line taken by Sir Humphry Rolleston in his suggestive address.[2]

I should like first to make a few remarks on the *prevalence* of the disease and on its type as we see it at the present time. In one of the widely read English books on the diseases of children the author states that congenital syphilis is a *rare* disease. With this, I think, few of us can agree, and if Sir Humphry Rolleston's interesting suggestions as to its relationship to lesions of the endocrine glands can be established as facts the disease will assume an even greater importance than it previously possessed. Possibly the discrepancy of opinion as to the prevalence of the disease may be explained by a gradual change in type.

I venture to suggest that congenital syphilis in London has undergone considerable modification in type during the past 25 years—at least that is my personal experience. The number of infants with frank manifestations of syphilis, skin eruptions, rhagades, condylomata, &c., is less than it was. This does not imply that the case-frequency of the disease has diminished, but that there has been a gradual change of type, and it seems to have become increasingly rare to see the syphilitic infant as described in the text-books. It is true that I do not now see the same number of infants as I did 25 years ago and allowance must be made for this. Also many syphilitic children are sent to skin departments, who in former years would have been treated on the medical side of a hospital. But from inquiries made, there would appear to be grounds for believing that the type of disease in infants as it is seen at present in London does not seem to be so severe as formerly it was. This might be explained in two ways: (1) that the infection is of a milder type; or (2) that resistance to the infection is gradually increasing or changing in some way. It would be of value to have information as to the experience of others on this point.

Following the line of discussion laid down by Sir Humphry Rolleston, I propose to confine my remarks to three points: (1) the Wassermann reaction; (2) the influence of congenital syphilis on other diseases; (3) the influence of congenital syphilis on certain organs, particularly the kidney.

1. *Wassermann Reaction*.

There can be little question at the present time as to the value of the Wassermann reaction as carried out by a competent pathologist. Sir Humphry Rolleston, Dr. L. Findlay, and Dr. D. Nabarro have already discussed this from different points of view. It is generally agreed that a positive reaction in a child, either with or without stigmata, should indicate the necessity for active treatment which should be continued until the reaction becomes negative. A negative reaction, whether as the result of treatment or not, does not necessarily mean that the disease has died out. Both in children and adults one repeatedly sees cases in which a definitely positive reaction becomes negative after treatment and again becomes positive after lapse of time.

A negative reaction may be present in the following circumstances: (1) infection has not been incurred; (2) the infection may have completely died out, though it may have caused pathological changes or disturbance of function in various organs; (3) spirochætes may be lurking in a quiescent state in some tissue or organ of the body, antibodies not being produced; (4) the spirochætes may have undergone some change of state, such as a granular stage, which was referred to by Dr. A. Routh.

As to the value of a provocative dose of salvarsan in cases giving a negative reaction, I have not had a sufficiently large experience, but I may say that not in a single instance have I seen a positive reaction follow a provocative injection. (It will be interesting to hear the experience of others on this point.)

Sir Humphry Rolleston made a valuable suggestion in pointing out the advisability of examining in doubtful cases the Wassermann reaction in both blood and cerebro-spinal fluid. There can be no doubt as to the importance of this procedure, though it is more difficult to carry out with children than with adults, as anæsthesia so often has to be employed in the young. Personally I have never met with a positive reaction in the cerebro-spinal fluid of a child in which the blood reaction was not also positive.

The problem of the Wassermann reaction cannot be solved by the clinicians, and must be left in the hands of the laboratory workers for much further investigation.

2. *Congenital Syphilis and its Relation to Other Infective Disease.*

Resistance to infection is lowered in syphilitic children, especially in the first few years of life. This is generally recognised as regards the acute infections. With these, however, I do not intend to deal, but to confine myself to the association of syphilis and tuberculosis. These diseases may be regarded as the two commonest chronic infections of infancy and childhood, and it would be surprising if they were not frequently met with in the same subject. At the same time I do not think the association of these diseases is sufficiently recognised. Lymphadenitis is the form of tuberculous disease I have seen most frequently in syphilitic children, mostly affecting the cervical glands, which in some cases had been treated by operation. The cases presented the characteristic appearances of tuberculous glands: caseation, skin involvement, &c. The interesting point about these cases in which syphilitic stigmata had been previously overlooked was the very marked improvement which followed active antisyphilitic treatment. Two cases in older children which I saw with

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[1] A paper read before the Section for the Study of Disease in Children, Royal Society of Medicine, on March 16th, 1921.

[2] THE LANCET, March 5th, p. 471.

Dr. H. G. Adamson had enlarged cervical glands (with partial excision in one case) and exhibited cutaneous rashes of the tuberculide variety described as Bazin's disease (dermatitis scrophulosorum induratum). The Wassermann reaction was positive in both. Anti-syphilitic treatment brought about a marked improvement in the tuberculous glands and the skin lesions which had not been affected by other forms of treatment. *The same improvement, as the result of treatment of the syphilis, may occur in syphilitic adults suffering from pulmonary tuberculosis.*

I mention these facts in order to draw attention to an association of disease which, I think, is often overlooked. In tuberculous cases in which the family history is suggestive of syphilis or in which stigmata are present, however slightly, the Wassermann reaction should be employed. *Treatment of the syphilis may bring about a far more rapid improvement of the tuberculous lesion than would be possible without it.*

3. *The Influence of Congenital Syphilis on Certain Organs of the Body, especially the Kidneys.*

One of the most striking features of congenital syphilis is the widespread nature of the lesions it produces. No tissue or organ of the body is immune. The internal and external secretory organs are those with which we are now concerned, and each one of these is liable to undergo definite pathological changes which have been fully described. Sir Humphry Rolleston suggested that the changes in the endocrine glands brought about by congenital syphilis may be responsible for many and varied conditions, such as dyspituitarism, some of the obscure bony diseases, lipodystrophia, &c. With the means at our disposal it seems equally difficult to prove or to disprove this point. In the great majority of cases of such diseases of the endocrine glands the Wassermann reaction is negative and stigmata are absent. But damage may have been caused by a syphilitic infection which has died out and which later may bring about a diminution of activity of the affected gland or glands. But further *evidence must be brought forward before we can ascribe a syphilitic origin to the impaired functions of these glands.*

We are perhaps on more secure ground when we consider the external secretory organs, especially the liver and kidneys. With the liver I do not propose to deal as probably the changes due to syphilis in this organ have been more fully investigated than those in any other gland. It is somewhat remarkable that comparatively little investigation has been made as to the early and late effects of congenital syphilis on the kidneys.

Sir Humphry Rolleston has suggested that the extensive renal changes found in the group of cases associated with dwarfism or infantilism are due to syphilis. The general consensus of opinion at the present time would seem to be opposed to this view. I might mention that the last case of this description brought by me before the Royal Society of Medicine gave a negative Wassermann reaction in both the blood and cerebro-spinal fluid.

It might be urged that the kidney lesions are due to a syphilitic infection which has died out. Against this I would point out that the changes in the kidneys are always very marked and indicate some infective or toxic agent of considerable virulence. Had syphilis been the cause one would expect other organs to have been affected to a greater or less degree, whereas it is significant that the kidneys alone exhibit changes, except for the secondary changes in the cardio-vascular system.

The morbid changes found in the congenital syphilitic kidney may be briefly summarised as follows:—

1. In the fœtus—stillborn at term, and abortions. In these there is often evidence of arrested development. Groups of cells of embryonal type surrounded by normally developed tissue and a varying degree of small-cell infiltration of the cortex.

2. *In infants.* Similar changes may be present, but sclerosis may have begun. These areas of infiltration adjoining zones of proliferating connective-tissue cells and bands of fibrous tissue. Queslier[3] states that in most cases the lesions, whether old or recent, are arranged as islets with normal areas between them. They are situated mostly in the cortex, and the kidneys are often unequally affected.

3. In older children the sclerosis is more diffuse and the capsule is adherent; the weight of the kidneys is generally unequal and is diminished.

This is a very brief summary of the more severe types of renal disease due to congenital syphilis; it is only reasonable to believe that there are milder degrees of involvement. Also, as in the case of the liver, as the result of treatment recovery may take place, but the organs may be rendered unduly liable to disturbance later on in life by comparatively slight causes. Rose Bradford and others have suggested that cases of so-called idiopathic nephritis may be due to syphilis as a *predisposing cause. If this be true, the influence of* syphilis may be explained by the supposition that the spirochætes, although they have died out, have left behind a damaged organ or one which is peculiarly susceptible. A mild attack of one of the specific fevers, such as varicella, in a child known to be syphilitic may be followed by an acute nephritis.

Hutinel[4] has drawn attention to the vulnerability of the kidney in congenital syphilis, and has pointed out the liability to relapse which these cases of nephritis may exhibit. In some the exciting cause may be a slight attack of tonsillitis or of impetigo. Syphilis may be a factor in some of the not uncommon cases of intermittent albuminuria of childhood. As in the case of the liver, there may be a long latent period (during which the spirochætes may be present but inactive), and in these signs of nephritis make their appearance about the time of puberty as the result of some other infective or distributing cause which may rouse the spirochætes again into activity.

Time will not permit further consideration of these clinical manifestations, but my object is to draw attention to the very important relationship congenital syphilis may bear to kidney disease, and to urge that the necessity of determining whether syphilis is a factor *should be borne in mind in dealing with doubtful cases* of renal disease in children.

The *lungs* also may be affected by congenital syphilis. The association with tuberculosis has been referred to, and I will say no more on this point. Pneumonia alba is a rare massive condition of the lung found in new-born infants, and so far as I know has no special clinical interest. But syphilis may also give rise to a slighter degree of infiltration compatible with longer life, which may lead to pulmonary fibrosis and, according to Still and others, to bronchiectasis. It may well be that in cases of latent syphilis an attack of broncho-pneumonia or acute bronchitis may stimulate the resting spirochætes into action and fibrosis or bronchiectasis ultimately result. It would be interesting to know what proportion of cases of fibrosis of the lung give a positive Wassermann reaction.

Conclusion.

In conclusion, a few words about *treatment.* It seems to be generally agreed that intravenous injections of one or other of the modern arsenical compounds should be combined with the administration of mercury either by the skin or mouth. I have been impressed on several occasions with the small doses of mercury given by the mouth by some practitioners. *Infants and children are remarkably tolerant* of this drug, and I do not think that the best results are obtained unless comparatively large doses are given: beginning with ½ gr. doses of pulv. hyd. c. creta twice daily, then thrice, and gradually increasing this up to 1½ gr. thrice daily. This should not be followed by any ill-effects. My late colleague, Dr. Eustace Smith, was in the habit of giving considerably larger doses than these. Should the drug cause diarrhœa, as it may do, though rarely, when first given, an equal quantity of aromatic chalk powder combined with it will prevent any looseness of the bowels.

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[3] Gaz. des Hôp. civ. et mil., 1913, pp. 1016-1019.

[4] Hutinel: Paris Médical, 1919, p. 65.

POST-SALVARSAN JAUNDICE.

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DATING from October, 1920, a small epidemic of jaundice following treatment of syphilis by novarsenobillon has been noted in the Rhine army. The first case of the series died five days after admission to hospital, and was diagnosed acute yellow atrophy at the autopsy. Several more cases, clinically similar, were admitted shortly after this occurrence, and I was led to examine for evidence of hepatic disturbance and acidosis. The findings were so constant, had so much bearing upon prognosis and treatment, and were so different from the findings in jaundice from other causes that I think they may be of interest.

The series comprises 24 cases of "914" jaundice, and as controls 15 cases of jaundice in patients who were non-syphilitic and had not had any arsenical treatment. I do not propose to discuss the exciting cause of the jaundice, for that has been considered already by several observers, who conclude that it is the arsenical radicle of novarsenobillon. In the literature at my disposal there is only one dissentient on this point, E. G. Ffrench,[1] who concludes that the jaundice is due to syphilis itself in some cases, and that it occurs with some frequency in patients who have received no "914" or other arsenical preparation. However, H. D. Rolleston[2] states that jaundice in secondary syphilis is rare, and quotes figures of Werner and Goldstein showing that jaundice occurs only 77 times in 23,261 cases of syphilis before the introduction of salvarsan. Nicaud,[3] G. E. Strathy, C. H. V. Smith and B. Hannah,[4] and R. Hallam,[5] conclude that the jaundice is due to arsenic. Moreover, the jaundice of secondary syphilis is said to be hæmolytic in type[6]; Nicaud[7] determined the fragility of the red blood corpuscles in a series of his cases, and found an increase of resistance; in two cases of the present series I tested the fragility and found definite increase. The treatment of jaundice due to syphilis is that of syphilis (Rolleston); in "914" cases further exhibition of arsenical preparations aggravates the condition. Moreover, if the condition were due to active syphilis a positive Wassermann reaction should be present; this was not found to be the case in the present series. It has not yet been proved whether the toxicity is due to arsenic properly combined as novarsenobillon, or whether it is due to some arsenical impurity; Hallam[8] could find no impurity in the samples supplied to him in his series.

No case of this jaundice appeared during the period March–September, 1920. The occurrence of the epidemic coincided with the onset of cold weather. The explanation of this is probably twofold: (a) the seasonal incidence of afebrile jaundice has been shown to reach its maximum in the winter months,[9] and (b) a heavier burden is thrown upon an embarrassed liver by the winter diet rich in fats and proteins. The time of onset of symptoms relative to the dosage of "914" received shows no difference from what has previously been observed. The smallest total dosage of "914" in this series was 4·05 g., the largest, 12·15 g. The time of onset after the last injection varies from one day to 17 weeks, the average being 10 weeks. Nicaud[10] divides "914" jaundice into early and late types—that is, occurring soon after small or late after large dosages. He came to the conclusion that the early cases had a more serious prognosis. In this series such a division could not be made; some of the late cases were mild, some severe, and vice versa.

The investigations made include clinical findings and narration of symptoms, as these differ from those found in catarrhal jaundice, and are therefore of importance in differential diagnosis. The urinary investigations comprise examination of the amount, acidity, presence of albumin, casts, sugar, acetone, deposit of leucin and tyrosin, bile pigments and acids, urobilin, percentage of urea, estimation of ammonia, and the ammonia-urea gen ratio. The diastase was estimated in each case from time to time. These examinations were made daily until convalescence was established. All the quantitative and most of the qualitative examinations were made by myself with the same apparatus throughout.

Morbid Anatomy.

In brief, the morbid anatomy appears to be a hepatitis leading to fatty degeneration (v. Nicaud's early autopsy[11]), followed by cell death and compensatory fibrosis of periportal distribution. The fibrosis would appear to be responsible for the further atrophy and shrinkage of the liver. Next in severity to the liver the kidneys are concerned, and show a marked degeneration and atrophy of the tubular epithelium. Fatty degeneration of most tissues is present. Hæmorrhages into brain, lungs, pleura, pericardium, and peritoneum are common in fatal cases. The liver shrinkage in life was demonstrated in 30 cases by X ray measurement.[12] In addition, Strauss[13] describes ascites in one fatal case.

In an early case it would be expected that a normal-sized, or rather enlarged, liver would be encountered, the enlargement being due to one or more of the following conditions: vascular engorgement, fatty degeneration, or small-celled infiltration; acidosis should be present from defective protein metabolism. As the condition progresses to convalescence or death, shrinkage would result from diminution of the hepatitis or further atrophy. It will be seen in the next section that these conceptions are justified.

Symptoms.

The presenting symptoms as compared with those of catarrhal jaundice appear in Table I.

TABLE I.

Type.	No. of cases.	Nausea.	Vomiting.	Headache.	Epigastric pain.	Anorexia.	Sore throat.	Pruritus.	Epistaxis.	Jaundice.	Dimness of vision.
		%	%	%	%	%	%	%	%	%	%
"914 jaundice" ...	24	33	22	41	58	45	9	13	0	55	4
Catarrhal jaundice	15	67	53	33	44	53	0	16	0	48	0

The character of the symptoms in the two classes show no marked differences, with the exception of abdominal pain, which in the "914" group showed no relationship to food; in three cases, all showing definite evidence of liver enlargement, the pain was dependent upon posture, being aggravated by lying upon the left side. The abdominal, just as the cephalic pain was not well localised. Shoulder pain was not observed. Dimness of vision occurred in the fatal case three days before death.

Clinical Findings.

The clinical findings in the two groups appear in Table II.

TABLE II.

Type.	Pharyngitis.	Desquamation.	Palpable spleen.	Large, palpable liver.	"Tender" liver.	Epigastric tenderness.	Icterus.	Erythema.	Somnolence.	Diminution of ankle-jerks.
	%	%	%	%	%	%	%	%	%	%
"914"	9	30	5	38	33	50	100	9	22	9
Catarrhal	0	7	13	7	13	27	100	0	0	0

Pyrexia was not observed; the one fatal case showed a subnormal temperature. The skin desquamation affected chiefly the extensor surfaces of the limbs; in a few cases the trunk, especially the chest, showed scaling; there was no associated dermatitis.

Condition of liver.—In the "914" group the liver was definitely palpable and enlarged in 38 per cent. of the cases; the real percentage is certainly higher, for the pain evoked by palpation was so severe, or caused so much boarding of the abdominal muscles, that the attempt was given up. In all these cases the superior liver dullness was normal and the consistence of the liver was distinctly hard, in some cases giving the impression of wood; in about one-third of the cases there was pain or discomfort, as the sharp lower edge slipped over the palpating thumb (procédé de pouce). In one case there was definite evidence of a small-sized liver; in this case fatty casts were found in the urine. In an important percentage of the "914" group the liver was enlarged and altered in consistence.

The *erythema* noted was similar to that observed by Sicard.[14] Absence of Achilles jerk is regarded by Sicard as an important early sign or arsenical neuritis; diminution on one side was noted, no complete absence of ankle-jerks occurred. The eye-grounds of several severe cases were examined by the ophthalmological specialist, Captain Pringle, R.A.M.C., who found nothing abnormal. The liver condition changes with the progress of the case; in three cases only did the enlargement persist in convalescence, and these cases were three of the most severe. When enlargement persists it may be assumed that the cirrhotic changes are permanent.

Somnolence was noted only when distinctly more marked than the depression and lethargy common in other forms of jaundice. The one fatal case developed somnolence after two days in hospital; it was accompanied by delirium and rapidly deepened to coma. The same somnolence was noted in the earlier cases of the series by the M.O. in charge of the medical wards, who directed my attention to them as possible cases of acute yellow atrophy. Instructions were then sent out to all M.O.'s of units to watch for cases of jaundice in men who had had treatment for syphilis, and to send cases to hospital when discovered. The result was that, with one or two exceptions, the later cases were much milder, and somnolence was not noted again. This somnolence, I suspected, was due to disturbed hepatic metabolism; I accordingly examined for a resulting acidosis. Strathy[15] suspected acidosis, but gives no figures. The estimation of acidosis was accomplished by comparing the ratio of the ammonia nitrogen to that of the urea. According to Panton,[16] "A reliable guide to the extent of the acidosis can be obtained from a comparison of the ammonia and urea nitrogen." Samples of normal urine, of urine of diabetes, of catarrhal jaundice, and of patients who had had much "914" treatment were examined, and the results of the catarrhal cases are included and are referred to as "jaundice controls."

Urinary Findings.

It is regretted that no urinary examination was made in the fatal case; this case occurred in my absence. To detail the findings in each case would require too much space; amongst other examinations the ammonia-urea nitrogen ratio was determined 500 times. Many of the results may be summarised and dismissed briefly. The urine of each patient was collected in a receptacle stored in a cool place; all examinations were made with complete 24 hours' specimens.

Amount.—Usually diminished, the average being 45½ fluid ounces during the first complete 24 hours. The diminution appeared to be proportionate to the severity of the case. On the fifth day the urine averaged 59 fluid ounces. Jaundice controls (catarrhal or apyrectic jaundice) showed like amounts, 45 ounces on admission, increasing to 66 ounces on the fifth day.

Acidity.—High on admission, requiring 34·5 c.cm. decinormal caustic soda per cent. for neutralisation. This diminished rapidly, and on the fifth day averaged 15·5 c.cm. Controls averaged 22 c.cm. per cent. on admission, and 14·1 c.cm. on the fifth day.

Albumin.—Present in 14 per cent. of the cases. It disappeared in convalescence, was slight in amount, never more than a trace being noted. The jaundice controls showed no albumin.

Bile pigment.—Gmelin's test was positive in 92 per cent. of the cases on admission.

Urobilin.—Present in the 8 per cent. of the cases in which bile pigment was absent. Schlesinger's test and the test of Morel and Policard[17] were applied in each case. Urobilin was generally found present several days after bile pigment had disappeared. Urobilin, unaccompanied by bile pigment, was not found in the catarrhal control, though its occurrence has been noted.[18]

Bile acids.—Hay's test was performed in every case until the severe and mild cases alike failed to give a positive reaction.

Deposit.—Detailed notes were not kept in all cases. Sediment usually consisted of amorphous urates; uric acid crystals were occasionally, and oxalate crystals were frequently, noted. Pus corpuscles were commonly present, and on three occasions showed well-marked, deeply stained globules with osmic acid. No blood was noted. Oxalate crystals were also found in many of the jaundice controls.

Casts.—Present in 11 per cent.; usually granular or hyaline. Fatty casts were sought in each case, but were found in one only.

Leucin and tyrosin.—Sought in the deposit of each case but never found. Precipitation methods were not employed.

Sugar.—No case showed presence of reducing substances.

Acetone.—Not found.

Urea.—The percentage on admission was high, the average being 2·4 per cent. Jaundice controls averaged 1·63 per cent. In both classes the urea percentage rapidly diminished owing to the special diet given.

Ammonia-urea nitrogen ratio.—The formalin method, as described by Panton, was employed for the ammonia estimation; for the urea the hydrobromite method. For the former 20 c.cm. of urine were taken, and for the latter 4 c.cm. The calculation of the contained nitrogen is simplified by multiplying the number of cubic centimetres of decinormal sodium hydroxide solution used, after adding the neutral formalin, by 14; the number of cubic centimetres of nitrogen evolved is multiplied by 58·33, the latter constant being worked out on the basis that 16 c.cm. nitrogen correspond to 1 per cent. urea.[19] This figure is rather high; 15 c.cm. are given by Plimmer.[20] The division of the former figure into the latter gives the ratio—ammonia nit. : urea nit. :: 1 : x. For brevity the latter figure only is given. On the day of admission the ratio averages 9·35, the lowest being 6·0 and the highest 15·0. "Under normal conditions the ammonia nitrogen is about one-twentieth of the urea nitrogen, and in conditions associated with acidosis it may rise to one-fourth. A rise in the ammonia nitrogen to one-tenth of the urea nitrogen is definite evidence of acidosis."[21] Seventy-one per cent. of the cases show a ratio of less than 10—i.e., one-tenth—on the day of admission. Taking the average of the clinically severe cases, the ratio was found to be 8·1; the average of the cases showing somnolence is 8·0. The average ratio after four days in hospital was found to be 22·0—i.e., one twenty-second. Some of the cases did not show an acidosis on the day of admission, but the ratio of ammonia nit. : urea nit., in some cases dropped below the acidosis level on the second, third, or fourth day. At some time during the acute stage of the illness acidosis was determined in 80 per cent. of the cases, and was present in all but the slight cases.

In the jaundice controls the average ratio on admission was 16·3. After five days it averaged 22·0. In only one case did the figure fall below 10·0, and this was regarded as being due to ammoniacal fermentation, for the acidity was very low, and triple phosphates were found in the deposit. It should be noted here that all the cases, controls also, were treated in the same ward, had the same diet, and the same medicinal treatment, with the exception that in one or two of the catarrhal group pill fel bovini was given t.d.s.

I am aware that catarrhal jaundice, in some schools at least, is no longer regarded as merely a symptom-complex brought about by the damming up of bile by an acute stenosis of the bile-ducts due to catarrhal cholangitis, but as a lesion of the hepatic cells, which interferes with the hepatic function as a whole.[22] But the figures given above appear to show that the hepatic function is much more severely embarrassed in the "914" cases.

Urinary diastase.—This was measured partly to determine whether there was evidence of pancreatic involvement, and partly because it was considered possible that differential diagnosis in catarrhal cases might be facilitated; for a pancreatic origin in certain cases of catarrhal jaundice is considered by Rolleston. An associated catarrh of the duct of Wirsung might accompany that of the common bile-duct. The Wohlgemuth technique as described by Wallis[23] was followed; in all 140 estimations were made. Figures on the whole show an increased amount of diastase; in 42 per cent. of the cases the figure reached or exceeded 40; the highest figure noted was 100 units, which fell to 20 units within seven days. Figures of 50-60 units were fairly common. In 19 per cent. of the cases the figure dropped below 10 units at some time; the lowest figure reached was 6 units, but this is regarded as the lowest normal limit by Maclean and Russell.[24] The remaining 39 per cent. gave normal diastase figures throughout the illness—i.e., 10-30 units. This increase is of interest, as it may demonstrate pancreatic involvement or may be regarded as further evidence of hepatic embarrassment; for an increase of the diastase has been found constantly in the toxæmias of pregnancy,[25] in which condition hepatic involvement is generally conceded. In all cases where the diastase showed normal values the figure became normal in a few days. This examination was found to be of little value in differential diagnosis, for a similar increase, varying between 40 and 80 units, was found in 28 per cent. of the jaundice controls; this is further evidence for the presence of pancreatic changes in catarrhal jaundice.

The urinary findings justify the opinion that a lesion of the liver tissue is present and that an acidosis results; for 80 per cent. of the cases showed evidence of acidosis at some period of the illness. Moreover, the degree of acidosis was proportional to the severity of the clinical findings; also the acidosis disappeared as the other symptoms subsided.

Course of the Illness.

The average of the cases shows that the period spent under close observation was 22 days; about three days added to this gives the average time spent in hospital. The last day after admission on which acidosis was present averaged the fourth day. No case was discharged from hospital until he had been on the full diet for a week, and had performed some light duty. So far no relapses have occurred.

Prognosis.

The case mortality is difficult to determine. From the literature quoted I have been able to obtain figures in 141 cases; amongst these 23 deaths are recorded, giving a mortality of 16·3 per cent. This figure may be too high, for, possibly, some early deaths, not due to hepatitis, are included. On the other hand, it is highly probable that some of the fatalities have been described as acute yellow atrophy, for this condition, formerly a great rarity, appears to be fairly common at present, and comparatively numerous cases are described in the current European literature. The present series, which is not included in the above figure, shows a mortality of 4·1 per cent.—i.e., one case, the first of the series, who did not receive any specific treatment. Series of cases show very variable mortality rates; both in Hallam's and Nicaud's series no deaths are recorded.

Treatment.

All the cases were kept in bed until chicken diet was ordered. Fluids were given freely, especially imperial drink. The only routine drug treatment given was sod. bicarb. 60 grains t.d.s. Laxatives were ordered when required. For 24 hours after admission full diet and no treatment was given in order that the gravity of the case could be determined. After this the patient was put on the following diets, one after another, as the urinary and clinical findings improved: (1) starch diet: in this proteins and fat are excluded, the diet consisting of bread, fruit, boiled vegetables, milk puddings (made with very little milk), jelly (as a protein sparer), and tea without milk; (2) fish diet: the addition of boiled fish being made to the starch diet; (3) fish and eggs: one or two eggs per diem in addition to the fish; (4) chicken diet: the ordinary chicken diet of the hospitals, the patient being allowed out of bed; (5) ordinary diet: when this was given the patient was encouraged to help in the ward. It may here be noted that the recovery of the jaundice controls appeared to be accelerated by this treatment.

My thanks are due to the D.D.M.S., Rhine Forces, for issuing instructions to all M.O.'s of unit and otherwise facilitating the investigations; also to Major E. F. Bashford, O.B.E., R.A.M.C. (T.C.), D.A.D. Pathology, for permission to perform examinations in the laboratory.

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GENERALIA ON THE
LOUSE PROBLEM AT THE WESTERN FRONT.

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IN order to round off my records of the results of about three and a half years' continuous work, mostly in Flanders, on various aspects of the louse problem, I publish the following few remaining generalia from my notebooks. They are somewhat belated, but many post-war duties have prevented their collation.

Viability of Lice.

Through the kindness of Mr. A. W. Bacot, of the Lister Institute of Preventive Medicine, a supply of nits and about 300 lice of all ages were forwarded to me in France for certain experiments. The eggs were attached to small pieces of khaki cloth upon which the insects were at liberty to cling and crawl. All were dispatched in a round wooden pill-box $1\frac{1}{2}$ inches in diameter and of the same depth. The insects had been given opportunity to feed at about 4 P.M. on Oct. 22nd, 1918, and were then packed and placed in the post. They reached the laboratory in France on Oct. 29th, and, with the exception of a few which were set aside for viability experiments, were allowed to feed at 2 P.M. The survivors which fed numbered 138—approximately one-half of the original number dispatched—were of all ages except, of course, newly hatched specimens. Thus a fast of 6 days 22 hours apart from the human host, at an unknown temperature in the post, was well within the powers of the insects. Similar observations to this have been recorded by many observers, but the two following experiments present new features.

Experiment 1.

Oct. 22nd, 1918, 4 P.M.: Lice given opportunity to feed by Mr. Bacot.

Oct. 29th, 11.30 A.M.: 2 nymphs and 1 larva in second instar separated and placed in incubator at 28° C.

Oct. 31st, 10 A.M.: All fed after a little effort, one standing on its head to do so. 2.30 P.M. and 6.30 P.M.: All fed; kept in an incubator at 28° C. between feeds.

Nov. 1st, 9.15 A.M.: Only 1 nymph fed; the second nymph still alive, but too feeble to feed though given 30 minutes to do so; killed. Larva dead. 6.30 P.M.: Survivor fed.

Nov. 2nd, 10 A.M., 3 P.M., and 6.45 P.M.: Survivor fed.

Nov. 3rd, 9.15 A.M. and 6.30 P.M.: Survivor fed.

Nov. 4th, 11.15 A.M.: Survivor did not feed; incubator had failed, and louse exposed to room temperature for several hours. (Temperature not noted.) 6.30 P.M.: Appears nearly dead—ruptured.

Experiment 2.

Oct. 22nd, 1918, 4 P.M.: Lice given opportunity to feed.

Oct. 29th, 11.30 A.M.: 3 nymphs and 2 larvæ in the second instar separated and placed in incubator at 28° C.

Oct. 31st, 10 A.M.: Lice removed and kept on bench at about 15° C.; still able to crawl feebly. 5.15 P.M.: Given opportunity to feed; the 3 nymphs settled and fed almost immediately; one larva was more tardy in feeding, while the other crawled around feebly before settling, and did not feed till some time after; the larvæ were the feeblest of all. Subsequently, between feeds, kept in incubator at 28° C.

Nov. 1st, 9.15 A.M.: 4 fed; one larva failed to feed after 30 minutes and subsequently died. 6.30 P.M.: 4 fed.

Nov. 2nd, 10 A.M.: 3 nymphs fed. The larva fell into a bowl which had been wiped with strong cresol and never fed afterwards. 3 P.M. and 6.45 P.M.: 3 survivors fed.

Nov. 3rd and 5th: All fed twice a day, morning and evening.

Nov. 6th: All appear perfectly healthy; added to stock.

These experiments and observations show: (1) that nymphs and larvæ in the second instar may survive a fast and separation from the human host of 9 days 2 hours—$6\frac{22}{24}$ days in the post, $1\frac{22}{24}$ days in an incubator at 28° C., and $0\frac{7}{24}$ day in a laboratory at 15° C.; (2) that, moreover, though very enfeebled after their fast, they still had strength enough to feed and subsequently recover; (3) that this period of fasting and separation from the human host approximates very closely to the limits of endurance of the insects.

These conclusions are of interest because, to my knowledge, no other records show for similar conditions quite such a high viability for the louse. It is of interest, too, that these hardy specimens were nymphs, and presumably about the prime of life.

A Clothing Repair Depôt.

Compared with that of the bug or flea the viability of the louse is very low; this fortunate fact is well illustrated as follows.

In July, 1918, Lieutenant-Colonel Statham, A.D.M.S., Paris Area, took me to the repair depôt for clothing organised by the British Army Ordnance Department in Paris, where Captain Thompson, A.O.D., kindly demonstrated the routine of the institution and, in reply to questions, furnished much interesting information on the infested condition and treatment of the garments received. To this depôt were returned vast quantities of soiled, discarded and salved garments of the British armies in France to be dealt with appropriately. The number of garments received per year was estimated at 2,000,000. Some were only fit for burning, but large numbers were renovated and re-issued for service. During the renovation process the first operation after sorting was the inspection and segregation of those garments which had been excessively highly infested. Such articles showed the usual characteristic appearance—innumerable nits packed like large sand grains along the lines of the seams and the creases, interspersed with lice of all sizes. The next operation was carried out by old women who, by means of knives, scraped the egg masses away from the cloth. The points of interest, upon which the old women and Captain Thompson were most emphatic, are, first, that sorters and scrapers never became infested and, secondly, that they would not have taken on such employment had they felt that there was any risk of infestation. Evidently the period of separation from the human host, an indeterminate period largely spent in transit from the front to the base, was sufficiently long to kill both lice and nits. Such being the case, no special methods of disinfestation were employed, the articles being laundered in the usual way.

This affords an excellent illustration of the fact that practical and extremely valuable services were dependent upon the relatively low viability of the louse!

"Dangerous Carriers."

The proportion of articles scraped varied with the type of garment—e.g., of the riding breeches 60 per cent. were so treated, of the tunics 7½ per cent., and of the underclothing 5 per cent. In drawing any conclusions as to the degree of lousiness of the troops from these figures it should be borne in mind that no records existed of the number of times these garments had been disinfested up the line or of the degree of the last infestation before being discarded. But, taken in conjunction with my studies of the infested condition and the psychology of certain types of soldier tolerant of extreme lousiness, these comments may be advanced. The men who had worn these garments were evidently of this type—I have called them "dangerous carriers"—because no self-respecting soldier would ever permit his clothing to get into such a state either as the result of one huge visitation or from traces of a number of smaller infestations severally combated by disinfestation at various times. He would have scraped it or burnt it himself. Besides, few quartermasters would have refused an issue of new clothing to such cases. The general point of importance which issues is that my estimate that nearly 8 per cent. of infantrymen were "dangerous carriers" has received corroboration in a somewhat curious and unexpected fashion.[1]

A Note on Dissemination.

The relative importance of the various sources of dissemination have been thoroughly discussed elsewhere[2]; but, to recapitulate briefly, it may be mentioned that by far the most important source was the lousy soldier. Blankets, bedding, latrines, dug-outs, &c., were of minor significance. To illustrate the latter point I cite an experience which occurred while I was attached to the New Zealand Division in June, 1916, at Armentières.

This division had but recently arrived in France from Egypt, and I was detailed to give instructional work to it on "flies and mosquitoes." However, opportunity was taken to make certain observations on my special subject. Just previous to departure from Egypt the whole division had been thoroughly and generally disinfested by means of "Hunter's train."[3] The troops were brought practically straight to the Armentières front and certain battalions placed in the line. After about ten days of trench warfare one battalion was brought to the baths and 110 shirts were examined immediately after the men took them off. After the usual experiences with many battalions at many other baths the results were a pleasant change; a large number were louse-free, the average was only 3, and the range from 0 to 20.

Without a complete knowledge of the condition of the men prior to their entering the trenches, it is impossible to state precisely the reasons for this infestation and for its degree; but, to speak generally, the disinfestation in Egypt must have been well done, and the trains, billets, and dug-outs in France must have been only very slightly infested, which latter is the point I wish to make. These facts will appear more striking when one considers the usual condition of troops on going up into the trenches and on returning therefrom to the baths.

Proportion of Men Infested with Crab-lice.

One of the features of the louse problem which I never had full opportunity for investigating as thoroughly as it deserved was that of crab-lice (*Phthirius pubis*). Observations of infestation by such were made at various times, as, for instance, when testing the effects of insecticides upon troops, and led me to believe and state in lectures at the front that these infestations appeared to be of much commoner occurrence among troops in the fighting area than was generally supposed. Until 1918 the data were not considered as sufficiently detailed to warrant publication, but as a striking record was furnished me by Lieutenant Seaton, of the United States Medical Corps, I associate the two best of my examples with his.

1. Out of 83 men from three different infantry regiments of a certain division 4·7 per cent. were found infested with crab-lice (May, 1916).
2. Out of an experimental party of 21 men from seven different field ambulances of a certain corps 14 per cent. were infested (May, 1917).

I have no reason to believe that the condition of these men was otherwise than typical of the general condition of troops in the forward areas at these times. As the result of a meeting with me, in which the louse problem was discussed, Lieutenant Seaton took special pains to investigate the condition in regard to crab-lice of the men of a brigade of British artillery to which he was attached as medical officer. About the middle of September, 1918, he kindly gave me his report. He had physically inspected 850 men while they were on duty in the gun-pits and wagon-lines in the Ypres salient, and found the total proportion of men infested was 35 per cent. This result was based upon observations as to whether crab-lice or nits or both were present on the pubic hairs. Lieutenant Seaton also detected body-lice (*Pediculus humanus* var. *corporis*) co-existing with crab-lice, but was of opinion that the majority of cases were "crab" infestations. Where nits alone were found on the hair he had not taken any steps to ascertain to which species they belonged or whether they were alive or not. He had not classified the cases in relation to their degrees of infestation. To many this result will be somewhat surprising.

The Degree of Infestation of Combatant Troops at various times during the Campaign.

For purposes of comparison the following table, compiled in October-November, 1915, and published in a previous paper[1] is inserted:—

Proportion of men—		Proportion of men—		
Without any lice	4·9%	With 30-129 lice	11·2%	
With 1-9 lice	41·9%	„ 130-349 „ ..	4·9%	7·7% d.c.
„ 10-19 „	19·6%	„ more than 350	2·8%	
„ 20-29 „	14·7%			

d.c. = Dangerous carriers.

In order to test an insecticidal powder a certain division was visited in a rest area during May, 1916; the clothing of 85 men from three different regiments was examined and gave the following result:—

Proportion of men—		Proportion of men—	
With 1-10 lice	67·0%	With 51-100 lice .	15·3%
„ 11-50 „	10·5%	„ over 100	7·0%

During the years 1916 and 1917 I noted the condition of garments on many other occasions whilst engaged for more or less protracted periods at various [illegible] In the northern sector on the testing and stan[illegible] methods of disinfestation. The work was at divisional baths and at the large corps disinfestor at Poperinghe. Other duties prevented me from repeating my methods for obtaining data such as cited above, but I observed sufficient to convince me that these two results would still hold good. My last experiences occurred at a general hospital at a base towards the end of the fighting in October–November, 1918.

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[1] Peacock, A. D.: The Louse Problem at the Western Front, Brit. Med. Jour., May 27th and June 3rd, 1916, and Journal of Royal Army Medical Corps, July, 1916.

[2] A. D. Peacock: Op. cit.

[3] Nuttall, G. H. F.: Combating Lousiness among Soldiers and Civilians, Parasitology, 1918, vol. x., No. 4.

During the pursuit of a research on the relation of lice to trench fever I examined the clothing of ten men admitted sick from an adjacent machine-gun depôt. In one case only no lice were found, but there were many hundreds upon another. The lousiness of the remainder varied from 1 to 15 with an average of 6·7. The number of cases examined was certainly small, but, on the other hand, they were not specially selected. Such a condition, however, should not have existed in a highly disciplined depôt provided with a large and efficient disinfector.

I also examined the condition of the clothing of the men who had been wounded in the heavy open fighting of that period. The men, who belonged to diverse regiments and divisions, had usually spent two or three days in the train before reaching the hospital, and still wore their compaign-ing clothing. Rapid examinations of their garments were made when they reached the disinfector, and invariably showed that very few cases, if any, were louse-free, while many were highly verminous. On one occasion 34 shirts were examined more carefully and showed 11 (34·0 per cent.) louse-free, 13 (37·0 per cent.) with a few lice, while 10 (29·0 per cent.) had varying numbers of insects—50 to some hundreds—upon each of them. This, it should be remembered, resulted from the inspection of one kind of garment only. Repeated visits paid subsequently to the disinfector and more cursory examinations of the garments indicated the same state of affairs. I did not consider it necessary at these latter examinations to go into minutiæ, as my experience in such matters convinced me that the one result already mentioned was sufficiently representative.

These instances show that the pedicular condition of the combatant troops in France at the conclusion of the fighting in November, 1918, was no better than it was in November, 1915, when I obtained the first figures in regard to lousiness. In order to understand how this condition of affairs came about a brief outline of the main features of the anti-louse compaign among the British troops in France may not be without interest.

Salient Points in the History of Disinfestation at the British Western Front.

In planning an anti-louse campaign the first condition to create was a general belief that the louse could be beaten. But among combatant troops of all ranks the fatalistic tradition that the louse is an objectionable but natural and unavoidable fact of war dies hard, and, in the light of the preceding notes, it would seem that the tradition should still hold. But it holds not because the louse has defied investigation by the entomologist or because the rationale for its extermination was never outlined, but because the sound and proved suggestions of research were not followed up in the grand manner. Investigation made it perfectly plain that the louse was not endowed with occult powers, and anyone who followed the course of disinfestation experiment in France and England, and also the literature of the subject, could see that sufficient work had been performed to warrant the initiation of a bold anti-louse campaign at the beginning of 1916. But when convincing experimentation is not backed up by the application of its teachings, instructional work among lousy troops becomes counsel of perfection, and there is little hope of creating the will to defeat the insect enemy. Of course the most effective event, which would have startled the authorities into the necessary activity, would have been an epidemic of typhus at an early date in the campaign. Fortunately, perhaps, this never eventuated, and the menace of typhus as one argument for disinfestation was never of value. The discomfort of lousiness, its effect on men's rest and sleep, and the resultant depression of their physical fitness were never considered poignant reasons for disinfestation, while the more apparent effects of skin diseases, directly and indirectly traceable to lice (as well as the scabies mite) did not make sufficient appeal.

We may now follow the course of the anti-louse campaign, dealing first with the instructional side and then with the experimental. But before doing so I should like to pay tribute to the immense amount of work performed at home by Mr. A. W. Bacot, of the Lister Institute of Preventive Medicine, and Professor G. H. F. Nuttall, F.R.S., of the Quick Laboratory, Cambridge, on the problem, both of whom have assisted me many times. Their influence can only be appreciated by those who took active part in the anti-louse campaign.

(*a*) *Instructional.*—Very little organised instructional work was carried on in France until 1916, when, subsequently to the publication of various articles in the scientific journals, the War Office issued a pamphlet on the louse problem on the Western front. During the winter of 1916–17 army and corps schools of sanitation for medical officers were established, where weekly lectures on the louse problem were given as part of the curriculum. Later similar schools were instituted for non-commissioned officers and men engaged in various services on sanitary duties. In May, 1918, a "Circular Memorandum," a useful brochure on disinfestation, was issued by the Director-General of Medical Services, and a revised edition appeared in August. The practical result of these publications and lectures is difficult to assess. Ideas were disseminated and interest created, but little was accomplished which directly affected the welfare of the fighting soldier up the line. For instance, to the regimental medical officers who attended the schools, men with a thousand other regimental cares, the problem of disinfesting their men was beyond them, as they were totally unprovided with apparatus. Even had they possessed any, such as flatirons, or improvised any, as certain officers of my acquaintance did, the conditions permitted such very limited opportunities for their use that little could be accomplished.

(*b*) *Experimental.*—Consideration of the part played by "insecticides"—palliatives at the best—need not detain us long. Of the many preparations applied to the clothing and body only one emerges as promising—naphthalene. During 1914 and 1915 tests with N.C.I. powder (naphthalene 96 parts, creosote 2, and iodoform 2) showed fair success, but before a routine for its issue and use could be established the supplies failed and all subsequent efforts to obtain naphthalene in large quantity failed. I understand that the reason for such was that the crude product from which it was obtained was required in the manufacture of explosives. Various other products were tried, but were never of any particular value.

The arrangements for the bathing of troops and the disinfestation and laundering of their underclothing in the front areas, though not quite adequate, were generally most creditable, but there still remained the great problem of the disinfestation of outer garments. This was absolutely essential, as the infested khaki and cardigans were among the main sources of louse dissemination; in any routine, if it was to be successful, the salient fact could not be ignored that *all* the soldiers' clothing required repeated disinfestation at frequent intervals.

About the middle of 1915 and for a long period afterwards the usual establishment of disinfestation apparatus per division rarely exceeded one "Foden Thresh" and perhaps two horse-drawn "Threshes." These machines barely served to disinfest the underclothing alone, and a great deal of energy was also dissipated by their being used for blankets, which were minor sources of infestation. Occasionally local conditions were favourable, as at the well-known cloth factory at Nieppe, Armentières. Here, during the summer, autumn, and winter of 1915, one of the huge dye-vats, instead of being used as a bath, was converted into a successful steam disinfestor by the authorities of the 50th Division. Khaki clothing was thrown into it, the lid lowered, and steam turned on from the main pipe which heated the other vat baths. Such adaptations, however, of necessity were the exception in the front area. About this time, too, failing the provision of large appliances, attempts were made at divisional baths to disinfest the khaki by ironing. This method, which was abandoned by the summer of 1916, failed because of the disproportionate amount of space, labour, and expense involved.

Early in 1916, in connexion with their bath and laundry at Neuve Eglise, the Canadian Corps introduced steam disinfesting chambers for treating the outer clothing, and similar chambers were constructed later at Dranoutre and Westoutre. The chambers at Neuve Eglise were heated by steam generated by an old local threshing machine, but as the idea became more generally exploited vertical boilers were provided. Among the British corps this idea made slow headway, and there was an absence of standardisation of disinfestation methods as well as a lack of coördinated effort. This could be witnessed when divisions were "changing over," as time and again the new personnel from the incoming divisions, after taking over the established bath and disinfestor, allowed a successful routine to lapse owing to unfamiliarity with the idea of disinfestation, let alone with its operations.

At the beginning of 1917, at a laiterie near Poperinghe, a large steam plant of five chambers was erected as a corps disinfestor, the steam being supplied from the two large horizontal boilers of the adjacent laiterie. The main object of this large effort was the disinfestation of the outer clothing of troops attending the three corps baths in Poperinghe. In this scheme the clothing was returned to the troops after 24 hours, the men meantime being accommodated with special suits from the corps' stock. In addition, troops were brought to the laitèrie and all their clothing treated while they waited in bath gowns in marquees near by. Owing to an attack of trench fever and removal from that area I was never able to obtain figures to illustrate its beneficial effects upon troops which repeatedly used the institution.

Such efforts as these in the front areas undoubtedly did a great deal of good, but in a sporadic fashion, because three factors operated which prevented their being exploited to the full. These factors were (1) insufficiency of disinfestors, (2) consequent inability to give adequate repetition treatment to the same troops, and (3) as instanced above, lack of general understanding of the idea and methods of disinfestation.

It is a curious fact that in my experience the rest areas which, one would think, were the ideal places for the wholesale cleaning of troops were almost totally unprovided with plant, while the regimental routine did not provide for "resting" troops any opportunity for a thorough de-lousing and clean-up.

In May, 1917, I was recalled to England, and in collaboration with Captain J. Taylor Grant, R.A.M.C. (T.F.), was instructed to work at various aspects of disinfestation, the principal objects being (1) to ascertain the value of sulphur dioxide generated by the Clayton gas apparatus as a method of disinfestation, and (2) the devising of a portable apparatus for hot-air disinfestation. The results of the greater proportion of this work are incorporated in Professor Nuttall's "Combating Lousiness among Soldiers and Civilians."[3] About this time Captain Jacobs, R.A.M.C. (T.F.), and Major H. Orr, C.A.M.C., were working out their hot-air disinfestors in France, which resulted in both types being completed early in 1918.

Comparison of Types of Disinfestor.

Now in most of the appliances mentioned heretofore there is an obvious drawback; they are only of service in stationary warfare. My experience of the conditions in France and also of the experimentation carried on there and in England decided me (in common, I dare say, with others) that the exemplar of disinfestors for campaigning still remained to be evolved. The great qualification demanded of it is suitability for both stationary and mobile warfare, but before making suggestions on this point it would be well to summarise the qualifications of the most useful devices in use during the war. Full details of their value are quoted in Professor Nuttall's work.[3]

Apparatus.	*Advantages.*	*Disadvantages.*
Horse-drawn Thresh. Foden steam lorry Thresh.	Mobile; efficient.	Heavy; compared with Canadian steam disinfestors, uneconomical in working; unsuitable for leather articles;* somewhat expensive.
Steam Canadian disinfesting chambers.	Efficient; economical.	Stationary; unsuitable for leather.
Hot-air chambers—Jacobs or Orr types. Hot-air chambers—Orr-Grant type.	Efficient; economical; suitable for leather.	Stationary; the Orr and Orr-Grant types limited to one type of fuel—coke.
Canvas hot-air hut; Grant-Peacock type.	Mobile; cheap; readily erected.	*Limited to one type of fuel—coke.*

* Leather strappings on riding breeches are a nuisance in disinfestation. They are not really essential, and cloth strappings can be substituted.

Towards the end of 1917, if not before, I forwarded the suggestion that two suitable types of disinfestor could be constructed on the following simple lines:—

Type A, for transport on a horse-drawn wagon.—A large box, asbestos lined, about 5 ft. long, 3 ft. broad, and 4 ft. high, capable of holding 20 suits of three garments (tunic, trousers, and cardigan), or equivalent load in other garments, &c., modelled after the pattern of the Canadian huts; steam to be led from a small, strong, vertical boiler capable of generating it at 15 pounds pressure.

Type B, a steam-wagon disinfestor.—Two boxes as indicated in Type A, fitted on a steam lorry, steam to be obtained from the boiler of the lorry. These types would combine the good points of the Thresh machines and the Canadian steam chambers. They would have the mobility of the former with the additional advantages of being cheaper, lighter in weight, far more economical in steam, and capable of using coal, coke, or wood. I would suggest that the establishment of such be one of Type A per battalion, pro rata for other troops, while the larger type could be employed at baths, large hospitals, and concentration camps. They could be incorporated into any schemes of bathing and even, if necessary, their steam utilised for the heating of bathing water.

Steam-train disinfestors.—In view of the great success attending what has been called "Hunter's train" in the East, another idea suggests itself—why not use a lighter type for narrow gauge lines which tap country not accessible by larger plant? Of course, the type of mobile disinfestor employed would depend upon the nature of the country and campaign; obviously, for example, trains would be most suitable for desert warfare.

Conclusion.

This very brief account of the antilouse campaign at the Western front may be brought to a conclusion by reference to one of the most interesting and remarkable events in its history—in March, 1918, trench fever was proved a louse-borne disease. This provided a most convincing and stimulating argument for disinfestation, but the new spirit moved too late. The German offensive caused the destruction of much of our plant, while our counter-offensive and mobile warfare precluded the use of the surviving apparatus.

To those of us who endured lousiness and who worked on the experimental side of the problem the foregoing history brings melancholy reflections.

ACUTE PUERPERAL SALPINGO-PERITONITIS.*

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A QUICK succession of cases presenting the same or similar conditions affords a special opportunity for study and comparison; hence I venture to bring forward a record of personal observations of a disease of which I have been fortunate enough to see and treat several examples during the last three years.

A word is necessary to explain the name I have adopted for a well-known condition. "Salpingitis" is not enough, while "salpingo-oöphoritis" is often wrong, especially early in the disease; but "salpingo-peritonitis" lays due emphasis on the essential peritoneal factor in the pathology and treatment. Further, I am chiefly concerned with acute salpingitis, occurring in a previously healthy tube, which appears to me to be more common than is generally supposed, and which gives rise to the characteristic clinical picture which I wish to describe.

If the condition is an exacerbation of previous tubo-ovarian disease such chronic changes must of necessity have been slight for pregnancy to have occurred, and any such exacerbation largely takes on the form of an acute suppurative salpingitis of recent origin. Acute puerperal salpingitis differs in so many aspects from that of non-puerperal origin, particularly as regards the physical signs and treatment, that it should be considered as a separate disease.

Anatomical Conditions in the Puerperal State.

The general physiological state, together perhaps with an altered resistance to infection, are important factors distinguishing the puerperal from the non-puerperal woman, but the fundamental difference which is responsible for its individual consideration is anatomical; it lies in the peculiar anatomical conditions of the abdomino-pelvic organs during the first fortnight after labour. The tubes are essentially abdominal, not pelvic, organs; and they are usually affected before they have reached their normal positions in the pelvic cavity. By the end of the first week, when symptoms generally manifest themselves, the tubes lie at or just above the pelvic brim, in relation with the iliac vessels; while the ovaries are placed below, just within the pelvis, and applied to its lateral walls. The former are, therefore, outside the limitation of the pelvic basin, and are surrounded by coils of small intestine, which considerably alters the results following escape of pus from the abdominal ostia, as compared with a similar tubal condition where the tubes are lodged within the pelvic cavity. In the latter case, as is well known, the resulting abscesses are strictly circumscribed in the pouch of Douglas, and the whole inflammatory area tends to be roofed in and delimited by the omentum or small intestine. General extension of the infection into the abdominal peritoneum is unusual, and the symptoms and signs are correspondingly localised. Resolution is a frequent result; the patient recovers without operation, and may regain a fair state of health. But in puerperal salpingitis conditions are different. The abdominal situation of the tubes is the cause of an abdominal as opposed to a pelvic peritonitis, inasmuch as it allows the outpouring of pus amongst the coils of small intestine at or just above the level of the sacro-iliac joint; herein lies the essential difference between the two varieties of salpingitis, a difference which is manifest as much in the physical signs exhibited as in the treatment required. Further, the hyperæmic condition of the uterus and appendages during the puerperium will also have its share in modifying the gravity of the symptoms and the rapidity of their course.

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* A paper read before the Section of Obstetrics of the Royal Society of Medicine, on March 3rd, 1921.

The involution of the uterus appears to be arrested in all these cases at a point at which the fundus extends about half-way between the symphysis and the umbilicus. This may be due to the presence of infection within its cavity or possibly to a neighbouring active suppuration in the tubes, but the important result is that the tubes are maintained at their high level at or above the brim of the pelvis for a considerable time after the inception of the disease. Moreover, the large uterus nearly fills the pelvic cavity, and affords a fixed point comparatively high up in the abdomen proper for the development of adhesions with other parts.

Morbid Anatomy in the Acute Stage.

The morbid anatomy is well seen when operation is undertaken in the acute stage. The tubes are seen to be greatly congested and œdematous, especially in the ampullary portion, while the fimbriæ are protruding and the ostium is discharging pus. The isthmus may appear to be quite normal or swollen to a less extent. Any adhesions at first are light and easily separated, often being due to flakes of recent lymph and chiefly involving adjacent coils of small intestine and part of the cæcum or pelvic colon. The abdominal ostium frequently opens into a small abscess cavity walled in by the adherent coils and situated at first just in front of and above the sacro-iliac joint. Later, when suppuration has extended, it tends to pass forward along the brim of the pelvis towards the uterine cornu and is shut in from above by the omentum, or the pus may even come into relation with the abdominal wall, and I have seen eruption of the abscess through the parietal peritoneum into the layer of fat beneath the rectus.

The Course of Puerperal Salpingitis.

It is noteworthy that the pouch of Douglas early becomes obliterated in nearly every case by a light adhesion of its anterior and posterior walls, extending to the depths of the fossa, and effectually preventing the formation of a deep abscess. This is a point of considerable importance both as regards the physical signs and the technique of the operation, for it is in sharp contra-distinction to the state of affairs which exists in ordinary non-puerperal salpingitis, where inflammatory collections appear at the lowest part of the pouch. In puerperal salpingo-peritonitis invasion of the pouch of Douglas is secondary to the extension of pus from the primary focus at the ostium of the tube as it burrows from above downwards along the postero-lateral wall of the pelvis. It is only at the delayed operations that the fossa is found to contain an abscess, and then not in its depth, but spreading from the infected ovary. Similarly the utero-vesical pouch may be effaced in whole or part by adhesion of the bladder to the anterior uterine wall.

A secondary condition sometimes found in cases operated on at a later date is a cellulitis of the upper part of the broad ligament which has spread forward from the meso-salpinx to involve the tissue beneath the round ligament. Under these circumstances the upper part of the broad ligament becomes an indurated dome-shaped mass limited behind by the tube, and in front by the round ligament, presenting an upper triangular surface having its apex at the uterine cornu. Later, the infection affects the cellular tissue in front of the round ligament, which then takes up a position riding over the convex surface of the cellulitis. It is common also for the inflammatory process to extend over the pelvic brim into the iliac fossa, and also along the infundibulo-pelvic ligament as in ordinary parametritis. A mild degree of œdema is common in the meso-salpinx in the earliest cases, but it may be the forerunner of an extending cellulitis, as I have stated. When suppuration occurs here it tends to point just external to the uterine cornu in the angle between the round ligament and the tube. It is this which sometimes accounts for the firm adhesion of the uterine cornu to the omentum or abdominal wall, and furnishing an important physical sign in the shape of a localised point of exquisite tenderness just external to the lateral edge of the uterus.

Suppuration of the ovary can arise in three ways. Firstly, it may be a late result of acute purulent salpingitis after adhesion with it has occurred, as is commonly seen in the gonococcal cases; secondly, it may be an exacerbation of an old condition of salpingo-oöphoritis; and thirdly, from the wall of the gut by direct extension. This is the only explanation I can give of a case I recently operated upon. The tubes in this patient were perfectly normal, lying just above the pelvic brim, but the left ovary, which was not the subject of old inflammation or adhesions, was fixed by its convex border to the pelvic colon, which at this point was indurated and œdematous. On separating the two a small collection of about half a drachm of pus was liberated. Evidence of the gut as a direct channel of infection is also supplied by another case of suppurative salpingo-peritonitis where *Bacillus coli* was grown only from the peritoneal abscess and not from the tube or uterus, which yielded streptococcus and gonococcus respectively. The spread of pus infection to the normal ovaries is a serious matter, as, short of removing the organ, it is difficult to eradicate when once established. Moreover, in these cases ovarian infection is the starting point of a descending suppuration. The first mass that can be felt by vaginal or rectal examination is the infected ovary surrounded by adherent coils or omentum. From this initial peri-ovarian abscess pus spreads downwards to form a collection in the pararectal fossa. Later the ovary can be felt as an enlarged mass, a fact due to its containing an intra-ovarian abscess.

The subsequent morbid anatomical changes can be studied during the delayed operations. Then it is seen that the chief change has been the formation of dense adhesions involving all the pelvic organs, together with the omentum and intestine. Especially are the tubes and ovaries firmly bound down to the large uterus and pelvic brim. Suppuration tracks in all directions, causing large peritoneal abscesses, and the ovary may be converted into a large pus sac. General suppurative peritonitis appears to be rare as the result of purulent salpingitis, though we know that it is not uncommon in trauma of the uterus in labour or abortion, and it is sometimes seen in septicæmia.

The bacteriological examinations of my cases have been too few to justify any conclusion, but four cases have all grown streptococci, with gonococci once, and *Bacillus coli* also.

Cause of the Disease.

We know that the disease is due either to extension of organisms along the tube from the infected uterus or to an exacerbation of previous salpingo-oöphoritis, which must of necessity have been only slight in degree or unilateral. That the former does frequently occur is certain, and can be easily understood; but I believe that the disease is sometimes caused by organisms that have lain dormant for a long time in otherwise perfectly normal tubes, and the following case proves this.

Some two years ago a patient, at the commencement of labour, underwent a deliberate Cæsarean hysterectomy by Mr. C. W. G. Bryan at St. Mary's Hospital. The tubes were divided and ligatured in the ordinary way at the uterine cornua. The convalescence was normal and undisturbed till the end of a week, when she developed signs of acute lower abdomen illness. We reopened the abdomen together, and found both tubes in a state of acute purulent salpingitis, leaking pus into the usual peritoneal abscess cavities situated around the abdominal ostia. The tubes showed absolutely no trace of old adhesions, and the fimbriæ were separate and protruding around the ostium as a result of œdema. Moreover, Mr. Bryan assured me that there was at the first operation no sign of old salpingo-oöphoritis.

This case proves conclusively that the disease can arise entirely independently of post-partum uterine infection, for here there was no uterus at all, and also that potentially dangerous microbes can lie quiescent in an apparently normal tube. Incidentally I might add that I believe the tube can exercise an inhibitory effect on microbes within its lumen at ordinary times, for I have succeeded, for instance, in growing streptococci from the peritoneal abscess cavity around the tube and from the uterus, but have failed to cultivate a microbe from the pus within the tube in the same patient. But during the puerperium this defensive mechanism—if there be any, in fact—appears to deteriorate and allow an outburst of organic growth previously held in check.

Symptoms and Signs.

There is little noteworthy about the symptoms, for they are those commonly complained of in an acute lower abdominal peritonitis. A few points, however, may be emphasised. As in acute appendicitis, pain precedes everything and is rapidly followed by a slow rise of temperature to reach 102° or 103° F. on the third or fourth day, with a pulse following suit. Vomiting is not a feature in the early cases. An interesting and indicative symptom occasionally is retention of urine or painful micturition, and is specially seen in cases where a cellulitis has developed secondarily to the salpingitis involving the upper part of the broad ligament and extending forward beneath the round ligament to the neighbourhood of the bladder. If the patient is not operated upon there is a persistent fever, with chronic pain and wasting; she slowly goes down hill, develops cardiac weakness, and is bedridden.

The physical signs require more detailed description.

In the early stages the abdomen is not truly rigid and there is nothing but tenderness fairly accurately localised to a point about 2 inches below and external to the umbilicus—i.e., over the posterior part of the lateral brim of the pelvis. The fundus uteri can be felt rising about 2 inches above the symphysis. It may or may not be tender at first, but later becomes so, especially if adhesions become attached to the cornua or if a secondary cellulitis develops. After a week or more it is not unusual to find a mass in the hypogastrium to one side of the fundus uteri. Excepting cellulitis, which is felt immediately above Poupart's ligament, such a tumour is nearly always due to adherent omentum and coils of distended gut. Later as suppuration spreads there is true rigidity and tenderness of the whole hypogastrium, with extension upwards over the ovarian veins, if thrombosis of these vessels has taken place.

Per vaginam the signs are difficult to appreciate, for the primary changes are not in the pelvis, and the gentlest manipulation causes pain. The uterus can be felt enlarged, with limited mobility soon developing, and later complete fixity. In the first few days it is symmetrically disposed in the pelvis, but later it may be displaced laterally by secondary cellulitis, and the displacement is towards the side affected. During the first week there may be little or nothing felt in the lateral fornices, but later an indefinite tender mass can be felt very high up in the postero-lateral region, which is largely made up of the ovary surrounded by adherent coils enclosing pus. The accessible part of Douglas's pouch seldom, if ever, contains anything, though per vaginam the posterior portion of the lower part of the uterine body may give the impression of a tumour, because it tends to bulge backwards immediately above the cervix. By far the best palpation of the pelvis is gained by rectal examination. High up on one or both sides the early composite swelling can be made out fairly early, becoming larger and more distinct as time passes.

A swelling high up in the broad ligament disturbing the position of the uterus is probably a mass of secondary cellulitis.

Treatment.

The treatment of this disease is, perhaps, the most interesting part of its discussion. Whether or not operation should be done is a question less contentious than *when* it should be done. In the great majority of these patients there is no doubt that operation is necessary, for the condition is essentially one of suppurative peritonitis, which, unless relieved, will show no tendency to undergo spontaneous resolution. The condition is totally different, as we have seen, from the ordinary acute gonococcal salpingo-oöphoritis where the whole process is confined within the limits of Douglas's pouch, and where also experience has shown that almost complete resolution is possible in the majority of cases. Moreover, the peccant organism in puerperal salpingitis is frequently a streptococcus, which the peritoneum is far less able to tolerate and suppress than the gonococcus. Further reasons are that the tubes being subinvoluted, soft and distensible, are more liable to develop into pus sacs, while the involution of the uterus is permanently delayed, probably laying the foundation of a chronic hypertrophy. But the time at which operation should be performed is the point which admits of difference of opinion.

My own view is that puerperal salpingo-peritonitis should be operated upon as early as the diagnosis is established, for the following reasons:—

1. If radical treatment is delayed the general condition of the patient rapidly deteriorates. There is loss of flesh and strength, amounting later to emaciation, with the danger of cardiac failure following an operation performed as a last resort.
2. The ovaries, which are at first free from suppuration, are prone to develop small abscesses, and later become disorganised. When once the ovary has become the seat of a pus infection it is extremely difficult to eradicate it without removing the whole organ; and if such an ovary is left in situ it forms a source of chronic pelvic trouble.
3. The adhesions become tougher with delay and more difficult to separate, involving risk to the gut, more extensive raw areas, and more time to complete the operation. Strong adhesions form a serious additional risk to the operation.
4. The tubes become thoroughly disorganised and incapable of repair. The delicate ciliated epithelium is desquamated, granulated tissue takes its place, and the walls become permanently thickened. The tube as a whole becomes densely adherent to the ovary, the uterus, and lateral wall of the pelvis. Removal of such a tube may be an almost impossible task without injury to the gut or even to the ureter, and yet if these appendages are left in situ the patient's convalescence may drag on for months or even a year with a chronic sinus and emaciation.
5. The peritoneal abscesses extend and may reach the abdominal wall, especially over the uterine cornua. In one patient the pus had actually tracked through the peritoneum and had formed an abscess in the paniculus beneath the rectus.
6. Secondary cellulitis of the upper part of the broad ligament may develop if the condition is not relieved by operation. This sometimes goes on to pus formation pointing at the cornual angle. Cellulitis is a serious extra burden for the patient, delaying the convalescence, adding fresh possibilities because of its dangerous lines of extension, tending to produce thrombosis of the ovarian veins, and liable to leave a legacy of chronic pelvic pain.

Almost any one of these reasons is sufficient, but taken together they certainly make a good case for early operation. The disease is quite different from acute gonococcal salpingitis, and the objections to early operations in this condition do not here obtain.

Operation.

The operation itself should be done with great care, and sound judgment is necessary to determine the exact procedure required by each individual case.

After the abdomen is opened and the cut edges of the peritoneum clipped to towels, the upper part of its cavity must be thoroughly packed off by gauze in the usual way. Obstructing adhesions are then separated, and the region of the abdominal ostia of the tubes is sought, as it is here that a peritoneal abscess will most likely be found. Great care should be taken not to disturb the light adhesion which has probably obliterated the pouch of Douglas and possibly also the utero-vesical pouch. The tubes and ovaries are inspected to note particularly whether the affection is entirely recent or whether there is evidence of old inflammatory trouble. In the former case the ostium will still be patent, surrounded by œdematous fimbriæ, and if the tube be gently squeezed pus will exude from its open end.

Now such a tube is a potential pus sac, but at the same time it still possesses a mucous membrane capable of restoration to a functioning condition, provided that operation is undertaken during the first few days; this point can easily be demonstrated microscopically. Therefore to leave the tube alone is to invite chronic inflammatory changes, perhaps a pyosalpinx, with a train of chronic pelvic symptoms; whereas removal of the tube at this stage is too radical a measure for an organ which is capable of complete restoration. The correct surgical treatment, I believe, lies in permanently laying open the tube in order to drain it. Scissors should be entered at the ostium and the ampulla opened up. This procedure is exactly comparable to the laying open of an ill-draining abscess cavity with the object of terminating the suppuration and preventing further damage by the continuance of a subacute inflammation set up by the presence of pus under a certain degree of tension. The ostium, while it remains patent, is incapable of affording free drainage of tubal contents, and soon, as we know, in septic infections the fimbriæ adhere and close the opening. Salpingostomy immediately destroys the tube as an abscess cavity, but does not destroy it in its capacity as a future ovum-bearing channel, provided that it is done at an early stage of the disease. Further, by checking the suppurative and inflammatory processes within the tube not only is a pyosalpinx impossible, but there is no longer a tendency for the formation of chronic interstitial salpingitis with permanent closure of the ostium and complete destruction of the ciliated epithelium.

That an acutely suppurating tube can undergo complete resolution after salpingostomy I have recently had occasion to witness.

A patient at the Willesden Municipal Hospital in whom I carried out this operation on the left side developed pneumonia and died about a month after. At the autopsy I found that this tube had completely resolved. It had shrunk to the normal size and its gutter was lying open, while it had contracted absolutely no adhesions. This was in spite of a small chronic abscess holding about half a drachm of pus between the ovary and lower part of broad ligament.

I was much impressed by this case, as originally the tube was in a condition of acute suppurative salpingitis, from which streptococci were cultivated. If, however, the tubes and ovary show signs of former inflammation and are bound down, giving no promise of ever being able to function again, they should be removed in the ordinary way. Otherwise they are liable to furnish chronic foci of suppuration and the patient's convalescence is immensely prolonged. The delayed operation—i.e., performed after two or three weeks, may be difficult and dangerous on account of the appendages being enveloped in very dense adhesions. There is now little hope of saving the tubes; in fact, it is usually necessary to remove them to ensure a reasonably quick recovery. Mere drainage of the peritoneal abscess cavity is not sufficient. Secondary cellulitis of the upper part of the broad ligament should be incised radially from the cornu between the round ligament and the tube and explored by a sinus forceps. Pus is frequently found, but if not the escape of serum and œdematous fluid materially hastens subsidence. Before closing the abdomen the suppurating areas should be drained.

Conclusions.

The general principles, therefore, in operating on acute puerperal salpingo-peritonitis are to employ conservative measures on structures in an acute condition in order, firstly, to save them, and secondly, to prevent chronic changes developing in them, but to deal radically with acutely inflamed and seriously damaged appendages in spite of dense adhesions which may be present. In this way much can be done to conserve function, to prevent chronic disease, and to provide for reasonably quick recovery to normal health.

A FURTHER SERIES OF FORTY CASES OF BONE-GRAFTED MANDIBLES.

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SINCE the publication of my earlier paper[2] I have bone-grafted 40 additional patients, bringing the total series up to 100. In the first 60 cases, a complete analysis of which I have already given, bony union was obtained in 93 per cent. In the 40 subsequent cases bony union has been so far obtained in 24, 4 are definite failures, and the remainder, nearly all quite recent cases, appear to be consolidating satisfactorily.

The operative technique has remained unchanged; the graft in every case has been taken from the crest of the ilium, fitted and securely wired into accurate end-to-end apposition with the jaw fragments by means of the "templates" described in my earlier paper. In practically every case the whole depth of the jaw has been utilised in the formation of the facet for apposition with the graft. In the case of the posterior fragment this facet has frequently measured from 1 inch to 1½ inches in vertical extent. (Fig. 1.) The graft has been fashioned of a like depth. The result is a solid reconstruction of the mandible devoid of all trace of spring, and with an "alveolar border" continuous with that of the jaw fragments. This upper or alveolar border of the graft is at first formed by the open cancellous tissue of the iliac crest. Successive observations with X rays, however, show that with exposure to the stresses incidental to the use of the jaw, this upper border becomes rounded off with a layer of compact bone.[3] Clinically it has been observed that the upper border of the graft becomes capable of bearing the direct pressure of a denture within a few months of the operation. In three cases it was possible to verify this condition of the graft, in two cases during life and in one after death.

As foreshadowed in my earlier paper, the practice has been adopted as a routine of opening the splints and allowing free use of the mandible at the second or third week after operation. In nearly all the cases the loss of bone extended beyond the standing teeth, so that this practice resulted in exposing the grafted mandible to considerable strain. The results have confirmed my earlier impression that this exposure hastened consolidation of the union. Radiograms show distinct evidence of union in the form of delicate striæ across the line of junction at the third or fourth week. By the third or fourth month radiograms, as a rule, show no trace of the line of union. This rapidity of union is entirely independent of the size of the graft. Cases 68, 71, 72, and 79 (Fig. 2) were all cases in which the loss of bone extended from the canine region well into the ascending ramus, and all showed clinical union with no trace of spring by the fourth week after operation. Three of these cases had had a bone graft which had failed to unite prior to coming under my care.

In my earlier cases I frequently split the graft, using only half its thickness, the deeper aspect of the graft consisting of open cancellous tissue, and only one layer of compact bone being present. The more complete exposure of the jaw fragments in later cases has enabled me to accommodate the entire thickness of the graft, but that the earlier practice in no way interferes either with the survival of the graft or with its rapid union with the jaw fragments is shown by the fact that Case 68 quoted above is one of the few instances in which this practice has been followed among the more recent cases. Opportunities occurred for examination of the nature of the union obtained in three cases respectively 6, 15, and 18 months after the bone-grafting operation.[4] The specimen at 15 months was obtained owing to the necessity for resecting the posterior union in order to open the mouth, the posterior fragment being so fixed by fibrous tissue as to resist less drastic treatment. The case at 18 months was a post-mortem specimen. Sections from both cases were ground on the finger. When sufficiently thin for mounting they could not be bent at the zone of union. They were stained with mallory, which has an especial affinity for fibrous tissue. The periosteal tissue on the surface of the sections is deeply stained, while the zone of union in each case remains unstained. (Fig. 3.) When viewed under the higher power of the microscope this region is seen to consist of dense bone, the lamellæ and lacunæ of which are distinctly visible. (Fig. 3A.)

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[1] A résumé of a paper read to the Surgical Section of the Royal Society of Medicine, February, 1921, when cases, radiograms, and microscopical sections were shown.

[2] THE LANCET, 1920, ii., 9.

[3] A similar architectural adaptation of stress has been described for the tibial graft in Albee's operation for Pott's disease.

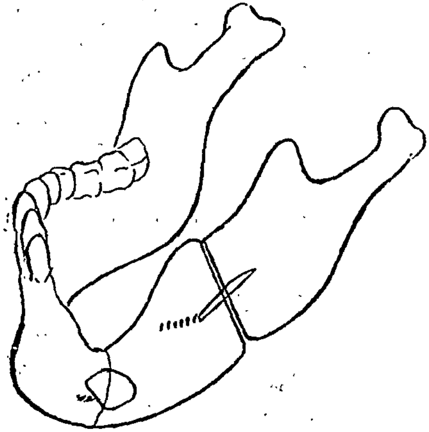

FIG. 1.—Diagram taken from an X ray five weeks after operation. Four months later all trace of the line of union had disappeared.

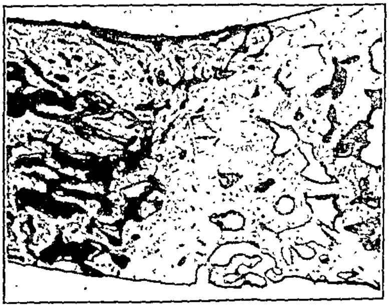

FIG. 3 (Case 40).—Ground section of bone across union of graft and posterior jaw fragment 18 months after the bone-grafting operation. The deeply-stained periosteal tissue is sharply contrasted with the absence of fibrous tissue in the zone of union. (The demarcated area A appears enlarged below.)

I did not commence bone-grafting for the repair of the fractured mandible until the end of 1918. To this circumstance is, perhaps, due the very large proportion of the cases—well over 80 per cent.—in which the loss of bone extended beyond the standing teeth, or even involved the ascending ramus. To the same cause is due the considerable number of cases in which one, or even two, bone-grafts had been inserted and had failed to unite prior to the patient coming under my care. In only one of these cases have I failed to obtain bony union. In this case there had been two previous bone-grafts; the loss extended from the canine region almost to the condyle, and the graft I inserted was fully 4 inches long. Infection followed the operation and the graft was subsequently removed.

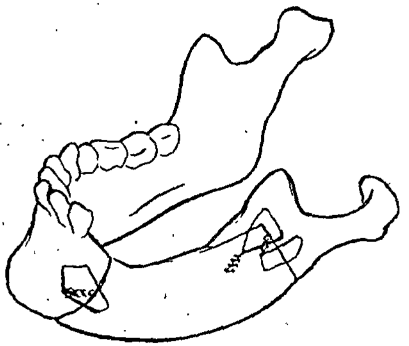

FIG. 2.—Diagrammatic representation of mandible of a Chinaman, who proved a very unruly patient. He removed his stitches with a razor a few days after operation, and soon afterwards removed his splints; nevertheless his graft was quite firm after the fourth week. He has since returned to China. This was one of the cases referred to in which a previous bone-graft had failed.

Nothing has contributed more to the great progress reconstructional oral surgery has made during the last few years than the intimate coöperation which has been established between the operating and the dental surgeon. All the cases have been operated upon at the Queen's Hospital for Facial Injuries, Sidcup. Throughout the work I have had the advantage of the expert advice and encouragement of Sir Frank Colyer, the consulting dental surgeon to the hospital. For the great majority of the cases the dental and prosthetic treatment has been carried out by Mr. B. Mendleson, to whose active and whole-hearted coöperation I stand much indebted. The sections showing the nature of the union obtained have been very kindly made for me by Mr. James T. Carter.

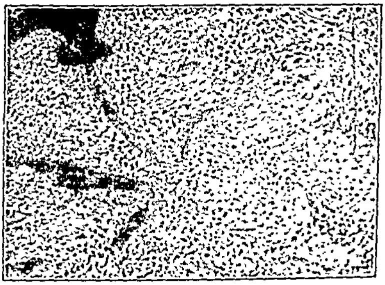

FIG. 3A.—The demarcated area in Fig. 3, shown at a higher magnification; the lamellæ and lacunæ of the dense bone are clearly seen.

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[4] The section at six months was from a decalcified specimen, and was described in my previous paper.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

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TWO CASES OF GANGRENE OF THE LUNG

COMPLICATING INFLUENZAL PNEUMONIA.

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AND
F. B. SMITH, B.CH. CANTAB.

THE account by Dr. Cronin Lowe in THE LANCET of Jan. 15th of three cases of severe colitis found post mortem after influenza recalled the following two cases of gangrene of the lung seen by us during the same influenza epidemic. In view of the similarity of one form of this disease to a true septicæmia such a complication might be expected to result from an embolus. At the time—i.e., June, 1918–March, 1919—no instance of pulmonary embolus recorded by others came to our notice, and during the two years subsequently a search through a considerable portion of the literature has failed to show any reference to the condition. The reason for recording the cases is not that we think them very unusual, but in order to ensure that the picture of the disease may be made as complete as possible. One case was diagnosed before death; both were fatal.

CASE 1.—Lieutenant ——, aged 23. Admitted Oct. 21st, 1918, from transport ship after reporting sick six days previously. Irritable dry cough. Temp. 101·4° F. Headache, sore throat; copious, blood-stained purulent sputum for last 24 hours. Poor air entry over whole of chest, with small localised area of broncho-pneumonia in the left lower lobe. 23rd: Pyrexia subsided by lysis; P. 60, R. 20, chest remarkably clear of signs; patient merely exhausted. 27th: Allowed to sit up in easy chair. 29th: While sitting up in chair at 6 P.M. sudden acute attack of pain in the left lumbar region. The patient likened this pain to lumbago; its sharp stabbing onset was very noticeable. No physical signs obtained. Chest still clear. 30th: T. 100, P. 90, R. 26. Examination of chest, abdomen, and urine negative. No cough; patient could lie only on the right side; abdominal muscles quite rigid. 31st: Hæmoptysis of about 20 oz. of dark blood, with striking relief of pain in the side; diagnosis of pulmonary embolus made. Nov. 2nd: Sputum copious, muddy, limpid, no mucus, very offensive; small effusion of fluid left base; sputum showed no pus cells, appeared to be a pure culture of a diplo-streptococcus. 8th: Left chest explored, fluid withdrawn having the same characteristics as the sputum.

Operation.—This lasted half an hour under chloroform and ether. A portion of the seventh rib was excised; incision opened directly into a large gangrenous cavity in the deep substance of the lower lobe of the lung, apparently well shut off from the upper pleural cavity. T. subnormal, P. 100, R. 28. Wide drainage. 12th: Gaseous cellulitis of chest and loin; extensive incisions. Carrel-Dakin's tubes. Impossible to apply local antiseptics to the chest cavity on account of threatened asphyxiation of the patient by any fluid introduced. 18th: Extension of the cellulitis to the buttocks; lobar pneumonia right lower lobe with clear pleural effusion. 21st: Death.

Post-mortem findings.—Heart: Excessive clear fluid in the pericardium. Right ventricle completely filled by organised ante-mortem clot extending continuously through the pulmonary valve along the artery beyond its first bifurcation. Right lung: 10 oz. turbid pleural effusion. Dense fibrinous pleural membrane. Lower lobe shows massive consolidation commencing to resolve. Left lung: Upper half of the upper lobe normal. The rest of the lung wholly destroyed by a stinking, gangrenous cavity with bronchioles, arteries, and connective tissue strands necrosed, and bridging the cavity, which is firmly shut off by adherent pleura from the upper half of the pleural sac. The upper division of the artery to the upper lobe is patent, lower division completely occluded by an extension of the organised clot from the heart, a quarter of an inch in diameter. Artery to the lower lobe completely occluded by an extension of the organised clot from the heart, its termination visible in the wall of the cavity, and half an inch in diameter.

CASE 2.—A sergeant, aged 23. Admitted on Oct. 3rd, 1918, off transport ship third day after reporting sick. Well-marked broncho-pneumonia left lower lobe. 8th: Pyrexia gone by lysis. 14th: Pleural effusion left side. 15th: Thin pus withdrawn; excision of part of seventh rib; wide tube drainage. 18th: Discharge ceased; later in the day a sudden attack of pain in the left side, with discharge of serous limpid fluid through the drainage-tube. 19th: Fluid draining from the chest in a surprisingly large amount; pyrexia high; general condition worse. 25th: Heart failing; high "septic" fever; profuse sweating for last six days; loud amphoric respiratory murmur over whole of left chest. 27th: Death.

Post-mortem findings.—Right lung normal. Left lung upper lobe apsed. Pleural membrane thick and fibrinous, with some localised pockets of pus adjacent to the pericardium and on the left surface of anterior mediastinum. Lower lobe, gangrenous stinking cavity 3 by 2 inches in dimensions, bounded below by the diaphragm and involving one-third of the mass of the lobe. The rest of the lobe shows resolving massive consolidation. Embolus or thrombus to account for the gangrene could not be found. Heart: Apparently normal; no ante-mortem clot.

Remarks:

It may be that Case 2 was an abscess of the lung of other primary origin than an embolus, but the type of lesion post mortem certainly suggested embolic origin in spite of the fact that an occluded artery could not be demonstrated. These two cases occurred amongst a series of 49 other post-mortem examinations made during the course of the epidemic. In two other of these cases there were present small multiple abscesses, not gangrenous in type. In the comprehensive account of the disease and its pathology given by Drs. A. Abrahams, N. Hallows, and H. French in THE LANCET of Jan. 4th, 1919, no mention is made of pulmonary embolism.

A NOTE ON

SPLENECTOMY FOR TORSION OF THE SPLEEN IN A CHILD.

BY A. H. SOUTHAM, M.A., M.CH.OXON., F.R.C.S.ENG.,
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TORSION of a wandering spleen in a child, followed by the operation of splenectomy, is a condition not often met with. The successful result makes the following notes worthy of publication.

J. H., a boy, aged 6 years, was brought to the Manchester Royal Infirmary on Dec. 31st, 1920, with a diagnosis of acute appendicitis. His mother stated that he had been seized with sudden abdominal pain the previous evening at 10.30 P.M. whilst he was in bed, and had been vomiting continuously ever since. He had never complained of abdominal pain previously. On examination he was found to have a temperature of 100° F., and a pulse of 120. The whole abdomen was held very rigid, with tenderness and rigidity most marked over McBurney's point. I decided to perform laparotomy immediately. When under the anæsthetic, a large and freely movable tumour was palpable in the right iliac fossa. The abdomen was opened through the right rectus muscle and the tumour was found to be an enlarged and congested spleen. The organ was without difficulty delivered through the incision, and the pedicle was then seen to be twisted on itself two and a half times. The pedicle was transfixed and ligatured in two halves, a second ligature encircling the whole pedicle. The pedicle was then divided, distal to the ligatures, and the spleen removed. The abdominal incision was sutured in layers. Convalescence was uneventful, and the child was discharged from hospital on Jan. 19th, 1921. The spleen was found to weigh 14 oz.—three to four times the usual weight of the organ at this age.

A blood film, taken immediately after the operation was completed, showed a slight polymorphonuclear leucocytosis, but otherwise no change from the normal. A second film, taken the day before his discharge from hospital, showed a leucocytosis with some diminution of the colour index. Microscopical examination of a section of the spleen showed extreme congestion of the organ; no other pathological changes were to be found.

The cause of the enlargement of the spleen is difficult to determine. The child showed no evidence of rickets or congenital syphilis, and the other abdominal organs appeared at the operation to be normal in size and position. The condition may have been congenital in origin or it may have arisen as a gradual process, slight torsion of the pedicle causing congestion of the organ and a slow increase in size, a sudden extra twist giving rise to the acute symptoms. There was, however, a complete absence of history of previous attacks of abdominal pain. It is interesting to note that the number of twists of the pedicle was the same as the average number of twists found in cases of torsion of an ovarian cyst or of the testis. The ectopic spleen is said to be usually found on the left side of the abdominal cavity; in this case it was well to the right of the median line. This position, the acuteness of the onset, and the marked tenderness and rigidity in the right iliac fossa made the condition closely simulate an attack of acute appendicitis. It would appear that the spleen can be removed in a child without any immediate ill-effects.

I am indebted to Mr. Charles Roberts, under whose care the patient was admitted, for permission to publish these notes.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

GENERAL MEETING.

ERADICATION OF TUBERCULOSIS IN MAN AND ANIMALS.

A GENERAL meeting of the Fellows of this society was held on March 14th, Sir JOHN BLAND-SUTTON, the President of the society, being in the chair, when a discussion of the eradication of tuberculosis in man and animals was opened by Sir JOHN MCFADYEAN, Principal of the Royal Veterinary College.

Prevalence of Bovine Tuberculosis.

He pointed out that, though there was a considerable number of diseases which were recognised as common to man and animals, yet in most of them cases of actual transmission from animals to man in this country were extremely rare, and transmission in the opposite direction was still rarer. Tuberculosis was the great exception to the rule among diseases of animals communicable to man. What was termed tuberculosis was met with in all the domesticated animals, but avian tuberculosis was now regarded as a disease distinct from that which prevailed in man and other mammals, and cases of its transmission to other farm animals or to human beings were unimportant on account of their rarity. For the veterinary profession the chief form of tuberculosis was that which affected the bovine species, and as regards economic importance it alone was important. It was essentially a disease of cattle in the sense that the type of bacillus which caused it would cease to exist if the bovine species became extinct. It was an independent disease of cattle in the sense that the eradication of human tuberculosis would leave its incidence among cattle unaffected. On the other hand, the eradication of bovine tuberculosis would reduce to nearly vanishing point the loss which tuberculosis at present caused in pigs and other farm mammals, and it would sensibly diminish the cases of human tuberculosis, especially those which had their starting-point in connexion with the alimentary tract.

Incentives to Eradication.

There were two incentives to an effort to eradicate tuberculosis from the bovine species; the one might be termed economic and the other humanitarian. In order to estimate the force of the *economic incentive* one must be informed regarding the loss at present inflicted by the disease on agriculturists and others who breed and keep cattle. Cattle of all ages were subject to infection with tuberculosis, and the incidence rose with the age and reached its maximum among old cows. It was scarcely possible to say what proportion of the entire cattle population was affected, because we had neither slaughter-house statistics nor the record of tuberculin-testing of young cattle on a sufficient scale to warrant precise conclusions. It was quite certain, however, that the proportion affected under 2 years old throughout the country was generally low. In breeding animals from 3 years upwards it could not be estimated at less than 30 per cent., and in the principal milking breeds it was probably at the present moment nearer 40 per cent. Much higher percentages were not at all rare in particular herds. In spite of this the mortality was low, and in well-managed herds it was often under 1 per cent. per annum over a period of years. Unlike some other contagious diseases of cattle, tuberculosis was thus not generally so serious from the farmer's point of view that he felt compelled to take measures to eradicate it from his herd if these measures involved either great trouble or great expense. There were exceptions to the rule that the existence of tuberculosis in a herd did not cause great loss, but in such exceptional cases one usually found that the owner had taken no precautions whatever, and that he had been in the habit of keeping tuberculous animals in the herd long after they had become visibly affected. In such circumstances not only was the proportion of animals affected increased, but the proportion of cases which assumed the clinical form and developed udder lesions was also increased. In cattle, as in man, in the great majority of cases actual infection did not become manifested by obvious deterioration of health.

With regard to the *humanitarian motive*, at the present time instructed medical opinion throughout the world appeared to be solidly in favour of the view that the frequency with which tuberculosis was transmitted from cattle to man provided a strong incentive to complete eradication of the bovine disease. He would be interested to hear what those present thought of the new view that the passage of tubercle bacilli from cows' udders to the stomach of children might actually be beneficial to the human species by producing an immunising effect and thereby diminishing the result of subsequent infection with the more virulent human type of the bacillus.

There was not the least doubt that the disease could be eradicated within a few years if that were considered necessary regardless of cost. This could be effected by enforcing the general testing of all cattle in the country, followed by compulsory slaughter of all reacting animals. Having regard to the facts already mentioned concerning the present incidence of the disease such a scheme was unthinkable. It would involve the slaughter of one-third to one-half of all the milking cattle in this country, and also a considerable proportion of the younger stock. Putting aside the fact that it would involve the payment of a huge sum of money to compensate for the slaughter of apparently healthy cattle it would greatly reduce the supply of milk immediately and for a good many years to come, and add in a proportional degree to its already high price. Concerning the question whether the ultimate complete extinction of the disease might not be achieved by some slower and less expensive method, he thought that, having regard only to the present stage of knowledge, the answer must be that unless a great discovery was made with regard to vaccination against the disease one could not hope for anything beyond a very slow reduction in its present prevalence. In such circumstances one might consider whether it would be useful to encourage in some way the voluntary efforts of owners to get rid of the disease. The eradication of tuberculosis from a herd, however, in this country was not practicable for more than an insignificant minority of farmers and others who kept milking herds. Those who owned valuable pedigree herds might succeed in freeing their herds from tuberculosis, as might also those who could find accommodation for reacting animals on a separate farm or in entirely separate buildings, and the Institute of Animal Pathology at the Royal Veterinary College had recently made an offer to lend its assistance to the owner of any pedigree herd who was prepared to carry out the measures actually necessary to that end.

Because it was not possible to put in force the drastic measures which would be necessary to eradicate tuberculosis within a prescribed period, it was necessary to enforce such measures as appeared to be practicable and necessary to prevent or diminish the cases of human infection from cattle. In the past very exaggerated views had been held regarding the danger of infection through meat, but at the present time there was general agreement that milk was the great vehicle of human infection, and that cases of transmission of bovine tubercle to man would be greatly diminished if one could cut off from human consumption the milk which came from cows which were actually infected with the disease. This was the object aimed at by the Tuberculosis Order which came into force in 1913 and the slightly modified Order which replaced that in July, 1914. The suspension of the latter Order on the outbreak of war was a misfortune, and if the subsequent discussion indicated that those present were in sympathy with the proposal he would be prepared to move a resolution to the effect that the reintroduction of the Order was urgently necessary in the interests of public health.

Bovine Disease as a Vaccine.

Professor S. LYLE CUMMINS said, with reference to Sir John McFadyean's question about the importance of bovine tuberculosis as a disease affecting man, that it raised several acutely controversial points. In Professor Cummins's opinion, when questions proved to be acutely controversial it was generally found that no very certain knowledge existed on either side. In a sense this was true as to the importance of bovine tuberculosis in this country. On one side much knowledge was being gained at the present time through researches of Dr. Stanley Griffiths at Cambridge and of others, some actually present at this meeting. It could be stated without any hesitation that bovine bacilli did cause fatal disease in human beings. It was known that they caused much of the abdominal tuberculosis of children, and it was also true that they take their share in producing tuberculous meningitis. As to the possibility of milk charged with bovine bacilli having a beneficial action as a vaccine, we were on much more uncertain ground.

There was, he went on to suggest, a great deal of evidence to show that the human race, in England at least, did owe a considerable amount of immunity to the ingestion of bovine bacilli in milk. Some support for this theory was to be found, he thought, in recent statistical records published by Dr. J. Brownlee, in which it had been shown that there were two important types of mortality from pulmonary tuberculosis in this country—the one affecting young adults and being especially prevalent in the Shetlands, in Wales, and in Ireland, the other leading to a mortality in middle-age, and being commoner in our large towns. It had been shown that there was a definite co-relation between the middle-aged type of mortality and milk-supplies contaminated with tubercle bacilli, but no such co-relation could be traced as between contaminated milk and mortality of the young adult type. As the middle-age mortality represented, presumably, a type of the disease on the whole more benign than that associated with earlier deaths, it was probable that some factor of resistance was operative in the one and absent in the other. Such a factor might perhaps depend on immunisation following small bovine infections in early life. But while thinking that such a theory was not merely tenable, but probable, Professor Cummins was far from advocating the deliberate use of contaminated milk for the purpose of obtaining immunity. Even assuming that such milk did actually act as a vaccine, it must be regarded as a very dangerous one, because the doses could not be controlled, and a massive dose would certainly lead to serious illness and perhaps death.

Under these circumstances Professor Cummins was prepared to support strongly the views expressed by Sir John McFadyean that every possible effort should be made to provide milk as free as possible from tubercle bacilli. He quite agreed with Sir John McFadyean that the complete elimination of bovine tuberculosis was out of the question as a practical measure, but he thought that if our efforts for a pure milk met with success we might reasonably hope so to diminish the number of tubercle bacilli in milk-supplies that there would be no danger of clinical disease and every prospect of the acquisition of relative immunity. When all was said and done, far the most important type of tuberculosis in this country was pulmonary tuberculosis, a disease caused by the human bacillus. Apart from the question of infection by bovine tubercle bacilli, there were other very strong reasons for wishing for a purer milk-supply. Many other diseases besides tuberculosis could be caused by contaminated milk. There was no doubt that the nutritive substances in milk were in very great dilution, and that the transport of milk involved the conveyance of very large volumes of fluid in proportion to the amount of nourishment contained therein. It was to be hoped that the physiologists might ultimately be able to say for certain whether the properties lost in the preparation of dried milk powder could be substituted efficiently by the addition of other articles to the diet of children.

The Rousing of the Public.

Sir **CLIFFORD ALLBUTT** said that he did not intend to detain them by a survey of the well-worked field of tuberculosis, of which many of his hearers indeed knew more than he did; yet he would try to say something new on the subject, even if it were paradoxical; as, indeed, it must be. Of the devastation caused by this virulent pest he need not speak, but as Robert Burns thought that there might be something to be said even for "Old Nickie-ben," so perchance to the evil spirit of tubercle some beneficent by-product might be credited. He remembered in the early days of his practice in the north how in the valleys of the Dales enteric fever was rampant and endemic; the farmsteads were foul with stenches, vermin, and disease, but the farmers said that a good manure heap did no one any harm. However, the discovery of the exact causes of typhoidal affections led to a conversion of people who before had turned a deaf ear to all arguments. So it was with tubercle; you might as well have argued with one of his bullocks as with the farmer on the intimate causes of this disease also, until the discovery of the tubercle bacillus aroused the public to a sense of the intimate and subtle virulence of germs of disease which could be neither seen nor handled. Tuberculosis, then, was our schoolmaster to drive into us these truths; a schoolmaster which chastised us with scorpions indeed, but began its serious lessons with those innocents the butcher and the milkman. No less had been the revelations on glanders and the marvellous results in the war of mallein vaccines—results which are almost incredible when compared h the ravages of the disease in former campaigns. e the education began with the stableboys. Thus the lessons of many such diseases had at last persuaded the man in the street to listen to the truths and prophecies of science.

The Rôle of Comparative Pathology.

Sir Clifford Allbutt continued :—

Let me now bring before you lesson the second, which is to avoid a rush to the other extreme—namely, an unreasoning cry for "results." Our campaign against tuberculosis is proving to the layman that, as in the field so in the laboratory, times and seasons are not to be controlled nor reckoned upon. A long cleaning of the land comes first, then after the fallow we have to plough and harrow to make a fine tilth, then to await due weather to sow the seed, then to keep patience during the long dormancy of seed apparently dead in the soil; and then again many a contingency before harvest is secured. If we are to solve these problems we need capital, time, and patience on the part of those awaiting our results. They cannot be hurried. In the schools maxims can be instilled in some order and with expedition, but discovery, the work of the universities, cannot be hurried nor produced to time. The third lesson of our schoolmaster is that if we are to understand the laws of disease in any one field we must coördinate it with work in other and allied fields of pathology. Every study but medicine has recognised and pursued the comparative method—anatomy, history, religion, law, philology, and so on. Medicine alone fails utterly to see the great work before it in this enlarged realm of research. We shall never understand the diseases of man until we study also side by side with them the diseases of plants and animals. For this reason I welcome to-night most cordially our veterinary visitors and the presidency of Sir John Bland-Sutton, one of the rare links of comparative pathology. Let us learn that the pathological relations of the humblest animal or plant may serve to throw into light fertile general laws and principles. Every moment of our lives we are dependent upon unicellular plants for good and evil. Who would have supposed that the harvest of herrings would appear to depend upon the changes in the sunspots! Now principles cannot be parcelled out between the several aspects and departments of medicine. Some beginning with comparative pathology we are making by coöperating with our veterinary brethren on this occasion, but it is a small beginning; we need far more than this. Fusion between two fields of medicine so different as theirs and ours is impossible, but coöperation and constant mutual enlightenment on systematic lines is essential if we are to comprehend their work, and they in like manner ours; for evolution is one of the keys to pathology as to biology. It is with the greatest anticipation of such a renewal of medicine that I have heard, on some such lines as these, of the election of a committee of which Sir David Prain is the chairman. This is one of the ameliorations we owe to our harsh and cruel schoolmaster tuberculosis. Specialise we must, especially in practice; but it is the place and function of the universities to counteract this narrowness by a wider outlook and by a clear-eyed faith in the results—some ready, some deferred—which we shall gather in if we work together in an endeavour each from our own side to throw crosslights upon the researches of workers in other departments of medicine. Until we establish institutes of comparative pathology our science and art will tarry on the way.

Age Distribution of Human and Bovine Infections.

Dr. A. C. **INMAN** said that the scientific study of tuberculosis became possible when in 1882 Koch discovered the causative agent of the disease. The distinction between the human, bovine, and avian types was another advance and had allowed us to obtain some valuable knowledge as to the sources of infection and as to the relative importance of infection from man to man and from the consumption of foodstuffs contaminated with the bacilli of bovine origin. For this country the study of the types of bacilli infecting man

TABLE I.

Age-period.	No. of cases.	Human.	Bovine.	Human and bovine.	Atyp.	% bovine.
0 to 5 years. ...	196	127	65	2	2	34·2
5 to 10 years....	265	189	70	1	5	26·8
10 to 16 years....	127	105	16	—	6	12·6
16 and upwards.	341	313	18	2	8	5·9
*Total	929	734	169	5	21	18·70

had been very carefully undertaken, and we owed to the Royal Commission on Tuberculosis, and more especially to the extended work of Dr. Stanley Griffith and Dr. A. Eastwood, an accurate knowledge of the relative frequency of infections by the human and bovine types in the various types and forms of tuberculosis, as was shown by Table I. It would be seen that consumption was nearly always due to infection by bacilli of the human type.

Table II. showed the results of sputum cultures:—

TABLE II.

—	No. of cases.	Human.	Bovine.	Atypical.	% bovine.
All ages	212	205	3	4	1·41

Whilst the bacilli recovered from the glands in the neck occurring in children during the first decade of life were, in the majority of cases, of the bovine type, these studies had shown us the importance not only *of taking steps to prevent infection from man to man,* but also to prevent the consumption of foodstuffs contaminated with bacilli of the bovine type. Evidence obtained from the post-mortem examinations had shown us that under the age of 18 years tuberculosis was relatively *uncommon* but very *fatal*, whilst in adults it was common but largely latent and non-fatal. (Table III.)

TABLE III.

Subjects under—	No. of post mortems.	Free from tuberculosis.	Tuberculous.	Fatal tuberculosis.	Non-fatal tuberculosis.
18 years of age ...	88	73	15 (17 %)	11 (73·3 %)	4 (26·7 %)
Adults	420	29	391 (93 %)	110 (28 %)	281 (72 %)

Another important *fact* learnt from post-mortem examination was that *the healing of a tuberculous* lesion consisted in the throwing up of a defensive barrier and the shutting off, rather than the extermination of, the bacilli. Fully virulent living bacilli might be recovered from old "healed" tuberculous lesions even if these had *undergone* calcification. (Rabinovitch, Burnet.) V. Pirquet's testing of 693 clinically non-tuberculous children with the cutaneous tuberculin test confirmed the findings of the post-mortem room. By the age of 10 years 35 per cent. reacted positively, and by the fourteenth year the percentage had risen to over half (55 per cent.). The *observations of Franz on* apparently healthy soldiers of (1) a Bosnian regiment recruited from a district where tuberculosis was rife, and (2) a Hungarian regiment recruited from a district poor in cases of tuberculosis, bore repeating because of their *importance in connexion* with *the incidence of tuberculosis* infection in young adults, and the value of the tuberculin test in the diagnosis of tuberculosis.

To eradicate the disease from man effectively it would seem necessary to have a certain preventive against the infection. This we did not possess. But we did know the sources of infection, and it was our duty to protect everyone from such sources. It was distressing under the circumstances to read in Dr. Marcus Paterson's book the statistics culled by Dr. Sutcliffe, of the Ipswich Sanatorium, on the use of the sputum flask by tuberculous patients in this country as recently as 1918. Of patients admitted to the sanatorium on the advice of medical men 93·75 per cent. had sputum before admission. In 57·77 per cent. bacilli had been found previous to admission. Only 8·88 per cent. of those with sputum arrived at the sanatorium with a flask. Paterson also *pointed out that the control of milk,* butter, and cheese could *be much more efficiently carried out* than was the case to-day.

Three Desiderata.

In the absence of a certain preventive against infection we required the following desiderata urgently: (1) A method of diagnosing the disease in its earliest stages; (2) a successful method of treating the disease; and (3) a method of ascertaining that the disease was cured.

1. *A Method of Early Diagnosis.*—In the case of tuberculous infection we had as yet no certain means of diagnosing the disease in its earliest stages. Owing to the large number of apparently healthy persons who gave a positive reaction, the tuberculin test had proved to be of but limited value in the early diagnosis of the disease. The demonstration of tubercle bacilli in the sputum only became possible when the tuberculous ulcer communicated with a bronchus—i.e., the bacilli were not demonstrable in the earliest stages of the disease. The great value of the test, however, could not be too strongly insisted upon from the point of view of the public health. It should be possible to examine the sputum of all patients who consulted a doctor for cough with sputum, whatever physical signs or symptoms they *presented.* Even to-day it was not uncommon to find *numerous tubercle bacilli* in the first sample *of sputum* examined *for* a *patient who* had been under *medical* treatment *for months*. From the patient's point *of view the* examination was one of very considerable *importance, for* the tuberculous focus in the lung was, when tubercle bacilli were present in the sputum, in communication with the outside world, and was liable to become contaminated with bacteria other than the tubercle bacillus. From the following table, summarising the results of an investigation which he had carried out in 1912, it would be seen that secondary infections were by no means uncommon in "open" pulmonary tuberculosis. (Table IV.):—

TABLE IV.

—	Febrile cases.	Afebrile cases.
A. Infection by T.B. and secondary organisms	28 (87·5%)	13 (54·1%)
B. Infection by T.B. alone	4 (12·5%)	10 (41·6%)
C. Infection by secondary organisms alone	0	1 (4·1%)
—	32	24

It was an urgent matter to place the patients in as pure an atmosphere as possible and away from *congested areas in* which the air was liable to be polluted with *catarrhal micro-organisms.* There was a *striking contrast* between the bacterial *flora of* sputum *in London* and that of patients living in pure country air. He believed that the good results obtained *from the so-called open-air treatment of* pulmonary tuberculosis was largely to be attributed to this limitation *of the sources of* secondary *infections.* The *technique of the* tuberculo-opsonic index was difficult, and its routine use, as in a large institute, was a very great strain on the individual who carried out the test. An analysis of 250 cases of doubtful pulmonary tuberculosis performed in the routine laboratory tests of the Brompton Hospital gave the results shown in Table V.:—

TABLE V.

Cases without T.B. in sputum.	No. of cases.	Positive.	Negative.
Clinically tuberculous disease ...	56	48 (85·71%)	8 (14·23%)
Doubtfully tuberculous disease ...	134	91 (67·91%)	43 (32·08%)
Clinically non-tuberculous disease	60	4 (6·66%)	56 (93·33%)

In 100 cases with a positive index and no tubercle bacilli in the sputum special care was taken over a subsequent period *of* about two years to try to find tubercle bacilli by numerous examinations of the sputum, and in *14 cases the bacilli were found confirming the diagnosis.* In a small series *of* cases, *doubtfully tuberculous,* and admitted to the hospital *for diagnostic purposes the tuberculo-opsonic index test* and the complement-fixation test *were carried* out on each patient. In 21 out *of 30 cases (70 per cent.)* the two tests agreed; In 5 out of 30 cases (16 per cent.) the T.O.I. was positive and the *C.F.T.* was negative, and *in 4 out of* 30 cases (13 per cent.) the T.O.I. was negative *and the* C.F.T. was positive. In a series of 42 cases at the King Edward VII. Sanatorium, Midhurst, *Dr.* Radcliffe and *Dr.* de Wesselow made a similar observation. In 32 cases (76 per cent.) the two tests agreed; in 7 (16 per cent.) the T.O.I. was positive and the C.F.T. was negative, and in 3 cases (7 per cent.) the C.F.T. was positive. Further work was necessary to enable us fully to understand the mechanism of the test. In 1913 an investigation was carried out at the Brompton *Hospital on* the value of the complement-fixation test as an aid to early diagnosis. Besredka's antigen was used, and *though the* results were encouraging it was found that the antigen was not truly specific, for positive reaction was obtained with syphilitic non-tuberculous sera. In a series of 107 consecutive cases admitted to Dr. W. C. Bosanquet's wards the bloods were sent to the laboratory for examination, and *Dr. Bosanquet* independently recorded his diagnosis after due clinical observation. There was a remarkable agreement in the diagnosis. In 1920, several years after the bloods had been examined, he (Dr. Inman) had tried to find out what had happened to those patients who had had no tubercle bacilli in their sputum at the time of the blood test. Only 29 cases could be traced. McIntosh and Fildes had suggested in 1914 the use of a fresh suspension of living tubercle bacilli as an antigen in the complement-fixation test for tuberculosis.

Such an investigation had been instituted at Brompton, and the test promised to be one of real utility. Before any considered announcement could be made, however, further research was needed, more especially with regard to the specificity of the reaction, and to state the activity of the lesion in those cases in which the reaction was positive. Infallibility could not be expected of any biological test, and it was doubtful whether, seeing that the general population of this country was largely tuberculous, such tests could ever occupy quite the position of practical utility in the diagnosis of tuberculous infections as the Wassermann reaction did in the diagnosis of syphilis.

2. *A Successful Method of Treatment.*—There was no known cure for tuberculosis. He believed, however, in the importance of the principles of auto-inoculation of bacteria and their products enunciated by Sir Almroth Wright. As the results of laboratory experiments the importance of absolute immobilisation of a tuberculous focus from which excessive auto-inoculations were proceeding received specific confirmation. The revelation of a rich content in antibodies in certain pleural effusions had led Perkins, Young, and Meek to inject such fluids for therapeutic purposes in seriously infected cases of pulmonary tuberculosis, with encouraging results. He believed that the intelligent administration of tuberculin and vaccines prepared from secondarily infecting microbes might still serve to convert a seemingly hopeless outlook in some cases into one of so great amelioration that life for the patient became tolerable and even enjoyable.

3. *A Method of Ascertaining whether Cure Took Place.*—No certain means of ascertaining when a tuberculous infection was cured as yet existed. He spoke of the vital-capacity test as formulated by Dreyer. In a preliminary series of 150 cases of pulmonary tuberculosis weighed, measured, and treated by Dr. L. S. T. Burrell at the Brompton Hospital in London, Professor G. Dreyer at Oxford, by calculation of the figures sent to him by Dr. Burrell, was able to classify these persons as normal individuals, or as examples of mild, of moderate, or of severe pulmonary tuberculosis, in practically absolute agreement, as afterwards appeared, with the clinical diagnosis and classification made at the time at Brompton.

In proved tuberculous cases he believed that a series of blood examinations as regards the Arneth count might prove to be of distinct value in the testing of a case as to arrest of the disease. Dr. Treadgold, working in his laboratory, had come to the conclusion that a left shift under 200 in old cases of "clinical arrest" was suggestive of recurrence, and called for minute and careful re-examination. He urged that a record of the serum reactions, quantitatively estimated, should be kept of all cases evacuated from sanatoriums as "clinically arrested." He thought that most of the patients so discharged were probably still in need of treatment, and their lesion was still in communication with the blood and lymph stream. The verification of this might lead to a prolongation of treatment and a diminution in the number of relapses.

Influence of Environment on Resistance.

Dr. **HALLIDAY SUTHERLAND** said that an increase of knowledge regarding the details of tuberculosis could never lead to more than partial success in the task of eradication unless there was agreement concerning certain general principles. Since the discovery of the tubercle bacillus medical opinion on the ætiology of the disease had swung from one extreme to another. If asked the cause of tuberculosis the majority of people would answer "the tubercle bacillus." That answer was wrong. Tuberculous infection was ubiquitous, and after middle life practically everyone was infected. If the tubercle bacillus was the cause of the disease—using the word cause in its true sense—then mankind would have been decimated long ago. Tuberculosis as a disease was produced by two factors—infection and resistance of the tissues. The relation of these two factors was shown in the animal experiments of Trudeau in 1885. When resistance was unimpaired it was difficult to infect either a man or an animal, and when man lived under conditions in harmony with nature tuberculosis was a rare disease. Even to-day there were primitive races free from tuberculosis, and in the south of Spain amongst the fighting bulls living on the open plains tuberculosis was very uncommon, although domestic cattle in the same country were notoriously tuberculous. Such was the influence of environment on resistance. If resistance was unimpaired, either a massive dose of bacilli or prolonged exposure to infec- s necessary for the development of the disease, was easier to induce the disease in a starved than in one well fed. To eradicate the malady it was necessary to raise or to maintain resistance, and to prevent infection.

As the bovine tubercle bacillus had been recovered in over 50 per cent. of cases where tuberculosis attacked the glands, bones, and joints of children, it was probable that some 10,000 children died every year in consequence of drinking tuberculous milk. Sir John McFadyean had said that to eradicate the disease in cattle it would be necessary, amongst other things, to slaughter 1,000,000 animals. That was not the experience of the American Government. By the Bang system tuberculosis could be eradicated from a herd within seven years, and it was only necessary under that system to slaughter the animals having advanced disease. As tubercle bacilli were present in the milk from animals whose udders were not affected, the Tuberculosis Order of 1912 would only check the gross infection of milk, and could not secure a tuberculosis-free milk. There were two extreme views on the question of tuberculous milk, and in attempting to reconcile these extremes by adopting a neutral attitude Professor Cummins had involved himself in certain very obvious contradictions. Professor Cummins deprecated the gross infection of milk, welcomed the Tuberculosis Order, and hoped that we should benefit by drinking the slightly infected tuberculous milk that would continue to exist after the Order was put in force. It was true that Dr. Brownlee had shown the chronic type of pulmonary tuberculosis to be correlated with milk, but there were many other factors with which it might be correlated. Those who believed in the benefits of drinking tuberculous milk should advocate the vaccination of children with attenuated cultures of tubercle bacilli. The dosage could then be controlled, and those who urged this plan would at least be logical. That plan would not be advocated. The work of Arloing had first shown that immunity conferred in this way was both partial and transient. Calmette more recently had shown that the resistance of an infected animal could be raised and prolonged by these measures. If Dr. Brownlee's views were correct then this partial immunity would lead to an increase in the number of chronic cases, whereby the amount of infection amongst the population would be increased. Those who played with the question of tuberculous milk would do well if they followed their opinions to a logical conclusion. Remarks by medical men on the advantages of tuberculous milk did a great deal of harm, not amongst the medical profession, who were able to assess their value, but amongst dairy farmers and the general public. These statements were seized upon by the trade and used as an argument against legislation, which, however imperfect it might be, had for its aim the preservation of the life and health of children. Professor Cummins had also said that the milk trade was in an unsatisfactory economic condition on account of the bulk of fluid milk and of the difficulties in transport, to overcome which he advocated dried milk. As dried milk was much more expensive than fresh milk this proposed remedy was obviously economically unsound.

By far the greatest source of infection was from human beings, and in order to eradicate the disease it was necessary to correct the faulty environment whereby resistance had been lowered, and to check the amount and spread of infection. It was impossible to alter the general defects of our civilisation to any material extent, but it was possible to alter the environment of the individual patient. Unless this was done in the early stages of the disease the change came too late. That meant early diagnosis. Everyone would welcome the advances in bacteriology of which Dr. Inman had spoken, and to which he had contributed so much, but there was a real danger lest a type of practitioner was evolved who relied solely on a laboratory for diagnosis and failed to use the senses that God had given him. In spite of many difficulties it was already possible by means of clinical methods, X rays, and the tuberculin subcutaneous tests to make a firm and accurate diagnosis of tuberculosis months and even years before tubercle bacilli appeared in the sputum. A chair of tuberculosis should be created in every university, and competent clinicians, having special experience in this disease, should be appointed to teach the students.

Once the disease had been diagnosed the next step was to provide adequate treatment for patients in all stages of the malady. Sir Robert Philip's coördinated Edinburgh system provided for all contingencies. The tragedy was that the system had not been carried out on the lines advised by the Departmental Committee in 1912. Sanatorium results were bad because the sanatoriums were filled with advanced and dying cases. When early cases were sent and kept for an adequate period the results were uniformly good. As tuberculosis was essentially a disease of civilisation, there was no short cut to its control and eradication.

Combined Medical and Veterinary Effort.

Professor **F. HOBDAY** had no doubt as to the value, in any scheme for the eradication of tuberculosis, of collaboration between the medical and veterinary professions, as each was well acquainted in their respective everyday lives with the disease in all its forms. The question of clean milk certainly could not be settled except by combined action between the two.

In his original paper he had purposely generalised in various diseases communicable to man, with a view to emphasising the importance of united effort on the part of the workers in human and veterinary medicine; but when, at the request of the members present, the discussion was adjourned and it was suggested that one of the subjects only should be taken, he readily acquiesced, and eradication of tuberculosis from man and animals was chosen. It was the subject which he had suggested as being of far too great importance to be grouped with others, one which must of necessity be taken by itself, and one about which every scientific worker, whether in the laboratory or clinical sphere, could say something. Particularly was it of importance just now on account of the new hopes which were being raised by the report of the work recently done on immunity by vaccinations, and here again the observations made upon animals must take first place. Much for mankind depended upon the results here to be attained, and the whole research was still a further corroboration of the advantage of collaboration between those who had expert knowledge of the normal habits of animals as well as man. Taking all the diseases originally mentioned in his lecture, and even if the cases of actual transmission were, as Sir John McFadyean had said, only enough for the average man to see once in three years or once in ten years, this was all the more an argument for keeping them out of the country, and it was all the more to our credit if we did this. What would be the position now if the veterinary profession had not done its duty in the past with regard to glanders and rabies? It was to the veterinary side of comparative medicine that the country owed this excellent position at the present time, and if we could find the way to do as much for tuberculosis of cattle as we had done for the eradication of glanders from horses we should again have rendered mankind a service. As regarded tuberculosis in cattle, it was possible to eradicate it by the aid of tuberculin if cost was no objection. It was the cost together with the question of the milk-supply which stood in the way. That bovine infection was a reality was shown by statistics brought forward that evening by Dr. Inman, who had told us that 18·7 per cent. of all cases were of bovine origin; that in tuberculosis of the glands of the neck of very young children the proportion went up to 85 per cent., and between 5 and 10 years of age 65 per cent., whilst another speaker had said that of this form of tuberculosis an average of 10,000 children died annually. He thought that the discussion and the interest shown by the mixed assembly of medical and veterinary professions proved the truth of the last paragraph of his original paper: "that in the combat against disease the workers in human and veterinary science go over much the same ground, and that by working in unison much valuable time might be saved and much better results would be attained than if each kept itself in its own water-tight compartment."

A Unanimous Resolution.

The following resolution was passed unanimously:—

That the Fellows of the Royal Society of Medicine and officers of the National Veterinary Association, assembled in joint meeting, are of the opinion that the prevalence of tuberculosis among cattle in this country continues to be a serious menace to the health of human beings, and that to counteract this danger the reintroduction of the Tuberculosis Order, which was suspended in 1914, is urgently required.

SECTION OF PATHOLOGY.

A MEETING of this section of the Royal Society of Medicine was held on March 15th, Dr. W. S. LAZARUS-BARLOW, the President, being in the chair.

Dr. J. A. MURRAY read a paper contributed by Dr. W. H. WOGLOM and himself on Experimental Tar Cancer.

Dr. A. J. EAGLETON read a paper on

The Standardisation of Antipneumococcal Serum.

The work of American bacteriologists, he said, had differentiated four groups of pneumococci. Groups I., II., and III. were definite entities, there being three subgroups to Group II. Group IV. consisted of a heterogeneous collection of pneumococci unrelated to each other, or to the first three groups. Therapeutic serum (type I.) had been used in America with encouraging results. There was less evidence of the value of types II. and III. sera, and American opinion was at present against their use for therapeutic purposes. A serum for therapeutic use had been prepared at the Wellcome Physiological Research Laboratories by immunising horses with a type I. pneumococcus. It had been tested (almost entirely with an English strain) by a method almost identical with that used in America. The test consisted essentially in the titration of 0·2 c.cm. of serum against different doses of living pneumococcus culture. Mice are employed and the injections made intraperitoneally. Adequate controls must be made, and all injections done in duplicate. Care must be taken in dilution of the culture prior to the test, as very grave errors could be introduced by carrying over organisms from tube to tube.

Upon three main factors the success of the test depended:—

(1) *The mice.*—Gaertner infections accounted for many failures; in other cases, although no specific extraneous infection could be found, the animals succumbed irregularly from general deficiency of resisting power. Feeding must be carefully watched, exposure to cold avoided, and the animals should be kept under experimental conditions for at least one day before injection.

(2) *The media.*—The virulence of a culture might apparently be lost by growth on unsuitable media; the virulence returned when the organism was given a suitable environment. The broth must not be more acid than pH = 7·2, and to maintain this reaction a heavily buffered peptone was necessary. The medium should not be over-heated. Cultures maintained on horse-blood agar had lost their virulence, to regain it on transference to sheep- or rabbit-blood agar. This was correlated with the fact that certain horses contained a normal antibody to the pneumococcus. Rabbits did not. Sheep had not been tested. Two interesting speculations arose out of this: (*a*) Was the presence of normal antibodies in the blood of some animals responsible for variations in growth of micro-organisms on media containing unheated blood; (*b*) did it help to explain the value in some cases of non-specific horse-serum therapy.

(3) *The micro-organism used.*—The culture must be virulent. The strains used were virulent when received. They had not been passaged and were still virulent. While not stating that passage is unnecessary for maintaining virulence, the workers held that too much attention had been paid to it, and too little to the media employed.

Serum made to protect against type I. American strain was efficient against English strains. Protective serum had also been made against type II., but by the test described this had not at present the same high degree of potency as the type I. serum. Large doses had been given intravenously to rabbits without producing any untoward effects.

Dr. NATHAN RAW read a paper on the

Attenuation of Tubercle Bacilli.

He showed numerous cultures and specimens of tubercle bacilli which had been continuously subcultured for 14 years. These bacilli were now avirulent and non-tuberculigenic, after repeated tests on susceptible animals. The object of this work was to endeavour, if possible, to find a specific remedy against tuberculosis and to protect children of tuberculous stock who were exposed to infection in the home.

CARDIFF MEDICAL SOCIETY.

A MEETING of this society was held on March 8th, Dr. W. MITCHELL STEVENS in the chair, when Professor T. GRAHAM BROWN delivered an address on

Experiments on the Brain.

He first sketched the history of the work on brain areas, and then described certain experiments carried out on chimpanzees. Stimuli applied to the motor areas, although at first subminimal, were found, when repeated, to cause movement, an effect known as "facilitation." Similar stimuli applied to one area made neighbouring areas sensitive to subminimal stimulation, an effect known as "activation"; this effect was due to fibres in the cortex connecting neighbouring areas. Destruction of motor areas in the cortex was followed by only temporary paralysis, and complete restitution of movement was soon regained; this result followed when the cortex was ablated on both sides. This restitution also followed the destruction of sensory areas on both sides and of the motor area on one side. Professor Brown pointed out that the work was as yet far from complete, but he put forward the suggestion that the deeper structures of the brain controlled postural movement, while the cortex was more concerned with fine manipulation.

LIVERPOOL MEDICAL INSTITUTION AND MANCHESTER MEDICAL SOCIETY.

A JOINT meeting of these societies was held at Liverpool on March 3rd, the President of the former, Dr. J. E. GEMMELL, in the chair.

Vascular Lesions of the Brain.

Professor E. S. REYNOLDS mentioned some points arising in connexion with vascular lesions of the brain, quoting illustrative cases. He specially referred to meningeal hæmorrhage occurring during birth, to emboli and their results, and compared these in their symptoms and course with thrombi and hæmorrhage. He alluded to the difficulty which often occurred in diagnosing whether a hemiplegia was due to thrombus or hæmorrhage, and the consequent difficulty in treatment.

Posterior Rhizotomy.

Sir WILLIAM THORBURN gave an account of cases of Posterior Rhizotomy and of Drainage of the Spinal Theca. As regards rhizotomy, he related several personal cases in which the operation had been performed for gastric crisis, and analysed the published records. With regard to rhizotomy for pain, he indicated, again from personal cases, why in many instances relief was not to be anticipated and why the results are less satisfactory than in gastric crises. He did not recommend Foorster's operation for spastic paraplegia. He then referred to cases resembling transverse myelitis, in which drainage of the theca spinalis was followed by rapid recovery. He recalled the earlier work of Horsley on so-called chronic spinal meningitis, and strongly urged the exploration of any doubtful cases of this type, pointing out that in practised hands the operation of laminectomy is as safe and reliable as is laparotomy.

Diathermy and Pharyngeal Operations.

Sir WILLIAM MILLIGAN read a paper upon the Treatment of Inoperable Malignant Growths of the Pharyngeal and Epilaryngeal Regions by means of Diathermy and Radio-diathermy. He pointed out the type of case suitable for diathermy treatment and described the rationale of the treatment. In cases where diathermy was done close to large blood-vessels great care had to be taken, as otherwise there was a risk of sloughing of arterial walls and severe secondary hæmorrhage. In many cases it was advisable to tie the main blood-vessels leading to the affected regions. Diathermy treatment had the advantage of sterilising the tissues, blocking the lymphatics and small blood-vessels, and of readily destroying malignant cells owing to their having in all probability a lower vitality than normal cells. In cases where the growth to be treated was situated in the immediate neighbourhood of the larynx, it was advisable to perform a preliminary tracheotomy. In small growths the best results appeared to follow the use of a current of from 500 to 900 milliampères, but in large growths of one to two ampères were necessary. Where there was much necrotic tissue it was a good plan to perform a preliminary scraping, great care being taken, however, to avoid any bleeding as far as possible. The pain produced was, as a rule, not great until about the eighth or tenth day, when it was considerable owing to the separation of the slough and the formation of a raw granulating surface. The presence of glands did not negative diathermy operations, and glands might be treated either by diathermy itself or by intensive X ray treatment. Where intensive X ray treatment was used it was advisable to desensitise the skin either by the application of pressure or by the subcutaneous injection of salt solution. The advantages of diathermy were: 1. That it might be employed when ordinary surgical procedures are impracticable. 2. That it does not produce much, if any, shock. 3. That with reasonable care it is a bloodless procedure. 4. That it has the merit of sterilising the tissues, blocking vascular and lymphatic vessels and preventing [illegible]mination of the cancer cell. 5. That it frequently affords relief from painful symptoms and mechanical difficulties in cases surgically hopeless. 6. Septic and broncho-pneumonia are much less frequent than after cutting operations. Its disadvantages are: (1) that it destroys both healthy and diseased tissues. (2) that the walls of adjacent blood-vessels may become softened and secondary hæmorrhage result; and (3) where the skin is involved keloid cicatrices may result. He referred to a series of inoperable surgical cases where, by means of diathermy, life has been prolonged for from two and a half to three years with complete comfort.

Variations of the Normal Stomach.

Dr. A. E. BARCLAY discussed the Variations of the Normal Stomach. He maintained that the old anatomical pictures were caricatures, and that the distortions were due to the action of formalin or other preservatives, coupled with the effect of rigor mortis. Essentially the stomach was a living muscular tube, whose very varied alterations in appearance was largely due to alterations in muscular tone. The tonic action was a function of the living muscle, and could only by studied in life by means of X rays. The main function of this tonic action was to stabilise the stomach so that it maintained the contents in tubular form in spite of gravity. When tone relaxed the contents descended to the lowest part of the stomach. He demonstrated models of normal empty and full stomachs, and also a series indicating the way in which its shape was changed by the alteration of posture. Tonic action was responsible for the maintenance of the shape of the normal stomach, and he insisted that transitory loss of tone and gastroptosis were simply variations of the normal. He then dealt with the musculature, and laid great stress on the great importance of the innermost layer, the incomplete and powerful band of oblique fibres that passes down on either side of the lesser curvature and illustrated the band by a series of dissections by Jefferson. He pointed out that in atony this oblique band was apparently unaffected, while the rest of the muscle was thinned out. In gastroptosis, on the other hand, the oblique fibres were elongated proportionately with the other coats. He also showed slides of a type of normal stomach which he called the "cup and spill." This curious shape, he suggested, was due to over-contraction of this oblique band without a corresponding contraction of the other coats. From these observations he deduced that the oblique fibres could act entirely independently of the other coats, and that, in all probability, the anatomists would find that they had a separate and independent nerve-supply.

ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

THE eighth meeting for session 1920–21 was held in the Faculty Hall on Feb. 18th, when Professor ROBERT MUIR gave a lecture, with microscopic demonstration, on

Hæmochromatosis and Bronzed Diabetes.

The development of our knowledge of the subject was briefly sketched, and it was pointed out that the essential pathological feature was the deposit of iron-containing pigment in great amount and in unusual positions, this resulting in hæmochromatosis; and that diabetes resulted only when the lesion in the pancreas was of sufficient degree, there being cirrhosis in this organ as well as in the liver. Two cases were described in which both bronzing of the skin and diabetes were present, and reference was made to the estimations of iron made in one of these along with Professor Shaw Dunn. An account was also given of two, and possibly three, cases at an early stage of the affection, and from these the inference was drawn that the earliest lesions were cirrhosis of the liver and pancreas, with deposits of hæmosiderin in these organs and in the retro-peritoneal lymphatic glands. In the pancreas the changes occurred at an earlier period in the secreting epithelium than in the islands of Langerhans, but the results did not warrant a conclusion as to the relation of the lesions in these structures to the onset of diabetes.

The lecturer contrasted the deposits of pigment with those occurring from abnormal hæmolysis, and pointed out that they differed both in amount and in distribution, those in hæmochromatosis being much greater and occurring in sites, such as thyroid, heart muscle, skin, stomach, &c., in which hæmosiderin resulting from hæmolysis did not occur. From these facts and from the fact that in hæmochromatosis there was no evidence of increased blood destruction or regeneration it was not justifiable to conclude that the iron pigment was actually derived from hæmoglobin. There might be an inability to use up again the iron derived from normal hæmolysis, but in this case the peculiar distribution of the pigment could not be explained.

The essential factor in hæmochromatosis appeared to be a special affinity of the tissues and organs for iron, and the source of the stored iron must ultimately be the iron in the food, but whether or not this passed through the form of hæmoglobin was not certain. The cirrhosis of the liver and possibly of the pancreas seemed in some way to be related to this abnormal metabolism of iron, but there must be some special factor, as in most cases of cirrhosis of the liver the accumulation of pigment was absent. The accumulation of iron must go on for a long period of time, sometimes for two or three years, even if all the iron in the food were retained. Reference was also made to recent analyses of food and excreta, indicating that there was an actual retention of iron.

BRISTOL MEDICO-CHIRURGICAL SOCIETY.

Teething.

A MEETING of this society was held on March 9th, Dr. L. E. V. EVERY-CLAYTON, the President, in the chair, when a discussion on Teething was opened by Dr. R. O. CLARKE, who began by saying he did not believe in the so-called symptoms of teething.

From the days of Hippocrates till the early part of last century "teething" was held to be the cause of all infant maladies, and some 50 per cent. of the infant mortality was attributed to it. A number of ridiculous superstitions arose, some of which survive to this day, such as the impropriety of healing a sore on a baby's head or curing an otorrhœa before the completion of dentition. In the middle of the nineteenth century doubts began to arise. In modern textbooks the subject was mostly dealt with by "hedging." The argument in one of these, that so many intelligent parents could not have been deceived, Dr Clarke held to be most fallacious, and he instanced the beliefs in witches, the evil eye, and overlookings which were upheld for centuries. After touching on views as to the process of eruption of a tooth, a process which he maintained was normally painless, he called attention to the fact that a baby is always cutting teeth from 6 months to 2 years old. He then went through the symptoms usually attributed to a baby being "about his teeth," such as dribbling, biting on hard objects, and so on, and gave an alternative explanation in each case. Disorders regarded as complications of teething, such as gastro-enteritis, and colds in the head, with consequent otitis, bronchitis, &c., were, he said, infective in origin in the first six months of life, and asked why their relapses after that date should be ascribed to teething? He did not deny that there was such a thing as painful dentition. Going through the various "scientific" theories advanced to support a popular idea, he said he could not see why reflexes from the fifth nerve should upset one system more than another.

Dr. Clarke said that there were two main classes of opinion. To those who really believed in "teething troubles" he had nothing to say, because their idea, often learnt at their mothers' knees, was as firmly fixed as their religious and political opinions. There were, however, those who, though not really believing in "teething troubles," yet thought it a harmless and eminently useful diagnosis, and it was to these that Dr. Clarke addressed his remarks. He firmly believed that nearly all minor ailments of babies were preventable, and that if medical men would instruct mothers how to avoid diarrhœa and colds they would get better results than by being content to say "It's teething." Moreover, the symptoms of early rickets, the most frequently overlooked of all diseases, were just those—convulsions and catarrhal infections—which were commonly attributed to teething.

Discussion.

The PRESIDENT confessed to a belief in teething as a source of rashes.—Professor F. H. EDGEWORTH thought it was improbable that any reflex irritation could provoke convulsions.—Dr. J. O. SYMES took the view that the belief in teething as a source of symptoms was a harmless and often comforting superstition.—Mr. W. R. ACKLAND spoke of the sudden relief to symptoms afforded by the opening of a gum, a fact corroborated by Mr. A. W. PRICHARD.—Mr. E. A. G. DOWLING attested the truth of the reference of aural pain to teething, and Dr. P. WATSON-WILLIAMS thought that the process of teething might actually lower the resistance of the ear to infection and predispose to otitis.—Mr. E. H. E. STACK showed that it was possible to distinguish between referred and direct aural pain.—Dr. R. S. STATHAM quoted experiences to show that in the second dentition it was sepsis that introduced an element of pain, and Dr. V. M. COATES spoke of bacteriological data supporting the infective theory of pain in the first dentition also.—Professor WALTER C. SWAYNE said that children's weights "mark time" and do not increase during teething, and observed that the coincidence of changes of diet with the period of teething might explain the coincidence of digestive disturbances with teething.—Dr. C. E. K. HERAPATH supported Dr. Clarke's view that it was time to relegate belief in teething as the cause of disorders to the realm of exploded myths.—Mr. G. F. FAWN gave reasons for believing that teething was often a painful process.—Dr. C. F. COOMBS suggested that the absence of complications from the second dentition supported Dr. Clarke's arguments. —Dr. CLARKE replied.

SOCIÉTÉ DE THÉRAPEUTIQUE DE PARIS.

AT a recent meeting of this society Dr. LESNÉ read a paper on

The Posology of Sodium Salicylate in the Child,

in which he emphasised the tolerance of the child for this drug and the good effects derived from its administration by enemata or intravenous injections in doses of 0·5 g. per c.cm. The tolerance to salicylates in childhood, shown by absence of tinnitus, delirium, and albuminuria, was doubtless due to the perfect condition of the renal emunctories in early life, as the salicylate appeared in the urine less than 24 hours after its ingestion.

The Hypodermic or Intravenous Injection of Allyltheobromine.

Dr. ROSENTHAL stated in a communication on this subject that though theobromine was regarded by Huchard as the most reliable diuretic, it was often ill tolerated in doses of 2 g. and a fortiori in doses of 3 or 4 g. On the other hand, allyltheobromine, which was 150 times more soluble than theobromine, could easily be injected in the form of a neutral solution hypodermically, intramuscularly, or intravenously. Dr. Rosenthal therefore recommended that in all cases of intolerance for theobromine allyltheobromine should be substituted in intramuscular injections of 0·30 g. twice a day. The intravenous method should be reserved for urgent cases or for those in which the presence of an œdematous infiltration contra-indicated the hypodermic route.

The Action of Heliotherapy and Phototherapy on the Præcordial Pain of Angina Pectoris.

Dr. ARTAULT DE VEVEY recorded two cases in which this treatment caused immediate relief and finally complete disappearance of anginal attacks occurring in patients with cardiac disease.

The Cholagogic Action of Polypodium Vulgare.

Dr. H. LECLERC stated, in a communication on this subject, that the rhizome of this fern, which was a favourite remedy in ancient times, was a powerful cholagogue without any irritative action. He related the case of a girl suffering from catarrhal jaundice whose symptoms had proved refractory to all the usual remedies, but soon subsided after the use of this rhizome.

The Treatment of Epidemic Encephalitis.

Dr. MULLER, of Liége, recorded three cases of the myoclonic form of epidemic encephalitis in patients aged 42, 33, and 15 respectively, in whom intravenous injection of iodine oil caused a rapid disappearance of the symptoms. The doses ranged from 6 to 15 c.cm. and from three to six injections were given in each case.

THE Chelsea Hospital for Women has received £100 from Mr. T. G. Sorby and £25 from Lady Nort towards the building of its nursing home.

Reviews and Notices of Books.

TUBERCULOSIS.

1. *Traité de Pathologie Médicale et de Thérapeutique Appliquée.* Tuberculose. (1) La Tuberculose en Général. (2) La Tuberculose de l'Enfant et de l'Adulte. Les Tuberculoses Viscérales. Edited by ÉMILE SERGENT, L. RIBADEAU-DUMAS, and L. BABONNEIX. Paris: A. Maloine et Fils. 1920 and 1921. Pp. 379 and 811. Fr.20 and Fr.35.

THESE two large volumes, which contain numerous black and white as well as coloured illustrations, include a series of articles on different aspects of tuberculosis by writers whose names are in themselves a certain guarantee of the value of the opinions expressed. Like most systems of medicine compiled by several writers, these volumes are good in parts; indeed, in most parts; as an index to the present vogues of treatment they are illuminating. More than 50 pages are devoted to an account of artificial pneumothorax treatment, and in the space of less than six pages vaccine therapy, including tuberculin, is handled with merciless scorn. Dr. Joussett stamps tuberculin as a pseudo-vaccine which both in theory and in practice is a gigantic failure. So it may be. But it is a curious fact that tuberculin therapy has survived for more than 30 years, during which its obsequies have been frequently celebrated with even greater gusto than Dr. Joussett devotes to them. Of serotherapy he is more hopeful, and he discusses this line of treatment at considerable length. Both volumes contain a mass of useful information presented in a highly readable and assimilable form.

2. *A Study in the Epidemiology of Tuberculosis.* By GEORGE E. BUSHNELL, Ph.D., M.D. London: John Bale, Sons, and Danielsson. 1920. Pp. 221. 20*s*.

Colonel Bushnell, who is Honorary Vice-President and Director of the National Tuberculosis Association of the U.S.A., calls this book a study of the epidemiology of tuberculosis. As such it is remarkably incomplete. Many and important epidemiological aspects of tuberculosis are totally ignored or only briefly referred to. But as a study of one aspect of the problem this book is of great value, because, in his advocacy of only one school of thought, the author has collected most of the available evidence supporting this school and has moulded it into a very convincing thesis. With engaging frankness he confesses that his views, as set forth in this book, are not supported by any original investigations. His aim has been rather to collect and discuss epidemiological data which have hitherto been buried away in inaccessible journals written in foreign tongues. Copious extracts from papers, mostly German, have been made, and it is evident that Dr. Bushnell's views are largely the expression of the teachings of Römer and others.

The gist of his message is that the first infection more or less decides the subsequent fate of the patient, whose susceptibility to reinfection from without is no greater than that of a syphilitic to reinfection with syphilis. "There is no good reason why disease caused by the virulent and highly resistant tubercle bacillus should form an exception to the law that reinfections do not take place so long as the infectious agent is present." The author goes on to show that, while the *mortality* from tuberculosis rises and falls with the general mortality and environment, there is practically no change in its *morbidity*. The author stamps as "the error of modern times" the denial of the teaching that a first infection prevents renewed infection from without. But once this elementary hypothesis is used as a key to he seemingly complex problems of tuberculosis "the riddle of the centuries" is solved. To readers intrigued by the notion that consumption can be eradicated by a wholesale roping in of sputum-positive cases in segregaion camps it must seem rank heresy when the author writes "...... the consumptive, much to be dreaded is at close quarters for the uninfected, is indispensable in the present era because he unwittingly provides for that immunisation which prevents our race from perishing, as so many other races have perished when thrust unprepared into the midst of infection." This book is to a great extent an exposition of Römer's law, according to which tuberculosis runs an acute and fatal course in communities where it is rare, and a chronic and relatively benign course where the disease is common. Or, that contact with tuberculosis affords a certain protection against it.

After reviewing the literature dealing with tuberculosis in highly civilised and primitive races, and the invaluable evidence provided by v. Pirquet's test, the author shows with convincing logic that the solution of the problem is to be found in the conditions under which infection first occurs. In civilised communities the problem is thus referred to very young children. If these can be protected against a large initial infection an all-important step has been taken. He quotes Pollak of Vienna as showing that after the age of 4 children do not appear to be unfavourably affected by the entrance of a tuberculous individual into the family circle, while those of lesser years grow up more delicate. When a child has recently become infected, as shown by v. Pirquet's test, the greatest possible care should be taken of it "to the end that the infection may remain latent." There can be no doubt, the author argues, that the first half-year after infection is a critical time for the child. "Proper attention at this time would do more to lower the morbidity and mortality from tuberculosis than anything except preventing the infant from coming into contact with the consumptive." The author's views on bovine infection are summed up in the following: "It is an Utopian dream ...... to hope that the tuberculous infection of cattle will ever be totally eradicated. But if this is not done, given the disappearance of the typus humanus, immediately bovine tuberculosis rears its horrid head, probably as formidable a menace as tuberculosis of the human type has ever been!." Being convinced that we must live with the tubercle bacillus if we are to enjoy the benefits of tuberculisation, the author regards a "sterilisatio magna" as little short of disastrous, and the ultimate object of his ambition is the replacement of nature's methods of tuberculisation, so terribly wasteful of human life, by a thoroughly scientific method of artificial inoculation which need sacrifice no life. Whether Colonel Bushnell has actually solved "the riddle of the centuries" or not, he has at least put forward many cogent arguments in favour of an hypothesis which, if it prove correct, would greatly simplify the campaign against tuberculosis.

3. *The Early Diagnosis of Tubercle.* Third edition. By CLIVE RIVIERE, M.D., F.R.C.P. London: Henry Frowde, Hodder and Stoughton. Oxford Medical Publications. 1921. Pp. 318. 15*s*.

BARELY two years have elapsed since the publication of the second edition of this useful book, and little alteration has been made in the present edition. In the section dealing with the differential diagnosis of tubercle, an important improvement has been made by the inclusion of pulmonary syphilis as one of the conditions which may simulate tuberculosis of the lungs. The author does not consider syphilis a very common simulant of pulmonary tubercle, and he quotes McCrae and Funk as finding only four cases of pulmonary syphilis among 1200 cases at the Jefferson Chest Hospital. On the other hand, the author admits that syphilitic ulceration of the trachea and bronchi may be comparatively common and may give rise to signs, such as cough and dyspnœa, suggestive of various diseases other than syphilis. Discussing the differential tests, he puts the therapeutic test last, but he admits that the best evidence of a syphilitic lesion lies in its response to antisyphilitic treatment. Mercury he recommends with confidence, but the iodides he advocates with the reservation that they are apt to cause a congestive reaction in active tuberculous lesions. Another condition which he introduces for the first time into his discussion of the differential diagnosis is pneumo-mycosis. In other respects, this third edition differs from the second chiefly in those finishing touches which every conscientious author wishes to add almost before his book has emerged from the press. With the recent, rather melodramatic exposures of incorrect diagnoses of tubercle, the need for an authoritative work on the early diagnosis of tubercle has become more than ever evident, and the author is to be congratulated on the lucid and comprehensive manner in which he has tackled a very difficult task. In the matter of percussion he is at his best—a best which leaves the possessor of an ordinary pair of hands humbly conscious of his deficiencies. We disagree with the author's aphorism that "where the teachers are at variance the tree of knowledge can hardly be expected to flourish." Discussion leads to truth, while untested views lead to dogmatism.

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4. *Die Lungentuberkulose.* Ihre Pathogenese, Diagnostik, und Behandlung. By Professor FELIX KLEMPERER. Berlin: Urban und Schwarzenberg. 1920. Mit 16 Textabbildungen und 5 Tafeln. Pp. 164. M.40.

WHEN an author in the preface to his book announces that it is intended not for students but for practitioners, he raises hopes that the jog-trot platitudes of orthodoxy will be abandoned in favour of a free exploration and discussion of new ideas and possibilities. In this case such hopes are, indeed, ultimately fulfilled, but before he is admitted to the author's own sanctum the reader must submit to a novitiate, during which he is regaled with such pabulum as: "The cause of pulmonary tuberculosis, as of every other form of tuberculosis, is Koch's bacillus." When he passes from such established facts to matters still in dispute the author's attitude is guarded and judicial; to the question whether pulmonary tuberculosis in the adult is due to endogenous infection resulting from disease in childhood or a new infection from without, he gives the safe, but not helpful, answer that both hypotheses may tally with the facts. Tuberculin treatment, he maintains, is to-day the "most important ætiological specific method of treating pulmonary tuberculosis." A few pages further on, and after a critical review of the literature of tuberculin therapy, he admits that tuberculin is "a useful support to general treatment, not more and not less." He is more emphatic on the subject of protein therapy, and he finds injections of milk, so vigorously puffed of late in certain quarters, as quite unsuited to replace tuberculin. His experiences of "partigen" treatment on Deycke-Much lines have left him unconverted. As for treatment with live cultures of acid-fast microbes, he has little hope to offer; he has given Friedmann's cultures in 40 cases, but even when the pulmonary disease was taken early, no marked benefit ensued from this treatment. In a short review of pneumothorax treatment the author opines that every operation fatality can be traced to air embolism, and that pleural reflex accounts only for some of the alarming symptoms not terminating fatally. Useful notes are appended to the symptomatic treatment of such trying complications as night sweats and cough.

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5. *Die specifische Percutanbehandlung der Tuberkulose mit dem Petruschkyschen Tuberkulinliniment.* By Dr. F. GROSSMANN. Berlin: Urban und Schwarzenberg. 1921. Pp. 76. M.12.

Dr. Grossmann throws into this booklet on the treatment of tuberculosis by innuction with Petruschky's liniment all the fervour that personal recovery under specific treatment is calculated to infuse. After undergoing Petruschky's treatment the author has, in conjunction with Petruschky, done much to put this treatment on a rational and systematic footing. Readers with a lurking suspicion that this method represents an inert, harmless placebo will note that the author finds it contra-indicated in the presence of high fever, mixed infections, and other debilitating conditions.

A PHYSICIAN'S ANTHOLOGY OF ENGLISH AND AMERICAN POETRY.

Selected and arranged by CASEY A. WOOD, M.D., and FIELDING H. GARRISON, M.D. London: Oxford University Press. 1921. Pp. 346. 8*s.* 6*d.*

THE appearance of another anthology requires justification, because if it is to be representative it must contain verses which have been published repeatedly in different forms. "A Physician's Anthology of English and American Poetry" has the best and most logical of origins; it was intended as a birthday offering on his seventieth birthday to Sir William Osler, "le physicien, le plus poéte que jamais," to paraphrase Liszt's description of Schubert. The prophet of international medicine did not live to see the book published, but the scheme and much of the contents had already passed through his hands, and he had given his approval. It is to his memory therefore that the volume is dedicated. The book is not a collection of verses by medical men, nor do the poems deal with medical subjects. It is, says Dr. Garrison in his foreword, difficult for a physician to find time and energy to read poetry; and it is this, and not lack of appreciation which deters them. The arrangement of this collection is intended to facilitate reading for these time-pressed doctors of medicine.

The volume is divided into 18 sections from "Youth and Manhood" to "Divina Mors," passing through such experiences as "Nympholeptos" and "Taedium Vitae," and the poems are chosen very widely. Thus we find in the anthology, under the heading "Amantium Irae," Shakespeare's "Let me not to the marriage of true minds" facing Rupert Brooke's "The Hill." And under the section "In War Time" Milton's "*Captain or Colonel or Knight in Arms*" precedes Walt Whitman's wonderful pictures of the American Civil War, and is followed by a chorus from "Prometheus Unbound" and Dr. Henry Head's dignified and pathetic message to those who in the recent war were found too old to fight. Here also is Mr. Siegfried Sassoon's mordant estimate of a certain sort of blatancy, that was neither so useless to the Allied cause or so wholly hoggish in its origins as he thinks, but which certainly gave a chance of expression to very unworthy sides of character and conduct.

Anthologies remind us of the time-saving, trouble-saving doctrines of modern life, from which now apparently even the reading of poetry may not be excluded; but they lead to a wider appreciation of the English-speaking poets and as such are heartily welcome. The class of readers aimed at in this collection will find that an excellent choice has been made for them.

POVERTY AND ITS VICIOUS CIRCLES.

Second and enlarged edition. By JAMIESON B. HURRY, M.A., M.D. London: J. and A. Churchill. 1921. With illustrative diagrams. Pp. 411. 15*s.*

THOSE who are taking up social work will read with interest and profit this second edition of Dr. Hurry's work. As the author says in his preface, "Social reform has received an impetus which shows no signs of slackening and whose effects are reaching to the remotest quarters of the earth."

Part I. of the book deals in 22 chapters with the vicious circles of poverty. Part II. shows how as the effect of these vicious circles poverty becomes a self-perpetuating, a self-aggravating, and a fatal disorder. Part III. deals with the attempt to break the vicious circles by legislation, by the work of voluntary organisations, and by individual effort. In the conclusion (Part IV.) the author discusses the methods which promise most success in the future.

There are interesting accounts of the extension of the franchise, of social legislation, of the Elberfeld system, of the Poor-law, and many other matters. The author has more faith in legislation than in the Poor-law. He gives special praise to the friendly societies and the coöperative movement. We are not sure, however, that coöperators are always model employers. Dr. Hurry says (p. 134) that the diminution in lunacy among females during the war, in spite of the emotional wave pervading the nation, "was due to the full occupation of, and high wages paid to, all women who could work." This statement is specially interesting in view of the large proportion of domestic servants and of governesses among the older female patients in county asylums, both being occupations formerly badly paid and allowing of small emotional outlet. Trade-unions come in for some criticism from Dr. Hurry for the narrowness of their outlook and "a certain lamentable selfishness of purpose." It has certainly been extraordinary how little the keen male trade-unionist has interested himself until quite recently in the organisation of woman's labour. The man who has worked hard for due recognition of the value of his own labour has allowed his wife or daughter to work for "pocket money" wages, and has, as Dr. Hurry points out in Chapter 16, thus helped ultimately to reduce his own wages. We note that in the chapters on defective feeding and wastefulness the author retains the idea that one protein is as good as another and that margarine is equal to butter. We think, in view of recent work on amino-acids and vitamines, such statements should be qualified.

The book is written rather in a philosophical than in a practical spirit. The author has no new remedies to put forward and does not even discuss proposals such as pensions for mothers or State subventions for the relief of poverty of the widow with young children or of the large family of the man earning a labourer's wage. In his conclusion he professes himself an optimist, but perusal of his book left us in no such frame of mind. The devotion of a separate chapter to each circle, while it leads to inevitable repetition, makes it difficult for the reader to formulate from the whole a practical programme of social reform.

STUDIES IN DREAMS.

By MARY ARNOLD-FORSTER. With a Foreword by Dr. MORTON PRINCE. London: George Allen and Unwin, Ltd. 1920. Pp. 186. 8*s*. 6*d*.

THE reader who is familiar with the recent literature of dream-study and cognate topics may find himself attracted by this book because of its literary qualities rather than by any new knowledge about dreams which it may provide. For Mrs. Arnold-Forster's style is a welcome change from the kind of writing to which we are accustomed in "scientific" accounts of the nature of dreams; and her sane and dispassionate consideration of the problems presented by her own dream-life is a model which more dogmatic writers might do well to copy. Mrs. Arnold-Forster approaches the subject with the intention of finding out by observation and experiment what can be learnt about the working of the various mental faculties in the dream-state; and she discusses the part played by the will, reason, imagination, and memory. Her own experience of the possibility of controlling her dreams leads her to believe that "the dream mind is far less independent of our will than is supposed, and that, to a degree that is not generally thought possible, the waking mind can, and does, direct the activities of the mind in sleep." The examples adduced in support of this opinion are strongly reminiscent of the influence of suggestion in suggestible or hypnotised subjects, and since we know that in such subjects dreams can be imposed on the dreamer's mind and their course determined by suggestion from without, there is no reason to doubt that self-suggestion may, in some cases, be equally efficacious. In this sense voluntary dreaming and "dream control" may be possible; but this is not to say that the will is active *during* the dream.

Great importance is ascribed to the part played by sensory impressions during sleep, and to their power of arousing memories with hallucinatory vividness. In dreaming, association of ideas is assumed to be free from all inhibitions, and as soon as a thought arises in the mind its sensory imagery takes *concrete form* and appears as objective reality. The dream is fashioned from such sources entirely, and its structure and course unted for by the free play of association and a tening of the faculty of imagination." No attempt is made to discover why the flights of imagination take the course they do; they are obviously regarded as the product of "free" fancy. Thus the dream, having no *meaning*, needs no "interpretation." In her dislike of the symbolic interpretations made use of in psycho-analysis the author seems to have forgotten the importance of the method of dream interpretation by "free association," though without investigation by this method the personal significance of any dream is elusive. A striking feature of the author's own dreams is their coherence into connected stories. As Dr. Prince points out in his foreword, "the dream-mind, like all dissociated systems, can be educated into a highly organised intelligence." This appears to have been the case with the dream-mind of the author, and when this happens, the dream-life assumes a very different character from that which it shows in ordinary people.

Interesting accounts of dreams which show some amount of supernormal faculty, and descriptions of experiences in the borderland state between sleep and waking occupy a considerable part of the book. In a future edition more care should be taken in proof-reading. On page 159 Professor McDougall's name appears three times as "McDowell."

PRÉCIS DE MICROBIOLOGIE CLINIQUE.

Par FERNAND BEZANÇON. Paris: Masson et Cie. 1920. Pp. 600. Fr.30.

THIS book is one of an admirable series of volumes, the "Collection de Précis Médicaux," issued by Masson et Cie. The present edition is the third, and maintains the form and scope of the previous ones. There are naturally certain additions and extensions corresponding to the growth of knowledge or to the added importance of certain branches of bacteriology. Thus the methods of bacteriological diagnosis of cerebro-spinal meningitis, of typhoid and paratyphoid, and of dysentery are discussed at length and in detail. The information contained in the book, though stated to be elementary, is abundant enough to supply interesting reading to experts, and is given with the precision common in French authors. The book can be confidently recommended to laboratory workers and to clinicians.

MANUAL FOR HEALTH VISITORS AND INFANT WELFARE WORKERS.

By Several Writers. Edited by Mrs. ENID EVE, late Ministry of Health; formerly Chief Health Visitor and Sanitary Inspector to the Borough of Holborn. London: John Bale, Sons, and Danielsson, Ltd. 1921. Pp. 194. 10*s*. 6*d*.

THIS little book is one of a series of modern clinic manuals. Dr. Bostock Hill writes a preface, and we cordially agree with his views as to the desirability of a conjoint appointment of so-called health visitor, school nurse, tuberculosis visitor, and midwife inspector, wherever this is at all possible. From the point of view of the health visitor her work should be varied; from the point of view of the work overlapping should be avoided, and the mother in the home should not be worried by all kinds of different official visitors, but should be visited by one woman who can try to constitute herself the friendly adviser of the family in health matters.

The book, as might be expected from the experience of the editor, who is also the author of many of the chapters, is full of good sound advice to those who are contemplating the adoption of the career of health visitor. Apart from training, the great requisites of a health visitor are tact and good temper. The advice in this book ought to help in the acquisition of tact and in the assumption of the virtue of good temper even by those who have it not. The booklet contains a useful appendix with regard to training institutions and curricula for health visitors, and it is unfortunate that its price may possibly prevent it from coming within the reach of all health visitors. Health authorities might save public money by presenting it where it would be useful and used.

THE LANCET.

LONDON: SATURDAY, MARCH 26, 1921.

Ophthalmia Neonatorum.

OPHTHALMIA neonatorum has been notifiable since April 1st, 1914, and in some recently issued reports of medical officers of health reference has been made to its increased prevalence. Ophthalmic surgeons are agreed that with proper treatment of the eyes at birth the disease can be prevented, and cases of it should become exceedingly rare. There is general agreement that when it has occurred, given adequate and prompt treatment, damage to either eye should be very exceptional, and the loss of an eye almost unknown. In these circumstances the occurrence of a case in any lying-in hospital should be made the subject of careful inquiry. Obstetricians and gynæcologists are not eye specialists, and it follows that every lying-in hospital should have a call on the services not only of a physician interested in pædiatrics, but also of an ophthalmic surgeon, so that the nursing staff, the pupil midwives, and, last but not least, any students attending the practice of the hospital, may have adequate instruction in the methods necessary to prevent the disease. If the first line of defence against ophthalmia is broken, efficient curative methods would thus be applied at the earliest possible moment.

From two-thirds to three-quarters of the births in the country being attended by midwives, the Central Midwives Board should see to it that registered midwives receive the necessary instruction in the use of one of the silver solutions recognised as being effective. Local authorities are empowered to issue these solutions to midwives capable of using them. It should not, however, be hastily assumed that births attended by midwives involve the greatest danger. Recently we heard of a case where it was intended to make all possible provision against unforeseen circumstances. The family medical attendant, a consultant obstetrician, and an experienced monthly nurse were all three engaged beforehand. Attention was concentrated on the mother: the baby lost one of its eyes. The midwife is bound by the rules of the Board to send for medical help whenever there is "inflammation of, or discharge from, the eyes, however slight," and to notify the medical officer of health that she has done so. Thus, when a midwife attends a birth, provision is made for very early notification of ophthalmia neonatorum. The medical attendant does not wash the baby and may fail to notice the first signs of anything wrong with its eyes. When a case of ophthalmia does occur it is not sufficient for the midwife to send for the nearest doctor. Many practitioners make no claim to special knowledge of eye diseases, and one who rarely meets with such cases might not recognise at once that he is confronted with something formidable. Valuable time may be wasted in ineffective treatment with boric lotion, and irretrievable damage may be done before the case comes to the notice of an ophthalmic surgeon. In face of the menace of such a tragedy as a blind child we must not stand on ceremony or take risks. The medical officer of health, who finds that treatment is not being effectively carried out, ought to be able to arrange with the general practitioner to have mother and child removed to hospital at once—the mother in order to prevent weaning and also that her own treatment may be undertaken if the disease is gonorrhœal in origin. In every large centre of population beds should be available for this purpose, whether in a municipal or a voluntarily supported hospital. The stay in hospital is short and the expense slight compared with the importance of the object in view. From one-quarter to one-third of the inmates of institutions for the blind are there on account of inadequately treated ophthalmia neonatorum. We must cut off this supply of human misery at its source.

In the Memorandum of the Ministry of Health dealing with the form of annual report for 1920 it is laid down that "details should be given of each case of ophthalmia notified, showing whether one or both of the eyes suffered permanent injury, and if so, to what extent." Such annual reports hitherto have not given this information, but have simply returned the number of cases notified. Special forms are now issued by the Ministry which are to be filled in for notified cases of encephalitis lethargica, acute poliomyelitis, and cerebro-spinal fever. This is done for the purpose of increasing our knowledge of the diseases mentioned. We suggest that special forms should be issued by the Ministry to be filled in for each case of ophthalmia neonatorum, in order that we may know what damage is done by this disease and to what extent the knowledge of it we actually possess is utilised or ignored. By the adoption of such a plan attention would become focussed; the occurrence of cases of ophthalmia neonatorum would be enormously decreased and the loss of eyesight from this cause would practically disappear.

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Protozoal Intestinal Infection at Home.

INVESTIGATIONS on the human intestinal protozoa were undertaken during the war with the object of clearing up the diagnosis in thousands of cases of dysentery and other intestinal disorders. The patients were continually invalided home from the near and far East, and very soon the fact was brought to light that *Entamœba histolytica* and other protozoa were often present in cases which had had no dysentery, nor, indeed, any intestinal malady whatever. It became clear, therefore, that it was only a small percentage of those actually infected with *E. histolytica* which acquired true dysentery. As a few isolated cases of dysentery and liver abscess and one carrier case had been recorded as occurring in individuals who had never left the British Isles, the suspicion was aroused that infection with *E. histolytica* amongst the inhabitants of Britain might not be so rare as was generally supposed. With this idea in mind, and assisted by several trained experts working in different parts of the country, Mr. CLIFFORD DOBELL, on behalf of the War Office Committee on Dysentery, of which he was a member, organised an investigation of the indigenous population. A similar investigation had already been undertaken at the Liverpool School of Tropical Medicine. present Report,[1] which is not the least of the many valuable publications emanating from the Medical Research Council, contains a critical review by Mr. DOBELL of the records and results of the various investigations just mentioned, together with an account of cases of *E. histolytica* infection previously recorded amongst residents of the British Isles.

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[1] A Report on the Occurrence of Intestinal Protozoa
tants of Britain with special reference to *Entamo*
By Clifford Dobell, F.R.S. (Protistologist to the M.
Council), with contributions by A. H. Campbell, B
D.Sc., R. C. McLean, M.A., Muriel M. Nutt, ac
A.R.C.S. Medical Research Council, Special
1921. Price 2s. net.

The investigations extended over a large class of population, the Liverpool examinations including civilians in Liverpool Royal Infirmary, army recruits, children, asylum patients, and university and school cadets. Other reports deal chiefly with the artisan class of Birmingham, Brighton, Leeds, Sheffield, Bristol, and Reading. As a result of these examinations it was found that the following protozoa were present, the figures representing the incidence percentage amongst over 3000 individuals examined: *E. histolytica* (7–10), *E. coli* (35–54), *E. nana* (9–13), *Iodamœba bütschlii* (0·5–0·75), *Giardia intestinalis* (18–27), *Chilomastix mesnili* (6–9). It was thus demonstrated that the working-class population examined was infected with *E. histolytica* to the extent of 7–10 per cent. The earliest age at which an infection with this organism was found was three years, but that it may be expected at an earlier age is demonstrated by the finding of *Giardia intestinalis* in a child of 3 weeks. Sex does not influence the chances of infection to any extent, nor does occupation, with the exception of that of miners, who provided the greatest number of infected individuals. Certain instances of family infection came to light, and one is mentioned in which the father and mother and five of six children were all infected with *E. hystolytica*. It thus appears that practically all the common intestinal protozoa of man occur indigenously in all parts of Britain, and, as the writer remarks, it is no longer necessary to seek a foreign origin for every case of protozoal infection found in this country. Attention is also drawn to observations which indicate a similar state of affairs in France, Holland, and Germany.

All evidence goes to show that these infections are not a result of the war, and there is every reason to suppose that they have existed amongst the population for hundreds of years. The figures indicate the frequency with which inhabitants of our islands consume food and drink which has been exposed to gross contamination with fresh human fæces. The fact that so large a percentage of the population is infected with *E. histolytica* does not mean, however, that many cases of amœbic dysentery will occur. Compared with the number infected those who acquired the disease are actually very few, and the more frequent occurrence of amœbic dysentery in tropical countries is accounted for by the much higher incidence of infection. The presence of *E. histolytica* in the population of Britain need not be regarded with alarm. Nevertheless, in the future as in the past, this protozoa may be expected to cause some cases of dysentery and liver abscess, and because of the serious nature of these diseases its presence should be recognised by medical practitioners and the possibility of its occurrence in certain cases duly considered. Protozoal infections of the human intestine can no longer be regarded as peculiar to the tropics. They are generally more frequent there, because it is in those regions that sanitation is relatively defective. That they occur to the extent they do in Britain is perhaps surprising; [illegible]w, it is a fact well worth the attention of sani[illegible]ns. May not the incidence of protozoal infections be an index of the efficiency of sanitary systems and personal hygiene amongst any given population? The facts brought out so clearly in this most interesting Report deserve attention commensurate with their far-reaching importance.

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Approved Societies and Voluntary Hospitals.

DURING the debates at the end of last year, by a Standing Committee of the House of Commons, upon the Ministry of Health (Miscellaneous Provisions) Bill—a measure which was afterwards rejected by the House of Lords—the most important discussion from the medical point of view centred round Clause 11 of the Bill, which sought "to give power to county councils to supply and maintain hospitals, to contribute to any voluntary hospitals within their area, to undertake maintenance of Poor-law hospitals and institutions, and to establish and maintain or contribute towards the ambulance service." In view of representations that this clause, by setting State organisation at rivalry with charity, would prejudice the voluntary system of hospital support at a critical time, and just when there was a strong feeling that the country did not enjoy to the full the benefits that might be obtained under that system, Dr. ADDISON stated that he would forthwith appoint a committee "to inquire into and report upon the financial position of the voluntary hospitals throughout the country." This was a wise move, for until accurate information was made public from authoritative sources the most widely differing estimates as to the poverty of the voluntary hospitals had to be dealt with as serious, even though, if some of the statements were true, others must be false.

The Committee appointed by Dr. ADDISON consisted, as he promised it should, of five Members only, none of them being medical men or connected with hospital arrangements in any way, and from this small and impartial body, over which Lord CAVE presided, expeditious advice has now come in the form of an Interim Report.[1] The document, which is unanimous, commences by acknowledging that from evidence received the conviction has been reached that it is desirable in the public interest to maintain the voluntary system of hospital management, and we are glad to welcome a pronouncement which we anticipated. The Committee find that the present situation of financial depression has been mainly due to the large increase, during and since the war, of salaries and wages, and in the cost of provisions and materials; and they hope later to make recommendations as to the practical methods of remedy. But in the meantime an Interim Report is issued because a pressing matter, whose consideration is within the terms of reference, has just presented itself. The quinquennial valuation of Approved Societies under the National Health Insurance Acts shows a considerable surplus over the amounts required for the purposes of the Acts. "Excluding Ireland," says the Report, "the valuation of 4926 societies and branches containing 2,558,123 members (out of a total of approximately 10,000 societies and branches containing nearly 15,000,000 members) which had been completed on Dec. 24th last, showed a total disposable surplus as at Dec. 31st, 1918, of £2,171,576, and it is anticipated that when the valuation is completed the total disposable surplus of all the Approved Societies will not be less than £7,000,000. This result is attributed to a material extent to conditions arising out of the war, such as the reduction owing to war conditions of sickness, disablement, and maternity claims, and the release of reserves in respect of members killed on active service." Now under the provisions of the Acts the Approved Societies may, during the next five years and with the approval of the Ministry of Health, utilise any surplus at their disposal in providing additional sick benefits, while the payment of the whole or any part of the cost of the maintenance and treatment of members in a hospital or convalescent home is specifically mentioned in the list of additional benefits authorised by the Acts. The strong opinion of the Voluntary Hospitals Committee is that, in the interest both of the hospitals and of the Approved Societies, a substantial part of the disposable surplus should be applied towards the cost of the maintenance of members of the Societies while they are in hospital. We believe that the larger of the Approved Societies will find themselves in full accord with the suggestion of the Voluntary Hospitals Committee. Those who desire to maintain the voluntary system—even its most ardent supporters—have never disguised from themselves that that system requires much strengthening. How could any other view be held having regard to the statements of their pecuniary plight which continue to emanate from all parts of the country and from some of the best-known institutions? But it has been clear for a long time that the country does not reap to the full the benefits that might accrue under the voluntary system, because of the ineffective procedure which characterises much of the administration. Subscriptions are not collected in any systematic manner from large classes who are quite able to assist. The three outstanding sources for an increased hospital revenue under the voluntary system have been seen to be, first, large business firms whose employees receive benefits in many cases out of all proportion to any donations or subscriptions made by the firm; secondly, the patients themselves, a very large proportion of whom are able to pay something towards their maintenance, although unable to meet the great cost of long illnesses, operative interference, or special treatment in their own homes; and thirdly, the Approved Societies, to whose members the work of the voluntary hospitals is of very great value. The Interim Report states that of the patients treated at the hospitals "a considerable portion, about 30 per cent. of the out-patients, and a larger percentage of the in-patients, are insured persons, and the effect of hospital treatment is not only to relieve these patients from suffering, but also to reduce the period during which they are a charge upon the Insurance funds." If the war, while depleting hospital funds, has had the effect of greatly increasing the surplus available to Approved Societies a special reason is provided for the consideration by the Societies of the claims of the hospitals.

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[1] Ministry of Health, Voluntary Hospitals Committee: Interim Report. London: H.M. Stationery Office. (Cmd. 1206.) 1*d*. net.

The Report concludes by recommending succinctly to the Ministry of Health that the matter should be brought to the notice of the Societies concerned, who should be advised as to the amount of the contributions which could reasonably be made out of their available surplus. The urgency of the situation, which has led to the issue of an interim document, is due to the occupation at the present time by the Societies in framing schemes for the future. Obviously, it would have been more convenient to include in a general report the consideration of the responsibilities of the Approved Societies towards the hospitals, when the relation of these circumstances to the whole complex problem would have been apparent. But, in the circumstances, it became necessary for the Committee to call the attention of the Ministry to the inadvisability of approving of any scheme for the disposal of the Societies' surplus until their recommendations on the subject had received consideration.

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A DEFENCE OF THE MEDICINE-MAN.

DR. MARETT, reader in social anthropology at the University of Oxford, is one of the latest apologists of medical ethics, as they were understood by our remotest ancestors. In a chapter on The Primitive Medicine-man in his "Psychology and Folk-lore," published in 1919, he takes up the cudgels for a class which has pretty generally been regarded hitherto as composed almost entirely of quacks and deliberate swindlers. According to him the medicine-man of antiquity, as well as his tribal representative to-day, was, and is, no humbug. The Australian aboriginal practitioner believes as firmly as his patient that disease, especially if it be sudden in its onset and obscure in its origin, has been caused by the introduction into his patient's head of some foreign body—usually a piece of crystal—and this he proceeds to extract symbolically. After uttering the proper prayers or incantations he apparently brings a piece of crystal out of the cranium of the sufferer, but—and this is the point to remember—he does not seek to hoodwink anyone by what appears to be a sleight-of-hand trick. His patient and his patient's friends are not for a moment deceived by him. They know as well as he that he has been holding the piece of crystal in his hand—or up his sleeve, if he wears one—and that he has only acted ritualistically throughout. The crystal is a symbol of the mischief within the head, which may in its turn for the matter of that be only referred to as a crystal *pro formâ*. What the medicine-man really does is to set the good magic influence or "nama" within himself to combat the bad "nama" afflicting his patient. He, in fact, deals in the occult, but he does so with high moral intent, and has attained to the power of so dealing only after severe training, involving fasting, isolation, and all the other miseries of a special initiation.

DR. MARETT'S contention is engaging and it makes for the honour of the profession that at present represents the tribal medicine-man, the tribal king, priest, and bard, for there was an early period in human history when all these offices or functions were perhaps often combined in one person. Whether, however, his theory can be said to hold true in all cases is another question. Probably there were good medicine-men and bad, from the latter the charlatans being descended. Something very like "nama" still lingers in the prescriptions of illicit practitioners, and many primitive people in every class all the world over are attracted by the occult element in a patent pill. Dr. MARETT recognises the fact that among primitives malpractitioners were not unknown, but he is careful to show that the good medicine-man, who views his craft in the light of a religion, is always anxious to drive out mere magicians and necromancers from the circle of the profession. Practice involves high moral standards and an ascetic outlook on life. It was an Australian aboriginal who told Dr. HOWITT that he had taken to drink, and that as a consequence the virtue had gone out of him. We trust that he was quite sincere in his professions, since a sceptic might argue that the savage is always anxious to stand well with those strange white men of the missionary type, with their new-fangled views about temperance and continence, and their undoubted supplies of beads, blankets, and other good things.

Annotations.

"Ne quid nimis."

UNIVERSITY GRANTS.

THE Universities Grants Committee have just issued their report, which they describe as a preliminary survey of some of the outstanding difficulties of finance and organisation which confront the universities at the present time. The Committee consist of Sir William M'Cormick (Chairman), Dr. W. Bateson, Sir Dugald Clerk, Sir J. J. Dobbie, Miss S. M. Fry, Sir F. G. Kenyon, Sir Stanley Leathes, Sir Wilmot Herringham (who was appointed in place of the late Sir William Osler), and Sir J. J. Thomson. The report opens with an expression of the Committee's sense of the efficiency maintained in the universities and colleges generally in the face of serious difficulties; the members were convinced at an early stage in their investigations that the present resources of the universities are inadequate. Since the armistice the Treasury grants as a whole have been increased by 83 per cent., and support has been obtained through increased tuition fees, and, in some instances, assistance from local education authorities; but all expenditure has increased enormously, and even if pre-war incomes had been doubled it is doubtful whether the universities would be as well off as they were before the war. The Committee are satisfied that the efficiency of university education will be seriously endangered unless further substantial improvement is made in the salaries of teaching staffs. It was clear from evidence received that some members of university staffs were living in circumstances quite incompatible with continued efficiency; material readjustments of salaries were long overdue in 1914, and present economic conditions emphasise the urgency of the question. The Committee doubt whether universal flat rates and automatic increments are possible or desirable, but they consider that it would be an advantage if all grant-aided institutions could agree upon basic minimum salaries within grades and faculties. Hardly less important is the provision of a suitable system of superannuation, with maintenance of the autonomy of the universities, and facility for free transference of teachers into other professions. The insufficient numbers of teachers are also causing anxiety to university authorities; members of the staffs are, as a rule, not only underpaid but also overworked, and sufficient leisure to pursue research is as essential as adequate remuneration. With reference to tenure of appointments the Committee are of opinion that greater fixity is in many cases desirable; and as regards status, lecturers below the rank of professor should be given an effective voice in internal administration and the regulation of study and discipline. Passing on to the subjects of equipment and accommodation, the Committee refer to the necessity of adequate provision for increase and upkeep of university libraries, and to the wider recognition of the importance of the librarian's position. The needs of the Faculty of Arts are mainly for personnel; the Faculty of Pure Science requires, in addition, accommodation and material equipment, particularly in view of the large numbers of ex-Service students who have recently entered the latter department of study.

Turning to applied science, the Committee take the Faculty of Medicine as the best example of the theoretical and practical in combination, as the requisite thorough grounding in the basic sciences of physics, chemistry, and biology, and in the intermediate anatomy and physiology, illustrate the essential condition of a university education in any applied subject. The Committee are of opinion that no education can be called liberal which leaves a student at 18 ignorant of the fundamental laws of nature; but there are too few secondary schools in which these subjects are at present properly taught to permit the universities to dispense with elementary instruction them. Within the past 25 years the teaching of students of medicine has been very widely extended, and is now passing into the hands of teachers devoting their entire time to the work, each subject of which requires much space and great expense for laboratory purposes. It has not in England been considered a necessary qualification for teaching medicine that a man should have practised laboratory methods of advancing the science; the Royal Commission of University Education in London, reporting in 1913, recommended the setting up of a system which would provide teachers and assistant staffs willing to devote themselves to scientific investigation. This system is now in operation by means of the clinical units established, with the assistance of grant aid from the Treasury, at the medical schools of four London hospitals, and the Committee state that everywhere throughout England and Scotland the principle has been seized upon and the need realised; they have issued a statement for the guidance of university bodies contemplating the establishment of new arrangements to this end.

In considering general needs, the Committee recommend throughout the provision of grant aid in the form of block grants. Reference is made in the report to the serious shortage of residential accommodation for students in most of the great cities, and to the wide extension of extra-mural work. In consultation with the authorities of universities and colleges the Committee have drawn up for annual presentation to Parliament schedules displaying the essential items of income and expenditure, together with statistics of students. They express the opinion that it is not perhaps an impossible ideal to look forward to a general scheme whereby the areas served by different universities should be defined, and all rating authorities should contribute to their local university the proceeds of a penny rate. In conclusion, the Committee emphasise the possibility of local support in future grant allocations, and urge upon university authorities the importance of regarding their endowment funds as their central source of revenue.

ACUTE PERITONITIS SIMULATING ENTERITIS.

CONSTIPATION is the rule in acute peritonitis and in the cases in which diarrhœa occurs the peritoneal symptoms—abdominal pain and tenderness and repeated vomiting—generally render the diagnosis clear. At a meeting of the Société Médicale des Hôpitaux of Paris, MM. A. Bergé and J. Roberti reported a case in which the diarrhœa was so prominent a symptom and the signs of peritonitis so slight that the diagnosis from acute enteritis remained doubtful for a long time and prevented operation at the most favourable time. A dressmaker, aged 21 years, was admitted into hospital on July 23rd, 1920. The history was that after dancing all night on the 17th and taking six or seven ices she had slight rigors on the evening of the 18th. However, she was able to work on the 19th. That night she was attacked with diarrhœa and pain in the abdomen, which from the first was generalised. On the morning of the 20th she vomited her coffee. The diarrhœa, accompanied by colic, continued. Fifteen to 20 greenish glairy stools were passed daily. For five months she had suffered from leucorrhœa. Menstruation was very irregular. On examination she was prostrate, and the eyes were sunken. More than 10 greenish glairy fœtid stools had been passed in 12 hours and one contained a little blood. There was no nausea. In the hospital she vomited three-quarters of a litre of greenish fluid; this was the second time she vomited in four days. The abdomen was a little distended, tender all over, and especially in the left iliac fossa. But the tenderness was neither exquisite nor superficial; strong pressure was necessary to provoke it. There was no cutaneous hyperæsthesia and no pain on sudden depression of the abdominal wall. The patient could sit up without pain. The tongue was moist, the temperature 102·8° F., the pulse 116 and good, and the respiration 35. There was oliguria and no albuminuria. Attempts at inducing abortion were denied. Menstruation last took place at the end of June. Vaginal examination showed the cervix a little soft, but the body of the uterus was normal. On the two following days there was considerable improvement, and on the 25th the abdomen was less distended and less tender and more supple, and only a single stool was passed in 17 hours; but on the 26th her condition was distinctly worse, the features were pinched, the pulse 150 and thready, and the dyspnœa had increased. The abdomen was a little distended, tense, and a little painful. She vomited once and passed one glairy stool. A surgeon was called in and performed exploratory laparotomy. There were tracks of pus, but no collection, all over the abdomen. The maximum amount of pus and membrane was in the pelvis around the left tube. Salpingitis was considered the source of the trouble and total hysterectomy was performed. Death occurred three hours after operation. The uterus was found normal, the tubes a little enlarged, but without any gross lesions. At the necropsy the intestines were found injected and covered at numerous points with fibrino-purulent membrane. The whole intestine was filled with greenish-grey mucous liquid. It was then ascertained that on the 15th the patient had visited a professional abortionist, but what had been done was not known. Evidently the peritonitis was of genital origin and due to manœuvres to induce abortion. The intensity of the diarrhœa and the slightness of the symptoms of peritonitis suggested enteritis. Slight or moderate diarrhœa is recognised in pneumococcic and certain septic forms of peritonitis with profound intoxication, particularly streptococcic peritonitis. This diarrhœa is serous or glairy and often fœtid. But in these cases the ordinary signs of peritonitis—vomitings, abdominal pain and hyperæsthesia, very rapid, feeble pulse, and hiccough—render the diagnosis clear.

T.N.T. IN THE ANIMAL BODY.

T.N.T. poisoning has fortunately lost most of its immediate practical interest,[1] but the study of its remote effects on the body yielded results of sufficient interest to warrant a full inquiry. The outcome of this inquiry is now before us in a special report,[2] containing the most recent observations. Approach has been made from the point of view of the clinical features, toxicology, and biochemical evidence. The net result tends to show that the workers in these separate fields of investigation come to similar conclusions as regards certain aspects of the condition. The outbreak of toxic jaundice amongst workers in munition factories revealed the fact that the trinitrotoluene itself was the causative factor, and this was all the more surprising since up to this time it had been regarded as a more or less harmless substance. Naturally impurities in the trinitrotoluene were at first looked upon as the cause, but these have been proved to play no part in the production of toxic jaundice. The knowledge gained as a result of this scientific inquiry is of undoubted value, and opens up a field of investigation into the effects on the liver of closely allied substances. Trinitrotoluene is prepared by nitrating toluol, a compound produced from the distillation of coal-tar. It is possible that a number of closely related chemical compounds derived from the same source may exert a similar action on the liver. Their use in medicine is being extended daily, and we want to know their exact action on the body, particularly on the liver, and whether this action is similar to that produced by T.N.T. It is in this respect that the present report offers such valuable information and suggestions, and therefore merits careful attention.

Dr. W. J. O'Donovan contributes a long memorandum on the subject, and deals with the historical, technical, administrative, and clinical aspects of the problem.

His paper affords an excellent illustration of the value of combined work in approaching such a problem. The paragraph on the technical side is of interest, particularly as illustrations are given of the method of filling shells with T.N.T. Amongst the clinical features observed were toxic gastritis, toxic jaundice, dermatitis, and anæmia, the latter in the more severe forms being of the aplastic type. The workers who suffered from dermatitis, as a general rule, did not develop toxic jaundice or anæmia, and in this condition susceptibility undoubtedly played a very large part in its production. In the latter months of the war T.N.T. in the form of a fine yellow powder was mixed with ammonium nitrate (80 per cent.), making the resulting mixture (amatol) much more hygroscopic, and it was with the use of this mixture that the skin lesions predominated. It appears therefore that this mixture was absorbed by the skin, and its moist nature would naturally act as an additional aid to its absorption.

The occurrence of toxic gastritis is of interest, especially as it was observed so frequently in munition factories, and was of outstanding importance. The symptoms were pain (colicky in character), nausea, vomiting, constipation, and cyanosis of lips and tongue. These were the typical symptoms of poisoning by coal-tar derivatives, and convalescence appears in many cases to have been prolonged. It is more than probable that such cases may have received considerable damage to the liver, besides the gastric mucous membrane, and yet insufficient to produce actual jaundice. That coal-tar derivatives do actually induce necrosis in the liver is well known, and this may be in the form of circumscribed patches and so escape detection. The damage is still there and may show itself after a lapse of time, which may be months or years. A case was reported recently where a patient had received salvarsan treatment, and was operated upon subsequently for condylomata. The patient died after the anæsthetic, and post mortem a number of atrophied necrotic patches were found in the liver. Apart from slight jaundice following the salvarsan treatment there was no evidence of any permanent liver damage. The importance of the toxic gastritis cannot be too strongly emphasised, and any cases known to have suffered from this form should be followed up and observed. The production of cirrhosis of the liver and pernicious anæmia may receive a possible explanation on similar lines to the remote effects of T.N.T. poisoning. This latency in the production of toxic effects was a characteristic feature of toxic jaundice, around which, of course, most of the interest connected with T.N.T. poisoning lies. This is well illustrated in the case published by Professor E. Glynn, of Liverpool, the latency being nine months, and a post-mortem examination yielded evidence of extensive focal necrosis affecting about a third of each liver lobule. This toxic jaundice appears to have developed insidiously and with very slight symptoms. The earlier the cases were removed from the factory the better was the prognosis, but there was no constancy between the severity of the symptoms and the ultimate outcome of the case. All the evidence given points to the fact that the T.N.T. was capable of producing necrosis in the liver without producing any grave symptoms, hence the difficulties that arose in diagnosis. There was no simple test that could be applied to determine the extent of liver damage in any given case. A noteworthy feature was the absence of Webster's reaction in the urine of patients with toxic jaundice, which will be referred to later. The exact factor or factors which determined the onset of toxic jaundice are at present unknown, but the possibility of an intercurrent infection or lowered resistance is discussed by Dr. O'Donovan.

Dr. G. A. Wyon reports his results obtained on animals who received large doses of T.N.T.

With such doses hepatic degeneration was produced in cats, rabbits, rats, and monkeys. Chronic poisoning with small doses of T.N.T., however, did not produce any such effect. The comparison is made with poisoning by alcohol, chloroform, and tetrachlorethane, and Dr. Wyon concludes that there is a second unknown factor which probably coöperates with T.N.T. in producing fatal poisoning in man. The animal experiments, however, did not throw much light on the poisoning effects as observed in man, and illustrates one of the great difficulties encountered in this research.

Mr. T. A. Webster contributes an interesting account of his work on the metabolism and excretion of trinitrotoluene.

The question of how to detect small quantities of T.N.T. in the urine of workers exposed to this compound was satisfactorily settled by Webster, and the discovery of the test is due to his labours. The modification of the test whereby a beautiful blue colour is obtained was independently discovered by F. Tutin and described in THE LANCET, 1918, ii., 554. The chromogenic body—viz., azoxy-di-nitrotoluene—is excreted in the urine, and is responsible for the Webster test, and presumably formed in the kidney. It is here conjugated with glycuronic acid and excreted in the urine. Attempts to obtain the chromogenic substance from the blood or organs failed.

Dr. H. H. Dale deals with the fate of T.N.T. in the animal body and the attempts made to trace the changes which T.N.T. undergoes before being excreted as the chromogenic substance, the only compound so far isolated with certainty from the urine.

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[1] Trinitrotoluene Poisoning: Officially Communicated by the Ministry of Munitions. THE LANCET, 1916, ii., 1026.

[2] Medical Research Council. Special Report Series. No. 58. 1921. Price 3s.

The significance of the Webster test is emphasised, especially as a signal of danger of T.N.T. poisoning. The absence of this reaction from the urine may be taken as an ominous sign. The chromogenic substance appears to represent the safest point at which reduction of T.N.T. is arrested. The failure of the body to excrete T.N.T. in this form may therefore provide an indication that more highly reduced forms occur, and with them severe intoxications.

Dr. P. N. Panton deals in his two reports with his experimental work on animals, and the pathological changes induced in man by T.N.T. poisoning.

In the experimental work he collaborated with Dr. Harold E. Bates, and Dr. H. M. Turnbull has added very complete reports upon the histological changes which he found in the experimental animals, and also in man. In only two animals was it possible to induce changes akin to the aplastic anæmia and toxic jaundice as met with in man. The aplastic anæmia and the toxic jaundice were not directly due to hæmolysis by the poisonous action of T.N.T. The extreme reduction of the blood-forming bone-marrow was the chief effect of the poison in the cases of aplastic anæmia. The cell-count was thus that of a rapid progressive primary anæmia with a high colour index. The observations on the macroscopic and microscopic changes in the liver in toxic jaundice due to T.N.T. are of more than passing interest. The question as to whether permanent liver damage occurred in the cases which recovered is also discussed. The evidence so far obtained leads to the view that recovery from minor liver damage is the rule, and is non-progressive. With severe damage to the liver there was, however, evidence of a progressive degeneration with the occurrence of toxic jaundice many months after exposure to T.N.T.

The report is a testimony to the value of scientific coöperation, and if the cases of T.N.T. poisoning are happily no longer existent, there are many conditions which closely resemble it and require investigation. The effects of a number of liver poisons have still to be elucidated, especially salvarsan and its numerous substitutes, and further light may thus be thrown upon the various manifestations of T.N.T. poisoning described in this report.

GUSTAV KILLIAN.

In the death of Professor Gustav Killian, which occurred last month, rhino-laryngology has sustained the loss of one of its most brilliant workers. Born in Mayence in 1860, he studied at Strasbourg, Heidelberg, and Berlin under Krause, Jurasz, and Fraenkel; in 1900 he became professor of diseases of the nose, ear, and throat in the University of Freiburg-in-Breisgau, and in 1911 succeeded Professor B. Fraenkel in the University of Berlin. Killian was an original worker of extraordinary fertility, and will long be remembered for his association with the most notable advances in the technique of his specialty; especially remarkable is his work on direct examination of the larynx, trachea, and bronchi, on suspension-laryngoscopy, on submucous resection of the nasal septum, and on the "Killian" operation on the frontal sinus. Many English laryngologists will remember his visit to London in May, 1914, when he delivered the Semon lecture and demonstrated his method of suspension-laryngoscopy. Foremost among his pupils are Brünings and v. Eicken. His name will remain a landmark in the history of rhino-laryngology.

THE NON-OPERATIVE TREATMENT OF SURGICAL TUBERCULOSIS.

The discussion at the Medical Society of London on March 7th served to emphasise what has recently been pointed out by Mr. G. R. Girdlestone and others in our columns—namely, the inadequate provision in this country for dealing with the crippling disabilities of children. Mr. Girdlestone himself found,[1] from an analysis of the case-sheets of more than 12,000 youthful cripples, that in 35·4 per cent. of them the occasion of the crippling disability had been non-pulmonary tuberculosis. At the discussion Sir Anthony Bowlby, speaking for surgeons in general, justly pointed out that it was impossible in these, or indeed in any other cases, to eradicate the tubercle bacillus by operation. If it could be done at all, that was a thing which could only be done by the patient himself. But, on the other hand, much more than passive treatment was needed for this class of case. Mere convalescence in the open air was insufficient, for a child with a tuberculous hip needed appliances and other forms of special treatment. Mr. T. H. Kellock in his contribution regretted that efforts so far had been mainly directed towards building up the constitution in these cases of surgical tubercle, whereas little or nothing had been done to try to treat the disease itself. He also saw the necessity of combining local and constitutional treatments. Mr. W. H. Trethowan showed the difficulties of the orthopædic surgeon called upon to treat tuberculous disease of bones and joints in the busy out-patient department of a big general hospital. Some cases did well even without the benefit of a stay in the country, but often the most modern and efficacious methods of preventing and correcting deformity were in out-patient practice vitiated in results by bad home circumstances. All who are called upon to deal with these cases naturally turn for guidance to the experience of the Treloar Cripples Hospital at Alton or to that of the Rollier Clinic at Leysin; but the suggestion of scattered orthopædic clinics made by the Central Committee for the Care of Cripples should not be forgotten. Every area in this country should be served by a hospital for crippled children.

ANGINA PECTORIS IN DIABETES.

According to Dr. Max Kahn,[1] physician to the Beth Israel Hospital, New York, comparatively little attention has been given to the cardio-vascular changes present in diabetes, angina pectoris especially being overlooked. Unless granular changes in the kidney are also present, the diabetic patient usually has a normal or low blood pressure. Attacks of angina pectoris may nevertheless be the chief complaint of a middle-aged diabetic patient. Although the pain may not be excruciating, it may be sufficiently severe to stop whatever work the patient is doing. A remarkable feature of the attacks is that they do not occur when the sugar tolerance is not exceeded. A high blood-sugar with glycosuria will frequently cause recurrence of the attacks. Dr. Kahn suggests that the pathological changes in the myocardium responsible for the angina result from a lowering of the glycogen storage in the fibres of the bundle of His, which are normally richer in glycogen than the ordinary cardiac fibres. Electro-cardiograph tracings of diabetic patients with angina pectoris show an inversion of the T-wave in one or more of the three leads, which, as Willus has recently pointed out, is usually due to some pathological change of the myocardium. Of three cases of diabetes reported by Dr. Kahn two had a low blood pressure and attacks of angina pectoris, while in the third there were high blood pressure and albuminuria, but the patient did not complain of any cardiac oppression.

THE MANCHESTER RADIUM INSTITUTE.

The report of the Manchester and District Radium Institute for the year 1920 consists for the most part of abstracts of two papers read before the Royal Society of Medicine last year. The first of these concerns carcinoma of the cervix, the second the treatment of exophthalmic goitre; both should be of value to practitioners who missed the opportunity of reading the original communications. Of original work Dr. G. E. Loveday furnishes a report on the blood of radium workers based on examinations carried out in the institute during the past 14 months. Two cases are described in detail, one being that of a female worker, who had handled radium for five years. Unfortunately, no indication is afforded as to the precise nature of her work—whether she was engaged in making or fitting emanation apparatus, or in applying it to patients. Thus no judgment can be formed as to the amount of gamma radiation received, a fact upon which other investigators lay particular stress, as the blood changes are believed to be the expression of the cumulative action of small doses of gamma rays. The same criticism applies to the case of the male worker. Both cases showed leucopenia; in the case of the female worker it was extreme, but the leucocyte count resumed its normal level nine months later after a period of rest. A summary of work done at the institute shows that 834 fresh cases were seen during the year, 562 of them being malignant, and of these, 65 cases (exclusive of rodent ulcer) are stated to have been "free from signs and symptoms of disease at the end of the year." Such results are encouraging, although they should be read along with Dr. Arthur Burrows's statement that "nearly half the cases reported well at the end of the year in my annual reports recurred subsequently," and it is probable that with the passage of time other cases may show signs of recrudescence. Interesting suggestions are made with reference to prophylactic irradiation, and the question is raised whether this procedure should be adopted some time before, at, or some little time after the operation. A positive pronouncement on this point would be welcome. Dr. Burrows discusses the possibility of modifying the screens now in general use, and refers to Janeway's method of burying unscreened tubes in tumours as an indication of the fact that heavy screening is by no means essential in treatment. He states that brass and silver are, on the whole, the best methods to be employed. This endorses the experience of many other workers, who agree that silver is the most generally useful screen. A photograph is given of the new Radium Institute, to which it is hoped to transfer the work early in the present year.

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[1] The Lancet, Jan. 8th, p. 74.

[1] Journal of the American Medical Association, Feb. 26th, 1921.

SYPHILIS OF THE PANCREAS.

Dr. Udo J. Wile,[1] professor of dermatology and syphilology of the University of Michigan, remarks that in spite of Neumann's statement in 1899 that the diagnosis is never made during life or at least without operation, a number of cases are on record in which undoubted syphilis of the pancreas was diagnosed intra vitam. Although most authorities hold that the condition is exceedingly uncommon, Sallis, who collected 15 cases in 1913, asserts that the condition is not so rare, and states that syphilitic lesions of the pancreas occurred 45 times in 100 cases of abdominal syphilis. Warthin also holds that chronic interstitial pancreatitis is one of the most frequent visceral lesions found at necropsies in cases of latent visceral syphilis. Syphilis of the pancreas may occur in a sclerous and a gummatous form; a combination of the two forms is also found. The symptoms of syphilitic pancreatitis differ but slightly from those of any other pancreatic disease, and the pancreas is so seldom affected alone that the symptoms are frequently masked by those of involvement of the other viscera. The few points suggestive of syphilis when the pancreas is the seat of disease are jaundice without other cause, glycosuria, and tumour of the pancreas without cachexia. The diagnosis is extremely difficult. Except for the predominance of glycosuria, which occurs in about 50 per cent. of the cases, and the relatively mild cachexia in association with a large palpable tumour, there are no definite criteria, according to Dr. Wile, to differentiate syphilis of the pancreas from cholelithiasis and from other forms of pancreatic disease, such as carcinoma or chronic interstitial pancreatitis. The association of hepatic disease, however, is strongly in favour of syphilis, and the therapeutic test is in most cases the most valuable guide. Although Neumann regards the prognosis as unfavourable, inasmuch as most of the cases are recognised only at autopsy, Dr. Wile has collected 10 cases in which complete recovery was reported as the result of administration either of salvarsan, mercury, or iodide, or of mercury and iodide combined.

"IDIOPATHIC" DILATATION OF THE URINARY BLADDER.

IN a recent issue of THE LANCET (March 12th, p. 534) Dr. S. R. Tattersall recorded an example of those curious cases of dilatation of the urinary passages without any discoverable mechanical or organic obstruction to the exit of urine. The instance is that of a youth, 18 years of age, who died with renal fibrosis, and in whom the bladder was distended and hypertrophied, notwithstanding the fact that micturition was unimpeded and that a rubber catheter could be passed without difficulty; the urine, which was acid, contained no blood or pus. A similar phenomenon, mutatis mutandis, is encountered elsewhere, and is, perhaps, best known in the œsophagus under the names of idiopathic dilatation, œsophagectasia, and achalasia. Now that the diagnosis of this form of œsophageal dilatation has been rendered easy by skiagraphy (after the administration of bismuth mucilage), the number of such has augmented, the increase being, of course, apparent only, and due to the development of more accurate methods of diagnosis. In the large intestine a like end-result has been long known, once as "idiopathic" and at present as "megacolon," the change in nomenclature having added, however, no further light as to its causation. These various dilatations are "idiopathic" in the meaning that they stand apart in their kind, and do not admit of explanation by any of the commoner obstructions which lead to similar distension. That they are neuromuscular in their essential nature, however, may be assumed without much hazard, using this term in a broad sense; for under such, more than one conception in detail is possible. The hypothesis that the dilatation arises from a fault in coördination between the propelling musculature and the relaxation or active dilatation of a corresponding sphincter, is that at present in favour. The name achalasia (failure to open) was devised in order to exclude sphincteric closures due to hypertonic contraction or spasm. The latter process may be excluded by the fact that no hypertrophy of the sphincters is found, even after the lapse of many years, during which the dilatation of the structure behind has been proceeding. The existence of a sluggish reflex is another possible element in the neuromuscular fault, the origin of the normal reflex being the distension of the viscus, which latter may not be incited to discharge its contents until the internal pressure reaches a degree which in health would be excessive. The existence, lastly, of a primary ganglio-neuritis of the intraparietal nerves of the viscus concerned is a further supposition of which the truth can be proved only by rigid histological demonstration.

Dr. Norman Walker, of Edinburgh, has been appointed Chairman of the Scottish Board of Health Consultative Council on Medical and Allied Services in succession to Principal Sir Donald MacAlister, K.C.B.; and Dr. John Yule Mackay, Principal of University College, Dundee, has been appointed Vice-chairman in succession to Dr. Walker. While relinquishing the chairmanship of the Council, Sir Donald MacAlister will continue to give his services as a Member of the Council.

THE LANGHAM TELEPHONE EXCHANGE:

MEDICAL MEN'S NEW NUMBERS.

WE have received notice of the following additional transferences from the Mayfair to the Langham Exchange:—

Mayfair.	Subscriber.	Langham.	Mayfair.	Subscriber.	Langham.
4054	Carlill, Hildred	2134	1118	Matthews, John	1115
7021	Mason, M. S.	1295	5387	Daly, Ashley	1667
1993	Saunders, Arthur	1913	4861	Steele-Perkins, G.	1775

The speedy appearance of the new Telephone Directory will, we hope, make further announcements unnecessary.

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[1] Archives of Dermatology and Syphilology, February 1921.

A POLAR EXPEDITION.

BY A. H. MACKLIN, O.B.E., *M.C.*, M.D. VICT.,
LATE SURGEON TO THE IMPERIAL TRANS-ANTARCTIC EXPEDITION.

IN view of the recent announcement by Sir Ernest Shackleton of a new expedition to the Arctic some of its medical aspects and some account of the surgeon's work may be of interest.

Purely medical work forms a very small share of the total duties of the surgeon. All members of an expedition must take part in routine duties; they must be prepared to help in the work of the ship, wash down decks, take a trick at the wheel, even to take a turn as "Peggy," assisting in the galley and washing dishes. Later their duties may include temporarily those of sledge-pullers.

Once the general duties have been carried out, each man must be prepared to attend entirely to his own wants, and must keep in repair all his personal gear. In addition he has his own special work to perform: the zoologist and botanist make and supervise the collection of animals and plants, the geologist makes his study of ice and land formations, and so forth. As each member of the expedition has to be physically fit, and is selected partly for his qualities of wind and limb, the duties of the surgeon in the ordinary way are light. His opinion, however, is sought on diverse unexpected matters, such as the health of the sledge-dogs and the quality of the meat of seals, penguins, and sea-birds generally.

The Welfare of the Dogs.

Veterinary work is of the highest importance to the expedition, for the dogs form the traction power of the sledges, and the loss of any one of them is serious. Their chief disabilities result from fighting. Many of these dogs seen in the ordinary way and with stomachs well filled with a mixed dietary, are tractable and peaceable, but when at work, or on a definite ration, often of freshly killed meat, they are fierce to a degree, and though submissive to their drivers (a point of policy) fight amongst each other so furiously that serious injury and disability result unless they are separated at the onset. Injuries from this cause cannot be absolutely eliminated, though it is a point of interest that dogs which have worked together in a team for some time rarely fight. When two strange teams meet, however, there often ensues a battle royal, in which every dog of each team participates. In dealing with wounds and external injuries of the dogs it is necessary so to dispose the animal that it cannot interfere with the repair process, and to secure this considerable ingenuity is often called for on the part of the surgeon. My own experience in the Antarctic has shown that wounds in dogs heal readily and well, and that good results can be obtained from fractures, even those of such bones as the humerus, which is not by any means so "getatable" for treatment as the human humerus.

The chief sources of sickness amongst sledge-dogs are undoubtedly parasites. External parasites are easily dealt with by isolation and washing with fairly strong antiseptics—e.g., carbolic soap and lysol, and keeping the coats well combed and brushed. Intestinal parasites are also fairly easily dealt with, the most difficult to get rid of completely being the ordinary tapeworm. In dogs a much more drastic method can be adopted than with human subjects. When the condition has been diagnosed the animal's food is stopped and a powerful purgative is given. This in itself will often cause the passage of a large number of parasites, sometimes even the complete tapeworm. For this purpose castor oil is the most effective purge, but must be given in large doses (about 2 oz. for a dog weighing 90 lb., and more for the heavier dogs). After the bowels have been completely evacuated the vermicide is given and is followed in about 24 hours by another purgative. All food is withheld during this time, though the animal is allowed to drink or to eat snow. the fourth day food is again given. I have never any ill result from the combination of filix mas and castor oil. It is astonishing what a number of the various nematodes and cestodes an animal can carry in its intestines without marked external signs. Another parasite which I encountered in ten dogs during the last Antarctic expedition is more difficult to deal with. The animals attacked lost weight and hair, the mucous membranes were pale, and a curious hump of the spinal column exhibited itself; the animal was restless, barked at nothing, and scratched itself frequently. Post-mortem examination revealed the presence of a large, round, reddish-pink worm with a dark lateral line, 2½–3 ft. in length, known from its appearance to the sailors as "the big red snake." Sometimes two smaller worms were found. All but one were found in the abdominal cavity, the most usual site being under the right lobe of the liver or in the right epigastric fossa. In every case the worm was shut off by a thin-walled prison caused by fibrinous adhesions of the omentum. On first opening the abdomen (the incision was always made before the carcass had become cold) the worm seemed to be feebly motile. This motility lasted for a few moments only; as the examinations were always made in low temperatures, this was probably due to the inrush into the abdomen of cold air. In one other case the worm, a large one, was coiled in the pelvis of the left kidney, the cortex of which was contracted and hard. The right kidney was hypertrophied. The preserved specimens of the organs and the blood films were lost owing to the sinking of the *Endurance.* From inquiries and references made since my return I gather that the parasite was the *Strongylus gigas.*

Parasites Affecting Food-supply.

The surgeon is usually called upon to decide as to whether various portions of the animals killed for food are fit to eat. I found in the Antarctic that all of them, the seal tribe, sea-leopards, sea-elephants, &c., penguins, and the various sea-birds, suffered largely from parasites. In most cases these were confined to the alimentary tract, but in some cases I found cysts on the heart wall (*Cysticercus cellulosæ*), and some small bodies, stated by the biologist to be trematodes, free in the bile-passages in large numbers. Often in the latter case the left lobe of the liver was white and shrunken, a faint, sharp line differentiating the unhealthy from the healthy part. In these cases also, the lymphatic glands throughout the whole body were enlarged, and the capsule separated off by a thin layer of serous fluid. The spleen was often so much enlarged that it more than half filled the abdomen and was soft and flaccid.

[As in the case of the dogs, all pathological specimens and notes made at the time were lost with the ship.]

Antarctic animals depend largely upon fish for their food-supply, the other source consisting of what is commonly spoken of as "whale food," small creatures known as euphausia and a species of amphipod. All the fish obtained in these regions contained intestinal parasites in large numbers, and were probably the source of their occurring in the larger animals. I was interested to notice that the only "land" bird in the Antarctic—namely, the Paddy Bird—lived largely upon the parasites passed in the excreta of penguins. Often where penguins collected in numbers, these Paddies could be seen walking about with quick steps, hastening always to pick up the parasite before it had become frozen in the excreta. The whale forms one exception to the above. This immense animal is notorious for a very small gullet, through which one would have difficulty in passing the hand. Mr. Clark, who examined numerous specimens, found that whales lived entirely on euphausiæ, amphipods, and sometimes on squids. I have regretted that I did not examine their stomachs and intestines to see whether they contained the same parasites as the fish-eating animals.

With regard to the employment of the meat of such animals, I always insisted on the importance of first carefully removing the whole alimentary tract entire, avoiding spilling of the contents, and burying or dumping it well away from the meat. When parasites were confined to the intestines all the meat, and the liver, kidneys, heart, and brains, were used for food.

When there were any signs of disease outside of the alimentary tract I recommended that it should not be used at all, except when food was scarce, when the meat was eaten, but the internal organs thrown away.

Frost-bite.

The purely medical work consisted mainly in dealing with such small accidents as may from time to time occur amongst the party—frost-bites, small localised inflammations, cuts, fractures, extraction of teeth, &c. Frost-bite is a condition which occurs very frequently, but all members of the party quickly learn how to recognise and treat this condition, and the danger of neglect is so well known that a constant watch is kept for its onset. As is common knowledge, the parts most frequently affected are the exposed parts of the face and the extremities—the tips of the ears, the nose, the skin over the cheek bones, the chin, the fingers, and toes. It is the custom for members who are out together, or meet outside, to scrutinise each other's faces, and give warning of any appearance of frost-bite. Some men carry a small looking-glass for this purpose. In the very early stages it is only necessary to cover the part first with one warm hand and then the other, replacing each as it gets cold in the mitts. A little gentle friction may be applied, but not much, for the cuticle over a frost-bitten part of the face is easily rubbed away, leaving an extremely sore and slightly weeping surface. The practice of rubbing the part with snow, recommended in text-books, is utterly useless and extremely unpleasant. Frost-bitten fingers are easily treated by placing the hand inside one's clothing next to the skin. Frost-bite of the feet and toes is a very much more serious matter, and each individual must exercise the greatest care and watchfulness in guarding against its onset. The danger is that the parts may become frost-bitten, while the owner is quite unaware that anything is amiss or whilst he is asleep. Exhaustion adds to the danger, for not only is the local circulation impaired, but the man is not likely to be so watchful for its onset, or so ready to take prompt steps for its treatment. The toes may be unbearably cold and suddenly become comfortable. This is easily recognised if all the toes become suddenly frost-bitten at the same time, but the difficulty is that small portions of different toes are usually affected, and though there is no sensation in these parts, the toes as a whole still feel cold. To the experienced, and those on guard for it, there is, however, a feeling that everything is not quite right, when the only thing to do is to remove all foot-gear and examine the part. Frost-bitten feet may be treated by rubbing with a warm hand, and may be rubbed more vigorously than the face. The parts usually return to normal within a few minutes. If the frost-bite has been present for some time it may be necessary to persist on this treatment for a longer period. Bad cases require that a good Samaritan enclose the foot within his clothing next to the warm skin, or even relays of good (but probably blasphemous) Samaritans. Removal to a warm atmosphere and hot food and drink facilitate recovery, but care must be taken to prevent too rapid a return of the blood flow, causing choking of the capillaries, thrombosis, and a condition more difficult to deal with than the original frost-bite. It is, no doubt, the danger of this that has given rise to the treatment of "rubbing with snow." Certainly it is more justifiable in the case of the feet, and may be a good thing to teach "first-aid" students, whose natural instincts would be to warm the parts at a fire or to plunge them into hot water. Cases which do not come back to normal within a few hours of this treatment will not come back to normal at all; blisters containing straw-coloured serum or even blood may form, and then the question arises whether the slough be superficial and the patient will get off with the loss of some skin, or will death of the whole part, requiring amputation at a later stage, ensue? A case which occurred on the last Antarctic expedition produced typical dry gangrene of the toes, which were black and shrivelled, and separated by a well-marked red line from the healthy foot. Amputation was performed. The party was at that time living under an up-turned boat. During the operation the inmates were all turned out, with the exception of two invalids, one of whom, suffering from frost-bite himself, gravely looked on, wondering whether his turn would come next. It is impossible to over-emphasise the extreme importance of prompt and efficient treatment in dealing with frost-bite of the feet. It is quite a common thing where the parts have not been actually frost-bitten on the return from the cold outer air to a warm room for a sensation of severe "pins-and-needles" to occur while the circulation is returning to normal. There is here also a point of danger, for the too rapidly returning flow of blood into devitalised tissues may lead to exudation into the surrounding tissues, causing constriction of the lumen of the vessels. In a mild degree it often causes an irritable condition resembling chilblains, and is most commonly seen on the tips of the ears. Hence the advisability of not immediately warming the parts, but of letting the process take place gradually.

Advice on Foot-gear.

In dealing with frost-bite of the feet the great essential is, of course, prevention, and this is a point to which Sir Ernest Shackleton has himself given great attention, even to the very lowest detail. Frost-bite is due to the constricting influence of cold on the capillaries, so that eventually the lumen becomes obliterated. The part is entirely denuded of blood, and becomes waxy-white in appearance. The essentials of foot-gear for Polar regions are therefore: (1) to avoid any constriction of the supply of blood to the toes; (2) to have a non-conducting air-space between the toes and the outer air. The first is arrived at by wearing loose coverings to the legs, avoiding garters, and any sort of constricting bands, and by having the socks well fitting and made in series, so that when three pairs are being worn the second sock fits easily over the first, and the third easily over the other two. The outer coverings, for the sake of utility, must be well-fitting, but must be sufficiently loose and allow a non-conducting air-space between them and the feet. This is largely obtained through the socks, which, made of wool, contain a lot of air in their meshes. It is important also to see that, as far as possible, this air-space is not replaced by damp. Thus the outer covering must permit of ventilation to prevent the accumulation in the socks of perspiration moisture. Rubber boots, for this reason, are unsuitable. The outer coverings as put into use consist either of finnesko made from reindeer hide or of specially designed boots with strong leather soles and strong, closely-woven canvas tops. Felt boots are also sometimes used. Further, to obviate the difficulty of perspiration, sennegrass, which takes up moisture and dries again rapidly, is packed into the finnesko or boots each morning, and is removed each night to dry. It dries so rapidly that, if spread out, it is quite ready for use the next day. Socks are taken off always at night; no experienced explorer would ever dream of keeping on during the night the socks he had worn during the day, a temptation to which the inexperienced is very prone. It is a rather surprising matter of experience that socks placed during the night between one's jersey and the underclothing will have dried out considerably by morning (even a wet box of matches can be rendered fit for use in this way). They cannot be left out in the open air because, with the slight moisture in them from perspiration, they would freeze absolutely stiff in the shape in which they had been hung out.

Oils and grease, which are regarded by a great many people as being non-conductors, and "fine stuff to keep you warm," should be avoided as much as possible, for they conduct cold readily. Everything should be done as far as possible to eliminate them both from clothing and from skin. I have nothing to say here with regard to the use of whale oil in the army; the pros and cons are numerous, and space does not permit me to enter fully into the question; but as a result of observations and experiments, in the Antarctic, in France, on the Italian mountains, and in Northern Russia, I am fully convinced that the ideal to aim at for the prevention of frost-bite is dryness and the exclusion of fats and oils.

From the point of view of an expedition this may be illustrated in many ways. During a visit to the whaling station of South Georgia, where whale oil abounded, I made a practice of rubbing the oil into my boots, with the object of making them warmer and more waterproof. I discovered that it had the opposite effect. The whalers informed me that this was a matter of common experience amongst them, and that they made a practice of removing as much whale oil as possible from their boots each night. Whilst in the Antarctic it was often my duty to flense and cut up seals. In the process my left hand grasped the seal and became well anointed with blubber oil. My right hand held the flensing knife and was not so anointed. Following the operation I wiped my hands with snow, which did not completely remove the grease, dried off surplus moisture, and replaced them in mitts. When returning to camp my left hand was always cold, whereas the right hand remained comfortably warm.

After the loss of the *Endurance*, with stores, it became necessary for members of the party to wear, without change, the same clothes for the best part of a year. Parts of them became very greasy; the cold could be felt readily "striking through" these greasy parts in marked contradistinction to the non-greasy parts. Socks which had been worn for some time and become slightly greasy were not so warm as clean dry socks.

Scurvy.

With regard to scurvy, a disease which has interfered with many Polar expeditions, much new work has been done in recent years, and the numerous investigations and results published in medical papers. From the point of view of a Polar expedition it is wise to regard the disease as having two different causes: (1) The deficiency of a vitamine; (2) a gastro-intestinal intoxication, or the direct action of small but potent ptomaines contained in badly preserved meat. In spite of the extremely convincing work on vitamines there is still the possibility that this latter factor may come in, and only the very best preserved foods, obtained from reliable firms, should be used.

Sir Ernest Shackleton has always realised the importance of variety in food, both from a mental and physical point of view. Thus in the Antarctic expedition one could never tell the day of the week by the food supplied, and some new and fresh dainty was constantly appearing. Even before the loss of the *Endurance* in the days of plenty fresh meat was constantly served, and the cooking was always good.

Some Questions Answered.

A question often put to me by medical men is with regard to the functions of defæcation and micturition. These are performed in the usual way, though certainly often under the most uncomfortable conditions. I have never seen perineal or anal frost-bites, although it is reported that one of the men who accompanied Sir Ernest Shackleton across South Georgia incurred frostbite of the penis. It certainly was not serious, and produced no permanent disability. Many times men who went outside in cold, and especially in windy, weather, returned extensively frost-bitten in the face and hands and feet, but not in the private parts. In the case of severe and prolonged blizzards it might be necessary to defæcate in a tent, a hole being dug and instantly refilled with snow; but the majority of men will prefer to face the most unpleasant weather conditions out of doors. This suggests a small but important point: in cases of constipation the greatest care must be exercised in purgation not to produce too violent a result. Should a sudden blizzard arise it would be the greatest hardship to a man to have to face the violence of the elements too many times.

Another interesting point is that members of the Antarctic expedition, owing to the loss of the *Endurance*, were compelled to go for a prolonged period (about ten months) without a wash or a change of clothing. I have been asked how this affected the skin. It was found at the first hot bath that the skin round the knees and elbows, where the clothes rubbed, had become begrimed and required two or three good scrubbings; for the rest the skin was beautifully white and unusually soft and satiny to the touch. This condition lasted from two to three months, when the skin gradually returned to normal. Nasal catarrh, the so-called "cold in the head," did not exist; there was not one case till we returned to civilisation, when almost without exception every member was attacked and had difficulty in throwing off the condition. There is another point on which I have been asked—namely, growing a beard. I think it is almost universally agreed upon amongst modern explorers that a beard is not a good thing. True, it has certain advantages in that it is warming and protects the face and neck from winds. The great disadvantage is that moisture from the breath issuing from mouth and nostrils impinges on it and freezes, forming in a short time a solid mass of ice on the face which in itself is not comfortable, and when one enters a warm room or a sleeping-bag thaws out with unpleasant results. Stefansson ("My Life with the Eskimo") advocates clean shaving, but in this heroic measure few others will be found to agree, and is, of course, quite out of the question when performing a sledge journey. The custom most commonly adopted is close clipping with the ordinary fine barbers' clippers, performed at least once weekly.

The cold keen air of polar regions acts on the body like champagne, and fills one with a joy of living not experienced in tropical or even temperate climates. Both man and dogs gain in bodily vigour the further they penetrate over the Circle. Appetites are increased, and on the plain well-cooked food everyone puts on weight. The dogs become much more lively, a condition manifested by more fierce and frequent fighting; their coats grow thicker, and the clamour at feeding time becomes absolutely riotous. Every morning shows them madly keen to get into harness, and though hard worked and rigidly disciplined, they show a joy in existence rarely exhibited by the leisured animal at home. On the other hand, it is a bad country to be ill in. There are few comforts such as we know them, no warm and pleasant sick-rooms, no cool, clean sheets, or gentle women. In cases of sickness amongst the dogs, facilities do not permit of artificially warmed housing; and they rely on their own body heat and the insulation of their thick coats. It is here that the value of the bushy tail is seen, and also the habit, well known, even in domestic dogs, of twisting round and round in a circle before finally settling down to rest. The sledge-dog does the same in the snow as the pet dog does on the carpet, producing thereby a small sheltered hollow into which he coils himself, and, curling his bushy tail over the unprotected parts of his face, presents when asleep the appearance of a round ball of fur. When from whatever cause the animal's vitality is lowered and the temperature subnormal, it is unable to resist the intense cold, and unless taken to the lee of a warm pipe, or placed in some improvised warm shelter, rapidly succumbs.

It may be of interest to mention that dogs can exist when buried under several feet of snow. On one occasion, after a two days' blizzard, I found the whole of my dogs buried in varying depths of from 4 to 8 feet in a large snow ramp; yet when dug out, except that they were rather sluggish and more difficult than usual to rouse, they were perfectly normal. In ice regions it is unnecessary to water dogs—they obtain all that is required by eating snow.

One more point of interest: salt ice when piled up has the peculiar property that after two to three days the salt leaves the top pieces in the pile, so that they become quite fresh and can be melted down for use as drinking water. But for this property existence on floe ice would be impossible.

There are times in these inhospitable regions when one hates them and the longing for home is intense. Yet the return to civilisation is not altogether unmingled with regrets, nor is the prospect of another visit devoid of a feeling of "uplift" and pleasurable anticipation.

A NURSES' TRAINING COLLEGE IN BRUSSELS.—In memory of Edith Cavell and Mme. de Page the Rockefeller Foundation has given Fr.43,000,000 for the establishment of a training college for nurses in connexion with Brussels University Medical School.

VITAL STATISTICS OF LONDON

DURING FEBRUARY, 1921.

IN the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the ten diseases notified in the table was equal to an annual rate of 10·0 per 1000 of the population, estimated at 4,531,971 persons in the middle of 1920; in the three preceding months the rates had been 15·2, 11·9, and 10·4 per 1000. Among the metropolitan boroughs the lowest rates from these diseases were recorded in Chelsea, the City of Westminster, St. Marylebone, Hampstead, Holborn, and Lambeth; and the highest in Fulham, Bethnal Green, Poplar, Battersea, and Greenwich. The prevalence of scarlet fever was about 10 per cent. less than in the preceding month; this disease was proportionally most prevalent in Hammersmith, Finsbury, Bethnal Green, Stepney, Poplar, Southwark, and Bermondsey. The Metropolitan Asylums Hospitals contained 3799 scarlet fever patients at the end of the month, against 5503, 4729, and 4112 at the end of the three preceding months; the weekly admissions averaged 464, against 780, 590, and 489 in the three preceding months. Diphtheria was slightly more prevalent than in the preceding month; the greatest proportional prevalence of this disease was recorded in Paddington, Islington, Shoreditch, Bethnal Green, Battersea, and Greenwich. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 2604, 2615, and 2648 at the end of the three preceding months, numbered 2766 at the end of February; the weekly admissions averaged 333, against 360, 316, and 319 in the three preceding months. The prevalence of enteric fever was appreciably less than in any of the six preceding months; of the 14 cases notified during the four weeks ended Feb. 26th, 3 belonged to Stepney, 2 to Islington, 2 to Paddington, and 2 Wandsworth. There were 9 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 16, 15, and 11 at the end of the three preceding months; the weekly admissions averaged 2, against 3, 2, and 3 in the three preceding months. Erysipelas was proportionally most prevalent in Paddington, Fulham, Bethnal Green, Poplar, Southwark, and Deptford. The 25 cases of puerperal fever included 3 in each of the boroughs of Hammersmith, Islington, Lambeth, and Deptford, 2 in Stepney, and 2 in Poplar. The 17 cases of cerebro-spinal meningitis included 2 in Stepney, 2 in Southwark, and 2 in Lambeth; while the 2 case of poliomyelitis notified during the month belonged respectively to Hammersmith and Hackney.

The mortality statistics in the table relate to the deaths of civilians actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ended Feb. 26th the deaths of 4850 London residents were registered, equal to an annual rate of 14·0 per 1000; in the three preceding months the rates had been 13·1, 14·2, and 12·5 per 1000. The death-rates ranged from 11·6 in Camberwell and in Woolwich, 11·8 in Deptford, 12·2 in Wandsworth, and 12·9 in Lambeth, to 16·7 in Bethnal Green, 16·8 in Holborn, 17·1 the City of London, 17·2 in Chelsea, and 18·7 in Kensington. The 4850 deaths from all causes included 250 deaths which were referred to the principal infectious diseases; of these, 7 resulted from measles, 28 from scarlet fever, 92 from diphtheria, 43 from whooping-cough, 1 from enteric fever, and 79 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded in the City of London. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Paddington, the City of Westminster, Hampstead, Hackney, and Lewisham; and the highest in Kensington, Stoke Newington, Shoreditch, Bethnal Green, Bermondsey, Battersea, and Wandsworth. The 7 deaths from measles were only one-sixteenth of the average number in the corresponding period of the five preceding years; of these, 4 belonged to Stepney and 2 to Islington. The 28 fatal cases of scarlet fever exceeded the average by 13; of these, 3 belonged to Bethnal Green, 3 to Wandsworth, and 3 to Woolwich. The 92 deaths from diphtheria exceeded the average number by 24; the greatest proportional mortality from this disease occurred in St. Pancras, Stoke Newington, Poplar, Bermondsey, Battersea, Wandsworth, and Greenwich. The 43 fatal cases of whooping-cough were 70 fewer than the average; of these, 8 belonged to Islington, 5 to Kensington, 4 to Southwark, and 3 each to Lambeth, Battersea, and Wandsworth. One death from enteric fever was registered during the month, against an average of 4. The 79 fatal cases of infantile diarrhœa were 13 in excess of the average number; the greatest proportional mortality from this disease occurred in Chelsea, Shoreditch, Bethnal Green, Southwark, Bermondsey, and Battersea. In conclusion, it may be stated that the aggregate mortality in London during February from these principal infectious diseases was 34 per cent. below the average in the corresponding period of the five preceding years.

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING FEBRUARY, 1921.

(*Specially compiled for* THE LANCET.)

Cities and Boroughs.	Estimated civil population, 1920.	Notified Cases of Infectious Disease.												Deaths from Principal Infectious Diseases.									Deaths from all causes.	*Death-rate per 1000 living.*
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	4,531,971	—	1902	1357	—	14	—	25	162	17	2	3479	10·0	—	7	28	92	43	1	79	250	0·7	4850	14·0
West Districts:																								
Paddington	149,673	—	47	61	—	2	—	—	8	1	—	119	10·4	—	—	—	—	2	—	—	2	0·2	167	14·5
Kensington	164,177	—	55	33	—	—	—	1	7	—	—	96	7·6	—	—	1	4	5	—	4	14	1·1	235	18·7
Hammersmith ...	136,200	—	95	28	—	—	—	3	4	—	1	131	12·5	—	—	2	2	—	1	2	7	0·7	147	14·1
Fulham	158,621	—	81	62	—	—	—	1	8	1	—	153	12·6	—	—	—	3	—	—	3	6	0·5	169	13·9
Chelsea	62,987	—	9	12	—	—	—	—	2	—	—	23	4·8	—	—	—	—	1	—	3	4	0·8	83	17·2
City of Westminst'r	132,615	—	18	17	—	—	—	1	2	—	—	38	3·7	—	—	—	—	2	—	1	3	0·3	155	15·0
North Districts:																								
St. Marylebone ...	101,856	—	26	17	—	—	—	—	3	—	—	46	5·9	—	—	—	1	2	—	1	4	0·5	103	13·2
Hampstead	91,519	—	20	16	—	—	—	—	2	—	—	38	5·4	—	—	—	—	—	—	1	1	0·1	92	13·1
St. Pancras	228,178	—	83	52	—	1	—	—	7	—	—	143	8·2	—	—	—	8	2	—	3	13	0·7	232	13·3
Islington	335,907	—	95	136	—	2	—	3	4	1	—	241	9·4	—	2	1	8	8	—	4	23	0·9	391	15·2
Stoke Newington...	52,984	—	26	11	—	—	—	—	—	—	—	37	9·1	—	—	—	2	1	—	1	4	1·0	62	15·3
Hackney	225,372	—	114	77	—	—	—	—	6	—	1	198	11·5	—	—	1	3	—	—	3	7	0·4	230	13·3
Central Districts:																								
Holborn	39,676	—	5	14	—	—	—	—	—	1	—	20	6·6	—	—	1	—	1	—	—	2	0·7	51	16·8
Finsbury	78,291	—	46	14	—	—	—	1	3	1	—	65	10·8	—	—	1	1	—	—	2	4	0·7	92	15·3
City of London ...	14,447	—	5	3	—	—	—	—	—	—	—	8	7·2	—	—	—	—	—	—	—	—	—	19	17·1
East Districts:																								
Shoreditch	102,044	—	49	45	—	—	—	1	2	1	—	98	12·5	—	—	2	2	2	—	5	11	1·4	118	15·1
Bethnal Green ...	114,471	—	76	67	—	1	—	1	11	1	—	157	17·9	—	—	3	2	—	—	6	11	1·3	147	16·7
Stepney	241,770	—	147	50	—	3	—	2	11	2	—	215	11·6	—	4	2	2	—	—	6	14	0·8	264	14·2
Poplar	159,766	—	89	55	—	—	—	2	13	1	—	160	13·1	—	—	1	6	—	—	2	9	0·7	172	14·0
South Districts:																								
Southwark	187,142	—	110	36	—	—	—	1	11	2	—	160	11·1	—	1	2	—	4	—	5	12	0·8	213	14·8
Bermondsey	129,189	—	77	41	—	—	—	1	4	—	—	123	12·4	—	—	—	5	—	—	5	10	1·0	156	15·7
Lambeth...	293,572	—	107	33	—	1	—	3	11	2	—	157	7·0	—	—	2	2	3	—	4	11	0·5	270	12·9
Battersea	165,664	—	83	71	—	—	—	1	8	—	—	163	12·8	—	—	—	9	3	—	5	17	1·3	187	14·7
Wandsworth... ...	316,990	—	124	131	—	2	—	—	8	1	—	269	10·1	—	—	3	15	3	—	5	25	1·0	324	12·2
Camberwell	284,712	—	100	104	—	1	—	—	5	—	—	210	9·6	—	—	1	6	1	—	4	11	0·5	254	11·6
Deptford...	115,636	—	46	46	—	—	—	3	6	1	—	102	11·5	—	—	2	2	—	—	2	6	0·7	106	11·8
Greenwich	102,408	—	52	46	—	—	—	—	3	—	—	101	12·9	—	—	—	4	1	—	1	6	0·8	108	13·7
Lewisham	174,438	—	43	48	—	1	—	—	6	1	—	99	7·4	—	—	—	4	—	—	1	5	0·4	179	15·3
Woolwich	141,666	—	74	28	—	—	—	—	7	—	—	109	10·0	—	—	3	1	2	—	—	6	0·6	125	11·6

* Including membranous croup.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Increase of Prostitution and Syphilis in Vienna during the War.

IN a recent report of the Board of Health interesting data are given as to the part played by lues in the mortality statistics of this city. From 1911 to 1920 a total of 1125 cases observed post mortem in Vienna were strictly due to syphilis; gummatous conditions and congenital or other absolutely sure manifestations were considered proof of syphilitic causation of death. In 1911 114 cases were classified as belonging to this group; the figures for the years till 1918 were respectively 107, 109, 147, 97, 91, 90, 79. In 1919 a sudden rise to 129 occurred, increased in 1920 to 162. During the years 1909–19 78 per cent. of these deaths from syphilis occurred amongst infants under 1 year old. From 1914 to 1918 the falling birth-rate was accompanied by a marked drop in deaths from syphilis; but in 1919 the birth-rate went up only 25 per cent., as compared with the previous year, whilst deaths from syphilis were increased by 63 per cent., and in 1920 the birth-rate rose 35 per cent., and the syphilis death-rate rose more than 100 per cent. over the 1918 figures. The children born in 1919 and 1920 have thus suffered very severely; this fact is not surprising, since nearly every healthy man between the ages 19 and 50 had been called to the front during the years of war. Complementary information is given by reports of the sanitary department of the police in Vienna. It is the function of this department to control both the declared and the clandestine prostitutes. By surprise visits to hotels, &c., and by control of the streets, such women are supervised and subjected to exact examination, when those found to be ill or infectious are at once taken to hospital. Thus in 1918, of 5540 females examined 27 per cent. had to be sent to hospitals; in 1919, of 6666 examined 25·4 per cent. were diseased; in 1920, 7240, 29 per cent. diseased. More than 60 per cent. of these women are below 24 years of age, and fully 20 per cent. of the total are under 18 years. These young girls have little or no knowledge of self-protective hygiene, and quickly fall victims to venereal infection. More than 50 per cent. of them were found infected, whilst of the older prostitutes about 22 per cent. needed immediate treatment. In a large number of cases the motives for taking up this "career" were noted; poverty, hunger, and the desire for fine clothing were responsible in about half the cases investigated, whilst moral depravity, bad example, or lack of proper supervision and care accounted for the other half.

A Rare Case of Torsion of the Entire Omentum.

At a recent meeting of the Medical Society of Vienna Dr. Hirsch demonstrated a rare specimen obtained a few days ago by operation on a medical man. The patient had been suffering from inguinal hernia for a long while. He had always succeeded in retaining the hernia by means of a pad, but it had for a long while been troublesome. On the day before operation the reposition of the hernia, which had again caused trouble, was impossible, and serious symptoms with pain set in. A diagnosis of incarcerated hernia was made and operation performed immediately. On incising the hernial sac it was found empty, except for some liquid. It was therefore clear that the surgeon had acted upon a wrong diagnosis. Laparotomy was then performed; the abdomen being opened, a large purplish tumour appeared, which was soon discovered to be the omentum majus, turned on its own axis three times 360°. The pedicle was as thick as a man's forearm. Total ablation of the tumour had to be performed, and the patient made an uninterrupted recovery. Cases of torsion of the entire omentum are sufficiently rare to justify record of them, and only in a very few instances has a correct diagnosis been made before operation. The mechanism of the condition is that the appendices loicæ become lodged in an existing hernial sac, and subject to traumatism by a pad and by repeated handling, reposition, or other manipulations; they then grow thicker and heavier and stretch, causing a torsion of parts and, in suitable cases, of the entire omentum. The pathological changes taking place in the tissues are so rapid in their onset that it is hardly possible to do anything less than to remove the entire strangulated portion of the organ even after a short duration of the condition.

Renewal of Dispute Between Medical Dentists and Dental Mechanics.

In July, 1920, a Bill passed the National Assembly in Vienna, which regulated the relations between medical dentists and dental mechanics in a way thought at that time to be satisfactory to all parties concerned. It was the result of a compromise, arrived at by coöperation of the representatives of the profession and of the dental mechanics. Its chief features were the following: (1) All persons being at the time of the commencement of the Act engaged in dentistry, either as mechanics or as medical dentists, are entitled to practise their profession without restriction, except that purely surgical interferences were permitted only to the medical dentists, extraction of teeth being regarded as a surgical interference. (2) The occupation of dental mechanic should gradually die out as an independent vocation by the fact that no new licence should be given except to a medical dentist—i.e., a doctor of medicine. (3) The mechanic should in future be only an assistant of the doctor, except those 650 men who at present had offices of their own and worked both for the doctors and their own patients. This understanding, however, was not long in force. The mechanics are not satisfied with permission to excavate and fill the teeth besides making the mechanical appliances and prostheses. They now want also to be entitled to perform surgical operations, extractions—in fact, to be regarded as perfectly equal in their rights to the medical dentists. Opposition to their demands has been answered by a mechanics' strike. The mechanics' organisation has caused all apprentices and assistants to the medical dentists to resign their offices, and has offered them employment with the practising mechanics. The medical profession are endeavouring to settle the problem by enlightening the public on the dangers and risks offered by such a state of affairs, but adhere to the opinion that it is the duty of the Government to make the mechanics obey a law passed only half a year ago with their active consent.

Increase of Rickets in Austria.

One of the chief evils derived from malnutrition is the spread of rickets amongst Austrian children. The Board of Health has tried to obtain reliable data as to the frequency of this condition, but returns cannot be obtained from many rural districts; and large numbers of peasant families never summon a medical man. Investigators had therefore to be content with the fact that only the severer cases were reported. Rickets has without a doubt become much more frequent during and after the war, especially amongst children over 12 years old. In 1913, 5 principal children's hospitals showed on their books 640 cases of rickets; in 1919 the figure stood at 2859, amongst them 589 over 12 years of age. The lack of milk, of fats, and farinaceous food was especially felt amongst the poorer classes. Amongst infants the increase of rickets was not so much marked, for breast-feeding was more often resorted to, owing to lack of other food for the babies. The frequent appearance of rickets amongst older children (above 12) seems to be analogous to the frequency of osteomalacia amongst adults in these times.

Results of Examination of School Children by School Doctors.

Interesting facts were ascertained at a recent meeting of school doctors about the pathological conditions found amongst school children in rural districts. In one of our most cultivated country towns 330 boys and 310 girls were examined, all 6 years of age, just at entering school. Their average weight was: boys 19 kilos, girls 18·66 kilos; height: boys 111½ cm., girls 110; circumference at nipple of breast: boys

58½ cm., girls 56·75. The following conditions were found to be present: Adenoids in 20 boys and 7 girls; swollen glands, 103 cases each; 30 boys and 18 girls had rickets; 7 children had organic heart disease; 12 boys and 35 girls suffered from goitre; 9 boys and 14 girls from myopia; 6 boys and 2 girls had herniæ; 39 boys and 27 girls had an apical lesion with a negative Pirquet test; whilst only 3 each had positive Pirquet. Enlarged tonsils were found in 34 boys and 19 girls, 4 boys and 16 girls were deaf, whilst 12 boys and 27 girls had scoliotic changes and 7 boys were hydrocephalic. The number of backward cases amongst older school children was found sufficiently large to justify the establishing of special classes for them. It appears to be necessary very early to pay special attention to defects of the vertebral column; faulty sitting in school is not so much to blame for scoliosis or flat breast, but an organic change, manifest already in very early life. Gymnastics are required to control such conditions. Also myopia and deafness are often the result of a previous disease or disposition, and not necessarily only due to the traumatism of school teaching. Glands in children are only of importance if they appear in the supraclavicular region—mostly associated with pathological changes in the apices of the lungs.

March 9th.

The Services.

ADDITIONAL PAY FOR OFFICERS ON COMMITTEES.

AN Army Order provides that a field officer on full pay who is appointed to serve on a committee or to act as its secretary in virtue of possessing special scientific knowledge not acquired as part of his normal military duties will receive 15s. of additional pay for each day on which such committee sits. A captain or subaltern serving in similar circumstances will have additional pay of 10s. a day.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. E. A. Bourke is placed on retired pay on account of ill-health contracted on active service.

Temporary Captains relinquishing their commissions and retaining the rank of Captain: J. Anastasi and A. G. Wright.

TERRITORIAL FORCE.

Lieut.-Col. J. H. Harris, T.D., resigns his commission and retains the rank of Lieutenant-Colonel, with permission to wear the prescribed uniform.

Capt. P. J. Gaffikin to be Major.

Capt. and Bt. Major R. E. Barnsley, R.A.M.C., to be Adjutant of the R.A.M.C. School of Instruction, Northern Division (T.F.).

Lieut.-Col. A. B. Lyon is appointed to command 1st London Casualty Clearing Station.

Major J. R. Benson resigns his commission and is granted the rank of Lieutenant-Colonel.

Major A. W. French and Capt. W. T. P. Meade-King resign their commissions and are granted the rank of Major.

Major A. G. Roper resigns his commission and retains the rank of Major.

Capt. (Bt. Major) E. G. Smith resigns his commission and retains his rank.

Captains resigning their commissions and retaining the rank of Captain: C. F. Backhouse, A. J. H. Iles, S. L. Brimblecombe, C. E. M. Jones, C. H. Maskew, A. V. Maybury, C. F. Glinn, G. C. F. Robinson, B. Dyball, R. V. Solly, R. Jaques, H. Andrew, C. D. Lindsey, W. L. Pethybridge, J. L. Wright, C. Lamplough, J. E. F. Palser, A. W. Power, M. H. Way, and C. H. Saunders.

4th Southern General Hospital: Lieut.-Col. J. E. Square resigns his commission and retains the rank of Lieutenant-Colonel. Major (Bt. Lieut.-Col.) J. W. Gill resigns his commission and retains his rank.

5th Southern General Hospital: Major N. E. Aldridge resigns his commission and retains the rank of Major.

TERRITORIAL FORCE RESERVE.

Lieut.-Col. C. A. Lees, from 2nd London (County of London) General Hospital, to be Lieutenant-Colonel.

LITERARY INTELLIGENCE.—Messrs. W. B. Saunders Company announce for early publication Keen's "Surgery," volumes seven and eight, which will complete the work.—The Williams and Wilkins Company, of Baltimore, U.S.A., announce the early appearance of the first number of the new *American Journal of Tropical Medicine*, of which the annual subscription price, net postpaid, to British subscribers is 23s. The journal, which will appear six times a year, is edited by Dr. H. J. Nichols, Major, U.S.M.C., Army Medical School, Washington, D.C.

Correspondence.

"Audi alteram partem."

VANISHING TYPHOID IN PHILADELPHIA.

To the Editor of THE LANCET.

SIR,—Thirty years ago Philadelphia had a death-rate from typhoid fever of 63·9 per 100,000 inhabitants. Last year it was 3·3 per 100,000. The reason is—filtered water. Just how consistently the fall occurred during the installation of the filtration system is well worth noting. This system was commenced in 1899, was completed in 1912, and cost about 28 million dollars. It has been estimated that if the same rate of mortality had held in 1920 as averaged from 1898 to 1908 there would have been 900 deaths and about 6000 prostrated from typhoid; instead of this the total deaths in the entire city were 60, and almost one-half of these were traceable to outside sources of infection. Considering the population of 1,837,924 on July 1st, 1920, this is a wonderful showing. Philadelphia is certainly trying to answer the historic question: If preventable, why not prevented? During the period 1862–1870 there occurred the very high average of 79·9 per 100,000; the next decade showed 58·1 and the rate of 45·2 in 1901 to 1910 suddenly broke to 12·5 in 1912, when all the water was filtered. The recent years show the following rates: In 1914 the rate was 7·5; in 1917 it was 6·2; in 1918 it was 4·8; in 1919 it was 4·4; and in 1920 it was 3·3. Incidentally the death-rate from diarrhœa and enteritis has fallen 40 per cent. in eight years and the mortality of children under 1 year 20 per cent.

Philadelphia takes her water-supply partly from the Delaware river and partly from the Schuylkill river. Higher up on both these rivers are active manufacturing cities such as Trenton and Norristown, but the problem seems to have been solved to render the water pure notwithstanding this handicap. When the filtered water was first sterilised it was accomplished by the use of hypochlorite of lime; but since 1914 liquid chlorine has supplanted the hypochlorite, and is applied as required to the effluents of all filter stations. The quantity of liquid chlorine is determined by results of daily analyses of effluents. Thus Philadelphia fortunately provides for all its inhabitants water that is sterilised after filtration. I am, Sir, yours faithfully,

GUY HINSDALE, M.D.

Hot Springs, Virginia, March 12th, 1921.

*** Dr. Hinsdale's letter provides a pendant to the annotation on water-borne typhoid in our issue of March 12th.—ED. L.

GRAVES'S DISEASE.

To the Editor of THE LANCET.

SIR,—In the recent discussion on Graves's disease at the Royal Society of Medicine, reported in recent issues of THE LANCET, it seems strange that so little was said as to the danger of removing, or interfering with the blood-supply to, the parathyroid glands, for it is a very real risk. Sir William Stokes removed one-half of an enlarged thyroid from a girl of 18 years; the case did well; three and a half months later he removed the remaining half; in 11 days there occurred mental torpidity, slowness of speech, swelling of eyelids, face, and hands, and also dilatation of pupils, disturbances of respiration, and rapidity of pulse and death occurring 21 days after operation. There is little doubt that the latter group of symptoms and the fatal termination were due to the removal of the parathyroids. It is clear that in partial operations the complication is rare, and it seems natural to think that the best operation in Graves's disease would be, as Crotti recommends, to remove the front part of both lobes and the isthmus, avoiding the back part of the lobes where the parathyroids and recurrent laryngeal nerves lie; the number and distribution of the parathyroids and the danger cannot be wholly avoided; we therefore indebted to Dr. W. S. Halsted for informing us how to recognise and treat the symptoms. A patient under his care on the eighth day after a thyroid operation had several attacks of numbness commencing in the lips and extending to the face and arms. The patient said the attacks were indescribably awful and that she would sooner die than have many more of them. Dr. Halsted was so confident of the cause of the symptoms that he immediately sent to Dr. W. G. MacCallum for dried parathyroids of beeves; the effect of parathyroid exhibition was almost instantaneous and most marvellous; it is stated that an equally good result can be obtained by the administration of calcium salts. In experiments on the lower animals in which the parathyroids have been removed, in a minority of cases the animals can be kept alive for weeks and months and even years by putting them on a diet consisting solely of milk. This is the best way to exhibit calcium, for 10 gr. of the lactate of calcium only corresponds to 2 oz. of milk, which would probably have no effect. Equally good results, it is said, can be obtained by the salts of strontium, and also by those of magnesium and barium, but as these last two are poisonous they cannot be used; thus there are three specific remedies for aparathyroidea—namely, parathyroids and the salts of calcium and strontium.

It is said there is no specific treatment for Graves's disease, but Dr. Lockhart Gillespie cured three children of about the age of 10 years by giving them each 10 gr. of the iodide and 5 gr. of the bromide of strontium three times a day, in 33, 21, and 30 days respectively.[1] Further, we cannot be sure that the improvement which occurs in cases of Graves's disease when kept in bed and fed on a diet into which milk enters largely is not due in part to the specific action of the calcium in the milk.

There is a connexion between Graves's disease and diabetes; it is therefore interesting to note that Dr. A. S. Donkin, in a farmer with diabetes, by placing him on a diet solely of skimmed milk in 16 days, reduced the amount of sugar in the urine from 25 gr. to the ounce to nil, and this notwithstanding the large amount of sugar in 8 pints of skimmed milk.

I am, Sir, yours faithfully,
WALTER EDMUNDS.

Carlton-road, Putney, S.W., March 19th, 1921.

THE PATHOLOGY OF RELAPSING FEVER.

To the Editor of THE LANCET.

SIR,—In an account of the discussion following Lieutenant-Colonel J. C. Kennedy's paper on this subject, read at the Royal Society of Tropical Medicine and Hygiene and published in THE LANCET on March 12th, I am quoted as having said with reference to relapsing fever in Mesopotamia "the case mortality among Arabs was 8 per cent., among Indians 1 per cent., &c." The figures given by me related to a series of cases in 1917 and 1918, and were: "The case mortality among Indians was 8 per cent., among Arabs 1 per cent., &c." I am, Sir, yours faithfully,
W. H. WILLCOX.

Welbeck-street, Cavendish-square, W., March 21st, 1921.

VENEREAL INFECTION IN RHINE ARMY.

To the Editor of THE LANCET.

SIR,—I have always found the War Office records regarding venereal disease to be kept most accurately and stated (for public consumption) most confusingly. What we want to know is: (1) What is the V.D. contraction rate for each month, calculated at the rate per 1000 per annum for the Rhine Army, from Jan. 1st, 1919, to Jan. 31st, 1921? (2) What is the average strength of the Rhine Army and the average number of V.D. cases under treatment in hospital or otherwise?

To show how the same facts may be presented in a most misleading manner let me set out the following: On p. 111 of Dr. E. B. Turner's evidence before the National Birth-Rate Commission (Special Enquiry) in November last:—

> "In Cologne the numbers varied, hovering about 12,000 men. When I was there the 25th General Hospital, Venereal Disease, with 500 beds, was full, and in addition there were those who were being treated at E.T. centres for mild cases."

And Dr. Turner also told the Commission (I was present at the time) that there was a "waiting list" of V.D. patients. Now if the number of cases actually under treatment, in hospital or otherwise, was 600 for 12,000 troops that would be a rate of (for hospital, plus, say, 100 E.T. cases) *500* per 1000 per annum. This is not an unbelievable rate, because the American Forces in Paris had for January, 1918, a rate of *480* per 1000 per annum. That fact is stated by Lieutenant J. E. Moor,[1] who was the M.O. i/c of the American Medical Report Centre, Paris District. Then disinfection was thoroughly applied, some 72 prophylactic stations being ultimately established, and enormous quantities of calomel tubes were distributed officially and unofficially, and the rate at the end of 1918 for the American forces in Paris district had dropped to *94·6* per 1000 per annum, a great tribute to the American medical officers and the American Red Cross, hampered as they were by public ignorance and mistaken opposition. Later they were misguided also by certain English officials, and began to rely only on depôt disinfection, and hence in the beginning of 1919 their rate had risen to *148* per 1000 per annum. The rate for all troops in U.S.A. (with depôt disinfection) for six months ending Dec. 27th, 1918, was *150·62* per 1000 per annum, and the rate given in the National Birth-Rate Commission's report for American troops on the Rhine in 1920 averages *142* per 1000 per annum.

Now what is the rate for the British Army on the Rhine? Dr. Turner's figures work out at 500 per 1000 per annum. Sir Archdall Reid, giving evidence in the same place, suggested the rate was from 200 to 250 per 1000 per annum, and we have the following official statements:—

> 1. "The records show that in our Army on the Rhine, which numbers from 11,000 to 12,000 men, the percentage of troops suffering from V.D. is 2·6."—*Evening Standard*, March 6th, 1921.
>
> 2. Sir L. Worthington-Evans told Parliament on March 8th, 1921, that "the monthly average of admissions for V.D. to hospital was 1·4 per cent. of the total strength" for period Jan. 1st, 1920, to Jan. 31st, 1921.

These statements are not necessarily contradictory, but they are certainly confusing, not to say misleading. If "the percentage of troops suffering from V.D. is 2·6" for 12,000, then 312 men are in V.D. Hospital. (But Dr. Turner says there were 500 plus E.T. cases!) The figure quoted by Sir L. Worthington-Evans—1·4 per cent. per month—is equal to *168* per 1000 per annum. If that is the average number of V.D. cases, how can 2·6 per cent., or 312 men, be correct? Still less correct is Dr. Turner's statement of 500 in hospital.

I called on the Rev. Talbot Hindley, of St. John's Vicarage, Upper Holloway, to get his evidence as to the facts (free from the angry and unwarranted criticism to which this gentleman has been subjected, mainly because of something he did not say), and he tells me that he gave five Gospel lectures in the Venereal Disease Hospital at Cologne; that many of the patients were not appealed to by his Mission; but that he was officially informed that over half the patients in the hospital did attend his lectures on each occasion, and that on each occasion his audience numbered over 200 men; thus there would be at least 400 men in the V.D. Hospital, besides those receiving out-treatment, of which he knew nothing. All the men who attended his lectures were hospital patients in blues. If this statement is correct, Dr. Turner's evidence is corroborated and Sir L. Worthington-Evans's statement is contradicted.

Finally, on page 233 of the National Birth-Rate Commission's Report there is published a letter from the War Office stating that the rate for June quarter, 1920, was *53·79* (contraction rate); for September quarter, 1920, *38·38*. This means that the rate for the June quarter of 1920 was *215* per 1000 per annum, or nearly as high a rate as the Canadians had when they first landed in England.

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[1] Brit. Med. Jour., Oct. 8th, 1898.

[1] Journal of the American Medical Association, 1920, lxxiv. p. 1158.

The following paragraph I copy literally from the *Times* of May 22nd, 1920, to show what a false impression truthful figures can make:—

VENEREAL DISEASE IN THE ARMY.

Mr. Churchill, in a written answer to Captain Elliot, states that the approximate ratios per 1000 of admissions for venereal disease in the British Army are as follows:—United Kingdom: 1918, 43; 1919, 59; first quarter, 1920, 14·8. France: 1918, 32; 1919, 67; first *quarter, 1920, 40·5. Army of the Rhine: 1919, 46*; first quarter, *1920*, 42·3. The ratios for 1919 and 1920 are to a large extent fallacious, he adds, owing to rapid demobilisation. The latest information shows some improvement in France and Germany.

Now the rates quoted herein for France for 1918 and 1919 are apparently annual rates, and the rate for 1920 is a quarterly rate, hence comparative rates per 1000 per annum are: 1918, *32;* 1919, *67*, or is it 268? 1920, *40·5* × 4, 162. The Rhine rates are, apparently, per 1000 per annum: 1919, *184*; 1920, *169* (March quarter), and on May 22nd Mr. Churchill says there is "some improvement," the "improvement" being a rise to 215 per 1000 per annum for the June quarter, 1920! Now what are the actual facts?—I am, Sir, yours faithfully,

ETTIE A. ROUT,
Late Hon. Sec., New Zealand Volunteer Sisters.

March 18th, 1921.

DANGEROUS DRUGS ACT, 1920.

To the Editor of THE LANCET.

SIR,—"A Member," writing in your issue of March 19th, suggests that I may be mistaken if my letter, which appeared in your columns of the 12th, intended to imply that "the Council of the London and Counties Medical Protection Society voices the medical opinions of the society's contributors, inasmuch as they are not in any way consulted." It is, of course, impossible to take a referendum of members on every subject that comes before the Council of the society, but members are, I think, quite well aware that the opinion of any individual member, if communicated to the Council, receives careful consideration. The great majority of the members of Council and all the officers are elected annually, and are therefore as representative as is possible of the members of the society. Moreover, at the annual meeting (which this year will fall on April 6th) every member who cares to attend can express his opinion on the policy of the Council.

As regards the proposed Regulations under the Dangerous Drugs Act, 1920, I am not aware that any member of the society differs from the unanimous opinion of the Council, and I note that "A Member" himself does not express any disagreement. Of course, it is very seldom that 6000 members of a society will be in absolute agreement on any particular point, but in this case I am not at present aware of any disagreement whatsoever.

We should be very glad to hear from any members of the society who have formed any opinion on the subject. I am, Sir, yours faithfully,

HUGH WOODS,
General Secretary, The London and Counties Medical Protection Society, Ltd.

Craven-street, Strand, W.C., March 18th, 1921.

ANALYSIS OF THE GASTRIC CONTENTS.

To the Editor of THE LANCET.

SIR,—Mr. J. H. Ryffel's paper on this subject in your issue of March 19th gives an incorrect account of the technique suggested by Dr. W. J. Adie and myself and published in THE LANCET of Feb. 26th. Mr. Ryffel states that "recently Cole and Adie have urged the use of thymol-blue working to an end-point, $=\mathrm{HCl.N} \times 10^{-2 \cdot 6}$, or about N/500."

I had hoped that we had made it quite clear that it is not possible to get correct results from free HCl if one works to a reaction more alkaline than about N/100. He goes on to state that "this indicator would leave a large gap between the total acidity and the free HCl so that it would surely be better to retain dimethyl." I completely fail to see why a large gap is undesirable, since it undoubtedly exists in a great many cases.

I maintain that our technique gives an exact measure of the free HCl and therefore of the actual hydrogen-ion concentration of the gastric contents. Dimethyl gives the whole of the free HCl and an unknown fraction of the combined HCl. If it gave the whole of this combined HCl its use might be defended, but since it gives a figure which nobody can possibly evaluate, it is unfortunate that its use should be advocated by a scientist of Mr. Ryffel's reputation.

I am, Sir, yours faithfully,

Biochemical Laboratory, Cambridge, March 22nd, 1921. SYDNEY W. COLE.

TREATMENT FOR INTERNAL CANCER.

To the Editor of THE LANCET.

SIR,—Since August, 1916, I have been treating with apparent success cases of internal cancer, as diagnosed clinically, as they occurred in general practice. This fact, and the contrasted failure of my treatment of many cases of external cancer with the same remedy suggest to me a new clue in the treatment of cancer. I believe that carcinoma is almost, if not always, associated with some form of rheumatism which yields to a course of alum taken internally. The effect is not observed in the subjects of external cancer associated with a gouty disposition, and I have found that cancer of the rectum, anus, and bladder does not respond to this treatment. The prescription which I recommended is:—

℞	Alum sulphate	gr. ii.
	Mag. carb. levis	gr. v.
	Potass. citrat.	gr. v.
	Tr. opii	♏ iii.
	Aq. chloroformi	ʒ ii.
	Aq. ad	℥ i.

℥ i. t.d.s.

30 drops of liq. bismuthi et ammon. citrat. being added in the case of gastric cancer.

An illustrative case is the following:—

Mr. S., aged 60. On Dec. 29th, 1919, I found him in bed with temperature 101° F. and a hard, irregular lump in the cæcum. He had lost weight and complained of recent "rheumatic pains" *shooting up to the right loin.* There was *no vomiting*, but the abdomen was tympanitic. Tongue clean and pulse 70 and bowels well open. He was put at once on the above alum mixture, with a diet of soda-and-milk, beef-tea, and bread-and-milk. On Dec. 30th calomel gr. i. was given four-hourly for relief of distension.

Jan. 1st: Irregular and hard *lump still there, but less painful and* certainly smaller.

Jan. 4th: Calomel is keeping the bowels open; much mucus in the motions, but no blood. Abdomen flatter. T. 100°.

Jan. 7th: T. 99·8°. Growth hardly palpable.

Jan. 9th: T. 98·6°.

Jan. 20th: Putting on weight rapidly with good appetite. Going to the seaside.

This is one out of six cases of hard irregular growth in the cæcum or colon, with shooting pains up to the right loin, treated by this method. Other cases treated with similar success have been carcinoma of the stomach (7), gall-bladder (1), and prostate gland (1). A case of carcinoma of the ovary responded in an encouraging way. I am placing these suggestions on record in order that other practitioners may test a simple but effective treatment in inoperable or incurable post-operative cases.

I am, Sir, yours faithfully,

REGINALD LARKIN, M.D. Lond., M.R.C.S.

London, S.E., March 18th, 1921.

MATERNITY AND CHILD WELFARE CENTRES AND DAY NURSERIES.—In view of inquiries from local authorities and others interested, the Ministry of Health have issued a revised list, with index, of *maternity and child* welfare centres in England and Wales, including, for the first time, a list of day nurseries. The list contains the names and addresses of 735 centres and 140 day nurseries conducted by voluntary societies and of 1188 centres and 44 day nurseries conducted *by local authorities.* At about 150 of the centres special *dental treatment* is provided, while *others have special arrangements* for eye and ear treatment. While the centres in the first part of the statement are primarily consultation centres for nursing mothers and children under 5, some are fully equipped for ante-natal consultations. There are now separate lists for residential and non-residential institutions. The Ministry advise that consultation centres should be reserved for healthy women and children, and that where possible treatment should be given at special treatment centres which may be established at a hospital or combined with a sc[illegible] clinic, and may take cases from a number of consulta[illegible] centres. The list is obtainable from His Ma[illegible] Stationery Office, or through any bookseller, at 2s. net.

Parliamentary Intelligence.

HOUSE OF LORDS.

WEDNESDAY, MARCH 16TH.

Special Committee on Venereal Diseases.

Lord **WILLOUGHBY DE BROKE** called attention to the Report of the Special Committee on Venereal Diseases, asked the Government what steps were being taken to give effect to its findings, and moved that the Report should be printed and issued as a Parliamentary paper. He said on the last occasion when he raised the question Lord Sandhurst, in response to a request for certain figures with regard to the Portsmouth area and the incidence of venereal disease there as compared with other areas in the United Kingdom, produced a figure which, owing to its magnitude, was positively astounding. He presumed that the noble lord was supplied with the figure by the Ministry of Health. Lord Sandhurst, or at any rate those who supplied him with the figures, knew perfectly well that he (Lord Willoughby de Broke) was asking for figures with regard to the area of which Sir Archdall Reid was the A.D.M.S. in order to prove that under the system of self-disinfection which he had caused to be carried out there was a decrease in venereal disease to a point that was almost negligible. It would almost seem that at the Ministry of Health they were animated by a desire to discredit the figures given by Sir Archdall Reid, because they roped into Lord Sandhurst's answer not only the venereal cases in Sir Archdall Reid's command, but all the other infections in the whole of the district, as well as those which were imported into the district from the outside. Fortunately the whole thing was exposed by Sir Archdall Reid himself, and the fallacy of the figures with which Lord Sandhurst had been supplied was admitted in a White Paper subsequently published by the Government, in which it was shown that the figures given were between three and four times in excess of the actual numbers. He did not charge anybody with a deliberate breach of good faith, but the production of figures of this kind was not calculated to raise public confidence in statements put forward by the Ministry of Health in reference to self-disinfection. The Committee presided over by the Bishop of Birmingham comprised the heads of almost all the various denominations, and also women doctors and physicians and surgeons of the highest merit, and the Government sent their own witnesses to give evidence before it. It was appointed with the consent and approval, if not at the actual instigation, of the Ministry of Health. The Government were therefore bound to take some notice of the Report and to carry its recommendations into effect. The salient features of the Report were, first of all, that the Committee found that sexual continence was compatible with normal health. They concluded with the strongest possible recommendation that in view of the serious situation parents, teachers, ministers of religion, social reformers, and others should combine in a national effort to assert the moral obligation of chastity. With that recommendation the society to which he belonged was in the heartiest accord, and an injunction of that kind was placed at the head of all their leaflets.

The Policy of Self-Disinfection.

With regard to self-disinfection the Committee said:—

> "Having regard to the disastrous effects of venereal disease on individual and national welfare, the Committee think that the time has arrived when the Ministry of Health should, through local health authorities, draw public attention to the grave menace to national health and welfare which exists from this cause, and should make it the personal obligation on every individual who exposes himself or herself to the risk of infection from venereal disease to take adequate steps to become disinfected, and to obtain medical advice and treatment where necessary until cured or rendered free from infection. It would then be the recognised duty of every individual who exposes himself or herself to the risk of syphilis or gonorrhœa to obtain and apply efficiently suitable disinfectant remedies immediately after intercourse, and, in the event of the development of symptoms of disease, to seek medical advice at the earliest opportunity."

The Committee further stated that no obstacle should be placed in the way of people obtaining the right disinfectants from the chemists, and that if necessary the law should be altered to enable them to do so. It was not really necessary to alter the Act of 1917; it was only necessary that the Ministry of Health should put one of its sections into operation, and through the local health authorities take such steps as would enable chemists to sell to people asking for them such things as were duly authorised by the Ministry and those in authority. The Committee very wisely were of opinion that no further reliance could be placed on an increase of the provision for early treatment of the sym- oms. To provide sufficient of them to serve the whole lation was impracticable, and in the present attitude rds public expenditure it was out of the question. At the best it meant delay of disinfection, and he did not see why the ratepayers and taxpayers should pay for keeping houses where the incontinent might go. It was not denied that the rate of venereal infection in this country was a matter of grave public concern; that it was alarming; that it ought to be, and must be, dealt with; and that nothing very much was being done. Those who favoured the policy of self-disinfection did not shut their eyes to all the other means which might be brought forward some day for the purpose of stamping out, if possible, venereal disease. But the particular policy they were concentrating on at the moment had this advantage: it could be carried out immediately by the Ministry of Health. Supposing they promoted a Bill (which a lot of people thought ought to be done) to make it a criminal offence to communicate the disease to somebody else; there was a very large and highly organised body of opinion in this country which was dead against that. It was dead against anything that would savour of State regulation of vice or a return to a state of affairs analogous to that which prevailed under the Contagious Diseases Acts. They would have great difficulty with that. Compulsory notification, so that patients might, if possible be kept under observation for a long enough period to be cured, if ever they could be cured, was a remedy that was full of pitfalls. The society to which he belonged was perfectly prepared to discuss that and all other remedies, but for the moment they had a practical remedy which had proved to be efficient if it was properly tried, and one which was approved by the very important Committee to which he had referred. The official policy was to exhort people not to commit fornication, and then to tell them that if they did they must consult the doctor at once, either before or after the symptoms arose. That policy might be right or wrong in principle, but it had failed in its object. The manner in which the Government were dealing with venereal disease now was a failure; nothing had been done. The Society for the Prevention of Venereal Disease, to which he belonged, did not intend to depart from their policy, because they considered that that policy had been endorsed by the Special Committee. But at the same time he was not going to any conference in the frame of mind of Sir Anthony Absolute. He hoped that an agreement might be found, but everything depended on the attitude of the Government. The Government could either suppress the report or try to ignore it and let the whole thing drift on in the way they were allowing things to drift now in spite of the terrible incidence of venereal disease; or they could take the statesmanlike course and admit frankly that the application of this knowledge had proved to be sufficient where it had been efficiently carried out—they could take it and direct it in a scientific manner. If they did not do that they would be up against a great danger—namely, that the knowledge of self-disinfection was becoming public property. He was very glad to see that several public health authorities had already adopted their policy. There was a meeting held not long ago, at which several medical officers of health in the London district were present, and a resolution was passed unanimously adopting the policy of self-disinfection.

Drawbacks in Application to Civilian Population.

The Bishop of **LONDON** quite agreed with the noble lord in asking the Government to take the Report into consideration, but he pointed out that there was a very great deal said in the Report against self-disinfection. Who should decide when doctors disagreed?—because it was impossible to describe a greater contrast than that between the evidence of Sir Archdall Reid and that of Colonel Harrison, the man who established venereal disease camps in France. In the Committee itself there was a tremendous difference of opinion. Even in the army a system of self-disinfection, except under skilled instruction, was practically valueless. Colonel Harrison, who supported the practice with hope, thinking that it was going to be a great cure, found tremendous disappointment because it did not come up at all to his expectations. If it had failed in the army, how much more would it fail in a civilian population? And when they found that in order to make it effective every boy and girl had to be instructed from early youth in the use of these things he could not wonder that the people who gave evidence and the members of the Commission said that in many ways the remedy would be worse than the disease. Nothing could be more dangerous than the fancied security which this remedy gave. He was looking at the matter from the medical point of view. From the moral point of view he felt that such a system would debauch the conscience of the country. On the other hand, he thought that the Report was a most fair and modest representation of what was said in the evidence, and he should like it to be shouted from the house-tops that the Committee all agreed that chastity was consistent with the best possible health. He did not say that any individual should not have the right to purchase any disinfectant or cure for any disease from any chemist; he thought they were going too far in shackling individual liberty if they prevented any person doing that. With regard to the provision of ablution centres by local authorities, it was a wrong thing that thousands of pounds of the ratepayers' money should be spent to save a man from the consequences of his sin. He was strongly in favour of the doctor being allowed, under privilege, to communicate the fact to some parent whose young or innocent daughter might be about to marry a diseased man, and he was convinced by the evidence of a leading surgeon after the war that they ought to go still further—that they had come to the point when they must have a medical certificate of health before marriage.

Lord SYDENHAM said he regretted that when he asked Lord Willoughby de Broke to come to a round table conference with the National Council he declined. If the conference had taken place they would have been spared the unedifying spectacle of two bodies with the same object, the one constantly attacking the other in the press. He hoped that at this late hour the noble lord would join hands with the National Council in the work they were trying to carry out. There was no reason to expect any material result from self-disinfection if it was tried among the civil population. This was not really a medical question at all. Medical science had told them that certain disinfectants used very carefully in a certain way and at a certain time would probably have the effect of averting infection. Medical science had also told them that soap and water used under the same conditions would probably be equally effective. The questions were whether the civil population could be induced to adopt disinfection on a large scale, whether they would use it properly and at the right time, and what steps should be taken to induce them to do it. That was not medical, and the layman was quite capable of discussing it. He agreed that there was no reason why the nature and effects of disinfection should be kept secret. The National Council took it up in 1916 because there were very many cases of venereal disease among the troops. They advocated disinfection in the camps and barracks, and Sir Thomas Barlow took great trouble in carrying it out. They published a pamphlet explaining the uses of calomel and permanganate, and laying great stress on the importance of cleanliness. His organisation did not wish to keep back from the public any information that might be useful in combating the disease, but it could not go so far as his noble friend's society in proclaiming benefits which must be problematical. The Government would be ill-advised if it issued a statement which might be misunderstood, and which in that case would certainly lead to an increase of infection.

Need of Agreement in the Anti-Venereal Campaign.

Lord GORELL said for the last four or five months he had been endeavouring to see what could be done to bring about an understanding between the two societies. He had hoped that with the issue of the Report there might be found to be in it sufficient to make it common ground between them. That had, however, not been possible. Taking into consideration the Report he drew up eight points of policy, but before those points of policy had been before a general meeting of the National Council on March 22nd and had been confirmed it was hardly possible for him to state them in detail to the House. They might not be accepted, but they had received the full approval of the Minister of Health, and they were unanimously passed by a very representative executive meeting. He had read the Report and the whole of the evidence, and he could not see how any Government could possibly take action upon the lines of the Report, because it was made by a Committee of people who held very different opinions. It was his (Lord Gorell's) duty to give the House not opinions but facts on the other side. He had received a letter from a gentleman who was described by the Bishop of Birmingham—the Chairman of the Committee which produced this Report—as one who had given almost his life to the study of venereal disease. He was a member of the Committee, and was chosen to start the evidence. He had been 25 years a surgeon in the London Lock Hospitals, male and female; he controlled the venereal department of Charing Cross Hospital, and during the war he was in charge of a venereal department. He wrote:—

> "At two venereal disease clinics—Charing Cross Hospital and the London Lock Hospital, the largest clinic in the Empire—during the last four or five months I have been collecting statistics of the number of patients who have used self-disinfection after intercourse. (A) What disinfectant used? (B) How soon after connection? (C) What degree of thoroughness? The figures are at present not enough to be considered conclusive, but as far as they go they bear out what I have always said: self-disinfection will not diminish even the immediate numbers of true venereal disease. Remotely I believe it will produce an increase of venereal disease by giving a sense of false security. Self-disinfectants have prevented, and will continue to prevent, dirt diseases—e.g., septic sores, &c.
>
> About 20 per cent. of the labouring classes had used self-disinfection and it had failed. About 30 per cent. of the educated classes had used self-disinfection and it had failed. I believe that gonorrhœa is infected directly into the canal, especially in Jews; therefore washing outside is useless. In some of the above cases the appearance of the two diseases was postponed for a very long time, that is, the incubation period was greatly increased—a terribly dangerous happening, as during this period others, wives or other women, had been infected by the 'self-disinfectors.' I do not think it would be wise to quote percentages for this matter yet."

He quoted that to show that there was grave doubt at the present time, and need for a great deal more examination and gathering together of statistics before any definite pronouncement could authoritatively be made. At the same time he heartily supported the view that they could not afford to ignore the evidence or to allow matters to drift.

Further Action Imperative.

Viscount KNUTSFORD said he wanted to urge on the Minister of Health that the time for doing nothing had long since passed, and that they must not be afraid because of possible evils which might never happen to take vigorous action. The figures of venereal disease in this country were almost too great to be believed. At the London Hospital alone they had 23,000 new cases last year; that was four times the number they had a few years ago. It was impossible any longer to do nothing; they must do something. He remembered going to a Christmas party at a hospital, and the doctor took him in to see 40 little children, innocent sufferers (their mothers also innocent sufferers), and he said that if it had not been for the work in that hospital the only place in which he (Lord Knutsford) would have been able to see them would have been in the post-mortem room. If he were Minister of Health he would have a very energetic propaganda. He would preach that continence and chastity were consistent with vigour of mind and body. He would paint in the most awful colours the horrors and the suffering caused by these diseases, and would do everything to instil into the public a fear of contracting these diseases. He would tell them the dangers and how to avoid the dangers. He entirely agreed that self-disinfection, unless it was taught properly, was not an efficient safeguard; but they were not doing anything to give the people the knowledge which was a small protection. It was the duty of those who knew to teach others what they should do. He would open more clinics to which people who were diseased could come to be cured. The expense of the clinics would be very great, and the patients who went to them ought to be made to pay.

The Earl of MALMESBURY, as a member of the Joint Committee which considered the Criminal Law Amendment Bill, said he was more impressed by the evidence given by Sir Archdall Reid than by that of Colonel Harrison. But whether Sir Archdall Reid or Colonel Harrison was right it was the duty of Parliament to consider what steps should be taken, and taken soon, to prevent the spread and increase of this disease.

Lord ASKWITH asked if we were to go on with 800,000 cases of venereal disease in the country and increasing every day? It was absurd. No obstruction should be placed in the way of disinfection. That system had been tried in Portsmouth and other centres. It had been endorsed by some of the principal medical officers of health in some of the most crowded districts. They could not say that those men were wrong in adopting this method of disinfection and in saying that it could well be employed. He should support Lord Willoughby de Broke if he went to a division.

The Earl of CLANWILLIAM said he hoped the Government if they could not agree to his noble friend's motion would do something to help the cause.

Government Proposal for a Round-Table Conference.

Viscount PEEL, replying for the Government, said he trusted that Lord Willoughby de Broke would meet with the others around a table in a month or so and that the societies would arrive at a common policy and advise the Ministry of Health. Lord Knutsford knew well that the object of making treatment free was to persuade the largest possible number of people suffering from these diseases to go to the centres in the national interest, but if the noble lord with his experience thought this treatment ought to be paid for that view would have much weight with the Ministry of Health. He would remind their lordships that the Committee, consisting of medical officers of several Government Departments, reported unanimously against the advocacy of self-disinfection for the civilian population, after considering the war experience of the several armies. As regarded the Report of the Special Committee he would point out that medical opinion was very much divided on the question of self-disinfection. It was very important before any consideration was given to public opinion or moral considerations that they should arrive at some definiteness as to what medical opinion was on this question of disinfection. It was generally agreed that the danger of infection became slight and remote if the process of disinfection was carried out by a qualified medical practitioner. It was at the same time felt that it was not practicable to give such instruction to civilians as would ensure that the disinfectants were thoroughly and intelligently applied; further, medical authorities held that the spread of knowledge as to the efficiency of disinfectants if properly applied would lead to persons running the risk of infection who would not otherwise do so, and thus spread the disease. Another danger strongly pointed out by the doctors was that these disinfectants would be used in many cases as a substitute for the treatment of the disease. He was sorry to say that he could not give any very definite information at present on behalf of the Ministry of Health because the question would very shortly receive the attention of the Cabinet. He could only say that speeches on that debate would be very carefully considered. The Report of the Special Committee was not an official Report. If it were published as a Parliamentary Paper it would undoubtedly give colour to the view that this was an official Committee and that to some extent the views expressed were authorised by the Government. He hoped that his noble friend would not press the point.

Lord WILLOUGHBY DE BROKE said he should press the matter to a division.

On a division the motion was defeated by 29 votes to 9.

THURSDAY, MARCH 17TH.

Criminal Law Amendment Bill.

The House received the Report of amendments on the Criminal Law Amendment Bill and they were agreed to.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 16TH.

Venereal Disease.

Viscountess ASTOR asked the Minister of Health whether it was proposed to depart from the policy of dealing with venereal disease which was adopted by him on the unanimous recommendation of the Inter-departmental Committee which reported last spring after taking full evidence.—Dr. ADDISON replied: The question whether any modification is required in the policy adopted in dealing with these diseases is now under consideration, and I am not at present in a position to make a definite statement on the subject.—Major FARQUHARSON: Is the right honourable gentleman aware that the great weight of evidence given before the Inter-departmental Committee and before the Birth-rate Commission was entirely against the idea that packets for self-disinfection were efficacious means of stopping or preventing venereal disease?—Dr. ADDISON: I believe that statement is correct, and I think it is also supported by the experience of the various armies, but the whole matter is under consideration.—Major FARQUHARSON: That point is kept in view at all events.

Royal Naval Hospital at Yokohama.

Commander BELLAIRS asked the First Lord of the Admiralty what was the accommodation in beds for patients of the British Royal Naval Hospital at Yokohama; what was the staff and the maximum and minimum number of patients accommodated in 1920 or latest year available; and whether any expense was incurred in 1920 in sending officers or officials to inspect or overhaul the hospital.—Sir JAMES CRAIG (Parliamentary Secretary to the Admiralty) replied: As regards the first part of the question the particulars are as follows:—Accommodation, 97 patients; staff, 1 surgeon-commander, 4 sick-berth staff, and 13 native employees (hired); maximum number of patients under treatment 1920, 8; minimum number ditto, nil. The answer to the last part is in the negative.

Committee on Medical Records.

Sir WILLIAM DAVISON asked the Minister of Health what was the precise composition of the committee set up to deal with medical record cards.—Dr. ADDISON replied: The committee, under the chairmanship of Sir Humphry Rolleston, was composed in all of 17 persons, 14 being medical men. There are attached to the committee as members three lay administrative officers. Of the 14 medical men on the committee four were in insurance practice at the time, and a fifth had been in such practice until shortly before the committee's appointment.

Medical Officers on China Gunboats.

Commander BELLAIRS asked the First Lord of the Admiralty whether there was a medical staff of a surgeon and a sick-berth attendant to a remaining crew of 12 men in each of our river gunboats in China; whether he was aware that the American and French river gunboats did not carry doctors; and whether the Board would consider the economy which could be made by relying on the missionary doctors along the rivers.—Sir JAMES CRAIG replied: The Upper Yangtse has two gunboats, with one medical officer and one sick-berth rating between them; the Lower Yangtse has eight gunboats, with five medical officers and six sick-h ratings; the West River has *four gunboats*, with two ical officers and two sick-berth ratings. There is no information as to whether the American or French gunboats carry medical officers. It is not considered desirable or, indeed, practicable, to rely on the services of missionary doctors for medical attendance on ships' companies of the gunboats on these rivers. The complements of the vessels vary from 25 to 53, and are not as suggested by the honourable and gallant Member. Owing to the climate and the difficulties as regards obtaining good vegetables sickness has to be provided against, as well as the possibility of casualties in local disturbances.

State Contribution to Health Services.

Mr. TREVELYAN THOMSON asked the Minister of Health whether, in view of the results obtained from the activities of local authorities in the exercise of their powers for the amelioration of the health conditions of their areas, he would see that no curtailment took place in the grants made from the Exchequer in support of school clinics, maternity welfare centres, the care of tuberculosis cases, and similar work, when preparing his estimates for the coming financial year.—Dr. ADDISON replied: My right honourable friend the President of the Board of Education has responsibility in respect of the provision for school clinics. As regarded the other services mentioned the amounts inserted in my estimates for the next financial year are such as are required to provide the State contribution towards existing services and commitments, and also for such extension as can be shown to be necessary for immediate and urgent health requirements.—Dr. NATHAN RAW asked the Minister of Health what grants were made by his department to local authorities towards the cost of the treatment of tuberculosis, and what proportion of the total expenditure was represented by those grants.—Dr. ADDISON replied: Grants approximating to £970,000 will be made during the current financial year towards the expenditure of local authorities on the treatment of tuberculosis. The grants represent less than ½d. in the £ on the total sums voted by Parliament for the supply services of the country. In addition to these maintenance grants, grants in aid of capital expenditure amounting approximately to £360,000 will also be made.

Report on Official Statistics.

Mr. WILSON-FOX asked the Lord Privy Seal if he would state when the recommendations of Sir Alfred Watson's Committee on Official Statistics would be published.—Mr. LLOYD GEORGE, Prime Minister, replied: The recommendations of Sir Alfred Watson's Committee on Official Statistics will be published as a Stationery Office publication at an early date.

Public Health (Tuberculosis) Bill.

Dr. ADDISON introduced the Public Health (Tuberculosis) Bill "to make further provision with respect to arrangements by local authorities for the treatment of tuberculosis." The Bill was read a first time.

THURSDAY, MARCH 17TH.

Non-attributable Disability.

Sir THOMAS BRAMSDON asked the Minister of Pensions whether, seeing that a pre-war invalid with ten years' service who served upwards of four years during the war and was invalided with a non-attributable disability received nothing for his war service, whereas a new entrant serving a similar period during the war and invalided with a disability attributed to his own carelessness or neglect could receive an allowance up to a maximum of £150, steps would be taken to remedy this injustice.—Mr. IAN MACPHERSON replied: Men invalided and pensioned before the war who were called up for service were entitled to receive payment of their pensions while serving and to count their further service for increase of pension. Allowances under Article 7 of the Royal Warrant and Order in Council were not intended for men of this class, but for men who had no specific claim to compensation. The allowances are purely temporary and only in very exceptional circumstances would the maximum, or an amount approximating thereto, be granted, and the receipt of a temporary allowance cannot generally compare favourably with the grant of a life pension or increased life pension. If in any very exceptional case it were clear that a temporary allowance under Article 7 would be more to the man's advantage than a life pension, this allowance would be paid to him instead of pension.

Treatment of Neurasthenic Ex-Service Men.

Sir WALTER DE FRECE asked the Minister of Pensions whether his arrangements were now complete for the treatment of ex-Service neurasthenic patients; and how many such men he had hitherto treated.—Mr. IAN MACPHERSON replied: The facilities for the treatment of ex-Service neurasthenic patients have already been greatly extended, and the arrangements made by the Ministry are still in process of development. It would need a prolonged investigation to ascertain the total number of men treated since the formation of the Ministry. The number of officers and men at present under treatment is 9921.

Medical Record Cards.

Mr. ALFRED T. DAVIES asked the Minister of Health whether large numbers of patients' records cards had been inaccurately filled up by medical men or others; whether the numbers had increased during the past three months; whether he was satisfied with the present method of inspection; and to what he attributed the growth of inaccuracy in these returns.—Dr. ADDISON replied: In the filling up of 13,000,000 cards a certain number of inaccuracies are inevitable, but my information is that the tendency is all in the direction of improvement, and the last part of the question does not, therefore, arise. The answer to the third part is in the affirmative.

Advisory Committee on Blind Welfare.

Mr. MYERS asked the Minister of Health whether the term of service of the members of the advisory committee on the blind expired in December last; whether any committee was now in existence; and, if so, would he state its composition.—Dr. ADDISON replied: The answer to the first part of the question is in the affirmative. I am proposing to set up a new advisory committee, and hope to be in a position to announce its composition very shortly.

Financial Position of the Hospitals.

Sir GODFREY COLLINS asked the Minister of Health when the Report of the Committee on Hospital Finances, presided over by Lord Cave, would be published; could he inform the House as to the recommendations of the committee; and what steps he proposed to take in the matter.—Colonel MILDMAY asked the Minister of Health whether the Report of Lord Cave's Committee at present considering the financial position of hospitals was likely to be published soon; and whether, failing the possibility of such early publication, any interim report would be forthcoming, in view of the urgency of the issues under discussion, and of the fact that the future policy in this connexion of the Approved Societies and of other bodies concerned would shortly be considered and shaped.—Dr. ADDISON replied: An interim report is being issued to-day on the question of contributions to hospitals out of the valuation surpluses of Approved Societies. I am informed that the hearing of evidence will be completed by the beginning of May and the Committee hope to present their Final Report before the end of that month.

MONDAY, MARCH 21ST.

Alcoholic Liquors as Medicine.

Sir J. D. REES asked the Prime Minister whether, in view of the fact that beer as well as whisky had been allowed to be a medicine in prohibitionist America, he would arrange to relax the restrictions imposed upon the people of the United Kingdom under the Defence of the Realm Act and Central Control Board (Liquor Traffic).—Mr. LLOYD GEORGE replied: The Government propose to deal with this subject at an early opportunity.

Invaliding Disabilities of Post-war Invalids.

Sir THOMAS BRAMSDON asked the Secretary to the Admiralty whether the invaliding disabilities of post-war invalids would be viewed in the same light as that now obtaining for men invalided during the Great War; and whether the scales recently introduced would be applicable to post-war cases.—Sir JAMES CRAIG replied: Apart from disabilities aggravated by, but not due to, naval service, in connexion with which certain recommendations made by a Medical Committee set up by the Minister of Pensions are now under consideration, the answer to the first part of the question is generally in the affirmative. As regards the second part, a special scale has been approved for post-war cases, based on the principle that the exceptional circumstances inseparable from service under conscription will not be present in the case of a professional service.

Sir THOMAS BRAMSDON asked the Secretary to the Admiralty whether a Pensions Appeal Tribunal, similar to that set up for men invalided during the war, could be constituted to deal with pre-war and post-war disability pensioners.—Sir JAMES CRAIG replied: It is not considered that any necessity arises for a Pensions Appeal Tribunal in the case of the permanent service, having regard to the stringent medical examination applied to all new entries. In any event it would be impracticable to reopen the cases of pre-war disability pensioners.

Pension Appeals in London.

Lieutenant-Colonel Sir FREDERICK HALL asked the Minister of Pensions how many appeal tribunal courts had been set up in the London region; how many appeal cases there were still waiting for the tribunals to deal with; what was the approximate number of cases that were heard by the various tribunals in the London region each week; and what steps were to be taken in order that appellants' cases might in future be decided without their having to wait such a long period for their appeals to be heard as they had in the past.—Sir G. HEWART (Attorney-General) replied: I understand that pension appeal tribunals are distributed in various large centres in England and Wales (including London) in accordance with the number of cases to be dealt with in such centres, which varies from month to month. Since Feb. 28th six tribunals have been sitting in London. Approximately 300 appellants per week have been afforded an opportunity of having their cases dealt with during that period. There are at present 3000 cases awaiting hearing in London, of which 1565 have been received by the Pension Appeal Tribunals during the last month. Up to the present time the average period elapsing between the date on which an appeal was received by the tribunal and the date on which it was listed for hearing has been, I am told, six weeks. Steps to provide for the setting up of additional tribunals are under consideration.

Treatment of Bilharziasis.

Captain THORPE asked the Minister of Pensions whether, in view of the successful treatment by antimony of ex-Service men who contracted bilharziasis during the late war, he could hold out any hope of similar treatment at public expense to pensioners who contracted the disease in the South African campaign and were still suffering.—Mr. IAN MACPHERSON replied: This matter is at present under consideration.

TUESDAY, MARCH 22ND.

Washington Maternity Convention.

On the second reading of the Consolidated Fund Bill Mr. CLYNES and other Members raised the question of Article 3 of the Washington Convention dealing with maternity benefits, and asked the reason why the Government had decided not to ratify the Article and had not brought it before Parliament in the form of legislation.—Dr. ADDISON (Minister of Health) said that the initiation of legislation in this country rested with Parliament, and had the Government ratified the Washington Convention in regard to maternity the position would have been that an outside body would be able to compel the Government to submit legislative proposals to that House against its desires. To that the House would never submit. They had already in this country a system which was double-barrelled for providing maternity benefits—namely, the Insurance Act and the system administered by the local authorities. These recommendations cut right across the system in this country which was acting with singular success. The Washington Convention related only to employed women, which would mean that in this country about 460,000 women would be eligible, while 3,540,000 women, the wives of insured persons, would be excluded. To carry out these recommendations with regard to all these women would cost an additional £15,000,000. The system of maternity and child-welfare cost 1*d.* in the £ on the rates, rather less than £900,000 being contributed out of the Exchequer. The results had been brilliant. The rate of infantile mortality in London had dropped from 106 per 1000 in 1913 to 75 per 1000 in 1920. There had, of course, been contributory causes. People had been better nourished and the national conscience had been more fully awakened since the war.

BOOKS, ETC., RECEIVED.

ARNOLD, EDWARD, London.
Psychology and Psychotherapy. By William Brown, M.D. With a Foreword by W. A. Turner, M.D. Pp. 196. 8*s.* 6*d.*

BAILLIÈRE, TINDALL, AND COX, London.
Treatment by Hypnotism and Suggestion; or, Psycho-Therapeutics. By C. Lloyd Tuckey, M.D. 7th ed. With a chapter on Treatment by Suggestion During the War, by A. P. Allan, M.D. Pp. 413. 21*s.*
Advanced Suggestion (Neuro-Induction). By Haydn Brown, L.R.C.P., &c. 2nd ed. Pp. 402. 10*s.* 6*d.*

FROWDE, HENRY, AND HODDER AND STOUGHTON, London.
The Diagnosis and Treatment of Intussusception. By C. P. B. Clubbe, L.R.C.P., M.R.C.S. 2nd ed. Pp. 92. 7*s.* 6*d.*

GREEN, W., AND SONS, Edinburgh.
Veterinary Hygiene. By R. G. Linton, M.R.C.V.S. Pp. 429. 26*s.*

HEINEMANN, WILLIAM, London.
Diathermy: Its Production and Uses in Medicine and Surgery. By E. P. Cumberbatch, B.M. Pp. 193. 21*s.*

LEWIS, H. K., AND CO., London.
The Clinical Examination of Diseases of the Lungs. By E. M. Brockbank, M.D., and A. Ramsbottom, M.D. Pp. 83. 4*s.* 6*d.*
Clinical Bacteriology and Hæmatology for Practitioners. By W. D'E. Emery, M.D. 6th ed. Pp. 310. 15*s.*
The Form and Functions of the Central Nervous System. By F. Tilney, M.D., and H. A. Riley, M.D. Foreword by G. S. Huntington, M.D. Pp. 1020. £3 10*s.*

LIPPINCOTT, J. B., COMPANY, London and Philadelphia.
Quick Reference Book for Medicine and Surgery. By G. E. Rehberger, M.D. 63*s.*

MACMILLAN AND CO., London and New York.
Dermatology: The Essentials of Cutaneous Medicine. By W. J. Highman, M.D. Pp. 482. 32*s.*

STOCKWELL, ARTHUR H., London.
The MacDonald Trio. Pp. 75. 3*s.* 6*d.*

Medical News.

UNIVERSITY OF OXFORD: *Radcliffe Travelling Fellowship.*—The Master and Fellows of University College announce that the Radcliffe Trustees have elected Tom Sydney Nelson, M.A., B.M., University College, to a Radcliffe Travelling Fellowship of £200 for three years.

Radcliffe Prize, 1921.—The Master and Fellows of University College have awarded a Radcliffe Prize of £50 to Edward Palmer Poulton, M.A., D.M., F.R.C.P., Balliol College, for his researches in physiology and pathology.

UNIVERSITY OF MANCHESTER.—At examinations held recently the following candidates were successful:—

THIRD M.B., CH.B. EXAMINATION.

General Pathology and Morbid Anatomy.—Elsie C. Begg, Lionel Boyars, F. W. W. Fox, E. S. Frischmann, Richard Handley, Mary Kent, C. B. Kirkbride, G. A. Lord, Greta Lowe, G. L. Meachim, A. A. Pomfret, Eleanor P. Smith, J. H. Struthers, and C. B. V. Walker.

DIPLOMA IN PUBLIC HEALTH.

Marion Draper and J. H. Sheldon.

UNIVERSITY OF DURHAM: FACULTY OF MEDICINE.—At examinations recently held the following candidates were successful:—

THIRD EXAMINATION FOR DEGREES OF M.B., B.CH.

Materia Medica, Pharmacology and Pharmacy, Public Health, Medical Jurisprudence, Pathology and Elementary Bacteriology.—John N. Alexander, Florence Bentham, Robert W. Locke, George C. E. Reffell, Charles A. Wilson, Eleanor Hilda Wylam, and Ella Lees Young.

THIRD EXAMINATION FOR LICENCE IN DENTAL SURGERY.

Anatomy, Physiology, and Histology, Dental Anatomy, Dental Histology, and Dental Materia Medica.—William A. Cowden, Selby Hutson, Eric W. Manners (honours, second class), Robert H. Reay (honours, second class), John N. Slack, James W. Vasey, and Gladwyn Williams.

QUEEN'S UNIVERSITY OF BELFAST.—At the graduation ceremony held on March 19th the following degrees were conferred:—

M.D.—James Donnelly and Frederick Hopkins.

M.B., B.Ch., B.A.O.—With honours: First class: John A. Smyth. Second class: Eileen O. Bartley and Samuel A. Thompson.

Pass: John Black, Sloan M. Bolton, John W. Bradbury, Henrietta Bradshaw, Patrick P. Connolly, Maurice Emery, James English, James Gaussen, Edward M. Hadden, Henry Harris, Stanley M. Kirk, David Loughridge, Robert J. McMullan, Beattie McNeill, Alexander McSparran, Edward C. Patterson, John Patton, John D. Reynolds, William J. Simpson, Arthur C. Sinclair, Kathleen R. Snodgrass, and John Young.

Diploma in Public Health.—Joseph M. Clearkin, John H. Davison, James W. Kernohan, Olga R. I. Love, John A. Martin, Grahame Patton, William Saunderson, Robert L. Sinclair, and Samuel J. Stewart.

SOCIETY FOR THE STUDY OF INEBRIETY.—The annual meeting of the society will he held at the Medical Society of London, 11, Chandos-street, London, W., on Tuesday, April 12th, at 4 P.M., when Dr. H. H. Dale, F.R.S., will open a discussion on the Use of Alcohol in Medicine.

PANEL NURSES.—At a recent meeting at the offices of the Leicester Insurance Committee of representatives of Approved Societies a scheme of nursing for the city of Leicester was discussed. Twenty societies, including friendly and industrial societies and trade unions, were represented. The subjects considered included the advisability of using the accumulated funds of the Approved Societies to add nursing to the benefits already enjoyed by the insured, and the possibility of using the District Nursing Association in this connexion. It was suggested that under the care of trained nurses patients would often recover more quickly and that the funds of the Approved Societies would in the long run benefit. The following resolution was passed:—

> "That this meeting of representatives of Approved Societies heartily supports the idea of a scheme of nursing for the city of Leicester, and agrees that a representative committee be appointed to formulate such a scheme and report to a future meeting of representatives of societies."

Discussion also arose at a meeting of the Preston Insurance Committee on the question of provision for the nursing of insured patients. In this case a nursing centre was proposed, to provide which the societies might be asked to pay 3*d.* per member per year. Fifteen nurses was the number suggested. One member of the Committee, in welcoming the scheme, rejoiced to hear that the intention was to appoint nurses who would nurse and not simply nurses who went about inspecting. It was decided, after discussion, to circularise the Approved Societies in the borough having over 100 members to ascertain whether they were in sympathy with a scheme for nursing insured persons and would be prepared to contribute a few pence (say 3*d.*) per member per year in case such an organisation was formed Preston.

CONGRÈS INTERNATIONAL DE MÉDECINE ET DE PHARMACIE MILITAIRES.—This congress, organised by the Service de Santé de l'Armée Belge, will be held at Brussels from July 15th to the 20th, under the presidency of Dr. Wibin, Inspecteur-Général du Service de Santé de l'Armée. The subjects to be discussed include the general organisation of the health services of armies and their proper relation to the Red Cross, the clinical and therapeutic study of poisonous gases used in warfare, the struggle against tuberculosis and venereal diseases in armies, the treatment of fractured limbs, and the purification of drinking water. Communications on any of these subjects should be written in French, English, or Italian, and should be sent before May 1st to the Secretariat Général du Congrès, Hôpital Militaire de Liège (Belgique). The fee for the congress is 25 Belgian francs.

LIVERPOOL DISPENSARIES.—The annual meeting of subscribers to the Liverpool Dispensaries was held at the Town Hall last week. Mr. S. Mason Hutchinson, the President, stated that for some years the dispensaries had been making a charge for treatment. Originally it was 1*d.*, now it was 3*d.* Most of the patients were able to pay this higher charge, and paid it willingly. The committee did not encourage those patients to come to the dispensaries who could pay for private medical attendance. The total number of patients in 1920 was 26,590, against 25,253 in 1919 and 29,964 in 1918. The medical officer of health had acknowledged the important part played by the dispensaries in the early recognition of infectious diseases—531 cases having been notified during the year. Attached to the North Dispensary there was now a school and infant clinic which was doing very valuable work. The treasurer's report showed a deficit on the year's working of £248, and at the end of the year there was a bank overdraft of £1874. The Lord Mayor moved the adoption of the reports, and stated that the fact that the patients paid what they did was an indication that they recognised the beneficent character of the work carried on by the dispensaries. Dr. A. A. Mussen, assistant M.O.H., stated that the Infant Welfare Centre had been attended during the year by close on 3000 people. The work was preventive, and he was sure that the education given to the mothers did much to reduce the infant mortality in the district. At the children's clinic during the past four years over 4000 cases of operation for tonsils and adenoids had been dealt with without mishap.

ROYAL MEDICAL BENEVOLENT FUND.—At the meeting of the committee held on March 8th 17 cases were considered, and £175 voted to 14 applicants. The following is a summary of some of the cases relieved:—

Widow, aged 60, of M.R.C.S., who practised in Essex and died in February, 1921. Applicant's husband had been unable to practise for some time owing to failing eyesight and old age, and the small amount of £60 left at his death from the practice was much reduced by funeral expenses and debts. The widow's sole income is £37 10*s.* interest on her own money invested in War Bonds, and at present her rent and rates amount to £32 per annum. Voted £18 in 12 instalments.—Daughter, aged 49, of M.R.C.S., surgeon at a London hospital and died in 1873. Applicant was operated on in June, 1920, and since has been living on her small savings and cannot possibly return to nursing, her profession, for some considerable time. She asks for temporary assistance whilst incapacitated. Voted £10 in 2 instalments.—Widow, aged 57, of M.R.C.S. who practised at Great Yarmouth and died in 1920. Owing to her husband's indifferent health and a number of bad debts applicant found herself very badly off and has been trying to support herself by temporary employment, and with the help of friends has managed to pay her way, but now asks the Fund to help her as her health has broken down. Voted £18 in 12 instalments.—Widow, aged 44, of L.R.C.P. & S. who practised in Yorkshire and died in 1918. Applicant was left with two children totally unprovided for and asks assistance towards the education of the children. Applicant's father-in-law makes her an allowance, but this help may cease at any time; she augments this by letting apartments. Help has been given by the Irish Medical Benevolent Fund and the Professional Classes War Relief Council. Her rent is £48 per annum. Voted £2 and referred to R.M.B.F. Guild for education grant.—Daughter, aged 70, of M.R.C.S. who held a commission in the R.A.M.C. and was a resident medical officer in London later. Owing to loss of income applicant finds it hard to maintain herself and help an invalid brother on a very limited income, derived from an allowance from the War Office, of £32 per annum, and an allowance from a sister of £20. She has rooms free on condition that her income is not less than £40 per annum. As she is too old to work she appeals to the Fund to help her. Voted £10.—Daughter, aged 65, of M.D. Lond. who practised at Notting Hill and died in 1885 Applicant has supported herself by needlework, but owing to advancing years and failing eyesight cannot do the amount of work necessary to pay her way. The amount she now earns is about 18*s.* per week and her rent is 4*s.* per week. The Fund rendered assistance to the applicant's sister some time ago, but she is now in the infirmary. Voted £12 in 12 instalments.—Daughter, aged 50, of M.R.C.S. who practised at Wigan and died in 1870. Three sisters live together in one room, one an invalid. Applicant made about £50 this year at nursing, but owing to ill-health has applied to the Fund for assistance. The rent of the room is 16*s.* per week. Voted £18 in 12 instalments.

Subscriptions may be sent to the Honorary treasurer, Sir Charters J. Symonds, K.B.E., at 11, Chandos-street, Cavendish-square, London, W.1.

RED CROSS ENTENTE.—In a letter to the *Journal de Genève* of March 17th, Sir David Henderson, director-general of the League of Red Cross Societies, states that a satisfactory understanding has now been reached between the League and the International Red Cross Committee. This arrangement, which only awaits formal sanction, will result in useful collaboration, and place the Red Cross symbol out of reach of petty rivalry.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An extraordinary comitia was held on March 21st, Sir Norman Moore, the President, being in the chair. The President delivered the annual address and read eloquent obituary notices of the seven Fellows deceased during the past year—viz., Dr. M. Handfield-Jones, Dr. Philip John Hensley, Dr. David Lloyd Roberts, Dr. William Murray, Sir Frederick Taylor, Dr. William Odling, and Sir Felix Semon. Sir Norman Moore was then re-elected President. Licence to practice was granted to Evelyn Francis Bebbington, of Liverpool University.

PRESENTATION TO A MEDICAL MAN.—Dr. Alexander Stookes, senior surgeon to the Samaritan Hospital for Women, Liverpool, and one of the physicians to the Maternity Hospital, Liverpool, was entertained to dinner at the University Club on March 19th by his colleagues and friends on the occasion of his retirement. Professor Henry Briggs presided, and was supported by Mr. Rankine (chairman of the Maternity Hospital), Miss F. Ivens, M.S., Dr. T. R. Bradshaw, Professor L. R. Wilberforce, Dr. Blair Bell, and Mr. T. H. Bickerton. The company included the matrons of the Maternity and the Samaritan Hospitals. The toast of the "Guest of the Evening" was proposed by Mr. Rankine and supported by Dr. Bradshaw. Professor Briggs then presented Dr. Stookes with a substantial cheque. Dr. Stookes delivered a speech full of pleasant reminiscences of Liverpool 30 and 40 years ago, and thanked his friends in cordial terms for the honour they had done him. In the course of the evening speeches, paying tribute to Dr. Stookes as a surgeon and a man of many interests, were delivered by Miss Ivens, Professor Wilberforce, Mr. Bickerton, Dr. Blair Bell, and Dr. Glynn Whittle.

THE POSITION OF POOR-LAW MEDICAL OFFICERS. In the impasse that exists in the greater part of Ireland between local authorities and the Local Government Board the officers of the local authorities find themselves in a peculiarly difficult position. In most cases these officers are appointed by the local authority, subject to the approval of the Local Government, are paid by the local authority, and cannot be dismissed without the authority of the Local Government Board, which itself has the power of dismissal under sealed order. In the case of medical officers a small fraction of their salaries was contributed from central funds, but where the local boards have repudiated the authority of the Local Government Board these contributions are not paid and the entire burden of the salaries falls on the ratepayers. A medical officer, therefore, finds himself in the curious position of being paid by one body while holding his office at the pleasure of another. To add to his difficulty, these bodies issue contradictory orders and each expects his obedience. A Poor-law medical officer is bound to make certain returns to the Local Government Board. Certain local boards have forbidden their officers to make any such returns. The Local Government Board has retorted by threatening those who do not make returns with dismissal. A medical officer in such circumstances must either obey the Local Government Board and forfeit his salary or obey the guardians and be dismissed from his office.

NATIONAL LEAGUE FOR HEALTH, MATERNITY AND CHILD WELFARE.—An English-speaking Conference on Infant Welfare will be held at the Kingsway Hall, Kingsway, London, W.C., on July 5th, 6th, and 7th, Lord Astor in the chair, under the patronage of the Minister of Health. The main subjects to be discussed are (1) residential provision for mothers and babies; (2) inheritance and environment as factors in racial health; (3) the supply of milk, its physiological and economic aspects. Papers will be submitted by a number of authorities from all parts of the world, whose names will be announced in the detailed programme which will shortly be available. Throughout the Conference a mothercraft exhibition will be open from 11 A.M. to 9 P.M., at which the main features will consist of practical demonstrations in important matters relating to infant care. For the benefit of infant welfare workers of all kinds lectures will be given every evening during the Conference on (1) the Ideal Maternity and Child Welfare Centre; (2) Common Infections in Mother and Child; (3) the Tuberculous Mother and her Infant; (4) the Syphilitic Mother and her Infant; (5) the Accessory Factors in Infant Feeding; (6) the Psychology of the Mother and her Child. The Conference fee, including admission to the exhibition and to the evening lectures, the right to receive proofs of the papers to be read, and a copy of the report of the proceedings when published, has been fixed at £1 1s. per member, and tickets for various parts of the Conference can be had at various prices. Further particulars and tickets can be obtained from Miss Halford, 4 and 5, Tavistock-square, London, W.C.1.

ROYAL PORTSMOUTH HOSPITAL.—The annual meeting of this hospital was held at the Town Hall, Portsmouth, on March 22nd. The report stated that 13,596 patients had been treated during the year, compared with 12,062 in 1919. The average cost per bed occupied was £119 5s. 9d., against £115 2s. 4d. in 1919. The ordinary income last year amounted to £15,178—a record amount—against £10,531 in 1919. The annual subscriptions showed an increase of £1204 (£3818 against £2614), and the employees and box collections the splendid increase of £4204 (£4562 as against £358). The mayor has raised towards the deficit on maintenance account the sum of £3150. Legacies amounted to £485. The venereal diseases department had a successful year's working. 1004 new patients attended, and the total number of attendances was 23,674, an increase of 3827 over the figure for 1919. More accommodation being needed, the Portsmouth Corporation has constructed a temporary building for male patients. There are now six beds for female patients and five for male patients. A gratifying feature has been the increase in the number of patients who have come in the early stages of their disease.

Obituary.

WILLIAM IRONSIDE BRUCE, M.D. ABERD.,

PHYSICIAN TO THE X RAY AND ELECTRICAL DEPARTMENTS, CHARING CROSS HOSPITAL.

Dr. William Ironside Bruce died at his residence in London on Monday, March 21st, after a severe and distressing illness of about two months' duration. His early death has cut short a career of good service and much usefulness, and his loss will be greatly felt by many members of the medical profession, and is especially lamented by Charing Cross Hospital and its medical school.

William Ironside Bruce was the second son of the late Dr. William Bruce, of Dingwall, and a nephew of Dr. J. Mitchell Bruce. He was born at Dingwall and was educated at the University of Aberdeen, where he obtained the degrees of M.B. and Ch.B. in 1900, and then took service as civil surgeon in the South African Field Force. While in South Africa he took much interest in the early application of X rays for the diagnosis of war injuries, and when it became necessary to appoint an assistant to the late Sir J. Mackenzie Davidson at Charing Cross Hospital he was selected for this post. He remained in the service of Charing Cross Hospital to the time of his death and became responsible for an exceedingly efficient X ray department.

Ironside Bruce was intensely interested in the scientific developments of his subject, and especially in its practical application to the diagnosis and treatment of disease. The whole of his later work was built on a good foundation, as is evidenced by the publication in the early part of his career of his "System of Radiography with Atlas of the Normal." He was a good teacher—many now engaged in the practice of radiography owe much to his instruction—and was always prompt in service to his professional brethren. With a very complete knowledge of his subject he had a sound and increasing acquaintance with general medicine and surgery. In process of time he became President of the Section of Radiology in the Royal Society of Medicine, and took much interest in the establishment of the special diploma in this subject, now given by the University of Cambridge.

For some months the condition of his health had given anxiety, and at the beginning of the year he was persuaded to take a prolonged holiday. Shortly it was found that his illness was serious, when blood examination established the diagnosis of the severest type of aplastic anæmia and from this he died. Evidence now accumulating, that this condition can be caused by the effects produced on the blood-forming structures of the body by the more penetrating radiations both from X ray tubes and from radium, renders it almost certain that he succumbed as the result of his continuous and enthusiastic work in the subject of his choice.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BROWNLIE, W. B., M.D. Glasg., has been appointed one of the Medical Referees under the Workmen's Compensation Act for County Court Circuit No. 4.

MCDOWELL, R. J. S., M.B., Ch.B., to be Lecturer in Experimental Physiology and Experimental Pharmacology at the University of Leeds.

PINHEY, E. T., M.B., Ch.M. Sydney, Medical Officer of the City of London Union.

WHITEHEAD, H., M.D. Manch., D.P.H., Medical Officer of Health for Wigan.

University College Hospital: KANE, M. H. K., and BLAKE, J. C., M.R.C.S., L.R.C.P. Lond., House Physicians; BUTCHER, T. A., M.R.C.S., L.R.C.P. Lond., House Surgeon; KIRTON, C. A., Obstetric Assistant; EADES, R. O., Casualty Surgical Officer; SCANTLEBURY, G. C., Assistant in Ear, Nose, and Throat Department.

Vacancies.

For further information refer to the advertisement columns.

Birmingham General Hospital.—Asst. Visit. Anæsth. £50. Res. Anæsth., H.S., £100 each. H.S. to Skin and Venereal Depts. £125. Cas. H.S. £100.

Birmingham, Rubery Hill and Hollymoor Mental Hospital.—Jun. Asst. M.O. £400.

Brighton, Royal Alexandra Hospital for Sick Children, 10, Dyke-road.—Hon. P. and Hon. Asst. S.

Bristol General Hospital.—H.S. £175.

Central London Ophthalmic Hospital, Judd-street, W.C.—Path. £75.

Charing Cross Hospital, Agar-street, W.C.—Surg. Registrar. £150.

Denbigh Mental Hospital.—Jun. Asst. M.O.—£400.

Dewsbury County Borough.—Asst. Sch. M.O. and Asst. M.O.H. £500.

Dumfries, Crichton Royal Mental Hospital.—Clin. Path. £400.

Ealing Borough.—Asst. M.O.H. £500.

Eastbourne, Princess Alice Hospital.—H.S. £175.

Gloucester County Asylum.—Jun. Asst. M.O. £300.

Greenwich, "Dreadnought" Hospital.—H.S. £150.

Guildford, Royal Surrey County Hospital.—H.S. £150.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Res. Asst. M.O. £200. Also H.P. £50.

Hospital for Sick Children, Great Ormond-street, London, W.C.—Asst. Cas. M.O., H.S., and H.P. £50 each.

Huddersfield Royal Infirmary.—Two Jun. H.S.'s. £150.

Lincoln County Hospital.—Jun. H.S.—£150.

London Lock Hospital, 91, Dean-street, W.—Pathologist. £500.

Maidstone, Kent County Ophthalmic Hospital for Diseases of the Eye, Ear, Nose, and Throat.—H.S. £300.

Manchester, Ancoats Hospital, Mill-street.—Med. Registrar and Surg. Registrar. £100 each. Res. Surg. O. £250. Res. H.P. £200. Anæsth. 10*s.* 6*d.* per attendance. Also Female M.O.

Manchester Children's Hospital, Gartside-street.—Asst. M.O. £200.

Manchester County Asylum, Prestwich.—Asst. M.O. £572 18*s.*

Manchester, Crumpsall Institution and Infirmary, Crescent-road.—Res. Asst. M.O. £300.

Manchester Royal Infirmary and Dispensary.—Two Hon. Asst. P.'s.

National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—H.P. £150. Asst. P.

Newcastle-upon-Tyne, City Mental Hospital, Gosforth.—Jun. Asst. M.O. £400.

Norfolk Education Committee.—Asst. Sch. M.O. £500.

Northampton General Hospital.—H.S. £200.

North Riding of Yorkshire County Council.—Tuberc. O. £700.

Nottingham, Bagthorpe Institution and Infirmary.—Res. Asst. M.O. £300.

Nottingham City Asylum.—Sec. Asst. M.O. £400.

Oldham Royal Infirmary.—H.S. £200.

Paddington Green Children's Hospital, London, W.—H.P. £150. H.S. £150.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Cas. H.S., Asst. Cas. O., and H.P.'s. £100.

Reading, Royal Berkshire Hospital.—Second H.S. £200.

Rochester, Kent, St. Bartholomew's Hospital.—Jun. Res. M.O. £200.

Rotherham Hospital.—Jun. H.S. £150.

Royal Eye Hospital, St. George's-circus, Southwark, S.E.—Sen. and Jun. H.S.'s. £100 and £70. Also Clin. Assts.

Ryde, Royal Isle of Wight County Hospital.—Vacancy on Hon. Med. Staff.

Salford Royal Hospital.—H.S.'s, and Cas. H.S. £150.

Sheffield, East End Branch of the Children's Hospital.—H.S. £150.

Sheffield Royal Hospital.—H.S. and Asst. Cas. O. £150.

Sheffield Royal Infirmary.—H.S. £150.

Southampton Free Eye Hospital.—Asst. Hon. Ophth. Surg.

Swansea County Borough.—Asst. M.O. £500.

Tiverton Hospital.—H.S. £100.

Wakefield, Clayton Hospital.—Sen. H.S. and Jun. H.S. £250 and £200.

Wandsworth Union, St. James' Infirmary, Ousely-road, Balham, S.W.—Two Jun. Asst. M.O.'s. £300.

Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.

Wolverhampton and Staffordshire General Hospital.—Hon. Spec. for Ear, Nose, and Throat Dept. Also Res. Cas. S. £300.

Worcester County and City Mental Hospital, Powick.—Sen. Asst. M.O. £450.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Canterbury.

Births, Marriages, and Deaths.

BIRTHS.

DONNELL.—On March 20th, at Hinckley, Leicestershire, the wife of J. H. Donnell, M.B., B.C. Cantab., of a daughter.

HAMILL.—On March 21st, at Weymouth-street, W., the wife of P. Hamill, M.D., D.Sc., F.R.C.P., of a daughter.

MANSON-BAHR.—On March 17th, at Weymouth-street, W., the wife of Dr. Manson-Bahr of a daughter.

PARIS.—On March 14th, at Wimbledon, the wife of Major R. C. Paris, R.A.M.C., of a daughter.

RUDKIN.—On March 15th, at Devonshire-street, the wife of G. W. R. Rudkin, M.C., M.R.C.S., L.R.C.P., of a daughter.

MARRIAGES.

ANDERSON—HOOD.—On March 18th, at St. Columba's (Church of Scotland), Pont-street, S.W., the marriage of Major H. Graeme Anderson, M.D., F.R.C.S., R.A.F., of 75, Harley-street, W., to Gladys, elder daughter of Charles Hood, of Hatch End, Middlesex.

DAWSON—PARKINS.—On March 17th, at St. Clement's Church, Ilford, Ernest Archibald Dawson, L.D.S. R.C.S. Eng., to Dorothy Florence, only daughter of Mr. and Mrs. G. Parkins, of Holcombe-road, Ilford.

FORDYCE—WADDELL.—On March 15th, at the Scottish National Church, Crown-court, London, Captain A. Russell Fordyce, R.A.M.C., to Mary, younger daughter of the late James Waddell, Solicitor, Earlsferry, and Mrs. Waddell, Earlslea, Earlsferry.

LEEMAN—MACGREGOR.—On March 16th, at South Kensington Presbyterian Church, Percival Garmany Leeman, M.C., M.D., to Clara Grace Ellen, only daughter of Mr. Robert MacGregor, London, formerly of South Africa.

DEATHS.

CUMMING.—On March 14th, at the 3rd British General Hospital, Basra, Captain Robert Scott Cumming, M.C., R.A.M.C., aged 27.

DE BRENT.—On March 16th, Mortimer John De Brent, M.R.C.S., Victoria-road, Clapham Common.

KAY.—On March 11th (suddenly), at The Grove, Starbeck, Harrogate, Elizabeth Mary, wife of Walter Smith Kay, M.D., formerly Medical Superintendent of West Riding Asylum, Wadsley, Sheffield.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Friday, April 1st.

SECTION OF LARYNGOLOGY: at 4.45 P.M. (Cases at 4 P.M.)
Epidiascope Demonstration:
Mr. Archer Ryland will give an Epidiascope Demonstration of a Pharyngeal Pouch, dated 1760 A.D.
Cases and Specimens will be shown by—
Mr. G. W. Dawson, Mr. C. W. M. Hope, and others.

SECTION OF ANÆSTHETICS: at 8.30 P.M.
Paper:
Dr. R. L. Mackenzie Wallis and Dr. C. Langton Hewer: A New General Anæsthetic—its Theory and Practice.

Monday, April 4th.

SECTION OF TROPICAL DISEASES AND PARASITOLOGY: at 8.30 P.M.
Papers:
Dr. W. Broughton-Alcock: Laboratory Observations on Pensioners who contracted Malaria in the late War.
Dr. H. C. Lucey: Observations bearing on the Reliability of the Large Mononuclear Leucocyte Count as an Aid to the Diagnosis of Malaria.

Tuesday, April 5th.

SECTION OF SURGERY: SUBSECTION OF ORTHOPÆDICS: at 5.30 P.M. (Cases at 5 P.M.)
Cases: The following will be shown by—
Mr. Laming Evans (President): (1) Bilateral Synostosis of Radius and Ulna Associated with Bilateral Congenital Dislocation of the Hip; (2) Multiple Cartilaginous Exostoses Associated with Congenital Dislocation of the Hip.
Mr. A. W. Sheen: (1) Finger Joint Injury; (2) Autogenous Graft into Musculo-spiral Nerve.
Mr. H. A. T. Fairbank: Habitual Subluxation of Both Shoulders and Snapping of Both Hips, Associated with Unilateral Congenital Dislocation of the Hip.
Mr. A. H. Todd: (1) Chronic Arthritis of Knee in a Syphilitic Boy; (2) Tuberculous Disease of the Carpus in a Boy aged 9½ Years.

SECTION OF PATHOLOGY, at the Institute of Pathology, Charing Cross Hospital Medical School: at 8.30 P.M.
Mr. W. S. Cole and Dr. W. J. Adie: The Quantitative Analysis of the Gastric Contents.
Mr. W. S. Cole and Miss J. Aynton: Observations on Post-operative Ketosis.

Mr. J. E. Barnard: A Method of Demonstrating the Structure of Bacteria.

Dr. A. B. Rosher: The Agglutinins Present in Normal Sera for B. Enteritidis (Gaertner) and for Bacilli of the B. Suipestifer Group.

Dr. G. S. Wilson: Some Points in the Technique of Counting Viable Bacteria.

Dr. H. B. Weir and Dr. W. J. Adie: (1) Infarct of Spleen, followed by Rupture and Hæmorrhage; (2) Gumma of Heart with Hæmorrhage Causing Acute Heart-block.

Dr. W. W. C. Topley, Mr. J. E. Barnard, and Dr. G. S. Wilson: *A New Technique for Obtaining Bacterial Cultures from a Single Cell.*

Dr. W. W. C. Topley and Dr. H. B. Weir: Demonstration of the Lesions Found in Some Epidemic Diseases of Mice.

Dr. W. W. C. Topley: The Relation of B. Enteritidis (Gaertner) to Bacilli of the B. Suipestifer Group.

Friday, April 8th.

CLINICAL SECTION: at 5.30 P.M. (Cases at 5 P.M.)

Papers:

Dr. Ivor Davies: *Hair Ball or Hair Cast of the Stomach and* Gastro-intestinal Tract. A Report of Two Cases, with Specimens, and an Abstract of 108 Cases from the Literature.

Dr. M. Cassidy: Report re Case of Neoplasm of Lung.

Cases:

Mr. *C. Gordon Bryan*: Case of Osteitis Fibrosa, Treated by Resection of Four Inches of *Humerus* and Insertion of Boiled Beef Bone Graft.

Mr. Massie: Osteoma of Frontal Bone.

Mr. R. P. Rowlands: Two Cases of Jejunal Ulcer.

Other cases will be shown.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London *Hospital*, Hammersmith, W.

TUESDAY, March 29th.—10 A.M., Dr. McDougal: Electrical Department. 2 P.M., Mr. T. Gray: Surgical Out-patients. Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: *Skin Department.* 2.30 *P.M., Mr. Addison:* Visit to Surgical Wards.

WEDNESDAY.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 2 P.M., Mr. Sinclair: Surgical Out-patients. Mr. Gibb: Eye Department. Mr. D. Armour: Visit to Surgical Wards. Dr. *Morton*: X Ray Department.

THURSDAY.—2 P.M., Dr. S. Pinchin: Medical Out-patients. Mr. Baldwin: *Orthopædic Department.* Mr. B. Harman: Eye Department. 2.30 P.M., Dr. A. Saunders: Visit to Medical Wards.

FRIDAY.—2 P.M., Dr. Burnford: Medical Out-patients. 2.30 P.M., *Dr. Pritchard: Visit to Medical Wards. Mr. Baldwin:* Operations.

SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 2 P.M., Dr. Owen: Medical Out-patients.

Daily:—10 A.M. Ward Visits. 2 P.M., In-patient, Out-patient Clinics and Operations.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

THURSDAY, March 31st.—6 P.M., Chesterfield Lecture:—Dr. W. Griffith: The Bullous Eruptions.

Communications, Letters, &c., to the Editor have been received from—

A.—*Answers*, Lond., Editor of; Dr. T. Adam, Stirling.

B.—Dr. C. W. G. Bryan, *Lond.*; Dr. H. W. Bayly, Lond.

C.—Dr. B. H. Cole, Lond.; Central Midwives Board, Lond.; Dr. R. *Craik, Lond.; Prof. E. L. Collis*, Cardiff; Children's Country Holidays Fund, Lond.; Mr. A. Cooke, Cambridge; Chelsea Hospital for Women, Lond.

D.—*Dr.* E. Drybrough-Smith, Shebbear; Mr. A. Daly, Lond.; *Dr. S. Delépine*, Manchester.

E.—Dr. C. L. Evans, Lond.; Mr. W. Edmunds, *Lond.*

F.—Dr. W. E. Falconar, Lond.

G.—Mr. R. G. Guyer, Edinburgh; Sir H. J. Gauvain, Alton; Great Northern Central *Hospital*, Lond.; Dr. M. Grabham, Madeira.

H.—Mr. E. Hughes, Liverpool; Dr. G. Hirsch, Halberstadt.

I.—*Dr. Abd-el-Aziz* Ismail, Cairo.

K.—Mr. G. Keynes, Lond.; King's College *Hospital, Lond.*, Sec. of.

L.—Leicestershire, County Medical Officer of; London and Counties Medical Protection Society, Gen. Sec. of; London Hospital Medical College, Sec. of; Dr. F. Langmead, Lond.; Mr. E. M. Little, Lond.; Dr. G. C. Low, Lond.

M.—*Ministry of Pensions*, Lond.; Sir J. Mackenzie, St. Andrews; Dr. *T. W. Mitchell, Tonbridge*; Ministry of Health, Lond.; Manchester and *District Radium Institute*; *Major* W. G. MacPhearson, Lond.; Dr. R. W. MacKenna, Liverpool; Dr. J. Matthew, Lond.; Mr. S. A. *Mann, Lond.*

P.—Mr. H. Platt, Lond.; Panel Committee for the County of London; Dr. A. E. H. Pinch, Lond.

Q.—*Queen's University*, Belfast, Sec. of.

R.—Mr. H. Rundle, Southsea; Mr. P. B. Roth, Lond.; Royal Society, Lond.; *Rivista Ospedaliera*, Rome, Editor of.

S.—Mr. N. F. Sinclair, Lond.; Dr. G. Steele-Perkins, Lond.; Société des Sciences Médicales et Biologiques de Montpellier; Scottish Board of Health, Edinburgh; Verlagsbuchhandlung J. *Springer*, Berlin; Mr. A. Saunders.

T.—Mr. W. *H. Trethowan*, Lond.

W.—Dr. D. Walsh, Lond.; War *Office, Lond.*, Publicity Dept. of; Messrs. Williams and *Wilkins Co., Baltimore*; West London Post-Graduate College; Dr. J. D. Wynne, Norwich; Mr. H. Woolf, Le Havre; Dr. W. H. Willcox, Lond.; Dr. L. Williams, Lond.

Communications relating to the editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.

Notes, Short Comments, and Answers to Correspondents.

THE IDEAL ELEMENT IN MEDICINE, ILLUSTRATED BY THE LIFE OF JOHN HUNTER.

BY H. H. BASHFORD, M.D., B.S. LOND.

(*Concluded from p.* 635.)

The Growth of Medical Power.

EVEN *with the picture before us of the position of* Medicine in the year of Hunter's birth it is perhaps doubtful whether we have any of us quite realised how great that stride has been. In a world that every year is drawing its peoples closer, so that New York to-day has become nearer to London than was Hunter's Glasgow, in a world in which we now know the poet's phrase to be literally true that we cannot pluck a flower without troubling of a star, surely no *other art commands such faith or wields so various a power.* Upon the word of no other artist can an express train or an Atlantic liner be held up, the processes of law be delayed, or the engines of industry silenced; and yet by universal consent, as Kipling has reminded us, a doctor's certificate can do all these things. Not only in the sick room and the hospital, but in the every-day life of the school and factory, *in the building of houses and the planning of towns,* the community of to-day demands his presence.

The Doctor as Priest.

Even as the generals of *yesterday*, planning *a campaign*, consulted the oracles before *marching*, so the doctor is now called upon for his technical advice. Such and such a valley *is to be occupied,* but *the doctor prays down* his microscope, and the general, listening to his results, sends his men by another route. You have perhaps seen it stated indeed, *and with a good deal of truth, that the position of the* doctor *at the present moment is largely that of the mediæval* priest, out of whose side, as it were, he sprang. Where rich *men dying left in confidence* much of their wealth to the great monasteries, they now bequeath it in equal faith to the various hospitals. *That is a statement which Lord Knutsford*, for instance, would probably require me to qualify. But it is surely true that the community of to-day does recognise in the hospitals the expression *of a factor* inseparable from all true worship in its deepest sense.

Even in the ethical domain itself we behold the sphere of the doctor daily widening. More and more what was accepted as sin is now legitimately perceived to have been but ignorance, or the fruit of ignorance in the shape of *disease, ignorantly acquired or ignorantly unrecognised.* In many dark regions of human experience, where men once crept in moral fear, they may now walk, knowing the nature of their handicap, at any rate free from this particular burden. What that has meant in the rolling back of unnecessary clouds from the human conscience, what it has amounted to in terms of mercy and mutual forbearance cannot be guessed. But the result has been this, that to-day it is the doctor who has become the world's confessor, and whom the world *believes, rightly or wrongly, to have been the chief agent in* this spiritual enfranchisement. Health, wholth, wholesomeness, holiness—*more and more* has the world come to perceive that they are only facets of the same great crystal.

A Responsible Inheritance.

Such, then, is the inheritance to which the student of Medicine *finds himself called to-day*—an inheritance of such power and prestige as none of his predecessors ever entered upon. But, if there is one thing more than another that history has to teach us, it is that these are the very conditions most dangerous to idealism. Movement after movement, æsthetic and religious, has died *of its own material* prosperity, has attracted the professional, or professionalised the idealist, and perished from *fatty degeneration of the* heart; and it might be well *for us, just for a moment* or two, to take stock of ourselves from this standpoint. With increasing frequency, for example, it is being *openly alleged, not only that we are establishing a* priestly tyranny, but that this art of ours is becoming commercialised and that we are forming ourselves into *rings* to tax the *community.* That is untrue, of course, but at the same time it is, perhaps, a danger to be guarded against. In common with everybody *else we have been lately carried up* by an exceptional wave of idealism into an atmosphere of self-sacrifice, from which an apparent ebbing was probably inevitable. *I say "apparent"* because I firmly believe that behind *the new movements* that we are witnessing, behind the formation in almost every country *of group relationships* for *group-bargaining*, there is a sincere and honourable desire for a fairer and more joyous way of life.

the year. Legislation for making compulsory the vaccina*tion of children is being prepared, and a small hospital is* provided for in the Estimates. The medical officer considers that the Trengganu Malay has more faith in European surgery than in European medicine—the reverse of experience in the Western States of the Peninsula. There is no lunatic asylum. Lunatics, of whom there are many in Trengganu town, remain at large until discovered (by an overt act) to be homicidal; then they are confined by their relations in stocks or placed in the gaol, where they remain until they die or appear to recover. The proper treatment of insane persons is admittedly beyond the capacity of native rulers. In the State of Kedah the birth-rate was 30·04 and the death-rate 38·49 per mille. In the two preceding years the death-rate was 21·72 and 23·32. The State surgeon remarks:—

> "A comparison between the figures of the last two years shows the frightful havoc caused by the influenza pandemic. The Malay population suffered exceedingly, deaths amongst them rising from 4057 to 7859. Tamils suffered most severely, 1328 dying against 436, a nearly trebled death-rate, even allowing for the increase in Tamil population. The Chinese were much less affected, deaths being 1994 against 1660."

The principal diseases treated in the three principal hospitals of the State (Alor Star, Sungei Patani, and Kulim) were: Malaria, 1957 cases, 112 deaths; dysentery, 354 cases, 91 deaths; ankylostomiasis, 457 cases, 104 deaths; syphilis, 533 cases, 18 deaths; influenza, 552 cases, 134 deaths; and pulmonary tuberculosis, 143 cases, 76 deaths.

In the State of Perlis the birth-rate was 26·8 and the death-rate 31·1 per mille on an approximate population of 36,000. Influenza cast a gloom over the first two months of the year and took a toll of between 400 and 500 lives. No small-pox, plague, or cholera was reported.

Bahamas.—Mr. P. W. D. Ambrister, Acting Colonial Secretary, in a report just presented to Parliament, states that the birth-rate for the year 1919 was 35·7 and the death-rate 17·9 per 1000. The estimated population on Jan. 1st, 1920, was 57,838. The health of the colony in 1919 was good. No serious epidemic prevailed, but there were mild epidemics of influenza, German measles, and typhoid. The admissions to the General Hospital in 1919 numbered 742, making a total under treatment of 897, of whom 278 were discharged recovered, 288 relieved, and 36 unchanged, and 155 died. To the leper wards 5 males and 1 female were admitted, and to the lunatic asylum 24 males and 19 females.

INTERNATIONAL CONGRESS OF COMPARATIVE PATHOLOGY.

THE first congress took place in Paris early in November, 1912, under the presidency of the then Minister of Public Instruction, and was attended by more than 1200 members. The relation of human to bovine tuberculosis, and the changes to be found in the nervous system of rabid animals were two of the subjects which were fully discussed. A second meeting of the congress, as we had already announced, was to have been held in Rome at the beginning of April. Professor E. Perroncito, however, has announced on behalf of the organising committee the postponement of the congress, as the French delegates had intimated their unwillingness to meet German delegates without written acknowledgment by the latter of their responsibility for the European war.

UNDER-WEIGHTS IN MISSOURI.

A RECENT issue of the U.S.A. Public Health Reports records the inauguration in Missouri of "mother-and-child" nutrition clinics for the use of under-nourished children. When the school children in several cities were weighed and measured nearly half were found to be noticeably under-weight. In arriving at a decision as to what constituted an under-weight child the table of heights and weights prepared by Dr. Thomas S. Wood, of Columbia University, was used as the standard. A child who was found to be two or more pounds below the average weight for height and age, according to this table, was considered under-weight. The under-nourished child is one who is from 7 to 10 per cent. or more under the average weight for height and age according to the same table. He is not only below normal weight for height and age, but fails to gain at the normal monthly rate. During the period 8 to 12 years of age a boy should gain one-half pound per month; at 12 to 14 years of age he should gain three-fourths pound per month; and from 14 to 16 years he should gain 16 ounces per month. Under-nourished children fail to make these gains, and are, as a rule, pale, dull, listless, and under-sized. They become fatigued easily, and at times have no ambition for work or play. One of the most striking results of such a condition in children is their lack of resistance to acute diseases, and the majority of them suffer from catarrhal conditions of the respiratory tract. The under-weight children were examined and questioned in an effort to find the cause of the under-weight. It was found that these children had, besides physical defects, many faulty habits, such as late bed hours and insufficient or im*proper food consumption, which accounted to a great* extent for the fact that they were not gaining in weight normally. It was considered useless to try to correct these habits without the coöperation of the parents, and plans were worked out to secure this coöperation. Mothers of the under-weight children were invited to the school building to confer with the nutrition worker. Instead of the usual class work in nutrition mother-and-child clinics were held. The nutrition worker sat down with the mother and child and had a confidential talk about living habits. Much was got out which would not have been spoken in the presence of another woman. The prominent defects noted among these children are pale colour, winged scapula, and flabby muscle.

AN ACCIDENT DURING USE OF A HUMANE CATTLE KILLER.

ON March 4th a pony attached to a cart came into collision with a motor lorry at a road-crossing at Richmond. The animal was knocked over and its right fore-leg severely injured. The local inspector of the Royal Society for the Prevention of Cruelty to Animals was sent for, and upon arrival he decided to kill the pony. For this purpose he used the R.S.P.C.A. killer (figured as No. 3, p. 32, "Some Aspects of Humane Slaughtering," by R. O. Paddison, apparently published by the R.S.P.C.A., 105, Jermyn-street, London, S.W.). The inspector requested the police to clear the crowd away, and proceeded to put the nozzle of the killer on the pony's forehead and pull the trigger; death was instantaneous. Just as he was pulling the trigger three girls pushed to the front of the crowd at the side of the pony. As the crowd was dispersing one of these girls called out, "Someone has kicked me," and a few moments later, on examining the lower part of her leg, she found it was bleeding. When taken to the surgery of a local doctor, she was found to be suffering from a penetrating wound of the lower part of the leg about 4–5 inches above the ankle-joint; a piece of the stocking was carried in. Part of the bullet (roughly half), which had killed the pony, was extracted and she went home.

The condition of the girl is reported as satisfactory and whilst absent from her work she is receiving the amount of her wages from the R.S.P.C.A. Subsequent examination of the pony showed that when the cattle killer was fired the bullet struck the vertebræ of the neck and split, one portion remaining in the vertebræ and the other passing out at the back of the pony's neck and striking the girl. The inspector has stated that the instrument used was the only one he had, and was intended for use in slaughtering bullocks only. Since the accident he has obtained the Spearey killer (figured as No. 6 on p. 34 in the publication cited above) designed for killing horses, and will use it in future for this purpose. He further stated that he has had considerable experience in the use of the humane cattle killer; eight years ago on behalf of the R.S.P.C.A. he gave demonstrations all over the country from York to Penzance on the use of the instrument in slaughter-houses, using the same instrument employed at Richmond on March 4th. He had used the instrument for slaughtering "hundreds of beasts," and had never had an accident. Post-mortem examinations had shown that the bullet almost always flattens out in the "brain box," and he has never known a bullet to pass through a bullock's head. With a Greener killer, he states, the bullet has been known to come out of the hindquarters of a beast; there would seem to be some slight danger when this killer is used in slaughter-houses, if or when children are wrongly admitted during the slaughtering. According to the inspector 5000 R.S.P.C.A. cattle killers are in use; he has presented a full report of the accident to the society. The instrument used was apparently somewhat too powerful for this animal, which was only 13 hands in height.

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An Investigation
INTO THE
IDIO-VENTRICULAR RHYTHM,
AND THE THEORY OF DISTURBED REFLEXES.

BY SIR JAMES MACKENZIE, M.D.EDIN., F.R.S.,
DIRECTOR OF ST. ANDREWS CLINICAL INSTITUTE.

INTRODUCTION.

IN investigating diseases in the human body it is difficult to obtain a clear line to follow. There is no lack of matter for inquiry, and there are plenty of perceptible phenomena which call for investigation. When I began my investigations many years ago I was aware of a curious aimlessness in my endeavours. I took up the study of symptoms and devoted much time to noting the individual peculiarities of a number. Thus the sounds of the heart arrested attention, and one studied with meticulous care their variations and the regions in which they were heard. Irregular hearts were the object of another inquiry, and the peculiarities of the graphic records were carefully studied, but no progress was made. After many futile attempts of this sort, I at last recognised that there was need for some clearly defined idea. Being engaged in general practice, I considered which points would be most valuable in practice. After some thought I concluded that two objects were necessary in practice—namely, (1) the mechanism by which a symptom is produced, and (2) the significance of that symptom in so far as it related to the patient's future life.

In dealing with the first of these objects I experienced much difficulty in finding a line to pursue. On various grounds my attention had been directed to heart conditions; I found irregular action of the heart of frequent occurrence, and I attempted to obtain an insight into the mechanism by which the different irregularities are produced. I followed for a time the practice already referred to of studying the records of the pulse-beats obtained by a Dudgeon's sphygmograph. At last it occurred to me that the irregularities seen in this way only showed what the left ventricle was doing, and the question arose as to what the auricle was doing.

This was one of those extremely simple and apparently self-evident conceptions which seem scarcely worthy of consideration, but which nevertheless bear within them the germ of a very fruitful idea; and it enabled me to obtain the first differentiation of irregularities based upon the laws governing the movements of the heart. I still remember, although it happened over 30 years ago, the occasion on which I obtained the first result of the application of this idea, in a record of an irregularity in which I was able to demonstrate that the ventricle occasionally contracted before the auricle—the ventricular extrasystole. I was led to apply the idea to other abnormalities which had baffled interpretation, and they in their turn became clearly defined. If we compare the knowledge of abnormal heart movements at the present time with that of 30 years ago the extent of the revolution that has taken place in the knowledge of this subject will be realised—a revolution that resulted from the application of the simple principle of finding out what the auricle was doing. No doubt many observers who have contributed to this revolution have carried on their work unconscious that this principle really lay at its foundation.

The same fundamental conception—the mechanism of symptoms—guided my inquiry into other phenomena of disease. Until lately only a limited success resulted, for the simple reason that there was no such clear principle for a guide. As the inquiry proceeded a better knowledge of a great number of the different signs and symptoms of disease was gradually acquired, so that it was perceived that there was some fundamental principle which governed the production of a large group of symptoms. It is now many years since this idea crystallised. When we opened an Institute for Clinical Research in St. Andrews we made the search for this principle our chief aim, and it was gradually revealed to us, although at first we scarcely recognised it because of its extreme simplicity; for we found *that the mechanism by which many symptoms are produced is due to the modification of reflexes that are normally present in the body.*[1] This theory of disturbed reflexes as the cause of symptoms of disease has begun to throw light upon many problems which we could not solve, and has afforded us a guide for the investigation into the early stages of common diseases.

The objects of this paper are: (1) to describe certain abnormal states of the heart in which the principle embodied is not the question of the action of the auricle during the irregular action of the ventricle, but the question of the action of the ventricle itself; (2) to demonstrate the application of the theory of disturbed reflexes in certain obscure cardiac conditions; and (3) to show the effect of an abnormal rhythm on the functional efficiency of the heart. This last object is of importance in order to understand that other matter essential to intelligent practice—the bearing of the cause of an abnormal sign upon the patient's future.

ABNORMAL HEART ACTION.

The following cases are illustrative of abnormal states of the heart.

CASE 1.—About 20 years ago, when I was attempting the differentiation of the various forms of irregular heart action, I singled out one peculiar form which I described in my book on the pulse, published in 1902.[2] It was a case of a woman, 35 years of age, eight months pregnant, who suffered at times from breathlessness, with irregular action of the heart. The irregularity was varied in character. Sometimes there were present ventricular extrasystoles occurring at rare intervals, and sometimes frequently. Occasionally groups of from two to six extrasystoles would appear, each group being separated by the appearance of a normal ventricular contraction; and occasionally there would be a long series of 20 or 30 of the abnormal ventricular beats, giving rise to a ventricular tachycardia. When free from the attacks of irregular heart action she felt well, but when the heart was irregular she felt breathless on exertion; I did not attend her in her confinement, but learnt that she came through it without trouble. I heard of her three years after as being in good health.

I explained the abnormal heart action as being due to premature or extrasystoles of the ventricle, occurring singly or in groups. Since that time other observers have described the same condition, and I have had a number of cases, some of which have shown other signs of considerable moment.

CASE 2.—Female, aged 57. Seen in January, 1919; complains of breathlessness coming on during the night and also on slight exertion; gives a history of having good health until 20 years ago when she began to have asthma, very slight attacks at first, but in later years they have become severe and more frequent; lately she has had periods of several months with attacks nearly every night. Up till ten years ago she was otherwise well and vigorous and able to do her usual housework and had no trouble in walking. Latterly she has become very breathless on exertion and can only walk a short distance. Pulse irregular, due to extrasystoles occurring singly and in groups; no jugular pulse. Heart slightly enlarged, the dullness extending out to the left nipple line. The sounds clear, chest slightly emphysematous, and no other abnormal sign could be detected. Digitalis was given, and two days' afterwards the pulse was quite regular. She continued to take digitalis as she thought that the heart's condition was better. She was able to continue her household duties, but gradually became weaker, with swelling of the legs and very distressing attacks of asthma in the night. From time to time record of the pulse was taken, and frequently the irregularity was present, always showing the presence of groups of extrasystoles.

On Jan. 21st, 1921, her state was as follows: Very spare, slight œdema of the legs, pulse irregular, due to the occurrence of an extrasystole after every second normal beat. The heart dullness half an inch beyond the nipple line, the sounds free from murmur. She is very breathless on the slightest exertion and suffers from great difficulty in breathing in the night. She has been taking digitalis during the last two years, taking 30 drops of the tincture a day. Digitalis was stopped; two months later the stoppage had produced no effect.

CASE 3.—Male, aged 56. Seen in January, 1917; brought to me by his doctor, who informed me that the patient was having an attack of angina pectoris in the waiting room. I had him brought in to the consulting room and found him suffering from pain of considerable severity, situated over the middle of the sternum. I felt his pulse and found it rapid and irregular, and took a long tracing, of which Figs. 1 and 2 are parts. Three minutes after Fig. 2 was taken he said he felt free from pain, and I took another tracing and found the heart had become quite regular, as shown in Fig. 3.

He gave a history of fair health until three weeks previously, when he began to suffer from attacks of pain lasting 3 or 4 minutes. Since then he has had a number of attacks; he says that they only occur when his heart becomes irregular; he is conscious of this irregularity. The doctor confirmed this statement. I found him a well-nourished full-blooded individual; heart only slightly enlarged; sounds clear, and blood pressure over 230 mm. Hg (see Fig. 4). The radial pulse, both during the irregular period and the regular period, showed the pulsus alternans (Figs. 3 and 4). There was a slight trace of albumin in the urine; specific gravity 1007. After this he suffered frequently from attacks of pain, but there were long periods when the heart was perfectly regular and he was fit for a fair amount of exertion. In spite of various treatments the attacks continued to recur until a year later, when he died during coitus.

CASE 4.—Male,* aged 58, seen May 26th, 1920. Complains of pain over left breast and breathlessness on slight exertion. Has lived many years in India and has suffered from malaria and attacks of diarrhœa for several years after 1896; otherwise a healthy man. He felt well and fit until January, 1919, when being engaged in severe bodily labour he felt a pain in his chest which became worse until he desisted from the heavy work. At this time the weather was cold and the pain was easily provoked when he walked out into the cold air. He went to bed for three weeks and for a few days the pain kept recurring, but gradually abated. The pain, however, ever since can be provoked with exertion, and particularly during periods of heart irregularity, of which he is conscious. At these times he is pulled up on walking 200 or 300 yards because of the pain; the latter is continuous, sometimes attaining a great severity, but never coming on in short spasmodic attacks; it is felt across the chest and down the inside of the left arm. When at his best, and when the heart is not irregular, he can walk from two to six miles on the level at a quiet pace. On an incline he is then pulled up by breathlessness and occasionally by pain.

On examination he is a well-nourished, healthy-looking man, though slightly sallow; heart enlarged, dullness extending one inch beyond left nipple line; a systolic murmur loudest at the apex; rhythm markedly irregular. A slight trace of albumin in the urine; an X ray examination showed nothing but a slight enlargement of the heart.

A tracing was taken of his radial and jugular pulses; it showed a very disorderly rhythm varying in a peculiar manner, of which Figs. 5, 6, and 7 are examples. The key to the irregularity is shown in Fig. 7, where the radial pulse shows a regular grouping of beats with one big beat followed by two small ones. The jugular pulse, however, shows an auricular beat perfectly regular in all three tracings. The small beats in the radial pulse are not due to normal ventricular contractions following the auricular beats, as can be seen from Fig. 6, where there are an irregular series of the small beats in the radial occurring at a greater rate than the auricular beats. From these tracings it is evident that the irregularity is due to ventricular beats independent of the auricular beats, except at the beginning of a group, where there is a large radial beat, which is seen to be preceded by an auricular wave.

Hitherto the cases of this condition I have seen were paroxysmal, and I had no clear idea of the treatment. Finding this arrhythmia was not paroxysmal but persistent, we put him upon digitalis (1 drachm per day) on May 29th. That night he was very ill, suffering from an attack of cardiac asthma and Cheyne-Stokes breathing, with pain across the chest. He speedily responded to the treatment, and the second day his pulse became at times slow and regular, as in Fig. 8, and at other times irregular, as in Figs. 10 and 11. As soon as his pulse became slow he felt remarkably well; pain disappeared, and he was able to take a considerable amount of effort without distress. The digitalis was stopped to see whether the improvement was due to the drug, and in a few days he was as bad as ever, the small beats tending to recur, as shown in Fig. 9. He was again put on digitalis and in a couple of days he was greatly improved; the pulse became slower, and many normal beats appeared, as in Figs. 10 and 11. He was told to watch the effect of the drug and to diminish the quantity when he felt very well, and take it just when he began to feel the slightest return of his weakness, so that he should regulate the quantity of his drug according to his condition. He continued well during the ten days he was under observation, and seven months later he wrote saying he was still very well and continuing to take digitalis.

Analysis of Tracings.

All the tracings given belong to the same kind of abnormal heart action. Those in Cases 3 and 4 show a well-marked auricular beat occurring at regular intervals, while the radial pulse is extremely varied in its rate and character. The irregular actions of the heart in all four cases belong to that group where the ventricle is the seat of disturbance. This can be inferred not only from the character of the tracings given here, but also from the electrocardiograms which have been taken from similar cases. I had an electrocardiogram taken of another case, and it showed that the beats during the irregular period had the character peculiar to ventricular extrasystoles.

In some tracings the irregularity has a superficial resemblance to that of auricular fibrillation (Figs. 5 and 6). During the abnormal periods in these cases, however, the ventricular beats are often quite regular (Fig. 2), whereas in auricular fibrillation, unless the heart is slow, there is a continual variation in the rhythm. Moreover, the electrocardiogram of auricular fibrillation shows the ventricular complex to be normal in its character, indicating that the stimulus for the ventricular contraction comes from the auricle, while the ventricular complex during the abnormal rhythm in these cases correspond with that of a ventricular contraction arising in the ventricle itself, so that these cases belong to a group where the abnormal rhythm is ventricular in origin.

Heart Failure.

These four cases are of further interest as showing the signs characteristic of heart failure. Heart failure cannot be detected by examination of the heart itself, but only by the effects of impaired supply of blood upon the other organs of the body. Dropsy and enlarged liver—sometimes spoken of as the cardinal signs of heart failure—only occur in relatively few cases; the vast majority of people who suffer from heart failure never show these signs.

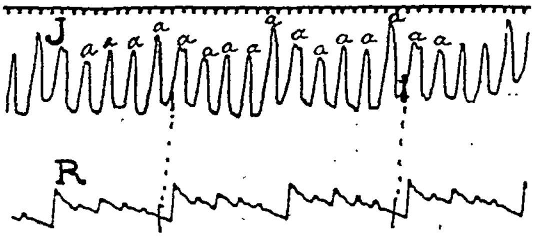

FIG. 1.—Part of simultaneous tracings of jugular (J) and radial (R) pulses, slightly reduced. The waves (*aa*) in jugular tracing are due to the contraction of the right auricle, and are quite regular, in contrast to the irregular rhythm shown in the radial tracing. The radial beats occur in groups of five, the first of which is a normal beat and arises in response to an auricular contraction, while the other four beats arise in the ventricle, independent of the auricular beats, and at a slightly more rapid rate. The characters of this irregularity are better brought out in Fig. 2.

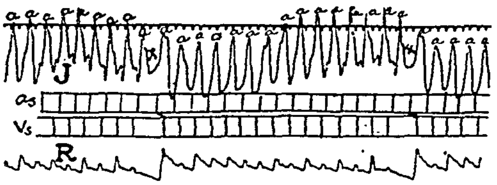

FIG. 2.—Part of simultaneous tracings of jugular (J) and radial (R) pulses reduced to $\frac{2}{3}$. The waves (*aa*) in the jugular tracings are due to the contraction of the right auricle, and are quite regular in contrast to the irregular rhythm of the radial pulse. The radial beats occur in groups. In Fig. 1 the groups were of five beats; in other instances they were 19, 13, and 15, as in this tracing. The first beat of the group is a normal beat in response to an auricular systole. In the intercalated diagram the downstrokes, As, represent the auricular waves in the jugular, while the downstrokes, Vs, represent the radial pulse (ventricular systoles). The space between represents the passage of the stimulus from auricle to ventricle, and it is shown this only occurs with the first beat of the group, all the other radial beats (ventricular systoles) being independent of the auricular systoles. At the end of each group there is a pause before the appearance of the normal ventricular contraction. It is interesting to note the appearance of the pulsus alternans. The beat after the first large beat of the group is always small, then the alternation is at first slight but becomes more marked towards the end of the group. There is no very clear evidence showing that the ventricular rhythm had any effect on the auricle, although there is a suspicion of a lengthening of the pause at ×, between the beats that precede the beginning of a group. Moreover, as soon as the abnormal rhythm ceased the auricular rate fell from 130 (as in this tracing) to 120, as in Fig. 3, suggesting that the auricle was affected.

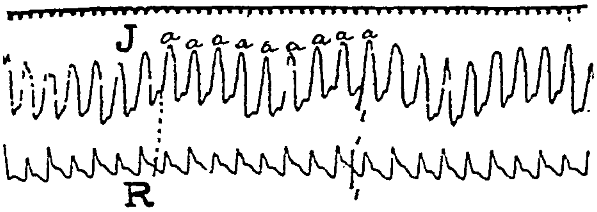

FIG. 3.—Simultaneous tracings of jugular (J) and radial (R) pulses, taken three minutes after Fig. 2. The radial pulse is now regular in time, and each beat is preceded by an auricular systole, showing that the rhythm is now normal. The rate is 120 per minute. The radial pulse shows the pulsus alternans—the rhythm being quite regular, while a large beat alternates with a smaller.

The best method, in fact the only method for obtaining a knowledge of the heart's efficiency in a person who is able to get about, is by appreciation of response to effort. This knowledge can be obtained not by any form of exercise in the doctor's consulting room, but by eliciting a clear account of the manner in which the patient responds to those efforts made in his daily life where the circumstances cannot be imitated by any artificial method, such as the sensations experienced on walking up a hill, or on walking after a full meal or in the cold air. When there is impaired efficiency of the heart these experiences give rise to certain very definite sensations, and these sensations are of the nature of disturbed reflexes. Thus the vast majority of people whose heart's efficiency is impaired suffer at times from one of two kinds of sensation, breathlessness or pain, with their accompanying sensations. In breathlessness the respiratory reflex is disturbed, and in pain the viscero-sensory reflex peculiar to the heart is disturbed.

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* I am indebted to Dr. R. L. Girdwood for most of the notes and records of the effect of the drug in this case.

It is unnecessary to dwell upon breathlessness as an evidence of heart failure, although the exact portion of the reflex arc disturbed is still far from clear. The disturbance of this reflex is not direct from the heart, but because the heart fails to supply the respiratory system with the normal kind of blood.

The nature of the reflex which gives rise to pain can be inferred by the situation of the pain, its peculiar distribution, and the phenomena which accompany it. I need not go into this matter more fully here beyond stating that the group of symptoms which accompanies the pain are the result of a stimulus arising from the heart muscle. The researches which we have been carrying on for some time show that there is a definite series of phenomena provoked by muscular fatigue, and the principle governing the appearance of these phenomena are the same for the heart as for other muscular organs.

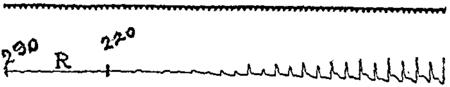

FIG. 4.—Part of tracing of the radial pulse (slightly reduced) while the blood pressure was being taken. The cuff embracing the upper arm was distended till the pressure was over 230 mm. Hg and the radial pulse was recorded. The air was allowed to escape and so the pressure within the cuff fell, the radial pulse gradually appeared—first the big beats, at 230, and the smaller beats at 220. This method brings out the distinctive features of the pulsus alternans.

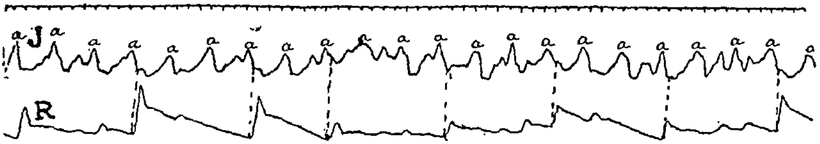

FIG. 5.—Part of simultaneous tracings of jugular (J) and radial (R) pulses, slightly reduced. Shows a very disorderly irregularity of the radial pulse, while the auricle (waves a) is regular auricular rate 90 per minute. The large beats in the radial are due to ventricular contraction arising in the normal manner—i.e., as a result of a stimulus from the auricle. The smaller beats are idio-ventricular beats, arising in the ventricle. There is a tendency for the ventricular beats to occur in groups. (May 26th, 1920.)

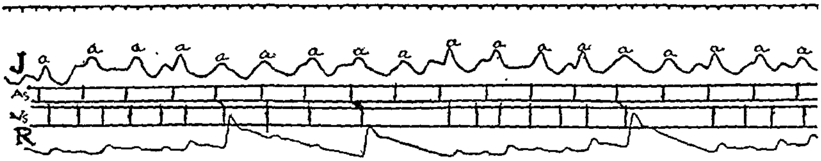

FIG. 6.—Simultaneous tracings, slightly reduced. Shows the same as Fig. 5; the tendency to form groups is more marked though the beats vary in number. Auricular rate 86 per minute.

In the cases described we find present one or both of these phenomena, breathlessness and pain. In the young woman (Case 1) there was breathlessness only, and also in Case 2 breathlessness was the only sign. In Case 4 there was both breathlessness and pain, and in Case 3 pain was the dominant symptom. In the vast majority of people in whom pain occurs it only takes place when the heart is called upon to make an effort; in Cases 3 and 4 pain occurred without effort, manifestly because the abnormal rhythm itself was an embarrassment to the heart in its work. In the case of the young woman the abnormal rhythm embarrassed the heart, for she could take effort without distress when free from the abnormal rhythm, but was easily rendered breathless when it was present. Pain in Cases 3 and 4 was of that dull prolonged kind, different from the pain of angina pectoris, when it occurs in definite attacks and subsides on the cessation of effort. In some respects the pain is like that which is occasionally present in auricular fibrillation. In this condition attacks of angina pectoris rarely occur. Patients who may have suffered from attacks of angina pectoris when the rhythm was normal become free from them when auricular fibrillation appears. One reason for this fact is that whereas effort provokes pain in patients with a normal rhythm; during auricular fibrillation, breathlessness occurs so readily that they are pulled up from this

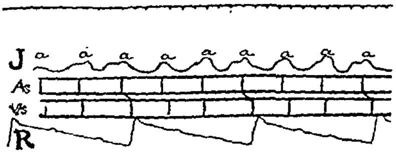

FIG. 7.—Part of simultaneous tracings (slightly reduced), taken at the same examination as Figs. 5 and 6, and showing regular groups consisting of one normal beat followed by two extrasystoles, the auricular rhythm being unaffected. In the intercalated diagram the downstrokes in the upper spaces, As, represent the auricular systoles (waves a in the jugular tracing), and in lower space, Vs, the downstrokes represent the ventricular systoles—represented by the radial beats. The space between represents the passage of the stimulus from auricle to ventricle, and it is shown only to occur with the large radial beats—the smaller beats occurring independent of the auricular contraction. The auricular rate is 88 per minute. (May 26th, 1920.)

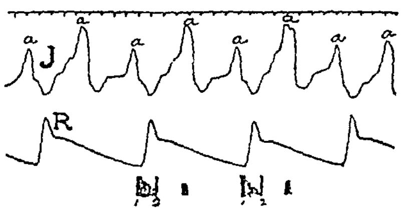

FIG. 8.—Part of simultaneous tracings (slightly reduced), after the administration of two drachms of tincture of digitalis. The auricular waves a in the jugular are 72 per minute, while the radial pulse is 36. During the pause in the radial pulse an extra-systole occurred, so weak that it is not shown in the radial tracing. On auscultation a single sound was heard during the pause which is shown diagrammatically under the radial tracing. The auricular waves during the pause in the radial beat are larger than the one which preceded the radial beat. The reason for this is that at the time the auricle contracted the ventricle was in systole, so that the contents of the auricle could not be emptied into the ventricle, but are forced back in the jugular.

cause. Nevertheless, in some cases, particularly where the heart is persistently rapid, pain of considerable severity may be felt across the chest, and it may disappear when the heart becomes slow under the influence of digitalis.

THEORY OF DISTURBED REFLEXES APPLIED TO THE ACTION OF DRUGS.

The theory of disturbed reflexes throws a new and unexpected light upon the action of digitalis and other cardiac drugs. It had been recognised for over 100 years that digitalis at times caused great slowing of the heart's action; consequently, the drug was supposed to be indicated whenever there was an increase in the heart's rate. It was found, however, that the slowing only occurred in a few cases. An inquiry into this difference enabled me to point out in 1906 that this slowing only occurred in people with an abnormal rhythm, particularly in those conditions which we now recognise as auricular fibrillation and auricular flutter. Although these observations have been fully confirmed, no clear understanding of the reason could be given. We are now able to give the explanation. In the vast majority of people who have a rapid action of the heart there is present some disease which produces agents that act upon the cardiac reflexes. Thus, in febrile states, such as pneumonia, influenza, and measles, the heart is usually rapid, sometimes very rapid, because of the action of the toxins of those diseases upon some portion of the cardiac reflex. When digitalis is given in such cases no effect is produced because the reflex is already poisoned by an agent which the digitalis is unable to overcome. The rapid pulse in auricular fibrillation and in the idio-ventricular rhythm described in this paper is due to a totally different cause. In auricular fibrillation it is the shower of weak stimuli from the fibrillating auricle which causes the increased ventricular rate. While in this form of independent ventricular rhythm which we are discussing the increased rate is due to some agent in the ventricle itself quite apart from the reflex. The digitalis, therefore, is acting in these cases upon a reflex not disturbed by any other toxic agent.

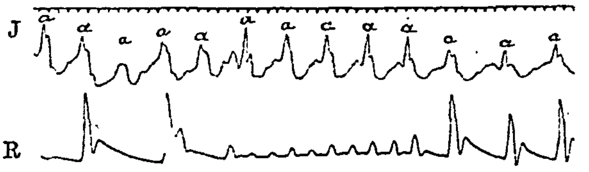

FIG. 9.—Part of simultaneous tracings (slightly reduced), taken four days after the stoppage of digitalis; the patient's condition became worse and the pulse became rapid and extremely irregular, with periods of rapid ventricular beats. Auricular rate 74. (June 7th, 1920.)

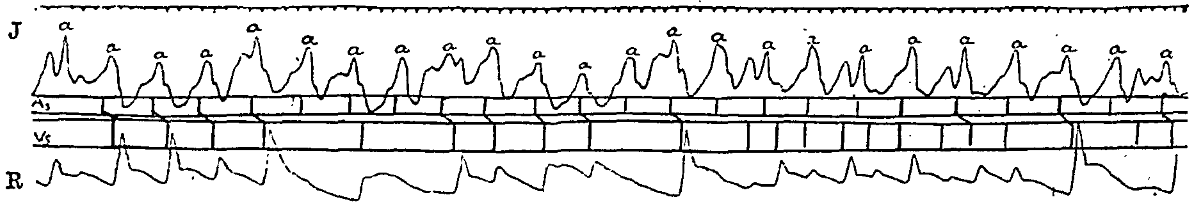

FIG. 11.—Simultaneous tracings (reduced to $\frac{3}{4}$) taken on the fifth day of digitalis administration, the patient's condition still showing signs of improvement. The tracing represents a period of great irregularity, which the intercalated diagram shows are due to the erratic appearance of ventricular extrasystoles. Auricular rate 72 per minute. (June 13th, 1920.)

It is known that a stimulation of the vagus has a distinct effect in dulling the auriculo-ventricular conducting system, and it is probably on this account that digitalis slows the heart in auricular fibrillation. But this is not the explanation which causes the slowing in this ventricular tachycardia. The researches of Gaskell[3] show that the stimulation of the vagus has a very definite influence upon the various functions of the heart muscle fibres, and it is probable that the digitalis effect in Case 4 was due to some such action. It is to be noted that the slowing of the heart was more rapidly produced in Case 4 than in auricular fibrillation. It takes from 4 to 7 drachms to get a definite effect in auricular fibrillation—the patient taking 1 drachm per day. In this patient the effect seemed to be produced after 2 drachms. Support of this view is found in the absence of effect on the auricle. The auricular rate fell from 86 to 72 on first taking digitalis. The auricular rate did not rise above 72 when the digitalis was stopped while the ventricular rate increased. The resumption of the digitalis speedily affected the ventricle but did not affect the auricular rate (see Figs. 5, 6, and 7). I recognise, however, that more observations will have to be made before this susceptibility is proved. There is a point of resemblance in the recovery from heart failure between auricular fibrillation and this ventricular rhythm in that the diminution of the ventricular rate seems the chief agent in restoring the heart's efficiency, more time being given after each systole for recovery.

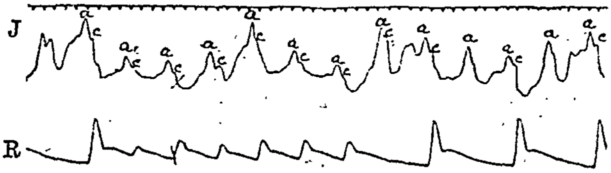

FIG. 10.—Part of simultaneous tracings (slightly reduced), taken four days after resuming the digitalis; the series of small ventricular beats had ceased, though the rhythm was still irregular. This tracing shows a group of normal beats, and periods when the radial pulse had only half the frequency of the auricular rate, as in Fig. 8, and for the same reason. Auricular rate 74 per minute. (June 12th, 1920.)

Sutherland[4] has shown that certain hearts with a rapid rate and the normal rhythm are susceptible to digitalis. This observation does not invalidate the view expressed here; it merely shows that there are agents which increase the heart's rate and which the digitalis can overcome.

PROGNOSIS.

In the investigation to which I refer in the introduction I spoke of the principles which guided me in detecting the mechanism by which symptoms are produced. Another matter absolutely essential to intelligent practice had to be considered—namely, what happens to the patient who shows an abnormal sign. This matter of prognosis is one that has been greatly neglected. While investigation into the various forms of cardiac irregularity has added greatly to our knowledge, such knowledge can only become of real practical use if it is supplemented by the knowledge of what effect the cause of these irregularities has upon the heart's efficiency. The great question, therefore, in every case is, Does this sign indicate heart failure or does it foreshadow its oncoming? It has been rather hastily assumed that this kind of knowledge was so easily acquired that no special steps should be taken to find it out. In reality it is a subject of very great difficulty, and requires a particular method of observation which very few people have undertaken. To begin with, to be able to undertake an inquiry into prognosis it is necessary to have a knowledge of the symptoms of heart failure; and so far very little has been done to discover what these are, for a great many signs which have no relation to heart failure have been mistaken for signs which gave that knowledge.

An investigation into this subject has revealed the fact that no physical sign or peculiarity of the heart itself can ever give the information as to its functional efficiency. The presence of some cardiac signs may be recognised as associated with heart failure, but they themselves are not signs of heart failure, so that one can say that no single abnormal sign is of itself a basis for prognosis.

Many years ago, on looking up my cases of pulsus alternans, I found that they had all died, and the question arose, Was this a sign of grave moment? A prolonged investigation revealed that when it was of grave prognostic significance there was always a great limitation of response to effort. It was occasionally present when not associated with any form of heart failure, as in certain forms of paroxysmal tachycardia, or when an individual had suffered severe pain such as hepatic colic. On the other hand, when this sign is present and indicates a grave prognosis, it is invariably accompanied by a great limitation of the person's response to effort, that is, effort evokes sensations of breathlessness or pain with great facility.

The reason that I have quoted the first case is to show that this ventricular rhythm may be present and the patient be in no danger, while its presence in Cases 3 and 4 shows that while it may embarrass the heart it is not of itself necessarily a serious sign—that is to say, the heart muscle itself was manifestly impaired, and the presence of this abnormal rhythm further embarrassed the heart in its work. The presence of pulsus alternans in Case 3 was of grave significance, but there was present such a degree of functional inefficiency that the slight embarrassment induced by this abnormal rhythm immediately caused great suffering, and the outcome of the case justified the view that the patient's condition was a grave one.

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MEDICO-MILITARY TRAINING.

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IN introducing the subject of the best form of instruction for medical students to fit them to take their part in case of national emergency, I would first postulate that the Officers' Training Corps, which has fully established itself and is completely organised, should be accepted as the organisation under whose ægis the training should be carried out. Its machinery is complete and it has come to stay. The national emergency is, of course, war, but there are many minor emergencies which may be encountered, even in the course of civilian private practice, in which a training calculated primarily to make a medical practitioner fit for field service as an army medical officer will be found of value, particularly to a medical man who enters any form of State medical service. Secondly, the training must be carried out in the leisure time of the student. The present medical curriculum, calculated to make a student efficient in carrying out duties to the sick in civil life, is sufficiently intense and exacting to make it unfeasible to add compulsory auxiliary subjects to those considered essential. Thus the training must be voluntary. It takes up time which the less patriotic or provident student devotes to games. Therefore the instruction should be as recreational as possible, and calculated for the mental enlargement as well as the physical culture of the student. It should be adapted to serve him in whatever course he adopts, as far as is compatible with its main object.

Origin of the Officers' Training Corps.

The medical units, Officers' Training Corps, form one of the branches of the senior division of that body, of a specialist type. For the information of those who have not been brought into touch with the subject of the Officers' Training Corps it may be well to state shortly its nature and functions.

It was formed in 1908 during the Secretaryship of State of Lord Haldane by a committee of school and university teachers, under the chairmanship and guidance of Sir Edward Ward, then Permanent Under Secretary of State for War, with the object of giving a standardised measure of training in military matters to students at schools and universities such as would fit them to become officers of the army, S.R.O., and T.F. It absorbed existing volunteer corps at schools and universities and consists of junior and senior divisions—the junior division at public and other large schools, the senior division at universities (and the Inns of Court). The officers in the junior division are schoolmasters, in the senior division members of university staffs, and both are on the Unattached List of the Territorial Force.

In the junior division, with the exception of two schools, where some engineer work is taught, infantry training alone is given. In the senior division, although infantry training is their staple, units of cavalry, artillery, engineers, signals, R.A.S.C., R.A.M.C., R.A.V.C. are formed and the special duties of these branches are taught in units of the contingent, of the formation of corresponding units in the army. The training is carried out under the general supervision of chief of the Imperial general staff, by the officers of the several contingents in term time and in annual camps. Adjutants who are attached to the general staff are appointed from the Regular army to contingents, and N.C.O. instructors are supplied. Equipment, arms, and uniform are also found by the public in kind or from grants. Cadets serve under a contract with their universities; they are not subject to military law, and enrolment is voluntary.

The affairs of university contingents are administered by a military education committee of the university where they exist, and the War Office assists the committee as necessary in carrying out their work. A certain minimum number of instructional parades are necessary to qualify for efficiency. Annual camps are held, and the training is made as practical as possible to fit the cadet for war service conditions. Certificates are obtained by examination.

One year of training is the minimum to admit a cadet to sit for Certificate "A," and two years for Certificate "B." Only Certificate "A" is obtainable in the junior division; both "A" and "B" are obtainable in the senior division. The possession of these certificates gives the holder certain definite privileges if he should choose the military career.

But the real value of the organisation is that it disseminates military knowledge among a large body of the class of men who are best fitted to hold commissions, and prepares them to take their places as officers in time of emergency, with a minimum of preliminary instruction. The Officers' Training Corps comprises a very large body. Twenty-one contingents exist in the senior division, and 162 in the junior division. The value of the training was fully proved in the war. Had it not been for the Officers' Training Corps output it would have been impossible to supply the army with junior officers. It is not too much to say that it saved the situation at the beginning of the war.

The Medical Units of the O.T.C.

These units have been formed of medical students, as units of the senior division contingents, with a view to training them for the Military Medical Services. The training unit is a section of a field ambulance, that being the war unit which gives the best opportunity of visualising the functions of the medical service in the field. Such units have been formed at the Universities of London, Cambridge, Oxford, Dublin, Belfast, Edinburgh, Aberdeen, and Glasgow, at which centres the larger medical schools are located. It is hoped that other units may be formed at other medical schools, but this cannot be sanctioned at the present crisis in national financial affairs.

Before proceeding with details I may state that some 5000 medical students were trained prior to the war in these medical units. A proportion of them took commissions in the Special Reserve and Territorial Force. The remainder, all such as were qualified, served in the capacity of medical officers in the navy or army, and the value of their O.T.C. training was testified to both by the officers whose commands they joined, and under whom they served, and by themselves. The value to the army of this body of trained medical officers was immense; and here I would insist that it is not enough for a medical man, in order to develop his full usefulness in the Army Medical Service, for him to be in possession of a medical qualification, and to have added a measure of military science, whether during a course at a training centre or in another arm of the Officers' Training Corps than his own. It is true that a knowledge of discipline and leading, and the action of other arms in addition to his medical qualification, will make some sort of an army medical officer, but it is not quite to the point, because the Army Medical Service is a highly specialised branch of the medical profession, and although its primary function is to aid the fighting power of the army by keeping the largest possible number of soldiers fit to fight, yet its essential aims are of a conservative kind, whereas in the fighting branches they are all destructive. The two points of view are essentially opposed to each other and the training shapes the mind to one or other aim. Moreover, it is a waste of time and money to train a cadet whose services would be certainly best, and perhaps only, used in war in the medical service, in the work of a fighting arm, and vitiates his point of view. There is enough of important military medical knowledge to be acquired with advantage throughout the whole of a medical cadet's training in a medical unit to take him all his training period to assimilate. This work has a direct bearing on his duties as an army medical officer. It is such as is not acquired during his purely medical curriculum, though much of it would aid him in his civil practice, such as sanitary and administrative work. And the method of its conveyance is far superior to that of a condensed course such as that undergone at a training centre, as it is spread over a longer period and given in assimilable doses.

There is another most important advantage in the existence of a medical unit at a university which is that it keeps the Army Medical Service in the eye of the public of the university. The Army Medical Service in time of peace is a body little known to such public, and from time to time good students have not only not been encouraged to join but actually discouraged by their teachers from doing so. The late war has been responsible for bringing the work of the corps to the knowledge of the medical profession, and there exists a very large body of medical men who have been trained in war and who may be counted as available for service in case of emergency for a few years. But the Officers' Training Corps is for the purpose of training the young men during their university education, and is a provident institution. It is the only piece of mechanism in this country that provides a reserve of potential medical officers for the army, and for this reason alone it deserves all the encouragement it can get.

Course of Training.

The course of training, as has been said, is shaped to fit the medical student on his becoming qualified to undertake the duties of a junior officer of the Army Medical Service in the field, with the least expense of time, or even with no preliminary training at a centre, and to make him as nearly as is possible in the time equal in essential matters belonging to war conditions to the young medical officer of the Royal Army Medical Corps. He cannot, naturally, have an equal knowledge of hygiene, tropical diseases, drill, discipline, interior economy, &c., in which the Royal Army Medical Corps lieutenant has had a six months' course at Aldershot and the Royal Army Medical College, and to which all his time has been devoted, but he will have gained enough to enable him to grasp the ideas underlying his work, its general direction, and many of its necessary details.

The course given to enable the cadet to enter for Certificate "B" lasts for at least two years; for Certificate "A" one year. During the first year, before he has entered upon the professional subjects of the medical curriculum, such as surgery and medicine, he is taught the military part of his duties and a certain amount of elementary sanitary work, and such portions of the work of a medical officer as do not involve the knowledge of his medical specialty. The cadet of the infantry is at this time learning to be a platoon leader, and the medical cadet acquires such knowledge of squad and company drill and ambulance drill, map-reading, and elementary military law as will make him efficient in the matter of leading and commanding the men who will be committed to his charge in parallel with him.

He also learns bandaging and the application of splints and tourniquets, field dressings, the contents of the medical panniers, means for the purification of water for the troops, tent pitching, field cooking, and the construction of extemporised structures used in camp sanitary conservancy, in which particulars he has to instruct his men. During the annual camp he puts them into practice. He receives instruction in the outlines of army and army medical organisation by lecture, in order that he may appreciate his particular sphere of activity and his responsibilities as an army medical officer. He has to attend a fixed number of instructional parades and the annual camp to attain to being "efficient." He supplements such instruction by a study of certain text-books of regulations.

Before sitting for Certificate "B" he undergoes a second year at least of Officers' Training Corps teaching of a kind which involves some knowledge of medicine, surgery, and hygiene, and medico-military details to a more particularised extent. This is intended to fit him to act as a medical officer in charge of a unit other than medical, and as a junior officer of a medical field unit. It involves training in organisation and administration, a knowledge of the structure and functions of medical units, military law, hygiene, including prophylaxis against diseases of armies, and methods of disinfection of buildings and clothes, and of water purification, personal hygiene and prevention of disease, under which come various agencies in the causation of disease, methods of disinfection and sterilisation and disinfestation in the field, sanitary survey of places frequented or used by troops, means of transport of sick and wounded, improvisations to supplement existing conveyances, the medical aspect of marches, quarters, movements of troops by rail and sea, and housing, feeding, and clothing of troops.

Opportunities for physical training exist in contingents and cadets are encouraged to learn to ride where there are facilities for it. Instructional stores are provided at contingent headquarters, being specimens of the vehicles, tentage, and ordnance, and medical stores of a field ambulance, for use in demonstration and practice during term-time. In the annual camp, which the cadet attends for eight days at least, the unit obtains from the command in which the camp is held vehicles and horses and stores to make it up to the establishment, and it is exercised on a scheme devised to demonstrate its working under war conditions. During term-time, when possible, tactical schemes may be carried out to illustrate the interworking of the unit with other units and arms.

Objects of Medical Cadet Training.

The whole training is designed to give the cadet a comprehensive outline of the work of any army medical officer in war, with as much useful detail as possible, and to enable him to instruct his subordinates. He must know enough of discipline and procedure to relieve him from embarrassment on entering his new sphere and to develop his full usefulness, enough of drill to enable him to move his men correctly and give him confidence, and enough of interior economy to enable him to deal with matters concerning the comfort and well-being of his men and patients.

The advantages of such training are, from the point of view of the State, considerable, in that it provides a reserve of potential medical officers possessing an amount of knowledge of the duties they would have to perform in war adequate to make them of the fullest value from the time of their joining, and this is fully realised. The advantages to the cadet are also considerable; he acquires, at no expense to himself, except that of some of his leisure time, an insight into subjects which in the event of his joining a State Medical Service are of supreme value, and, should he take up private practice, will fill gaps in his ordinary curriculum and be found very useful.

These are: a practical view of elementary hygiene which makes a good groundwork for its more intimate study; practice in first-aid methods and in the transport of sick and wounded and in improvisation in this connexion; organisation and methods of administration which enable him to deal with masses, as in railway accidents, mine disasters, &c., and to conduct his affairs with method; discipline, which will serve him in all the amenities of life and in dealing with subordinates. Map-reading is an accomplishment of practical use in everyday life, and its application to surveying and inspection will be found very useful by a medical officer of health. Drill and ambulance drill put him in the way to direct his assistants in the carrying out of any combined operation, such as the placing a patient upon a stretcher or in a vehicle. In addition to these pieces of knowledge the cadet gets an annual airing in camp at no expense to himself, which is most beneficial to his health. He is a member of a corporate body within the university, and his social relations with his comrades are of the most pleasant and healthy kind. To the university in whose Officers' Training Corps contingent he serves the organisation is of value in the fact that it has a body of students bound together by the ties of discipline and comradeship, who are working with a high aim for the welfare of the State, and who set the best kind of tone in the university, and influence others by their example. In a non-resident university this is particularly valuable. The training fosters habits of punctuality and the realisation of duty and responsibility.

War Record of the Medical Units.

The war record of the medical units is a very fine one and has amply established the value of the organisation and training. Unfortunately records are not complete, but of a body representing about a quarter of the whole number of medical officers of all services and categories who trained in these units—Royal Naval Medical Service, Royal Army Medical Corps, Special Reserve of Officers, Territorial Force, and temporarily commissioned officers—1178 in number, whose records have been obtained, 95 gave their lives, 176 were decorated, and 114 mentioned in despatches, a testimony to their devotion and efficiency and an example to the rising generation of students.

Their Present Position.

At the present time the senior division of the Officers' Training Corps, and particularly the medical units, are at a low ebb. For this there are several reasons:—

(1) A general feeling of war weariness and an idea fostered by the hope that there will be no more war in the near future.

(2) The fact that most of the present generation of medical students have served and do not feel disposed to give their leisure time to further military training under peace conditions. This reacts upon the younger men who were not of military age during the war.

(3) Certain very acute grievances which affected those former cadets who had taken commissions in the Special Reserve of Officers and Territorial Force during their war service. Of these grievances, the most poignant was (*a*) the better rates of pay accorded to medical men who took temporary commissions at consolidated rates of pay—24*s.*—the Special Reserve of Officers and Territorial Force officers only getting 20*s.* at the maximum, inclusive of their allowances which they dropped when on leave or in hospital; others were (*b*) the reluctance experienced in the granting of temporary rank to Special Reserve of Officers and Territorial Force officers, as compared with temporary officers, owing to the fact that seniority lists in the Special Reserve of Officers and Territorial Force were adhered to and were of a permanent nature, whereas on demobilisation temporary officers would be clear of the military establishment; (*c*) the ignoring of the previous training of Officers' Training Corps cadets on posting, due to the anxiety and hurry of mobilisation.

(4) During the war it was compulsory upon all students who were held to continue their studies, or who were physically of low category and for these reasons not called to the colours, to join the Officers' Training Corps. This brought a number of reluctant men into the medical units. The reversion to the voluntary system was the signal for these men to break away.

(5) The fact that those who had had their studies interrupted during the war felt it necessary to give the whole of their time to professional work and to make up the time lost in preparing themselves to earn their livelihood in civil life.

(6) A doubt as to whether it is worth while, and a question as to the tangible advantages to be drawn from the training.

Measures Enacted to Remedy Grievances.

The remediable causes of disinclination have after representation been remedied, and the following measures enacted:—

(1) In future all commissions will be in the Special Reserve of Officers or Territorial Army; this abolishes the giving of temporary commissions carrying higher rates of pay, and avoids the setting up of a standard of comparison which was so unfavourable to Special Reserve of Officers and Territorial Force Officers under former conditions.

(2) Six months' seniority will be given to officers who on joining the Special Reserve of Officers and Territorial Army possess Officers' Training Corps Medical Certificate "B," and three months to holders of Certificate "A."

(3) A credit of 6 per cent. of marks to holders of Medical Certificate "B" and 3 per cent. to holders of Medical Certificate "A" will be accorded at the entrance examination to candidates for Royal Navy Medical Service and Royal Army Medical Corps.

(4) Preference in the matter of posting and promotion will be given to officers in possession of Officers' Training Corps certificates over those who have not trained who apply for service in the medical branch of the army. Card records of the Officers' Training Corps services of medical cadets are now kept by the D.G.A.M.S. for reference.

The other causes of reluctance should in time cure themselves, provided always that encouragement at the medical schools is given to students to undergo their training.

THE TREATMENT OF INFECTIOUS DISEASES BY LEUCOCYTOLYSIS

PRODUCED BY RONTGENISATION OF THE SPLEEN.

BY IVAN I. MANOUKHIN, M.D.

(From the Institute of Experimental Medicine, Petrograd.)

IN my thesis "On Leucocytolysis" (Petrograd, 1911) I proved by direct experiments that an organism combats infection mainly by means of the breaking-up of its leucocytes. If in many acute infectious diseases there is an increase in the number of leucocytes in the blood, I regard this phenomenon as preparatory to their subsequent breaking-up. The organism can only cure itself when the specific anti-substances produced by the leucocytes have come out from them and filled the blood plasma, as a result of leucocytolysis. This process is produced in the blood by special soluble ferments entering into it, which I proposed to call "leucocytolysins," and leucocytosis, in those cases when it precedes leucocytolysis, is produced by soluble ferments, whose properties are opposed to those of the leucocytolysins, and which I proposed to call "antileucocytolysins."

Later on I succeeded in proving that leucocytolysins are produced by the spleen, and anti-leucocytolysins by the liver.[1]

From that moment it became possible to verify the correctness of the above theory in practice, and in 1913 in Professor Metchnikoff's laboratory at the Pasteur Institute in Paris I carried out with this purpose the following experiments. I infected with human tuberculosis monkeys (*Macacus cynomologus* and *rhesus*) and guinea-pigs, which are very susceptible to tuberculosis, and I stimulated artificially in them the activity of the spleen so that leucocytolysins should appear in the blood and that the leucocytolysis caused by them should exercise its curative effect. The stimulation of the activity of the spleen was carried out by radiating the organ with small doses of Rontgen rays. On this method, which is now being widely applied to men, I shall dwell in more detail as follows.

Method of Radiation.

The human spleen is radiated by a dose of X rays equal to 1 h., as measured by the Sabouraud and Noiré radiometer, using the Holtzknecht scale. In the case of weak patients a smaller dose is given. The rays are filtered through 1 mm. of aluminium. I obtain this dose during five minutes at 1 ma. and 5–7 a. with X rays whose hardness is 8 on Benoist's radiochromometer and 10 on Wehnelt's criptometer (but the hardness of the rays and duration of radiation are varied in relation to the gravity of the case), and with the anticathode at a distance of 25 cm. from the body. The spleen of monkeys and guinea-pigs is radiated with a somewhat smaller dose and with softer X rays, so that the rontgenisation lasts usually for about ten minutes. The dose and the duration of the rontgenisation is fixed separately for each species of animal, according to the extent of the leucocytolysis occurring in the blood. As the liver and the spleen secrete antagonistic ferments it is very important that the Rontgen rays should not fall on the liver while radiating the spleen. Therefore, for instance, in the case of humans, the radiation of the spleen is done exclusively from the front or back, but never from the side; and, to avoid radiating the liver, when the spleen is being radiating from in front, the right boundary of the tube (8 cm. diameter), which does not let the X rays pass through its sides, must be to the left of the left mammary line, and during rontgenisation from the back it must be to the left of the left scapular line.

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[1] Archives des Maladies du Cœur et du Sang, No. 2, 1913; and Comptes Rendus Hebdom. des Séances de la Société de Biologie, 1912, p. 656.

Experiments on Animals.

The results of the rontgenisation of the spleen of monkeys and guinea-pigs have proved that leucocytolysis plays an important rôle in the cure of infectious disease.[2] In order to formulate a theory of the significance of the leucocytolysis in the cure of infectious disease I carried out other experiments in Professor Metchnikoff's laboratory, and afterwards in Russia. It appears that rontgenisation of the spleen increases the proportion of alexin and the following specific anti-substances in the blood: hæmolysins, agglutinins, bacteriolysins, and opsonins.[3]

Again, working with Professor Besredka in Metchnikoff's laboratory on guinea-pigs inoculated with human tuberculosis, I tested the blood by the Bordet-Gengou reaction with the tuberculin of Besredka, and at the same time investigated the leucocytolytic properties of the blood. I convinced myself that the curve of fluctuation of specific anti-substances in the blood, revealed by the Bordet-Gengou reaction, was in full correspondence with the curve of fluctuation of the leucocytolysins in it.[4]

Applications of Knowledge Gained by Animal Experiments.

The results of these experiments on animals gave a perfect ground for passing to the application of the method of rontgenisation of the spleen of men for curative purposes.

Pulmonary tuberculosis.—I made my first observations in 1913 on patients suffering from tuberculosis of the lungs in Professor Vaquez's department in the St. Antoine Hospital, Paris.[5] Since that time during seven years I have evolved the application of my method of treatment, not only to tuberculosis, but to a series of infectious diseases.

Typhoid.—During the war, being at the head of a Red Cross hospital for infectious diseases in Kiev, I first tested the curative rôle of rontgenisation of the spleen in cases of typhoid. In the war-time setting the disease gave a very high mortality, being complicated in 40 per cent. of the cases by pneumonia, and it often took a septic course caused by various micro-organisms. Rontgenisation of the spleen reduced the mortality from typhoid to half. But as this method could only enable the organism to combat the bacteriæmia of the blood I attempted to increase the effect by introducing various anti-substances, which reached the blood as a result of rontgenisation of the spleen, into the affected sections of the intestines and their content. With this purpose I supplemented the rontgenisation of the spleen with the feeding of the patients with an autoserum obtained from their blood taken from them 8–10 minutes after the rontgenisation. The autoserum was administered in gelatin capsules. By this means I succeeded in reducing the mortality from typhoid 7½ times. Out of 225 patients not treated by my method 43 died—i.e., the mortality was 19·1 per cent. Out of 351 patients treated by radiation of the spleen alone 34 died—i.e., the mortality was 9·7 per cent. Out of 305 patients treated by radiation of the spleen and by feeding on the autoserum 8 died—i.e., the mortality was reduced to 2·6 per cent.

Tetanus.—After this our hospital had to extend wide medical help to patients suffering from tetanus. The majority were of short incubation period (mostly 5–8 days), which, even with a serum treatment, gave a mortality of 92–98 per cent. After some preliminary tests I established the following treatment for tetanus cases: to each patient, three times a day, 20 c.cm. of serum (prepared by Parke, Davis and Co., or by the Copenhagen Institute, or by ourselves at the Kiev Bacteriological Institute) was introduced under the skin, and 10 c.cm. of one of the above sera was injected intrathecally, together with 10 c.cm. of autoserum obtained from blood taken from the patient 8–10 minutes after rontgenisation of the spleen. Under this treatment the following figures, which are exceptional for war-time, were obtained: of 132 patients 36 died—i.e., the mortality was only 27·3 per cent. and the percentage of recovery 72·7 per cent.

It should be noted that in this case the rontgenisation of the spleen, besides immunising the body to the toxin of tetanus, removed the effect of the serum anaphylaxis. I had already proved in Metchnikoff's laboratory that in the origin of anaphylaxis the anti-leucocytolysins of the liver play an important part; and these, under rontgenisation of the spleen will be neutralised by the leucocytolysins.

Preparation of Curative Sera.

I also availed myself very widely of the rontgenisation of the spleen for the preparation of curative sera. Alongside with the immunisation of horses against the toxin of tetanus (and later also in cases of immunisation of horses against *B. typhosus*, *B. dysenteriæ*, and *Vibrio choleræ asiaticæ*) a rontgenisation of their spleen was performed. Thus I obtained curative sera of high concentration in a shorter time, and was able more readily to meet the great demand for them during war-time and considerably to cheapen the cost. For instance, I prepared the antitetanus serum, containing 2000 American units in 10 c.cm.—i.e., equal to the serum of Parke, Davis and Co. supplied to us at that time, ready for distribution in ampoules in three months.

Other infectious diseases.—I shall not dwell on such acute infectious diseases as acute bronchitis, pneumonia, pleurisy, typhus recurrens, the special "Carpathian" typhus, acute arthritic rheumatism, and acute malaria. They progress very satisfactorily under the influence of one rontgenisation of the spleen of the patients. As to the membranous inflammation of the lungs, I showed that favourable results were obtained by rontgenisation of the spleen before the war in the Maryinsky hospital for the poor in Petrograd.

Dysentery.—In the case of dysentery, which, in our hospital was more often of the Flexner type, and rarely of the Shiga-Kruse type, the progress of the disease was especially favourably influenced by introductions of autoserum, taken 5–10 minutes after radiation of the spleen, into the large intestine through a long syringe.

Non-infectious diseases.—Of non-infectious diseases the following are successfully treated by rontgenisation of the spleen: Bronchial asthma, owing to the connexion between anaphylaxis, which forms the basis of asthma, and the anti-leucocytolysins of the liver, referred to above; hepatitis and cholangitis, since in their case the irritation of the liver is also accompanied by an accumulation of anti-leucocytolysins in the blood; and hæmophilia.[6]

Treatment of Tuberculosis.

I have published in various places in Russia details of the treatment of infectious and non-infectious diseases by rontgenisation of the spleen, and shall conclude this brief exposition by an account of the cure of tuberculosis of various organs.

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[2] For further details of these experiments see my communication to the Société de Biologie, June 14th, 1913.

[3] Comptes Rendus Hebdom. des Séances de la Société de Biologie, 1913, p. 1221; also Russky Vratch, 1916.

[4] Russky Vratch, 1916.

[5] Published in La Semaine Médicale, May 21st, 1913.

[6] A communication by the writer on this subject appeared in La Semaine Médicale, May 21st, 1913.

Pulmonary tuberculosis.—For the last seven years I have personally treated 8000 cases of tuberculosis, mostly of the lungs, in Russia. I purposely treated them in the most unfavourable climatic conditions—in Petrograd—so that there should be no doubt that the climate played no part in the cure. I only demanded from my patients increased nourishment, so that there should be no lack of building material for the production of leucocytes and various specific anti-substances (whose formation was greatly accelerated by the rontgenisation), and rest during the day of rontgenisation, asking them to remain in bed until 12 A.M. on the day following if possible. During the last two years my patients could not keep even these conditions; they had to be employed to obtain food, and spent much energy in walking to get their very insufficient ration and in doing all sorts of unwonted work. Owing to this the treatment was protracted, but nevertheless even under these circumstances I obtained results which fully justified the method.

In tuberculosis of the lungs radiation is performed not oftener than once a week, and in cases of tuberculosis of the kidneys, bladder, sexual organs, lymphatic glands, or bones once in five days. In Petrograd the treatment of tuberculosis of the lungs of the first stage requires 8–10 seances, of the second stage 12–15, and of the third stage two series of 12–15 each, with an interval between of two or three months. In general I never give more than 15 seances at one stretch.

When the first stage of tuberculosis is treated in this way the temperature (which often rises a trifle after the first seances) falls to normal, coughing decreases, and the patient rapidly gains weight. Of the objective signs the harsh breath-sounds disappear, and the bronchial glands, which are usually swollen, are reduced. When the second stage is treated at first the disease becomes slightly worse. After this the details of recovery vary in different patients, but in the majority of cases, during the second half of the treatment the tubercle bacilli in the sputum decrease and finally disappear. The hæmorrhages cease, if there have been any, the sweats cease, and the patient gradually gains weight. The objective signs become worse at the beginning of the treatment; moist râles appear in abundance in the affected regions, and in places where auscultation has not revealed them before, and the only evidence of disease has been that revealed by X ray examination. After this the moist râles gradually decrease and completely disappear, giving place to symptoms of the ensuing cicatrisation of the tuberculous process.

The third stage responds to treatment like the second stage; its treatment is prolonged according to the size of the cavities present. Radiograms of the lungs taken before and after the seances have plainly showed their cicatrisation towards the end of the treatment. Thus the actual affection of the lungs with the tuberculous process is not in itself a contra-indication of the treatment by rontgenisation of the spleen. This treatment is only inapplicable in cases of extreme exhaustion, accompanied by a vigorous intoxicative affection of the blood-forming apparatus. Again, the treatment is unfavourably influenced by any change of the spleen pulp, for obvious reasons; for instance, patients who suffered from a lingering chronic malaria, with a large and firm spleen, do not react at all to the treatment.

Tuberculosis of kidneys and bladder.—Tuberculosis of the kidneys and bladder usually progresses very satisfactorily under the influence of only 15 seances of rontgenisation of the spleen. At first the tubercle bacilli and blood disappear from the urine, then the temperature, which had risen at the beginning of the treatment as in tuberculosis of the lungs, falls; the pains cease, and finally the urine is gradually cleared of leucocytes.

Tuberculosis of lymphatic glands.—Tuberculosis of the lymphatic glands is also quite successfully treated, usually in 15 seances. In cases where the tuberculous lymphadenitis has led to suppuration of the gland, the abscess is opened surgically, the suppurative secretion gradually diminishes, the infiltration disappears, and the fistula rapidly closes over with a soft cicatrice.

Tuberculosis of bones.—Tuberculosis of the bones also requires about 15 seances. In cases with fistulas the secretion at first increases, then, after 5–7 seances it gradually begins to diminish, the infiltration disappears, the pains cease, and the fistula closes over.

Tuberculous peritonitis.—This condition forms no exception in the general successful progress of this treatment of tuberculous processes.

Tuberculous meningitis.—Only acute tuberculous meningitis does not yield to this treatment. In one case I tried to supplement the treatment by intrathecal injections of autoserum from the blood of the patient, taken after rontgenisation of the spleen. But the injections were made too late. Perhaps, as in tetanus, the application of autoserum from the very first days of the disease will make even these cases yield to treatment.

In better climatic conditions the treatment of tuberculous patients progresses still quicker than in Petrograd. Thus, I had to treat two cases of tuberculosis of the lungs in Naples; the patients lived in Sorrento. The second stage was over after four seances; the first after two. The successful application of the method of treatment proposed by me to various forms of infectious diseases shows that its theoretical foundation is correct. Indeed, the constancy of the results of the application of rontgenisation of the spleen to different infections can only be explained on the theory that it brings in nothing new, but only strengthens the defensive mechanisms organised by Nature.

"It is in this way," as I said in one of my previous articles,[7] "that the organism can avail itself most extensively of the substances present in the leucocytes, for not only do we vigorously destroy the latter, but we also, through this destruction, stimulate the blood-forming organs to an increased production of new leucocytes which will go on breaking up in the blood," saturating the blood-plasm with specific anti-substances which are necessary for the struggle with bacteria and their poisons.

Even from this very concise exposition of the large supply of material at my disposal I think one may convince oneself that, in leucocytolysis, produced by radiating the spleen with a stimulating dose of Rontgen rays, we have acquired a sure method of governing the blood reaction of the organism. We can, therefore, at any moment give radical help to man struggling with various infections.

NOTES OF A
TYPHOID CARRIER CASE.*

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THE death occurred in 1914 of a woman who had long been known as a typhoid carrier and to have infected at least 10 persons who lodged with her. The case has been mentioned frequently by Dr. J. Niven, M.O.H., Manchester, in his annual reports to the Manchester Health Committee. A short record of her history may be of interest, as the case had been under observation for several years, and many samples of the excreta had been examined at the Public Health Laboratory of the University of Manchester. Moreover, the woman was under treatment for several weeks at Monsall Fever Hospital, and was again admitted there before her death from malignant disease of the stomach and pancreas, and Dr. Fletcher was able to make a post-mortem examination.

In the autumn of 1907 the attention of Dr. Niven was drawn to the connexion of Mrs. W. with cases of typhoid fever. Inspector Hewitt was instructed to inquire closely into her history, and he presented a report, of which the following is a summary:—

"Mrs. W., aged 54, had good health till 1895, when she had an illness said to be influenza, with headache, pains in back and limbs, delirium, and great sickness. She was for five weeks in a union hospital. Her health after this was good till 1898, since when she has had periodic attacks of great abdominal pain, with vomiting and blood-coloured urine."

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[7] La Semaine Médicale, 1913, p. 241.

* This report was prepared in the autumn of 1914, but on account of the war was not published.

Cases of typhoid continued to occur in Mrs. W.'s house, and there was barely a year without an infection. Her husband died in 1906, aged 64. He is stated to have had sickness and diarrhœa and an abscess on the side, but it was evidently not considered typhoid. In 1912 she was treated at home with salol and urotropin with a view to free the excreta from the typhoid bacillus, but without success. In January, 1913, she was admitted to Monsall Fever Hospital and treated with an autogenous typhoid vaccine prepared at the Public Health Laboratory. After several weeks' treatment examination of excreta at the hospital gave negative results, and she was discharged April, 1913. One month later the typhoid bacillus was again present in the fæces, but not in the urine, and another case of typhoid occurred in her house the same year.

The Manchester Health Committee then resolved to give her a pension on condition that she took no more lodgers. She began about this time to show signs of malignant disease, and died in Monsall Fever Hospital, May, 1914. The blood was tested on two occasions at the Public Health Laboratory for the Widal reaction; in November, 1907, it was negative, but a year later it was positive, and when patient was in Monsall Hospital, 1913, it was positive.

Table I. shows cases of typhoid which occurred in Mrs. W.'s house from 1898–1913.

TABLE I.

No.	Date.	Patient	Age.	Result of Widal test.	—
1	October, 1893.	W. D.	25	+	Death.
2	April, 1905.	A. B.	25	+	—
3	May, 1905.	H. R.	19	+	—
4	,, 1905.	A. W.	28	+	Death.
5	September, 1906.	A. A.	28	+	,,
6	,, 1907.	J. W. E.	19	—*	,,
7	,, 1908.	J. H. W.	36	+	—
8	,, 1910.	Servant.	14	+	—
9	,, 1912.	Young man.	—	—*	—
10†	,, 1913.	Male.	64	—*	—

—* No record of Widal test.
† After Mrs. W.'s return from Monsall Hospital.

For a satisfactory examination of the fæces for presence of the typhoid bacillus, &c., it is advisable to give the patient a sufficient amount of sulphate of soda to secure a good fluid evacuation. This is more likely to clear the upper part of the bowel, where the typhoid bacillus exists in greater numbers, and thus renders its detection easier. This method was introduced by Professor S. Delépine many years ago. On arrival at the laboratory successive dilutions are made of the fluid stool and surface cultures are made on litmus lactose agar culture set in Petri capsules. Sometimes the bacillus is found at once in large numbers, but if it cannot be found at the first attempt it is advisable to make several plates from the most suitable dilution. The small blue colonies (non-lactose fermenting) are picked out, subcultured and tested. The urine is centrifugalised and the sediment treated in the same way.

Post-Mortem Bacteriological Examination.

After Mrs. W.'s death at Monsall Fever Hospital, the spleen, liver, kidneys, and mesenteric glands were sent to the Public Health Laboratory for bacteriological examination. Cultures made from the liver, spleen, kidneys, and glands showed a large growth of the *B. coli* only, but it should be remarked that the organs arrived 48 hours after death. In the gall-bladder there was a fair-sized gall-stone of cylindrical shape; this was cut in half and cultures made from the interior. Numerous colonies of the typhoid bacillus was found, as well as a bacillus of the Gaertner group. The typhoid bacillus was also recovered from the bile, but with some difficulty, as it appeared to be growing in symbiosis with a Gaertner bacillus; one distinct colony contained both bacilli.

TABLE II.—*Summary of Examinations of Mrs. W.'s Excreta at the Public Health Laboratory.*

Date.	Specimen.	Result.	Remarks.
Nov. 12th, 1908.	Fæces.	+	Nearly pure growth.
	Urine.	+	—
Dec. 3rd, 1908.	Fæces.	+	—
	Urine.	—	Very scanty growth.
	,,	—	No growth.
Jan. 25th, 1909.	Fæces.	+	In very small numbers.
	Urine.	+	
April 4th, 1912.	Fæces.	+	Nearly pure growth.
	Urine.	+	Very numerous colonies.
Jan. 18th, 1913.	Fæces.	+	Nearly pure growth.
	Urine.	+	do. (vaccine prepared).
May 1st, 1913.	Fæces.	+	Found after repeated examination.
	Urine.	—	Bacillus resembling typhoid, but with no specific agglutination.
May 23rd, 1913.	Fæces.	+	Numerous.
	Urine.	—	—
April 3rd, 1914.	Fæces.	+	Numerous.
	Urine.	+	

Between Jan. 18th and May 1st, 1913, patient was in Monsall Hospital.

Some Further Notes from Various Sources.

A number of specimens of clothing, &c., were collected from Mrs. W., and were examined at the Public Health Laboratory by Dr. Sheila M. Ross, who has kindly given me permission to publish the results. The specimens were: washing from hands; scraping of nails; saliva; clothing—apron, blouse, chemise, drawers. No typhoid bacilli were obtained from any of these, though a bacillus was obtained from the underclothing which in some respects resembled the typhoid bacillus. The *B. coli* was obtained from the underclothing.

Dr. Barbara Cunningham (then assistant M.O.H. for Manchester) has kindly given me some further notes on the case. She says:—

> "Mrs. W. was a woman of clean and refined habits. She was distressed at being considered a source of infection, and gave us every assistance in the investigations. She was never found wearing soiled linen. She was usually constipated, and had periodic recourse to salts to secure an evacuation of the bowel. When at stool she was, owing to her rheumatism, unable to use sanitary paper, but made use of long strips of linen."

Notes from Monsall Hospital.—Dr. Fletcher, at that time medical superintendent, has kindly sent some notes on the case.

Mrs. W. was admitted to Monsall Hospital, Feb. 8th, 1913. The general condition was good and the spleen not palpable. The Widal reaction was positive; the typhoid bacillus was found in fæces and urine from Feb. 14th to April 2nd. An autogenous vaccine was given. The first dose was 100 millions, and it was gradually increased to 1000 millions; there was little or no reaction after inoculations. The only medicinal treatment adopted was helmitol gr. 10 t.d.s. from March 14th to April 12th.

After the beginning of the vaccine treatment bacteriological examination of the fæces and urine were made at the hospital with the following results:—

Date.	Fæces.	Urine.
March 3rd	—	+
April 1st	—	+
,, 3rd	—	—
,, 12th	—	—
,, 27th	—	—

The patient was discharged April 27th, 1913. On May 18th, 1914, the patient was readmitted in a very emaciated condition, with a history of hæmatemesis and incontinence of fæces and urine. She became rapidly worse and died on May 26th, 1914.

Post mortem.—A columnar-celled carcinoma was found involving the pancreas and cardiac end of stomach, with secondary deposits in mesenteric glands. The gall-bladder contained several calculi. On bacteriological examination the typhoid bacillus was found in the gall-bladder but not in the spleen.

Remarks.

Mrs. W. may be regarded as a typical example of a chronic carrier, as opposed to the temporary case, where the bacilli persist for a limited period only after the disease. It is not clear whether the bacilli were present continuously or intermittently. Though they were always found in the examinations here during a period of six years, yet the specimens were mainly sent after the infecting of the various lodgers.

One point of interest is the clear connexion of the gall-bladder with the condition: there were numerous attacks of cholecystitis and biliary colic, and it is possible that these attacks caused a fresh discharge of bacilli into the intestine, then at the post-mortem examination gall-stones were present and the typhoid bacillus was obtained from the bile and from the interior of a gall-stone. Typhoid bacilli were found in the bile as long ago as 1888; and in 1899 Droba was the first to isolate them from the interior of a gall-stone. Some years ago I examined a number of gall-stones in association with Dr. E. M. Brockbank, and in almost every instance a bacillus of the Gaertner group was obtained from the interior, usually in pure culture. It is probable that some bacterium is always the centre of the crystallisation of the gall-stone.

Dr. Fletcher makes no mention of any ulceration of the intestine, so we may accept the gall-bladder as the source of the bacilli found in the fæces; but what of their presence in the urine? Ledingham, in a long report to the Local Government Board,[2] states that in chronic typhoid carriers he never finds the bacilli in the urine of a male, and only occasionally in the female, and he believes it is always due to external contamination and is not found in a catheter specimen.

In the above recorded examination, while the bacillus was always present in the stools, it was found in the urine in 55 per cent. of specimens. In Monsall Hospital the bacillus was found in the urine on two occasions when it was not found in the fæces. My view is that although it may reach the bladder by external contamination it multiplies there, and is frequently present in enormous numbers. During the vaccine treatment, it appeared to persist longer in the urine than in the fæces. It will be noticed that the patient underwent treatment by various drugs, and had a full course of vaccine treatment at Monsall Hospital, an autogenous vaccine being used. The vaccine treatment appeared to be of temporary benefit, but within two months of leaving the hospital she had infected another lodger, and the bacillus was isolated from the fæces. Ledingham[1] states that the only permanent cures on record have been due to surgical treatment of the gall-bladder.

In this case the Widal reaction was negative at one time, but on two other occasions it was positive. Ledingham[1] finds in the numerous cases he has collected that the reaction was positive in about 70 per cent., but there is little evidence as to variation of the reaction.

As to the public health aspect of the case, it is evident there should be some compulsory powers to prevent a typhoid carrier from taking up any occupation in regard to preparing or serving food or drink of any kind.

My thanks are due to Professor Delépine for kind advice; to Dr. Niven and Dr. Cunningham, of the Manchester Health Office; Dr. Fletcher, of Monsall Hospital; and Dr. Ross, of this laboratory, for their kindness in permitting me to make use of their reports and notes.

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[2] L.G.B. Reports, 1908-9.

WELSH NATIONAL MEMORIAL.—The quarterly meetings of the National Memorial (Tuberculosis) Association, held at Shrewsbury on March 18th and 19th, were of unusual interest, in that the newly appointed chief medical officer, Professor Lyle Cummins, met the committees for the first time. The future medical work of the association, which controls over 1000 beds in 18 institutions, in addition to tuberculosis dispensaries, was carefully considered and planned, and the way in which it will be coördinated with organised research set on foot by the Medical Research Council was explained. Both the medical staff and the medical committee felt that the future of the work had better prospects ahead than has been the case since the war interfered with progress. Various appointments were announced, including that of Sir Robert Philip as honorary consulting physician, Mr. W. Thelwall Thomas as consulting surgeon, and Sir Henry Gauvain and Major Alwyn Smith as consulting physicians.

VASCULAR CHANGE DURING UTERINE INVOLUTION:

A STUDY OF THE CONDITION OF THE ARTERIES IN A UTERUS REMOVED 24 DAYS AFTER DELIVERY.[1]

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DURING the past 70 years many observers have made a close study of the histological changes that occur in the uterine vessels in the course of normal involution of the uterus after labour. It would seem that after so much inquiry there can hardly be any aspect of the subject in dispute or new observation to be made. In recent years a very complete research into this subject has been carried out by Dr. James Goodall, and both on account of its intrinsic merit and the fact of its being quoted at length in Eden and Lockyer's "New System of Gynæcology" it may be accepted as the standard work on the vascular changes that take place in uterine involution. The present communication deals with a single aspect of this subject—namely, the presence or absence of fatty degeneration in the muscle fibres of the arteries of the uterus undergoing involution.

The majority of past observers have found that fatty degeneration does occur both in the muscle fibres of the uterus and the muscle fibres of its vessels. In fact, there is no need to make any distinction in dealing with this subject between the muscle fibres in the two tissues, because there is no record of fatty degeneration occurring in the one group of muscle fibres while absent at the same time in the other group; the converse also holds good. Some have noted the appearance of fatty degeneration at an earlier stage in the puerperium than have others, but there has been little difference of opinion as to the fact of its occurrence. Goodall agrees with the majority of past observers and notes the presence of fatty degeneration in the muscle fibres of the uterus and arteries of the uterus, and states that "the muscle cells of the parent media undergo fatty degeneration at an early stage in the process of involution."

Description of the Case.

Dr. H. Williamson has kindly given me the opportunity of preparing specimens from a uterus removed at operation 24 days after delivery of a dead fœtus.

The case was that of a patient, aged 41, admitted to St. Bartholomew's Hospital under Dr. Williamson on Sept. 6th, 1919, on account of bleeding from the uterus and 25 weeks gravid. She was found to have a carcinoma of the cervix which extended up to, but did not involve, the posterior vaginal wall. The patient had had eight children, with straightforward labours and no miscarriages. The menstrual history was normal. The present pregnancy was normal until the onset of bleeding in April. On Sept. 17th, under general anæsthesia, the membranes were ruptured and abortion induced. At 2 A.M. on the 20th—that is, in the twenty-seventh week of the pregnancy—abortion took place. The fœtus was born dead, but not macerated. On Oct. 14th, 24 days after the delivery of the dead fœtus, Wertheim's hysterectomy was performed and the uterus removed.

The organ was placed in formol-saline, and at a later date parts of it were removed for section. The separate parts were embedded in gelatin according to Dr. J. F. Gaskell's method and cut frozen. Sections were stained in Sudan III. and acid hæmalum, others in Van Gieson and acid hæmalum, and others in Weigert's elastica and eosin. The advantages of the gelatin method of embedding are that the tissue is not raised to a higher temperature than 37° C., and is not brought into contact with xylol; as a result the cells retain their normal form more nearly, and any fat present is not dissolved out of the tissues.

The sections thus prepared show the usual changes in the vessel walls characteristic of normal arterial involution. The most striking changes occur in the intima; there is a cellular proliferation and hyaline swelling of the subendothelial layer, together with a swelling and splitting of the internal elastic lamina. In the media there is the appearance of a granular atrophy of the muscle fibres and a hyaline swelling of the intermuscular connective-tissue fibrils.

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[1] A paper read at the Section of Obstetrics and Gynæcology of the Royal Society of Medicine on March 3rd, 1921.

Remarks.

The picture has been often described and does not require detailed notice; in fact, the only point to which I would draw attention is the absence of any sign of fatty degeneration either in the medial coats of the vessels or in the muscle fibres of the uterus. The histological picture of the vessels in this specimen are in all respects comparable to the changes seen in the involution of the hypogastric and umbilical vessels after birth. I have examined many specimens of these vessels up to two years after birth and have not observed fatty degeneration occurring in the media in any vessel. Neither does fatty degeneration occur in the involution of arteries after ligature or thrombosis, nor in the normal involution of the ductus arteriosus; in fact, so far as I am aware fatty degeneration is not a normal feature of arterial involution. It would appear that it is only in uterine involution that fatty degeneration occurs in vessels undergoing this physiological change. The absence of fatty degeneration in my specimen is therefore in accord with the general observations on the changes that take place in arterial involution, and it further establishes the fact that fatty degeneration need not of necessity occur in uterine involution.

The presence or absence of fatty degeneration in uterine involution is a matter of importance to a proper understanding of the processes involved in the varied arterial lesions described under the term of "arteriosclerosis." Thus Thoma maintained that slowing of the blood stream was a dominant factor in the production of arteriosclerosis, and he based his theory largely on the change occurring in the iliac and hypogastric arteries of newly born infants. Thoma's theory of arteriosclerosis is chiefly concerned with the process of involution. The weightiest single piece of evidence against this hypothesis is the characteristic presence of fatty degeneration in the histological picture of arteriosclerosis and its absence in normal involution. But this distinction will fail if it is established beyond doubt that fatty degeneration occurs in the media of arteries undergoing involution in the puerperal uterus. I do not feel that it is expanding the subject too far in applying the observations on arterial changes in uterine involution to the wider subject of arteriosclerosis, because Goodall follows his observations to the same goal, and in discussing their bearing on arteriosclerosis he concludes by stating that his work seems to prove that both Jores and Thoma are right in their views as to the nature of the processes underlying the production of arteriosclerosis.

A Critical Examination of Current Views.

It is difficult to dismiss the work of past observers who have found that fatty degeneration always occurs in uterine involution, and at the same time in their writings there is not, in general, sufficient detailed information given to allow of adequate criticism of their material or methods. As regards my own specimen it may be objected at once that the pregnancy had not gone to full term and that the organ was in a condition of subinvolution. This criticism is fair, and one of my objects in bringing this matter forward is the hope that it may lead to my having better material to examine on a future occasion. The criticism, however, loses some force in that fatty degeneration is absent in my specimen: had it been present it might have been ascribed to subinvolution, but subinvolution cannot account for its absence. In the second place the criticism fails to an extent because the material of those who have found fatty degeneration in the muscle fibres of involuting uteri is also abnormal. I have not read any account of arterial changes in human uterine involution which avoid this criticism.

It would take too long to justify this statement in detail, but to illustrate my meaning I will take Dr. Goodall's research. It is based on the examination of 80 uteri, but the observations on the subject of the changes that occur in the puerperal uterus are based on only six cases. Goodall states that five of these showed subinvolution; in the sixth there was a morbid lesion, which one would expect to interfere with the process of normal involution.

It is a mistake to regard Goodall's observations as a record of the changes that occur in normal uterine involution, for he states on p. 61 of his monograph that "all the chronic inflammatory diseases, blood dyscrasias, ... and possibly malignant growths modify the normal complete involution." As there is no doubt as to the truth of this statement it is fair to assume that any unexpected histological features presented by uteri taken from cases in which any of these conditions were present are capable of explanation in terms of a pathological process rather than in terms of the physiological process involution. Further, in the six cases on which Goodall based his observations the cause of death was in all cases due to a disease which might in itself have caused both vascular disease and fatty degeneration in muscle fibres. Thus Case 1 died of "eclampsia, associated with, or caused by, a very grave chronic parenchymatous nephritis." Case 2 died of "syphilitic arteritis of the brain." Case 3 died of "septicæmia, secondary to an abscess of the breast with subinvolution." Cases 4 and 5 died of tuberculosis of the lungs, while Case 6 died of "acute yellow atrophy of the liver, chronic parenchymatous nephritis, and broncho-phthisis incipiens." An interesting comment is made on this case, for the author writes: "Hence it is seen why Case 6, who had had chronic Bright's disease, followed by acute yellow atrophy of the liver, should present such intense degree of incomplete oxidation of tissue," and in another paragraph that "such cases must be looked upon as abnormal." It is obvious that the author recognised his material as being pathological, and he cannot be blamed for his work being mistaken for an account of the changes that occur in normal involution. When a condition of suboxidation exists fatty degeneration may be expected to occur, and therefore before it is established that fatty degeneration is a part of the normal process of uterine involution it must be found to occur in a uterus taken from a healthy subject. Further, as regards the presence of fatty degeneration in the media of the vessels, it must be proved that the other vessels in the body are normal in order to exclude the possibility of the local vascular fatty degeneration being part of a diffuse vascular disease. This last condition will be fulfilled, in my opinion, if the intimate vasculature of the spleen and kidney are found to be normal, because I have found that diffuse vascular disease tends to have its chief incidence on these two organs.

Conclusion.

It must necessarily be difficult to obtain material from the human subject which will satisfy these conditions, and in the meantime we must rely on observations made on uterine involution as it occurs in animals.

Such observations have been made on rabbits.

Broers found that fatty degeneration occurred in the muscle fibres of the uterus between the third and thirtieth day of the puerperium; no reference was made to its presence or absence in the media of the vessels. Helme made similar observations on 10 rabbits, and since his work was primarily directed to this question it is of particular importance. He thus states the object of his research: "The prime question that presents itself is: Does a degeneration of muscle cells occur?" His answer is: "I have been unable to find a single muscle cell whose substance gave the characteristic appearances and reactions of fat," and later he speaks of the occurrence of a gradual diminution of the volume of the muscle cells of the media, "just as in the muscle cells of the uterine wall."

Too close a parallel cannot be drawn between the changes that occur in uterine involution in animals and those that occur in the human subject. There is also a conflict of observation. I think, however, that the conclusion is justified that the question of the presence or absence of fatty degeneration in the media of the vessels in the puerperal uterus is not as yet definitely settled.

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Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

TWO CASES OF PERINEPHRIC ABSCESS.

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With a Note by

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THE following two cases of perinephric abscess, admitted under the care of Dr. Wilfred Harris (to whose courtesy I am indebted for permission to publish these notes) at St. Mary's Hospital, Paddington, and operated on within 24 hours of each other, present certain features of interest:—

CASE 1.—A. M., male, aged 41, admitted Jan. 8th. Sent by a doctor who wrote that he had first seen patient on Dec. 14th, 1920. At that time patient complained of great pain in left lumbar region radiating forwards towards the left groin. Temp. 103° F. This condition continued on and off till Dec. 28th, when pain shifted upwards over base of left lung, where signs of pleurisy were noticed, and on Jan. 4th on exploration, a hæmorrhagic fluid was withdrawn. On the 6th a painful tender swelling appeared in the left lumbar region. Temp. 101°. Family history of T.B. On admission a further history was elicited of a boil in the neck which began during the last week in November, 1920. This was incised and drained, and as it cleared up early in December the patient first noticed a gnawing pain in left lumbar region which gradually became acute; on Dec. 14th he took to his bed.

Condition on admission.—Patient appeared wasted, toxic, and very weak; T. 102·4°, P. 120, R. 26, and very shallow. Signs of pleural effusion over left side reaching to axilla. The urine contained no pus or blood, and only a slight trace of albumin. A diagnosis of perinephric abscess with accompanying pleural effusion was made, and on Jan. 9th Mr. C. W. G. Bryan operated under local anæsthesia (novocaine), the patient's condition not warranting a general anæsthetic. He first removed by aspiration about 2 pints of hæmorrhagic fluid from the pleura, and then making an incision over the site of the abscess evacuated about 1½ pints of pus. A drainage-tube was inserted for four days, when the wound was allowed to heal. Temp. dropped to normal, and patient made an uninterrupted recovery with no further chest symptoms.

Pathological report.—(1) Pus: Direct film, many Gram-positive cocci, polymorphs and lymphocytes. Cultures: Many staphylococcus colonies. (2) Pleuritic fluid: Many cells, lymphocytes rather more numerous than polymorphs, no organisms seen. Cultures; No organisms grown. No T.B. found in either specimen.

CASE 2.—T. H., male, aged 50. Admitted Nov. 20th, 1920, for "gastritis" and wasting. He gave a history of boils in the anal region recurring from May till the end of August, 1920, when he had "influenza" with much vomiting followed by pneumonia and "gastritis." He was confined to bed, became much thinner, and continued to run a temperature until his admission to hospital. On admission he was obviously much wasted, seemed listless, T. 99·8°, P. 120, R. 26. Heart not enlarged, no murmurs audible. Other systems normal. Patient very constipated, carious teeth and pyorrhœa present. On Nov. 27th cultures of *Staphylococcus albus* were grown both from blood and urine. A blood count (Nov. 29th) showed: r.b.c., 4,000,000; Hb, 54 per cent.; colour index, 0·6; w.b.c., 24,000; polymorphs, 64 per cent.; small lymphocytes, 32·5 per cent.; large lymphocytes, 2·5 per cent.; large hyalines, 1 per cent.

The patient was treated with an autogenous vaccine without benefit, nor did improvement result from extraction of all his teeth. Temperature was of a septic type, fluctuating between 97·5° and 102·4°. Pulse-rate 100 to 120. Constipation remained obstinate from admission until Dec. 22nd, when an attack of diarrhœa supervened, lasting eight days. On Jan. 10th, for the first time, a small, fluctuant, painless swelling the size of a Tangerine orange was noticed in the right lumbar region about four inches to the right of the spine. This was only slightly tender on deep palpation. A blood count now showed: r.b.c., 4,000,000; Hb, 38 per cent.; colour index, 0·45; w.b.c., 16,000; polymorphs, 79 per cent.; small lymphocytes, 17 per cent.; large lymphocytes, 1 per cent.; large hyalines, 3 per cent. A perinephric abscess was diagnosed. The patient was operated on by Mr. C. A. Pannett and about a pint of pus evacuated. Temp. dropped to normal, drainage-tube was removed on the twelfth day, and patient was discharged from hospital Feb. 3rd.

Pathological report.—The pus removed from the perinephric abscess contained polynuclear cells and masses of Gram-positive cocci, presumably staphylococci. Cultures on blood-agar plates gave pure culture of a *Staphylococcus albus*.

Note by DR. WILFRED HARRIS.

The coincidence of two cases with perinephric abscesses, secondary to boils, being met with so close together is unusual. Case 1 was admitted and operated on as an urgency after my house physician had made the diagnosis of perinephric abscess without my having seen it. Case 2 had been a puzzle to us for weeks. The patient was evidently suffering from septicæmia, and gave a blood culture of *Staphylococcus albus*, but I had examined the patient carefully for signs of suppuration on more than one occasion, nothing more blameworthy than pyorrhœa and carious teeth being found. Ulcerative endocarditis was considered as a possible explanation, though no bruit ever appeared. The man gradually wasted and weakened, and undoubtedly would have died had it not been that Miss Wilberforce in this case also discovered a swelling over the right loin.

A NOTE ON
HERPES ZOSTER AND VARICELLA.

BY JAMES WATT, M.A., M.D. ABERD., D.P.H.,
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IN view of the controversy regarding the ætiological connexion of herpes zoster and chicken-pox, every case likely to afford any evidence of value ought to be reported.

P. R. M., male, aged 39, was admitted to the Downs Sanatorium on July 12th suffering from pulmonary tuberculosis, affecting both lungs, mainly the left, and complicated with chronic bronchitis. Tubercle bacilli were present in sputum. Temperature was normal till the 26th. On that and the two following days the morning temperature rose to 98·0° and 98·2° F., and evening to 99·2° and 99·4°. On July 29th, 30th, and 31st the level rose to 98·6° to 99° in the morning and 99·4° to 100·2° in the evening. Pulse-rate ranged between 80 and 92. On the 25th and following days patient complained of severe pain in left side and back, and on the 29th a typical herpes zoster appeared on the left side, the eruption being confluent and covering the left scapula below its spine, extending half an inch beyond its inner border. The following day another group of vesicles covering an area as large as a penny appeared in the middle of the left axilla, and a third area extended from outside the left nipple along the fourth and fifth interspaces below it. On August 1st a papular eruption appeared with the distribution of a small-pox rash, and the evening temperature rose to 101·4° F. The papules were profuse on the forehead and the rest of the face, scattered on the trunk, and sparse on the upper and lower limbs. On the 2nd many were vesicular and of diverse shape and size. Chicken-pox was diagnosed, and confirmed by Dr. W. Habgood, medical officer of health for Sutton, and later by Dr. F. M. Turner, of the South-Eastern Fever Hospital, to which the patient was transferred on August 2nd.

The sequel, however, raised a doubt. Dr. Turner has kindly sent the following further notes:—

On admission this man had obvious herpes zoster. The lesions were of very unusual size, but otherwise typical. In addition to the herpes lesions he showed numerous small pustules and scabs scattered over face, trunk, and limbs, suggestive of chicken-pox, and of no obvious distribution or arrangement. On August 17th he had a fresh outbreak of herpes along the third and fourth left intercostal spaces, the anterior axillary fold, and down the inner side of the left arm, with severe pain in all these regions. There were some herpetiform spots, also painful, on the right side of the chest between the anterior and posterior axillary lines. On the 20th there were herpetiform lesions over both sides of the chest, a few on the abdomen and on both upper arms. There was still considerable pain. Temperature did not exceed 99° F. Gradual subsidence then followed. In view of the distribution of the second rash, which at first simulated herpes zoster, but later was anomalous both for herpes and for chicken-pox, and in view of the rarity of relapse of chicken-pox, I began to doubt the evidence of chicken-pox in the first attack.

This man had been vaccinated in infancy, and when 9 years of age had been sent to hospital for small-pox. As he was sent home again within a fortnight, it probably turned out to be chicken-pox. Neither he nor any of his family had previously had herpes, nor had any of his six children had chicken-pox.

ROYAL MEDICAL BENEVOLENT FUND GUILD: BRISTOL BRANCH.—At a meeting held in the Council Chamber of the University, presided over by the Lord Mayor of Bristol, Mrs. Lauriston Shaw gave an interesting account of the work of the guild, chiefly on behalf of needy dependents of deceased medical men, work which is supplementary to that of the fund itself. She laid particular stress on the valuable assistance to the education of children of medical men, which the guild has been able to furnish, and made a number of suggestions as to methods of collecting funds. The meeting, which was well attended, was also addressed by the Lord Bishop of Bristol, the Master of the Society of Merchant Venturers, and Mrs. Hugh Stack, the secretary of the Bristol branch of the guild, a branch which is the fifth largest in the country, with 112 members.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF MEDICINE.

A MEETING of this section of the Royal Society of Medicine was held on March 22nd, Dr. A. F. VOELCKER, the President, being in the chair.

Dr. F. PARKES WEBER read a paper on

THROMBOSIS OF THE INFERIOR VENA CAVA,

in which he described the case of a patient who had been under his care with this condition plus thrombosis of both renal veins.

The patient was a man, aged 40, who had been admitted to hospital under the care of Dr. M. L. Schroeter in September, 1920. In the spring of 1919 he had suffered from a septic wound of the right hand. This was followed by an attack of thrombo-phlebitis in the left lower extremity, and at the same time a gradually increasing hydrocele on the left side was first observed probably (as was later seen) connected with venous obstruction from thrombo-phlebitis of the left pampiniform plexus. The right testis was undescended but could be palpated as a mass about as big as a large walnut on the right side of the lower front of the abdomen. The man had had gonorrhœa but never syphilis, and his Wassermann reaction had been found to be negative on three occasions. The urine was of rather low specific gravity, and contained a trace of albumin; no sugar. Otherwise nothing special was found on ordinary examination.

The hydrocele was operated upon at the end of the month. About two weeks later thrombo-phlebitis in the right internal saphenous vein was observed and was accompanied by slight pyrexia. Sodium citrate, 15 gr. three times daily, was prescribed and continued for three to four weeks and a diet containing sufficient green vegetables and fruit. The fever lasted about ten days. About a month later the superficial veins on the front of the abdomen were markedly dilated, more especially on the left side, and the circulation in them was from below upwards. There was slight œdema of the lower extremities. After about a fortnight there was thrombo-phlebitis in one of the superficial veins on the left front of the abdomen and a little temporary fever.

Early in December the patient was transferred to the medical side of the hospital under the care of Dr. Weber. For three days he had been passing very little urine. There was no definite ascites, but the abdomen was rather full (? venous engorgement). The daily quantity of urine was 200 c.cm., the specific gravity was 1012, acid, free from sugar, and practically free from albumin. The brachial systolic blood pressure was = 165 mm. Hg. There was considerable pain in the lumbo-sacral region for a week and much headache for a fortnight. For three days there was apparently anuria, which seemed clearly due to thrombotic obstruction in both renal veins. He was given two injections of urea (2 g. and 4·2 g.) subcutaneously on consecutive days and treated by hot hip baths for five days. The amount of urine passed increased gradually, was of low specific gravity, and contained a little albumin. There was occasionally a little vomiting and one short epileptiform attack.

About the middle of December the superficial veins of the collateral venous circulation on the trunk were becoming much more dilated. There was dullness to percussion at the base of the right lung, apparently due to pleural effusion, and afterwards a little dullness at the base of the left lung also. Ophthalmoscopic examination by Dr. C. Markus showed nothing definitely wrong in either fundus. The superficial veins over the back of the trunk became collaterally dilated as well as those on the front. At the present time the patient's condition was much as at the end of January. There had been three transitory epileptiform attacks, evidently not of uræmic origin. He was passing about 1450 c.cm. urine in the six hours, the specific gravity was about 1015, and there was a "cloud" of albumin and a few tube casts. There was still slight dullness at the base of both lungs behind.

In discussing the condition Dr. Weber said that, apart from thrombotic obstruction of the inferior vena cava connected with malignant tumour, thrombo-phlebitis might follow traumatism, some infection—such as typhoid fever, varicella, erysipelas, or, as in this case, a septic wound. In such cases the patient might recover and live for a long time, but not very much was known as to the exact subsequent history and the average duration of life. Sooner or later a special liability probably developed to attacks of thrombo-phlebitis in the enlarged (varicose) veins.

In 1907 he had seen a man, aged 26 years, whose inferior vena cava had become thrombosed seven years previously as a sequel to typhoid fever. The thrombosis was associated with the usual œdema of the legs and compensatory enlargement of superficial veins, which had reached their maximum six weeks after the first signs of thrombosis. Since then the man had had three attacks of thrombosis in the left lower extremity and had had varicose ulcers and pigmentation of the legs. Dr. Weber had heard that his condition in 1912 was much the same as in 1907.

Dr. J. L. Bunch had recorded a case of traumatic thrombosis of the inferior vena cava in a man aged 33, who, three years previously, after exertion in running, suffered from œdema of the legs, and developed collateral enlargement of the superficial veins of the abdomen and groin.[1]

In 1903 Dr. Weber examined an active, fairly muscular, energetic man, aged 28½ years, for life assurance, in whom the superficial veins of the lower extremities and lower part of the trunk were greatly enlarged, doubtless resulting from traumatic thrombosis of the inferior vena cava. About five years previously, after a carriage accident, his lower limbs had become swollen, and the superficial veins of these limbs and of the lower part of the trunk began to enlarge. He had been kept in bed for five months. He was otherwise in good health, and his urine was free from albumin. His life was accepted for a whole-life policy, with 10 years extra, and in 1917 Dr. Weber ascertained that the insurance was still in force and the man was about to pay his last premium.

Dr. Weber then gave a short account of the case of the late Dr. W. Rivers Pollock, who suffered from thrombosis of the inferior vena cava at the age of about 24 years.

The whole history was published by Professor S. G. Shattock, because the patient himself had bequeathed the affected parts of his body for dissection to the Royal College of Surgeons. When the thrombosis occurred (1884) he was in perfect health and won the 120 yards hurdle race for Cambridge University against Oxford in the record time of 16 seconds, holding his breath through the whole race. Immediately after the race was over he lay on the grass, and within a few seconds complained of pain in the lumbar spinal region. He was kept in bed for six months. The œdema of his legs and lower part of the trunk which at once supervened was followed in a few days by progressive enlargement of the superficial veins. Albuminuria, which likewise appeared after the injury, persisted throughout his life. Death occurred 25 years later from tonsillitis and septicæmia. During the last six years of his life he had been subject to attacks of thrombo-phlebitis in the enlarged saphenous veins. Professor Shattock found that the inferior vena cava was converted into a flat impervious ribbon from the point of entry of the hepatic vein downwards; both right and left renal veins were closed at their entrance to the vena cava, so that the return of blood from the kidneys must have taken place through the veins of the capsules and thence by way of the lumbar veins through the azygos vessels. Professor Shattock argued that the thrombosis was probably secondary to the rupture of the inner coat of the vena cava caused by the violent strain of the race with the holding of the breath; he compared the venous condition in question (for which he suggested the name "dissecting varix") to the arterial condition known as "dissecting aneurysm" when, owing to some violent strain or previous disease, a rupture of the inner coat of the aorta had occurred.

The paper was discussed shortly by Sir HUMPHRY ROLLESTON.

A TUBERCULOSIS IMMUNISING VACCINE.

Dr. NATHAN RAW read a paper on this subject. He said that in spite of an enormous amount of research we had not yet obtained a specific remedy which would effectively destroy tubercle bacilli in the body. Therefore we had to rely on producing a sufficient immunity in the tissues to resist the attack of virulent tubercle bacilli. This immunity could be obtained (1) by increasing the natural resistance by means of increased nutrition and sound hygienic conditions, and (2) by producing an artificial active immunity in the tissues. At the annual meeting of the British Medical Association in 1903 he had expressed the opinion[2] that human and bovine tuberculosis were separate and distinct infections, producing a different set of symptoms in the human body. The lesions caused by the human bacillus (direct infection) were pulmonary tuberculosis, tuberculous laryngitis, secondary intestinal ulceration, and, in some cases, lupus. The lesions caused by the bovine bacillus, which were generally caused by infected milk in the early years of life, were tuberculous glands, mesenteric tuberculosis, surgical tuberculosis, bones and joints, &c. (frequently), tuberculous meningitis, and some cases of lupus. Dr. Raw said that not only did he still hold to this classification and differentiation, but he firmly believed that one form of tuberculosis conferred an immunity in the body to the other form—in fact, that the two varieties of bacilli would not exist together in the body at the same time.

After treating over 2000 cases of tuberculosis in hospital with Koch's tuberculins, prepared from virulent cultures, he had come to the conclusion that, although a certain amount of success was obtained, the results were not, on the whole, satisfactory. The uncertain action of the tuberculin and the alarming reactions sometimes produced were very disconcerting, and there was no doubt that in certain cases quiescent tubercle was stirred to acute activity. For this reason he came to the conclusion that it was essential to use cultures of very low virulence and to avoid, if possible, general febrile reactions. The only certain way of permanently attenuating virulent cultures of tubercle bacilli was long-continued and systematic subculturing spread over a number of years. In 1906 Professor Koch had given him a pure culture on glycerine agar of human bacilli from the sputum of an advanced case of pulmonary tuberculosis. Professor Calmette had supplied him with a pure culture of bovine tubercle bacilli from the mesenteric glands of a cow, and Professor Bang, of Copenhagen, a pure culture of avian bacilli from the liver of a chick. These cultures had been subcultured on glycerine potato and then transferred to glycerine agar every month for 14 years in his laboratory, the present growths representing the 184th, generation. The growths were still profuse and true to type, but were quite non-tuberculigenic and non-pathogenic to animals. Every year since 1906 he had injected these bacilli into animals, and until 1912 had noticed no change in their virulence, i.e., to the 94th generation of subcultures. Afterwards attenuation became marked, and by a series of animal inoculations in 1913 and 1914 they were observed to be avirulent. During the war he took the cultures to France and continued the investigation there for four years, inoculating hares, rabbits, and guinea-pigs in 1916 and 1917. The cultures were in all cases non-pathogenic. In 1919 he inoculated more animals at the Lister Institute with large doses, but no infection was conveyed, and the animals remained alive and well for four months. These experiments, extending over 14 years, proved that virulent tubercle bacilli could be attenuated to such a degree as to be avirulent and non-pathogenic to highly susceptible animals, and showed, in his opinion, that we had a remedy against tuberculosis which would be of the greatest value, not only in the cure of the disease but in its prevention. Natural attenuation, while removing the virulence and toxicity of the organism, enhanced the value of the vaccine in treatment. In small-pox the immunity derived from inoculation of the virus of vaccinia was considerably greater than that which resulted from an attack of variola, because the defensive elements of the body had not been weakened in overcoming the virulence of the toxin. The treatment of disease by vaccines prepared from organisms attenuated naturally meant that the production of antibodies would take place rapidly without the preliminary shock which invariably followed the injection of a vaccine prepared from a virulent strain. Hitherto it had not been possible to test this in tuberculosis owing to the length of time necessary to produce a non-pathogenic strain of the bacillus.

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[1] Proc. R.S.M., Sect. of Path., 1913, vi., p. 126.

THE LANCET, 1903, ii., 473.

His work on animals had shown that immunity against infection was produced by injection of attenuated bacilli; and it was reasonable to suppose that the same would hold good in the human. Cattle could be rendered immune to virulent bovine bacilli by previous inoculation with virulent human bacilli, and he was convinced that there was a marked antagonism in the human body between human and bovine infections; these two organisms could not flourish in the body at the same time. A child who developed a primary abdominal tuberculosis with involvement of the mesenteric glands or an infection of the neck glands, which were usually caused by the bovine bacillus, was immune to the human bacillus, and young adults attacked by the human bacillus, producing primary pulmonary tuberculosis, were similarly immune to bovine infections for the rest of life. The differentiation between human and bovine infections in the body was not sufficiently accurate to be decisive. There were atypical strains of bacilli which could not be classed with certainty, and the varying virulence of these bacilli and their effects on susceptible animals were still a matter of some uncertainty in a fair number of cases. With a view to determining whether the disease caused by the human bacillus was antagonistic to that caused by the bovine bacillus and vice versa, he had instituted a clinical observation on a large scale in a Liverpool hospital of 900 beds, of which he had sole charge for 18 years. During that time he had had the opportunity of treating over 10,400 persons suffering from tuberculosis in all its forms. There were 200 beds for tuberculosis, half for primary pulmonary tuberculosis and half for surgical tuberculosis—glands, bones, joints, and lupus. During this period there were 4800 cases of phthisis and 1820 cases of surgical tuberculosis. In no case of primary pulmonary tuberculosis were any of the following lesions developed during the course of the illness: tuberculosis of bones, glands, skin, or tuberculous meningitis. Several cases developed brain symptoms during the last stages of the disease, but they were due to insanity, toxæmia, or exhaustion, and in cases with meningeal symptoms, those examined post mortem were found to be of pneumococcal meningitis. Amongst the surgical cases 28 developed lung symptoms, and were examined by laboratory methods and animal inoculation. Of these, 25 died and were carefully examined post mortem. In all cases the infection in the lung was either by direct extension from cervical glands to the apex of the lung, or from a primary focus in the abdomen through the diaphragm to the bronchial glands and lungs. This clinical experiment convinced him that the human body was attacked by two quite distinct forms of tuberculosis, one conveyed from person to person by direct infection and attacking chiefly the lungs, or so-called consumption, the other conveyed by milk from tuberculous cows and developed in the first few years of life. These two diseases were caused by different types of tubercle bacilli which would not live in the body at the same time, and one disease produced immunity to the other. For this reason he always used a vaccine prepared from bovine cultures in the treatment of the human infections and vice versa. Most cases of tuberculosis were of low virulence and, given suitable conditions, were favourable for treatment, but in some cases the virulence was so high as to destroy the person in a few weeks or months, and these were the cases popularly known as "galloping" consumption. He thought that the virulence of the tubercle bacillus in this country was less than it was 30 years ago; the number of deaths from tuberculosis in 1920 in England and Wales was 12,000 less than in 1919. A large percentage of the population were immunised to some extent against further and more severe infection by having had a mild infection of tubercle, and if we could induce some immunity by artificial means in children whose parents were tuberculous, and who, by constant association with them, were liable to infection, we should have gone a long way towards stamping out tuberculosis.

The vaccine which he had prepared from these attenuated cultures was a bacillary emulsion of the bacilli, and contained all the products of the bacillus. It was non-toxic and avirulent, and produced no reaction, even in large doses. For purposes of immunisation of susceptible children six injections were given at weekly intervals, and repeated in three months. The doses recommended were 0·001, 0·002, 0·003, 0·004, 0·005, and 0·006 mg. No symptoms whatever had been observed to follow these injections. In the treatment of the active disease the doses used were much larger than had been possible hitherto; and the treatment should consist of at least 12 injections given in increasing doses at intervals of seven days. The doses commenced at 0·0001 and increased to a maximum dose of 0·025 mg. The vaccine should be freshly prepared from the cultures and should not be used after one month. The vaccine could be used with complete safety in any stage of the disease, and even in advanced cases he had observed great relief from night sweats, toxic symptoms, and erratic temperatures. The results in suitable cases were excellent, but it would require at least two years accurately to gauge the effect of the vaccine for purposes of immunisation.

Discussion.

Sir JAMES KINGSTON FOWLER said that he agreed with Dr. Raw in regarding scrofula and tuberculosis as essentially different. He had been led to this conclusion by having to estimate the degree of increased liability to tuberculosis of those with cervical scars dating from early life. He had rarely seen cases of pulmonary tuberculosis in which there were neck scars. That some kind of immunity to pulmonary tuberculosis was conveyed by the other form acquired in early life might be one explanation. Dr. Marcus Paterson had told him that he had examined some hundreds of cases of pulmonary tuberculosis at the hospital to which he was attached, and only a very small proportion of the patients had evidence of having had glandular tuberculosis in early life. He had never seen a case of pulmonary tuberculosis in which he was convinced that tuberculin had done any good, but this did not invalidate what Dr. Raw had advocated. He thought that the evidence pointed to pulmonary and glandular tuberculosis being different infections. Eighty-five per cent. of cases of glandular tuberculosis were bovine, and all, or nearly all, cases of pulmonary tuberculosis were caused by the human bacillus.

Dr. **Weber** said that the therapeutic use of tuberculin had now been almost given up all over the world, even in the country from which it had originated. Tuberculin, unfortunately, did not really produce immunity to tuberculosis (that is to say, to tubercle bacilli), though it could produce immunity to tuberculin. Granting that what Sir James Kingston Fowler had said was true (as he thought future statistics would ultimately prove it to be)—namely, that persons with "scrofulous" scars from infection with bovine tubercle bacilli in childhood were comparatively immune to grave pulmonary tuberculosis (from human tubercle bacilli), he did not take a quite hopeful view, from the therapeutic standpoint, as to the probable results of Dr. Raw's method of treatment. There was a great difference between persons who had been attacked by bovine tuberculosis as children and those injected with Dr. Raw's vaccines. In the former case the patients had been inoculated, and actually infected, with *virulent* bovine tubercle bacilli over a long period, and even they were not quite invariably protected from death by subsequent tuberculosis of the lung (human tubercle bacilli). What, then, might the result be of injections of Dr. Raw's bacilli, which had altogether lost any virulence? He (Dr. Weber) thought that the immunity produced even by actual inoculation with Dr. Raw's *living* cultures of non-virulent tubercle bacilli would probably last only a very short time. Much more proof to the contrary was needed.

Dr. W. **Camac Wilkinson** said that the only way to prove the incidence of bovine and human tuberculosis was to take a long series (300–400) of post-mortem cases and work out from the tuberculous lesions the existence of one or other or both varieties of bacillus. The two varieties could exist in the same individual in his opinion. Gaffky had found that in 300 consecutive post-mortem examinations on children there were 57 cases of fatal tuberculosis, and in 55 out of the 57 the tubercle bacilli were of the human type. In a further series of 100 consecutive post-mortem examinations on children who had died in a general hospital 21 per cent. of the deaths were due to tuberculosis, and only one was due to the bovine bacillus. In Japan the cattle were immune to tuberculosis. Where did the children get the disease? In Japan tuberculosis was relatively greater than in England. Dr. Wilkinson then spoke of the favourable experience he had had with tuberculin.

Dr. C. W. **Hutt** said that Stanley Griffiths had pointed out that a very much larger number of children exhibited bovine tuberculosis than Dr. Wilkinson had said.

Dr. **Raw** said, in reply, that he wished to establish the general principle that we had to deal with two infections. He had found that tuberculin prepared from cultures of low virulence was much safer for the patient than that prepared from virulent cultures. He had performed 1800 post-mortem examinations on patients who had died from tuberculosis, but had never seen tuberculous meningitis occur in a case of primary pulmonary tuberculosis.

WAR SECTION.

Medico-Military Training.

A meeting of this section of the Royal Society of Medicine was held on March 14th, when Colonel H. E. R. **James** read a paper on the best form of instruction for medical students to fit them to take their part in case of national emergency. The paper is published in full in the present issue of The Lancet.

Mr. H. **Wansey Bayly** considered that there was urgent need for all medical students to receive some course of instruction in duties which they might be required to fulfil if called upon for war service. He very much doubted the reliability of Colonel James's statement that in future wars only those medical men belonging to the Reserve of Officers, or the Territorial Force, would be called up, as he believed that in the future, as in the past, temporary officers would have to be employed. Lack of proper instruction to M.O.'s, either before the war or during their military service, had entailed much unnecessary loss of life, and loss in the value of medical officers' services, and he stated that neither during his service at home, nor during his service as battalion medical officer in the Guards' Division, nor as medical officer to a brigade of artillery in France, had he ever received any instructions in his duties, with the result that he, in common with many other Territorial and Temporary officers, had felt that they had not been so useful as they would have liked to have been. It was true that orders and instructions were constantly being received on paper from headquarters, but such orders were liable to get lost or destroyed. The inspection and supervision were almost nil, so that it depended entirely upon the keenness of the medical officer as to whether he made any attempt to carry out the orders that he had received. Many medical officers seemed to consider that their duties consisted in attending to the sick when at rest, or to casualties when in the line, and failed to realise that their chief value lay in teaching preventive medicine, in carefully supervising the sanitation and hygiene of their unit, and in giving instruction in these matters to the officers and men.

In order to endeavour to obtain continuity in sanitation he had drawn up some battalion sanitary standing orders which, with the sanction of his A.D.M.S., were adopted by his battalion and which were published in The Lancet of June 16th, 1917, and, he believed, were adopted in a few units. He considered that the cause of medical students' and medical men's reluctance in joining medical units at the present time could be summed up in one word—distrust—distrust of the War Office, based on many bitter memories. He considered that the instruction could be better carried out by the civilian teachers and civilian teaching hospitals than by the R.A.M.C., as the really essential portion of such education was very simple and did not take long.

Civil and Military Training Contrasted.

Mr. T. B. **Layton** considered that the duties of the R.A.M.C. officer have in the past differed from those of his civilian colleagues in three ways: (1) He has been employed in preventive medicine to an extent unknown to members of the civil branch of the profession; (2) he is always engaged to a certain extent in administrative work; (3) the sick and wounded are not his personal patients, but they are the patients of the corps, coming under him for a short time only. He (the speaker) considered it was necessary to organise our instructions on the principle of teaching the students such subjects as apply especially to military work, to which insufficient attention is at present paid in the curriculum. In his position as an officer the surgeon had certain duties common to other branches of the Service, such as procuring food, clothing, and quarters; the power to move bodies of men rapidly, which is known as drill; and a knowledge of military law. These portions of the student's education should be taught as an irreducible minimum or not at all. There are plenty of other subjects to occupy such short time as he can spare, which are of vital importance to him as soon as the necessity arises. Advances of surgery in future wars would depend almost entirely upon the development of medical tactics, and unless we can apply to mobile warfare the six-hour ideal from wound to operating theatre all advances of civil surgery will be applied to military surgery in vain. For the junior ranks of the R.A.M.C. Mr. Layton would say it was enough if they studied the subject of shock and collapse in its relation to the transport of wounded. Hygiene of the march cannot be too strongly impressed upon anyone. He would have the students study it particularly in relation to the weight carried by the soldier and the problem of water-supply. He foresaw a great struggle with the combatant soldier in the future on the weight problem, and every medical man should be in the position to give firm advice on this point. The examination of recruits should be limited to men who have had training therein. The nation is, he believed, now spending thousands of pounds weekly on pensions to men with pre-war disabilities, which were not noticed on their enlistment forms (B178), or as the result of badly done boards (B179) in the early stages of demobilisation. He would urge that the chief subjects to be taught under the head of sanitation are those of food and of the louse problem. Besides that, he would teach them how to make a sanitary inspection with firmness but politeness. If the medical student learns all these things, he will have no time to study the army form on which to claim his allowance, how to obtain a tablet of aspirin, a bottle of brandy, a bar of soap, or a tin of pork and beans—he will learn these quickly when he once begins.

Opportunity for Military Training in the Curriculum.

Dr. C. H. **MILLER** thought that it would be possible for teachers in civil hospitals to point out the objects for which the Army Medical Service existed. In the field it was the minor malady and the slight wound that were important. A man who had sustained a compound fracture of the femur was useless to the army for many months, if not permanently; and therefore, from the army point of view, he was less important than a man suffering from I.C.T. It was not only incumbent on the student to learn about disease in all its aspects, but to realise that it was part of his duties to keep as many men fit as possible.

Dr. H. L. **EASON** considered that civilians were trained to consider the individual, whereas the army medical officer had to consider both patients and diseases in the mass. He thought it was impossible to give efficient instruction in hygiene and State medicine during the undergraduate's curriculum, as it was already overcrowded; but that some scheme would have to be devised whereby the claim for a doctor's service after qualification is possible for a period of 6 to 12 months for the purpose of army training. It had not always been realised by the R.A.M.C. that the day had gone by when they could expect a medical man to turn his hand to anything; this was a day of specialism, and some scheme must be devised whereby in a national emergency the chief medical officers should be allotted to posts for which their peculiar training fitted them. He was sure that if medical men were to be trained to fit themselves for national emergency, any such scheme devised for this purpose must be to a large extent compulsory.

Several other members of the section took part in the discussion, all agreeing that the really necessary education should be as simple in character as possible, and that the elements of war sanitation and hygiene were essentials, and expressing the opinion that there would be difficulty in obtaining recruits until the memory of various grievances (such as higher pay of Temporary over Territorial or Special Reserve Officers; the employment of specialists in ordinary routine work, while persons of no special knowledge were given positions as specialists; the payment of war gratuities on substantive rather than acting rank; promotion for reasons other than competency, &c.) had become dim through the passage of time. The discussion was a most interesting one, as contrasting the opinions and views of the Regular, and Territorial and Temporary branches of the Service; and the practical unanimity with which all those speakers who had held Territorial or Temporary rank agreed that the present lack of enthusiasm for military service amongst civil medical men and medical students was largely based on undeniable grievances during the late war.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

CONGENITAL SYPHILIS.

AT a meeting of this section of the Royal Society of Medicine, held on March 16th, Dr. F. S. **LANGMEAD**, the President, being in the chair, the discussion on Congenital Syphilis, adjourned from Feb. 25th, was reopened by Dr. H. **MORLEY FLETCHER**, whose paper appeared at length in THE LANCET of March 26th.

Post-natal versus *Ante-natal Treatment.*

Dr. **LEONARD FINDLAY**[1] said that he would like in the first instance to draw attention to the Wassermann reaction when properly carried out as being undoubtedly the most important aid to the diagnosis of the anomalous and late varieties of congenital syphilis. In support of this contention he referred to an analysis of 1000 reactions performed for him by Dr. R. M. Buchanan of Glasgow, in which the clinical and serological findings were contrasted. Cases of undoubted and suspicious early syphilis were divided into four groups according to the degree of clinical certainty of syphilis or no syphilis. In the cases clinically definitely syphilitic the reaction was positive in 98 per cent., whereas in those definitely non-syphilitic it was negative in 100 per cent. These figures, too, were in close agreement with those showing the behaviour of the reaction in the mothers of syphilitic and non-syphilitic children. Statistically, then, a positive reaction meant syphilis, and a negative reaction no syphilis, at least in the presence of active manifestations of disease. The serological test was, in fact, more frequently in agreement with the pathological lesions than the Widal reaction in the case of enteric fever on the finding of the tubercle bacillus in phthisis pulmonalis.

In view of the above the Wassermann reaction should be a great help towards deciding if a particular pathological process possessed a syphilitic basis. It would be curious if it were only the anomalous forms of the disease that gave a negative reaction, and it was difficult to understand how the syphilitic infection could so profoundly alter the child's nutrition or call forth radical changes in various organs and yet fail to induce the usual serological changes. Yet this was what many writers inferred to happen. In the presence of a negative reaction one demanded very strong clinical proof that the diseased condition was of a syphilitic nature. As the reaction persisted long after all clinical manifestations had disappeared, it should be our most delicate test of cure and a good gauge of the efficacy of the different methods of treatment of congenital syphilis as practised to-day. Treatment with mercury alone was most unsatisfactory, because a large proportion of the youngest patients died; in his own experience 70 per cent. of these under 3 months of age.

With the combined treatment with salvarsan or its allies and mercury the mortality of the young patients had been greatly reduced, only some 20 to 30 per cent. dying, but unfortunately, at least as evidenced by a persistently negative reaction, a cure was only obtained in a proportion of the cases. In children under 1 year of age 8 per cent. could not be cured with as many as 14 injections and in children over 1 year of age a cure could not be obtained in 50 per cent. of the cases. Such a state of matters was one with which no one can rest satisfied and contrasted very markedly with the results of ante-natal or prophylactic treatment, by means of which he had obtained 100 per cent. of successes—at least the children had never reacted positively to Wassermann's test nor had they presented any signs of the disease, even when observed over as long a period as seven years. Perhaps the most striking feature of ante-natal treatment was that these women continued to bear healthy non-syphilitic infants, though no further antisyphilitic treatment had been instituted. Ante-natal treatment was undoubtedly the treatment par excellence, and should be encouraged by us in every manner possible. In his opinion this implied notification. By ante-natal treatment all miscarriages and still-births could be avoided and the health of the future progeny ensured.

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[1] Dr. Findlay's remarks were made at the meeting on Feb. 25th, but were not received in time for insertion in our issue of March 5th

Ante-natal and Neo-natal Disease.

Mr. **JOHN ADAMS** confined his remarks to ante-natal syphilis, and the disease as it occurs in the newly born.

Congenital syphilis, he said, was rarely seen clinically in young people and adults, and the treatment of such cases was unsatisfactory, whereas the treatment of ante-natal syphilis and post-natal syphilis in infants was most encouraging. The best time to treat mother and child was at the earliest possible moment; the youngest baby he had treated was an hour old. The results were seen at once, and there was no secondary eruption. The Wassermann reaction rarely reverted to positive, and for the past three and a half years his cases were tested every three months. The year ending August 31st, 1920, was a particularly successful one at the Thavies Inn Venereal Clinic for Pregnant Women. Thirty-seven mothers had been admitted with syphilis, 37 babies had been born alive, one with a positive Wassermann reaction, 36 with a negative reaction; none of the babies died of syphilis, and no fœtus was stillborn from syphilis. The babies were treated according to a special scheme, which had been found most satisfactory, by intramuscular injections of galyl in glucose, intramuscular injections of mercury, and mercury by the mouth.[2] He thought that, except in the most expert hands, injection into the superior longitudinal sinus or external jugular vein must be difficult, dangerous, and disastrous. Mercurial treatment alone was too slow, but the results of galyl were seen in the baby within a few hours, and in adults within an hour.

When women were infected with syphilis during the seventh month of pregnancy the baby was healthy, which bore out Dr. Routh's view as to the protective part played by the syncytial cells; besides this, the lipoids appeared to have a protecting influence on the fœtus. Dr. Routh, in his lecture on Ante-and Post-Natal Syphilis before the Harveian Society in January, 1918, stated that, according to his estimation, 27,000 deaths occurred annually in England and Wales alone in the ante-natal period and the week following birth as a result of syphilis. It would seem that the reason why we saw so few children and adults affected by congenital syphilis in clinics was because they had ceased to exist.

Mr. Adams thought that venereal disease lying-in centres should be established in every town with medical officers specially appointed to look after the cases. He looked forward with confidence to the future, expecting that the wastage of infant life from syphilis would almost be abolished.

Dr. **REGINALD JEWESBURY** gave the results of the first 12 months' experience in the venereal clinic for children at St. Thomas's Hospital. These results are about to be published.

Infection from the Mother.

Mr. **J. E. R. MCDONAGH** said that if a woman contracted syphilis before the fifth month of pregnancy the child always contracted the disease; if she became syphilitic during the sixth and seventh months the child was affected by congenital syphilis in about half the cases, and if during the eighth and ninth months the child escaped.

Many of the infants who escaped infection in utero acquired syphilis by direct contact with their mothers soon after birth, and quite a large number of cases of so-called congenital syphilis were really cases of acquired. When a woman contracted syphilis, if she should have nine pregnancies, the first and last three were most likely to result in abortions, stillbirths, or in the birth of apparently healthy children who would show symptoms before the sixth week. Non-syphilitic children were most likely to be born in the middle. This was also true of a woman who conceived and contracted the disease from the embryo (conceptional syphilis). Although this was a general rule it must never be forgotten that once a woman had borne a syphilitic fœtus she was ipso facto herself a syphilitic and therefore capable of infecting all her future offspring, even if the father had never had the disease. A syphilitic woman, therefore, should be treated throughout the whole period of each succeeding pregnancy, irrespective of the amount of treatment she had already undergone.

With regard to the effect on the child of the treatment of its syphilitic mother, he said that, provided that the mother had had treatment throughout the whole of pregnancy, or when the disease was first diagnosed, one might expect the birth of an apparently healthy child. Without being able to give the exact percentage, he had formed the opinion during the last ten years that the majority of those apparently healthy children were really syphilitic. They did not develop symptoms before the sixth week, as used to be the case in the pre-salvarsan era, but at the age of 4 years or more developed eye, ear, or nervous troubles which did not respond to treatment. The syphilitic child in utero might be so influenced by the treatment of its mother as to behave like an acquired syphilitic whose response to the disease had been cut so short by treatment that when a recurrence appeared the lesion aped the primary sore. He now always treated for two to three years every child born of a syphilitic mother, however healthy at birth it might appear to be. Whether such a course would prevent syphilis hereditaria tarda only the future would show.

Value of Serological Tests.

As to whether pathological tests were of any value in discerning which children were syphilitic and which were not, he said that it was the rule for children born of treated syphilitic mothers to be serologically negative and to remain so till clinical manifestations appeared, even if they did not appear for some years, therefore a negative complement-fixation test could never be held as signifying that the child was not syphilitic. In cases in which the test was positive during the first months treatment only very slowly rendered it negative, and without treatment it tended to become negative about the age of puberty. When the test became positive for the first time three or four years after birth, it remained positive for the rest of the patient's life irrespective of the amount of treatment he or she underwent. If a mother gave a positive reaction at the time of birth the umbilical blood was usually positive as well; and even the infant's blood might be positive, although the child was not necessarily syphilitic, as, for instance, when the mother contracted the disease at the eighth month. Therefore a positive reaction given by a child at or soon after birth was not proof positive that the child was syphilitic.

Mr. McDonagh thought that we should see less early congenital syphilis in the future, but much more syphilis hereditaria tarda, especially in cases of late congenital nervous syphilis. It was impossible to say yet whether treatment of both the mother and the child would prevent this. On the other hand, it was possible to assert that pathological tests would neither help in prognosis nor indicate whether a case was cured or not.

Interstitial Keratitis.

Mr. **H. NEAME** discussed the results of treatment in 38 consecutive cases of interstitial keratitis. The treatment consisted of one, two, or three intravenous injections of novarsenobillon or diarsenol. Mercury by the mouth was given simultaneously.

Of the 38 cases 24 were suitable for inclusion in a group with a view to estimating the value of the treatment. In this series the arsenical preparations combined with mercury had not prevented five patients, who had come for treatment with keratitis in only one eye, from involvement of the second eye. Three had still only one eye involved. The evidence as to whether treatment prevented other complications, such as choroido-retinitis, was insufficient. There were five cases with this complication in the series. Three of these were old cases; one had been under treatment for interstitial keratitis in one eye, the other eye having been diseased six years before; the last had had the disease and was treated by other means for nearly a year before arsenic injections were given. Of the rest of the series there were only three in which choroiditis was possibly present. It was probable that the arsenical preparations had an effect on the choroid, since it was a very vascular structure. With regard to the effect on interstitial keratitis already established, it would appear from the visual acuity results in this series and from Wallis's experiences in 1913 that arsenical preparations had some influence in improving the final vision and in its more rapid attainment. With the growth of prophylactic treatment during pregnancy it was possible that the incidence of interstitial keratitis, like that of other manifestations of congenital syphilis, would dwindle.

Changes in the Teeth.

Mr. **A. T. PITTS** spoke of the teeth in congenital syphilis, and said that although we were not now so completely dependent on clinical manifestations for diagnosis since the introduction of the Wassermann reaction, yet the presence of certain dental dystrophies peculiar to congenital syphilis was still a sign of considerable positive value.

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[2] Royal Society of Medicine: Section of Obstetrics and Gynæcology, Nov. 7th, 1918; Nov. 4th, 1920; THE LANCET, 1918, ii., 707, and 1920, ii., 990.

The teeth which showed characteristic modifications were the upper central incisors and the first permanent molars. The former were described by Hutchinson in 1858, and the latter appeared to have been recorded by Moon, the dental surgeon to Guy's Hospital, in 1878, and were often spoken of as Moon's molars. There were two elements in a typical "Hutchinson's" incisor, the narrowing toward the tip and the notch. The first indicated an alteration in the whole architecture of the tooth, and would suggest that before calcification commenced the cells of the tooth germ were affected by the syphilitic virus. The notch would appear to be due to a true hypoplasia, due to some interference with calcium metabolism, and comparable with the hypoplasia seen in rickets and other disorders of childhood. Mr. Dolamore had suggested that this might not be an essential part of the syphilitic manifestation, but due to some intercurrent illness of malnutrition. Stein had stated that there were four stages in the life-history of a syphilitic tooth: (1) a diminution in breadth and an area of badly formed enamel at the cutting edge on eruption; (2) wearing of the cutting edge, which left the typical notch; (3) obliteration of the notch from wear to only a slight bevel on the anterior edge; and (4) obliteration of the notch and so much of the tooth that its diagnostic value vanished.

It must be admitted, however, that though this grouping of the life-history of the Hutchinson tooth was attractive, its clinical history was not absolutely conclusive. It should be remembered, however, that there might be an early stage when the notch was absent, and an undue insistence on its presence might blind an observer to the significance of a tooth unnotched, but with a marked narrowing toward the cutting edge. In his opinion, the enamel of syphilitic teeth was usually normal and showed no greater liability to caries than any other teeth. The view that mercury was the cause of hypoplastic teeth was not generally held nowadays. The lateral incisors of the upper jaw and the lower incisors might also show the characteristic shape, but much less commonly, and only rarely without the upper centrals being affected. Moon's teeth also showed a diminution in breadth towards the masticating surface, and shared the characteristic alteration in their architecture. The cusps were stunted and rounded; Moon described them as "dome-shaped," and an American writer had recently described them as the "mulberry" molar. Their appearance was equally characteristic with Hutchinson's teeth, but had to be distinguished from hypoplasia. In syphilis the molar tooth seen from the side view was dome-shaped, almost conical, and without the bulge of enamel usually present. The masticating surface was a flat plateau on which the rounded stunted cusps projected like small beads.

Another sign of congenital syphilis described by Sabouraud was said to affect the upper first molars only, and consisted of an accessory cusp on their internal surface at the anterior corner. This was a frequent malformation and often existed alone in a mouth whose dentition was otherwise regular and normal. It occurred in so large a proportion that it must be an anatomical variation, and he thought it was without pathological meaning. The same variation was sometimes found in the upper second deciduous molar. With regard to the milk dentition he was doubtful whether there was any condition which could be regarded as truly diagnostic of congenital syphilis, although the changes might be suggestive. A few cases of Hutchinson's teeth in the milk dentition had been recorded, among which were 27 cases recorded by Parrot, who, however, regarded rickets as a syphilitic manifestation. Calcification of the deciduous incisors commenced at the sixteenth to eighteenth week of intra-uterine life, and syphilis attacking the fœtus at that early stage was more likely to cause its death. This was probably the reason why a dental manifestation in the milk dentition was so rare. He suggested that some of the examples of Hutchinson's teeth recorded in the deciduous dentition might really have been cases of caries which had produced notches.

One disorder found in milk teeth, undoubtedly associated in some cases with congenital syphilis, was hypoplasia. Out of 4000 children he had only been able to collect 20 cases. It must be caused by factors operating before birth, and as syphilis was the disease which was most important at this period, it was reasonable to suppose that it must be included among the diseases which caused defective development of the deciduous teeth. There were, however, other causes, such as malnutrition of the mother, and a lack of vitamines in the maternal diet. Such must be common in mothers of the poorer classes, and yet hypoplasia of the milk teeth was very rare. It was of interest that out of his cases four occurred in congenital syphilitics, and in these the hypoplasia was especially well marked.

Without being dogmatic on such scanty evidence he would like to suggest that on *a priori* grounds congenital syphilis should be regarded as one of the causes of hypoplasia of the milk teeth, and that any well-marked case should arouse a suspicion sufficient to warrant further investigation.

Infrequency in General Practice.

Dr. RONALD CARTER said he had had 25 years' experience in general practice and 14 years at infant welfare work, and congenital syphilis was, in his experience, a comparatively rare disease.

He referred to a passage in Dr. Amand Routh's address last November on Latent Syphilis, in which he quoted some statistics of Dr. Helen Campbell, chief medical officer of the infant department of Bradford, on the frequency of congenital syphilis in industrial cities. Of 2172 infants born in 1918, 1606 were registered; the infant mortality was due to congenital syphilis in 80 per cent. of the deaths. Dr. Campbell ascribed these startling figures "to the fact that congenital syphilitic infants are peculiarly selected for attack by respiratory, gastro-intestinal and specific infections, such as measles, &c., which kill them in much larger numbers than infants not so affected." Dr. Carter pointed out that no pathological report of the cases was given and that, therefore, these statistics were of no value. They could not in any way represent the frequency of the disease amongst the industrial population.

He regretted that statistics which were so unreliable should have been quoted.

A Summing-up.

The PRESIDENT said that in the few minutes that remained he would not attempt to summarise the discussion, but would mention one or two important conclusions which could be drawn. On the diagnostic side it was clear that the general opinion was that a positive Wassermann reaction was good evidence of the presence of syphilis, except within a short time after birth, whereas there was some difference of opinion as to the value of a negative reaction. He thought that Mr. O. L. Addison's contribution had shown conclusively that what was generally known as syphilitic epiphysitis was really a manifestation which was very generally distributed through the osseous system, a conception of the disease which was not as well known as it should be. The importance of X rays therefore in diagnosis, especially on the surgical side, was evident. Sir Humphry Rolleston, as also Dr. Morley Fletcher, had broken a great deal of new ground, and had stimulated us to the closer investigation of a large number of disorders of doubtful ætiology. He was sure that they would be the first to agree that some time must elapse before we could postulate the influence of syphilis in their production. Of extreme practical importance was the general agreement upon the value of antisyphilitic treatment of the pregnant mother. The discussion had been a very valuable one in many ways, and if it had done no more than bring this point of view decisively before the profession it had played a very useful part.

Sir HUMPHRY ROLLESTON, in his reply, said that he thought that some of the most important contributions to the discussion were those on the special subjects. There was clearly a difference of opinion as to the incidence of the disease. The view taken by Dr. Morley Fletcher that there had been a change in type was very interesting.

SOUTH-WESTERN OPHTHALMOLOGICAL SOCIETY.—The meeting of this society, held on March 9th at the Bristol Eye Hospital and presided over by Mr. E. Richardson Cross, was well attended, in spite of the scattered nature of the area covered by the society. The morning was devoted to examination of a number of interesting cases, among which may be mentioned one in a child, shown by Mr. A. N. Godby Gibbs (Bristol), which illustrated very well the difficulty of distinguishing between glioma and pseudo-glioma retinæ. After luncheon the meeting was addressed by Mr. R. J. Coulter (Newport) on Some Squint Problems. In this he adopted heterodox views in order to provoke discussion, and a good debate ensued.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

AN ordinary meeting of this society was held on March 18th at 1, Upper Montague-street, W.C., Dr. F. E. **FREMANTLE**, M.P., the President, being in the chair. Forty-one new members were elected.

Dr. A. T. **NANKIVELL** (M.O.H., Poole) read a paper on

The Relation of the Laboratory to Preventive Medicine.

He spoke of the present-day cry for "economy," and said that it would be well if the people would rather ask for "science," for where the voice of the scientist was heard economy and thrift had followed. If the public would follow their scientific advisers, the health, and therefore the prosperity, of the community would be vastly bettered. The people were very ignorant of the science of public health. They knew little of the triumphs over malaria, plague, cholera, enteric, diphtheria, anthrax, and tetanus, and while they were aware that the Panama Canal existed, they were ignorant of the work of the scientists who conquered disease and made its construction possible. The first person to realise the value of the laboratory to the health department was Dr. D. S. Davies (M.O.H., Bristol), who was a pioneer in the large scale bacteriological examination of diphtheria contacts. The speaker heard with regret that some M.A.B. hospitals were discharging their diphtheria cases without swabbing. In Poole, where active swabbing was performed, including all sick school children and all cases of sore-throat, purulent nasal discharge, and discharging ears, the case mortality from diphtheria was only 3 per cent. Perhaps the laboratory was most useful in connexion with the diagnosis of diphtheria and tuberculosis. To-day in England and Wales practically all counties and county boroughs had their own laboratories or arrangements with laboratories at hospitals or universities, but many smaller towns and rural districts had no adequate arrangements. There was no doubt that with adequate staffing small laboratories were most useful, especially in saving time in connexion with diphtheria swabs. Every whole-time M.O.H. should have a laboratory to deal with diphtheria, sputa, ringworm hairs, blood, fæces, and water samples. In the larger places they might undertake all pathological work, including morbid histology and animal inoculation. General practitioners made much use of such facilities, and small fees might be charged, which were welcome in place of the fancy prices charged by some laboratories. In Poole the laboratory at a flat rate of 1s. 6*d*. per specimen was almost a paying concern. A fully-equipped county laboratory might extend its scope still further to agricultural bacteriology, for example. Chemical analysis should be left to the public analysts. The Dawson Report foreshadowed laboratories at the primary health centres, but Dr. Nankivell suggested that the family doctor, in respect for whom he yielded to no one, is but rarely competent to manage a laboratory, and that it would be better to continue to use the existing laboratories of the public health departments. The crying need of to-day was research and a close coöperation between the statistician, the epidemiologist, and the laboratory. Every M.O.H. who has a laboratory might undertake some research. To them was given the opportunity, and they would only have themselves to blame if others took the chance which they had missed.

Dr. C. W. **PONDER** (Pathologist and Assistant M.O.H., Kent) said that at his county laboratory they examined 20,000 specimens last year. They served a population of one million, and 450 doctors were continually sending specimens. No charges were made, and the inclusive cost for a year, after the deduction of £570 received back on account of venereal work, was £1250. The charge at a commercial laboratory would have been over £3500. He was not quite so sure of the value of swabbing in dealing with the prevention of diphtheria in large populations, though he realised that it gave good results in isolated communities. A special use of the laboratory was in educating the practitioner. Bacteriology was of great importance in dealing with typhoid fever, and he instanced an outbreak at Strood from infected water-supplies which was nipped in the bud by action taken by Dr. W. G. Howarth following upon the discovery in the laboratory of four simultaneous positive Widal reactions from that town. He thought that for poor people the public health laboratory should do non-infectious work, such as vaccines, sections, and blood examinations. Why should not the present local and county laboratories be linked up with the primary and secondary centres of the Dawson Report? In connexion with diphtheria swabs, delay in the post was a great trouble. He found that nearly 90 per cent. of positive diphtheria swabs were diagnosable by direct smear before culture, and this method should always be practised.

Dr. J. A. **WATT** (M.O.H., Ilkeston, and T.O., Derbyshire) said that the Derbyshire laboratory also dealt with the whole county. No charges were made. He agreed with the practice of taking no swabs from diphtheria cases on discharge from hospital. He believed that the cases which persisted in giving positive swabs over a long period did no harm. In typhoid fever it was most important to test the blood of all cases of illness in the family. He was in favour of attaching small laboratories to the primary health centres, if started.

Lieutenant-Colonel J. A. **ANDERSON**, R.A.M.C. (Assistant Director of Hygiene, R.A.M. College), stated that in the army there was better coöperation between the hygienist and the pathologist than in civil life. Close intimacy was essential, and chemical, entomological, and biological laboratories were needed as well as bacteriological. In Salonica he had found all these necessary in dealing with malaria. Through laboratory work they had found that the application of cresol to pools, &c., gave better results than the oil which was available. The education of the general practitioner was more important than of the sanitary specialist in this respect. The speaker wondered whether the mobile laboratories, which were so valuable in the war, would not also be useful in civil practice.

Dr. E. W. **GOODALL** (Metropolitan Asylums Board) agreed that every health authority should have a well-equipped laboratory. In collaboration with the late Dr. Washbourn he had had a good deal to do with the inclusion of bacteriology in the curriculum for medical students. He felt, however, that they had not got from bacteriology all that they had at one time expected. At his hospital they did not swab diphtheria cases on discharge. He took this course with a full sense of responsibility and in the knowledge that the cases were carefully watched by the M.O.H. For many years he had insisted on three negative swabs before discharge, but the results under that system had been no better, and return cases as common. Swabbing had been as devoid of results in connexion with post-scarlatinal diphtheria. The swabbing of all admissions and the isolation in a separate ward of those with diphtheria bacilli had not made the least difference to the incidence of diphtheria in the scarlet fever wards. They found that 10 per cent. of the scarlatinal admissions were reported as positive and had to be isolated. He questioned how many "positives" were really virulent bacilli. There was work which showed that only those from recent cases of diphtheria were virulent. The needless discovery of harmless positives was a nuisance. The matter was certainly one which urgently needed settling. He thought that valuable statistical comparisons might be made between M.A.B. hospitals having different practices in regard to swabbing. In connexion with the remarks on the laboratories proposed in the Dawson Report, he reminded the meeting that these were proposed for clinical and not for public health purposes.

Surgeon Rear-Admiral P. W. **BASSETT-SMITH** (R.N. College, Greenwich) said that the greater part of naval medicine was preventive, and that laboratory work was of the greatest importance. They had laboratories on all great ships and in all hospitals. The medical personnel was well versed in laboratory procedure, and the hygiene officers in close touch with the laboratories. They regarded it as important that no diphtheria cases should go back to the crowded conditions on ships until three negative swabs had been obtained. Where they had positive results and no clinical signs, virulence tests were done. At Greenwich School they practised widespread swabbing during the occasional diphtheria outbreaks. The laboratory was very important in the discovery of typhoid carriers. Laboratories should not be too small, as numerous places cannot all have expensive equipment and trained bacteriologists.

Dr. R. VEITCH CLARK (M.O.H., Croydon) had found that it was a sound economic proposition to run a fully-equipped laboratory for a district of about 200,000 population. In closed communities, such as schools and orphanages, he had been able by examination and swabbing to stop persistent outbreaks of diphtheria. A laboratory was essential both for clinical purposes and for administrative preventive medicine. He had greatly regretted, in connexion with two outbreaks of infective jaundice, that he had not a well-equipped laboratory at his disposal. He instanced dental decay, pyorrhœa, pseudo-rheumatic conditions, and the use of vaccines in respiratory diseases as requiring research. It was also required in connexion with school medical work, which was too much concerned at present with the mere piling up of statistics. M.O.H.'s should make special note in their annual reports of such conditions and epidemics as demand research, and of the difficulties experienced.

Lieutenant-Colonel F. HARVEY, R.A.M.C. (Deputy Director of Pathology, War Office), remarked that Dr. Nankivell's laboratory work in France was well known to him. He referred to the early systematic bacteriological work at the R.A.M. School at Netley. In 1898 they had there an excellent course with which was associated the names of Sir Almroth Wright, Sir David Semple, Sir William Leishman, and Sir William Horrocks. In the army there was a very close link between public health and the laboratory.

Dr. S. MONCKTON COPEMAN (Ministry of Health) said that too much prominence had been given to swabbing and "carriers" in diphtheria, and great expense was often wasted in this connexion. Seven per cent. of the population harboured diphtheria bacilli (so-called) in their throats. Virulence tests must be done, and if virulent the result was much more important. What was to be done with the carrier when discovered? Sections of the tonsils showed that the bacilli were usually deep in the crypts and not on the surface, and therefore surgery should be thought of. Recent American work claimed value for the testing of communities by the Schick reaction and the injection of toxin-antitoxin mixtures to produce immunity in those who were found by this reaction to be susceptible. The immunity thus produced was said to last three or four years (instead of a few weeks only, as when antitoxin only was injected), and the likelihood of anaphylaxis was said to be less. The Schick reaction could be tested again to determine whether the immunity had persisted. The results of the reaction indicate that many acquire immunity in a diphtheria outbreak without getting the disease in clinical form. Experiments were to be carried out shortly at Bristol on these lines. Where there was a good university laboratory Dr. Copeman thought it was better to make use of it than to start one independently in the health department. In any case he did not approve of the multiplication of small laboratories.

Dr. T. SHADICK HIGGINS (M.O.H., St. Pancras) doubted whether even the virulence test was sufficient to substantiate the dangerousness of so-called diphtheria carriers. He instanced work which he had done at Birmingham in collaboration with Dr. C. J. Lewis, in which scarlatinal convalescents were found frequently to have in their noses diphtheria bacilli which on isolation proved to be virulent to guinea-pigs. These patients had not infected any members of their families with diphtheria, though many of them had caused return cases of scarlet fever.

Dr. HERBERT JONES (M.O.H., Herefordshire Combined District) said that he now discouraged the swabbing of diphtheria contacts, and that the results were no better than in the absence of swabbing. They must rely more on the virulence test. They might be doing harm in relation to public opinion by pushing such bacteriology too much to the front.

Dr. T. EVANS (M.O.H., Swansea) remarked that it was his practice in dealing with diphtheria contacts in schools to swab only cases with clinical signs, especially nasal discharge, enlarged glands, anæmia, or recent sore-throat. He questioned whether the Schick reaction could be applied to large populations. He instanced various directions in which laboratory research was needed, and claimed that there was no necessity for separate laboratories for bacteriological and pathological work.

The PRESIDENT observed that the discussion had centred too much round the subject of diphtheria. He said that the value of laboratories in military medicine had been proved over and over again. At the present time our difficulty was that we knew far too little to enable us to interpret bacteriological results, and the chief need was for research. The M.O.H. could spend his time most profitably in administrative work, and should not devote himself overmuch to petty laboratory work. There should be only one laboratory for a given area, which should do all the civil work required in the district, as well as naval and military work. They must press ahead, but go very carefully. Medical students should be turned out in the future with complete bacteriological knowledge.

Dr. NANKIVELL briefly replied.

Meeting of the Welsh Branch.

A meeting of the Welsh Branch of the Society of M.O.H.'s was held at Shrewsbury on March 19th, Dr. Colston Williams in the chair. A paper was read by Dr. Howard Jones in which he described steps taken in Newport to improve existing housing conditions, first by persuading occupiers to carry out improvements recommended by the health authorities, and then, through frequent inspection, by insisting on tenants maintaining hygienic conditions. Great advance in the direction of raising the amour propre of the tenants was stated to have been obtained without proceeding to legal compulsion.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.

Corporal Punishment in Schools.

AT a conference of this Association, held on March 18th, representatives were present from every class of educational institution. Mr. R. C. ELMSLIE, the President, referred to a previous meeting at which the medical aspects of the matter had been discussed and a resolution passed:—

> "In view of the evidence of damage from caning on the hand, and the possibility of consequent impairment of function, this society is of opinion that caning on the hand should be forbidden."

That resolution had been sent to the Home Office, the Board of Education, and the Ministry of Health.

Dr. E. H. T. NASH referred to instances of injury he had seen, and to a questionnaire he had sent round, to which there was an almost unanimous reply that whilst corporal punishment was an occasional necessity it should never be by caning on the hand. He advocated the tawse as used in Scotland, or else the cane on Nature's appointed place.

Canon A. A. DAVID, Headmaster of Rugby, thought punishments had much decreased in the past 20 years. Boys were better trained in preparatory schools and enjoyed much increased activities, so that masters could concentrate on positive encouragement and guidance rather than on the negative restraints and the rod. The less boredom existed the less need for punishments, but the element of fear was still necessary. If they caned they must hurt. He would not give up the stick, but it was not displayed or used indiscriminately.

Mr. C. W. CROOK, ex-President of the National Union of Teachers, said the elementary school teacher was at a disadvantage compared with the public school masters, as he had not the power of expulsion. The risks of caning had been much exaggerated. A body like the London County Council, responsible for a million children, would not have adopted caning on the hand with the restrictions they had without having some idea that it was the best form of punishment; and if not that, what was there for girls? An elementary school teacher who applied the rod to the back and raised wheals would soon find himself before the magistrate accused of brutality. He found the mere entry of a boy's name in the punishment book often sufficient. The time had not yet come when the medical profession could convince those responsible for elementary education that, if they punished at all, it must be elsewhere than on the hand.

Dr. W. GRIPPER, M.O., Royal Female Orphanage, found corporal punishment necessary. It was administered by the matron in camera. He could not say that caning on the hand was really bad.

Mr. M. J. RENDALL, Headmaster of Winchester College, regarded caning on the hand as a distinct blunder. They thought of the hand as sacred at Winchester and avoided damage even for a [short space of time. Punishment by prefects (senior boys) for quite trivial offences was very useful under careful regulation. The difference in opinion between the elementary school and public school view was remarkable and he hoped would be overcome.

Mr. W. SHARMAN, London Teachers Association, instanced a case where a teacher who had caned an insolent boy on the body had been punished himself by reduction of salary representing 60 times the amount he would have been fined had he assaulted the boy in the street.

Mr. J. R. ECCLES, Headmaster, Gresham's School, Holt, said he came into personal touch with all his 250 boys, and had not caned a boy in his own house for a dozen years. Caning was not degrading; it might be necessary, but should always be on the buttocks. He was wholly against birching or the frequent use of corporal punishment. He had used deprivation of games or privileges as a substitute punishment.

Miss DEANE, Kentish Town Secondary School, had doubts as to the efficacy of any corporal punishment. For girls in secondary schools it was unknown, and, from what had already been said, seemed rather an acknowledgment of failure on the part of the teacher.

Mr. L. LUMBY, National Union of Teachers, said that caning on the hand should never leave a bruise. If the tawse was recognised it would much simplify matters.

Mr. GUY KENDALL, University College School, used two-hour periods of detention, which had resulted in corporal punishment becoming obsolete, not because it was not wanted, but because there were persons who could not be trusted with it.

Rev. CECIL GRANT, St. George's School, Harpenden, commenced his teaching career strongly opposed to corporal punishment, but had reluctantly come to the conclusion that there were occasions on which it was essential. Detention and deprivation were, however, good substitutes on most occasions.

The PRESIDENT said that there had been practical unanimity amongst the medical members that the use of the cane on the hand was unjustifiable, and that they must condemn it whatever the teacher might say. He felt with the Head of Winchester that there was too wide an interval between the public and elementary school standards, and that the traditions which led to the present regulations in the public schools were of great value and should be a guidance to all teachers.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this society was held at the West London Hospital on March 4th, Dr. F. J. MCCANN, the President, in the chair, when a paper was read by Dr. BERNARD H. SPILSBURY on

Instrumental Abortion.

Dr. Spilsbury said that abortion was a practice by no means confined to civilised communities and instanced some of the crude methods in use amongst primitive races—e.g., pummelling the abdomen with stones. For the production of abortion the most effective methods were those in which violence or other physical agents were applied directly to the uterus. Success depended upon the amount of the local disturbance and to some extent upon the readiness of the uterine reaction, a factor which varied in different individuals.

The following were some of the commoner methods used:—

(1) Passing an instrument into the cervical canal or into the body of the uterus. In self-attempted abortion the favourite instrument was a hatpin, crochet hook, or a skewer. Skilled abortionists resorted to more suitable instruments, such as catheters. Without the requisite anatomical knowledge a woman was unlikely to pass an instrument into her own uterus, unless prolapse was present, when she might be successful.

(2) Intravaginal injections of various fluids.

(3) Intrauterine injections of fluids, of which soap solution was a favourite. Even scalding water had been used.

(4) Blowing air through a catheter passed into the uterus.

(5) Manipulation of the external os uteri with the hand.

(6) Packing the vagina.

(7) Abdominal massage of the uterus.

(8) The local application of electricity.

(9) Dilatation of the cervix and immediate removal of the products of conception, a method chiefly employed by medical practitioners.

The dangers of instrumental abortion were three—viz., infection, hæmorrhage, and shock.

Infection was favoured by the large raw surface in the uterus and the proximity of large blood-vessels to the placental site. Streptococci and the colon bacillus were the most frequent infecting agents. In fatal cases the course of infection varied greatly. At the one extreme was a rapidly fatal septicæmia with little or no local suppuration, and at the other was a prolonged septicæmia ending in pyæmia. Septic pulmonary infarcts were common. Massive embolism of the pulmonary artery might occur.

Hæmorrhage alone was occasionally responsible for death when the placental site was damaged or the uterus perforated, but it was more frequently associated with septic infection in fatal cases.

Shock often occurred at the moment of passage of an instrument into the uterus and was usually transient, but occasionally instant death occurred. This might also result from the injection of fluid into the uterus.

Discussion.

The PRESIDENT referred particularly to treatment of cases of attempted abortion. Treatment must be prompt and first directed to a thorough cleansing of the whole genital passages. If this proved ineffective there should be no hesitation in opening the abdomen and, if necessary, removing the uterus.—Dr. A. LAPTHORN SMITH endorsed the President's statements, and pointed out that the doctor's first duty was to save the patient and not that of detective. It was always wise in these cases to call in the aid of another practitioner, both for his medical assistance and to avoid any appearance of secrecy. After cleaning the passages he advised the free use of powdered boric in the vagina.—Dr. W. H. WILLCOX congratulated Dr. Spilsbury on his comprehensive paper, and referred to Dr. Spilsbury's unrivalled experience of these cases during the last 15 years. He said that frequently instrumental abortion was aided by ecbolic drugs given either before or after the mechanical interference. He was glad that two important points had been emphasised—viz., that the mere passage of an instrument into the pregnant uterus might cause sudden death. Several instances of this had occurred in recent years. The second point was the extreme rapidity with which septicæmia often occurred, since in many instances septic organisms were directly introduced into the peritoneal cavity.—Dr. J. A. MANSELL MOULLIN agreed with what had been said regarding early treatment. Free drainage of of the infected uterus was imperative, with laparotomy if necessary.—Dr. A. KNYVETT GORDON said that from his experience in the treatment of a large number of cases of puerperal septicæmia he had come to regard the administration of large doses of anti-streptococcic or anti-colon bacillus serum (according to the bacteriology of the case) as the most valuable constitutional remedy we had. At least 100 c.cm. should be given in 2 pints of saline into the subcutaneous tissues. He strongly deprecated the use of vaccines in acute cases. It was wrong in theory and disastrous in practice.—Dr. F. G. LLOYD said that these cases were always unsatisfactory from the practitioner's standpoint. He strongly advocated sharing the responsibility with another practitioner in suspected cases of criminal abortion. He pointed out that any deposition made by the patient could only be taken as evidence if the patient fully appreciated that she was beyond hope of recovery.

Reviews and Notices of Books.

PUBLIC HEALTH AND INSURANCE.

American Addresses by Sir ARTHUR NEWSHOLME, K.C.B., M.D., F.R.C.P. London: P. S. King and Son. Baltimore: The Johns Hopkins Press. 1920. Pp. 270. $2.50.

THE publication of these addresses, delivered in various American cities during 1919 by a man with the extensive experience of Sir Arthur Newsholme, is a matter of interest to a wide circle. In the first lecture, which reviews public health progress in England during the last 50 years, the author refers regretfully to the effect of perfunctory economic teaching, to the neglect of the public health side of the Poor-law organisation, and to the creation of independent local insurance committees, which he considers the greatest blunder of a National Insurance Act, "which was conceived ill-advisedly, had too short a gestation, and suffered a premature and forced delivery." In the second lecture there is a word of warning for eugenic enthusiasts. "Public health embraces some eugenic elements and may comprise more when eugenists have accumulated adequate non-fallacious evidence on which to base valid conclusions." In the same lecture there is also a much-needed defence of representative government and a plea for decentralisation. We cordially agree with Sir Arthur Newsholme that a central authority should not have to concern itself in minutiæ of local administration, but should devote itself to the larger general issues, and to raising the work of all local authorities to the same level of efficiency. Sir Arthur Newsholme has much to say about "the ad hoc vice," the need for the abolition of small and relatively inefficient local authorities and the creation of "complete local Parliaments dealing with all Governmental concerns." A considerable amount of space is also given to a discussion of the great need for an improved medical service, and of how the service should be built up.

The disadvantages of publishing in one volume a number of separate addresses are referred to in the preface; repetitions are unavoidable and are particularly noticeable in the statement of the case against the Insurance Act. Every lecture is of great interest, though perhaps Lecture VII.—The Obstacles to and Ideals of Health Progress—best illustrates the author's grasp of his subject. It seems unnecessary to predict that this volume will be widely read and to suggest that every student of sanitary or social reform will act wisely in making a careful study of its pages.

MANUAL OF MEDICAL JURISPRUDENCE AND TOXICOLOGY.

Fourth edition. BY W. G. AITCHISON ROBERTSON, M.D., F.R.C.P.E., F.R.S.E., Lecturer on Medical Jurisprudence and Public Health, School of Medicine, Royal College of Surgeons, Edinburgh. London: A. and C. Black. 1921. Pp. 414. 12*s.* 6*d.*

THAT Dr. Aitchison Robertson's manual should have gone through four editions since 1908 is alone proof of its recognised usefulness to students studying for examinations. In earlier editions public health has been included with medical jurisprudence and toxicology, but now it has been found more convenient to deal with public health separately. As it stands, the volume on medical jurisprudence and toxicology is packed with valuable matter in a condensed form. The author disclaims any intention to do more than instruct students without competing with the ampler text-books provided for practitioners and lawyers. In the circumstances it is natural that he should not cite authorities for all the varied information that he gives. However, for a writer who deals with legal topics, reference to authorities is a useful check. For example, Dr. Aitchison Robertson goes rather far in saying that when a defence of insanity is raised at the trial of a criminal charge the test is the power of the accused to control his actions. So far as England is concerned it is hardly true to say that what is known as the Rule in M'Naughton's case is obsolete. Many medical men have argued that it is capable of improvement, and juries have not always been induced to apply it strictly, but the change here, at any rate, has not gone further than that.

ANXIETY HYSTERIA.

Modern Views on Some Neuroses. By C. H. L. RIXON, M.D., M.R.C.S., Senior Neurologist, Ministry of Pensions Neurological Hospital, Exeter; and D. MATTHEW, M.C., M.B., Ch.B., Neurologist to the same hospital. With a Foreword by Colonel Sir A. LISLE WEBB, K.B.E., C.B., C.M.G., &c., Director-General of Medical Services, Ministry of Pensions. London: H. K. Lewis and Co. 1920. Pp. 121. 4*s.* 6*d.*

THE authors have written a little monograph on anxiety and conversion hysteria as seen by them in a wide experience of the neuroses of war. The book follows more or less didactically the common lines of psychopathology, symptomatology, diagnosis, and treatment, and if it contains no striking novelties (not, perhaps, that such are now to be expected) it embodies much sound and useful teaching. In particular, the diagrams given in the first of the above-mentioned sections are eminently calculated to enable the general practitioner to form a better idea than he is otherwise likely to get of the mechanisms concerned in the production of hysterical symptoms—i.e., the mental mechanisms. For while reference is duly made in the text to such physical symptoms as tremor, ocular symptoms, sweating, palpitation, vasomotor and pilomotor symptoms, &c., no attempt is made to explain the physiological mechanism of their production, important though this must obviously be, and no correlation of neuroglandular or neuronal disorder with psychological disorder is envisaged. We are, it is true, told that the vasomotor system is very liable to be unbalanced as the result of the emotional conflict, but in the symptomatology of hysteria there is more than a mere secondary effect on neuronal function of primary psychological disturbance. It is the peculiar nature of the disorders on the physiological level that calls for minute and unprejudiced investigation.

Taken as a whole, nevertheless, and considering the expressed aim of the book to be a guide for the general practitioner dealing with cases of hysteria on medical boards, we are of opinion it serves a useful purpose.

HYPNOTISM.

An Introduction to the Study of Hypnotism, Experimental and Therapeutic. Second edition. By H. E. WINGFIELD, M.A., M.D., B.C. Cantab., Consulting Physician, Royal Hants County Hospital. London: Baillière, Tindall, and Cox. 1920. Pp. 195. 7*s.* 6*d.*

THE second edition of Dr. Wingfield's introduction to the study of hypnotism should go far towards removing the prejudice still lurking in some quarters against the more general use of the procedure as a psychotherapeutic method of service in selected cases. Describing in simple and direct terms his exact technique, Dr. Wingfield substantiates his claim to enduring results in many instances by a series of brief clinical records, the value of which is undoubtedly increased by his candid admission of the limitations of the method and by his expressed unwillingness to hail in hypnotism a panacea for epilepsy, morphinism, dipsomania, stammering, and what not. Owing to the vogue of psycho-analysis as a therapeutic process hypnotism has perhaps somewhat fallen into the background; yet Dr. Wingfield's experience is that in the latter method lies a powerful factor in the unearthing of repressions supposedly accessible only to the former, and since psycho-analysis is in many cases practically an impossibility, more use might certainly be made of hypnotism. For a sane, cautious, and discretionary advocacy of the treatment of neurosis by suggestion with or without actual hypnotisation we can recommend the physician to turn to Dr. Wingfield's book.

NERVES AND THE MAN.

A Popular Psychological and Constructive Study of Nervous Breakdown. By W. CHARLES LOOSMORE, M.A., Brown Scholar at Glasgow University. London: John Murray. 1920. Pp. 234. 6*s*.

WE hope the day is far distant when the medical man will become so knowledgeable from the perpetual imbibition of strictly professional treatises that he will refuse to learn anything from those outside the pale of the Medical Register. As it is, there is, and has always been, a tendency to ignore contributions to therapy emanating from lay sources, doubtless because such are often characterised by one-sided presentation of the particular thesis advocated—a failing, however, not confined to non-professional contributions. The student of functional nervous disease, remembering that he must treat the whole man—body, soul, and spirit—and conscious that a knowledge of human nature is worth tons of text-book lore, will hail a kindred mind and appreciate innumerable therapeutic hints, no less valuable because not couched in technical language, as revealed in Mr. Loosmore's "Nerves and the Man." The management of the neuropathic individual is as onerous as his treatment, and none can manage others to whom his own mental trends, intellectual and affective, are as a sealed book. For ever treating others, the physician is too often forgetful of the old adage "Know thyself." A useful corrective is to be found in the slender volume under review, which we have perused with pleasure and profit no less for its literary garb and style than for the thread of sound common sense interwoven throughout. At critical periods in a man's life certain phrases, certain thoughts couched in an epigrammatic form, it may be, have proved often enough precious pegs on which to hang up his troubles, and though possibly Mr. Loosmore's "restful phrases" have more of a religious cast than certain others, the principle is absolutely sound. The reader will find a charm in scanning the pages of this little guide to self-knowledge and in applying to himself the wisdom gleaned from many fields and admirably set out by its author.

ANATOMY OF THE BRAIN AND SPINAL CORD.

Fifth edition. By RYLAND WHITAKER, B.A., M.B. Lond. Edinburgh: E. and S. Livingstone. 1921. Pp. 262. 12*s*. 6*d*.

WE welcome a new issue of a book which has always been a favourite with those who desire more than a purely superficial acquaintance with the intricacies of the central nervous system. This edition has been in part rewritten and rearranged by the author and makes a small volume of description easy to read and follow, with illustrations clear and good, if sometimes rather small. The main portion of the book is descriptive anatomy, and can be heartily recommended to the student. The last chapter deals shortly with development and is more in accordance with common form; here we would point out that the infundibulum is not to be described with strict accuracy as developing from the telencephalon. A slip of such sort, however, does not detract from the value of the book as an exposition of central nervous anatomy and arrangement, and it is from this point of view that we offer it welcome.

TEXT-BOOK OF EMBRYOLOGY.

Third edition, enlarged. By (the late) C. W. PRENTISS and LESLIE B. AREY. London and Philadelphia: W. B. Saunders Company. 1920. With 388 illustrations. Pp. 412. 27*s*. 6*d*.

THE Embryology of the late Professor Prentiss was a well-known book which, after his untimely death, passed into other hands for its second and third editions: in these hands it has more than retained its position among students in America. It deals with the development of the human, pig, and chick embryos from the laboratory and student's point of view, and gives clear and well-illustrated accounts of the processes. But, as we have had occasion to point out with reference to several works emanating from the other side of the Atlantic, the foundation is practically altogether German, and it may be said that embryology in England has gone beyond the level adopted in these works. We may add that one of the very few references in this book to English work is to the demonstration of the maturing human ovum by Professor A. Thomson, which is regarded as hardly conclusive. This is of course a matter of opinion, but those who had the good fortune to be present when Professor Thomson demonstrated his specimens will hardly agree with it. We say this in no spirit of rancour—the book is an excellent one, so far as it goes, but we do not consider that it goes far enough for English students. A meed of congratulation is due to the publishers for the way in which the volume is turned out.

PHYSICAL CHEMISTRY.

Praktikum der Physikalischen Chemie insbesondere der Kolloid-chemie. Für Mediziner und Biologen. Von Prof. Dr. med. LEONOR MICHAELIS. Berlin: Julius Springer. 1921. Mit 32 Text-abbildungen. Pp. vii. + 160. M.26.

THIS book contains a description of over 70 experiments in physical chemistry which Professor Michaelis has devised for his numerous pupils; they have been gradually evolved during the course of many years, partly in conjunction with his colleague, Professor P. Rona. The names of these authors are well known to all biochemists, and we have pleasure in recommending this volume to our readers, as the experiments will be found of value alike by the beginner and by the more advanced worker. Before each group of experiments there is a short explanatory section stating upon what principles the method depends or what is its importance in biology. The experiments are arranged methodically, though not always in accordance with the physical subject-matter. Thus, they begin with the simple "series" experiment of determining rennin and pepsin, and lead on, through colloidal precipitation, determination of hydrogen-ion concentration by means of indicators, surface-tension, diffusion, adsorption, to the measurement of electrical conductivity and electro-motive force. Every experiment is clearly and neatly described, the more complicated being greatly assisted by the many excellent diagrams of apparatus.

PHYSIOLOGY OF PROTEIN METABOLISM.

By E. P. CATHCART, M.D., D.Sc., F.R.S. (Monographs on Biochemistry.) London: Longmans, Green, and Co. 1921. Pp. 176. 12*s*. 6*d*.

THIS monograph, like all others in this excellent series, is an example of the best method of crystallising out what is really known from what is surmised. It deals with the digestion, absorption, and subsequent history of protein in relation to the economy of the body as a whole, and in relation to the physiology of starvation and work. Though some overlapping with Dr. R. H. A. Plimmer's monograph on the "Chemistry of the Proteins" is inevitable, the balance between the purely chemical and the biological is well preserved. The subject is one of peculiar intricacy. In its broadest outlines protein metabolism can no doubt be presented in an apparently simple and conclusive manner, but when we come to look a little deeply the simplicity vanishes. It is unfortunately true that few but professional physiologists are likely to appreciate this volume to the full, but the fault for this does not lie with its author. Even the chemistry of the proteins is a clear and well-explored domain when compared with the physiology of protein metabolism. But it must not be imagined that the subject is a dull one, or that Professor Cathcart has not dealt with it in a satisfactory way. Indeed, his own researches in this field qualify him to write with that clearness and vitality which pertain only to first-hand knowledge. Despite the vast amount of work which has been done since the days of Voit, there is as yet no unanimity of opinion on any of the fundamental physiological questions of protein metabolism—for example, on the minimum protein requirement or the relations of protein to the energy needs of the body. The perusal of the present volume leaves us with a stronger impression than ever that we have now much information but little knowledge on the subject; doubts, unverified hypotheses, and unsolved problems cropping up on almost every page. An important object of these monographs is to consolidate our advances and to gain observation posts for future work. The author has admirably accomplished both of these aims. The large and up-to-date bibliography (25 pages) is a useful feature, but it should be pointed out that some at least of the references in the text are not to be found therein. One of these is to work done by Mrs. G. D. Cathcart.

SIX PAPERS BY LORD LISTER.

With a Short Biography and Explanatory Notes by Sir RICKMAN J. GODLEE, Bart. (Medical Classics Series.) London: John Bale, Sons, and Danielsson, Ltd. 1921. Pp. viii. + 194. 10*s.*

THIS little volume is one of a series dealing with "some of the most epoch-making contributions to medical science," published under the general editorship of Dr. Charles Singer. It is intended to follow this volume with others treating of Paré, Laennec, Auenbrugger, Hippocrates, and Galen. It is eminently fitting that the work of a man whose researches revolutionised surgery should lead the series, and we must congratulate Sir Rickman Godlee upon his illustrative selection and also for his biography, though there are naturally, as Sir Rickman Godlee confesses, many regrettable gaps. However, we have papers upon the Early Stages of Inflammation, on Anæsthetics, on a New Method of Treating Compound Fractures, a Demonstration of Antiseptic Surgery, on the Nature of Fermentation, and an address on the Present Position (1890) of Antiseptic Surgery, delivered before the International Medical Congress at Berlin. Of these papers the two upon Compound Fractures and upon Fermentation are perhaps the most interesting, and give a very good picture of Lister's patient way of working and of the honesty in which he always set forth his failures together with his successes; it is interesting, too, to compare the paper upon Fermentation (1877) with Tyndall's treatment of the same subject in 1876.[1] There is, by the way, what seems to us a somewhat misleading statement in a note (p. 95) to a passage in the paper on compound fractures—"*Carbolic acid is almost absolutely insoluble in water*," for the crystalline purified variety which is mentioned in the note is soluble in 1-14 of water at 56° F.

The collected edition of Lord Lister's papers is expensive and the selection now before us will help many who have neither the time nor the opportunity to read the full collection, to realise what manner of man Lister was, and how great is the debt which suffering humanity owes to his patient studies.

CHEMICAL PATHOLOGY.

Fourth edition. By H. GIDEON WELLS. London and Philadelphia: W. B. Saunders Company. 1920. Pp. 695. 35*s.*

THIS text-book has now reached its fourth edition, and has been revised and additional new matter incorporated without any serious increase in size. Dr. Wells gives a review of general pathology from the standpoint of the chemical processes involved. The importance of a knowledge of the chemical changes induced in various morbid anatomical states cannot be too fully emphasised. We know of no other book which really attempts to describe these changes with such a thorough review of the literature. For example, the well-known amyloid degeneration is described, including its chemistry, and the views which have been put forward as to its origin. If one refers to the book for information on such subjects as calcification, fat necrosis, the composition of exudates and transudates, or of gall-stones, a good account will be found, with abundant references to the literature.

The book can be recommended not only to the pathologist but to the student who is desirous of obtaining information on chemical pathology, and thus bridging the gap between his knowledge of chemical physiology and general pathology. It can also be recommended to the clinician, since in it he will find abundant information on the present state of our knowledge of the chemical changes induced in disease. The chapter on anaphylaxis is good; a difficult subject is clearly dealt with, modern views being discussed. The chapter on the chemistry of growth and repair, including as it does an excellent summary of our knowledge of deficiency diseases, and the part played by vitamines is also worthy of special mention. In passing we observe that Dr. Wells is inclined to regard pellagra as a deficiency disease, and it is therefore included in this chapter. The chapter on pathological pigmentation deals with the chemistry of pigments, a subject of absorbing interest, and the relations of the various pigments are here described. A good account of melanin and lipochromes will also be found in this chapter, as well as a description of blood pigments. The so-called toxæmias are exhaustively considered from the chemical point of view, and the physician will obtain much valuable information from a perusal of the book, particularly with regard to uræmia, the toxæmias of pregnancy, and acidosis and ketosis. The difficult and complex problem of intestinal toxæmia has attracted considerable attention amongst medical men; a large number of diseases have been ascribed thereto, and it is of interest that the advance of chemical knowledge tends to minimise the importance of this as a cause of disease.

Dr. Wells has produced a really excellent work which can be recommended to all interested in the subject of chemistry as applied to medicine, and for the mass of readable information and the copious references to the literature contained therein.

BOOKS FOR NURSES.

1. *Medicine for Nurses.* By JOHN HENDERSON, M.D., Ch.B., F.R.F.P.S. Glasg. London: Edward Arnold. 1921. Pp. 263. 8*s.* 6*d.*

ALTHOUGH Dr. Henderson's book should prove of undoubted value to nurse-students who prefer to study special books on the special departments of nursing, it cannot be said that it is a particularly useful addition to nursing literature, and the information it offers in no way excels that contained in any comprehensive textbook on general nursing. Dr. Henderson explains that care has been taken to select only essential material, but it must be realised that the finesse of nursing depends largely upon a full understanding of the details which underlie good technique, and although the nursing and treatment are given in conjunction with each disease, one could wish for a more graphic description of nursing methods. The subject-matter is well arranged, and specially commendable is the short introduction on surface anatomy to each class of disease. The book can be recommended to students who are under the close supervision of a ward sister or sister-tutor responsible for the correct application of the treatment prescribed.

2. *Bandages and Bandaging for Nurses.* By M. CORDELIA COWAN. London and Philadelphia: W. B. Saunders Company. 1920. With 189 illustrations. Pp. 177. 10*s.* 6*d.*

THE excellent illustrations which make up the greater part of Miss Cowan's book almost convince us that it may be possible to achieve success in the difficult art of bandaging without the aid of a demonstrator. So realistic are the reproductions of the methods employed that each step may be closely followed until the required result is reached. We congratulate Miss Cowan upon the concise and attractive form in which she has presented her subject, and regret only that the present price of her book may prevent many English student-nurses from purchasing it.

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[1] Fragments of Science, vol. ii., p. 251.

THE MOTHER AND THE INFANT.

By EDITH V. ECKHARD. London: G. Bell and Sons, Ltd. 1921. Pp. 256. 6*s.* net.

THIS is a new volume of the Social Service Library, under the general editorship of C. R. Attlee. Miss Eckhard, who is a tutor in the Ratan Tata department of Social Science in the University of London, in conjunction with which the books in this series are published, has contributed an account of the aims and activities of the child-welfare movement, at least as far as these concern the child up to school age. Miss Eckhard points out how far the scope of voluntary organisations is enlarged by the growing activities of the State, and lays stress on the many ways in which a closer coöperation between these public and private bodies can be made effective. The main interest and value of the work, indeed, lie in the constructive and very practical suggestions scattered throughout its pages; and, though for many of the problems raised the author frankly acknowledges that there is no one solution, there is nothing vague or nebulous in the way in which the facts and the difficulties alike are faced.

The opening portion of the book describes the need for child-welfare work, and the growth of the movement from small and humble beginnings, the succeeding chapters dealing with the expectant mother, child-welfare centres, creches, day nurseries, and other organisations. There is a useful chapter on Workers and Training, in which is criticised the inadequate training, both theoretical and practical, allowed by the two years' course for health visitors; it must, indeed, be difficult to plan the time-tables in view of the wide range of subjects to be covered.

The book, as a whole, bears evidence of careful thought, and is one which will repay study by the social science worker of to-day.

THE LITERARY YEAR-BOOK, 1921.

London: Routledge and Sons, Ltd. Liverpool: Editorial Offices, 67, Dale-street. 8*s.* 6*d.*

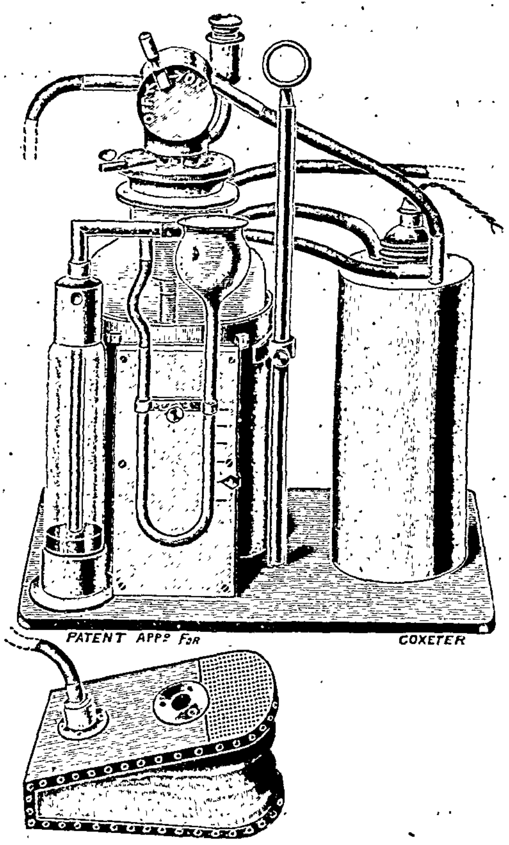
IN amount and arrangement of matter this issue is the best which has appeared. The Directory of Authors and Journalists, with a note on pseudonyms, occupies some 300 pages, and quantity of output must in such a work of reference determine to a considerable extent the amount of space allotted to each writer rather than his or her literary position. Mr. Thomas Hardy, Miss Marie Corelli, Mrs. Irene Osgood, and "Rita" tie with 15 lines apiece, and Sir Hall Caine and Mr. John Galsworthy with 14. Mr. Bernard Shaw does not detail his work, and fills only nine lines, while Sir Harry Johnston and Mr. E. V. Lucas each occupy 22. There are notable omissions, but it is impossible that this should be otherwise; everyone who writes is not an author, and when he may be said to become one defies definition. In a sense medicine has not, perhaps, been adequately noticed—neither Sir Clifford Allbutt nor Sir Almroth Wright are to be found in the directory, though the letters after the Poet Laureate's name serve to remind us that he is a medical man. The medical author, however, is an excellent example of the writer whose literary output is usually subservient to his proper calling. Our sympathies go out to the compiler of this list, who can have no arbitrary rules to guide him as to exclusion or inclusion.

Amongst the many features of general literary interest is a useful chapter on "Literary Property" contributed by Mr. G. H. Thring, the Secretary and Solicitor to the Society of Authors. This article embodies the experience and practice of years, and should have the desirable result of inspiring all who would enter into business arrangements with regard to the publication of their works to seek the advice of this Society. The chapters headed "Thoughts on Selling MSS.," "The Author as a Business Man," and "Some Hints for Contributors" are all valuable.

New Inventions.

A SIMPLE AND EFFICIENT INTRATRACHEAL ETHER APPARATUS.

THIS apparatus is simple in construction and gives a constant vapour of any strength at an even temperature. It may be worked with a foot-bellows, rotary pump, compressed air or oxygen as desired. As will be seen from the illustration the apparatus consists of: A light and specially constructed foot-bellows; a bottle to contain ether fitted with a new type of regulating valve; a water bath; a safety valve and manometer; and an electric or hot water heater. A filter packed lightly with cotton-wool is placed in the course of the tube leading from the bellows to the bottle which contains the ether.



The upper lever of the regulating valve diverts the air from the bellows *over* the surface of the ether or completely shuts it off. I have used this apparatus in a large number of cases of all sorts—e.g., removal of neoplasms of the neck, removal of tongue, upper jaw, &c., and it has proved itself to be efficient. The apparatus can be equally well used for the administration of intratracheal chloroform.

Messrs. Coxeter and Son, 171, Pancras-road, N.W. 1, to whom I am indebted for many helpful suggestions with regard to mechanical difficulties and also for making a light and efficient pair of foot-bellows, are the wholesale makers of the apparatus.

A. W. MATTHEW, M.R.C.S., L.R.C.P. Lond.,
London, W. Anæsthetist to St. Mary's Hospital.

THE King has granted unrestricted permission to Mr. A. A. Miller, L.R.C.P. Lond., M.R.C.S., to wear the Cross of the Chevalier of the Legion of Honour, conferred upon him by the President of the French Republic in recognition of services to the French sick and wounded in the late war.

FRENCH SUPPLEMENT TO THE LANCET

Under the Editorial Direction of

Professor CHARLES ACHARD,
PROFESSOR OF CLINICAL MEDICINE IN THE UNIVERSITY OF PARIS.

AND

Dr. CHARLES FLANDIN, D.S.O.,
CHEF DE CLINIQUE A LA FACULTÉ DE PARIS.

OCULAR TRAUMATISM AND MENINGITIS.[1]

BY PROFESSOR F. DE LAPERSONNE.

THE following is a summarised account of a case of acute meningitis following an infected wound of the eye, seen at the Ophthalmological Clinic of the Hôtel-Dieu, Paris.

Patient, a boy, aged 13, was wounded in the right eye by broken glass on Oct. 9th, 1920. An oculist, consulted on the 11th, reported a penetrating wound of the cornea, with hypopyon. On the 19th the patient was sent to the Hôtel-Dieu and admitted as an urgent case; upon examination we found panophthalmia with yellowish cornea and chemosis. Movements of eyeball limited; temperature 38° C.; headache and excitement. Exenteration was immediately performed, with local anæsthesia, by Dr. Velter, *chef de clinique*. Complete curettage, followed by thermo-cauterisation of the orbit, brought away the whole of the membrane and masses of purulent matter. On the same day the temperature rose and remained at 40° C. until the following day. On the 21st it fell to 37° C., and 3 c.cm. of Delbet's serum was injected. On the 22nd temperature again rose; there was stiffness of the nape of the neck, and Kernig's sign, but no vomiting or headache. Lumbar puncture gave a doubtful liquid. An intravenous injection of 20 c.cm. of electrargol was given.

On the 23rd the nervous symptoms were less evident, the patient was calmer and more sane; temperature was 38·2° C. On the 24th further injections of Delbet's serum and electrargol were given. On the 25th the meningeal symptoms were accentuated; the occipital headache was intense, with great excitement, nocturnal cries, Kernig's sign; temperature 40·2° C., pulse uncountable. Pupil of unaffected (left) eye dilated; papillary stasis present. Another lumbar puncture was made. Injections of electrargol and Delbet's serum were continued; on the 29th an injection of antimeningococcal serum was given. Lumbar puncture gave a liquid distinctly cloudy and hypertensive. The temperature remained above 39° C.; the patient died on Oct. 31st, three weeks after the injury and 12 days after the operation.

Examination of cerebro-spinal fluid.—The first and second lumbar punctures showed abundant polynucleosis, but direct examination revealed no bacterial elements. The third puncture showed considerable polynucleosis with numerous pneumococci, presenting their characteristic aspect of diplococci encapsuled and Gram-positive. There was no question of meningococci, which have a different morphological character and are Gram-negative. Cultures from the fluid obtained by anterior puncture gave pure pneumococci.

Autopsy.—The exenterated ocular cavity was perfectly empty, there being no choroidal debris. The orbit contained neither purulent infiltration nor any foreign body. A generalised meningeal congestion was observed, with hæmorrhagic pachymeningitic plaques. The arachnoid cavities were filled with a muco-purulent fibrinous mass. The base of the skull was especially involved; the median fossa was covered with thick greenish-yellow pus, which had spread over the entire anterior arachnoid membrane, and traces of which had reached the anterior fossa and even the cerebellar fossa. The sinuses of the dura mater were intact.

Simple and Complicated Injuries of the Eye.

Meningeal affections following ocular or oculo-orbital injuries are rare, but very serious. War ophthalmology has given relatively numerous examples of traumatic meningo-encephalitis caused by oculo-orbital injury. Not only the eye was involved; the vulnerant agent had produced an oculo-orbital wound, with direct fracture of the base of the skull in the anterior fossa and with discharge of cerebro-spinal fluid. We have observed 12 cases of meningo-encephalitis amongst 1500 wounded treated in the ophthalmological department of the Hôtel-Dieu, and were able to distinguish the following four varieties.

1. Very acute form. *The patients reached us very* quickly, but were already in a manifestly meningitic condition. They rapidly became delirious or comatose and died in less than 48 hours.

2. Ordinary form, with stiffness *of back of neck*, Kernig's sign, excitement, and fever. Cerebro-spinal fluid cloudy; death within ten days.

3. Slow form, lasting three weeks, with very irregular thermic curve, and periods of excitement and quiet. The cerebro-spinal fluid filtered more or less intermittently through the wound; its issue sometimes coincided with a partial remission of symptoms. This fluid, clear or mixed with pus or blood, had an ammoniacal odour. The condition produces progressive enfeeblement and terminates in death.

4. Form admitting of cure. Certain patients were cured in spite of very grave injuries. In the case of one of our blinded men a bullet had destroyed the contents of both orbits and the root of the nose. Cerebro-spinal fluid flowed from this large wound, in which the cerebral pulsation was visible. After a period of great danger the patient developed mental disturbances for some months. We have lately seen him in good health.

Simple penetrating wounds limited to the eyeball can also produce meningeal disturbance. Several observations have been published upon this subject. In 1897 I presented to the Société Française d'Ophtalmologie the following summarised account of a case resembling in every way that reported at the beginning of this paper.

A child, aged 12, was wounded in the cornea by a blow with a pair of scissors. On the fifth day very painful iridocyclitis was observed, with headache and excitement. Classical enucleation was performed on the sixth day; incision of the eyeball revealed a purulent iridocyclitis with involvement of the vitreum. The child remained in an excited condition and headache persisted. The third day after operation the temperature rose to 40° C., with severe headache, vomiting, delirium, and stiffness of the nucha. Death occurred on the tenth day after intervention.

Autopsy.—Suppurating meningitis was revealed, only slight at the convexity, but forming at the base a thick greenish yellow exudate, extending from the medulla oblongata to the optic chiasma. Bacteriological examination demonstrated the existence of pneumococci, with no associated organisms, in the meningeal pus and in the sheath of the optic nerve. The sinuses of the dura mater presented no alteration.

Kalt has published accounts of two cases of pneumococcal meningitis following operation (one a child suffering from orbital sarcoma with corneal ulceration, the other a man of 60, enucleated for purulent iridocyclitis). These conditions must be distinguished from thrombo-phlebitis of the orbital veins and of the cavernous sinus. We have lately observed the following case:—

On Nov. 3rd a man, aged 40, was admitted to the Hôtel-Dieu as an urgent case, with a temperature of 40·6° C. and delirium. He presented, on the same side as iridocyclitis of long standing, orbital cellulitis with palpebral œdema, exophthalmia, and papillary stasis. After 48 hours the same symptoms were observed on the other side. Thrombo-phlebitis of the orbital veins and of the cavernous sinus had attacked the other side by way of the coronary sinus. The cerebro-spinal fluid showed abundant polynucleosis. The patient died four days after his admission to hospital.

Pathogenic Agency of the Pneumococcus.

The pneumococcus is the pathogenic agent of meningitis following infected wounds of the eye. Since 1897, at the Société Française d'Ophtalmologie—i.e., in the thesis of my pupil Painblan (Lille, 1897), and in a lecture delivered at the Hôtel-Dieu (*Presse Médicale*, 1901)—I have insisted on the part played in these complications by the pneumococcus. In Germany, a year before my first communication—i.e., in 1896—Zimmermann had reported, in a case of meningitis following enucleation, the presence of "undifferentiated cocci." The pneumococcus, however, has been recognised since Talamon and Fraenkel. My colleague, Calmette, Director of the Pasteur Institute at Lille, and I attempted at that time to produce the same phenomena experimentally.

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[1] A lecture delivered at the Ophthalmological Clinic, Hôtel-Dieu, Paris.

Our results with rabbits were as follows: (1) Section of optic nerve; injection into sheath of nerve of a drop of only slightly virulent pneumococcal culture; death, due to generalised infection, in 10 days. (2) Inoculation into anterior chamber with a strong pneumococcal culture; death in two days, due to pneumococcal toxæmia.

In these two cases we did not find orbital or meningeal suppuration, but we proved the presence of the pneumococcus in the optic nerve-sheath, at the level of the optic chiasm, and at the base of the brain.

The pneumococcus often exists as a saprophyte in the conjunctival culs-de-sac and in the lacrymatory canals without causing the slightest inflammation; but it is also often pathogenic, producing conjunctivitis of the new-born and corneal ulcer with hypopyon, and when penetrating injury of the eye takes place it frequently begins to cultivate, and may produce meningitis. Our two observations concern children of 12 and 13 years of age, but analogous adult cases have been reported. Must we assume that a process of anaphylaxis takes place—that after a former pneumococcal infection the system is specially sensitised for the pneumococcus? In any case this micro-organism is a redoubtable enemy.

Method of Treatment.

Experiments in vitro show that certain antiseptic solutions (the mercuric salts, such as sublimate, for instance) do not penetrate the enveloping capsule of the pneumococcus. Lavages, and even subconjunctival injections, of sublimate or cyanide probably have no action, since ocular infection depends upon the pneumococcus. Alkaline substances dissolve the capsule and prevent the pneumococcus culture from spreading. Since 1897 I have used hyperchlorite of calcium, but I have had to stop using it, because it sets up irritation of the conjunctiva. The hypochlorites again came into use during the war (Carrel's method, with Dakin's fluid), and I myself in 1917 advised the employment of chloramine in 1 per cent. solution, for oculo-orbital war injuries.

In the presence of a penetrating injury of eyeball or orbit success depends essentially on rapidity of diagnosis and treatment. The patient should be carefully and quickly examined with use of radiography or radioscopy. Intervention should follow rapidly—less than 24 hours after the injury. My pupils, Duverger and Velter, in their work "Ophtalmologie de Guerre," have detailed the rules of rapid treatment, which treatment is essentially conservative. But in the presence of an acknowledged panophthalmia, all delay is dangerous; here the eye is painful, definitely lost for purposes of sight, and likely to induce grave complications. The surgeon must choose between enucleation and exenteration. In 1884, de Graefe, after the death of two of his cases of panophthalmia, insisted upon simple evisceration in preference to enucleation. In 1889, an interesting discussion on this question was held at the Société Française d'Ophtalmologie; Panas and Gayer preferred enucleation, but the former afterwards adopted exenteration with the cautery, which I advocated in 1892 for all cases of panophthalmia.

Exenteration has this great advantage over enucleation: the sheath of the optic nerve is not thereby opened and infected. At the International Congress of Medicine held in Paris in 1900 Pfluger, Snellen, de Schweinitz, and Swanzy presented reports on "Enucleation and suggested operations to replace it." Agreement between them was not complete. Moreover, the total statistics from 1861 to 1896 of Moorfields Hospital showed seven cases of death in 6876 enucleations. It must be noted, however, that these 6876 cases were not all of panophthalmia, and that the seven deaths all followed panophthalmia. In 1908 Albert Terson, in a report on the Treatment of Wounds of the Eye, declared that "exenteration with the cautery as advised by Lapersonne should be accepted as the least dangerous and most efficacious operation against panophthalmia." Antonelli made certain reservations in connexion with sympathetic ophthalmia, but sympathetic ophthalmia is not to be feared in panophthalmia; what is to be feared is plastic iridocyclitis. In 1912 Jacqueau, of Lyons, recorded a case of panophthalmia consequent upon a penetrating wound, in which enucleation was followed by death.

Conclusion.

At the present time exenteration with the cautery is practised by the majority of ophthalmologists. Consideration of the case recorded at the outset of this lecture does not point to contra-indications, for it is clear that the meningeal affections existed before the operation.

I am convinced that exenteration with the cautery is demanded by the indications I have detailed. It is the only treatment for acute panophthalmia following a penetrating accidental or surgical wound of the eye, with infiltration of Tenon's capsule, chemosis, and threatened orbital cellulitis. But if fever, headache, and other symptoms are already in evidence, the prognosis must clearly be made with reservations as to meningeal complication.

CORNEAL ANÆSTHESIA

INDUCED BY LESIONS OF THE TRIGEMINUS.

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AND
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CORNEAL anæsthesia may exist in an isolated condition and may pass unobserved, but more often it forms part of a neuro-ocular syndrome—neuro-paralytic keratitis, ablation of the Gasserian ganglion, fracture of the base of the skull, ophthalmic herpes, neuralgic herpes of the cornea, or kerato-malacia. It is nearly always connected with a lesion of the Gasserian ganglion. The ophthalmic nerve, its nasal branch, the ophthalmic ganglion, or the ciliary nerves can, however, be directly reached. Sometimes it is connected with a lesion of the root of the trigeminus, or of a protuberant lesion (alternate hemianæsthesia), or of a cerebral lesion (hemianæsthesia).

Isolated Corneal Anæsthesia.

This condition may exist unobserved, but if a minimal corneal injury takes place or an operation on the eye is performed it may be the beginning of neuro-paralytic keratitis. In order to avoid serious complications it is well to pay strict attention to the sensibility of the cornea. We shall shortly refer to a case of fracture of the skull in which a very slight traumatic conjunctival keratitis ended in necrosis of the cornea with panophthalmia. The corneal anæsthesia had not been dealt with sufficiently early.

Corneal Anæsthesia and Operation for Cataract.

In four of our cases operated upon for cataract complications developed; and only the accident of these complications enabled us to discover corneal anæsthesia in the eye operated upon, an anæsthesia also existing in the other eye. A brief record of these four cases follows:—

CASE 1.—Complete bilateral cataract; aged 88. Nothing to report. On Jan. 23rd, 1920, extraction of the cataract of the left eye, with iridectomy and suture of the cornea. Cicatrisation of the corneal incision only took place after five weeks; no pain. No other complications, except an intense oblique astigmatism, reducing vision to 6/60.

CASE 2.—Complete bilateral cataract. Nothing to report. Right eye: extraction with iridectomy, without suture; incomplete coaptation of corneal incision for more than three weeks. Interstitial opacification of superior part of cornea.

CASE 3.—Female, aged 58, alcoholic. Lacrymal ducts impermeable, but not infected. Complete bilateral cataract. On Dec. 6th, 1919, preparatory iridectomy of right eye. On July 3rd, 1920, extraction of cataract and suture of cornea.

incomplete coaptation of corneal incision. Iridocyclitis with hypopyon, atrophy of eyeball. No pain. Corneal cicatrisation *only complete after six weeks.*

CASE 4.—Female, aged 64. Left eye operated upon for cataract in 1916, with no complications. Right eye: complete cataract. Former involuntary lacrymation, but the injection was well taken, and there was no conjunctival reaction. On Oct. 7th, 1920, extraction of the cataract with iridectomy and suture of cornea; incomplete coaptation of incision. Iridocyclitis without pain, hypopyon, then panophthalmia, necessitating exenteration.

There is no reason to attribute the corneal anæsthesia to our intervention. In his thesis on "Corneal Sensibility" (Paris, 1908) Cerise showed that "it is always on the cicatrice itself that sensibility returns in the first place," and that the corneal portion rapidly regains its innervation. In our four cases complete and persistent anæsthesia was present extending over the whole cornea not only of the eye operated upon but also of the other eye. This insensibility was evidently present before the operation, and caused delay of cicatrisation. The first case had no troublesome sequel; the second was complicated by corneal opacity. In the third and fourth cases incomplete cicatrisation of the incision facilitated septic endo-ocular complications (atrophic iridocyclitis, panophthalmia) due to the defective condition of the lacrymal ducts. To sum up—before operating on cataract it seems to us of value to complete the examination of the condition by testing the corneal sensibility.

Neuro-paralytic Keratitis and Extension of Anæsthesia into the Trigeminal Tract.

It is evident that anæsthesia of the whole trigeminal tract can only be induced by a Gasserian or retro-Gasserian affection. When the anæsthesia only affects the tract of the ophthalmic nerve the lesion is seated behind the orbit or at the level of the Gasserian ganglion. We have observed in our present work under Professor F. de Lapersonne a neuro-paralytic keratitis with anæsthesia of the ophthalmic nerve and hemicrania, very probably connected with an endocranial neoformation of the region of the Gasserian ganglion. The anæsthesia is often limited to the cornea and to the conjunctiva, and more often still to the conjunctiva alone. The lesion may be in front of the Gasserian ganglion, and sometimes at the level of the ciliary nerves themselves (orbital affection), but almost always it is a lesion of the Gasserian ganglion itself. And in that case, how can we explain affection of corneal sensibility when cutaneous sensibility remains unaffected? It would be interesting to know if this greater vulnerability of the fibres supplying the cornea is due to the disposition of their course across the Gasserian tract. Another hypothesis appears equally admissible: the very special sensibility of the cornea would be more easily modified than that of the skin.

The skin reacts in three forms of sensibility, unlike the cornea. Corneal sensibility to pain is very great; corneal sensibility to contact, denied by the majority of writers, is ill-defined; it requires separation of the points of Weber's compass by more than 5 mm. Corneal sensibility to heat is a disputed question; a current of hot air produces a sensation of cold. However it may be, neuro-paralytic keratitis is oftenest induced by a lesion of the Gasserian ganglion, even when the cutaneous sensibility of the trigeminus is intact.

Neuro-Paralytic Keratitis and the Surgery of the Gasserian Ganglion.

Everyone is aware of the gravity of neuro-paralytic keratitis following resection of the ganglion. To avoid this dangerous complication, certain writers have advised the substitution for this operation of retro-Gasserian section of the trigeminus. For Sicard[1] "section of the root, whilst leading to cure of neuralgia, gives shelter to neuro-paralytic complications." We have, however, just observed a case of neuro-paralytic keratitis following retro-Gasserian neurotomy.

CASE 5.—Female, aged 36, who had suffered for 12 years from trigeminal neuralgia, resisting all treatment. On August 2nd, 1920, Dr. de Martel performed retro-Gasserian neurotomy on her; anæsthesia of cornea and conjunctiva and of the trigeminal tract. Two months after the operation neuro-paralytic keratitis developed with ulceration of the nasal membrane and of the wing of the nostril. Tarsorrhaphy arrested the evolution of the corneal ulceration, and the latter disappeared, leaving several opacities. Absolute corneal anæsthesia persisted.

Neuro-paralytic Keratitis and Traumatism of the Skull.

In the presence of cranial traumatism corneal anæsthesia is a symptom to be looked for. It indicates a lesion of the base and makes it possible to avoid ocular complications.

CASE 6.—Male, wounded Nov. 3rd, 1917, by several fragments of shell. Wounds of limbs and "non-penetrating injury of the left temporal region. Shell splinter extracted from the soft portion"; ordinary traumatic kerato-conjunctivitis, with slight epithelial erosion of the cornea. On Nov. 13th a vast central ulcer was observed, with total corneal anæsthesia and hypopyon; no pain. On the 26th panophthalmia; exenteration. To sum up—a radiating fracture of base of skull, with probable involvement of Gasserian ganglion. If corneal anæsthesia had been discovered in time tarsorrhaphy would, perhaps, have preserved the eye.

Neuro-paralytic Keratitis and Meningeal Reactions.

All bony, meningeal or encephalic lesions involving the Gasserian region can induce neuro-paralytic meningitis. Syphilis occupies the chief place in this ætiology. But it must be realised that the meningeal reactions so frequently observed during certain general or epidemic affections may be accompanied by corneal anæsthesia with neuro-paralytic complications.

Neuro-paralytic Influenzal Keratitis.

During the 1918–1919 epidemic we observed 21 cases of neuro-paralytic keratitis in patients suffering from influenza.[2] This manifestation was accompanied by pains in the trigeminal tract on the same side, with headache. In cases where lumbar puncture was performed we found very distinct albuminosis and lymphocytosis.

Corneal lesions have a polycyclic contour, as in corneal herpes. One of our cases presented numerous vesicles, analogous to those of herpes zoster, on the upper eyelid.

Keratomalacia.

This condition should be put in the same class with neuro-paralytic keratitis; it ends in perforation of the cornea, whilst the symptoms of reaction are only slightly marked. Keratomalacia is generally followed by death. Anatomical and pathological reports have made clear the meningo-encephalic nature of this disease, which attacks very young, premature, or weakly children.

Herpes of the Cornea.

Neuralgic herpes of the cornea is accompanied by painful symptoms in the trigeminal region and by hypoæsthesia, or even anæsthesia, of the cornea. We have just seen that certain meningeal conditions produce an analogous syndrome. The corneal lesions of neuro-paralytic influenzal keratitis, with polycyclic contours, for example, are absolutely identical with those of corneal herpes. On the other hand, the corneal anæsthesia of herpes zoster is also accompanied by vesicular eruption, the ulceration of which assumes a polycyclic form. It would be of interest to examine the cerebro-spinal fluid of patients suffering from neuralgic herpes of the cornea. This disease is doubtless connected with a slight affection of the Gasserian ganglion, allied to a defective condition of the meninges.

Ophthalmic Herpes.

In herpes zoster corneal anæsthesia is to be expected. The vesicular eruption rapidly assumes a polycyclic shape. Furthermore, herpes zoster is characterised by painful phenomena, to which we shall return later.

Basing their data on a series of 21 cases of thoracic herpes zoster, with autopsy, Head and Campbell have shown that the condition is one of inflammatory and hæmorrhagic lesions situate at the levels of the spinal ganglia. This theory, reserved at first for spinal herpes zoster, must be extended to cover facial herpes. André Thomas and Henyer found the same type of inflammatory and hæmorrhagic lesions at the level of the Gasserian ganglion.[3]

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[1] Société de Neurologie, June, 1920.

[2] Monbrun, A.: Archives d'ophtalmologie, August, 1919.

Herpes zoster is very often accompanied by cerebrospinal fluid reactions—lymphocytosis and albuminosis. We have always noticed this fact in the numerous cases we have studied under Professor de Lapersonne. Certain types of herpes zoster are perhaps due to an undetermined infection, "epidemic, non-relapsing, and contagious," as claimed by Landouzy. But very different diseases may induce herpes zoster—syphilis, tuberculosis, pneumonia, eruptive fevers, influenza, typhoid, diphtheria. MM. Achard and Laubry, Pautrier and Clement Simon, have seen it following spinal anæsthesia. It is known that the arachnoid and the pia mater are inserted in the dural cavity of the Gasserian ganglion, and that the latter is directly connected with the cerebro-spinal fluid. Herpes zoster is induced by a meningo-Gasserian lesion. And it is the affection of the Gasserian ganglion which produces corneal anæsthesia and the symptoms common to herpes zoster, to neuro-paralytic keratitis, and to certain forms of corneal herpes.

Painful Anæsthesia of the Trigeminus.

Herpes zoster, neuralgic herpes, and certain forms of neuro-paralytic keratitis are accompanied by neuralgia in the trigeminal region; these painful phenomena are to be contrasted with anæsthesia of the tegument. It is interesting to study this dissociation of the objective and subjective sensibility of the trigeminus. Moreover, the trigeminus contains sympathetic fibres of the cerebro-spinal system. Some of these sympathetic fibres lead directly to the branches of the trigeminus, others to the Gasserian ganglion (sympathetic Gasserian nerve fibres of François Franck).

In 1916 one of the writers investigated pains of the trigeminal tract of causalgic type due to "alteration of the sympathetic in certain wounds of the eye and orbit."[4] One of our wounded cases presented at the same time a complete anæsthesia of the whole trigeminal tract. Herpes zoster completely effects this painful anæsthesia. We know that Déjerine and Thomas, and Head and Campbell, attribute a certain importance to the sympathetic in intercostal herpes zoster. In 1919 Sicard, Roger, and Vernet insisted upon the rôle of the sympathetic and upon the causalgic character of the pains of herpes zoster. We consider that in herpes zoster, neuralgic herpes, and certain forms of neuroparalytic keratitis a Gasserian lesion attacks at the same time the true nerve-fibres of the trigeminus, producing anæsthesia of the tegument, and its sympathetic nerve-fibres, causing pain.

This theory is important from the point of view of surgery of the Gasserian ganglion. Resection of the ganglion and retro-Gasserian radicotomy anæsthetise the tegument innervated by the trigeminus, too often producing neuro-paralytic keratitis, but they do not always cure facial neuralgia, since the attachment of the sympathetic to the trigeminus is partly at the level of the ganglion and partly below it.

LACK OF LAUNDRIES IN PARIS.

(FROM A FREQUENT PARIS CORRESPONDENT.)

THE annual fête day of the Paris washerwomen has gone by—it used to coincide with the Mid-Lent Carnival—when the Queen of Beauty is elected to preside over the rejoicings, being chosen among the laundresses. But modern industrialism, steam-laundries, the high price of coal, and the general circumstances of life prevalent in Paris have played havoc with an ancient and picturesque custom. There was a time when the Seine sufficed for the washing of Paris linen, and nothing can be better or more natural than to wash clothes in running water and hang them out to dry in the open air and sunshine, so long as such treatment of the river does not affect its value for the community in other ways. There are little recesses on the banks of the Seine where for centuries the laundress of Paris earned her living free from rent. During the reign of Louis XV. a man named Marie obtained permission to instal a houseboat near the Pont Louis XV., so constructed as to serve for a laundry. Here, in a sheltered partition, each laundress could wash her goods in the running water, and it was her habit, when the season allowed, to wear flowers. The presence of so many women, sometimes gaily bedecked with flowers, gave animation to the banks of the Seine; and, as they were washing close together, the Queen of Beauty could be more easily selected among them than if they had been engaged on some other occupation.

The Passing of the Houseboat Laundry.

Time, however, wiped these mediæval pictures off the canvas. Paris spread out and the river ceased to be the centre of the city. The houseboat laundries, which had become very numerous, decreased in numbers, and by 1849 only 80 remained, and a Parliamentary Committee was appointed to inquire into them and the whole laundry situation of the city. The reporter for the committee, Mr. Armand, argued that dirty linen was a cause of disease and that the fact of its existence was a symptom of laziness and, if not overcome, of moral decadence. But as a consequence it was decided to build baths and washhouses in districts that were some distance from the Seine, for in all parts of the town there would be linen to wash. The first of these new washhouses was constructed in the old insalubrious quarter of the Temple. It was called the Bain Lavoir Napoléon and was opened in 1853. As these establishments increased in number, the houseboat laundries, such as were left, disappeared one by one; their picturesque features had largely gone before. When the danger had thus ceased to exist a scare was started that the Seine was contaminated by the dirty linen, but by that time the sewers, or the overflow from the sewers, were in operation as real dangers. It was decided that no new floating laundries should be allowed, and to-day there only remain three or four which are in the last stage of decrepitude and cannot float much longer. The days of the laundry-boat are numbered and a popular feature of Paris life is fading away. What is more serious far is the fact that the other laundries are also disappearing, the picturesqueness which supported the boats being absent from the washhouses.

A Substitute Must be Found.

Yet Paris must wash its dirty linen. Before the war there were 350 public washhouses; but the space they occupied is now wanted for new offices, warehouses, banks, and even kinemas. Already 184 washhouses have been abolished. It must be borne in mind that in the tenement-houses and flats of Paris there are no conveniences for washing, no boiler, no little back garden or yard where the linen can be hung to dry. The housewife takes her linen to the public washhouse and pays a small sum for the necessary accommodation to wash it. The majority of families have not the means to give their linen to laundries; they must wash at least a considerable part of it themselves. The large steam-laundries that take in the linen of families and hotels are established in the outskirts of Paris, notably at Boulogne, where they have the necessary room, and with a motor-car carry the linen to and from town, manage very well. But the charges made are ruinous to all but the wealthy. If the poor and persons of moderate means cannot get their linen washed on reasonable terms, public health must suffer. But if the Mid-Lent Carnival has this year so far forgotten its traditions as to select for its Queen of Beauty a typist instead of a washerwoman, that is no reason why public attention should not be called to this public grievance. Some remedy may then be found, and the festival will have served a good purpose.

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[3] Société de Neurologie, 1912.

Monbrun, A.: Archives d'ophtalmologie, May, 1916.

THE LANCET.

LONDON: SATURDAY, APRIL 2, 1921.

The Action of X Rays on Living Tissues.

IN some respects it may be said that the general physiological effects of X rays have not received the experimental study that they merit. It is only natural that in the treatment of disease by these rays attention has been focussed upon the affected structures, the careful observation of which, combined with experimental investigation, has resulted in a very large number of facts being ascertained. The microscopic findings, indeed, form a separate branch of pathology which may conveniently be included in the term radio-pathology. Such detailed studies have provided a basis for a rational interpretation of the various processes by which a malignant tumour, when irradiated in vivo, may be arrested in its growth, diminish in size, and possibly disappear in the course of time. It is, however, unlikely that this sequence of changes occurs simply as a result of the irradiation which the tumour cells have undergone, for the normal tissues of the host also share to some extent in the exposure to the rays. The nature of this physiological reaction will largely depend on the conditions under which the irradiation is carried out. In our present issue an account of some experimental studies is given by Dr. IVAN I. MANOUKHIN. The author has come to the conclusion that as a result of exposing the spleen to X rays leucocytolysins are set free in the blood. The action of such bodies, as their name indicates, is to effect a solution of the leucocytes, a process which the author looks upon as a necessary step in the successful combat of certain diseases in the body. The experimental basis of this work was provided by monkeys and guinea-pigs, and Dr. MANOUKHIN satisfied himself that subsequent to an exposure of the spleen to X rays the blood shows an increased content of bacteriolysins, agglutinins, and other antibodies.

Starting from this basis Dr. MANOUKHIN carried out a large amount of therapeutic work in cases of tuberculosis, tetanus, typhoid, and other diseases, the main feature of such treatment being the irradiation of the spleens of the patients. An important supplement to this treatment is mentioned by the author; 10 minutes after the X rays are given blood is obtained from the patients, and the serum from this is readministered to them in the form of gelatin capsules. The line of investigation seems one of considerable importance, and will probably stimulate further inquiry into the physiological processes which occur among the various organs of the body after irradiation. Since 1903, when SENN drew attention to the direct effect of X rays upon the spleen in cases of leukæmia, a great deal of work has been done upon the blood changes which occur in animals after exposure to X rays. The researches of AUBERTIN and BEAUJARD in 1908 upon guinea-pigs stand out as one of the most important of the early contributions to the subject; they came to the conclusion that not only are the circulatory elements of the blood affected by the rays, but that some disturbance is produced in the bone-marrow. They found that a medium dose of X rays caused a condition of hyper-activity of the bone-marrow which was the more accentuated the more marked the decrease in the leucocyte content of the blood.

Recent observations by Dr. J. C. MOTTRAM have shown that individuals who have been exposed to repeated small doses of the penetrating gamma rays suffer a serious diminution not only in their circulating leucocytes but also in their red cells. In extreme cases he showed that this may result in an aplastic pernicious anæmia. Last week we reported the untimely and tragic death of Dr. IRONSIDE BRUCE, who has fallen a victim to a blood disease of the above kind. It can only be surmised that, during the course of his radiological work, in alleviating the suffering of others Dr. BRUCE received fractional doses of radiation, the effects of which manifested themselves with startling suddenness; for he died after only a brief illness. Such an event may cause apprehension among radiologists generally. The dangers attending the use of X rays are only now being fully revealed, and it is recognised that these fall into two categories: the superficial damage to the skin caused by the softer types of X rays resulting in dermatitis or still graver conditions; and the damage to the deeper structures, including the blood-forming organs, caused by the more penetrating types of X rays and the gamma rays from radio-active substances. It must be admitted that the conditions under which a great deal of the radiological work of the country is done at present are of an exacting nature. The main factors detrimental to the health of operators appear to be (1) fractional doses of the rays they are using, owing to insufficient protection; (2) the fouling of the atmosphere due to high tension discharges and bad ventilation; and (3) the necessity for a number of hours per day being spent in the dark room. The difficulties of providing adequate safeguards to health under the varied conditions of radiographic and radiotherapeutic work are considerable, but certainly not insurmountable, and we look with confidence to radiologists to overcome these difficulties, so that the practice of radiology may continue under a regime in which the personal safety of the operator has been made the subject of scientific investigation. To initiate such a regime was, we understand, Dr. BRUCE'S earnest wish, and its inauguration would be the most fitting memorial to his life-work.

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Hospital Administration: A Test Case.

IT should be a great help to the quiet solution of the problems of hospital administration throughout the country to have them worked out on the stage in the lime-light and with a full orchestra. For this reason we may all be thankful to Bradford. There everything has conspired to produce a dramatic effect; last of all the Boundary Extension Inquiry, which has given a fine opportunity to representative health officers of other sanitary districts to say what they think of municipal health administration as judged by its results in the county borough of Bradford. The city, said one, was badly scavenged and had a persistently high infant mortality rate; the chances of prospective mothers dying in childbirth, said another, were twice as great at Bradford as anywhere else in the West Riding, largely owing to filthy homes. We quote the harsh statements apart from their context, as has been done widely in the daily press, but without endorsing their conclusions. Cause and effect are not always easy to trace in health matters, and we have a questionable precedent supplied by the Minister of Health himself last week, when attributing the fall in infant mortality in London to the maternity benefit under the Insurance Acts. Efficient scavenging and unanxious motherhood are both good things, even though they must compete with many others for an immediate effect on vital statistics. But admitting all this, it is equally certain that the public health service in Bradford with its 27 rate-paid doctors has not yet demonstrated by its results the necessity for doing away with the voluntary hospital system, and that, without mincing words, is what the proposals of Dr. J. J. BUCHAN, medical officer of health for Bradford, amount to.

The local medical advisory council does not share Dr. BUCHAN'S views, but this excellent institution, which consists of three consultants, nine general practitioners, and two whole-time officers, did not come into being till last December, and has only just presented its report, a unanimous one, on the proposed municipal hospital of St. Luke's. The proposal is, it may be remembered, to provide a total of 1148 hospital beds, which, judging by the actual experience of running expenses at the Royal Infirmary and the tuberculosis sanatorium of the Insurance Committee, would entail a cost of at least 16s. per annum per head of the population of Bradford. Not that this would be a high price to pay for a complete system of municipal health, but the advisory council contends with justice that such a levy at the present time would cut off at its source most of the revenue of the voluntary hospitals. A deficiency of in-patient beds is frankly admitted by the advisory council, which therefore approves the St. Luke's scheme in so far as it is necessary to supplement the present provision of hospital beds and to make this provision adequate. But on Sir NAPIER BURNETT'S estimate of three beds per 1000 of population, Bradford would require no more than 900 hospital beds in all, or only 600 of the additional 1148 suggested. The casualty departments of the voluntary hospitals already meet local needs, their out-patient departments suffice for the reduced demand brought about by domiciliary treatment under the Insurance Acts, and facilities for treatment of eye, ear, nose, and throat might be provided by coöperation with the existing special hospitals. The alternative scheme set forth by the advisory council appears on the face of it to be a thoroughly business-like one. It proposes the establishment of a joint hospital board with executive powers enabling it to coördinate all the hospitals in the city, to allocate special work, to avoid overlapping, to give first-hand information on hospital matters to the municipal health committee, to appoint the visiting staffs, to select and nominate applicants to all vacant posts. At St. Luke's itself it advocates a practitioners' ward into which patients might be sent for treatment by their own medical attendants; apart from this, the appointment of the staff to be made on the lines recently adopted at the Paddington Infirmary, London, under the St. Mary's Hospital scheme. Such a staff would be made up of four physicians, four surgeons, one obstetrician, one ophthalmic surgeon, one aural surgeon, one pathologist, one radiologist, and two anæsthetists, and, in addition, beds should be placed at the disposal of the tuberculosis officer.

We believe that the scheme substantially as suggested, if it could be carried out with the full and hearty concurrence of all those concerned, would indeed meet the needs of Bradford and provide a nucleus for future development, whether along municipal or voluntary lines. It contains the essentials of continuity with the past without unduly pledging the future. It has a proper regard for economy both in money, materials, and personnel. Whether all parties in Bradford are prepared to sink their grievances, some of them very real ones, for the common good remains to be seen. The eyes of the public health workers of the country are fixed upon them; this is a critical position, and no one will mistake for weakness the conciliatory attitude of true statesmanship.

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Intussusception.

INTUSSUSCEPTION in its acute form among children is a disease which even at the present time is exceedingly fatal, but this high mortality is not inevitable and is due very largely to delay in diagnosis. Mr. C. P. B. CLUBBE, of Sydney, N.S.W., a second edition of whose useful book [1] has recently appeared, has had a relatively large experience of the condition, yet it is, fortunately, not of very frequent occurrence, and this, no doubt, partly accounts for the fact that when it does occur it is not more readily diagnosed. Nevertheless, it is not difficult to recognise. A previously healthy child is seized quite suddenly, screams, turns pale, vomits, and in a short time seems to recover itself, only to cry again at intervals as if in pain. These symptoms are not in themselves diagnostic, but they become so when coupled with the fact that in 97 per cent. of cases blood is passed by the bowel *in from 2 to 10 hours*. Treatment carried out at this stage will probably result in the patient's recovery, yet in very many cases the diagnosis is not made for two or three days, by which time the child is exhausted and collapsed and is unlikely to survive an operation for more than a few hours. It must be admitted that this common delay in diagnosis may be due in part to inefficient teaching. The description of the disease is in some text-books actually misleading; the early passage of blood per rectum is insufficiently emphasised, and the impression is conveyed that the acuteness of the disease, and therefore the urgency of operation, is to be gauged by the degree of collapse seen in the patient. Yet in every case, except in the very rare condition of chronic intussusception usually found in adults, the disease is essentially acute from the very start, and by the time collapse is seen the patient is almost beyond the help of surgery. The treatment of intussusception by injection into the bowel from below has now been abandoned in favour of operative treatment. Mr. CLUBBE, however, while advocating operation in every case, believes that a partial reduction of the intussusception may be obtained by a preliminary injection and that the duration of the operation may be in this way shortened. His conclusions in most other respects do not differ materially from the accepted views, but for the reasons already indicated his book should be widely read by those whose duty it is to ensure that every case of intussusception is diagnosed and treated at an early stage of the disease.

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[1] The Diagnosis and Treatment of Intussusception. By Charles P. B. Clubbe, L.R.C.P., M.R.C.S. Second edition. London: Henry Frowde and Hodder and Stoughton. 1921. Pp. 92. Price 7s. 6d. net.

Annotations.

"Ne quid nimis."

IMMUNITY AND TUBERCULOSIS.

WE can count from memory at least three new antiserums and four new tuberculosis vaccines which have come to our notice since the war ended—most of them with the blast of trumpets in the daily press—and a reference to contemporary medical journals would reveal a considerable addition to the number. There is also a chapter of immunology just opening, with accounts of the protective powers of certain special types of protoplasm against the tubercle bacillus. Witness the almost supernatural accounts of recent experiments with the caterpillar and the snail in destroying the inoculated tubercle bacillus. These accounts recall the early records of Richet's experiments on the sea anemone and anaphylaxis when immunologists paused in wonderment. And the results may not be dissimilar—fascinating and yet disappointing in their application to man. It is essential, therefore, that if we strive for the mastery over the tubercle bacillus we strive by right methods. The late Sir Michael Foster once said that the physiologist should exercise his imagination to the full outside the laboratory, and should forthwith eschew it when he reached his bench. This warning is probably more needed now than at any time since Darwin first preached evolution. It has also been said that when the bacteriologist suffers from nightmare he is haunted in his dreams by a hideous row of control experiments which he has neglected to perform. We could almost find it in our hearts to wish that some men suffered from this nightmare a little oftener. Failure to control experiments is a serious mental aberration on the part of the bacteriologist, and when the clinician turns bacteriologist he is particularly liable to this form of mental disorder. How many valueless tests have been made in the study of tuberculosis, and how many wrong conclusions drawn by failure to make controls with the normal? We need to control the virulence and purity of our cultures, the toxicity of our media, and a hundred other factors; and when we come to use antiserums there is a whole new field of control research awaiting us on the influence of normal serum on immune bodies and on pyrexia and metabolic processes generally, which at present we have barely visualised. Nor are these the only factors. The physician, if he be honest with himself in testing a tuberculosis vaccine or antiserum, must make controls as to dosage and auto-inoculation; he must compare the normal individual with the abnormal. In the ideal experiment there is only one variable factor, the one on which we are at the moment researching; all else is stabilised. These are conditions we should aim at. Here especially is the clinician's pitfall, because it is hard to equalise things by the bedside. And the climax of research is reached in those statistical results known as "cures" which beset the path of every worker. No phase of work is more readily misinterpreted. A little difference in the method of choosing cases, a little carelessness in following up our results, a little variation in the "end-point" of a clinical reaction which is rarely as clearly defined as a titration in volumetric analysis, a little undue optimism about that fatal phrase "quiescent lesion," and it is all up with our statistics. The penalty is paid by the patients. One moral is to pay a vast deal more respect to the accurate meaning of the word specific. Having exalted the term to a special place in the vocabulary of immunity, let us not prostitute it to the use of every new and untried remedy in vaccine and serum therapy.

THE COMPARATIVE METHOD IN MEDICINE.

FOR many years Sir Clifford Allbutt has been advocating the consolidation of all branches of medical study in the belief that without the comparative method medicine cannot make active growth on the larger lines. Professor F. Hobday's lecture, which we print elsewhere, delivered at a combined medical and veterinary meeting, gives examples of the peril to man from animal diseases, grave enough in themselves to drive this lesson home. But there is far more in it than this, as Professor Hobday indicates—namely, that only in the light of disease as a whole can its parts be adequately known and its intimate laws understood. The comparative method has been fertile of results in the spheres of anatomy and morphology, as, indeed, it has been the groundwork of modern developments in the study of history, language, and religion. Much good might come from affiliating a section of veterinary medicine with the Royal Society of Medicine, or, perhaps better, from organising a section of comparative medicine at which graduates of both professions could discuss subjects of mutual interest. The large attendance at the discussion on March 14th to discuss the Eradication of Tuberculosis in Man and Animals confirms the interest taken in these borderland topics. Cambridge University has its field laboratories and its agricultural department, and, apart from any other motive, it would probably pay pedigree stock-breeders and nurserymen very well to endow an institute for practical and theoretical work on comparative medicine, both of plants and animals. An endless variety of experience and opportunities for research would be afforded by comparative pathology.

THE UROHÆMOLYTIC COEFFICIENT.

Professor Alfredo Amati, of the University of Naples,[1] has been conducting some new researches on urinary hæmolysis as an aid to the diagnosis of nephritis and malignant disease. In his first series of experiments his object was to investigate in what way the red cells behaved when immersed in the urine of healthy persons, and what influence the specific gravity, reaction, amount of chlorides, urea, and molecular concentration had upon the phenomenon of hæmolysis. The result of this first series was to show that normal urine is never hæmolytic, but, on the contrary, has in the majority of cases an antihæmolytic action on the blood cells. And an interesting point is that this antihæmolytic action bears no direct relation to the specific gravity, reaction, quantity of urea and chlorides, or cryoscopic delta. Apart from urea, which it is known has no action on the red cells, it was found that urines with low specific gravity, deficiency of chlorides, and high cryoscopic delta did not cause hæmolysis, almost as if they did not obey the physical laws of osmosis, thus confirming the hypothesis that in the urine of healthy persons there is an antihæmolytic substance which renders it resistant to these physical laws. The second series of experiments were with pathological hæmolytic urines, of which, after long investigation, Professor Amati only found six—three from cases of chronic interstitial nephritis, one in chronic parenchymatous nephritis, one with carcinoma of the uterus, and the last with sarcoma of the sternum. The specific gravity, amount of salts, &c., seemed to have very slight influence on the phenomenon of hæmolysis in these cases, but the reaction was not constant. The inconclusive nature of these experiments led Professor Amati to a third series in which he investigated the effect of adding distilled water to urine—i.e., if the urine of a healthy person is not hæmolytic how much distilled water must be added to make it globulicidal. He took a series of eight test-tubes, the first containing 6 c.cm. urine alone, the next 5½ c.cm. urine and ½ c.cm. distilled water, and so on, the eighth having ½ c.cm. urine and 5½ c.cm. distilled water. The patient's finger is pricked and two drops of blood allowed to fall into each test-tube, which are then placed in an incubator at 37° C. for 2-24 hours. The results found were that physiological urines in order to become hæmolytic had to have a marked dilution with distilled water, usually 5 water to 1 urine. The important point is that the degree of dilution is constant in all urines, and if the smallest dilution required to render a urine hæmolytic be called the urohæmolytic coefficient, it may be said that this coefficient is constant in normal urine, being usually equal to $\frac{5}{8}$, but may oscillate between $\frac{3}{8}$ and $\frac{10}{11}$. With pathological urines, however, using the same dilution, it was found that in nephritics and patients with malignant disease this urohæmolytic coefficient becomes considerably changed or even inverted, ranging between $\frac{1}{11}$, $\frac{1}{6}$, and $\frac{1}{3}$. We call the attention of observers to these researches which promise to be useful for diagnostic purposes; the method is simple and easy, and within the range of everyone, and if Professor Amati's conclusions are verified the investigation of the urohæmolytic coefficient may become one of the common laboratory methods and of utility in doubtful cases of nephritis and malignant disease.

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[1] Il Policlinico, Practical Section, Feb. 28th, 1921.

A FRENCH REVIEW OF MEDICAL PROGRESS.

THE *Archives de Médecine et de Pharmacie Militaires*, published by order of the Minister of War, proposes to issue every three months a "medical chronicle" drawing attention to the notable facts and ideas which have during the period marked the progress of medicine. The present chronicle is from the pen of Dr. de Lavergne, professor at the Military Medical School of Val-de-Grâce, and recounts striking advances in medicine which have come to notice during the war. Spirochætosis ictero-hæmorrhagica was previously unknown, also the broncho-spirochætosis of Castellani, apparently brought to France by Arab troops from Africa; Noguchi has proved yellow fever to be due to another spirochæte. Gas poisoning was a new disease, and amœbic dysentery was almost unheard of in France, where only 13 cases of endemic origin had been reported up to July, 1914. Paratyphoid-A fever was very rare, too, until imported, probably by troops from Algeria and Morocco. Then encephalitis lethargica, a polymorphic disease, was discriminated about 1918. Its virus is a filter-passer which sets up the disease in injected monkeys and rabbits. It is a question whether various of the rarer but well differentiated nervous diseases which we so little understand may not be sporadic cases of this infectious disease. The nature of chorea is in consequence being rediscussed; some bold spirits even ask whether hysteria in certain of its manifestations may not be the expression of an infectious disease. We shall probably in future inject serums protective against both gas gangrene and tetanus, and surgeons have found in the war that the bacteriologists can help them, as for years the physicians have known. The cause of influenza is not completely understood. It appears to be a filter-passer which causes an illness, in itself slight, but opening the way for serious secondary infections against which a patient may be protected by suitable vaccines. The cause of mumps is also a filter-passer, and, inoculated within the parotid of the cat, after nine days' incubation it excites a parotitis, which is sometimes complicated by orchitis. The cause of another infectious disease, typhus, is not yet known, though the disease reproduces itself (Ch. Nicolle) in the guinea-pig injected with the blood of a typhus patient, and cultures of *Bacillus proteus* are agglutinated by serum from cases of typhus. Levaditi and A. Marie claim they have proved the existence of two races of *Treponema pallidum*, one of which is neurotropic and attacks the nervous system, while the other, dermotropic, attacks only the skin. Shock is considered due (Delbet) to the absorption of toxins, products of the crushing of muscles. Then there is Widal's "hæmoclasic reaction," due to the entry into the organism of a heterogeneous albumin. This reaction is recognised by examination of the blood, by the blood pressure, or by alteration in the refractive index of the serum. Sometimes no symptoms follow, sometimes we have evidence of anaphylaxis. Examples are asthma from the smell of sheep, giant urticaria after certain foods have been taken, epileptic fits excited by eating chocolate, or an attack of malaria due to the break-up of the rosettes. He and his pupils show it is not only as amino-acids that proteins leave the intestine; they sometimes enter the portal circulation unchanged. One social change due to the war must be mentioned. A man nowadays brought before a discharge board and found to be on medical grounds unfit for service is presumed to be entitled to a disability pension unless the army can show that his unfitness is not due to his service. Antityphoid, anticholera, antitetanic preventive injections formerly debated are now universally accepted. Some prevent typhus by injecting serum of patients convalescing therefrom, and similar proposals are made regarding measles. But, of course, these methods are of themselves insufficient. Places must be kept clean, water must be sterilised when suspicious; a vigilant police at the frontier may keep off plague and typhus—but what do these precautions avail if the general population be not educated in proportion, if its own manners and customs are unclean and unhygienic? It is clear from the zeal with which France is throwing herself into the fight against tuberculosis that her hygienic conscience is thoroughly aroused ...... But Professor de Lavergne's review should be read at length in the original.

OCCUPATIONAL DERMATITIS IN DENTISTS.

DR. C. Guy Lane,[1] assistant dermatologist to the Massachusetts General Hospital, Boston, remarks that occupational dermatitis in dentists has usually been attributed to one of their antiseptics or soaps, and with the exception of Mook, who records a case due to apothesin, no one has associated the skin lesions with the use of local anæsthetics. Dr. Lane has recently had occasion to treat three dentists who presented an irritated condition of the hands, apparently due to their individual susceptibility to procain. This drug was introduced into the United States in 1912, where it appears to be the most widely used local anæsthetic among dentists. In its lesser toxicity, greater solubility and stability it possesses considerable advantages over cocaine. It is neutral in reaction, and its solutions are precipitated by alkaloids and alkaline carbonates, though it is not affected by sodium bicarbonate. The eruption in Dr. Lane's cases consisted of circinate erythematous areas with fissures on both palms and about the fingers, and was attended with intense itching. The lesions in the palms closely resembled those of an epidermophyton infection, but examination of the scales was negative. Skin tests with procain solutions revealed an individual susceptibility in each case, there being intense redness and itching within 24 hours at the points of inoculation. A rapid cure followed the discontinuance of the use of the drug, or in protecting the hands by wearing rubber gloves.

ETHNOLOGY FROM AN EASY CHAIR.

THIS is the alternative title of Lieut.-Colonel T. R. St. Johnston's delightful book on the Islanders of the Pacific.[2] Here and there we do not follow the medical author's arguments, but his title disarms criticism based upon stern logic. Colonel St. Johnston's thesis is that "the Polynesian and the European had in the remote ages of the past one common ancestry, a kinship of common blood." And the following is the author's account of this ancestry. There was once (p. 262) a nation termed "Armenoid," who inhabited the country north of Mesopotamia, and who, several thousand years ago, began one of the well-known tribal migrations. The Armenoids invaded Egypt, got down to the Persian Gulf and invaded India, where to-day the Nagas are probably their descendants. They pushed out the aboriginal inhabitants—i.e., the Dravidians, who were driven down to the Malay Peninsula and the Indonesian islands. Meantime the Armenoids who had gone down to Egypt had worked their way down the Red Sea and eastwards to India where they also came into contact with the Dravidians, and pushed on into the Pacific, intermarrying with the Negrito Pacific aboriginals, and founding the Melanesian peoples of to-day. But the real Polynesians are the descendants of the

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[1] Archives of Dermatology and Syphilology, March, 1921.

[2] London: T. Fisher Unwin. 1921. Pp. 307. 25s.

Armenoids who came into India by land, and who in their turn were slowly pushed on by the Aryans until they reached Java and the gates of the Pacific not later than the fifth century B.C. They left Java about the beginning of the Christian era, and when they got to the Pacific islands they found there the black, flat-nosed people of whom so many traditions are found in Polynesian legend. Of the connexion between these people and the people in other parts of the world who mined for gold, worshipped the sun, and built great stone temples, we have not space to talk. But we must refer to one passage of Colonel St. Johnston's book, on the Fire Walk ceremony (p. 173) which, as he says, is or was carried out in other parts of the world, Indonesia, Japan, Egypt, and Bulgaria. In the Pacific it is confined to the Polynesian districts, for though found in Fiji it is only in the definitely Polynesian island of Benga that it exists, and is even there confined to one special group of people. Now Virgil gives an account in the Eleventh Book of the Æneid of a Fire Walk ceremony held at Soracte in honour of Apollo, similar in every way to the Polynesian ceremony described by Colonel St. Johnston. Here are his words:—

> "Summe deum, sancti custos Soractis Apollo,
> Quem primi colimus, cui pineus ardor acervo
> Pascitur, et medium freti pietate per ignem
> Cultores multa premimus vestigia pruna."

Highest of gods, Apollo, guardian of holy Soracte, thou whose chief worshippers we are, thou for whom the pile of burning pine wood is fed, while we upborne by faith press our footsteps in the glowing embers. ...... Pliny (Hist. Nat., VII., 2), commenting on this custom, says that the power to walk through the blazing wood embers was confined to one family, the Hirpi, and Servius, the commentator, quotes Varro as saying that they rubbed their feet with a drug, "medicamento plantas tingunt." So we find an identical ceremony in primitive Italy and in Polynesia. Dr. Warde Fowler, in his Roman Essays and Interpretations, has drawn a most interesting picture of the extraordinary parallelism between certain customs, especially of divination, which exists between those of primitive Italy and certain tribes of modern Borneo, such as the Kayans and Kenyahs. The Kayans are partly of Caucasian blood, and are believed to have found their way into Borneo from Central Asia by way of Burma; Borneo, it is true, is not Polynesia, but it is a stepping-stone thither from India. So here we have another link between ancient Italy and the Far East, and the sum of Colonel St. Johnston's speculations is that the Polynesian race must not be allowed to die out. One point more, and that a very speculative one. There is a tradition that about the twelfth century a ship with whites on board arrived at Oahu, and that this is probably the same ship in which Paumaha, of Oahu, brought back two white gods or priests to Hawaii. Could these white men have been Nestorian missionaries? In the sixth century there was a flourishing Nestorian church in Malabar, and in the eighth century a Nestorian patriarch of China. It is not impossible, therefore, that by the twelfth century some enterprising missionaries may have got into Polynesia, though there is no record left of the pilgrimage.

THE FOURTH VENEREAL DISEASE.

ACCORDING to Dr. William M. Donovan,[1] Instructor in clinical medicine at the University of Wisconsin Medical School, who records an illustrative case, the subject of the so-called "fourth venereal disease," or specific ulcerative and gangrenous balano-postbitis has received comparatively little attention. The condition is an acute inflammatory disease of the glans penis and opposed surface of the prepuce, characterised clinically by ulceration and at times gangrene, with a copious flow of fœtid pus, and caused by the symbiosis of a spirochæte and fusiform bacillus morphologically indistinguishable from those met with in Vincent's angina. Predisposing causes are (1) a redundant prepuce with tendency to phimosis, and (2) an unclean preputial sac with its decomposing smegma. The comparative frequency of the condition is shown by the fact that it constitutes 2–3 per cent. of the cases seen at the Hôpital du Midi. The period of incubation ranges from two to eight days. Subjectively there is a mild itching followed by constant burning pain in the preputial sac and extreme tenderness of the penis on manipulation. Exfoliation of the epithelium of the sulcus, prepuce, and glans takes place and is followed by ulceration. Œdema of the whole penis, phimosis with heat and redness, and palpable dorsal lymph vessels are common. Bilateral inguinal adenitis is frequent, but suppuration does not occur. Constitutional symptoms are absent except in severe cases which are attended by prostration, fever, vomiting, &c. In cases with much phimosis gangrene is liable to supervene unless proper treatment is instituted, but when there is no such phimosis the condition may subside spontaneously with the ordinary methods of cleanliness in two or three weeks. The disease is sometimes complicated by the coexistence of syphilis. The diagnosis is established by the presence of the spirochæte and fusiform bacillus in the pus. Prophylaxis consists in the performance of circumcision. Cauterisation is contra-indicated, as it renders anaerobic conditions possible beneath the coagulated albumin. The following treatment is recommended by Dr. Donovan: A dorsal slit should be made in the phimosis so as to enable remedies to be applied and favour aerobic conditions; the sac should be irrigated every few hours with peroxide of hydrogen solution, and powdered salvarsan or neo-salvarsan should be applied daily to the ulcers.

ANILINE AND CANCER OF THE BLADDER.

THE International Labour Office of the League of Nations at Geneva has established a special section, under the direction of Dr. Carozzi, to deal with industrial hygiene. This section has now produced its first publication, a booklet[1] dealing with cancer of the bladder among workers manipulating aniline. Rather inconclusive reports have been issued on this subject in recent years, and we welcome this reasoned summary of all available evidence, feeling that anything which may throw light upon conditions or influences leading up to malignancy cannot fail in the long run to prove of value to the whole cancer problem. While at the present time the development of the dye industry in this country gives special interest to the subject. The earlier cases of cancer of the bladder were reported from Frankfort-on-Main, but statistics now published include other cases studied by Leuenberger at Basle, which is another centre of the dye industry. The figures indicate that among 15,800 patients treated at the surgical clinic of this town from 1861–1900, only 6 (0·04 per cent.) were tumours of the bladder; while from 1901–10, after the chemical industry was established, among 9650 cases 16 (0·2 per cent.) were tumours of the bladder and 12 of these cases occurred among workers in the dye industry. The occurrence of these cases at Basle establishes a definite relation between the industry and tumours of the bladder. The condition itself takes varying periods to develop, depending upon the chemical influence concerned; less than three years' exposure is claimed to be sufficient in the case of benzidine, five years in the case of naphthylamine, and 12 for rubine and fuchsine. The first symptom is frequently hæmaturia with dysuria, and stranguria; but bladder irritation, disappearing and reappearing, may precede by a considerable time more serious alterations. Lack of personal hygiene, malnutrition, and alcoholism favour the condition, and workers who take great care of their skin show a smaller number of cases. Papillary tumours, adenomata, and adenocarcinomata occur; but the majority of the tumours have an extraordinary polymorphism. These tumours result from "an atypical growth of the epithelium of the mucous membrane, with the formation of microscopic and macroscopic papilloma, the development of granulated tumours, carcinoma, adenocarcinoma, sarcoma, &c." Doubt seems to be present in the first stages of any case as to whether it is benign or malignant. For some indefinite reason a sharp distinction is drawn in the report between tumours of the bladder due to aniline compounds, and epithelial carcinomata as seen among workers manipulating tar, shale oils, and pitch. In each case at first there is an overgrowth of epithelial tissue, papilloma of the bladder in the one case and skin warts in the other. In each case difficulty arises in determining when the overgrowth has taken on malignant characters; O'Donovan[2] holds that in dealing with tar cancer we have in all probability a carcinomatous histological picture from the beginning. In each case metastasis is not the rule. In each case there is a chemical similarity in the bodies bringing about the tissue changes; aniline is a benzene compound, while tar, paraffin, and pitch are all distillation products of vegetable matter containing benzene derivatives. Determination, in these instances of occupational cancers, of the precise substances which can induce hyperplasia in living tissues might go far to disclosing the first stage from normality to abnormality upon which malignancy is finally superimposed. Probably chimney-sweeps' cancer, induced by coal-tar products in soot, and cancer of the lip and buccal cavity, induced by products of tobacco distillation, would be found to have a similar primary cause.

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[1] American Journal of the Medical Sciences, February, 1921.

[1] Cancer of the Bladder among Workers in Aniline Factories. Studies and Reports, Series F, No. 1. International Labour Office, Geneva. February, 1921.

Considerable effort has been made to discover which chemical products are at fault. Evidence points to the aminobenzenes, particularly benzidene and β-naphthylamine. The path of entry into the body is not clear; probably the respiratory and digestive tracts, as well as the skin, each play their part; but the analogy of T.N.T. poisoning would suggest that the skin is the most important. The path of exit is indicated by the pathological results; Kuchenberger claims to have found a colour test by which the presence in the urine of amino-aromatic compounds can be demonstrated. The value of this test, like Webster's test among T.N.T. workers, is to establish the presence of exposure to risk, and the necessity for more efficient means of prophylaxis. Exposure can be minimised by good ventilation, rigorous cleanliness, dust prevention or removal, short periods of work, clean overalls, and a clean skin. Periodical medical examination, including cystoscopy, is needed. Milk should be given to the workers, and alcohol and smoking prohibited.

This pamphlet, which contains a valuable bibliography of the subject dealt with, will, we hope, only be the forerunner of other interesting studies concerned with diseases peculiar to industry.

ACCOMMODATION FOR SEAMEN.

WE are informed that the town council of Newport (Mon.) has formally complained against the unsatisfactory Regulations of the Board of Trade which permit the present degrading type of accommodation for seamen to continue in the British Merchant Service. The report adopted by the council states that the time is ripe for the revision of the British regulations for the hygiene of crew spaces in order to secure larger cubic space for sailors, and urges that a strong committee representing the Board of Trade, the Ministry of Health, shipowners, shipbuilders, the officers and men of the Merchant Service, port sanitary authorities, and the Admiralty be set up with this object. The council points out that the present British official standards are too low, and in some respects inferior to those insisted upon by many foreign countries and British colonies. The council proceeds to say that the excessive rates for sickness and deaths amongst seamen are closely related to the unfavourable conditions of their lives at sea. The figures per thousand for the Navy and the Merchant Marine, drawn from the best statistics available before the war, strengthen these arguments, though it must be remembered, as we pointed out recently in another connexion, these may be gathered on systems which are not really comparable:—

	Royal Navy, 1913.	Merchant Marine, 1913–14.
Total number of men	126,830	245,619
Death-rate from injury	1·18	5·01
" " disease	2·06	4·1
Total death-rate	3·24	9·11

The Merchant Service would appear to have a death rate from disease which is double, and from injury quadruple, that of the Royal Navy in peace-time. We should have to go back 20 years to find so high a death-rate from disease alone in the Navy, but it is three times higher in the Merchant Service. The report points out that, "apart from the question of providing healthier and brighter housing conditions for the Mercantile Marine in return for their noble self-sacrifice during the war and their heroic work in saving the Allies from starvation and ruin," our foreign competitors are giving their men better accommodation, and British sailors and firemen have shown preference for service in American merchant vessels, where conditions of life are so much better.[1] According to the town council of Newport large numbers of ships have been recently built with the war-time improvements omitted, and this without official interference. A 48-hour week for seamen may possibly in the near future be adopted. In that case crews must be much larger, more accommodation will be quickly required, and it is the more important that we should have good plans ready now. The need for international agreement in this matter is real, for ships pass from country to country and crews are of many nationalities, and the Newport report is sound in urging that the League of Nations should establish a minimum international standard of marine hygiene for sailors' accommodation. The report is to be sent to the Prime Minister, the Board of Trade, the Ministry of Health, and others interested in, and with power over, port sanitary work, from whom we trust it will get the careful attention it deserves. It marks an epoch in the fight for good accommodation for seamen in their ships, where the medical officer of health for Newport, Dr. J. Howard-Jones, has long been a protagonist.

SIR WILLIAM THORBURN.

AT the end of last year, as our Manchester correspondent recorded at the time in our news columns, Sir William Thorburn resigned his appointment as senior honorary surgeon to the Manchester Royal Infirmary, doing so, as we were aware, a little before his time expired in order to devote himself more entirely to the private practice of his specialty. The resignation necessarily carried with it the vacation of the chair of clinical surgery in the University of Manchester. The Council and the Senate of the University, in accepting the double resignation, expressed their appreciation of his services and passed a resolution referring to his distinguished record and skill in the practice of his profession. The very warmth of this expression, which was widely published in the press, has had the embarrassing result of misleading many of Sir William Thorburn's friends to believe that he has retired from practice. We are glad to assure them that this is not the case. He has always remained in full private practice, nor has his connexion with the hospital ceased. At a meeting of the medical board of the Manchester Royal Infirmary, held on March 30th, a resolution was moved and carried confirming the appointment of Sir William Thorburn to continue to give lectures on the surgery of the nervous system and to continue doing surgical work at the Infirmary.

WE regret to record the death, at the age of 55 years, of Dr. Robert Murray Leslie, senior physician to the Prince of Wales Hospital and to the Royal Chest Hospital, City-road.

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[2] O'Donovan, W. J.: Epitheliomatous Ulceration Among Tar Workers, British Journal of Dermatology and Syphilis, vol. xxxii., 1920.

[1] THE LANCET, 1921, i., 90.

TUBERCULOSIS IN GERMANY.

BY E. G. GLOVER, M.D. GLASG.,
FORMERLY MEDICAL SUPERINTENDENT, BIRMINGHAM MUNICIPAL SANATORIUM, CHELTENHAM.

FROM time to time conflicting newspaper reports reach England as to the exact degree in which Germany has suffered in well-being as the result of the war, and, for this reason, it is perhaps worth while examining the statistical evidence with reference to tuberculosis. The figures given here are taken from the records of the Gesundheitsamt. Tables A and B are concerned merely with the death-rate from tuberculosis, since there is no compulsory notification of infection in Germany, but only a compulsory notification of deaths from tuberculosis.

Annual Death-rate from Tuberculosis of All Organs per 10,000 Living Inhabitants.

A.—Whole of Prussia.			B.—In German towns.			
Year.	Absolute No.	Death-rate.	Year.	No. of districts.	Absolute No. (civil and military).	Death-rate.
1892	—	26·0	1914	386	41,730	16·0
1913	56,861	13·6	1915	383	44,805	16·8
1914	58,577	13·8	1916	383	48,779	18·0
1915	61,606	14·4	1917	383	67,860	25·2
1916	66,544	15·7	1918	373	75,160	28·7
1917	87,032	20·5	1919	365	66,604	27·1
1918	96,844	22·8				

The figures in Table A are for the whole of Prussia, town and country included; in round figures, we may note specially the fall of the death-rate from 26 in 1892 to 13·8 in 1914 and the rise to 22·8 in 1918. As, however, the figures for rural districts always water down the tuberculosis death-rate it is advisable to consider the town death-rate as given in Table B. In this case the figures are for the whole of Germany and deal with the rate in towns of 15,000 inhabitants and over in about 380 districts, the population concerned totalling 25,797,000. The increase from 1914 is again remarkable, and we may say that between 1914 and 1919 100,000 more patients died than might have been expected, calculating from the rates of 1914. These figures are perhaps less illuminating as there is no record for Alsace-Lorraine in 1918–19, and none for Posen in 1919, and over 10,000 other fatal cases have, therefore, not been included.

Owing to the faulty system of notification in Germany, and the frequent lack of differentiation between lung tuberculosis and tuberculosis of all organs, it is difficult to give satisfactory figures with regard to lung disease, but a rough idea may be obtained from Table C, which deals with lung rates in some towns, districts, and and provinces.

TABLE C.—*Death-rate of Lung Tuberculosis per 10,000 Living.*

Place.	1885	1913	1917	1918	1919
Berlin	34·6	16·6	30·4	29·9	23·3
Hessen	29·2	12·5	21·2	20·0	19·0
Bavaria	25·4	14·7	17·0	17·6	—
Prussia	—	12·0	18·2	20·5	—
Munich	—	17·3	21·9	23·9	—
Saxony	25·0	11·4	13·1	Incomplete.	—

The difference between industrial and rural areas in Table C. is very striking. With regard to the increase in the tuberculosis "infection-rate," this can only be guessed in Germany, but going on the assumption that at least twice the total number of deaths represents the number of cases living (and this, in England at any rate, would be a very modest assumption), we may take it that in 1913 there were 200,000 cases, and that in 1918 this figure had risen to 340,000. As a matter of fact, the Gesundheitsamt estimates that there are at present little short of 500,000 cases in Germany, and this is probably true.

A certain amount of corroborative evidence can be had from general health statistics, although naturally less stress can be laid on their probable accuracy. From a report of the Reichs-Versicherung one finds that whereas in 1913 10,400 adults were on the sick-list, in 1919 this number had risen to 43,000; in Hamburg the number of tuberculous patients receiving extra nourishment rose to nearly double in the period from November, 1917, to August, 1919; in Berlin the death-rate for women and children rose from 14 in 1913 to 19 in 1920 (this last figure making due allowance for the influenza epidemic). According to the Berlin Industrial Friendly Society the percentage of deaths caused by tuberculosis, in relation to the total deaths from all causes, is as follows:—

	Men.	Women.
1914	30	32
1917	42	45
1919	35	39

As is well known, a similar rise in tuberculosis death-rates and morbidity-rates occurred in England during the war (speaking from memory, the number of actual deaths in England and Wales rose from 49,000 in 1913 to 58,000 in 1918), but compared with the rates in 1892 it is not nearly so striking as in Germany. The figures before 1892 in Germany are not very reliable or rather not comparable. It is therefore interesting to inquire whether in Germany, as in England, an improvement took place after the conclusion of hostilities. That such an improvement did take place can be gathered from the following figures, which show the half-yearly death-rates per 10,000:—

	First half.	Second half.
1914...	17·5	14·6
1919...	34·4	27·1
1920...	25·6	(?) 16 (incomplete).

All the figures go to show that the highest death-rate was reached in 1918, and that, especially in the second half of 1919, there was a marked improvement which has since continued. The same applies to the statistics for living cases. The figures for the Berlin Krankenkasse show a distinct drop since 1918, and this is confirmed by the Stettin report, but it is interesting to note that in Mannheim (where industrial conditions are very bad) the reverse holds true, especially for infectious patients. Not only has the rate risen there, but whereas in 1918 of all new cases 17 per cent. were infectious, in 1919 21 per cent. were infectious. Whether the rates will shortly fall to the pre-war level is an open question, but taking into account the present food situation in Germany it seems unlikely. As a rough approximation one might say that the present food conditions in Germany are much worse than they were ever in England at the worst time of the war, and that this must affect the next ten years at least, especially amongst those who are at present in youth or adolescence.

Methods of Fighting Tuberculosis.

On the other hand, the fact has to be faced that the present organisation of antituberculosis work in Germany is unable to cope with the problem: firstly, because of lack of money; secondly, because the German is no longer as docile and amenable to health regulations, or, indeed, to any official regulations, as formerly; and thirdly, because the dispensary system has not been effectively organised, especially with regard to treatment and after-treatment. Of course, there are many excellently organised centres, as in Stettin, but in other places these are absent, and in large towns like Berlin there are so many organisations that within a circle of stools the unfortunate patient falls to the ground. The working of the insurance regulations in a town like Berlin is curious. Sick benefit is organised and administered, as in England, through the medium of the Krankenkassen, but tuberculosis work is in the hands of the invalidity department. This is due to the fact that since the invalidity section suffered so much from tuberculosis unemployability they set out, at first, to attempt to cure tuberculous cases; and latterly, to attempt to prevent infection. For this reason the Landes-Versicherung has a well-organised system of dispensaries, sanatoriums, &c.

The uninsured are less fortunate. True, at the Charité (a model University hospital) there exists an organisation where officials of the more needy class, small shopkeepers, shop assistants, and widows and children without means can receive treatment. In *1919*, *6080* were on the books, and in *1920* this rose to 9200. As a side-light on present conditions, it may be noted that in 1919 the figure included 38 authors and artists, a few doctors and lawyers, and several hundred Government officials, many of whom were of high grade. At the Charité the patient pays one-third of his own costs, the employers, if any, are approached to pay another third, and the remainder is found from various sources—e.g., the municipality, the Government, the Deutsche Central-Komitee, or privately.

An additional complication in Berlin was introduced by the extension of the town boundaries. In the suburbs, both rich and poor, regional dispensaries existed for dealing with the diagnosis and home visitation of tuberculosis cases, and these have not yet been absorbed into any central organisation. Both insured and uninsured are dealt with here, and here, as with the Landes-Versicherung and Charité, the families of infected cases are dealt with. It is expected that in the near future this family system will apply to diseases other than tuberculosis. In practice, then, a tuberculous patient is recommended by his private doctor, or by the Kassenarzt (insurance doctor) or by his Poor-law doctor (Armenarzt) to go, or goes of his own initiative, to a local Fürsorgestelle (dispensary), whence, if insured, he is transferred to the Insurance Organisation, or where, if uninsured, various attempts are made to provide him with treatment.

Deficiencies of the System.

But when one comes to inquire what this treatment actually amounts to, the German system, sometimes through no fault of its own, shows up very badly. In all Germany in the year 1918–1919 there were 168 sanatoriums, with 17,500 beds, and for children 172 institutions, with 14,000 beds. This does not include, of course, a number of beds in the various hospitals and Poor-law infirmaries. In Berlin, for example, there are 378 beds in hospitals and 160 in Poor-law infirmaries, mainly for hopeless cases, leaving roughly about 680 available beds in proper tuberculosis sanatoriums. This, for a population of over four million under present conditions of infection, is much too little. It is estimated at the Gesundheitsamt that only 25 per cent. of any new series of cases can get effective sanatorium treatment; the Charité authorities estimate the figure at 35 per cent., and it is at any rate safe to say that 50 per cent. do *not* get adequate treatment. The period of treatment, too, has been reduced, largely through lack of money, to 6–8–10 weeks' duration. Moreover, it is much more difficult for uninsured cases to obtain treatment; the uninsured Fürsorge-Stellen must go from pillar to post begging or purchasing sanatorium accommodation under various organisations in various parts of the province of Brandenburg.

This deficiency in sanatorium treatment would not be serious if at the various dispensaries there was provided effective out-patient treatment or after-treatment. Unfortunately this is not so. The dispensaries are exceedingly well organised as far as diagnosis, statistical records, the supply of printed forms, innumerable recommendation forms, and the dispensing of good advice is concerned; they are also the centre-point for a staff of efficient nurse-supervisors, but the dispensing of medical treatment is practically unknown. There are, indeed, many insurance dispensaries where tuberculin is administered, and the Charité in Berlin has a fairly efficient treatment clinic for uninsured cases, but in general there is no treatment in dispensaries. The patient has the cold comfort of accurate diagnosis, and must thereafter extract what satisfaction he can from printed recommendations. What the dispensaries have done in the past and still try to do is to distribute food, cod-liver oil, and clothing to needy cases, but at the present time this is practically a dead letter. When the tuberculosis patient in Germany asks for bread he is almost literally given a stone, or at least a bread-substitute which closely resembles emery-paper.

In practice, treatment is limited (if one exclude the small amount of sanatorium treatment provided) to home-care, or, as it is euphemistically termed in England, "domiciliary" treatment. This is usually carried out by the Insurance or private doctor. The Poor-law doctor also treats cases, but he is not in great demand; the Brandenburger hates the Poor-law and, indeed, until recently at any rate, treatment by Poor-law officials entailed loss of certain civil rights. The end of the tuberculosis story in Germany is very simple: notification of the patient's death is made under legal statute to the Kreisarzt who is really the police doctor, the house is sterilised, the children are examined, and that is the end.

Some Observations.

Three observations of some interest may be made. Amongst all classes in Germany the relatively alarming increase in tuberculosis is attributed mainly to the effect of the "Hunger-blockade" as it is called, and by the same classes it is held that improvement in tuberculosis is greatly retarded by the transfer to other countries of a large proportion of milk cows. On the other hand, some tuberculosis authorities are, all things considered, very optimistic about the future of the tuberculosis crusade and think that in a comparatively short time after food-supplies approximate to the normal quantity the rates will also fall to normal. The outside observer, remarking as he must, the lean, yellow, under-nourished look of German youths cannot but feel that this bodes ill for the tuberculosis rate in ten or so years' time, and finds such optimism is premature.

The second observation is that England and America have every reason to feel proud of the activities of the various relief missions, especially those of the Quakers, who unobtrusively, but effectively, help in some way to provide children, apprentices, university students (and in the near future, it is hoped, tuberculous cases) with adequate nourishment. It is true that often only the fringe of the problem is touched, still the attempt is one which deserves all praise.

The last observation is that the average German appears to have only a theoretical acquaintance with the principles of fresh-air inhalation; preferably he takes his air well boiled, or at any rate half cooked; real fresh air he relegates to its natural habitat—viz., out of doors. It is worthy of comment that the interior of many tuberculosis institutions is warm enough to make the enthusiastic foreigner mop his inquisitive brow, and to make him sigh for the English system whereby he no sooner enters a tuberculosis centre than he is almost blown out of the exit. In Germany, however, this does not apply to the poorer institutions and not to the homes of the poor. It should be remembered that even substitute coal in Germany costs more marks than the indigent can afford.

I am obliged to Professors Möllers and Kayserling, to Dr. Helm, to Geheimrat Pütter, and many others for much information and the privilege of inspecting their institutions and statistics.

Berlin, Feb. 8th, 1921.

SERBIAN WORKERS REUNION.—The second annual reunion of the workers for Serbia will be held at the Wharncliffe Rooms, Great Central Hotel, London, on Tuesday, April 19th. Colonel Sir Courtauld Thomson, Chief Commissioner of the British Red Cross in the Near East from 1915 to 1919, will take the chair. Dinner 7 for 7.30 P.M., dancing at 9.30 P.M. Last year 164 were present, and it is hoped that all medical men and women who served with the medical missions or with the R.A.M.C. units attached to the Royal Serbian army will attend. Application for tickets should be made before April 12th to the honorary secretary, Miss Marx, 24, Melcombe-court, Dorset-square, London, N.W.1.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Professional Secrecy.

THE Council of the Royal College of Surgeons in Ireland has passed the following resolution:—

> The Council are of the opinion that it is contrary to the public interest that medical men should break their professional tradition and, without the consent of their patient, disclose information which they have obtained in the discharge of their professional duties. If any instance is reported to the Council in which one of the Fellows or Licentiates of this College is pressed to break confidence, such specific case will be considered by the Council and representations made to the authorities if such be thought necessary.

It is understood that an opinion in a similar sense has been embodied in a resolution by the Royal College of Physicians of Ireland.

Sentences on Medical Practitioners.

It is announced that Dr. Patrick McCarville, Monaghan, has been sentenced to six years' penal servitude for operating in a "Flying Squadron" in the Bragan Mountains. The trial took place at Belfast. The "flying party" occupied a house near the hills owned by a man named M'Kenna, in which arms, ammunition, and explosives were found. Dr. A. English, assistant medical officer of the Ballinasloe District Asylum, has been sentenced to nine months' imprisonment for having in her possession literature relating to Cumann n' Ban and Dail Earann.

The Irish Census.

Arrangements for the taking of the Irish Census were in train, and it was expected that the enumeration would be made next month. Last week, however, Dail Earann issued a decree prohibiting those who acknowledge its authority from assisting in the Census. In face of this very regrettable decision there is little use in the Commissioners proceeding with their task, since without cordial coöperation on the part of the entire public a Census will be worse than useless; it will be misleading.

March 28th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Post-graduate Medical Teaching in Glasgow.

FOR many years post-graduate instruction in medicine has been given in several Glasgow hospitals, but only in the early part of 1914 was a special endeavour made to organise a permanent comprehensive post-graduate teaching scheme for Glasgow as a whole. The outbreak of war delayed further progress until 1919, when an emergency post-graduate course was organised and carried on in the summer and autumn. The course was highly successful, and the committee in charge felt justified in recommending the institution of a permanent scheme. Such a scheme was adopted on March 2nd, 1920, at a joint meeting of the Faculty of Medicine of the University of Glasgow and the General Committee for Post-Graduate Medical Teaching, which had been appointed in 1914 at a public meeting of the medical staffs of the various Glasgow teaching institutions and hospitals. The various teaching institutions and teachers taking part in the scheme constitute an association the business of which is managed by a Board elected periodically by them. The chairman of the Board is Sir Donald MacAlister and the vice-chairman Sir Hector C. Cameron. To inaugurate the scheme the Board arranged a series of weekly demonstrations for practitioners extending from November last till May of this year, and the number of practitioners taking advantage of the series is satisfactory. For the ensuing summer and autumn the Board has arranged a comprehensive course of instruction for medical practitioners extending from May till October. Most of the Glasgow hospitals are taking part in the scheme, which has been arranged as far as possible so that a practitioner who so desires may occupy the greater part of each day attending classes open to all qualifi medical practitioners and conducted independent of the undergraduate courses. A practitioner may en for one or several classes and may attend for one or mo months at his discretion. The Board has also had view the provision of facilities for young graduates a others who may wish to obtain a closer acquaintan with hospital work in one or other of its branches an who are prepared to give the necessary time. Arrangements have been made whereby a limited number ma become attached to wards or out-patient departments nominally as clinical assistants, for definite period throughout the year. As such they would work unde the direct supervision of the physician or surgeon i charge and carry out such detailed investigations as directed. A young graduate wishing to specialise in children's diseases, mental diseases, tuberculosis, venereal disease, or other subjects should find such a training invaluable. It has long been felt that Glasgow, in the midst of such a vast industrial population, with its abundance of clinical opportunities, should become one of the leading centres of post-graduate medical teaching. This year the Board of the Glasgow Post-Graduate Medical Association presents to the medical profession its first organised scheme of teaching, trusting it will enable practitioners to keep themselves abreast of the times. Full information concerning the classes and clinical assistantships may be had on written application to Dr. A. M. Kennedy, secretary, Post-Graduate Medical Association, University, Glasgow, or by applying personally at the various hospitals which are taking part in the scheme.

Coördination of Medical Services in Aberdeenshire.

A conference of representatives of the local authorities in the county of Aberdeen and other bodies interested in coördination of the medical services was held in Aberdeen on March 18th. The main points discussed were: The possibility of devising a scheme for coördination of the services of the medical staffs of the county council and the education authority with a view to economy in administration and prevention of overlapping; a possible agreement whereby the services of the nurses employed by the several district nursing associations be made available not only for the purposes of maternity and child-welfare schemes and the tuberculosis scheme but for the medical inspection and treatment scheme of the education authority. Could an agreement be arrived at between the education authority and the various local authorities not only for the cleansing of verminous children, but also, where necessary, of the whole household in which the children resided? The meeting was unanimously of opinion that a scheme of coördination for the several local authorities should be instituted. It was resolved that the county medical officer, the medical officers of health for the several burghs, the school medical officer, and the tuberculosis medical officer should consider the whole question of the coördination of the medical service and frame a scheme and submit it to a future meeting.

Perth Infirmary: Students' Effort.

A week's effort, organised by students of Dundee University on behalf of the Perth County and City Royal Infirmary, which last year had a deficit of almost £7000, was opened on March 26th by a free gift sale at Perth Auction Mart. The sale was opened by Sir Robert D. Moncrieffe. With donations the sum realised was fully £500.

Aberdeen Dispensary and Vaccine Institute: Annual Meeting.

The annual meeting of the managers and subscribers of the above institute was held on March 24th in the town-hall, Lord Provost Meff presiding. The annual report showed that in the past year the total number of cases treated in all departments was 3659, an increase of 417 on the previous year. The number of patients treated at their own homes by the general staff of the dispensary was 929, being an increase of 236 on the previous year, and the number of visits paid to patients was 2639, being an increase of 603. The number of vaccinations and revaccinations performed was 111.

being 72 more than the number for the previous year. The special ear, nose, and throat cases treated numbered 336, with a decrease of 19 over the number in the previous year. In the ophthalmic department 80 cases, and in the special department for women 142 cases, were treated. The number of prescriptions dispensed was 14,536, being 128 fewer than in the previous year. The number of medical students who paid for admission to the general practice of the institution was 100, being an increase of 74. The number of vaccination certificates issued amounted to 65, an increase of 27. The annual subscriptions received amount to £87 7*s.* 6*d.*, being a decrease of £6 13*s.* on the previous year. The total receipts for the year ending Dec. 31st, 1920, were £967 7*s.* 3½*d.*, and the total expenditure £1008 16*s.* 1½*d.*, leaving a deficiency for the year of £41 8*s.* 10*d.*

March 28th.

URBAN VITAL STATISTICS.

(Week ended March 19th, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18½ million persons, the annual rate of mortality, which had been 15·5, 15·2, and 15·2 in the three preceding weeks, declined to 13·9 per 1000. In London, with a population of 4½ million persons, the death-rate was 13·1, or 2·0 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 8·0 in Rotherham, 8·1 in Walsall, and 8·4 in Wallasey, to 23·7 in Dewsbury, 26·1 in Hastings, and 26·8 in Bury and in Tynemouth. The principal epidemic diseases caused 249 deaths, which corresponded to an annual rate of 0·7 per 1000, and comprised 77 from infantile diarrhœa, 63 from diphtheria, 51 from whooping-cough, 34 from measles, 20 from scarlet fever, and 4 from enteric fever. Measles caused a death-rate of 2·9 in West Bromwich and diphtheria of 2·8 in Merthyr Tydfil. The deaths from influenza, which had been 138, 167, and 149 in the three preceding weeks, numbered 151, and included 42 in London, 10 in Leicester, and 6 each in Birmingham and Sheffield. There were 3695 cases of scarlet fever and 2817 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 3730 and 2818 respectively at the end of the previous week. During the week ended March 12th 5 cases of encephalitis lethargica were notified in the County of London, and comprised 1 each in Finsbury, Greenwich, Lewisham, St. Marylebone, and Wandsworth. The causes of 44 of the 4946 deaths in the 96 towns were uncertified, of which 13 were registered in Birmingham, and 3 each in Stoke-on-Trent and Manchester.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 19·4, 18·0, and 18·5 in the three preceding weeks, fell to 17·8 per 1000. The 398 deaths in Glasgow corresponded to an annual rate of 18·9 per 1000, and included 47 from whooping-cough, 15 from influenza, 7 from infantile diarrhœa, 4 from diphtheria, 2 from scarlet fever, and 1 from measles. The 158 deaths in Edinburgh were equal to a rate of 18·5 per 1000, and included 7 from influenza, 6 from measles, 2 from whooping-cough, and 1 each from diphtheria and infantile diarrhœa.

Irish Towns.—The 140 deaths in Dublin corresponded to an annual rate of 17·3, or 0·8 per 1000 below that recorded in the previous week, and included 2 each from influenza and infantile diarrhœa, and 1 from diphtheria. The 147 deaths in Belfast were equal to a rate of 18·3 per 1000, and included 16 from whooping-cough and 3 from infantile diarrhœa.

(Week ended March 26th, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18¾ million persons, the annual rate of mortality, which had been 15·2, 15·2, and 13·9 in the three preceding weeks, further fell to 13·0 per 1000. In London, with a population of 4¾ million persons, the death-rate was 11·6, or 1·5 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 4·9 in Smethwick, 6·3 in Wallasey, and 7·0 in Gloucester, to 20·0 in Hastings, 20·5 in Middlesbrough, and 25·4 in Carlisle. The principal epidemic diseases caused 226 deaths, which corresponded to an annual rate of 0·6 per 1000, and comprised 65 from infantile diarrhœa, 59 from diphtheria, 53 from whooping-cough, 33 from measles, 14 from scarlet fever, and 2 from enteric fever. Whooping-cough caused a death-rate of 1·3 in Sunderland, and diphtheria of 1·4 in Tottenham and 2·8 in Dewsbury. The deaths from influenza, which had been 167, 149, and 151 in the three preceding weeks, declined to 121, and included 33 in London, 10 in Sheffield, 7 in Birmingham, and 6 in Leicester. There were 3608 cases of scarlet fever and 2778 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 3695 and 2817 respectively at the end of the previous week. During the week ended March 19th, 5 cases of encephalitis lethargica were notified in the County of London, and comprised 1 each in Islington, Finsbury, Bethnal Green, Battersea, and Wandsworth. The causes of 20 of the 4633 deaths in the 96 towns were uncertified, of which 4 were registered in London and 3 in Birmingham.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 18·0, 18.5, and 17·8 in the three preceding weeks, further fell to 15·3 per 1000. The 354 deaths in Glasgow corresponded to an annual rate of 16·8 per 1000, and included 19 from whooping-cough, 15 from influenza, 4 each from diphtheria and infantile diarrhœa, 2 from measles, and 1 from scarlet fever. The 115 deaths in Edinburgh were equal to a rate of 13·4 per 1000, and included 7 from influenza, 5 from whooping-cough, 3 from diphtheria, and 2 from measles.

Irish Towns.—The 136 deaths in Dublin corresponded to an annual rate of 16·8, or 0·5 per 1000 below that recorded in the previous week, and included 4 from infantile diarrhœa, 3 from influenza, and 1 each from whooping-cough and diphtheria. The 124 deaths in Belfast were equal to a rate of 15·4 per 1000, and included 7 from whooping-cough, 3 from infantile diarrhœa, 2 from measles, and 1 each from scarlet fever, diphtheria, and influenza.

The Services.

ROYAL NAVY MEDICAL CLUB: ANNUAL DINNER.

THE annual dinner of the Royal Navy Medical Club will take place at the Hotel Cecil, London, on Thursday, April 14th, at 7.30 P.M. for 8 P.M. Members who wish to be present are asked to inform the honorary secretary, Royal Navy Medical Club, 1, Lake Buildings, St. James's Park, London, S.W. 1, not later than seven clear days before that date.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lieut.-Cmdr. D. Loughlin is allowed to withdraw from the Service with gratuity.

ARMY MEDICAL SERVICE.

Major-Gen. O. R. A. Julian retires on retired pay.

ROYAL ARMY MEDICAL CORPS.

The undermentioned Captains relinquish the acting rank of Major: C. M. Gozney, G. D. Harding, and C. R. Dudgeon.

Lieut. (temp. Capt.) H. G. P. Armitage to be Captain.

H. W. Street, late Captain, Can. A.M.C., to be temporary Captain.

Officers relinquishing their commissions:—Temp. Major M. H. Allen (retains the rank of Major), Capt. E. Hulme and Temp. Capt. J. D. Judson (retain the rank of Captain).

TERRITORIAL FORCE.

Capts. H. K. Griffith and S. F. St. J. Steadman to be Majors.

ROYAL AIR FORCE.

Flight Lieut. C. W. T. Baldwin and Flying Officer F. T. Allen are granted temporary commissions in the ranks stated.

BRIGHTON, HOVE, AND PRESTON PROVIDENT DISPENSARY.—The report for 1920, submitted to the annual governors' meeting on March 15th, recorded increased charges to patients. The payments of members are to be increased from 2*d.* to 3*d.* for those over 16 years of age, and from 1*d.* to 1½*d.* per week for those under that age, the maternity fee being raised from £1 1*s.* to £1 11*s.* 6*d.* The whole of the members' contribution was paid to the doctors attending them without deduction of any kind, and the doctors supplied all necessary medicine free of any further charge. The administrative expenses were provided by subscriptions and donations and from the income of invested capital. The governors would in future be obliged to require those using the hospital to pay still further for some of the benefits they receive over and above their weekly subscription. The dispensary was founded in 1837 to enable the poorer classes to choose their own doctors and be attended to by their own paid medical men. When the National Insurance Act came into operation it was found that there was still need for the provident dispensary, 135 new members being admitted during 1920, against 156 in 1919. There has been some doubt expressed as to the effect on the work of the dispensary of Dr. J. F. Gordon Dill's provident scheme for hospital benefits and additional medical services, but this cannot yet be estimated.

Correspondence.

"Audi alteram partem."

A CONTROLLED STUDY OF SANATORIUM RESULTS.

To the Editor of THE LANCET.

SIR,—I am glad that Dr. Thompson Campbell has replied to Dr. E. Ward's article on sanatorium results in your issue of March 12th. The obviously unscientific data on which Dr. Ward's conclusions are based must have struck many who read his article. If he were right, in our present state of knowledge, the best that can be done for tuberculous patients is to leave them alone. The worst, almost, is to send them to sanatoria for treatment. Statistics, as quoted by Dr. Ward, are of no value because they give figures which only deal with tuberculous cases from one, and that the least important aspect. To classify patients as suffering from slight, medium, and extensive tuberculosis is irrational and useless. In the ultimate issue it is not the extent but the intensity of the disease that tells. Slight disease with marked toxæmia has a far worse prognosis than extensive disease with a slight degree of toxæmia. Further, he does not state the duration of treatment. Three months in a sanatorium is rarely of much good, and, to judge the results of sanatorium measures from a series of cases who spend an inadequate period, is wrong. Many patients require three years' treatment and not three months. That it pays to keep patients for prolonged periods one has had frequent proofs. For example take the following case:—

One of our large Scottish Universities gives a prize to the student who proves to be the most brilliant man of his year in any faculty. Last year the man who obtained that prize was one who had been a patient in the Consumption Sanatoria of Scotland, Bridge of Weir, six years ago. He suffered from advanced phthisis and had very marked toxæmia. Had we discharged him at the end of one year, I have little doubt that he would have been dead within a few months. Had we discharged him at the end of two years, I fear that he would have survived but a short period. Keeping him for three years so established him that he was enabled to go through an arduous university course, and gain not only this coveted prize but a scholarship of several hundreds a year for four years. He has, I may say, had no recurrence of the symptoms during the period of strain. Dr. Ward says that "if a tree growing feebly in a poor soil is transplanted to a good soil, and then after improvement returned again to the bad soil, it will not resume its feeble growth, but will probably die." That is not quite true. It depends upon how long the transplanted tree is allowed to remain in the good soil.

Dr. Ward's controls seem to have been a doubtful collection. One of the reasons why they were not sent to sanatoria was because it was decided to keep them under observation for a while, to avoid for them the sanatorium stigma. Another reason was that they were unwilling to go to a sanatorium. What proof had he that they were really tuberculous? My experience in consulting and dispensary practice is, that patients, when diagnosed as tuberculous, are very submissive in their anxiety to be restored to health. They gladly acquiesce in any suggestion. Very rarely does the stigma of a sanatorium weigh with them. In cases that are doubtful it is different. The majority of these do well with a change and with symptomatic treatment.

A personal experience over many years has convinced one of the fact that in the sanatorium we have a means of dealing radically with this scourge in individuals. The results frequently are quite as dramatic as those obtained in the realm of surgery. Three things are required: the right type of case, a well-organised method of treatment along the lines of graduated rest and exercise, and a prolonged period of residence. Hyperaeration, hyperalimentation, and in selected cases tuberculin do the rest.—I am, Sir, yours faithfully,

JAMES CROCKET, M.D.,

March 21st. Lecturer on Tuberculosis, Glasgow University.

INSURANCE RECORDS: THE VIEW OF THE LONDON PANEL COMMITTEE.

To the Editor of THE LANCET.

SIR,—At their meeting on March 22nd the London Panel Committee directed me to send you a copy of the following resolutions:—

(a) That the Committee are of opinion that some form of medical record is necessary.

(b) That the Committee are of opinion that practitioners should not be required to enter matters on the record cards which in their opinion are likely to be detrimental to the interests of the insured persons concerned.

(c) That in the opinion of the London Panel Committee the present medical records are neither advantageous to the medical service nor beneficial to the community, and that it is desirable that they be discontinued forthwith.

I am, Sir, yours faithfully,

R. J. FARMAN,

Secretary, Panel Committee for the County of London.

Staple House, 51, Chancery-lane, W.C., March 24th, 1921.

THE FIGURES OF VENEREAL DISEASE.

To the Editor of THE LANCET.

SIR,—In your Parliamentary Intelligence of March 26th Lord Knutsford is reported to have made the following statement in the House of Lords:—

> "The figures of venereal disease in this country were almost too great to be believed. At the London Hospital alone they had 23,000 new cases last year. ......"

At a low computation each of these new cases would put in at least 12 attendances, so that the total number of attendances at the venereal department of that hospital would amount to considerably over a quarter of a million a year. As the total number of attendances at the department in 1919 was actually 24,499 Lord Knutsford was quite justified in his statement that "the figures of venereal disease in this country were almost too great to be believed." They most emphatically are. I am, Sir, yours faithfully,

Queen Anne-street, W., March 26th, 1921. J. ERNEST LANE.

"A VERY ENERGETIC PROPAGANDA."

To the Editor of THE LANCET.

SIR,—During the recent debate in the House of Lords on the report of the Special Committee on Venereal Diseases Viscount Knutsford urged the need of a "very energetic propaganda" directed towards the creation of a higher standard of morality and a lessening of the incidence of these diseases.

In this connexion a few figures as to the extent and scope of the propaganda undertaken in one year by the National Council for Combating Venereal Diseases may be of interest:—

Personal letters of inquiry received and answered by the medical department	33,000
Free pamphlets individually distributed, each pamphlet published or approved by the Ministry of Health and the N.C.C.V.D.	606,000

A very large number of addresses have been given to teachers, social organisations, employees of large firms and workshops, and to unselected audiences of the general public. It is impossible without special inquiry to estimate the numbers reached in this way by the 89 branches of the National Council, but the fact that one branch alone has reached 33,000 people during the last three months indicates the magnitude of this side of the work.

The cinematograph film has proved a most valuable addition to the propaganda material. Addresses have been given at exhibitions of approved films in more than 200 centres, the estimated number of such lectures being 718. Recent attendances at such displays as reported by local branches are: Gateshead (18 lectures), attendance 25,000; Plymouth (12 lectures), attendance 12,000; Leicester (24 lectures), attendance 23,000.

I am, Sir, yours faithfully,

E. O. GRANT,

Secretary, National Council for Combating Venereal Diseases.

March 26th, 1921.

THE DR. F. M. NEWTON FUND.

To the Editor of THE LANCET.

SIR,—Dr. Francis Morley Newton, medical officer of the Stoke-on-Trent Union Hospital, who died on Feb. 15th, 1920, left a widow and four children, aged 8, 7, 6, and 1½ years respectively. He suffered from asthma and diabetes and was unable to insure his life or to make provision in any other way for his family, so that their present financial position and future prospects are precarious. A fund in aid of the widow and children has been opened under a committee having for chairman Mr. R. H. Dickson, F.R.C.S. Irel., President of the North Staffordshire Medical Society, and Mr. W. Webster, F.R.C.S. Edin., as secretary.

Dr. Newton was educated at Epsom College and St. Bartholomew's Hospital. The committee feels that his friends or fellow students might wish to contribute to this fund, and takes the opportunity offered by your columns to reach them. Contributions will be gratefully acknowledged either by the chairman or secretary.

I am, Sir, yours faithfully,
WM. WEBSTER,
Secretary to the Fund.
64, King-street, Newcastle-under-Lyme, Staffs,
March 26th, 1921.

THE LABELLING OF THYROID TABLETS.

To the Editor of THE LANCET.

SIR,—We heartily support Dr. A. E. Carver's contention contained in his interesting letter in THE LANCET of March 12th on the prescribing of thyroid gland that the present slipshod method should be standardised. The dosage of all other widely used medicinal products is based on the dried substance, and why should an exception be made for thyroid gland? Would a pharmacist receiving a prescription for digitalis leaves assume for a minute that the doctor meant the moist as he did not state "exsic." or "desiccat.," and proceed to calculate how much of the dried powder he must dispense to be equivalent to the moist? What is absurd in the one case is equally absurd in the other. No doctor troubles himself about the ratio of dried product to moist for drugs other than thyroid. The system is purely a survival of a non-scientific basis.

Moreover, this mixed system is fraught with danger. For instance, a doctor prescribes 1 gr. of thyroid gland in tablet form and the pharmacist dispenses it, using, say, Jones's tablets, which are 1 gr. moist equivalent to 1/5 gr. dried substance. The patient now has a further supply, but from another pharmacist, who in this case, conforms to the B.P. standard and dispenses tablets which contain 1 gr. of the dried extract made by, say, Smith and Co. The patient finds a marked difference, it may be for the better or for the worse, and the doctor is puzzled. The prescriber never sees the bottle, and if he did most probably the issuing label would be covered by the pharmacist's dispensing label. We may add that in 1913 a paper was contributed from our laboratories to the Pharmaceutical Conference[1] using the argument which Dr. Carver now employs. Martindale and Squire, our two leading authorities after the B.P., both adopt the dried substance as their standard, and many of the leading manufacturers do the same.

Our experience does not conform with that of Messrs. Parke, Davis and Co. that prescribers mean "moist," for we made a large number of inquiries, and always had the same reply, that the "dried" substance was intended. In several cases the prescriber stated that the initial doses were always experimental and tentative, and the real dose required could only be decided by trial and result. We hope that this correspondence will do something to bring about a uniformity of prescribing and dispensing based on a more scientific and uniform principle.

We are, Sir, yours faithfully,
DUNCAN, FLOCKHART AND CO.
Edinburgh, March 22nd, 1921.

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[1] Year Book of Pharmacy, 1913.

Obituary.

RUTHERFOORD JOHN PYE-SMITH, CH.M. SHEFF., F.R.C.S. ENG.,

EMERITUS PROFESSOR OF SURGERY IN THE UNIVERSITY OF SHEFFIELD, AND CONSULTING SURGEON, SHEFFIELD ROYAL HOSPITAL.

WE regret to learn the death of Rutherfoord John Pye-Smith, lately professor of surgery in the University of Sheffield, whose retirement from the medical profession only dates from a few months ago.

Rutherfoord Pye-Smith came of old Sheffield stock, his grandfather, John Pye-Smith, D.D., F.R.S., his father, Mr. Ebenezer Pye-Smith, F.R.C.S., being both Sheffield men, though the latter practised in London, where his third son was born in 1848. Like an elder brother, Philip, R. J. Pye-Smith was educated at Guy's Hospital, from which he qualified in 1872, becoming F.R.C.S. three years later. In 1876 he went to Sheffield as a general practitioner. He soon made his mark as a man of exceptional skill and versed in modern surgical procedure, which was at that date undergoing a revolution. He was appointed in 1877 honorary surgeon to the Public Hospital and Dispensary (now the Royal Hospital), where he became the pioneer of Listerism in the district, and as such quickly came into prominence. Younger men trained on the same lines soon appeared on the scene, but until his retirement Pye-Smith was always looked up to and respected as the doyen of surgery in Sheffield.

A colleague writes:—

When he began his career, like all other provincial surgeons of that time, he also carried on a general practice. In pre-Listerian days operative surgery alone was too scanty to provide a living, at any rate in the provinces, and it was necessary for surgeons to take general practice as well. Pye-Smith was almost the last of the local surgeons to do this, and he continued to do so more or less to the end of his career. As his surgical reputation grew and the amount of operative work demanded by the public increased, this combination of the two things made his work endless, and, as he could not bring himself to adopt modern labour-saving methods, it is difficult to understand how he got through his day's work. Motor-cars, typewriters, shorthand clerks—all these were anathema to him! For many years his single-horse brougham remained as the sole survivor of its kind amongst the profession! Every letter was in his own handwriting, and they were rarely less than four pages! No assistant prepared the patient for operation or put on the dressings after operation! Everything he did was done from beginning to end by himself. Perhaps the most striking tribute to his capacity for work, and his high sense of personal service, was the time which he devoted week by week to his hospital out-patients, even during the busiest part of his life. Four or five hours of his day, at least twice a week, would be given up to this part of his duties alone.

On the constitution of the University of Sheffield Pye-Smith was elected Professor of Surgery and gave long and valued services to the University, so that on retirement from his chair a few years ago he was rightly made Emeritus Professor, receiving also the honorary degree of M.Ch. in the University. In the affairs of the University, whether in the Faculty, Senate, or Council, he took an active part, rarely missing a meeting, while his frequent correction of the substance or the phraseology of the minutes or reports, of which he had always read every line, became a by-word amongst his colleagues. It was natural that he should be chosen to represent the University on the General Medical Council, where again his practical experience of the problems of education, learned in the evolution of the Sheffield Medical School, was often drawn upon by his colleagues.

During the war, though already showing distinct signs of strain from a life of incessant toil, he joined the staff of the Wharncliffe War Hospital, and in spite of remonstrances of friends, who saw how the work was telling upon him, he remained at his post until the conclusion of hostilities. But when the war was over he could not disguise from himself that his health was seriously affected, and a little less than two years ago he retired from practice and went to live in the country. He ceased work however too late, and although for a time his health improved he succumbed to a brief attack of influenza on March 23rd at his house in Ampthill.

Professor Pye-Smith, though closely associated in our minds with the University with which he was connected during his long working life, may be regarded as a general leader in surgery—he was one of the focuses from which modern surgery, based on the discoveries of Lister, was distributed throughout the country. Outside his profession he was keenly devoted to art, for music, painting, architecture, and beautiful scenery all had their appeal for him. His holidays were usually spent in walking tours in some part of his native country. His disposition was serene, no one ever saw him ruffled or impatient, and in the difficulties of others he was always ready to act as mediator. A religious man by conviction and in practice, he was a great supporter of Congregationalism in Sheffield. He was also chairman of the Council of the Y.M.C.A. in that city. He led a full, arduous, and generous life, and few citizens can ever have been more widely and more deservedly regretted.

Dr. Ernest Hasler Helby, medical officer to Princetown prison, was killed on March 24th by a fall from his motor-cycle. Dr. Helby was a Middlesex Hospital man who, after qualifying in 1893, demonstrated in bacteriology at King's College, London, before entering the prison medical service. He was at Birmingham and Aylesbury before he was appointed to Princetown.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Medical Committee of the House of Commons.

THIS Committee met on March 21st in Room 13, House of Commons, Dr. NATHAN RAW in the chair, when Sir PHILIP MAGNUS submitted correspondence with the Ministry of Health on the subject of security of tenure of medical officers of health. A Bill drafted some years ago (Public Health Officers Bill) was considered. Sir PHILIP MAGNUS agreed to have the Bill brought up to date and submitted to the committee at a subsequent meeting.

A deputation from the Medico-Political Union, consisting of Dr A. WELPLY, Dr. GORDON WARD, Dr. MACDONALD, and Dr. GREIG, was then heard. Dr. WARD submitted objections to the new medical record cards, and Dr. GREIG submitted objections to the new regulations of the Ministry of Health, to come into force next year, concerning the transfer of practices. A discussion then took place, when the deputation was promised that the points suggested would have the attention of the Committee.

HOUSE OF LORDS.

MONDAY, MARCH 21ST.

Criminal Law Amendment Bill.

On the motion of the Bishop of LONDON, the Criminal Law Amendment Bill was read a third time and passed.

WEDNESDAY, MARCH 23RD.

Danger of Smuggled Foreign Dogs.

Lord BLEDISLOE asked the Government whether there were good grounds for suspecting that during the last few months dogs had been smuggled into this country from abroad, thus evading the quarantine regulations and constituting a source of danger to the community in the matter of the transmission of hydrophobia; whether the maximum penalty for such evasion was for the first offence only £20; and whether seeing that such a fine, in the absence of any discretion on the part of the Court to substitute imprisonment therefor, was an insufficient deterrent to many such offenders, the Government would so amend the Diseases of Animals Act, 1894, as to empower the Court to impose in the case of a first offence the more drastic penalties provided thereby in the case of a second or subsequent offence. It seemed, he said, to be the fashion to breed as small a dog as possible of the varieties known as Pomeranians, Belgian griffons, Blenheim spaniels, and more particularly Pekingese, so that it was comparatively easy to smuggle into this country in a lady's muff, or in a small portable basket, dogs arriving across the Channel. There was also the danger, which was becoming a very real risk, of possibly larger dogs being transported to this country by aircraft, and more especially military aircraft. This suggestion was strengthened by the location of the various confirmed outbreaks of rabies, as published by the Ministry of Agriculture. During 1919 there were 155 confirmed cases of rabies, largely in the South and West of England, and more or less in the neighbourhood of the camps; and in 1920, although the number was considerably reduced, no more than 42 outbreaks having taken place, much more than half those were in Wiltshire, which, of course, comprised Salisbury Plain, and in the three adjacent counties. Only five took place in all the rest of England. In the early part of this year the Army Council issued an instruction prohibiting the embarkation of any dogs with soldiers on transports or upon other means of conveyance to this country without a licence from the Minister of Agriculture. In the meantime, however, harm seemed to have been done by this illegal smuggling. A month ago the Masters of the Foxhounds Association passed a unanimous resolution urging the Government to take steps against this illicit importation of possibly diseased animals. A rabid dog was very seldom found wearing a muzzle, and it was therefore questionable whether muzzling, carried out sporadically in certain areas only, was an effective preventive of the spread of rabies.

Lord WILLOUGHBY DE BROKE, in supporting what Lord Bledisloe had said, remarked that not long ago a whole pack of foxhounds had to be destroyed. It seemed to him that lovers of Pekingese and Belgian griffons and such dogs appeared to lose all sense of public spirit in this regard, and it would be a great advantage if the Minister of Health would look into this matter and offer some kind of advice to the public against these dogs being allowed to lick dishes and plates in public restaurants as he had seen them do.

The Earl of CRAWFORD (Chancellor of the Duchy of Lancaster) said, with regard to the danger of smuggling dogs into the country by aircraft, he was informed that the Department of Agriculture, which had given the closest attention to the subject, had made inquiries and had satisfied itself that public aerodromes were now very well watched. The Department, however, was quite conscious that some smuggling might be attempted, and they were taking steps, which he would not particularise or describe, to reduce that danger to a minimum. As regarded fresh legislation, for the time being at any rate, the Board of Agriculture was of opinion that the present penalties, the danger of the quarantine, the guard of the Customs, and so forth, could be relied upon to keep disease out of the country; but if any evidence were forthcoming of fresh attempts to use the aeroplane for this specific purpose, the Ministry would be quite prepared to ask for increased penalties.

HOUSE OF COMMONS.

TUESDAY, MARCH 22ND.

Army Veterinary Service.

Sir L. WORTHINGTON-EVANS (Secretary for War) informed Colonel Sir A. HOLBROOK that the question of the amalgamation of the Army Veterinary Service with the Remount Service was not a new one. He was informed that it would not be practicable for the Army Veterinary Service to perform the duties of the Remount Service in addition to their own duties, and it was not considered that a saving would accrue from a combination of the two services even if this were feasible.

WEDNESDAY, MARCH 23RD.

Government's Opium Policy.

Mr. MONTAGU (Secretary for India) informed Sir J. D. REES and others that it was not proposed to make any change in the opium policy of the Government of India as a result of the recrudescence of poppy cultivation in China. The matter was now governed by the Hague Convention. Under that Convention, as China had prohibited the import of opium, India was bound to prevent the export of Indian opium to China. He was given to understand that the matter would be discussed by the Opium Advisory Committee of the League of Nations at the forthcoming Congress at Geneva.

Sanitary Arrangements of Caravans.

Major GLYN asked the Minister of Health what powers were possessed by the Ministry of Health to control the conditions and sanitary arrangements of caravans, especially when these had ceased to be really mobile and had settled in some field or vacant piece of land, joined shelters to the vans, and, without control or method, established a kind of encampment of vehicles, often a menace to the health of a district.—Dr. ADDISON replied: The Ministry of Health have themselves no direct power in this matter, but the local authority can take action under the Nuisances Provisions of the Public Health Act where a tent, van, shed, or similar structure is in such a state as to be a nuisance or injurious to health, or is so overcrowded as to be injurious to the health of the inmates. The local authority can also make by-laws under Section 9 of the Housing of the Working Classes Act, 1885, for promoting cleanliness in, and the habitable condition of, such structures, and for the prevention of nuisances in connexion with them.

Venereal Disease.

Captain ELLIOT asked the Minister of Health whether he had at any time sanctioned the provision of public money, either out of the National Exchequer or out of local revenues, for the purposes of the National Council for Combating Venereal Diseases, either for the purpose of advertisement or for any other purpose; and, if so, whether he would specify what amount of money had been so provided in each of the financial years affected and on what purposes the money had been spent.—Dr. ADDISON replied: The reply to the first part of the question is in the affirmative. In accordance with the recommendation of the Royal Commission on Venereal Diseases the National Council for Combating Venereal Diseases has been recognised by the Government since 1916 as the authoritative body for the purpose of spreading knowledge and giving advice in regard to the question of venereal diseases in its varied aspects. During the years ended March 31st, 1919, and March 31st, 1920, grants were made to the National Council from the Exchequer amounting to £13,000 and £15,600 respectively, and the grant up to date during the current financial year amounts to £13,750. These grants have been paid in respect of expenditure incurred by the National Council in connexion with a campaign of publicity and education by means of lectures, meetings, exhibitions, and press advertisements, and by pamphlets, posters, and other literature. The grants for the current financial year and for 1919-20 included a proportionate sum for administrative expenditure. No grants are made direct by local authorities to the National Council, but some of these authorities have made contributions to local branches of the Council in aid of the propaganda and educational measures undertaken by those branches.

Captain ELLIOT: In view of the recent recommendations of the Birth Rate Commission will the right honourable gentleman see that steps are taken to persuade the two societies engaged in the campaign against venereal disease to coöperate instead of pulling in different directions?—Sir J. D. REES: Will the right honourable gentleman in this matter regard with suspicion reports of a profession which has reported that victorious England has a C 3 population?—Dr. ADDISON: I cannot agree with these generalisations. I have done everything I can to get these two different bodies to work together and am continuing to do so.

Infant Mortality in London.

Mr. GILBERT asked the Minister of Health what had been the rate of infant mortality during the last four years in London, and what had been the cost on the rates during the same period of maternity and child welfare centres established in the London area.—Dr. ADDISON replied: The rate of infant mortality in London has fallen during the last four years as follows: 1917, 104; 1918, 108; 1919, 85; and 1920, 75. The average cost to the rates of London of the Maternity and Child Welfare Service was during each of the last four years considerably less than 1d. per £ of assessable value.

Death-rate from Phthisis and Tuberculosis.

Captain ELLIOT asked the Minister of Health the number of deaths and the death-rate per 1000 from phthisis and tuberculosis, all forms, in 1920, and similar figures for the previous five years; and whether, as a measure of public economy, he proposed to reduce the number of sanatoriums and beds available for coping with this disease.—Dr. ADDISON replied: The total deaths during the past six years from 1915-20 inclusive from all forms of tuberculosis were as follows: 54,295, 53,858, 55,934, 58,073, 46,312, 42,545. The death-rates per 100,000 of the population for the same years were as follows: 151·5, 152·9, 162·4, 169·4, 125·8, 112·8. As I have already stated, the figures for the last two years were the most encouraging we have had since the inception of the national scheme for the treatment of tuberculosis. The answer to the last part of the question is in the negative.

Grants for Tuberculosis, Maternity, and Venereal Disease.

Mr. BRIANT asked the Minister of Health what were the grants towards the services for tuberculosis, maternity welfare, and venereal disease for London during the last year; and if there had been any reduction in infant mortality since the grants in aid were issued.—Dr. ADDISON replied: The grants paid to local authorities in London during the last completed financial year in respect of the services mentioned were: tuberculosis, £49,195; maternity and child welfare, £39,763; venereal disease, £35,543; total, £124,501. The mortality-rates are given in my reply to the honourable Member for Central Southwark. The total expenditure in all these services combined out of an average rate in London of 14*s.* 5*d.* for the year 1920-21 was 2¼*d.*

Birth-, Death-, and Marriage-rates in Ireland.

Lieutenant-Colonel ALLEN asked the Chief Secretary to the Lord Lieutenant of Ireland the birth-, death-, and marriage-rates, respectively, in Ireland for the years 1910, 1914, and 1920.—Sir H. GREENWOOD replied: The figures per 1000 of the population are as follows:—1910: marriages 5·04, births 23·3, deaths 17·1; 1914: marriages 5·41; births 22·6, deaths 16·3; 1920: marriages 6·18, births 22·2, deaths 14·9.

Washington Maternity Convention.

Mr. CLYNES asked the Prime Minister whether, in view of the great importance of the Washington convention on maternity, and also of the widespread opinion that the draft conventions of the Washington conference must be submitted to Parliament, an opportunity would be given after Easter to discuss the Government's policy on the maternity convention, and also the Ministerial declaration that it was for the Government to decide whether any particular convention should be submitted to Parliament.—Mr. LLOYD GEORGE (Prime Minister) replied: I would refer my right honourable friend to a reply given on Feb. 22nd in which a promise was given by my right honourable friend the Member for the Central Division of Glasgow to the effect that consideration would be given to this subject in the event of a question being put after Easter.

Condensed Milk Standard.

Mr. GRATTAN DOYLE asked the Minister of Health whether he was aware that the draft regulations based on the Committee's recommendations for a standard of condensed milk were at direct variance with the bulk of the evidence submitted by interests concerned; and whether the Committee's report and recommendations would be published.—Dr. ADDISON replied: I understand that the standards recommended by the Committee are not substantially different from those which were advocated by the majority of trade witnesses except in the case of one variety (full cream unsweetened) where a somewhat lower standard has been adopted. I am prepared to publish the Committee's report if there is any general desire to that effect.

Nation's Supply of Potable Water.

Major KELLEY asked the Minister of Health whether he had received any recommendations for the conservation and allocation of the nation's supplies of potable water; and whether he proposed to take action to reserve sources of water-supply for towns such as Rotherham, whose populations were certain to expand greatly, but whose areas did not adjoin any watershed unpolluted by industry or agriculture.—Dr. ADDISON replied: Recommendations on the subjects contained in the first part of the question are made in the Second Interim Report of the Water Power Resources Committee (Cmd. 79). These have been under my consideration, but it is not practicable to propose legislation on the subject at present.

Pre-war Naval Disability Pensioners.

Lieutenant-Colonel ARTHUR MURRAY asked the Secretary to the Admiralty whether naval officers who were invalided out of the service before the war, but who served during the war, were to be included amongst the pre-war disability pensioners.—Sir J. CRAIG (Parliamentary Secretary to the Admiralty): The answer is in the negative.

Coroners Remuneration Bill.

Major STEEL asked the Prime Minister whether he would give facilities for the second reading and subsequent stages of the Coroners (Remuneration) Bill in order that this Bill might be passed quickly into law.—Mr. LLOYD GEORGE replied: The Government do not oppose the second reading of this Bill, but it must take its chance with other private Bills.

BRITISH ASSOCIATION.—The next meeting is announced to take place at Edinburgh from Sept. 7th-14th. On the evening of the opening day Sir Edward Thorpe will deliver his presidential address. Sir J. Frazer is to preside over the section of Anthropology, Sir Walter Fletcher over that of Physiology, and Professor C. Lloyd Morgan over that of Psychology. Biochemistry, Vocational Tests, and the Relation of Genetics to Agriculture are to receive their share of attention.

LONDON TEMPERANCE HOSPITAL.—An entertainment, including a musical programme and amateur theatricals will be given by the nursing staff of this institution on April 13th, 14th, and 16th at 8 P.M. The entertainment is in aid of the building fund and will be held in the out-patient hall of the hospital. The prices of admission to reserved seats are 10*s.* 6*d.*, 5*s.*, 2*s.* 6*d.*, and 1*s.* Tickets can be obtained from the matron at the hospital.

Medical News.

UNIVERSITY OF CAMBRIDGE: DIPLOMA OF PSYCHOLOGICAL MEDICINE.—A five weeks' revision course for the diploma examination will be held in Cambridge from July 18th to August 20th. The course will include lectures and laboratory work on the Anatomy and Physiology of the Nervous System (Dr. C. R. A. Thacker), and on Psychology (Dr. J. P. Lawson) for Part I. of the examination, and lectures and clinical work on Psychopathology (Dr. C. S. Myers and Dr. J. F. E. Prideaux) and Mental Diseases (Dr. M. A. Archdale) for Part II. The fee for the whole course is 12 guineas. That for the course for Part I. or Part II. alone is 6 guineas. The examination for Part I. (Anatomy and Physiology of the Nervous System, and Psychology) is held in October, and that for Part II. (Neurology and Psychiatry) in December. Further information may be obtained from the Secretary to the D.P.M. Committee, Psychological Laboratory, Downing-street, Cambridge.

UNIVERSITY OF LEEDS.—Dr. R. J. Stewart McDowall, whose appointment to the University lectureship in experimental physiology and experimental pharmacology was noted last week, was in 1917 specialist sanitary officer in charge of the Palestine water-supplies, which included the pipe line across the Sinai Desert, and was later deputy assistant director of medical services for the British Forces in Palestine, Syria, and Cilicia. Since demobilisation he worked under Sir E. Sharpey Schafer in the physiology department of the University of Edinburgh, surrendering the positions of lecturer in that department and of clinical tutor in medicine at the Royal Infirmary under Sir Robert Philip to come to Leeds. He was a member of the International Congress of Physiology held in Paris last year and is on the general and organising committee of the physiology section of the British Association.

UNIVERSITY OF LIVERPOOL.—At examinations held recently the following candidates were successful:—

DEGREE OF M.D.

Amy Hodgson and N. W. Walmsley.

FINAL EXAMINATION FOR DEGREES OF M.B., CH.B.

Part III.—Eileen Dowling, F. H. Edwards, S. Farris, W. S. Gilmour, H. T. Hughes, R. M. Jones, Florence M. Lamport, R. F. J. Martin, F. G. Pailthorpe, J. H. Pottinger, A. McK. Reid, and J. C. Twomey.

Part II.—G. C. Bhatia, Eleanor E. Briant, H. R. Chibber (distinction in Forensic Medicine and Toxicology), and C. Cookson.

Part I.—Ethel Ashton, H. R. Chibber, G. Clark, H. M. Cohen, R. W. Cowie, J. Elsohn, I. S. Fox, H. S. Gordon, R. C. Gubbins, W. D. Jeans, T. Knowles, Mary E. Nosworthy, G. Sanders, S. G. Sheir, Mary D. H. Sheridan, W. T. de V. Thomson, Mary G. T. Williams, and D. A. Woodeson.

Honours, Class II.—J. G. L. Jones (distinction in Obstetrics).

DIPLOMA IN PUBLIC HEALTH.

A. J. Hawes, J. O. Murray, and L. B. Stott.

DIPLOMA IN TROPICAL MEDICINE.

R. Nixon, A. S. Richmond, J. M. Skinner, R. B. Stewart, and Marion Thomson.

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.

C. C. Anderson, J. H. Mather, R. E. Roberts, and R. I. C. Rodgers.

UNIVERSITY OF ABERDEEN.—The following candidates have passed the Final Professional Examination in Medicine:—

Charles Davidson Allan, John James Hall Anderson, Nicholas C. Bodenstein, Foong K. Chen, John Craig, Lilian Fyfe Gall, Ronald K. Grant, G. W. Hay, Eleanora M. P. Law, Margaret Lipp, Matthew H. Logg, Douglas R. Macdonald, Alexander McKay, Elsie Mackie, Katherina F. E. van der Merwe, Mary G. Milne, Dorothy Mitchell, John I. Moir, Marian Elizabeth Mowat, J. M. H. Murray, Janet Cruickshank Nicol, Mary Milne Pyper, Alexander E. Reid, Edwin N. D. Repper, James P. J. Rossouw, George Saint, Norman Charles Simpson, G. Violet G. Smith, Ian R. Spark, Alexander L. G. Thomson, Ian S. Thomson, and A. R. Wood.

WORK OF THE CITY CORONER DURING 1920.—Dr. F. J. Waldo, J.P., H.M. City coroner, held during the year 1920 599 inquiries in the City of London, including H.M. prison at Holloway, as well as in Southwark. Post-mortem examinations were ordered and carried out in all but 14 inquests of death. Juries were summoned in all cases except those of a few natural deaths; Dr. Waldo maintains this constitutional and popular pre-war method on the principle that the coöperation of an intelligent jury, such as can be found in the City, secures a better and more satisfactory tribunal than that constituted by a coroner sitting alone. Among the inquests held were two cases of murder, 2 of manslaughter, 1 of justifiable homicide, 1 of felo-de-se, 22 of suicide, and 1 of arson. Inquests were held on 24 children under the age of 1 year and on 52 between the ages of 1 and 16 years. Fifty-eight fatalities (28 in the City, 30 in Southwark) were due to vehicles. Dr. Waldo, backed by his juries, has made frequent appeals to the Minister of Transport, the Home Secretary and Police, the London County Council, and the various local road authorities for more street refuges, more police at fixed crossings to assist foot-passengers across congested streets, and compulsory side life-guards on all heavy commercial motors, similar to those in use on motor omnibuses; but his recommendations have so far met with little notice. An inquest was held on the body of one infant accidentally suffocated whilst in bed with the parents, this figure being the lowest ever recorded. The marked general decrease throughout England and Wales during the past few years in this class of preventable death has, in the coroner's opinion, much less to do with the question of drink than with the more general use of cots and cradles. The holding of more autopsies has been an important factor in the lessening in the number of these deaths. Inquests were held in only 8 cases (3 in the City, 5 in Southwark) of sudden death accelerated by the administration of anæsthetics for surgical operations. As heretofore, the deaths occurred during the use of chloroform or a mixture containing chloroform.

NORTH-EAST LONDON POST-GRADUATE COLLEGE.—A special post-graduate course is to be held from Monday, April 25th, to Saturday, May 7th, inclusive. At 10.30 A.M. and 11.45 A.M. each day practical demonstrations will be given on the more important clinical and laboratory methods applicable in medical practice. In the afternoons at 2 P.M. demonstrations will be given on groups of cases illustrating special subjects, and at 3 P.M. on selected cases in various departments of practice. At 4.30 P.M. each day there will be either a clinical lecture (free to qualified medical practitioners) to be delivered by Sir William Hale-White, Sir Thomas Oliver, Sir Henry Gauvain, Mr. H. D. Gillies, Dr. P. Manson-Bahr, Dr. Frederic Thomson, and others, or clinical consultations on obscure medical and surgical cases. On Saturdays demonstrations will be given on the Early Diagnosis of the Infectious Fevers at the North-Eastern Fever Hospital, St. Ann's-road, London, N., and on cases of Insanity Associated with Epilepsy at the L.C.C. Mental Hospital, New Southgate, London, N. Further information and syllabus of the course may be obtained from the Dean of the College at the Prince of Wales's General Hospital, Tottenham, N. 15.

HORSHAM COTTAGE HOSPITAL.—The governors of the Horsham Cottage Hospital have found it incumbent upon them to increase the fees of the patients rather than let the institution run into serious debt. Increased expenditure consequent upon high prices has not been met by a corresponding increase in the receipts, and at the twenty-ninth annual meeting held on March 23rd it was unanimously agreed that each patient should pay such weekly contribution as the committee may fix, not being less than 7*s.* 6*d.* or more than £2 2*s.*, the committee still holding the power to remit the whole or part of such payment at its discretion; and that the minimum fee for private patients be £5 5*s.* per week, in addition to dressings, extras ordered by the doctor, and a special nurse or nurses, should such be required. There were 228 patients admitted during the year, including 30 accident cases; 100 major operations and 204 minor operations were performed. The number of patients (228) was the highest on record. Although the governors have some £10,000 in hand for the enlargement of the hospital it has been decided that the building scheme must remain in abeyance owing to the high cost of materials and labour.

THE LATE DR. J. D. KENNY.—John Drought Kenny, whose death occurred on March 9th at his residence, The Grange, Wickersley, near Rotherham, was a native of Ireland, and obtained his medical education at Queen's College, Galway, and at the Ledwick School and Adelaide Hospital, Dublin. At the Ledwick School he was first prizeman in practice of medicine. He qualified in 1884, and in 1887 went to Yorkshire, where, after acting for some time as assistant to the late Dr. Lyth, of Rotherham, he settled down in practice in the village of Treeton, where he remained for the next 25 years. He soon built up a large practice, gaining the esteem and affection of all classes by his good nature and devotion to work, and he will long be remembered by the poor of the village for the help he gave them in money and provisions during a long and serious coal strike. His patients and friends showed their appreciation by presenting him with a motor-car when in 1912 he left them to take up practice in Wickersley. He held numerous appointments under the guardians, the Yorkshire Coal-owners Indemnity Company, and various colliery companies, and he also took much interest in ambulance work; for his services in the latter connexion he was made, in 1911, an honorary associate of the Order of St. John of Jerusalem. His death occurred from pneumonia after a illness, and came as a great shock to his He is survived by his widow.

SUMMER TIME, 1921.—The Home Secretary has fixed summer time this year to commence on Sunday, April 3rd, at 2 to 3 A.M.

GENERAL HOSPITAL, BIRMINGHAM.—The annual meeting was held on March 16th, under the presidency of the Bishop of Birmingham. The report stated that the main difficulties to be faced were lack of funds and of accommodation. The ordinary subscriptions and donations showed a steady increase and several large and unexpected donations had been received. In December the National Relief Fund made a donation of £17,800 towards that part of the debt contracted owing to war conditions, and this, added to the £40,014 obtained by the sale of securities, enabled the hospital to be temporarily free from debt. But such additions to the funds could not be expected in the future, and without other sources of income the hospital must sell further securities or greatly reduce its work. The average cost of each in-patient was £9 9*s.* 11*d.*, as compared with £7 11*s.* 7*d.* for the previous year. The total expenditure was £93,734 and the receipts £63,599, an excess of expenditure over income of £30,135. These figures are exclusive of the sums received from the National Relief Fund and from the sale of securities. The hospital had received £9000 from the Hospital Saturday Fund, as compared with £6000 last year, in addition to a grant of £1000 for the Jaffray Hospital. From the Hospital Sunday Fund was received a sum of £2834, an increase of £822 on last year. The number of in-patients was 6930, an increase of 486. The daily average number in hospital was 335, an increase of 20 on the average of the last five years. The out-patients numbered 42,376, as against 39,330 in 1919; 5923 operations were performed during the year.

Medical Diary.

SOCIETIES.

BIRMINGHAM MEDICAL PSYCHOLOGICAL SOCIETY.

WEDNESDAY, April 6th.—4.15 P.M., Paper:—Dr. R. M. Ladell: Some Problems in the Treatment of Pensioners.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, April 4th.—2 P.M., Dr. S. Pinchin: Medical Out-patients. Dr. Simson: Diseases of Women. Dr. Morton: X Ray Department. 2.30 P.M., Mr. Baldwin: Visit to Surgical Wards.

TUESDAY.—10 A.M., Mr. Steadman: Dental Department. 2 P.M., Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Skin Department. 2.30 P.M., Dr. Pritchard: Visit to Medical Wards.

WEDNESDAY.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 2 P.M., Mr. D. Armour: Visit to Surgical Wards. Mr. Sinclair: Surgical Out-patients. Mr. Gibb: Eye Department.

THURSDAY.—2 P.M., Mr. B. Harman: Eye Department. Mr. MacDonald: Surgical Out-patients. Mr. D. Armour: Operations. Mr. Baldwin: Orthopædic Department.

FRIDAY.—10 A.M., Dr. Robinson: Gynæcological Operations and Visit to Wards. Dr. McDougal: Electrical Department. 2 P.M., Mr. T. Gray: Surgical Out-patients. Dr. Burnford: Medical Out-patients. 2.30 P.M., Mr. Addison; Visit to Surgical Wards.

SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 2 P.M., Dr. Owen: Medical Out-patients.

Daily:—10 A.M. Ward Visits. 2 P.M., In-patient, Out-patient Clinics and Operations.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.

Post-Graduate Course on Infant and Child Welfare.

A Course of Twelve Practical Demonstrations on the Management and Feeding of Infants and Young Children by Dr. E. Pritchard to Qualified Practitioners.

TUESDAY, April 5th.—10.30 A.M., Demonstration I., Causes of Infant Mortality.

THURSDAY.—3 P.M., Demonstration II., How to Conduct an Infant Consultation, Examine an Infant, and Keep Records.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

THURSDAY, April 7th.—6 P.M., Chesterfield Lecture:—Dr. W. K. Sibley: Seborrhœa and Psoriasis.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

MONDAY, April 4th.—5 P.M., General Meeting.

TUESDAY.—3 P.M., Lecture:—Prof. R. A. Sampson · Present Position of the Nebular Hypothesis.

THURSDAY.—3 P.M., Tyndall Lectures (I.):—Mr. C. T. R. Wilson: Thunderstorms.

FRIDAY.—8 P.M., Discourse:—Dr. R. H. A. Plimmer: Quality of Protein in Nutrition.

SATURDAY.—3 P.M., Lecture:—Dr. H. H. Dale: Poisons and Antidotes.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

TUESDAY, April 5th.—4.30 P.M., Lecture:—Mr. W. H. Hey: The Diagnosis of the Chronic Abdomen.

Appointments.

KEYNES, G. L., M.D., B.Ch. Camb., F.R.C.S. Eng., has been appointed Assistant Surgeon, City of London Truss Society.

Certifying Surgeons under the Factory and Workshop Acts: ORR, J. (Eccles); MCCAUL, G. B., M.D. Dub. (Kirkby Lonsdale); BIRTWHISTLE, F. P. H., M.D. Manch. (Barton-on-Humber); STORRS, C. S., M.D. Camb. (Colne); SOMMERVILLE, M., M.B., Ch.B. Glasg. (Shap); PHILIPSON, G. R., M.B., B.S. Durh. (Allendale).

Vacancies.

For further information refer to the advertisement columns.

Barnsley and Wakefield Joint Sanatorium Committee.—Asst. Tuberc. O. and Res. M.O. at Mount Vernon Sanatorium. £400.

Barrow-in-Furness, North Lonsdale Hospital.—Second Res. H.S. £225.

Birmingham General Hospital.—Asst. Visit. Anæsth. £50. Res. Anæsth., H.S., £100 each. H.S. to Skin and Venereal Depts. £125. Cas. H.S. £100.

Birmingham and Midland Homœopathic Hospital.—Res. H.S. £175.

Birmingham, Rubery Hill and Hollymoor Mental Hospital.—Jun. Asst. M.O. £400.

Bootle Borough Hospital.—Third H.S. £120.

Bristol General Hospital.—H.S. £175.

Denbigh Mental Hospital.—Jun. Asst. M.O.—£400.

Dumfries, Crichton Royal Mental Hospital.—Clin. Path. £400.

Eccles Borough.—M.O.H. and Sch. M.O. £800

Enham Village Centre for Disabled Ex-Service Men, Andover, Hants.—Asst. M.O. £250.

Gloucester County Asylum.—Jun. Asst. M.O. £300.

Guildford, Royal Surrey County Hospital.—H.S. £150.

Hastings Education Committee.—Asst. Sch. M.O. £500.

Herefordshire General Hospital.—H.S. £200.

Hospital of St. John and St. Elizabeth, 40, Grove End-road, N.W.—Anæsth. £50.

Hospital for Sick Children, Great Ormond-street, London, W.C.—Asst. Cas. M.O., H.S., and H.P. £50 each.

Hospital for Women, Soho-square, W.—Res. M.O. £100.

Huddersfield Royal Infirmary.—Two Jun. H.S.'s. £150.

Isle of Wight County Mental Hospital.—Asst. M.O. £300.

King's College Hospital, Denmark Hill, S.E.—Hon. Jun. Dent. S.

Kirkburton, Storthes Hall Asylum, near Huddersfield.—Asst. M.O. £400.

Leith Hospital.—Res. H.P. 50 gs.

Liverpool, Royal Southern Hospital..—Two H.P.'s and two H.S.'s. £120 each.

London Jewish Hospital, Stepney Green, E.—Clin. Asst. Ophthalmic Dept. £80.

London Lock Hospital, 91, Dean-street, W.—Pathologist. £500.

Manchester, Ancoats Hospital, Mill-street.—Med. Registrar and Surg. Registrar. £100 each. Res. Surg. O. £250. Res. H.P. £200. Anæsth. 10s. 6*d.* per attendance. Female M.O. 3 gs. per clinic.

Manchester Children's Hospital, Gartside-street.—Asst. M.O. £200.

Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—P., Dent. S., and Radiographer. Also Jun. Res. M.O. £120.

Miller General Hospital for South-East London, Greenwich-road, S.E.—Sen. Res. M.O. £350.

National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Asst. P.

Newcastle-upon-Tyne, City Mental Hospital, Gosforth.—Jun. Asst. M.O. £400.

Newport, Mon., Royal Gwent Hospital.—H.S. £200.

Northampton General Hospital.—H.S. £200.

North Riding of Yorkshire County Council.—Tuberc. O. £700.

Nottingham, Bagthorpe Institution and Infirmary.—Res. Asst. M.O. £300.

Ochil Hills Sanatorium, near Milnathort.—Res. Med. Supt. £500.

Paddington Green Children's Hospital, London, W.—H.P. £150. H.S. £150.

Prince of Wales's General Hospital, Tottenham, N.—H.P., H.S. £200. Jun. H.S., Jun. H.P. £120.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Cas. H.S., Asst. Cas. O. £100.

Reading, Royal Berkshire Hospital.—Second H.S. £200.

Rotherham Hospital.—Jun. H.S. £150.

Royal General Dispensary, Bartholomew Close, E.C.—Res. M.O. £175.

St. Bartholomew's Hospital Medical School.—Chair of Anatomy. £900.

St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—Jun. H.S. £75.

St. Thomas's Hospital, Albert Embankment, S.E.—Jun. Asst. in Venereal Department. £400.

Salford Royal Hospital.—H.S.'s £150. Cas. H.S. £150. Also Anæsth. £50.

Sheffield, East End Branch of the Children's Hospital.—H.S. £150.

Sheffield Royal Hospital.—H.S. and Asst. Cas. O. £150.

Sheffield Royal Infirmary.—Three H.S.'s, two H.P.'s, Aural H.S., and Asst. Cas. O. £150 each.

South Eastern Hospital for Children, Sydenham, S.E.—Hon. Asst. P. and Hon. Asst. S.

Southampton Free Eye Hospital.—Asst. Hon. Ophth. Surg.

University College Hospital.—Obstet. Registrar. £150.

Wakefield, Clayton Hospital.—Sen. H.S. £250. Jun. H.S. £200.

West London Hospital, Hammersmith-road, W.—Cas. O. £5 5*s.* per week.

Winchester, Royal Hampshire County Hospital.—Sec. Res. M.O. £200.

Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.

Wolverhampton and Staffordshire General Hospital.—H.S. £200.

Worcester County and City Mental Hospital, Powick.—Sen. Asst. *M.O.* *£450.*

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for an Inspector of Factories under the Factory and Workshop Acts at West Bromwich.

Births, Marriages, and Deaths.

BIRTHS.

ASH.—On March 26th, at Crowborough House, Crowborough, Sussex, the wife of Richard Guy Ash, L.D.S.R.C.S. Eng, of a daughter.

FRANKAU.—On March 24th, at Wyndham-place, W., the wife of Claude Frankau, C.B.E., D.S.O., F.R.C.S., of a son.

GROVE WHITE.—On March 23rd, at Gledhow-gardens, South Kensington, the wife of Captain J. H. Grove White, I.M.S. (retired), of a son.

LESCHER.—On the 25th March, at 48, Kedleston-road, Derby, to Bridget, wife of Dr. Frank Graham Lescher, M.C., B.A., M.B. Cantab., a daughter—Bridget Mary.

DEATHS.

PYE-SMITH.—Rutherfoord John Pye-Smith, J.P., F.R.C.S., late of Sheffield, on the 23rd March, at his house in Ampthill, Beds., after three days' illness. Aged 73. Funeral 29th, 2.30, at Ampthill.

SHAW.—On March 17th, suddenly, Lawrence Drew Shaw, D.S.O., M.B., Ch.B., Harley-street, London, W., and late of Tientsin, China.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. E. E. Atkin, Lond.; Dr. H. el Arculli, Liverpool; Dr. G. Alexander, Furness; Automatic and Electric Furnaces, Ltd., Lond., Managing Director of; Dr. E. D. Adrian, Cambridge.

B.—Dr. G. R. Bruce, Jarrow-on-Tyne; Brooklyn Cardiological Society; Dr. J. Blomfield, Lond.; Mrs. C. Brereton, Lond.; Prof. H. Briggs, Liverpool.

C.—Dr. F. G. Crookshank, Lond.; Chicago School of Sanitary Instruction; Dr. W. J. Cruikshank, Brooklyn; Major B. J. Courtney, Esher; Dr. B. H. Cole, Lond.; Dr. A. Chaplin, Lond.; Dr. H. P. Cholmeley, Forest Row; Dr. P. C. Campariole, Trinidad; Dr. F. G. Chandler, Lond.; Dr. J. Crocket, Bridge of Weir.

D.—Messrs. Duncan, Flockhart, and Co., Edinburgh; Department of Scientific and Industrial Research, Lond.; Mr. H. Dickinson, Lond.; Mr. A. J. Davy, Lond.

E.—Mr. D. L. Eadie, Edinburgh.

F.—Dr. A. G. T. Fisher, Lond.; Miss G. Fuller, Lond.; Dr. W. E. Falconar, Lond.

G.—Great Northern Central Hospital, Lond.; Messrs. Gale and Co., Lond.; Dr. G. Graham, Lond.

H.—Mr. E. Hughes, Liverpool; Harrogate Baths, Manager of; Dr. R. Hobbs, Lond.; Dr. R. C. Holt, Didsbury.

J.—Col. H. E. R. James, R.A.M.C., Lond.

K.—Khartoum and Omdurman Civil General Hospitals, Director of; Dr. A. M. Kennedy, Glasgow; Messrs. Kegan Paul, Trench, Trübner, and Co., Lond.

L.—Mr. C. Lovat, Lond.; Dr. G. C. Low, Lond.; Mr. E. M. Little, Lond.; Mr. J. E. Lane, Lond.; Mr. H. Logan, Barnsley; Dr. T. Lewis, Lond.; Dr. F. E. Larkins, Lond.; Dr. F. G. Layton, Walsall; Messrs. E. and S. Livingstone, Edinburgh; Leeds University, Sec. of; Dr. G. Langmead, Lond.

M.—Metropolitan Life Insurance Co., New York; Dr. R. F. Maddren, New York; Sir James Mackenzie, St. Andrews; Mr. M. Meredith, Liverpool; Dr. H. A. Macowen, Lond.; Major F. J. Mitchell, Lond.; Mr. G. Mayall, Bolton; Medical Committee of the House of Commons, Lond., Sec. of; Margate Chamber of Commerce, President of; Medico-Political Union, Lond., Hon. Sec. of; Dr. A. L. McLean, Sydney.

N.—National Council for Combating Venereal Diseases, Lond.; National Anæsthesia Research Society, Columbus, Ohio; National League for Health, Maternity and Child Welfare, Lond.; National Housing and Town Planning Council, Lond.

O.—Mr. T. H. Oliver, Manchester.

P.—Dr. R. M. F. Picken, Glasgow; Dr. W. T. G. Pugh, Carshalton; Panel Committee for the County of London, Sec. of; Messrs. G. P. Putnam's Sons, Lond.; Mr. H. Platt, Manchester; Dr. A. G. Panagotaton, Alexandria; Dr. H. R. Prentice, Lond.; Dr. R. H. A. Plimmer, Aberdeen; Dr. B. T. Parsons-Smith, Lond.

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S.—Dr. T. Stephani, Montana; Scottish Board of Health, Edinburgh; St. Marylebone General Dispensary, Lond.; Serbian Dinner Committee, Lond., Sec. of; Surgery Publishing Co., New York, Editor of; Mr. A. W. Shaw, Lond.

T.—Mrs. M. Taylor, Lond.; Mr. H. R. Todd Lond.

U.—United States Public Health Service; University of Edinburgh, Sec. to; University of Bristol, Vice-Chancellor and Council of; Messrs. T. Fisher Unwin, Lond.; University of St. Andrews; University of Liverpool, Registrar of.

W.—Mr. F. W. Warrick, Lond.; Mr. J. W. Thomson Walker, Lond.; West London Hospital Post-Graduate College, Sec. of; Dr. F. J. Waldo, Lond.; Mr. G. Wilkinson, Sheffield; Mr. W. Webster, Newcastle, Staffs.

X.—X Rays, Ltd., Lond.

THE meeting of the Section of Psychiatry of the *Royal Society of Medicine arranged for April 12th* will not take place.

BOOKS, ETC., RECEIVED.

ALLAN, PHILIP, AND Co., *London.*

Pilgrim's Books. No. 5: The Art of High Life. Pp. 271. 5s.

The Things which are Seen: A Revaluation of the Visual Arts. *By A. Trystan Edwards, M.A. Pp. 354. 18s.*

ALLEN, GEORGE, AND UNWIN, London.

Pure Thought and the Riddle of the Universe. By Francis Sedlák. Pp. 375. 18s.

Woman. By Magdeleine Marx. Introduction by Henri Barbusse. Translated by A. S. Seltzer. Pp. 288. 7s. 6d.

BIRCHER, E., Leipzig.

Die Ultra- und Polarisations-Mikroskopische *Erforschung* des Lebenden Auges und ihre Ergebnisse. Von Dr. L. Koeppe. Pp. 270. 20 Schweizer Franken.

F. A. DAVIS COMPANY, Philadelphia.

Practical Psychology and Psychiatry. By C. B. Burr, M.D. 5th ed. Pp. 268. $2.00.

DUCKWORTH AND Co., London.

Hunger. By Knut Hamsun. Translated from the Norwegian by G. Egerton. Pp. 310. 8s. 6d.

HODDER AND STOUGHTON, London.

The Constitution of the United States: an Introductory Public *Lecture delivered under the Rhodes Benefaction* at University College, Jan. 17th, 1921. By the Hon. J. W. Davis. Pp. 36. 1s. 6d.

KARGER, S., Berlin.

Kompendium der Speziellen Chirurgie für Studierende und Aerzte. Neu bearbeitet. Von Dr. F. Erkes und Dr. B. O. Pribram. 12-14 auflage. Pp. 422.

LE FRANÇOIS, Paris.

Les Cardio-Rénaux: Étude Théorique et Pratique. Par le Docteur O. Josué et le Docteur Maurice Parturier. Pp. 230 Fr 12.

MASSON ET CIE, Paris.

Chirurgie de l'Œil et de ses Annexes. Par F. Terrien, Professeur Agrégé à la Faculté de Médecine de Paris. 2nd ed. Pp. 620. Fr.50.

Le Sympathique et les Systèmes Associés: Anatomie Clinique, Sémiologie et Pathologie Générale du Système Neuro-Glandulaire de la Vie Organo-Végétative. Par A.-C. Guillaume. Preface du Prof. Pierre Marie. 2nd ed. *Pp. 396. Fr.18.*

Examen des Aliénés: Nouvelles Méthodes, Biologiques et Cliniques. Par le Dr. André Barbé, Médecin Aliéniste des Hôpitaux de Paris. *Préface de M. le Dr. Séglas. Pp. 178. Fr.8.*

OLIVER AND BOYD, London and Edinburgh.

The Clinical Study and Treatment of Sick Children. By J. Thomson, M.D. 3rd ed., rewritten and greatly enlarged. *Pp. 912. 32s. 6d.*

PUTNAM'S (G. P.) SONS, London and New York.

"Wade In, Sanitary!" The Story of a Division Surgeon in France. *By Lieut.-Colonel R. Derby, U.S. Army. Pp. 260.* 12s.

Pope's Manual of Nursing Procedure. By A. E. Pope. Pp. 596. 18s

RESEARCH LABORATORY, PARKE, DAVIS, AND Co., Detroit, U.S.A.

Collected Papers. Edited by Dr. E. M. Houghton. Pp. 489. Vol. I.

ROUTLEDGE GEORGE, AND SONS, London. DUTTON, E. P., New York.

The Origin and Problem of Life A Psycho-Physiological Study. *By A. E. Baines. Pp. 98. 3s. 6d.*

SPRINGER, JULIUS, Berlin.

Einführung in die Physikalische Chemie. Von Dr. Walther Dietrich. Pp. 106. M.20.

Die Innere Sekretion. Von Dr. A. Weil. Pp. 140. M.28.

SWARTHMORE PRESS, London.

Quaker Aspects of Truth. By E. Vipont Brown, M.D. Pp. 156. 5s.

THIEME, G., Leipzig.

Monographien über die Zeugung beim Menschen. Von Dr. Hermann Rohleder. Band V.: Die Zeugung bei Hermaphroditen *Kryptorchen, Mikrorchen und Kastraten. Pp.* 143 Band VII.: Die künstliche Zeugung (Befruchtung) im Tierreich Pp. 128. M.42.

UNIVERSITY OF TORONTO PRESS.

Notes on the Medical Treatment of Disease. For Students and Young Practitioners of Medicine. By R. D. Rudolf, M.D. Pp. 457.

URBAN AND SCHWARZENBERG, Berlin and Vienna.

Leitfaden der Neurologischen Diagnostik. Von Dr. Kurt Singer. Pp. 201.

Lehrbuch der Nervenkrankheiten. Von R. Bing. Pp. 672.

Infektion und Immunität. Von Dr. M. Loewit und Dr. G. Bayer Pp. 550. M.80.

Princip und Praxis der Vakzintherapie. Von *Dr. Alexander* Forbát. Pp. 52. M.6.

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Notes, Short Comments, and Answers to Correspondents.

OBSERVATIONS ON SOME OF THE DISEASES OF ANIMALS COMMUNICABLE TO MAN.[1]

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STUDENTS of human medicine have nowadays become specialists and subdivided specialists, and students of veterinary medicine have done the same, but there is still room for further specialism—that is, for those who will bridge the gap which divides the two, and specialise in comparative medicine; by which I mean the study of the analogies and differences shown in diseases intercommunicable between men and the various species of animals which, having no thought for the future, only live (some of them very short lives) to look forward to a meal, to automatic sleep, and to the excitement of an occasional fight or love affair.

By the study of comparative medicine our sphere of knowledge may be greatly enlarged, and by comparison of symptomatology, of the sites especially affected, of immunity and susceptibility we shall progress forward more rapidly in the fight against disease, and investigators will often save themselves much of the time at present lost in following unnecessary side-tracks. Knowledge of the fact that certain species of animals are refractory, or even completely immune, to certain diseases is also of enormous value and must always have a satisfactory explanation, if only the latter can be discovered. There is no better illustration of such immunity than that of the ox tribe to the disease known as glanders. Why should the ox be immune to glanders when the horse, ass, mule, certain carnivora, and man fall easy victims? A knowledge of the diseases of animals communicable to man cannot but be beneficial to the worker in human pathology; and the number of diseases concerned is astonishing. The comparative aspect of any one of them could be made the subject of a separate paper, but my intention here is to generalise, and to introduce the names of certain diseases met with in Great Britain, communicable from animals to man, with the object of drawing attention to the great value of a knowledge of the comparative aspect of each; and, in order to attain that knowledge, the necessity for collaboration and coöperation between the medical and veterinary professions.

I am sure that individual experiences of others will add emphasis to the above remarks, and will perhaps form the basis of some scheme advantageous to both medical and veterinary practice.

Communicable Diseases.

We have at the present time, in Great Britain at least, the following which are indisputably communicable: glanders, anthrax, tuberculosis, rabies, foot-and-mouth disease, mange of all animals (horse, ox, camel, dog, cat), ringworm (especially of horse, calf, cat, and mouse), certain forms of seborrhœa (such as farriers get from handling horses with greasy legs); and I think that the great prevalence of pyorrhœa in pet dogs (which are often kissed and allowed to lick the lips and hands of their owners) should be regarded as a possible contributive factor towards that disease in human beings; pyorrhœa may at some future date be definitely added to the list.

Others, produced by parasites which require an animal host in order to make their life-cycle complete before they can become pathogenic to man, are *Echinococcus*, the *Cysticercus bovis* (the larval stage of the *Tænia saginata* of man), and *Cysticercus cellulosæ* (the larval stage of *Tænia solium*), the parasites of measly beef and measly pork respectively, and the *Trichina spiralis* of the muscles of the pig, which gives rise in countries where ham is largely eaten smoked and not necessarily cooked, to trichinosis in man.

I now propose briefly to take each condition in turn and consider the most important points affecting both man and the lower animal, and discuss how the veterinary surgeon can help his medical confrère. I would particularly emphasise a careful consideration of glanders, anthrax, rabies, foot and mouth disease, and certain forms of mange and ringworm, as their only source is from some species of animal, and when we of the veterinary world have stamped out these diseases completely from our patients they will automatically cease to exist in man; the attainment of this result cannot but add credit to the study of comparative medicine.

Tuberculosis stands in a category by itself, as not only is it contagious from man to man, animal to animal, and animal to man, but it also does its work insidiously through milk, which is so necessary as a food for children; and even when the animal is dead its meat is still dangerous, being still, in many instances, only perfunctorily inspected. It is to our shame to have to admit how backward England is in this matter.

Glanders.

Glanders is a particularly good disease with which to begin the list, as when it is eliminated from the veterinary schedule it will become unknown as a disease of mankind. Even now a medical man is frequently puzzled when confronted with a patient suffering from this infection, so rarely is it seen; but the veterinary surgeon, with the aid of mallein, can almost invariably make his diagnosis with certainty and within 48 hours. Here the veterinary profession has to lead the way, and that it is doing its duty in this respect is shown by the fact that in 1901 (only 20 years ago) some 2370 horses were destroyed for glanders in Great Britain (1828 of these coming from London), and that the present statistics of the Veterinary Department of the Ministry of Agriculture show that during the past year (1920) only 15 outbreaks occurred in the whole of the British Isles, with a total destruction of only 22 animals; and this, too, after the sale of some 150,000 army horses and mules gathered together from various countries and employed in the war. In mallein we have a sure diagnostic test; by its use glanders was kept completely under control amongst the British horses and mules during the recent war; I believe I am correct in saying that during that time no case of glanders in man was ever reported; whereas, during the South African campaign, glanders was terribly rife amongst animals and caused endless anxiety both to veterinary and medical officers.

Some 15 or 20 years ago, in the districts of London which contained large cab and omnibus stables it was a rare thing for a County Council veterinary inspector to have a day go by without being called in to see a suspected case of glanders, and I recollect one stud of only about 2000 horses from which some 90 glandered were taken within 12 months. Mallein was then in its trial stage, and the law did not enforce its compulsory use on the in-contact cases, the consequence being that when the owner of the stable had an outbreak of glanders he promptly sent the in-contact animals to a repository, and thus disseminated the disease broadcast. Twice I have officially been present at the post-mortem examination of men who had died of the disease, and in neither case was the disease suspected until just before death, one being treated for pleurisy and the other for rheumatism.

At the present time the use of mallein is compulsorily applied by law to all ponies before they are sent underground for colliery work. When an outbreak takes place in a stud or stable in any part of the British Isles the whole of the "in-contacts" are immediately quarantined and tested. All reactors are destroyed, all suspects set aside and retested until the veterinary inspector is satisfied that a clean certificate can be given to the stud.

During the late war special precautions were taken by the officers of the Royal Army Veterinary Corps to isolate and mallein all animals on purchase and again on admission to and evacuation from veterinary hospitals. All units were malleined at regular intervals, and before being finally sold, either for work or human food, all animals were submitted to this test. In this way millions of doses were used, but the result justified the trouble taken, and no army of the whole Allied force was so free from glanders as ours. The infection is usually transmitted to man from a glandered horse, ass, or mule by means of nasal discharge, discharge from a farcy bud, or contact of an abraded surface with a sponge, brush, or stable utensil which has become contaminated with some of the infectious discharge from the animal. The possibility of infection of man by ingestion also was drawn attention to by the late Mr. W. Hunting, the chief veterinary inspector of the London County Council, who observed men handling the nostrils of infected horses and then eating their bread-and-meat or bread-and-cheese without washing their hands. The men most commonly affected are those whose life brings them into contact with horses, and one has only to read the medical press to see the hopelessness of treatment when once the disease has become established.

I believe I am correct when I say that there is only one instance on record where a human patient has survived and permanently become clear of a glanders infection, the fortunate man being a well-known member of my own profession, but it was only after endless operations and several years of painful treatment that his medical advisers were able to certify a cure. One of those who died of this disease last year was a veterinary bacteriologist of the Government of India, a man of great promise, the disease being contracted during the course of his duty.

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[1] An illustrated lecture delivered (Feb. 3rd, 1921) before a combined meeting of the Royal Society of Medicine and the Central Branch of the National Veterinary Association.

Glanders in carnivorous animals has been observed in lions fed in a zoological garden on infected horseflesh which was given raw.

It is gratifying to read in the annual report of Sir Stewart Stockman, the chief veterinary officer of the Ministry of Agriculture, that "this disease is now approaching the point of eradication." When that is accomplished in horses there will also be one less disease for the human race to fear.

Anthrax.

Anthrax still takes its toll of both animal and man, being met with in the latter principally amongst those who have to deal with animal products, such as skin, hair, wool, and hides from abroad, and those who make or assist at post-mortem examinations of dead animals. Mention of infected Japanese shaving brushes, which have lately been referred to in the medical and lay press, must not be omitted. With the veterinary surgeon the disease is seen most commonly in cattle, although one meets with it in the horse, sheep, pig, and even the dog, the latter animal being rather more refractory than the others.

The returns of the chief veterinary officer of the Ministry of Agriculture for 1919 show that Wales had been absolutely free for three years, but that 180 outbreaks were confirmed in England and 59 in Scotland. In all, 275 cattle, 8 horses, 1 sheep, 38 pigs, 1 dog, and 7 ferrets were affected. Twenty-five per cent. of the outbreaks occurred on premises where anthrax had occurred the previous year. The annual average, owing to precautions taken by the officials of the Ministry, has been reduced from about 1000 between 1907 and 1910 to 239 in 1919. The disease is troublesome and difficult to control, but the measures at present taken appear to be keeping it in check.

If only the disinfection of imported things such as hides, wool, hair, &c., can be thoroughly controlled we shall hear of fewer cases in man; the same may be said of the supply of cotton and other cakes imported into Great Britain as a food for cattle. The following were the surmises made as to the source of the 1919 outbreak. (1) Effluent of tanneries or other similar industries getting into streams; (2) feeding of infected offal to pigs; (3) use of imported foodstuffs and artificial manures; (4) contaminated sewage; (5) contact with infected material of other outbreaks.

It is thus by attention to complete disinfection of animal products and sources of contamination by animal products that we shall diminish the chances of human infection. For animals themselves it is a more difficult problem, as so much of their food material must of necessity come from abroad, a good deal of it from countries in which anthrax exists to a considerable extent. The destruction of the spores is the chief difficulty, but a good fight is being maintained, and if only the disease can be kept under control among farm animals the veterinary profession will be doing a good deal towards helping to make it a rare disease in man.

Rabies.

Rabies has had no place in this country for nearly 20 years until lately; the present inconvenience from which dog owners in several parts of England have to suffer is entirely due to the surreptitious importation of some dog in the incubation stage of the disease. All continental countries, with the exception of Norway, Sweden, and Denmark, are infected; although mainly seen in the dog, rabies is also met with in horses, cows, sheep, cats, foxes, wolves, and even fowls, in some of which it produces a train of rather curious symptoms, which to the layman may not give any suspicion of the disease, and thus disaster may be led up to.

Everyone knows something about the suspicious signs in the dog, although the classical symptoms are by no means constant. The change of manner, the desire to hide in dark corners, great excitability towards strange people and strange dogs, restlessness and weariness, snapping at imaginary flies, the attempts to chew and futile attempts to swallow all objects near at hand, the inability to swallow water, the continual salivation, and final violent rage in the mad form—or the typically dropped jaw in the paralytic form—are all characteristic of the rabid dog. It is strange, too, what long distances they will cover in their unconscious frenzy, wandering aimlessly on for miles; and it is for this reason that sometimes a large area or district has to be placed under the restrictions of the Ministry of Agriculture. The voice, too, becomes altered, the bark being hoarse and accompanied by a most peculiar howl, the sound of which when once heard is never forgotten. Paralysis of the hind-quarters and complete exhaustion and coma finally supervene if the disease is allowed to run its course.

In the cat the symptoms are even more violent than in the dog and a rabid cat is even more to be feared by man than a dog. It will bite and scratch, attacking men and animals in a most reckless fashion. The voice changes in tone and, as with the dog, paralysis of the hind-quarters eventually follows. In the horse and ox there is violent excitement; a particular symptom which has been noted again and again is an attempt to bite or rub the scar of the original site of infection, as it is practically always from the bite of a rabid animal that their infection occurs. Sexual excitement is often present. Paralysis of the hind-quarters is the common sequel in all instances, and the disease is always fatal.

The 1919 annual report of the Chief Veterinary Officer of the Ministry of Agriculture showed that 143 cases of rabies were confirmed in that year, there being 140 dogs, 2 horses, and 1 pig. The first case was imported into Plymouth somewhere about May, 1918, and it is to this piece of criminal thoughtlessness on the part of someone that we owe the fact that we are now again an infected country. During 1919 alone some 179 persons were bitten by animals in the scheduled areas, 46 of whom were bitten by animals proved to be rabid. Treatment was arranged by the medical officer of the Ministry of Health, and it is a triumph to the memory of Pasteur that there have been no deaths from hydrophobia.

By the present arrangements the neck and head of any dog which has died or been killed as a rabies suspect is dispatched at once to the veterinary laboratory of the Ministry of Agriculture, together with a history from the field veterinary inspector who made the post mortem. This is then dealt with at once; the Negri bodies are searched for, and if necessary inoculation experiments are made. The result has worked out that in 96 per cent. of cases a decision could be given at once, thus saving those patients who had been bitten much suspense and anxiety; and, what is more, enabling the medical officer to advise and urge immediate anti-rabies treatment.

At the present time the necessity for the muzzling order still exists in certain areas, and both medical and veterinary practitioners must be on the look out for rabies; but there is no doubt that what has been done before can be done again; an island like ours can be rendered free from rabies.

Foot-and-Mouth Disease.

Foot-and-mouth disease, as a disease communicable from animals to man, does not bear quite the same importance as the diseases previously alluded to, but it is important, because, if neglected, it would cause a certain amount of trouble through ingestion of milk. Such trouble is not at all uncommon in countries where foot-and-mouth disease is indigenous; at the present moment in England I am given to understand that there now exists at least one definite case of contagion in an official who was constantly examining mouths and feet. Foot-and-mouth infection can only come from infected cattle, and the disease can also be transmitted not only to man but to the sheep, goat, and pig, whilst horses and fowls are not immune.

In most European countries it always exists, and it is owing to our insular position and to precautions taken by the Ministry of Agriculture that this country was entirely free from 1895 to 1899, and again from 1903 to 1908, with the exception of two small outbreaks which were easily suppressed. The present outbreak is very obscure in origin, and as the virus is invisible and the disease one of the most insidious and contagious in existence, it has presented many difficulties. Had it not been taken firmly in hand at once it would certainly have cost agriculturists millions of pounds, and it is highly probable that another disease would have been added to the medical practitioner's list. As an indication to what extent it will spread it is only necessary to mention that in 1892 in Germany no less than 1,501,299 cattle, 2,193,157 sheep, 17,782 goats, and 438,262 pigs were affected, whilst in other continental countries it raged with equal violence.

Even so recently as the spring of 1919 the North of Italy was visited by a very virulent form, and a great many of the agriculturists of the provinces of Milan, Turin, Tuscany, and Cremona were ruined in consequence, as it affected not only milking cattle but also working bullocks.

Mange.

With regard to mange, the parasite of the disease is in all animals; it is always a source of danger to man, and infection has been noted on many occasions. Three varieties of parasite are found on the horse—a sarcopt, a psoropt, and a symbiot, but it is the two former which give trouble, and man is infected by contact with mangy horses, grooming tools, food utensils, &c., usually on the chest (especially if hairy), the under surface of the forearm, and the hands. Riding a mangy horse has been known to infect men down the inside of the legs and in the public region, and during the recent war this form frequently occurred. Knackermen are often infected when employed in skinning mangy horses. Sarcoptic mange is very troublesome to get rid of in the horse, requiring several months, but the psoroptic variety is much more amenable to treatment.

Sulphur in some form or other is the basis of most treatments. In Great Britain it is a notifiable disease.

That mange in the dog and cat is transmissible to man does not seem so generally known and appreciated as it ought to be, and some time ago Dr. A. Whitfield and I published the histories of 17 cases in which he confirmed the existence of the sarcoptic parasite in the human subject, and I confirmed it in the dog. The owner of a mangy small dog is often found to complain of an irritable skin, usually the region of the inside of the forearm, where the dog rests its head when being nursed. The contact of the warm flesh causes the mange parasite to leave its original host and transmit itself to the human flesh, where it sets up considerable irritation. In some of these 17 instances infection had taken place in the region of the neck and chest, and in one on the abdomen, as a result of the objectionable habit of allowing the little dog to sleep in that situation. The lesions produced were described by Dr. Whitfield as small vesicles, slightly smaller than the ordinary eczema vesicle and surrounded by a narrow zone of hyperæmia, very like that of varicella, only about one-eighth of the size. These lesions were scattered discretely over the surface and not in grouped lesions. The intense irritation leads to decapitation of the little vesicles, and their original site becomes covered with either a serous or a blood scab. If left untreated the parasite will live in the human subject for about six weeks, but if treated, I am told that it is readily got rid of.

In the dog we have two varieties of parasite, the *Sarcoptis conis* and the *Donodax folliculorum*; the latter gives the veterinarian endless trouble, and both are infectious to man. Sarcoptic mange yields readily to treatment, but it takes about a month or six weeks to effect a certain cure. If neglected the dog becomes covered with scabs and sores, gets thin and emaciated, has a peculiar mousy odour, and will eventually die.

I have with me to-night a cat, the subject of sarcoptic mange, really so loathsome and miserable an object that one cannot understand the owner or her servants not having observed its condition long before. This animal has been infected for some weeks and has been wandering about the house without restriction. The uncastrated male cat is, in all large towns, a fruitful source of the spread of sarcoptic mange amongst the females, and, indeed, to other males with whom he is constantly at war.

Ringworm.

Ringworm of the horse, calf, dog, and cat are the ones which interest us most to-night from the point of view of contagion to man. All are contagious and give considerable trouble in their treatment. In country districts the calves are the constant source of infection, in town the cat is mostly the culprit. Dr. Whitfield has recorded several such cases, as have also others.

Measles in Beef and Pork.

Measly beef is, as you know, due to the *Cysticercus bovis*, the larval form of the *Tænia saginata* of man. The *Cysticercus cellulosæ* in the muscle of the pig is the larval form of the *Tænia solium* in man. It is to be remarked that the general neglect of proper meat inspection in England is lamentable. Fortunately we cook our food well, and to this custom we owe a good deal of freedom from disease.

Trichinosis.

Trichinosis is a parasitic affection in the muscles of the pig, from which it is transmitted to man in sausages or other infected food which has not been thoroughly cooked. Dogs and rats, amongst other animals, are also subjects of this disease; the pig is infected by eating rats and mice and the flesh and offal of other infected pigs. The disease is met with in Germany, America, and other countries, special systems of meat inspection being necessary on account of its prevalence.

Tuberculosis.

The subject of tuberculosis had, perhaps, better be left to be introduced and discussed on another occasion. It is contagious from animals to man, and the questions of clean milk and clean meat are too important for casual treatment. Before the war the matter of a clean milk-supply and the eradication of tuberculosis from our herds of cattle was being taken up with vigour, and it is soon to be taken up again. It is very necessary to root this disease out from our herds in order to assist in its disappearance from man. I merely mention it, for the subject has so many sides to it that I feel we could not half do it justice.

Conclusion.

In conclusion, I wish again *to draw attention to the part* played by animals in transmission of certain diseases to man, and to emphasise the extent of ground common to workers in human and veterinary medical science. By joint action much valuable time may be saved and much better results obtained than by holding aloof in separate compartments.

TAPEWORM HOSPITALITY.

To the Editor of THE LANCET.

SIR,—A patient in Khartoum Civil Hospital, treated once in the ordinary way with filix mas, has produced 31 specimens of *Tænia saginata*. Is this a record?

I am, Sir, yours faithfully,
V. S. HODSON,
Director, Khartoum and Omdurman Civil General Hospitals.
March 10th, 1921.

PRACTICE BY FOREIGNERS IN CHILI.

FOREIGNERS in Chili are becoming aware of the turn of the screw against internal competition by non-Chilians in various trades and professions. For some years the law has forbidden medical practice to any who do not hold the State diploma, but until lately the interpretation of this law was not strict. The attention of the local medical society was directed by a practitioner to the position of the resident medical officer of the English hospital, with the result that his and all medical diplomas were carefully scrutinised. The three assistants at the German hospital are in similar case and a German dentist has already been obliged to leave Valparaiso.

LEARNED SOCIETIES.

THE thirty-seventh annual issue of the Year Book of the Learned Societies of Great Britain and Ireland (London: C. Griffin and Co., Ltd. Pp. 354. 15s.) is compiled from official sources and purports to be a record of work done in science, literature, and art during the session 1919-20. The claim is a large one and its full execution beyond human endeavour, while we gladly acknowledge to finding the year book a valuable book of reference, giving, as it does, not only the addresses, names of officials, dates of meeting, and other useful information, but also lists of the papers read at the different societies. A comparison of the current issue with its predecessor shows that, while a few societies have ceased operation, others have come into being, and necessitated an addition of nearly 20 pages to the book. Medicine, which in 1919 occupied 35 pages, now occupies 41, and biology, including microscopy and anthropology, which formerly had 44 pages devoted to it, now has 47. Psychology remains as previously with 7 pages, and general science with 53 pages. The field of medicine is not quite evenly covered, for while the programme of St. Mary's Hospital Medical Society, which includes papers by Sir Almroth Wright and others, is given, there is no mention of other students' societies of older foundation, such as the Abernethian Society of St. Bartholomew's, the Hunterian Society of St. George's, or the Physical Society of Guy's.

THE REMOVAL OF TATTOO MARKS.

As a result of the social upheavals of the war many persons have emerged from strata of society where tattooing is regarded as highly artistic to find themselves in strata where it is looked upon as vulgar and the badge of a savage. Little wonder, therefore, that a fresh impulse has been given to the art—a highly complicated and difficult art—of removing tattoo marks without further disfiguring the skin. Even in the time of the Roman Empire many devices were employed towards this end, and a paper by Dr. P. Cattani of Zurich (*Schweizerische Medizinische Wochenschrift*, Feb. 10th) shows that as many as 13 totally different methods have been devised, none of which can be said to be at once painless, easy, and effective. His detailed description of each method reveals an extraordinary degree of ingenuity on the part of cosmetic specialists, and, in some cases, marvellous powers of endurance on the part of their patrons. Dr. Cattani himself has practised only a few of these methods, *and the four which he finds the most successful* are Variot's, galvano-cauterisation under local anæsthesia, "harpooning" or digging out each granule of pigment (Wederhake's method), and excision of the skin. Variot's procedure begins with a preliminary cleansing of the skin, on which a concentrated aqueous solution of tannin is applied. With the tattoo needle the pigmented area is now freely punctured, and into the punctures thus made silver nitrate is repeatedly rubbed, and the skin is then strewed with powdered tannin. A protective dressing is applied, and after a short time a violent inflammatory reaction follows, with swelling and necrosis of the skin. After two to four weeks the crust thus formed is discharged, and the underlying structures, which are at first red, pale gradually in a few months. A slightly raised scar is left to indicate the original site of the tattooing. Dr. Cattani has never seen permanent ill-effects follow this method which, he admits, is painful as well as requiring much time and patience. He refers to a fatal case recorded by Parent-Duchatelet in 1857. The patient was a prostitute, whose reaction to the removal of tattoo marks by caustics terminated in death. To judge by Dr. Cattani's accounts of this and other methods of removing tattoo marks, it is abundantly evident that prevention is better than cure.

An Address
ON

THE COLONIAL MEDICAL SERVICE AS A CAREER.*

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GENTLEMEN,—I have been asked to address you by some members of our profession who are deeply interested in the medical and sanitary problems with which the Colonial Medical Service has to deal, and who, having had personal experience of the work of the Service in various parts of the world, desire that it should become better known.

Since the year 1908, when I was invited to be a member of a Departmental Committee which was then appointed by the Secretary of State to consider certain questions that had arisen in regard to the West African Medical Staff, I have been sincerely interested in all that concerns the welfare of the personnel of that and other units of the Colonial Medical Service. As chairman of the subcommittee on colonial medical appointments, which interviews and classifies the candidates, I have had for the last 12 years the pleasure of meeting all who have entered the service since that date; and as chairman of the Yellow Fever Commission I formed the highest opinion of the work of the many distinguished members of the West African Medical Staff who were appointed to investigate on the spot the problems with which that Commission had to deal. As a member of the Departmental Committee on the Colonial Medical Services, whose report was issued in August of last year, I was, moreover, able to learn what is in the minds of all those who are interested in those services.

STATIONS OF THE COLONIAL MEDICAL SERVICE.

The Dominions overseas of the British Empire differ, as you are aware, in the degree of their dependence upon the mother country, but, as was seen during the war, not in the degree of their attachment to the Crown. With the self-governing Dominions Canada, New Zealand, the Union of South Africa, Newfoundland, and the Commonwealth of Australia we are not to-day concerned, as they select and appoint their own medical officers. In some of the colonies only the senior medical appointments are filled by the Secretary of State usually by transfer from other colonies, the junior officers being natives of the country and appointed by the Governor.

The colonies in which any of you who may enter the Colonial Medical Service are likely to find the best opportunities for the exercise of your abilities and for a career on which you will be able to look back with satisfaction are those in which there is a large staff wholly appointed by the Secretary of State. This applies specially to the West African Medical Staff, the East African Medical Staff, and the Malayan Medical Staff.

The Colonies and Protectorates to which medical officers are appointed by the Secretary of State for the Colonies are:—

(*a*) The West African—viz., Nigeria, the Gold Coast, Sierra Leone, and the Gambia.

(*b*) The East African—viz., the Kenya Colony and Protectorate, the Uganda, Nyasaland, Somaliland, and Zanzibar Protectorates and the Tanganyika Territory.

(*c*) The Eastern—viz., Ceylon, the Straits Settlements and Federated Malay States, Hong-Kong, Weihaiwei, Mauritius, and the Seychelles.

(*d*) The West Indian—viz., British Guiana, Jamaica, Trinidad, Tobago, the Windward Islands, the Leeward Islands, Barbados, British Honduras, and the Bahamas.

(*e*) Fiji and the Western Pacific, Cyprus, Malta, Gibraltar, St. Helena, Bermuda, and the Falkland Islands.

In Ceylon, Mauritius, Jamaica, Barbados, the Bahamas, and Bermuda vacancies in the junior ranks are practically always filled locally by the appointment of qualified native candidates; in the case of some of the higher posts—by transfer from other colonies. Appointments in Malta are all filled locally. Vacancies in the Hong-Kong Medical Department have in the past generally been filled by transfer from other colonies. The total number of appointments filled by the Secretary of State is about 620.

Vacancies occur most regularly and frequently in (1) the West African Medical Staff; (2) East Africa; (3) the Straits Settlements and Federated Malay States. In nearly all cases the vacancies for which medical officers are selected by the Secretary of State are in the junior grades of the service. The senior appointments, especially those in the more healthy colonies, are almost invariably filled by the promotion of officers who have rendered good service in the same or in other colonies.

Let us now in imagination start on a voyage round the world. We arrive first at Gibraltar, which no Englishman can see for the first time without a thrill. Here are three surgical appointments attached to the Colonial Hospital. These are very desirable appointments, two of which have recently been filled by men with high surgical qualifications. In Cyprus there is a chief medical officer and five district medical officers.

THE WEST AFRICAN MEDICAL STAFF.

Returning and proceeding down the coast of Africa we pass in succession the colonies in which the West African Medical Staff are employed—viz., the Gambia, Sierra Leone, the Gold Coast, including Ashanti and the Northern Territories, and Northern and Southern Nigeria, now united as Nigeria.

The West African Medical Staff is the most highly organised and possibly the most efficient unit of the Colonial Medical Service. It stands to the West African Frontier Force in the same relation as the R.A.M.C. does to the Army. Its members have taken part in all the various wars in Africa, and during the late war they rendered distinguished service in the campaign in the Cameroons and East Africa, for which latter campaign some of them were lent. Officers are liable for service in any one of these colonies, but an attempt is always made to meet the wishes of an officer for a particular colony on first appointment.

As you are doubtless aware, the West Coast of Africa has had in the past an evil reputation from a health and climatic point of view. There is now a tendency in some high quarters (not in this country) to suggest that it has become almost a health resort. That such a claim or any approach to it should be made is the highest possible tribute to the devoted labours of the West African Medical Staff and to the medical departments of the Governments of those colonies by whom their work has been directed. I am far from suggesting that this era began with the appointment of Mr. Joseph Chamberlain as Secretary of State for the Colonies, but his name should always be mentioned with honour whenever the success which has attended the efforts of the Colonial Medical Service to promote the welfare of the European and native inhabitants of our colonies is brought to mind. It was Mr. Chamberlain who first established at the Colonial Office the traditions and high ideals in regard to tropical sanitation, which his successors there have worthily maintained. The contention now is, briefly, that in West Africa there is very little wrong with the climate, it is the diseases that matter, and that we now know how to prevent and treat those diseases, the most important and most prevalent of which is, of course, malaria. I cannot go quite as far as some are prepared to travel in this direction, but to discuss the question at length is beyond the scope of my address. That one is constantly meeting men who have been on the coast for years and who have not apparently suffered in health is a fact that cannot be ignored. I believe that it is largely a personal matter, firstly of natural resisting power and secondly of a rigid adherence to the laws of health which residence in tropical countries requires from Europeans if they are to escape the maladies incidental to life in those parts of the world.

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* This address to students was delivered at the Middlesex Hospital, and subsequently at Guy's Hospital.

Since this address was first delivered the vital statistics for West Africa from 1903 to 1919 have been published in an official paper. The facts as regards the death-rate for non-native officials are, very briefly, as follows: The highest death-rate during that period was in 1905 = 28·1 per 1000. Subsequently, with the exception of a slight rise in 1910, there was an almost continuous fall until 1916, when it was *10·3* per 1000. There has since been a slight rise owing to the influenza epidemic, but the rate is now again falling, and in 1919 was *12·5* per 1000. In this statement the losses during and owing to the war are not included. I may remind you that the death-rate for the United Kingdom in 1918 was 17·6 per 1000, but I must hasten to add that these figures are not really comparable, as the non-native officials in West Africa have been subjected to a medical examination.[1]

I have examined the returns giving the cause of death amongst the members of the West African Medical Staff which have occurred since the year 1908, when I first began to have a knowledge of their existence as a body. From these it appears that in the 13 years under review, climatic conditions are mentioned in the certificates of death in 7 cases only. In 4 cases malaria in some form is mentioned primarily; in 1 case dysentery is given as a secondary cause; in 1 case enteric fever is given as the primary cause, and in 1 influenza. The authorised establishment of the West African Medical Staff is about 250.

The most attractive and the most healthy regions in the West African colonies are on the high lands in the neighbourhood of Kano in Northern Nigeria, where there is a large Arab population, nearly all of whom are Mahomedans. Togoland was the first of the German colonies to be taken. A small detachment "on their own" paid a week-end visit to Lomé, the capital, and annexed the country. About one-third of Togoland has been added to the Gold Coast Colony, the remaining two-thirds to the French colony of Dahomey. As a result of the war about one-tenth of the area of the German colony of the Cameroons has been added to Nigeria in the form of a narrow strip along its eastern boundary which contains Buea, a mountain station that may be of use as a health resort, but during some months of the year mist is very prevalent there. The remainder of the colony has become French territory.

THE EAST AFRICAN MEDICAL STAFF.

Rounding the Cape of Good Hope and going northwards we pass Mauritius. In the Seychelles Islands, much further to the north, there are three appointments. We now come to the East African colonies—Nyasaland, Kenya (late British East Africa), Uganda, Tanganyika Territory (late German East Africa), and Zanzibar. The medical staffs of these various colonies are now in process of amalgamation into a single medical unit to be called the East African Medical Staff, and in future officers will be liable for service in any one of the colonies of the group as in West Africa. The authorised establishment of the East African units prior to amalgamation was 139. There are now many vacancies owing to the general shortage of medical men available for civil and Government employment, the result of the war and the absence of recruiting for the service during the war. Mombasa is the largest town and the principal port of Kenya Territory, and is also the starting-place of the Uganda railway, which runs through Nairobi, the capital of the Protectorate, to Kisumu, Port Florence on the Victoria Nyanza, a distance of 584 miles. Those who have read "The Man Eaters of Tsavo," by Colonel Patterson, should they ever pass that station, 133 miles from Mombasa, will call to mind the thrilling incidents of that story. Nairobi, 327 miles from Mombasa, is situated on the highlands or central plateau at an altitude of 5450 feet above the sea-level. The great game preserves are on either side of the railway before Nairobi is reached. The highlands have a temperate climate; the mean average temperature at noon is 78° F. July, August, and September are usually cold months. There are many European residents on the highland plateau, and their number is constantly increasing. Those who are interested in the East African colonies may be confidently recommended to read "Uganda for a Holiday," by Sir Frederick Treves, who combines with the highest distinction in surgery a love of travel and a literary style which make the descriptions of his journeys fascinating guide-books for those who follow in his footsteps. My colleagues at the Middlesex Hospital, Sir John Bland-Sutton, in "Man and Beast in Eastern Ethiopia," and Dr. Comyns Berkeley in "On Safari," have also given interesting accounts of a visit to these colonies. Somaliland is not to be included in the East African unit, and from the despatches I have read I do not gather that it is a very desirable station, although it was lately the scene of one of the cheapest and most successful campaigns for which the Colonial Office has ever been responsible, and the first in which aircraft played an absolutely dominating rôle.

THE MALAYAN MEDICAL STAFF.

Crossing the Indian Ocean we arrive at Ceylon. Here only the higher posts in the medical department are filled from home; the other officers fo the most part hold the licence of the Ceylon Medic College, which is recognised by the General Medic Council as a registrable Colonial qualification. Fr Ceylon we cross to the Straits Settlements, Pena Malacca, and Singapore, and the Federated and U federated States of the Malay Peninsula, where the a large medical service, which the departmental c mittee of 1920 have recommended should b the Malayan Medical Service. This is ent from home. The authorised establishm unification was 82 medical officers.

CHINA AND THE WESTERN PAC

In China there are medical appointments a Kong and at Weihaiwei, where there are two m officers. In Fiji there are at present 18 medical officer three of whom are also magistrates, in addition to a chief medical officer, a medical officer of health, and a senior medical officer. The medical services of Fiji and the Western Pacific are interchangeable; officers may be transferred from one to the other at the discretion of the Secretary of State. The staff in the British Solomon Islands Protectorate consists of one senior and two junior officers. In the Gilbert and Ellice Islands there is one medical officer in charge.

THE WEST INDIAN GROUP.

Rounding Cape Horn we come to the Falkland Islands, where there are two appointments. The first British colony as we go north along the coast of South America is British Guiana, where there are 33 appointments, including a surgeon-general. In Trinidad and Tobago there are approximately 40 medical officers. In the Windward Islands, Grenada, St. Lucia, and St. Vincent there are 25 appointments, with the right of private practice. Officers may be transferred from one island to another at the discretion of the Governor. In the Leeward Islands, Antigua, St. Christopher and Nevis, Dominica, Montserrat, and the Virgin Islands there are 24 appointments. British Honduras is a colony on the east coast of Central America. The medical staff consists of a principal medical officer, who is allowed to undertake consulting practice, and five assistant medical officers. Bermuda or the Bermudas, for the colony really consists of the main island and a group of about 300 smaller islands, is on the Western Atlantic, and has a small medical service. This completes our tour of the colonies.

PAY.

The attractions of any Government service in these days depends very largely upon the salaries which are offered and on the prospects of promotion and pension and a career. Probably the majority of salaried officers of any public service of any country are of opinion at the present time that their pay is inadequate, and many of them have good grounds for so thinking. The Departmental Committee (1920) learned from the witnesses that the increase in the cost of living is universal; there is not even a "bush station" in West Africa where the effect of the war in increasing the cost of the necessaries of life has not been felt, although the effect is greater in towns on the coast than in the interior.

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[1] The death-rate for London for the week ended Feb. 26th, 1921, was 15·1 per 1000, and for 96 English and Welsh towns 15·5 per 1000.

The salaries attached to the medical appointments in the various colonies are not uniform, and in some few cases are to be regarded more as retaining fees for the performance of certain Government duties than as adequate for whole-time employment. This does not, however, apply to those units in which the rates of pay are fixed by the Secretary of State, such as the West African Medical Staff and the East African Medical Staff, and it will, I think, give you a better idea of the prospects which await you in the service if I state in some detail the salaries which are now offered in those two units.

Pay in the W.A.M.S.

A considerable addition has lately been made to the rates which were in force before the war in regard to the West and East African appointments.

On appointment as an officer of the West African dical Staff on probation the initial salary is at the e of £660 a year, rising by annual additions of £30 to a year. After three years on probation, if then rmed in the appointment, the salary rises by I al additions of £40 to £960, with proficiency pay at a ate of £72 a year. Before, however, passing £800 a cal officers are required to take a special course of th for three months. If they obtain satisfactory gui ates at the end of the course they draw their who increments up to £960 a year. These are certifi- prob satisfactory attendance, not necessarily of As passed an examination.

Colo regulations in regard to the special course of Au are as follows:—

approved course of study is the three months' course he West London Post-Graduate College or the London ool of Clinical Medicine, Greenwich, in clinical medicine, nical surgery, and pathology.

fficers are allowed to substitute for this course either the course of study and examination for a recognised loma or degree in public health, sanitary science, or State edicine; or (ii.) the course of study and examination for a rther medical or surgical diploma or degree; or (iii.) if the overnor, on the recommendation of the principal medical officer, approves, a course of study in some special branch of medical or surgical practice—e.g., ophthalmology, dermatology, genito-urinary diseases—or an advanced course at the London or Liverpool School of Tropical Medicine.

Whichever of these courses of study is selected, the necessary tuition and examination fees are paid by the Colonial Government, except in the event of an officer deciding to enter for a further medical or surgical diploma or degree, in which case no fees are paid.

A medical officer who has served for three years on the maximum salary of this scale (£960) without obtaining promotion is eligible, if recommended by the Governor, to be placed on the scale of £1000, with annual additions of £50 to £1150, with £100 proficiency pay. This is the same rate of pay as that of senior medical officers.

There are seven appointments of sanitary officer, with salary at the rate of £1050 a year, rising by annual increments of £50 to £1200 a year, and a duty allowance at the rate of £210 a year.

The first step in promotion is to that of senior medical officer, in which grade there are 20 appointments with salary, as just stated, at the rate of £1000 a year, rising by annual increments of £50 to £1150 a year, and proficiency pay at the rate of £100 a year.

There are also seven appointments bearing the title of provincial medical officer—two each in the Southern Provinces, Nigeria, in the Northern Provinces, Nigeria, and in the Gold Coast respectively, and one in Sierra Leone, with salary at the rate of £1200 a year, and duty allowance at the rate of £240 a year.

There are four appointments of the grade of senior sanitary officer, one each for the Northern Provinces, Nigeria, the Southern Provinces, Nigeria, the Gold Coast, and Sierra Leone. Salary at the rate of £1300 a year is attached to these appointments, together with a duty allowance at the rate of £260 a year.

The next higher rank is that of deputy principal medical officer, in which there four appointments, two in the Southern Provinces, Nigeria, and one each in the Northern Provinces, Nigeria, and the Gold Coast respectively. Salary at the rate of £1300 a year, is attached, together with a duty allowance at the rate of £260 a year.

Principal medical officers receive salaries as follows:—In the Gold Coast and Nigeria, £1500 a year, with a duty allowance at the rate £300 a year. In Sierra Leone, £1350 a year, with a duty allowance at the rate of £270 a year. There is no principal medical officer in the Gambia. The director of the medical and sanitary service, Nigeria, receives a salary of £1700 a year, with a duty allowance at the rate £360 a year.

There are in addition various special appointments—e.g., (*a*) the director of the Medical Research Institute, Lagos, and the pathologist, Accra, receive a salary of £1300 a year, with a duty allowance of £260 a year. (*b*) Salary at the rate of £800 a year, rising by annual increments of £40 to £960 a year, is attached to about 10 posts (those of assistant at the Medical Research Institute, Lagos, and medical officers of health at various places). In addition to the proficiency pay (£72 a year), staff pay at the rate of £150 a year is also attached to these posts; and the holder of the appointment draws half of the staff pay during leave of absence, the remainder being drawn by his locum tenens. The holders of these appointments are not allowed private practice. Duty allowances, proficiency pay, and staff pay are not pensionable emoluments.

Private Practice.

All officers of the W.A.M.S., except principal and deputy principal medical officers, provincial medical officers, sanitary officers, and a few other officers holding special appointments, are allowed to take private practice, provided that it does not interfere with the faithful and efficient performance of their official duties, but it is within the power of the Governor to withdraw or to suspend the privilege in such places and for such periods as he may consider desirable.

The Colonial Office is always very careful to make it clear that private practice does not exist at the majority of stations, and no guarantee is given that an officer will be posted to a station in which he will be able to practise privately. As a general rule, stations where there is private practice are allocated to senior members of the staff. In West Africa, as elsewhere throughout the world, success in private practice depends very much on personality.

Gratuity.

An officer of the West African Medical Staff may, at the end of nine years (of which not less than six must have been residential) retire with a gratuity of £1000, or at the end of 12 years (of which not less that eight must have been residential) with a gratuity of £1250. In the event of an officer dying in the service after completing the period of residence qualifying him for the smaller or the larger of these gratuities, a sum equal to the gratuity in question is paid to the credit of his estate.

Quarters.

At all the recognised stations single quarters, free of rent (but not of rates and similar outgoings), are provided for medical officers, or an allowance is paid in lieu of quarters.

Pensions.

I shall only give a brief, and necessarily incomplete account of the regulations relating to pensions and gratuities for the West African Service. Moreover, alterations in the West African regulations as to pensions are under consideration. On attaining the age of 50 years, or after 18 years' service (of which at least 12 must have been residential), an officer is qualified for a pension. If invalided after a minimum of seven years' service he still is qualified for a pension. If invalided before completing seven years' service he is qualified for a gratuity not exceeding three-quarters of a month's salary for each six months of service, provided that he has been confirmed in his appointment.

The method of calculating the amount of a pension appears at first sight somewhat complicated, but it is really simple. To the maximum salary of which the officer has been continuously in receipt an addition of from £40 to £80 is made to represent the value of free quarters. The sum so obtained is then divided by 40, which, it may be mentioned, is a more generous figure than in the Home Civil Service, in which the division is into sixtieths. This figure is then multiplied by the number of years he has served, and the result is the amount of his pension. As an example, an officer who has served 18 years satisfactorily, even if he has never been promoted from the lowest rank, obtains a pension of £553 10*s.* per annum.

A book is issued by the Colonial Office called the "West African Pocket Book," which contains much more detailed information than I have here given on the various matters mentioned.

Pay in the East African Colonies.

The salary on first appointment of a medical officer in any one of the East African colonies is now (1920) £500 per which admission is obtained by competitive examination stands on a higher level of regard than one which is entered by selection. I ventured to propose, and the Departmental Committee accepted the suggestion, that there should be a single entrance examination for all the public medical services. I believe that such a change would be to the advantage not only of the Services concerned, but also to that of the students in the schools. The suggestion received the support of your Dean (Middlesex Hospital), who brought it before the Committee of Deans of the London Medical Schools, by whom it has been adopted and forwarded to the heads of all the Government departments concerned.

Here, again, the Committee have been anticipated by Sir George Evatt. Under the heading "Entrance to the Service to be by Public Competition," he writes as follows:—

> "I think the day for nomination in the public services is now over. Appointment by nomination without competition is still the rule in the Colonial Medical Service. ...... The Secretary of State for the Colonies would each year notify the vacancies likely, and the competition would be on the same lines as that for the Army Medical Services. This would require the conditions of service to be placed before the medical public, and young medical men would decide into which service they would propose to enter. Pension rules, pay, honours, and rewards would thus become known to all."

There is in this suggestion nothing either novel or revolutionary, as it is the method adopted by the Civil Service Commissioners in the examination for admission to the public services. If this proposal should come into force it would, I think, be necessary that there should be a preliminary interview with a joint committee representing the various departments, and that the candidate should be approved for the service or services for which he had entered his name. To take the case of the Colonial Office as an example, it could not be expected to regard the possession of a qualification to practise as constituting by itself a sufficient proof of fitness for the responsible duties attaching to an appointment in the Colonial Service.

There is much inflammable material in Africa and elsewhere, and the possession of tact and judgment is necessary in those called upon to deal with native races if it is to be prevented from taking fire.

SECONDING FOR RESIDENT APPOINTMENTS.

If the recommendation as to admission by an examination test is adopted it carries with it an important proviso—viz., that the men selected may be seconded for a resident appointment, such as house surgeon or house physician, preferably at the general hospital where they have obtained their education in the practical subjects of their profession, or, failing that, at some other general hospital possibly not attached to a medical school, but approved for the purpose by the Secretary of State. This system of seconding recently appointed officers has been adopted by the army and has proved successful. The individual gains experience and his services become more valuable to the State.

I have a profound belief in the importance of holding resident appointments at that receptive period of one's life, preferably under one's own teachers. Indeed, when I was myself at that stage we were so insufferably conceited as to think that a man was then at his best, and that he steadily deteriorated from that time onwards. At the termination of their appointment officers who have been seconded and all others not so seconded would, as at present, be required to attend a course at the School of Tropical Medicine either in London or Liverpool of two or three months' duration.

THE FUTURE OF THE SERVICE.

All who are interested in the future welfare of the Colonial Medical Service will be in accord with the hope expressed in the concluding paragraph of the Report of the Departmental Committee of 1920:—

> "The Committee believe that by the adoption of the above measures ...... the Colonial Medical Service will attain to a very high, possibly even to the highest, status amongst the public medical services of the Empire."

If anything I have said should lead any of you to select the Colonial Medical Service, I trust that you will never have reason to regret your choice.

A Clinical Lecture

ON

WHEN TO OPEN THE MASTOID ANTRUM IN ACUTE EAR DISEASE.

Delivered at Guy's Hospital on Feb. 28th, 1921,

BY T. B. LAYTON, D.S.O., M.S.LOND., F.R.C.S.ENG.,
SURGEON TO THE THROAT AND EAR DEPARTMENT.

> "I beseech you, think it possible you may be mistaken."
> —*Oliver Cromwell.*

IN surgery there are three things to learn: how to operate, when to operate, and when to stop. The first is easy and can be learnt in time by anyone with industry who will trouble to watch other people do it first. The second is hard; it is learnt only by experience guided by rigid self-criticism as well in success as in failure. The third is so difficult that it is only one or two in a surgical generation who attain to it. It is of the second of these two that I wish to speak to you to-day in relation to acute ear disease.

Now the mastoid has been called the appendix of the ear, and in many ways the resemblance of acute ear disease to appendicitis is close. Some of you may remember a series of six clinical lectures on appendicitis given by our senior surgeon, and how he finished them by saying, "and remember, you fellows, it is damnably misleading." In that way acute ear disease resembles appendicitis, *for there is no condition which needs* such careful examination, consideration, and judgment as this, and in which you may even then find yourself so entirely in the wrong. It resembles acute appendicitis also in this, that once you have made up your mind that an operation is necessary you should operate that day and not defer it to the next. I remember an occasion on which a house surgeon to Sir Arbuthnot Lane was taken ill, and Mr. Lane, as he then was, felt undecided as to whether it was appendicitis, and, if so, whether it were not better that he be treated medically. He asked Sir William Hale-White to see him, and the latter went round to Mr. Lane's house after dinner and told him he thought it was a case of appendicitis and that the appendix should come out next day. But once the decision was made Mr. Lane did not wait; he put Dr. Hale-White, Mr. Fagge, and Mr. George Rowell into his car, and together they descended on to the hospital at about 9 o'clock in the evening. I would urge that whenever possible the same rapidity of action should follow the decision in cases of acute ear disease. There are some, I believe, who now teach that an operation should be done whenever an appendicitis is diagnosed. If you are of this school, then I would say that in this appendicitis differs from acute ear disease, for there are stages of the latter which are better left alone and for which operation should not be done, and the reason why acute ear disease differs from appendicitis in this point is that in the latter it is possible entirely to eradicate the offending part; in the former it is not. We can compare a simple acute otitis media to that stage of the appendicitis where the mucous coat only is inflamed and where the inflammation has not yet spread to the deeper layers. If we can diagnose this stage exactly we can remove the appendix in safety and without harm to the patient, but we cannot do the same to the middle ear. In the next stage we can compare the spread of the inflammation to the mucous membrane of the mastoid antrum with its extension to the muscular coat of the appendix. From each a recovery is possible, but the inflammation is dangerously near to the third stage, in which the peritoneum is involved on the one hand and the bone on the other. Here, again, could we tell exactly from our symptoms the pathological conditions beneath, we can remove the appendix without infecting the peritoneum, but we can neither remove nor open the mastoid antrum without infecting the osseous tissue of the mastoid.

Further, we have in the ear a minor surgical procedure which may lead to recovery which we have not in this stage of appendicitis. I refer to puncture of the drumhead. There is another way in which appendicitis differs from acute ear disease. It is that if the diagnosis that has been made is wrong in the one case operative treatment may lead you to another lesion which can be dealt with by operation, and in the other it will not. If when the abdomen is opened the appendix is healthy a cholecystitis, a Richter's hernia, or a suppurating tube may be discovered and amended, but if a healthy mastoid be opened there is no neighbouring structure which may have caused the symptoms. Where a diagnosis cannot be made the same principle applies in the two conditions; a person with chronic appendicitis may develop pneumonia or he may get an acute attack in his appendix. If you are confident that it is pneumonia you would not advise that the appendix be removed during the acute illness, but if you could not be sure you would argue that it was safer to open the abdomen during an attack of pneumonia than to leave an appendix which had given rise to such symptoms. So also a child who has long had a running ear may develop acute symptoms which may be due to pneumonia or to the onset of an acute mastoiditis. If you were to find a patch of consolidation which you thought might account for the symptoms you would hold your hand, but if you thought the clinical picture looked like pneumonia but did not feel sure, you would advise an exploration of the mastoid.

THE CLINICAL ASPECT OF THE PROBLEM.

I would have you consider this problem from the clinical aspect, and would have you remember that the word "clinical" infers a double standpoint. There is to be considered the position of the practitioner and of the patient. Working at a large hospital as this, with all the appliances of modern science to our hand and specialists in every branch of medicine to give us help, we are apt not to consider the difficulties that face the man who is working on his own and the alternatives on which he must fall back when he cannot attain to the ideal. My experience has not been great but it has been varied. Before I became surgical registrar to this hospital I spent a wander year. I went to Buenos Aires on a cargo boat carrying emigrants in which I operated on the chart-room table while the steward gave the anæsthetic. I was an assistant to a doctor in a small town up in Yorkshire where the practice extended nine miles out on to the Wolds. I did a locum not far from here and had the experience of being "ticked off" over the telephone by a youthful but unsympathetic house surgeon. I was house surgeon to a small county hospital and medical officer to a large Poor-law infirmary in both of which good surgery was to hand, but there was not the constant readiness to which we are accustomed here, nor the special advice upon allied branches of medicine that is always at hand. Recently I have had a longer period of a still more varied experience. I do not mean that I have had to deal with a case of acute ear disease in every place that I have been, but I have had to deal with some form of acute disease, and I have acquired the habit of considering how I should have dealt with the case before me under such and such circumstances, and above all, I have had experience of how great a responsibility it is to disturb the peace and quiet of some happy home by exploding the bombshell of an urgent and instant operation upon them. I do not mean that I would shirk such responsibility or have you do so, but I would have you realise what it is that you may know what you are doing when you lightly advise some instant operation which subsequently proves not to have been needed. Nor do I mean that I would have you refrain from giving the best of treatments here in order that you may have had experience of the next best; but supposing you have to fall back upon it I think you will be better prepared to face an unusual emergency if you have considered the possibility of its occurrence than if you have never given a previous thought to it. A consideration of cases which have got well under less good circumstances is a healthy stimulus to self-criticism of our successful cases, especially when some action of our own, such as an operative interference, has preceded this success. It is not hard to be self-critical in cases of failure where a little thought may enable us to realise where we have gone wrong, and a natural desire to prevent others doing so will lead us to tell them all about it. It is becoming almost fashionable to publish our tragedies and mistakes: we can almost hear the words of thanks for our courage in bringing forward the case. It is much more difficult to be self-critical in success. Modern psychologists tell us that pleasure is derived from the feeling of having accomplished something, of something attempted, something done; and when we publish our series of so many hundred mastoid or abdominal operations it is hard to turn round upon ourselves and ask in how many of these cases might an equally successful result have been obtained without all the pain and discomfort to the patient and anxiety to his relations that is attendant upon an operation without consideration of the risk. Yet we must ask ourselves this, and an experience of work in other places than the narrow walls of a large hospital will best enable us to do it. It is unfortunate that any one person in general practice sees so few examples of one type of case that he is unable to get enough to put against the lists of successful operations.

THE MENTAL ATTITUDE OF THE PATIENT.

Let us turn then from the practitioner to the patient, and first I would have you consider the mentality of the patient and the importance of studying the same. For, indeed, this is not often studied, and many think that the estimate of the same comes only by experience. I do not deny that in this more than of any other branch of our art experience is valuable, but I would impress upon you that the sooner you begin to study it the sooner will experience help you in the same. The greatest clinical teacher that Guy's has had on the surgical side within my memory has recently said[1]:—

> "The mental attitude of the patient must be studied; he must be considered as a man, as a sensitive being. The special reactions of each individual to his surroundings and to the disease from which he suffers must be noted. The student must learn to set a value on signs, which are not to be estimated by any physical apparatus; in children to interpret the meaning of a cry, a restlessness, a refusal of food."

In no type of case that I know is this study of more importance than in acute ear disease. The ease with which a diagnosis is made is infinitely greater in the stolid quiet child than in the highly strung excitable one. The difficulty of the interpretation of signs in some patient worn out by former anxiety or illness is infinitely greater than in the case of an acute infection in a previously healthy person.

PATHOLOGICAL CONSIDERATIONS.

Before we classify the clinical conditions under which we must discuss the need to open the mastoid let us consider the pathological conditions which may be present. An acute inflammation of the tissues of the middle ear is the start, and this passes over into the mastoid antrum and leads to an inflammation of the mucous membrane of that cavity. This is the earliest stage of an acute mastoiditis, and it is probable that this occurs in the vast majority of acute inflammation of the middle ear. It is not a condition which must need operation, but in its early stage is amenable to other treatment. It is when this passes on to a suppuration of the lining of the cavity, to ulceration of the mucous membrane, and to an acute osteitis of the mastoid process that operation becomes imperative. It is the difficulty in deciding when this has happened that is the problem. If the disease is allowed to go on under your eyes to a further stage you may consider that you have deferred operation too long; and this further stage is the extension of the inflammation from the bone to the surrounding structures. The least harmful of these extensions is to the periosteum. I am going to consider the case with swelling behind the ear no more; it is a question of diagnosis and we are not discussing diagnosis to-day. You may hesitate a bit as to whether such a swelling is due to the middle ear or is in some neighbouring structure, but once you have decided that it is due to the ear you must not hesitate to operate. The next of the structures to which the disease may spread are those within the cranial cavity; if you have evidence of early meningitis you must operate, but it is not good medicine. You must aim at decision before these symptoms arise, and if you save such a case your pride at doing so must always be tempered by the thought that the disease should not have gone so far. And the third structure is the lateral sinus with the jugular bulb.

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[1] The Hunterian Oration, by Sir Charles J. Symonds, THE LANCET, Feb. 19th, 1921.

ACUTE AND CHRONIC DISEASE.

The clinical classes under which these cases fall are those in which acute disease arises anew and those in which it arises in one who already has chronic disease. The former must be considered under two heads—cases which are seen during the very acute stage and cases which are seen in the less acute stage where the marked symptoms are passed, but the condition has not quite quieted down. In the former, where the illness has lasted over-night or up to 48 hours, the important fact is whether the drum-head is intact or not. When the drum-head is intact decision may be delayed unless the general condition of the patient is such that he appears too ill for a simple otitis media to cause the symptoms. Let it be thoroughly understood that delay in decision must only be countenanced where a careful watch can be put upon the patient. If he be not in a place where you or someone else can keep a watch upon him it is your business to get him there. Delay here may be more readily allowed, because there is a surgical procedure which can be done which has often wonderful results. Again I refer to puncture of the drum-head. The height of the temperature alone is no indication to operate; the case with the highest temperature may recover after puncture and other appropriate treatment; that with a relatively low temperature may already have osteitis of the mastoid; nor is a mastoid tenderness which is limited to the area of the antrum an absolute indication to do an operation, for with suitable treatment this may pass away in the course of a night. It is the persistence of the temperature and of the tenderness over a period of time in spite of treatment which constitutes the important symptom. When the drum-head is already ruptured decision is more difficult and less delay allowed. It means, in all probability, either that the infection is more acute or that the attack has already lasted a longer time. The height of the temperature is now more important, for the relief of the tension should have brought in down; tenderness also is more important, for the same relief should have made it better; and if the tenderness is not limited merely to the area of the mastoid antrum it is a stronger indication to operate. There is another symptom which now may help, the profusion of the discharge. If this is very profuse one can hardly imagine it to be secreted entirely by the lining of the middle ear, and so we may infer that it must come from the mastoid region and look upon it as a point in favour of interference.

It is possible to make a mistake as to decision under two conditions, when one sees a case in consultation on a single occasion and when one is daily in charge of the case, seeing it from time to time. In those cases that I have just considered, he who sees the patient on a single occasion has the harder task. It is a careful consideration of the symptoms from hour to hour over a short time that is the determining factor. In the next class of case, however, the man who comes in afresh with unbiassed mind will often be in a position to make a better decision than he who has been constantly in charge of the case. When the acute stage has passed it is a question of how long without operation you will allow the case to go on before it recovers or subsides into a chronic otitis media. I think these include the most difficult cases of all. The temperature may entirely subside, there may be no tenderness when you examine the patient, he may not complain of pain, and yet the improvement of the general condition may hang fire, and the patient not pick up as he should; or again, there may be a suspicion of some tenderness one day which was not there the day before, and is gone again upon the next; there may be a story of slight earache and no physical signs to account for it; there may be headache due to inflammation of the deeper parts of the bone with the pain referred to the vertex or the occiput. Each one of these symptoms may be insignificant in itself, but if two occur at once I consider them of marked significance. The temperature is now most important. If it does not settle down absolutely, or if having settled down it springs up again all is not well. We must remember that a slow extension of the disease brings it each day nearer to the lateral sinus, and that we have no way of knowing how far that is from the mastoid cavity, nor what sort of bone lies between them. A subsequent rise suggests some invasion of the blood stream, and a series of slight pyrexial attacks is very likely to be followed by a rigor and a thrombosed sinus if left without operation.

When the acute attack follows on chronic disease it is easy to argue thus: "Here is a case in which the possibility of operation had to be considered in any case, let us then do it now and operate on the acute disease and do a radical operation at the same time." It is a fallacious argument, and I do not find that such cases are so likely to do well. The acute disease on the top of the chronic may be more dangerous in that the old disease has already approached the other structures, but it is less likely to be so acute or so rapid, and so the same principles may be adopted in this as in the former class. A bulging of the postero-superior wall of the external meatus is often said to be a definite indication to operation. I am not convinced that this is so, but so many otologists of repute teach this, that it is a sign which cannot be ignored.

There remains those cases in which acute ear disease is associated with other acute disease. I have already mentioned the question of diagnosis, but that does not cover every case. There is still a class in which the ear disease is intercurrent or a distant complication of some other acute disease. Here the decision as to operation is most important. Two things are to be considered, how ill the patient is and whether the ear or the other condition is the more serious. If the mastoiditis is the cause of the most serious symptoms an operation may be necessary whatever the risk, but if the other lesion is so endangering the life that an operation might turn the scale, then you may have to refrain from an operation on the mastoid and take risks of meningitis or sinus infection that would not be justifiable under ordinary circumstances.

SUPPLY OF MILK FOR MOTHERS AND INFANTS.—The Minister of Health announces that owing to the excessive expenditure of many local authorities he has reconsidered the arrangements to be observed as a condition of his sanction to schemes for milk-supply and of grants in aid of expenditure thereon. In order to enable the expenditure to be more effectively controlled former orders have been rescinded and local authorities must in future obtain the sanction of the Minister, under the Maternity and Child Welfare Act, 1918, to schemes for the supply of milk to expectant and nursing mothers and children under 5. In a circular issued to local authorities a list of conditions is given without which sanction will not be given; these limit the quantity supplied at less than cost price to one pint a day (exceptionally one and a half pints for infants between 3 and 18 months) and the recipients to nursing mothers, expectant mothers in the last three months of pregnancy, and children up to 3 (exceptionally up to 5) years of age. The other conditions are framed to ensure that only those applicants receive milk at less than cost price to whom a supply is essential on grounds of health and who cannot afford to buy sufficient milk for their needs.

THE TOXÆMIC STAGE OF DIPHTHERIA

WITH SPECIAL REFERENCE TO PATHOLOGY AND TREATMENT.

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SINCE the introduction of antitoxin the mortality and morbidity of diphtheria have decreased enormously. Patients suffering from mild or moderately severe diphtheria at the present time, provided they receive antitoxin early—in the first three or four days of illness—and in adequate dosage, recover. And, further, the duration of illness and of convalescence are much less protracted than formerly, while late sequelæ such as paralysis and long-continued cardiac weakness are avoided.

There occur, however, many cases of a much more serious type which are seen from time to time at most infectious hospitals, and are all too frequent in certain areas where an epidemic of diphtheria seems to rage perpetually. Many of these patients die in the period between the fourth and the eleventh day of illness—sometimes before antitoxin has been administered and sometimes in spite of massive doses of serum. Other cases survive this first danger period of the disease to drag through a long and critical illness which may terminate in death as long as 12 weeks or more from the date of the infection. Convalescence, if it occurs, is protracted, paralysis is frequent, and cardiac weakness may remain to hamper the patient for years, although ultimate recovery is the rule. During the first week or ten days of an attack of diphtheria of this most severe type the patient shows certain clinical and pathological signs which differ from those of the second stage of the disease, a stage dominated by cardiac (or possibly tissue) degeneration. These phenomena are dependent on an overwhelming toxæmia. I have, therefore, called it the *toxæmic stage* of the disease. It gradually merges into the second stage, that of cardiac weakness.

In the present paper I propose to consider the toxæmic stage of the most severe type of diphtheria only, excluding from the discussion cases complicated by laryngeal involvement. I have been studying the pathology of this phase from the clinical and experimental standpoints since 1917 and during the last year have been investigating certain indications for treatment. I am not at present in a position to test the treatment clinically and am publishing my results with the hope that some investigator with clinical material available may be able to give the method a fair trial. My results are exceedingly suggestive, but are not absolutely conclusive. The failure to obtain a conclusive series of experiments is, I am convinced, due to the fact that I was only able to give part time to the work, with the result that many factors could not be controlled. In order to carry out a satisfactory series of experiments it would be necessary to arrange for a day and a night attendant for the animals.

Clinical Condition of Patient in the Toxæmic Stage of Diphtheria.

The clinical condition of a patient in the toxæmic stage of diphtheria closely resembles that of a patient suffering from wound shock or from the results of a severe hæmorrhage. My object has been to investigate this condition. I found that a considerable amount of work had already been done by previous workers. A summary of their observations and conclusions will be found in my monograph.[2] As the work progressed it became evident that the pathology of the shock-like condition of diphtheria resembled in part the condition in wound and toxæmic shock which was being worked out by the special committee appointed by the Medical Research Council. Up to this time (1917), although it was generally accepted that death in the toxæmic stage of diphtheria was due to failure of the circulation, different opinions were held as to the cause of the failure. Many observations were on record regarding the condition of the heart, the blood-vessels, the blood and the vaso-motor system, each of which had been blamed in its turn as the cause of death in this stage of the disease.[1] The facts had not, however, been correlated in such a way as to present a continuous picture of a series of pathological events leading up to, and culminating in, death from circulatory failure.

My clinical observations showed that there is in this stage of the disease:—

1. A reduction in the cardiac output as indicated by the blood pressure changes.[3]
2. A condition resembling slight œdema, which I have called "lymph-logging."[4]
3. An increase in the specific gravity of the blood. This increase in the concentration of the blood is so severe as to indicate that a large part of the fluid portion of the blood must have leaked out of the blood-vessels. As there is in these severe cases no increase in the flow of urine (generally in fact there is an oliguria) and no diarrhœa we must conclude that the fluid has leaked into the tissues or tissue spaces and probably accounts for the condition of lymph-logging described above.[5]
4. Changes in the suprarenals were also found regularly in patients dead of diphtheria.[6] The changes were of two types: first, hyperchromatism—an increased staining of the nucleus and deeply stained granules in the protoplasm, giving the cell a very active appearance; and secondly, hypochromatism. In some of the cells this change had progressed to an actual chromatolysis, and in some there was a dissolution of the nucleus and breakdown of the cell. These changes were sometimes found side by side in the same section and in every case the changes were very patchy. It is significant that such changes should be present in diphtheria. The persistent low blood pressure of the disease, after the toxæmic stage has passed, may perhaps be related to adrenalin deficiency in part, even if in part it is dependent on long-continued myocardial weakness. After an attack of diphtheria patients complain for many months of lassitude and lack of energy, while the pulse remains "collapsing"—i.e., the systolic blood pressure is normal and the diastolic pressure low, the second heart sound at the base is accentuated, and the heart rate rises unduly on slight exertion. These are also the characteristics of sub-adrenalism. (Compare Addison's disease.)

It seemed that if any progress was to be made as regards the pathology of this condition and its treatment experimental methods must be used which were not applicable clinically.

For, first, in clinical diphtheria the dose of toxin is dependent on the severity of the infection and cannot be varied at will. Secondly, patients are not seen until they are already ill, so that normal readings are never available for comparison, and readings during illness have to be compared against an average for normals of the same age, which may give a very considerable margin of error. Thirdly, diphtheria of the type I wished to study generally occurs in young children who are very ill, so that it may be impossible to get blood specimens and other records as often as desired. And, fourthly, it did not seem justifiable to try a new treatment clinically without evidence that it was at all events harmless experimentally.

Preliminary Experiments on Cats with Toxin.

Experimental work.—For the preliminary experiments I used cats. Cats were chosen because Brodie had found them suitable in studying the effect of diphtheria toxin and because they are satisfactory animals in which to make blood-pressure records with a kymograph.

The toxin I used was supplied by the Wellcome Physiological Research Laboratory. I should like to take this opportunity of expressing my grateful thanks to the superintendent, Dr. R. A. O'Brien, for so kindly providing it. The toxin had been standardised for guinea-pigs: it was of such a strength that—

0·002 c.cm. killed a standard guinea-pig in 147 hours.
0·005 „ „ „ „ 40 „
0·01 „ „ „ „ 27 „

I wanted to give cats such a dose that if they were untreated they would die on the fourth day—i.e., between 96 and 120 hours after inoculation. If the susceptibility of cats is comparable to that of guinea-pigs the dose should lie between 0·002 and 0·005 c.cm. per 250 g. of body-weight. There may possibly be two fallacies in this line of reasoning: (a) cats may be either more or less susceptible to diphtheria toxin than guinea-pigs (unfortunately I was unable to find any records of the dose that Brodie used); and (b) the length of the survival period after a lethal dose of toxin in guinea-pigs is not in direct arithmetical relation to the size of the dose.

I hoped that it would be possible to find a dose of toxin for a standard weight of cat such that it would invariably kill on the fourth day. I arbitrarily chose 2150 g. as my standard body-weight, and tried the following doses:—

A. Dose of toxin per 2150 grammes of cat.
B. Number of hours after inoculation at which death occurred.

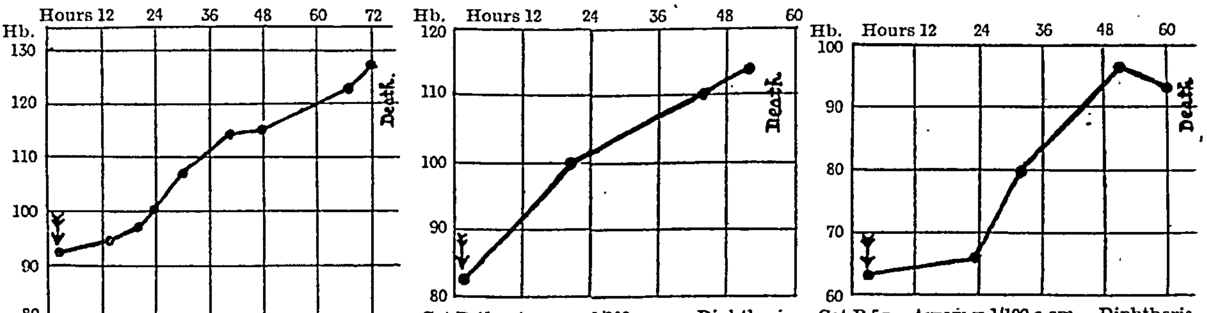
A.	B.	A.	B.	A.	B.
1. 0·66 c.cm.	29	4. 0·02 c.cm.	66	7. 0·02 c.cm.	72
2. 0·1 ,, ...	22	5. 0·02 ,, ...	36	8. 0·01 ,, ...	60
3. 0·02 ,, ...	48	6. 0·02 ,, ...	40	9. 0·01 ,, ...	60

The susceptibility of different cats varied so greatly that it made it very difficult to get records at the most favourable moment, especially as the animals nearly always became ill in the early morning. In many cases they appeared quite well at 8 or 9 P.M., and were moribund by 9 the next morning.

The inoculations were given subcutaneously. A latent period of varying length occurred during which the cat seemed well, although there was some rise of temperature. During the greater part of this period no concentration of the blood was detected. The cat then became lethargic and the concentration of the blood was found to be rising. Certain of the cats were anæsthetised at this stage, and blood pressure records taken. The animals all showed a fall in systolic pressure with a small cardiac output. As death approached the blood pressure fell still further; the right heart was inadequately filled; and the blood concentration reached a high point. In one instance heart-block occurred. In the end the animals rather suddenly collapsed and died.

The condition of the blood as regards concentration was estimated by readings of the hæmoglobin and the specific gravity. Concentration of the blood began towards the end of the latent period and continued to progress until death. The rise in the hæmoglobin percentage was very marked. It was estimated that somewhere about half the plasma fluid must in some cases have been lost from the effective circulation. In one case a vital red estimation was made which showed a loss of just under half (21/44) the plasma volume. (See charts.)

Charts showing Increase of Concentration of the Blood during Fatal Diphtherial Intoxication in Cats.



Cat B 1. Arrow = 1/50 c.cm. Diphtheria toxin.

Cat B 4*b*. Arrow = 1/100 c.cm. Diphtheria toxin.

Cat B 5*a*. Arrow = 1/100 c.cm. Diphtheria toxin.

Thus there is, related to the failure of the circulation which causes death in diphtheria, a reduction in the volume of the blood in circulation. The heart has an insufficient diastolic return; the beat output is reduced and the blood pressure falls. This condition is known to occur in wound and in histamine shock.[7] In these conditions an intravenous injection of a fluid that will stay inside the vessels helps to tide the circulation over the critical period. The problem of treatment in the case of diphtheria is complicated by the myocardial degeneration and the question of whether the heart will be able to work against an increased load. There is of course a second side to the problem. It is uncertain to what extent the myocardial degeneration is a direct outcome of poisoning by the toxin and to what extent it is due to the result of hampered metabolism dependent on the poor circulation. Would it be possible by improving the circulation to prevent in any degree the tissue degeneration which has been considered a specific effect of diphtheria toxin? We know that changes in the myocardium can be produced by soaking a strip of heart muscle in toxin,[8] so that it is unlikely that the tissues can be protected entirely by treating the circulatory failure. But the effect of the treatment described below, in safeguarding the suprarenals, appears to promise that patients treated by this method may have less severe and less prolonged damage to the myocardium and other tissues than patients treated merely on orthodox lines.

Experiments in Treatment.

The experiments so far described indicate that treatment must consist in increasing the fluid in effective circulation and at the same time, if possible, in diluting the blood so as to reduce its concentration and viscosity. The difficulty was to find an innocuous fluid which would remain inside the blood-vessels. For the original loss of fluid showed that either the vessels were unduly permeable or that the osmotic tension outside them was increased. Further, even if the vessels were not damaged directly by the toxin, yet the stagnation of the circulation, obviously present in severe diphtherial toxæmia, would undoubtedly result in damage to the endothelium with increased permeability.

Normal saline.—This was the first solution tried.

Experiment B II.—A male cat, weight 2150 g., was inoculated subcutaneously with 1/10 c.cm. toxin. Twenty hours later the hæmoglobin had risen from 78 per cent. to 108 per cent. and the specific gravity from 1052 to 1056. The animal was practically moribund. It was anæsthetised with ether and a cannula put into the carotid artery to record the blood pressure. The artery was, however, empty and collapsed. The heart was then exposed. It also was empty and fibrillating. 50 c.cm. of normal saline were run into the femoral vein and artificial respiration started. A second intravenous injection of 50 c.cm of saline was given 10 minutes later. The blood pressure now recorded 54 mm. of mercury and gradually rose to 74 mm. After this it fell to 54 mm., then to 44 mm., and then fell about 12 mm. every five minutes. During this time the blood began to concentrate again. Immediately after the second saline transfusion the hæmoglobin reading was 72 per cent. and the specific gravity 1045. The concentration then increased, so that when the blood pressure was 44 mm. the hæmoglobin was 82 per cent. and the specific gravity 1052. Thus the blood again lost fluid; presumably the saline leaked out of the vessels into the tissues.

This experiment showed that by increasing the blood volume, and at the same time reducing the concentration of the blood, the circulation could be improved, but that the effect was only transitory as the fluid was rapidly lost from the vessels with a return to the previous high concentration of the blood. It was therefore concluded that normal saline would not give any increased survival rate after a heavy dose of toxin. This conclusion is in accord with clinical experience.

Gum saline.—The effect of the intravenous injection of gum saline was next tried in the hope that the colloidal solution might be retained in the circulation although simple saline was rapidly lost. Experiment B III. was done on the same lines as Experiment B II. described above, but with gum saline, with a similar result. There was a latent period after the injection of the solution before the rise of blood pressure, which was probably related to poorness (slowness) of the circulation. It was shorter for the second injection than for the first. In each case, as the blood pressure rose and the circulation improved, the cat began to come round from the anæsthetic and the ether had to be increased, with a dependent fall in blood pressure. In this case there was no definite evidence of further leakage of fluid from the vessels. The experiment failed to show that treatment with gum saline is curative, first, because the experiment was done in such a way that the animal could not be allowed to survive, and second, because the animal was already too ill when the injections were given. Two experiments were therefore devised to avoid these objections. Cats were inoculated with toxin and when they showed the characteristic signs of toxæmia gum saline was run into the saphenous vein, exposed by a small incision under cocaine. (These two experiments were kindly performed for me by Dr. H. H. Dale.) Cat B IV.b died 12 hours after the injection—i.e., its life was not definitely prolonged as a result of the treatment. In the case of Cat B IV.a, two injections of gum saline were given. The cat died three hours after the second injection, 15 hours after the first. Blood specimens taken from both these animals showed marked agglutination of the corpuscles, and in both the kidneys were found to be much congested—the glomeruli being full of agglutinated blood corpuscles.

Citrated blood.—The agglutinating effect of gum saline on cat's blood corpuscles seemed to be undesirable in animals with circulatory failure of this type, so citrated cat's blood was tried in the following experiments. The blood was obtained from healthy cats. The animals were anæsthetised and bled out from the carotid artery into citrate solution. The blood was kept in the cold and used as required. It was found, however, that blood so kept rapidly acquired toxic properties and for this reason the method had to be discarded. Owing to difficulty in obtaining cats in larger numbers it was not possible to use a fresh donor for each injection.

Baginski states[9] that there is in diphtheria an increased *coagulability* of the blood. This statement is entirely at variance with the observations made during my series of experiments. I found that the coagulation-time of blood drawn from animals showing increased blood concentration as a result of diphtherial intoxication was prolonged. In some cases the blood showed no trace of clot at the end of half an hour, although it was in contact with tissue juice, and some specimens of blood cleanly collected were not clotted an hour after being shed.

Post-mortem Changes Observed.

The changes observed in the heart and liver were similar to those occurring in clinical cases. The liver suffers more severely in cats than in human beings. Frozen sections stained with Scharlach R. showed no evidence of fatty degeneration. In addition to the change in the heart and liver the suprarenals, also, were regularly found to be affected. They were swollen and unduly pink; in many instances hæmorrhages were present on the surface and in the cortex. The tissue was friable and degenerate. The microscopic changes were very similar to those described below in rabbits.

Conclusions Drawn from Preliminary Experiments.

1. That diphtherial intoxication produces a concentration of the blood in cats with a concurrent fall of blood pressure.

2. That the concentration can be alleviated temporarily by the injection of normal saline into the venous system, a measure which also raises the blood pressure.

3. That the fluid so introduced fails to relieve the condition permanently and concentration rapidly recurs.

4. That injections of colloidal solutions (gum saline and citrated blood) failed in the case of cats for extraneous reasons.

5. That inoculation with diphtheria toxin does not satisfactorily reproduce the conditions of clinical diphtheria.

Experiments with Cultures of Klebs-Löffler Bacilli.

It seemed probable that the concentration of the blood and the failure of the circulation could be more satisfactorily treated in animals infected with the Klebs-Löffler bacillus. For when a lethal dose of toxin is given it is given in one dose, and its effect cannot be overtaken by treatment. But clinical diphtheria develops gradually, the toxin being absorbed continuously in dilute solution. Animals not being susceptible to infection of the mucous membranes with diphtheria bacilli, must be infected by injection. H. G. Savage[10] tried repeatedly to infect cats with diphtheria bacilli on a mucous surface, but failed to produce a condition in any way resembling clinical diphtheria of the type I wished to study. He found, however, that by injecting a broth culture of diphtheria bacilli subcutaneously into kittens intoxication, with death, frequently followed. The doses he used, with very variable results, are as follows:—

—	Age of kitten.	Culture.	Dose.	Result.
1	4 weeks.	24 hours in broth.	2 c.cm.	*Death in 5 days.*
2	2 months.	2 days " "	1·8 c.cm.	*Recovery.*
3	5 weeks.	5 " " "	2 c.cm.	*Death in 9 days.*

Cats were available only in small numbers, and owing to the variation in susceptibility it seemed advisable to try experiments on a larger scale with a considerable number of controls. Rabbits have the advantage of being easily obtained in large numbers; intravenous injections can be made into the ear vein of a rabbit much more readily than into the saphenous vein of a cat; and, moreover, blood for injection can be obtained from a normal rabbit without inconveniencing it. In the following experiments I kept a batch of normal rabbits from which samples of blood were obtained as required.

The Technique Used.

The results obtained by Savage were very variable, and, moreover, broth in which diphtheria bacilli have been grown contains toxin in weak solution. As I wanted in my experiments to reproduce as nearly as possible diphtherial infection as it is seen in human cases, I decided to grow the bacilli on agar slopes and inject an emulsion of bacilli in normal saline. An animal infected in this way differs from an infected human in one other respect. In the human subject the diphtheria bacilli grow on the surface, and as antibodies collect in the blood, either as a result of the administration of antitoxin or from the reaction of the patient, the membrane containing the bacilli is shed and the infection terminated, leaving only an intoxication to be dealt with by the patient. In the case of animals infected by injection the offending organisms cannot be thus shed, so that the animal is at a disadvantage as compared with the human patient.

For each experiment an agar slope was inoculated with one loopfull of growth from the stock culture and grown for 18 hours. The whole of this subgrowth was then transferred to a mixing-tube and thoroughly broken up in a measured quantity of saline by the help of glass beads. A proportion of the emulsion was inoculated into the animals. In this way I avoided giving appreciable amounts of toxin.

The culture used in the following experiments was obtained from a severe case of laryngeal diphtheria. The bacilli, which were in pure culture, were of medium length. 2000 units of antitoxin were given to the animals intravenously when it was judged that the toxæmic stage had advanced so far that antitoxin alone would not save the animal's life.

The injections of bacilli were given subcutaneously on the back in 4 experiments (32 animals); subcutaneously on the inner side of the thigh in 1 (4 animals); subcutaneously on the abdominal wall in 2 (48 animals); and intramuscularly into the thigh muscles in 1 (36 animals). The inoculations on the back were the most satisfactory. The culture was too virulent when given intramuscularly, and in several cases where the injection was given on the abdominal wall the local lesion was found post-mortem to have extended through to the peritoneum and omentum.

Results of Preliminary Experiments with Injections of Cultures.

The first five experiments of Series C were undertaken to determine: (1) whether concentration of the blood occurs in rabbits as it has been shown to do in cats and in man, and (2) what dose of culture is suitable to be sure of killing, but not to kill too soon. It was found that the blood changes were similar to those occurring in cats inoculated with diphtheria toxin. And it was further found that healthy animals, apparently similar, reacted very differently to equivalent doses of culture, while any pre-existing morbid conditions—e.g., coccidiosis, congestion of the lungs, &c.—rendered the animal far more susceptible to diphtherial poisoning, and thus accentuated the actual variability.

Experiments in Treatment.

After these preliminary experiments a series of seven experiments was undertaken to try the effect of treating the deficiency of the circulation by infusion of:—

1. Hypertonic saline (vide Sir Leonard Rogers's work on cholera).[11] A 1·3 per cent. solution was used.

2. Gum saline (vide work on wound shock).[11] 0·6 per cent. gum acacia in normal saline was used.

3. Citrated blood (vide work on wound shock).[11] 3·8 per cent. sodium citrate in water was used; 20 c.cm. of this solution were added to 80 c.cm. of blood—i.e., 0·76 per cent. of sodium citrate in the blood mixture; 0·5 is just sufficient to prevent clotting. The blood was obtained in the case of cats by bleeding the donor animal from the carotid artery under ether anæsthesia. Care was taken that the blood should fall directly into the citrate solution, so that it might be as little damaged as possible. In the case of rabbits donors were kept and bled as required by merely pricking one of the veins of the ear and allowing the blood dropping from the puncture to fall into the citrate solution.

112 blood transfusions were performed on rabbits. No evidence was obtained suggesting that rabbits are grouped like human beings as regards their blood affinities. No ill-effects were noted traceable to the blood as such; in no case was there evidence post-mortem of agglutination of corpuscles, and in one instance only of hæmolysis. This animal died 24 hours after the last blood injection. It showed no ill-effects at the time, and post-mortem the only sign was some pink tinting of the pericardial and peritoneal fluids. Mixed blood was sometimes used, and where animals were given more than one transfusion different donors were used on each occasion.

The seven experiments of Series C were all of the same type.

Typical Course of the Experiments.

The typical course of the experiment was as follows:—

The animals were kept in quarantine under observation for a fortnight before the experiment was started. The number of animals used varied in different experiments from 6 to 36. (The actual numbers were: 18, 36, 24, 24, 6, 6, 6 = 120.) The animals were weighed and their hæmoglobin value estimated. They were then injected with the previously determined dose of culture. As a rule no obvious change occurred during the next 24 to 36 hours. They then became rather lethargic, sometimes refused food, and occasionally had diarrhœa. The hæmoglobin value by this time was found to have increased. A little later the rabbit would sit hunched up in the bottom of the cage. At this stage of the toxæmia it will not move spontaneously, and crawls rather than hops when stirred up. It takes no food. The ears are cold and the eyes dull. There is often diarrhœa. When the ears are inspected the veins show as thin black lines. If one of the lateral veins is punctured no blood exudes. The cross veins are invisible. If the ear is warmed and rubbed with ether or xylol the lateral veins become a little better filled. If the blood is pressed out the vein collapses and fills again only very slowly. But after the ear has been warmed for some minutes the vein fills with brighter coloured blood. As death approaches the circulation becomes more and more stagnant. In many instances it was impossible to obtain samples of blood for the estimation of hæmoglobin, and the attempt to do so caused such damage to the veins that intravenous injections were even more difficult than they would otherwise have been. In the ear veins it is possible actually to see the improvement in the circulation due to local warming, and it may be surmised that warmth applied generally to the whole body surface would have a similar effect on the general circulation. In certain instances where the animal suffered from fainting or convulsions it was found that warmth applied to the thorax by holding an electric lamp close to the chest wall had a restorative effect, and several of these animals finally recovered.

When it was judged that the intoxication had progressed far enough the animals were divided into groups. Often certain of the animals had to be discarded as dead or dying. The control group was treated with a single intravenous dose of antitoxin only. The animals in the other groups, in addition to a similar dose of antitoxin, received infusions of one of the fluids described above (hypertonic saline, gum saline, or citrated blood) at intervals of 12 hours—two, three, or four injections being given in the different experiments. The immediate good effect of intravenous transfusions was very striking. The solution had to be given very slowly. The circulation through the veins improved visibly during the injection. After the blood or saline had been given the animals became much more lively; they often started feeding or cleaning their fur. This effect was seen even in rabbits which eventually succumbed. In certain cases, however, where the animals were in extremis before the injection was given bad effects resulted. In some cases the animal fainted or had a convulsion, while, in a few, death followed either with or without a previous convulsion. The most effective treatment for this collapse was found to be warmth and elevation of the feet. In each instance where death occurred in this way the circulation was very stagnant and the blood dark and tarry. The fatal effect may be due to a washing out into the general circulation of accumulated metabolic products. If such is the explanation, death is due in these cases to an acute toxæmia from metabolic products, and indicates that the circulation should be improved to the greatest possible extent by warmth, &c., before giving an intravenous injection, and that the fluid should be given *very* slowly. Another possible explanation of these sudden deaths is to be found in the degenerate state of the heart. It is possible that the sudden rise of blood pressure due to the increase in blood volume is just too much for the heart in its weakened state. This hypothesis also indicates that the fluid should be injected slowly and that struggling should be prevented.

The Amount of Fluid Injected.

As it had been estimated that animals in a profound state of diphtherial toxæmia had lost a very large proportion of the fluid part of their blood it was considered essential to give large injections of fluid. A normal rabbit of 1100 g. weight (which was the average size of the animals used in these experiments) is calculated to contain from 80 to 100 c.cm. of blood. For the first injection I gave from 15 to 20 c.cm. of citrated blood together with about 5 c.cm. of antitoxic serum. The subsequent injections were 10-15, 10, and 5 c.cm. respectively. These are large injections, 20 c.cm. being equivalent to one-fifth of the total volume of blood the rabbit would have in the normal state. If the animal had lost about a third of its blood fluid an injection of this size represents about two-thirds of the defect.

Post-mortem Changes.

In the animals which died, both those from the control groups and those which died in spite of intravenous treatment, the local site of infection was found to be the seat of hæmorrhagic necrosis. In the animals treated with antitoxin only, the changes in the organs were similar to those already described in cats and human beings. In those animals which had been treated with blood transfusions and yet had succumbed there was one pronounced difference in the post-mortem findings. The suprarenals in the untreated animals, and in those treated with antitoxin only, were large, dark-coloured and hæmorrhagic, while in animals treated with blood transfusion in addition they were little, if at all, enlarged and normal in colour.

The suprarenals of two animals which died on the same day, as a result of infection with diphtheria bacilli, were taken and compared as regards size, weight, and colour. The first animal, *rabbit C.X. 2*, had been treated with blood transfusion as well as with antitoxin; the other animal, *rabbit C.X. 5*, had been given antitoxin only.

The suprarenal of the blood-treated case appeared to be about normal in size. The dimensions were: length 0·75 cm., breadth 0·4 cm., thickness 0·18 cm. The suprarenal of the untreated case was much larger. The length was not greatly increased, being 0·85 cm.; the breadth was definitely increased, being 0·7 cm., while the thickness was nearly doubled, 0·3 cm. The weight of the gland from the treated case was 0·052 g., and of that from the untreated 0·115 g. The colour of the gland from the treated case was a normal yellowish pink. That from the untreated one was of chocolate brown, and its tissue was very friable.

Microscopic changes.—(1) Frozen sections stained with Scharlach R. No fatty degeneration detected. (2) Material hardened with bichromate solution and stained with hæmotoxylin and eosin. Suprarenals prepared by this method stained very patchily. The cells of the cortex showed degenerative changes of varying degree. In the treated cases certain areas were made up of cells with deeply-stained nuclei and granular protoplasm, and other areas had pale nuclei with only skeleton cell outlines. The blood-vessels were congested. *In untreated cases large areas of hæmorrhage* were to be seen under the capsule and scattered through the cortex. The areas of degenerate cells were larger and the degree of degeneration more pronounced. The cells were separated from one another so that the tissue looked much more open than in the normal state. In all the specimens the medulla was small and shrunken. This change was most marked in the untreated cases. The chromaffin bearing cells were often deeply stained, the granules of chromaffin sparsely scattered and small. In many cases the medulla showed as a mere slit or line when the section was examined naked eye or with a hand lens. (3) Fixed with Carnoy's solution. This method of fixing was used to determine whether the irregular staining was not possibly due to excess of water in the cells and tissue spaces (compare lymph-logging). Sections of suprarenals fixed by this method shrank more than normal tissue would do. Sections fixed with Carnoy's solution took the stain much more evenly than the other preparations and the cells were not so widely separated, but the other features were still present—i.e., in the cortex the nuclei showed in some parts hyperchromatism with a granular cell protoplasm, and in other places hypochromatism, and in other parts were mere skeletons.

Late Changes in Surviving Animals.

In two instances where the culture had been given intramuscularly paralysis of the limb inoculated developed six and a half weeks after the injection. It finally disappeared entirely. Where the culture had been given subcutaneously a slough developed at the site of the inoculation. This was eventually shed, generally about the fifth week. (These animals had all been treated with blood transfusions.) Many of the animals treated with blood transfusion recovered. Animals recovering generally seemed to be normal by the eighth day. The first experiment of this series was the most successful. Eighteen animals were inoculated and four were treated with blood transfusions. Of these four, three survived, while the other animals, some untreated and some treated with antitoxin, without exception died. Details are as follows:—

Experiment C. VI.—Animals: 18 rabbits; weights from 1000 to 1800 g. Culture: 18 hours on agar slope. Dose: 1/18 of total slope in 0·5 c.cm. saline. Site: Subcutaneous, on back in 14 animals; on inner side of thigh in 4 animals.

Summary.—Of 18 animals injected with diphtheria culture 5 died on the second night and a fifth was discarded as very ill. The remaining 12 were divided into three groups, care being taken to arrange that the animals of the different groups were as nearly as possible comparable as regards degree of illness.

Group A.—Nos. 13, 14, 17. 18 received no treatment. Nos. 13, 17, and 18 died on the fourth day. No. 14 died on the eighth day.

Group B.—Nos. 6, 7, 11, 12 given antitoxin intravenously on the third day and no further treatment. No. 7 died on the fourth day. No. 12 died on the fifth day. No. 6 died on the sixth day. No. 11 died on the eighth day.

Group C.—Nos. 2, 3, 4, 5 given antitoxin intravenously on the third day and intravenous blood transfusions on the third day (20 c.cm.), on the fourth day (20 c.cm.), on the fifth day (10 c.cm.), on the seventh day (5 c.cm.). No. 5 died on the evening of the fourth day. Nos. 2, 3, 4 recovered and remained normal.

I had hoped to confirm this result by a further and conclusive experiment, but for various reasons the subsequent attempts were not so successful. The results of one experiment were nullified by the culture being given intramuscularly, by which route it proved much more lethal. In another the dose was too small; a third was vitiated by an epidemic of pneumonia amongst the animals; and in a fourth the animals died as a result of the weather turning suddenly cold.

In spite of these untoward circumstances, the results of the experiments show definitely that a certain proportion of animals suffering from diphtherial intoxication of such severity that if treated with antitoxin alone they would surely die, will, if treated also with blood transfusions, recover.

Conclusions Derived from Experiments.

There were no more survivals in the groups treated with hypertonic saline or gum saline, together with antitoxin, than in the control group treated with antitoxin alone. These animals have therefore all been considered together in contrast to those treated with blood transfusions and antitoxins.

Twenty-four animals which were inoculated and treated had to be discarded as the dose was sub-lethal, several of the controls surviving. A series of 95 animals received a lethal dose of diphtheria bacilli. Thirty-two of these were treated with blood transfusions in addition to antitoxin; of these, 15 survived the eighth day and 12 recovered entirely. Thirty-five were treated by antitoxin alone or by hypertonic saline or gum saline in addition; of these, 6 survived the eighth day and 5 recovered entirely.

Intravenous injections of citrated blood in addition to antitoxin treatment have not, in my hands, infallibly saved animals infected with a lethal dose of diphtheria culture. Indeed, they could hardly be expected to do so. Yet a certain number of animals which otherwise would certainly have died did actually recover as a result of the treatment. Further, in those animals which died in spite of blood transfusions it was found post mortem that the suprarenals had suffered less severely than in cases treated only with antitoxin.

It is safe to conclude that in clinical diphtheria treatment along these lines will probably reduce the risk of death—i.e., will increase the chance of survival, and by safeguarding the suprarenals will shorten the illness and lighten its severity. If blood transfusions served merely to protect the suprarenals the indication for their use in all very severe cases would be strong. It is probable that clinically a larger proportion of cases of diphtheria equivalent in severity to these infected animals might be saved by this means. For it is not possible to nurse animals as a human patient is nursed, while it is a well-known fact that nursing is a most important factor in saving bad cases of clinical diphtheria.

Suggestions for a Clinical Test of the Method.

1. *The donor of blood.*—Either a member of the staff at the hospital who from previous test is known to belong to group IV. should be chosen, or a relative of the patient can be used. In this case the donor's blood must be tested directly against the patient's. The blood should be collected by putting a needle into one of the veins at the bend of the elbow. If the blood is allowed to fall clear into sterile citrate solution there is no need to use paraffined tubes. The blood must be collected aseptically and should be used at once.

2. *The patient.*—If the patient is a small child it will, in many cases, be necessary to give a general anæsthetic. Antitoxin can be given intravenously at the same time as the blood transfusion. In very bad cases it will probably be necessary to cut down on the vein.

3. *Quantity of blood to be used.*—Amounts equivalent to those used for rabbits in the foregoing experiments are as follows:—

Age of child.	Weight of child.	Quantity of blood.
1 year.	21 lb.	160 c.cm., or ℥ v.
2 years.	2 stone.	200 ,, ,, ℥ vii.
4 ,,	2½ ,,	300 ,, ,, ℥ x.
6 ,,	3 ,,	400 ,, ,, ℥ xiii.

4. *Frequency.*—The intravenous transfusion should be repeated every 24 hours until three or four injections have been given, depending on the severity of the case.

5. *Precautions.*—The precautions usual in giving intravenous injections must be observed. Rigid asepsis must be practised; the fluid must be given at body heat, and bubbles of air must be excluded. The special precautions necessary in cases of diphtherial intoxication are: (*a*) In severe cases the circulation must be improved as far as possible by warming the patient, and by warming the arm where the injection is to be made. This will not only make the actual technique easier, but will reduce the risk of washing out toxic products. (*b*) The fluid must be run in very slowly.

It should be borne in mind that there is a certain risk of washing out toxic metabolic products, and thus giving rise to a rigor, convulsion, or even sudden death. But when it is recalled that such accidents are only likely to happen in cases so severe as to have practically no chance of recovery apart from blood transfusion, the risk can hardly be considered as a contra-indication to the treatment. And if the precautions detailed above are observed even this risk will be reduced.

The experiments were carried out at the National Institute for Medical Research, Hampstead, through the hospitality of the Medical Research Council. I wish to express my thanks to Dr. H. H. Dale for his unfailing kindness and interest in the work, for his many valuable suggestions and practical assistance; and to Dr. W. E. Gye for preparing cultures and for much help in all the bacteriological side of the work; also to Miss Durham and Miss Marchal for practical assistance in many of the experiments.

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SOME NOTES ON THE
PROPHYLAXIS OF TYPHUS FEVER.

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DURING the recent war typhus fever was, fortunately, quite uncommon in the British Army. Outbreaks occurred in some of the prison camps in Germany, in parts of Mesopotamia and Palestine, and in some of the smaller war areas. It is only, however, since the occupation of Constantinople and the consequent extension of our military activities to Southern Russia that units of our army have begun to suffer any high percentages of casualties from this disease. The present article is based upon our experience in connexion with Russian typhus during the winter epidemics of 1918–19 and 1919–20, and has special reference to those cases which occurred among the members and the attached Russian personnel of the British Military Mission to General Denikin's army.

The numbers of the British personnel of the Mission varied considerably from time to time, but during the winter of 1919–20 they averaged about 1000 men. The corresponding incidence of typhus is shown in Table I.:—

TABLE I. (British Personnel Only).

	1919 Nov.	Dec.	1920 Jan.	Feb.	March.	April.
Admissions ...	3	12	36	21	16	1
Deaths	Nil.	1	7	4	1	Nil.

A total of 89 cases with a mortality of 13 (14·6 per cent.).

Among the Russian population the incidence of the disease and the death-rate were both considerably greater than this, and the result was a very widespread epidemic which finally completed the disorganisation of the South Russian Army and of the country. As the epidemic progressed the advance of the enemy became more and more rapid, and the influx of refugees from the conquered territories made the overcrowding problem increasingly more acute. Towns which had normally 100,000 inhabitants were suddenly compelled to make room for 500,000, and houses which had formerly contained one family now housed anything up to ten. The station waiting-rooms and public buildings were packed with refugees who made these places their homes, and it was no uncommon thing to find numbers ill with typhus lying amongst the healthy.

The causes of this disaster may be summed up in the statement that it was entirely due to inefficient prophylaxis and lack of understanding of the essential features of the disease. Epidemics of considerable severity had been experienced during the two preceding winters. It was not sufficiently recognised, however, that, at any rate as far as Russia is concerned, typhus is a winter disease. There are two reasons for the winter prevalence, one being that owing to the cold weather personal cleanliness is at a low ebb and lousiness becomes almost generalised, and the other that the cold increases the overcrowding and the number of contacts to every case. For these reasons the epidemic of the winter 1919–20 might reasonably have been predicted during the previous summer and preparations made to combat it, but very little was done. Russian soldiers were not usually provided with a change of clothing, and baths were difficult or impossible to obtain. Inspections for lice and the disinfection of clothing and blankets were not often undertaken. Such disinfecting plants and bathing establishments as there were in the towns were mostly out of work because they were insufficiently supplied with fuel.

General prophylaxis on British lines was practised as far as possible among the personnel of the British Mission. At the British hospital a very strict regime was practised; all patients on admission had their hair closely cropped, were bathed and sponged all over with methylated spirit, and were put into entirely fresh clothing before being taken to their wards; all the nursing staff wore gowns in the wards, and had very frequent baths and changes of underclothing. During the retreat, when the hospital was on the move, this regime could not be carried out in its entirety, but every effort was made to keep any potentially infected clothing separate. It was during this period that the only case of typhus which occurred amongst the medical orderlies was contracted.

It will, however, be clear that the value of such general prophylaxis as this was very greatly diminished by the fact that the members of the British Mission were daily coming into contact with large numbers of people who adopted no such precautions. It was therefore quite insufficient to prevent a serious epidemic of typhus among the British.

Attempts at Specific Prophylaxis.

Apart from the general prophylactic measures indicated above some trial was made of the specific prophylaxis of the disease by inoculation and encouraging results were obtained. Although several organisms have been described none has yet been definitely proved to be the cause of typhus. Nicolle has, however, shown that it is very probable that the causal organism is to some extent localised in the leucocytes of the blood. This assumption is the basis of the method of preparation of most of the vaccines which have been used in Eastern Europe during the past few years. The vaccine used in South Russia during the winters 1918–19 and 1919–20 was of a crude type and consisted essentially of sterile typhus blood free from fibrin. It was prepared as follows:—

The apparatus for the collection of the blood consisted of a glass bottle containing a few pieces of glass and plugged with wool through which passed a glass tube connected with a needle suitable for intravenous work. The whole was sterilised and 6–8 oz. of blood were collected in the bottle from a suitable vein. The blood was defibrinated by shaking and was allowed to stand for two or three days. It was then again shaken up and 2 per cent. of carbolic acid was added. The resulting fluid was then transferred to and sealed in suitable ampoules which were heated for one hour at a temperature of 57°–58° C., after which it was used as a vaccine in the usual way.

The patient selected as the donor of blood must fulfil the following requirements:—

(1) He must be free, as far as ascertainable, from other disease.

(2) He must be on the first, second, or third day of the rash—i.e., usually on the fifth to seventh day of illness. Patients who have reached a later stage than this are unsuitable owing to the possible existence of a septicæmia due to complications such as parotitis.

Three doses of the vaccine were given in the arm subcutaneously or intermuscularly at intervals of five to seven days, the amounts being 1 c.cm., 2 c.cm., 2 c.cm. No general reaction was observed.

During November and December, 1919, 195 of the Mission personnel were fully inoculated in this way. Of these typhus subsequently developed in one only (0·5 per cent.). The number of the Mission not inoculated or not fully inoculated at this time was about 800, and amongst these typhus subsequently developed in 89 (11 per cent.). The one person who developed typhus after complete inoculation was a Russian nursing sister attached to the British Hospital. She came into contact with infection by visiting friends in Russian hospitals, but did not contract the disease until three months after inoculation.

The personnel of the British Hospital and of the Tank Corps Detachment (a mobile unit living in trains for the most part and travelling about the country) were fully inoculation almost without exception. Among the R.A.M.C. hospital personnel the only case of typhus was in a man who had received two doses only of vaccine. Among the Tank Corps personnel the only case was in a man uninoculated. A certain number received only one or two injections. Exact figures are not available. Amongst these several cases of typhus occurred, one, in particular, very severe; but none died. Amongst those who contracted typhus after inoculation or partial inoculation the mortality was nil.

The above figures refer to the inoculations which were performed at the beginning of the 1919–20 epidemic in November and early December, 1919. Later in the epidemic, in February, 1920, further inoculations were performed by practically the same method. At this time two persons received one injection each while in the incubation period of typhus. The possibility of infection at the inoculation could be excluded. Both developed very severe attacks (with marked nervous symptoms, and so confirmed the Russian experience that if a patient in the incubation period is given a dose of vaccine, or if he contracts the disease during the negative phase after a dose of vaccine, the severity of the attack is increased. This would point to the conclusion that if prophylactic inoculation is to be done it should be done before the disease has become epidemic. Otherwise it would possibly decrease the total number of cases, but might even increase the mortality.

Our results are summarised in Table II. :—

TABLE II.

Inoculations.	No.	Contracted typhus.	Mortality.	Remarks.
Full 3 injections.	195	1 (0·5%).	Nil.	Contracted typhus 3 months after inoculation.*
2 injections.	?	3	Nil.	One leg lost from gangrene.
1 injection.	?	15	Nil.	—
1 injection during the incubation period.	2	2	Nil.	Severe nervous symptoms.
Not inoculated.	700–750	69	13 (18·8%).	—

* Course of disease and recovery normal.

The fact that the only case which occurred amongst all the fully inoculated developed three months after the inoculation would point to the prophylactic being good for a short period.

A Dangerous Test.

An interesting experiment was undertaken by Dr. I. N. Asheshov, a Russian bacteriologist working at the British Mission Hospital. Three weeks after taking a prophylactic injection of 5 c.cm. of vaccine he inoculated himself subcutaneously with 1 c.cm. of blood taken direct from a typhus patient on the fifth day of his illness. This patient developed a very severe attack of typhus with a hæmorrhagic rash and died on the fourteenth day. On the afternoon of the thirteenth day from inoculation Dr. Asheshov felt unwell and the temperature rose. A severe attack of typhus developed and a hæmorrhagic rash began to appear on the second day. For about a week the patient's condition was fairly well maintained, but then collapse began to set in. Salines were given subcutaneously, and on the ninth day a first dose of 10 c.cm. of antityphus serum was injected intravenously. This was repeated on the two following days, and after the third dose a marked improvement in the patient's condition took place. The pulse-rate decreased from 160 on the 9th day to about 120 on the 11th. The temperature, which had fallen to below 101° F., again rose to a more normal level for this stage of the disease (104°). The temperature fell by lysis about the 14th day, and recovery took place. Convalescence was very slow, and at the end of three months he was only able to get about slowly. This may be in part accounted for by the very unsatisfactory conditions of the retreat which took place about this time. He had to be moved four times in the fortnight following the defervescence, once within 24 hours of the crisis in a Russian blizzard and twice in an open cart. This experiment was probably of too severe a nature, as such a heavy dose of the infecting organism as may be considered to be present in 1 c.cm. of blood could probably never be introduced under normal conditions by lice.

Conclusion.

Although the results mentioned above are suggestive, it cannot be said that the prophylaxis of typhus by inoculation has yet been placed on a firm basis. Further observations on a more extensive scale are necessary, and a fair trial should be given to this method in all countries in which typhus epidemics occur.

A FATAL CASE OF
CŒLIAC INFANTILISM

WITH COMMENTS ON THE MORBID ANATOMY OF CŒLIAC DISEASE.

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AUTOPSIES on cases of cœliac disease have been so seldom recorded that it seems advisable to publish the details of even a single case. In the present paper I give the particulars of a fatal instance of cœliac infantilism to which I have alluded in recent communications on cœliac disease,[1,2] and comment on the present and previously reported autopsies, with special reference to their bearing on the cause of the malady.

History of Case.

H. B., born March, 1913; fourth child in family of four, others strong and healthy. Born at full term; weight 8 lb. Breast-fed for two months; when weaned feeding difficulties appeared, and different foods were tried, but on each there was a tendency to looseness of the bowels. Later he attended various hospitals; it was noticed that "cod-liver oil did not suit him." He was late in walking.

1915.—Brought to my out-patient department at Paddington Green Children's Hospital for the first time in June, aged 2¼ years. The mother stated that the diarrhœa had been worse for six months, causing wasting; the motions were pale and very offensive and the abdomen enlarged, at times markedly so; swelling of the hands, feet, and eyelids developed from time to time. It was also stated that the child was very languid, preferring to stay in bed, and craved for tasty food, pickles, and vinegar, and would eat dirt. He would not readily take milky foods. On examination the abdomen was found to be prominent, but nothing abnormal could be felt within it. A provisional label of "? Abdominal tuberculosis" was given. In July the child was admitted for the diarrhœa under one of my colleagues, but was discharged a week later slightly relieved.

1916.—Not seen again until April. It was now stated that he had ceased growing for six months. The diarrhœa had been worse, again accompanied by swelling of the extremities, wasting, and occasional vomiting. For the rest of this year he attended me as an out-patient and was treated for the most part with bismuth and opium, which partially checked the diarrhœa. Exacerbations of it occurred in April, May, and December.

1917.—In January and February the diarrhœa was again worse, but with out-patient treatment it remained rather better until September. In October he was admitted for a second time under a colleague. He was then stated not to have grown for 12 months. The abdomen was large but showed no evidence of tuberculosis. The stools were large, pale, fatty, very offensive, and typical of cœliac disease. He had no stomatitis at any time. In hospital and convalescent home the diarrhœa lessened, but he gained neither in weight nor height. In December he returned to my out-patients, his motions remaining loose.

1918.—Not seen again until Oct. 1st, when he was brought to me again for severe diarrhœa. He was readmitted, coming under my own care as an in-patient for the first time.

He is now aged 5½ years. His height is 35½ in. (normal for age about 41½ in.); weight 24½ lb. (normal for age about 40 lb.). He has not grown for two years, wearing the same sized boots as two years ago. In stature he looks between 2 and 3 years old, but his facial expression is more corresponding with his real age. He is thin, but not at all marasmic, his face and anterior abdominal wall are the fattest parts of him. His colour is fair. His first teeth have been extracted for caries, but his first upper molars have already appeared. There is no evidence of osseous rickets. His manner is "old-fashioned" and that of a chronically invalided child. His abdomen is large, but no masses or matting can be felt within it. The bowels act several times a day and perhaps four times at night. The motions are large, pale, unformed, very offensive, and characteristic of cœliac disease. There is very little colic, except occasionally just before an action. Very slight dorsal clubbing of the fingers is present. The right knee-jerk is very difficult to obtain, the left is not obtained.

Course.—He was given a mixed diet, low in fat, containing skimmed milk, which was later replaced by Horlick's malted milk. Bynopancreatin was given with meals. During four weeks in hospital he lost 10 oz. in weight, though the diarrhœa lessened to some extent. He was then sent to the hospital's convalescent home at Slough.

For three weeks he appeared to be doing well there and improving. On Dec. 20th he was suddenly taken with fever and very severe diarrhœa, passing blood and mucus in his motions. He collapsed and died within 18 hours. Two other children before and seven others after him had similar illnesses, and the epidemic was regarded as one of influenza showing abdominal symptoms. There were no other deaths.

Autopsy.

Post-mortem examination was made by me 60 hours after the child's death. The body was not wasted, the subcutaneous fat being fairly plentiful in amount; it was thicker on the abdominal wall than elsewhere. No evidence of tuberculosis was found anywhere in the body. Tongue and tonsils normal. Thymus small. Heart and lungs normal. Liver: Weight 14½ oz.; not obviously fatty. Gall-bladder and duct appeared normal. No note was made on the character of the bile.* Pancreas and duct normal. Spleen: Weight 1¼ oz., normal. Kidneys: Weight 1¼ oz., each, normal. Suprarenals: Extensive hæmorrhage into the substance of the left gland, disorganising it; small areas of hæmorrhage into right gland, which otherwise appeared normal. Omentum: There was a copious deposit of omental fat sufficiently marked to strike me at once as peculiar in a child. Stomach normal. Intestine: Peyer's patches slightly enlarged; walls of intestine not thinned, seeming the normal thickness. There was injection of the mucosa of the colon, increasing from above downwards; no ulceration.

Histological examination (for this I am indebted to the kindness of Dr. E. H. Kettle, pathologist to St. Mary's Hospital).—The specimens showed slight post-mortem changes. Liver: No fatty or other change. Pancreas: Gland substance not altered by post-mortem change; normal in amount and appearance; no cell infiltration nor increase of fibrous tissue in the gland. Pancreatic and common bile-ducts show no chronic inflammation. Spleen and kidneys normal. Suprarenals: Hæmorrhagic changes, leading to disorganisation of the gland substance. Intestine (small and large at various levels): The mucosa shows much superficial post-mortem desquamation, and no opinion can be given on its condition at death; the deeper layers show no evidence of cell infiltration or fibrosis, and the examination satisfactorily excludes the presence of chronic inflammatory changes in the small intestine and colon.

To summarise, the patient, a boy, died at the age of 5½ years, of influenza. He had suffered from cœliac symptoms for nearly five years, had been under my observation for over three years, and was conspicuously stunted in growth. At the autopsy no chronic changes to account for the protracted symptoms were found in the liver, pancreas, intestine, or elsewhere.

Comments on Present Case.

1. *Interpretation.*—It is clear, I think, that the injection of the mucosa of the intestine, and the hæmorrhage into the suprarenals found post mortem, were the result of a terminal infection. This was not merely an exacerbation of the cœliac symptoms but a complicating and separate condition. This is proved by the facts that it was an epidemic infection (the patient was the third in a series of ten cases arising within a few days of each other), and that the symptoms it produced, notably the presence of blood and mucus in the stools, were different from those of cœliac disease, as it had shown itself in this patient. In spite of the presence of slight changes of decomposition it was possible to recognise that the gland substance of the pancreas and liver showed no evidence of disease. As far as the intestine was concerned the examination only served to exclude chronic changes such as might be expected to be present if cœliac disease were due to a chronic enteritis. Of such there was no trace; in particular there could be demonstrated no such cell infiltration and fibrosis as were found in the deeper layers of the intestine by Poynton, Armstrong, and Nabarro.[3]

2. *Inference.*—This case seems to show that cœliac disease, persistent enough to produce infantilism and severe enough to be associated with attacks of œdema of the "alimentary" type, may exist apart from structural changes in the pancreas, liver, or intestine; or, to put it more precisely, that the persistence of the excessive fat-wastage is independent of morbid changes in these organs.

3. *Growth in cœliac cases.*—It is difficult to say why growth is so much more impaired in one case than another. That the lack of growth might be in part due to the development in protracted cases of a secondary enteritis is an obvious and attractive explanation; but while it seems more than likely that the fatty contents of the intestine may set up catarrh of the bowel, the present case in which there had been cessation of growth for at least two years shows that such secondary changes are not necessarily severe nor persistent, and it remains questionable if they are essential to the production of infantilism.

4. *The cœliac abdomen.*—Abdominal enlargement is a cardinal feature of cœliac disease. Distension of the bowel with flatus and fæces and an atonic condition of the abdominal wall are recognised causes of enlargement of and variations in the patient's girth. Ascites has been recorded. But these factors do not altogether account for the chronic enlargement of the abdomen which remains in the most quiescent and convalescent stages of the disease. In one case of mine, for instance, which was gaining weight very rapidly, as the weight ascended and the stools became smaller and more solid the abdominal circumference continued to increase in measurement. In this connexion the copious deposit of fat in the omentum, which was so striking a peculiarity in the present case, becomes of interest, and I suggest that this omental fat and the fat of the abdominal wall together account for the persistent enlargement of the abdomen in such conditions as I am here discussing. Further, I think that they may explain the peculiar "feel" of the abdomen, characteristic though difficult to describe, which resembles that of the abdomen of a plump young adult. And I may here, perhaps, mention that some physiologists have thought that it is the fat derived from the carbohydrates of the diet which is first laid down in the omentum and abdominal wall.[4]

Discussion on Autopsies Previously Reported.

Of the symptoms of cœliac disease, one stands out as of pre-eminent importance—namely, the excessive fat-loss in the stools. Any explanation of the origin of the disease must necessarily explain this essential symptom, and thus attention is directly drawn to the possibility of organic disease of the pancreas or liver interfering with fat-digestion or of the intestine interfering with fat-absorption. Failing to find satisfactory evidence of such organic disease, we are left with the alternative of a functional derangement of the pancreas or liver to account for the disturbed fat-digestion. Having described above a fatal case of cœliac infantilism in which no structural disease of the organs mentioned could be found, I turn now to the study of the views of previous investigators and the pathological evidence already recorded, to see if they support or contradict the findings in my case.

Of actual post-mortem records there are extraordinarily few. Only three have I been able to find in the literature, and of these two are, in my view, very doubtful cases, though, as they have attracted some attention, they require discussion.

Gee,[5] who first described the "cœliac affection" (1888), wrote:—

> "Naked-eye examination of dead bodies throws no light upon the nature of the cœliac affection; nothing unnatural can be seen in the stomach, intestines, or other digestive organs. Whether atrophy of the glandular crypts of the intestines be ever or always present I cannot tell."

Gibbons,[6] the next year, expressed the same opinion. He regarded the disease as due to a widespread functional derangement, probably of nervous origin, of the digestive glands. Cheadle[7] viewed it in much the same light, emphasising particularly the derangement of the liver by describing his cases under the title of "acholia." In 1908 Herter[8] published his well-known book on Intestinal Infantilism. His cases were undoubtedly instances of cœliac disease, the existence of which, as he did not know of any of the previous descriptions, he here rediscovered. His work was of great importance, as he originated the idea that the failure in fat-absorption was the result of the presence of a chronic inflammation of the bowel. This he ascribed to the overgrowth and persistence of certain flora of the infantile intestine. Without always confirming Herter's bacteriological findings, many have adopted his nomenclature as expressing the view of the intestinal origin of the defective fat-absorption in what was in reality cœliac disease. Of these may be mentioned Freeman[9] and also Bramwell,[10] who put into this group such cases as would not fit into the type of "pancreatic infantilism" described by him in 1902.[11] Of all these authors—and many others might be mentioned—not one published the result of a post-mortem examination.

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* At the time of making this examination I had in mind the possibility of pancreatic disease or the chronic gastro-enteritis described in a paper by F. J. Poynton and others (discussed later), as mentioned by G. F. Still in his Lumleian lectures.

In 1913 Poynton, Armstrong, and Nabarro[8] published jointly, under the title of "A Contribution to the Study of a Group of Cases of Chronic Recurrent Diarrhœa in Childhood," a series of nine cases, of which most read like instances of cœliac disease. Of this series, the very peculiar first case was fatal, and a detailed account of the autopsy is recorded. In 1918 Still,[12] in his Lumleian lectures on Cœliac Disease, alluded to this particular case as "the only detailed record of a post-mortem which I have been able to find," and adds the information that the child was "much below the normal height for his age." He also gives an account of a very similar autopsy on a case of his own. Since this date Moorhead[13] has reported an autopsy on a case of "intestinal infantilism," the first published under this title. These three autopsies, then, seem the only ones that have any bearing upon the morbid anatomy of cœliac disease, and it will be seen that in all intestinal disease was found to be present. I have therefore to consider if these cases prove that the excessive fat-loss in cœliac disease is primarily due to a chronic enteritis preventing fat-absorption.

For the reader's convenience I venture to recall the essential features of the cases of Poynton, Armstrong, and Nabarro,[8] Still[12] and Moorhead.[13]

The Case of Poynton, Armstrong, and Nabarro.

A. H., male, died at 9 years. At 1 year had an attack of diarrhœa and abdominal swelling lasting eight months. At the age of 5 he came under authors' observation for the first time. He had then had diarrhœa for three months, at times passing blood and mucus. From that time (1908) until his death in 1912 he had repeated attacks of diarrhœa. At first the stools were noted as large, light brown, soft, and offensive, and were regarded as denoting a condition of chronic colitis. It was not until 1911 that the stools were reported as "white"; in the next year they were described as suggestive of cœliac disease. In the earlier stages the patient was treated by rectal lavage, milk diet, and bismuth and opium. In 1910 it became apparent that the "condition was gaining on the patient," and on each readmission to hospital he appeared worse. In 1911 he was treated by appendicostomy and lavage of the colon, and made much improvement for a time. Nine months later he became extremely ill, collapsed, and died. Still adds the information that the child's growth was much impaired.

Autopsy.—The macroscopical features are summarised thus: "(1) Thickening of the walls with inflammatory changes affecting the entire alimentary canal; (2) the absence of striking changes in Peyer's patches; (3) the absence of any obvious pancreatic lesion; (4) the abnormality of the liver, which was large and very fatty, the absence of any evidence of tuberculosis." Microscopically the alimentary tract showed congestion of the mucous membrane, with congestion and small round-celled infiltration in the submucosa and increase in the perivascular fibrous tissue in the muscular coat. In the colon these changes were less marked than in the small intestine and stomach. The liver showed universal and severe fatty changes. The pancreas showed that the interlobular fibrous tissue was much increased, particularly that surrounding the ducts. Bacteriologically a "dysentery bacillus of the Flexner group differing from the type bacillus in only a few minor points" was grown from scrapings of the mucosa of the colon. The heart's blood gave growths of *B. coli* and streptococci" (regarded as terminal or post-mortem infection).

Summary of case by Authors.—"This case is an extremely interesting one, because clinically it was regarded as one of colitis with recurrent acute attacks, without its dysenteric nature having been established. Post mortem the condition of the large bowel closely resembles that of patients in asylums who have suffered from subacute or 'periodic' dysentery."

Comment.—In spite of Still's comment on this case it is, I think, impossible to regard it as one of cœliac disease, unless that term is to mean no more than a fatty diarrhœa in a child. Certainly the authors did not so regard it at the time of publication. On the contrary, they went out of their way to avoid the term, as witness the title of their paper, and they gave clearly enough their interpretation of the case when they stated that they think it "justifiable to suggest that we have two factors to consider—the possible occurrence of a peculiar infection and the appearance of special symptoms of the cœliac affection as a sequel, but not necessarily as a constant occurrence." They considered the intestinal disease, diagnosed during life as chronic colitis, as responsible for the recurrent and persistent diarrhœa, while they suggest that the excessive fat-wastage in the stools which appeared late in the course of the disease may have been due to the severe fatty degeneration of the liver. With the latter suggestion it is not easy to agree, but there is no difficulty in accepting the view that the case was primarily one of chronic enteritis. This, which appears to have been a chronic dysentery of the "asylum" type, ran a relentless course; it interfered with the child's growth (producing a true condition of "intestinal" infantilism) and gradually made the child more and more ill. After some years an excess of fat appeared in the diarrhœic stools. Rather than attribute this to the fatty degeneration of the liver I suggest that this late symptom may have been due either to the enteritis becoming sufficient of itself to interfere markedly with fat-absorption or to the pancreatitis set up secondarily to the enteritis.

The point which I particularly desire to emphasise here is that this case does not demonstrate (and was not thought by the authors to demonstrate) any essential connexion between cœliac disease and enteritis; still less does it prove that the excessive fat-wastage in cœliac disease is due to a failure of fat-absorption owing to disease of the intestine.

Still's Case.[12]

The author writes:

"Clinically, the diagnosis had been in question on account of the unusually rapid course and also the comparatively late age at which the symptoms began. A boy aged 7 years was under my care 19 weeks with looseness of the bowels, amounting at times to actual diarrhœa. He had been sent into hospital as a case of tuberculous peritonitis on account of wasting and enlargement of the abdomen, but one early began to doubt this diagnosis, for the stools at times were suggestive of cœliac disease, and, moreover, there was, with œdema and purpura, frequently recurring tetany. .... On the ground that the case was probably one of cœliac disease, the boy, after several weeks of unsuccessful treatment, was put upon a fat-free diet and at once improved greatly, as cœliac cases usually do upon such feeding, but a few weeks later had a relapse of looseness with much distension of the bowel and died of exhaustion."

The autopsy showed changes in the intestine and pancreas similar to those recorded in the last case by Poynton, Armstrong, and Nabarro, but the liver was not fatty. No bacteriological examination was made at the autopsy; during life a bacillus resembling in many respects the *B. lactis aerogenes* was grown from the fæces.

Comment.—Apart from the marked clinical peculiarities of the case considered as one of cœliac disease the author is not disposed to assert with any assurance that the intestinal changes account for the excessive fat-wastage. "It is," he writes, "at least conceivable that the whole inflammatory process might be secondary to some functional failure of digestive secretion." It would seem to me that the explanation of this case might well be one similar to that already suggested for the one quoted above—namely, an enteritis with a secondary failure of fat-absorption due either to the intestinal disease or to the consequent pancreatitis. It does not seem possible to regard the case as proving the association between the ordinary case of cœliac disease and enteritis in the sense that the latter is the cause of the essential cœliac symptom of excessive fat-loss in the stools.

Moorhead's Case.

I have already stated that this is the first account of an autopsy published under the title of "Intestinal Infantilism," and that this term was invented by Herter, when he "rediscovered" cœliac disease, on the assumption that an enteritis was the primary cause of the fatty stools in his cases. In the present case, if we assume that the character of the stools was of the same fatty type throughout the illness (which the author does not actually state) it would appear that we have a most interesting example of infantilism arising from true cœliac disease. The only question then needing discussion is concerned with the author's view that the intestinal lesions found post mortem were the primary cause of the fatty diarrhœa.

Girl, aged 18 years, height 4 ft. 5 in., weight 3 st. 9 lb. She showed no secondary sexual characteristics. The history stated that at first healthy, she developed diarrhœa at the age of 5, and that this persisted and became so severe that at the age of 10 she ceased to grow. Under observation the motions were frequent, large, yellowish-white, and offensive; microscopically they showed large numbers of fatty acid crystals, a few undigested muscle fibres, and great quantities of the ova of *Trichocephalus dispar*. The abdomen was small, the liver and spleen palpable and slightly enlarged. The knee-jerks were absent. There was a trace of albumin in the urine. She suffered much from muscular cramps and attacks of tetany. She died of tetany and coma, following an apparently mild attack of influenza.

Autopsy.—The thymus was enlarged, the uterus atrophic, and the ovaries consisted of fibrous tissue only. The spleen, liver, pancreas, kidneys, and suprarenals were normal. The pituitary showed some changes thought to be secondary to inanition. "The small intestine showed marked post-mortem changes; the villi showed no structure and most of the surface portion of the mucosa had disappeared. Marked catarrh of the intestine was present, desquamated cells and mucus lay on the surface, and most of the cells of the glands showed goblet formation. The condition, in fact, was that which Herter surmised must exist." A microphotograph of the colon is reproduced.

Comment.—The author states that "the apparently primary pathological change in this case was catarrh of the colon, and probably also of the small intestine, and in consequence one may regard the case as one of undoubted intestinal infantilism." But it is not easy to accept this view. Clinically we have in this case, as I understand it, a fatty diarrhœa lasting for 13 years, and so severe as to produce a practical cessation of growth for eight years; post mortem there are found intestinal changes which are too acute and trivial in type to account for so chronic and severe a condition, and, moreover, they affect chiefly the colon, which has no part to play in fat-absorption. It is, I think, very much more plausible to regard the intestinal condition as not the primary cause of the fat-wastage, but as a secondary condition arising from result of the excess of fat in the intestinal contents and the infection by whip-worm.

If this view be accepted the origin of the excessive fat-loss in this case remains, as in my own, undiscovered by the post-mortem examination.

Conclusion.

A detailed consideration of these three autopsies in which intestinal lesions were found shows that they fail to prove that the excessive fat-loss in cœliac disease is due to an enteritis. This view is supported by other considerations. The excessive fat-loss in the stools is the essential and characteristic feature of cœliac disease. It is the first diagnostic symptom to appear, and is of severe grade (up to 57 per cent. of the fæces may consist of fat). It is altogether out of proportion to the disturbance in protein digestion. In all these features cœliac disease is unlike an enteritis.

The following recent case seems definitely to prove that the essential fault in fat-absorption is not merely the result of an enteritis.

G. W., female. At 2 years developed very offensive diarrhœa with enlargement of abdomen. Did not walk until 4. Ceased growing from 7 to 10. Then symptoms ceased and growth restarted. I first saw her at 10½ years, when she was 6 in. below normal height. For 11 months, during which she grew 1½ in., I watched her, awaiting a return of the diarrhœa. She was taking ordinary diet and no special medicine. As no further diarrhœa developed I had an analysis made of her fæces in order to test the reality of her "recovery." The stool was dark brown, formed, hard, and appeared normal. Nevertheless, when dried it was found to contain no less than 39·6 per cent. of fat (neutral fat, 7·0 per cent.; fatty acid, 28·3 per cent.; soaps, 64·7 per cent. of total fæcal fat). No excess of protein was found microscopically.

Again, so far as symptoms denoting enteritis are present they are usually late in the disease, as Still[14] observes. We do not in a typical cœliac case watch an enteritis becoming so severe as to cause conspicuous fat-loss in the stools; rather we seem to see a case essentially one of defective fat-digestion in which mild symptoms of intestinal catarrh may develop. That this is the generally accepted view is shown by usual treatment advised—namely, a fat-free diet.

On the other hand, the autopsy which I have reported here confirms the absence of organic disease which was emphasised by the original writers on the affection. If this be taken as a correct view, it follows that the defective fat-absorption in cœliac disease must be due to a fault of digestive secretions, either of the pancreatic juice or of the bile. Of these it is practically certain that the pancreas is not to blame,[1] and there is some evidence that the essential fault in cœliac disease is concerned with the bile-salts.

Summary.

1. Details have been given of a fatal case of cœliac infantilism in which post-mortem examination failed to show any chronic changes in the pancreas, liver, intestine, or elsewhere to account for the prolonged failure in fat-digestion.

2. The only autopsies hitherto recorded in cases of at all a similar nature have been discussed in detail; and it has been argued that the intestinal changes found in them do not prove that the excessive fat-loss in cœliac disease is due to an enteritis.

3. Other reasons against the view that cœliac disease is essentially an enteritis have been given.

4. From these arguments it is concluded that cœliac disease is independent of organic changes and thus must be due to a digestive fault (probably a defective action of the bile on fat-absorption).

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RECURRENT HERNIA:

THE OPERATIONS FOR ITS CURE.

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I HAVE operated recently on a number of cases of recurrent inguinal hernia, a few recurrent for the second time. The previous operations have been done in hospitals of various kinds—large civil hospitals, army hospitals, and smaller hospitals often described as "V.A.D.," "auxiliary," or "country house." It may be presumed that the experience of the operators varied considerably. The histories given by the patients suggest that in nearly all the cases the hernia was quite small at the original operation; the recurrence also has been, almost invariably, small. Several times I have diagnosed the "recurrence" wrongly as direct hernia. In only one case has there been evidence of wound infection; operators have been able to maintain asepsis and recurrence has not been due to weak post-suppuration scars. The original operation incisions have been short, not extending far out; the musculo-aponeurotic structures have shown evidence of repair, but the region of the "neck" of the sac has remained apparently virgin ground. The joining of the conjoint tendon to Poupart's ligament has been often shown by the "pegging" of muscular fibres into the ligament. The cord has in a few cases been superficial to this—i.e., a Bassini operation has been done, but much more frequently behind, in its normal position. In some cases possibly the tendon-ligament junction has given way and the cord has sunk back. In one case the vas alone was subcutaneous and might easily have been cut, the other structures of the cord being normally placed. In another a hydrocele of the cord was found, which appeared to be due to leaving the distal part of the sac. In another the original operation was for strangulated hernia. In some cases a direct hernia was present, although whether the original operation was for direct or indirect hernia it was impossible to say. In one case there was a double direct hernia. I have not seen direct evidence of ligation of the sac-neck, but sometimes there has been much scarring on the inside or outside of the sac. Neither have I seen gliding hernia or hernia demonstrable as being within the one horn left of an original bifid sac. It has often been puzzling or impossible to determine exactly what the original operation was. The matting of the parts frequently renders the operation difficult and tedious.

Causes of Recurrence.

The conclusions I have arrived at are: that in indirect hernia the usual cause of recurrence is non-removal of the deeper part of the sac; that an occasional cause may be a small sac not having been found; that other recurrences are those of direct herniæ; that in a few cases an original indirect hernia has been cured, but a direct hernia has been present at the original operation or has developed subsequently. I have seen a number of cases of recurrent hernia in which the patients, naturally disappointed, have refused further operation and asked for trusses.

There must be an enormous number of hernia operations; operators count their cases by hundreds, sometimes by thousands. No major operation is, I imagine, more frequently performed. The percentages of recurrences I do not know; recently working in two hospitals I have encountered a number; every hospital surgeon must be operating on them, so that the total number is great. The recurrence in my cases after an original operation for small hernia is to be noted; these should be the most successful cases.

What can be Done to Lessen the Number of Recurrences?

In the first place, it must be recognised that a well-performed hernia operation demands a high degree of technical knowledge and skill, and that no one should attempt it who has not been thoroughly trained by actual operative experience on the living body. I remember—almost with horror—many years ago being interviewed by a candidate for a certain hospital appointment, who most ingenuously said that he would like to have a "slap at a hernia"! Those of us with larger experience should recognise that the deepest part of the sac right down to the parietal peritoneum must be removed to effect a cure. Recurrences—particularly immediate—may be due to the treatment of an indirect and the overlooking of a direct hernia. Sometimes a hernia operation only reveals a very tiny indirect sac beneath the internal oblique margin, the class of sac which is frequently found incidentally in a very high operation for varicocele; the operator should then be especially careful not to miss a direct hernia.

The Operation for Recurrent Hernia.

In operating for recurrence, whether I think the hernia is indirect or direct, I always investigate both possibilities. I first seek for the sac in the region of the internal ring, as that is the easiest place to find it. After reaching the external oblique aponeurosis I incise it from the external ring for 3–4 inches and turn back the flaps. I then open the cord coverings close to where the internal oblique edge crosses over the cord and divide the internal oblique in the line of the canal outwards for about an inch, this being often done between two pairs of pressure forceps placed on the muscle, as there is an artery in the muscle which is thus conveniently controlled. A sac, if present, is found and the outermost part of its neck reached without any retraction. The sac is then followed down and isolated by splitting the coverings and dissecting them off. The sac is then opened and the finger passed inside and hooked round on the peritoneal surface and its point pushed forward against the peritoneum and transversalis fascia on the inner side of the deep epigastric vessels, thereby demonstrating a direct hernia if present and its size, and feeling the width of the gap between the conjoint tendon and Poupart's ligament. The appendix can now often be removed on the right side through the sac opening. Lipomata are removed. Where there is an indirect and no direct hernia the operation is continued by removing the sac flush with the parietal peritoneum (taking care to go deeper than any circular white thickening on its interior wall), and closing the peritoneal wound. Then the cut internal oblique and the coverings of the cord are sutured, the internal oblique and the conjoint tendon drawn down to Poupart's ligament as an additional safeguard, and the external oblique closed. The cord is as little interfered with as possible, and remains in its natural position.

The Bassini Operation.

Where there is a definite direct hernia, with or without an indirect, or where there is a large gap between conjoint tendon and Poupart's ligament, then, after treatment of any direct sac present as necessary, an operation of the Bassini type is performed, the cord eventually lying subcutaneous. I have sometimes found it necessary to put in a wire filigree lying on the transversalis fascia. I think the Bassini type of operation unnecessary in ordinary cases, the small herniæ which, nowadays, form the majority of cases operated on. Neither am I enamoured of the disturbance of the cord nor of its being placed between sutured planes or subcutaneously. Still, I think the operation should be that of choice for large musculo-aponeurotic weaknesses and for direct herniæ.

The operative procedures I have described are the ordinary ones I use for hernia. The division of the internal oblique I regard as essential in adults to get at the "neck" of the sac properly. It is not, however, necessary in babies, where the tiny overlap of this muscle can be ignored, and where the operation can be simplified to a complete removal of the sac in a way that has often been described.

An Illustrative Case.

I conclude with an illustrative case, selected because I made full notes of the operation immediately after its performance.

W. W. S., aged 36, formerly a private in the Labour Corps. A right hernia appeared in 1915 and increased in size until it became scrotal. Two years later he went into hospital for operation on it. Strangulation occurred there; immediate operation. Now there is a short linear scar over the external ring, with slight forward bulging beneath it. He is a fat man.

Operation March 21st, 1921. Long incision. The external ring was enlarged, with bulging below it, in which a few scattered cremaster fibres were seen. A small incision through this thin scar tissue opened an intimately adherent sac. The thin external oblique aponeurosis was incised for four inches and turned back, thereby disclosing a fat-overlaid internal oblique. The aponeurosis was scarred in its lower part. The internal oblique was cleared on its deep surface and divided for one and a half inches between two forceps; its section showed much fat intermingled with the muscle. The "sac" was then laid freely open and found to end blindly above and below, forming a large cyst without fluid in it, lined by shiny peritoneum, through which vas and veins could be seen. The cyst extended below into the upper part of the scrotum, but was separate from the tunica vaginalis; above it ended near the internal ring. Projecting into its upper end from the internal ring was the true sac, the size of a pigeon's egg, on the wall of which at its upper margin the cyst ended. Two layers of peritoneum had therefore to be gone through to reach the interior of the hernial sac. I cleared this sac near the ring, the rest of it being free, and continued the separation half an inch beyond the commencement of the parietal peritoneum, dividing deep to its neck a knot of scar tissue, probably the place where the strangulating stricture was divided. The sac had been opened during these manipulations; non-adherent omentum occupied it. The finger was passed within it and inwards, demonstrating that there was no direct hernia, and that the parietes were firm, the conjoint tendon coming close down to Poupart's ligament. The sac was removed and the peritoneal wound closed. The large cyst was removed. A large lipoma running along the cord was removed, being tied at the level of the peritoneal wound in two sections. The vas and other cord structures were freed and held aside. All fragments of cremaster, other coverings, and scar tissue were cleared off conjoint tendon and Poupart's ligament. The internal oblique and conjoint tendon were joined to Poupart's ligament, two stitches going external to the cord. The external oblique was closed. The cord was laid back and the subcutaneous fascia and skin united over it.

Comments.

At the operation for strangulation the external oblique was opened for an inch or more from the ring, the sac opened, the stricture divided, the contents reduced, and the wound closed, healing per primam. Adhesions closed the neck of this original sac and a second sac was invaginated into it from the top, originating either from the deepest part of the original sac beyond the closing adhesions or as a new sac. No "radical cure" was done. It is advisable that it should be done in operations for strangulation; usually there is no additional risk. The second operation shows that conditions present can best be elucidated by approaching the neck of the sac first. The Bassini type of operation was done although there was no great musculo-aponeurotic weakening because of the fatty condition of the muscles and the weak scar in the external oblique.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF NEUROLOGY AND OPHTHALMOLOGY.

Ocular Palsies.

Two evenings were set apart by these sections of the Royal Society of Medicine for a discussion on Ocular Palsies, at which the chair was occupied alternatively by Professor E. S. Reynolds and Dr. James Taylor.

Dr. Gordon Holmes opened the debate by a reasoned dissertation on the various forms of palsy met with in eye muscles and the anatomical situation of the causal lesions.

He recommended a careful study of the normal movements of the eyeball, and set out the associated palsies of the muscles which normally act together. An interesting point was the "unwillingness" of a patient with cerebellar disease to turn the eyes to the side of the lesion in performing conjugate deviation, which was met with in some cases of this disease, an important and new observation. Since he had been attached to the Moorfields Eye Hospital he had seen many cases of ocular palsy, and he was always conscious of difficulty in deciding what any case was likely to be due to. Only by a careful weighing of signs of associated disease could a presumptive diagnosis be arrived at. With regard to Graves's disease it was surprising to remember that not many years ago Dr. Hughlings Jackson and others regarded ocular palsies in association with Graves's disease as very exceptional. At Moorfields he (the speaker) saw a considerable number of these palsies in patients suffering from Graves's disease. He had no satisfactory explanation of the fact to offer, and one of the difficulties in determining the nature of ocular palsies was the paucity of careful histological work. In a considerable proportion of the cases of Graves's disease with ocular palsy there was but little proptosis, though he admitted that in some the muscular weakness was due to mechanical conditions. Wilbrand and Sänger stated that the ocular palsies in Graves's disease were usually due to nuclear degenerations. With regard to so-called rheumatic or toxic neuritis of oculo-motor nerves, he had seen a number of these cases, and there was a frequent involvement of the external rectus or of the muscles innervated by the third nerve, associated with pain in the forehead on the same side; sometimes there was considerable anæsthesia. In some of the cases of the kind he had encountered there was a septic focus in the vicinity. It was not yet known what a rheumatic neuritis was. Déjerine and others had found merely degenerative changes in some part of the nerve. It would be difficult to conceive of exposure to cold involving ocular nerves in their intracranial course. He did not feel that these cases were rheumatic nor purely toxic, because most toxic affections were bilateral, or at least more or less symmetrical, whereas most of the palsies were unilateral, or certainly asymmetrical. In the spinal cord local collections of cerebro-spinal fluid formed and compressed the roots of the nerves or the cord itself; similarly he thought loculated collections of cerebro-spinal fluid might form in the base of the brain and there involve one of the oculo-motor nerves. He had seen cases of chronic nuclear palsy. One had weakness and limitation of eye movements in all directions, with bilateral ptosis. The intrinsic muscles were intact. The ocular palsy in this case was associated with wasting of certain other groups of muscles, especially those at the shoulder girdle, of the progressive muscular atrophy type.

Complex Problems of Ætiology.

Mr. Leslie Paton spoke of the complexity of the subject. One disease alone, such as syphilis, could produce oculo-motor paralysis in numberless ways.

It might affect any part of the oculo-motor apparatus—cortical, supranuclear, nuclear, nerve roots, nerve trunks in their intracranial course, in the cavernous sinus, in the orbit, or it might affect the muscles themselves. Syphilis could set up disease of the vessels, and hæmorrhages might occur affecting the nuclei or the nerve roots; or a syphilitic arteritis in the internal carotid might press on nerve trunks in the wall of the cavernous sinus. Similarly an endarteritis might affect the vessels supplying the crura, the mid-brain, or the pons, and produce areas of softening. Or syphilis might give rise to tabes or general paralysis and to the variety of ocular disturbances arising in these diseases. Yet probably not more than 40 per cent. of cases of ophthalmoplegia were due to syphilis. Oculo-motor paralyses were divisible into three main groups: (1) Paralyses of central or cerebral origin. Subgroups of these were supranuclear lesions, internuclear lesions, nuclear, and nerve root lesions. (2) Paralyses of extra-cerebral origin—i.e., of nerve trunks, including intracranial and intraorbital cases. (3) Paralyses of muscular origin. He said the important internucleal set of fibres was in the posterior longitudinal bundle; it was by means of this bundle that the various oculo-motor nuclei were brought into connexion with each other and with the vestibular and auditory functions, also with the general, the muscular, the sense, and other afferent impulses in the body. The most important nucleus of origin of these fibres lay in Dieter's nucleus. The control of the internal musculature of the eye was a matter of considerable doubt. The vascular supply of the oculo-motor nuclei was derived from the anterior end of the basilar artery. Nuclear ophthalmoplegias, or ophthalmoplegias proper, could be subdivided into acute and chronic types. The first included the toxic form caused by alcohol. Wernicke's acute polio-encephalitis superior hæmorrhagica was the best example. Good examples of the infective type of acute ophthalmoplegia were found in lethargic encephalitis, influenza, and syphilis. But in some cases no infective agent could be found. The most important form of chronic progressive ophthalmoplegia was that occurring in tabes and general paralysis of the insane. Some ophthalmoplegias were of congenital origin, others were of a distinct familial type.

Rheumatic and other Toxi-infective Origin.

Dr. Wilfred Harris considered that cases of chronic nervous disease in which there was weakness of one internal rectus in lateral conjugate deviation were not very rare. He had seen the sixth nerve suffer after the injection of the Gasserian ganglion with alcohol. Recovery ensued after about four months. He asked for opinions as to the existence of rheumatic neuritis of the oculo-motor branches of the third or sixth nerve in the orbit. He described cases in which the symptoms seemed very suggestive of rheumatism as the cause.

Mr. Gray Clegg (Manchester) spoke of ophthalmoplegia in Graves's disease. He said that Osler and Macrae regarded the paralyses of ocular muscles occurring in Graves's disease as complications, rather than as part of the main disease. One authority, Suker, said a new ocular muscle symptom was present in a number of cases of Graves's disease—namely, "deficient complementary fixation in lateral eye rotations," he regarding it as due to a dissociation in the functions of the sympathetic and the extra oculomotor nerves of the eye.

Dr. Kinnier Wilson discussed the question of a possible unilateral cranial polyneuritis, which he regarded as one of considerable clinical importance. He described the case of a man severely ill with a general pneumococcal infection, showing itself as pleurisy and pneumonia, and who had complete paralysis of the seventh, eighth, ninth, tenth, eleventh, and twelfth cranial nerves, but on the right side only. There was no involvement of an ocular muscle or ocular nerve in that particular case, but he had seen analogous cases in which the sixth and seventh or the fifth, sixth, and seventh were involved, and saw no reason to doubt their toxi-infective origin.

Mr. N. Bishop Harman remarked on the comparative rarity of the kind of cases now under discussion. In a consecutive series of 5000 cases he found only 27 instances of ocular palsy—17 males, 10 females. Seven were due to injury, five to syphilis, five to general vascular disease or degeneration. Two cases in which the palsy followed exposure might be disputed by the neurologists, but in one of them there were clear manifestations of inflammation over the affected muscle, and both cleared up rapidly. Mr. Harman agreed that, apart from the cases of paralysis due to direct injury to the bones of the orbit and those ensuing on exposure, the occurrence of such a paralysis was a sign of serious general disease, but his own cases did not encourage the view that life was shortened thereby. He gave a careful analysis of his 27 cases. Discussing the treatment, he advocated countering the danger of diplopia by the wearing of one lens of ground glass. When the

lesion was peripheral he found blisters, faradism, and massage were effective local measures.

Progressive External Ophthalmoplegia.

Mr. M. L. **HINE** read a contribution by Mr. W. H. **MCMULLEN** and himself on Chronic Progressive Ophthalmoplegia Externa. Wilbrand and Sänger, in their textbook, grouped as a clinical entity certain cases of external ophthalmoplegia which they considered as having certain definite characteristics to distinguish them from the congenital cases of this affection and from those due to a defined toxic cause or to syphilis, or associated with manifestations of wider-spread disease of the nervous system. It was, however, by no means generally agreed that a separate classification of these was justified. The characteristics associated with them Wilbrand and Sänger gave as: (1) onset gradual, usually in infancy; (2) it is bilateral and very slowly progressive; (3) no other signs of nervous disorder or impaired health; (4) it might come to a standstill at any stage, but generally ended in complete external ophthalmoplegia.—Mr. **HINE** and Mr. **MCMULLEN** showed three patients whose condition illustrated their thesis.

Mr. M. S. **MAYOU** sent a brief description of two cases of paresis of the upward and downward movements of the eyes. The first definitely followed straining at stool. The pupils were active to light and lateral movement was unimpaired; he could converge. Vision was 6/12 in each eye, there was no optic neuritis, and the knee-jerks were present. Downward movement first improved, attempts at upward movement causing a coarse nystagmus. Wassermann was negative. Recovery was now practically complete. The second patient was suddenly seized with intense vertigo and diplopia. Vision was 6/6 in either eye, but the pupils were very sluggish, and he had no power of convergence. Wassermann was negative, knee-jerks present. No other nerve affection could be discovered. Both cases improved on iodide of potassium. In previously recorded cases the position of the lesion had been variously stated to be the optic thalamus, corpora quadrigemina, pons, and subcortical, but there seemed to have been no verification of this by autopsy.

Sixth Nerve Paralysis.

Mr. J. H. **FISHER**, referring to the suggestion that alcohol injections into the Gasserian ganglion sometimes caused sixth nerve paralysis, owing to damage of the nerve in the floor of the cavernous sinus, said he thought that was a rather improbable situation for such an event to take place. He knew of one case of sixth nerve paralysis in which the lesion was not there. The lesion in the cases referred to was not, he thought, in the cavernous sinus, but posterior to it.

Dr. **TAYLOR** said he had always felt somewhat sceptical about paralysis of ocular muscles being of so-called rheumatic origin. Seventh nerve paralysis was very common as a result of so-called rheumatic neuritis, but he had for years watched cases of ordinary seventh nerve paralysis without ever seeing sixth nerve paralysis associated with it. He had hoped to hear more allusion to cases of myasthenia gravis, as that was one of the common grounds on which neurologists and ophthalmologists met. A number of these cases had been referred to him by his colleagues at Moorfields. One of the most astonishing features about them was the great variability in their course, though some progressed steadily downwards. He referred also to a peculiar case in which a man with ocular palsies, double ptosis, &c., but with very little defect in limb movements, in whom the palsies were progressing downwards, so that later he could neither get about nor feed himself, developed an intense desire to return to his home in Hampshire. He went, and the next that was heard of him was in a letter written by himself, asking that the military authorities should be informed that he was not fit for service, as he had had myasthenia gravis.

The openers replied.

During the meeting Mr. J. H. Parsons was congratulated from the chair on his nomination for the Fellowship of the Royal Society.

SECTION OF ANÆSTHETICS.

AT a meeting of this section of the Royal Society of Medicine held on March 5th Dr. H. J. **SHIRLEY**, the President, in the chair, Dr. W. J. **MCCARDIE** read a paper on

Explosion of Ether Vapour During Laryngoscopy.

It occurred in a man of 56, who was given open ether to induce anæsthesia for laryngoscopy and removal of a piece of the vocal cord. For some minutes before the laryngoscope was introduced ether with oxygen was given through a nasal catheter in addition to ether from the mask. The mouth being opened, ether and oxygen still passing in through the nose, Mr. Musgrave Woodman began to introduce Hill's electric laryngoscope. It had not entered more than an inch when there were heard two or three loud reports like small pistol-shots, and flames issued from the patient's mouth. These were 5 or 6 inches high, and like those seen if a Winchester quart bottle of ether is set on fire. The nasal tube was at once pulled out and the flames quickly died. Anæsthesia was continued with chloroform and oxygen without trouble. There was no obvious burning, merely reddening of the mouth and pharynx, and the patient recovered normally and had no after cough. At the time of the explosion the room (temp. 65° F.) was lighted by two ½ watt bulbs and one Osram bulb under a shade 2½ feet away almost directly over the patient's head. The bulb of the laryngoscope light did not fuse, and the light appeared in order and there was no evidence of short-circuiting. No heat could be felt by the hand when the light was first switched on. The warm room, warm mouth, warm electric light, warm ether and oxygen, would all help towards the explosion. Ether vapour would take fire at a considerable distance from the source of heat. Dr. Squibb had related that he had seen ether take fire at a measured distance of 15 feet between the source of escaping vapour and the source of fire. Considering the absolute coincidence of the explosion with the introduction of the lamp, the cause must be found in the electric bulb of the laryngoscope.

Dr. McCardie related the only other recorded case of ignition of ether vapour in the presence of a closed electric light. Other instances of ether vapour ignition were brought forward by members of the section.

Mr. **RAYMOND APPERLY** read a paper on

The Importance of an Examination of Patients by the Anæsthetist Previous to the Administration of Anæsthetics.

The speaker pointed out that improvements in anæsthesia during the last 15 years had been not in the increased number of drugs at our disposal but in the variety of more scientific methods of administering them. This placed on the anæsthetist an increased responsibility in his choice of method. There was still room for improvement both in diminishing fatalities and in reducing after-effects, and one step towards this lay in thorough examination of patients some time before operation. The condition of the cardio-vascular, respiratory, and nervous systems could only be ascertained in this way, as well as the efficiency or otherwise of the kidneys. Previous examination too gave the anæsthetist time to think out the line of action best suited to the individual. Moreover, cumbersome or elaborate apparatus might be required, which would not be present unless the need for it had been appreciated beforehand. The examination was an advantage to the patient, who felt that nothing was being left to chance, to the anæsthetist who might glean important facts for his guidance, and to the surgeon who was able to rely on the anæsthetist's opinion as to the patient's ability to stand a prolonged operation. The physician, who seldom saw an operation, was not so well qualified a guide. The risks which a patient ran were not confined to serious operations. For minor ones they were often grave just because of the slightness of the operation leading to neglect of necessary precautions regarding the anæsthetic. In private practice patents in nursing homes were at hand and could be seen on the day before operation. In hospital practice there was routine examination by house officers and the anæsthetist was supplied with the information acquired. One class of patient, that which was admitted to the cancer department of the Middlesex Hospital, had especially emphasised for us the importance of preliminary examination. Mr. Apperly said that cachectic debilitated persons, often with secondary

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OCULAR PALSIES.

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Dr. **GORDON HOLMES** opened the debate by a reasoned dissertation on the various forms of palsy met with in eye muscles and the anatomical situation of the causal lesions.

He recommended a careful study of the normal movements of the eyeball, and set out the associated palsies of the muscles which normally act together. An interesting point was the "unwillingness" of a patient with cerebellar disease to turn the eyes to the side of the lesion in performing conjugate deviation, which was met with in some cases of this disease, an important and new observation. Since he had been attached to the Moorfields Eye Hospital he had seen many cases of ocular palsy, and he was always conscious of difficulty in deciding what any case was likely to be due to. Only by a careful weighing of signs of associated disease could a presumptive *diagnosis be arrived* at. With regard to Graves's disease it was surprising to remember that not many years ago Dr. Hughlings Jackson and others regarded ocular palsies in association with Graves's disease as very exceptional. At Moorfields he (the speaker) saw a considerable number of these palsies in patients suffering from Graves's disease. He had no satisfactory explanation of the fact to offer, and one of the difficulties in determining the nature of ocular palsies was the paucity of careful histological work. In a considerable proportion of the cases of Graves's disease with ocular palsy there was but little proptosis, though he admitted that in some the muscular weakness was due to mechanical conditions. Wilbrand and Sänger stated that the ocular palsies in Graves's disease were usually due to nuclear degenerations. With regard to so-called rheumatic or toxic neuritis of oculo-motor nerves, he had seen a number of these cases, and there was a frequent involvement of the external rectus or of the muscles innervated by the third nerve, associated with pain in the forehead on the same side; sometimes there was considerable anæsthesia. In some of the cases of the kind he had encountered there was a septic focus in the vicinity. It was not yet known what a rheumatic neuritis was. Déjerine and others had found merely degenerative changes in some part of the nerve. It would be difficult to conceive of exposure to cold involving ocular nerves in their intracranial course. He did not feel that these cases were rheumatic nor purely toxic, because most toxic affections were bilateral, or at least more or less symmetrical, whereas most of the palsies were unilateral, or certainly asymmetrical. In the spinal cord local collections of cerebro-spinal fluid formed and compressed the roots of the nerves or the cord itself; similarly he thought loculated collections *of* cerebro-spinal fluid might form in the base of the brain and there involve one of the oculo-motor nerves. He had seen cases of chronic nuclear palsy. One had weakness and limitation of eye movements in all directions, with bilateral ptosis. The intrinsic muscles were intact. The ocular palsy in this case was associated with wasting of certain other groups of muscles, especially *those* at the shoulder girdle, of the progressive muscular atrophy type.

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It might affect any part of the oculo-motor apparatus—cortical, supranuclear, nuclear, nerve roots, nerve trunks in their intracranial course, in the cavernous sinus, in the orbit, or it might affect the muscles themselves. Syphilis could set up disease of the vessels, and hæmorrhages might occur affecting the nuclei or the nerve roots; or a syphilitic arteritis in the internal carotid might press on nerve trunks in the wall of the cavernous sinus. Similarly an endarteritis might affect the vessels supplying the crura, the mid-brain, or the pons, and produce areas of softening. Or syphilis might give rise to tabes or general paralysis and to the variety of ocular disturbances arising in these diseases. Yet probably not more than 40 per cent. of cases of ophthalmoplegia were due to syphilis. Oculo-motor paralyses were divisible into three main groups: (1) Paralyses of central or cerebral origin. Subgroups of these were supranuclear lesions, internuclear lesions, nuclear, and nerve root lesions. (2) Paralyses of extra-cerebral origin—i.e., of nerve trunks, including intracranial and intraorbital cases. (3) Paralyses of muscular origin. He said the important internuclear set of fibres was in the posterior longitudinal bundle; it was by means of this bundle that the various oculo-motor nuclei were brought into connexion with each other and with the vestibular and auditory functions, also with the general, the muscular, the sense, and other afferent impulses in the body. The most important nucleus of origin of these fibres lay in Dieter's nucleus. The control of the internal musculature of the eye was a matter of considerable doubt. The vascular supply of the oculo-motor nuclei was derived from the anterior end of the basilar artery. Nuclear ophthalmoplegias, or ophthalmoplegias proper, could be subdivided into acute and chronic types. The first included the toxic form caused by alcohol. Wernicke's acute polio-encephalitis superior hæmorrhagica was the best example. Good examples of the infective type of acute ophthalmoplegia were found in lethargic encephalitis, influenza, and syphilis. But in some cases no infective agent could be found. The most important form of chronic progressive ophthalmoplegia was that occurring in tabes and general paralysis of the insane. Some ophthalmoplegias were of congenital origin, others were of a distinct familial type.

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The Importance of an Examination of Patients by the Anæsthetist Previous to the Administration of Anæsthetics.

The speaker pointed out that improvements in anæsthesia during the last 15 years had been not in the increased number of drugs at our disposal but in the variety of more scientific methods of administering them. This placed on the anæsthetist an increased responsibility in his choice of method. There was still room for improvement both in diminishing fatalities and in reducing after-effects, and one step towards this lay in thorough examination of patients some time before operation. The condition of the cardio-vascular, respiratory, and nervous systems could only be ascertained in this way, as well as the efficiency or otherwise of the kidneys. Previous examination too gave the anæsthetist time to think out the line of action best suited to the individual. Moreover, cumbersome or elaborate apparatus might be required, which would not be present unless the need for it had been appreciated beforehand. The examination was an advantage to the patient, who felt that nothing was being left to chance, to the anæsthetist who might glean important facts for his guidance, and to the surgeon who was able to rely on the anæsthetist's opinion as to the patient's ability to stand a prolonged operation. The physician, who seldom saw an operation, was not so well qualified a guide. The risks which a patient ran were not confined to serious operations. For minor ones they were often grave just because of the slightness of the operation leading to neglect of necessary precautions regarding the anæsthetic. In private practice patents in nursing homes were at hand and could be seen on the day before operation. In hospital practice there was routine examination by house officers and the anæsthetist was supplied with the information acquired. One class of patient, that which was admitted to the cancer department of the Middlesex Hospital, had especially emphasised for us the importance of preliminary examination. Mr. Apperly said that cachectic debilitated persons, often with secondary

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF NEUROLOGY AND OPHTHALMOLOGY.

OCULAR PALSIES.

Two evenings were set apart by these sections of the Royal Society of Medicine for a discussion on Ocular Palsies, at which the chair was occupied alternatively by Professor E. S. Reynolds and Dr. James Taylor.

Dr. Gordon Holmes opened the debate by a reasoned dissertation on the various forms of palsy met with in eye muscles and the anatomical situation of the causal lesions.

He recommended a careful study of the normal movements of the eyeball, and set out the associated palsies of the muscles which normally act together. An interesting point was the "unwillingness" of a patient with cerebellar disease to turn the eyes to the side of the lesion in performing conjugate deviation, which was met with in some cases of this disease, an important and new observation. Since he had been attached to the Moorfields Eye Hospital he had seen many cases of ocular palsy, and he was always conscious of difficulty in deciding what any case was likely to be due to. Only by a careful weighing of signs of associated disease could a presumptive diagnosis be arrived at. With regard to Graves's disease it was surprising to remember that not many years ago Dr. Hughlings Jackson and others regarded ocular palsies in association with Graves's disease as very exceptional. At Moorfields he (the speaker) saw a considerable number of these palsies in patients suffering from Graves's disease. He had no satisfactory explanation of the fact to offer, and one of the difficulties in determining the nature of ocular palsies was the paucity of careful histological work. In a considerable proportion of the cases of Graves's disease with ocular palsy there was but little proptosis, though he admitted that in some the muscular weakness was due to mechanical conditions. Wilbrand and Sänger stated that the ocular palsies in Graves's disease were usually due to nuclear degenerations. With regard to so-called rheumatic or toxic neuritis of oculo-motor nerves, he had seen a number of these cases, and there was a frequent involvement of the external rectus or of the muscles innervated by the third nerve, associated with pain in the forehead on the same side; sometimes there was considerable anæsthesia. In some of the cases of the kind he had encountered there was a septic focus in the vicinity. It was not yet known what a rheumatic neuritis was. Déjerine and others had found merely degenerative changes in some part of the nerve. It would be difficult to conceive of exposure to cold involving ocular nerves in their intracranial course. He did not feel that these cases were rheumatic nor purely toxic, because most toxic affections were bilateral, or at least more or less symmetrical, whereas most of the palsies were unilateral, or certainly asymmetrical. In the spinal cord local collections of cerebro-spinal fluid formed and compressed the roots of the nerves or the cord itself; similarly he thought loculated collections of cerebro-spinal fluid might form in the base of the brain and there involve one of the oculo-motor nerves. He had seen cases of chronic nuclear palsy. One had weakness and limitation of eye movements in all directions, with bilateral ptosis. The intrinsic muscles were intact. The ocular palsy in this case was associated with wasting of certain other groups of muscles, especially those at the shoulder girdle, of the progressive muscular atrophy type.

Complex Problems of Ætiology.

Mr. Leslie Paton spoke of the complexity of the subject. One disease alone, such as syphilis, could produce oculo-motor paralysis in numberless ways.

It might affect any part of the oculo-motor apparatus—cortical, supranuclear, nuclear, nerve roots, nerve trunks in their intracranial course, in the cavernous sinus, in the orbit, or it might affect the muscles themselves. Syphilis could set up disease of the vessels, and hæmorrhages might occur affecting the nuclei or the nerve roots; or a syphilitic arteritis in the internal carotid might press on nerve trunks in the wall of the cavernous sinus. Similarly an endarteritis might affect the vessels supplying the crura, the mid-brain, or the pons, and produce areas of softening. Or syphilis might give rise to tabes or general paralysis and to the variety of ocular disturbances arising in these diseases. Yet probably not more than 40 per cent. of cases of ophthalmoplegia were due to syphilis. Oculo-motor paralyses were divisible into three main groups: (1) Paralyses of central or cerebral origin. Subgroups of these were supranuclear lesions, internuclear lesions, nuclear, and nerve root lesions. (2) Paralyses of extra-cerebral origin—i.e., of nerve trunks, including intracranial and intraorbital cases. (3) Paralyses of muscular origin. He said the important internucleal set of fibres was in the posterior longitudinal bundle; it was by means of this bundle that the various oculo-motor nuclei were brought into connexion with each other and with the vestibular and auditory functions, also with the general, the muscular, the sense, and other afferent impulses in the body. The most important nucleus of origin of these fibres lay in Dieter's nucleus. The control of the internal musculature of the eye was a matter of considerable doubt. The vascular supply of the oculo-motor nuclei was derived from the anterior end of the basilar artery. Nuclear ophthalmoplegias, or ophthalmoplegias proper, could be subdivided into acute and chronic types. The first included the toxic form caused by alcohol. Wernicke's acute polio-encephalitis superior hæmorrhagica was the best example. Good examples of the infective type of acute ophthalmoplegia were found in lethargic encephalitis, influenza, and syphilis. But in some cases no infective agent could be found. The most important form of chronic progressive ophthalmoplegia was that occurring in tabes and general paralysis of the insane. Some ophthalmoplegias were of congenital origin, others were of a distinct familial type.

Rheumatic and other Toxi-infective Origin.

Dr. Wilfred Harris considered that cases of chronic nervous disease in which there was weakness of one internal rectus in lateral conjugate deviation were not very rare. He had seen the sixth nerve suffer after the injection of the Gasserian ganglion with alcohol. Recovery ensued after about four months. He asked for opinions as to the existence of rheumatic neuritis of the oculo-motor branches of the third or sixth nerve in the orbit. He described cases in which the symptoms seemed very suggestive of rheumatism as the cause.

Mr. Gray Clegg (Manchester) spoke of ophthalmoplegia in Graves's disease. He said that Osler and Macrae regarded the paralyses of ocular muscles occurring in Graves's disease as complications, rather than as part of the main disease. One authority, Suker, said a new ocular muscle symptom was present in a number of cases of Graves's disease—namely, "deficient complementary fixation in lateral eye rotations," he regarding it as due to a dissociation in the functions of the sympathetic and the extra oculomotor nerves of the eye.

Dr. Kinnier Wilson discussed the question of a possible unilateral cranial polyneuritis, which he regarded as one of considerable clinical importance. He described the case of a man severely ill with a general pneumococcal infection, showing itself as pleurisy and pneumonia, and who had complete paralysis of the seventh, eighth, ninth, tenth, eleventh, and twelfth cranial nerves, but on the right side only. There was no involvement of an ocular muscle or ocular nerve in that particular case, but he had seen analogous cases in which the sixth and seventh or the fifth, sixth, and seventh were involved, and saw no reason to doubt their toxi-infective origin.

Mr. N. Bishop Harman remarked on the comparative rarity of the kind of cases now under discussion. In a consecutive series of 5000 cases he found only 27 instances of ocular palsy—17 males, 10 females. Seven were due to injury, five to syphilis, five to general vascular disease or degeneration. Two cases in which the palsy followed exposure might be disputed by the neurologists, but in one of them there were clear manifestations of inflammation over the affected muscle, and both cleared up rapidly. Mr. Harman agreed that, apart from the cases of paralysis due to direct injury to the bones of the orbit and those ensuing on exposure, the occurrence of such a paralysis was a sign of serious general disease, but his own cases did not encourage the view that life was shortened thereby. He gave a careful analysis of his 27 cases. Discussing the treatment, he advocated countering the danger of diplopia by the wearing of one lens of ground glass. When the

lesion was peripheral he found blisters, faradism, and massage were effective local measures.

Progressive External Ophthalmoplegia.

Mr. M. L. HINE read a contribution by Mr. W. H. MCMULLEN and himself on Chronic Progressive Ophthalmoplegia Externa. Wilbrand and Sänger, in their textbook, grouped as a clinical entity certain cases of external ophthalmoplegia which they considered as having certain definite characteristics to distinguish them from the congenital cases of this affection and from those due to a defined toxic cause or to syphilis, or associated with manifestations of wider-spread disease of the nervous system. It was, however, by no means generally agreed that a separate classification of these was justified. The characteristics associated with them Wilbrand and Sänger gave as: (1) onset gradual, usually in infancy; (2) it is bilateral and very slowly progressive; (3) no other signs of nervous disorder or impaired health; (4) it might come to a standstill at any stage, but generally ended in complete external ophthalmoplegia.—Mr. HINE and Mr. MCMULLEN showed three patients whose condition illustrated their thesis.

Mr. M. S. MAYOU sent a brief description of two cases of paresis of the upward and downward movements of the eyes. The first definitely followed straining at stool. The pupils were active to light and lateral movement was unimpaired; he could converge. Vision was 6/12 in each eye, there was no optic neuritis, and the knee-jerks were present. Downward movement first improved, attempts at upward movement causing a coarse nystagmus. Wassermann was negative. Recovery was now practically complete. The second patient was suddenly seized with intense vertigo and diplopia. Vision was 6/6 in either eye, but the pupils were very sluggish, and he had no power of convergence. Wassermann was negative, knee-jerks present. No other nerve affection could be discovered. Both cases improved on iodide of potassium. In previously recorded cases the position of the lesion had been variously stated to be the optic thalamus, corpora quadrigemina, pons, and subcortical, but there seemed to have been no verification of this by autopsy.

Sixth Nerve Paralysis.

Mr. J. H. FISHER, referring to the suggestion that alcohol injections into the Gasserian ganglion sometimes caused sixth nerve paralysis, owing to damage of the nerve in the floor of the cavernous sinus, said he thought that was a rather improbable situation for such an event to take place. He knew of one case of sixth nerve paralysis in which the lesion was not there. The lesion in the cases referred to was not, he thought, in the cavernous sinus, but posterior to it.

Dr. TAYLOR said he had always felt somewhat sceptical about paralysis of ocular muscles being of so-called rheumatic origin. Seventh nerve paralysis was very common as a result of so-called rheumatic neuritis, but he had for years watched cases of ordinary seventh nerve paralysis without ever seeing sixth nerve paralysis associated with it. He had hoped to hear more allusion to cases of myasthenia gravis, as that was one of the common grounds on which neurologists and ophthalmologists met. A number of these cases had been referred to him by his colleagues at Moorfields. One of the most astonishing features about them was the great variability in their course, though some progressed steadily downwards. He referred also to a peculiar case in which a man with ocular palsies, double ptosis, &c., but with very little defect in limb movements, in whom the palsies were progressing downwards, so that later he could neither get about nor feed himself, developed an intense desire to return to his home in Hampshire. He went, and the next that was heard of him was in a letter written by himself, asking that the military authorities should be informed that he was not fit for service, as he had had myasthenia gravis.

The openers replied.

During the meeting Mr. J. H. Parsons was congratulated from the chair on his nomination for the Fellowship of the Royal Society.

SECTION OF ANÆSTHETICS.

AT a meeting of this section of the Royal Society of Medicine held on March 5th Dr. H. J. SHIRLEY, the President, in the chair, Dr. W. J. MCCARDIE read a paper on

Explosion of Ether Vapour During Laryngoscopy.

It occurred in a man of 56, who was given open ether to induce anæsthesia for laryngoscopy and removal of a piece of the vocal cord. For some minutes before the laryngoscope was introduced ether with oxygen was given through a nasal catheter in addition to ether from the mask. The mouth being opened, ether and oxygen still passing in through the nose, Mr. Musgrave Woodman began to introduce Hill's electric laryngoscope. It had not entered more than an inch when there were heard two or three loud reports like small pistol-shots, and flames issued from the patient's mouth. These were 5 or 6 inches high, and like those seen if a Winchester quart bottle of ether is set on fire. The nasal tube was at once pulled out and the flames quickly died. Anæsthesia was continued with chloroform and oxygen without trouble. There was no obvious burning, merely reddening of the mouth and pharynx, and the patient recovered normally and had no after cough. At the time of the explosion the room (temp. 65° F.) was lighted by two ½ watt bulbs and one Osram bulb under a shade 2½ feet away almost directly over the patient's head. The bulb of the laryngoscope light did not fuse, and the light appeared in order and there was no evidence of short-circuiting. No heat could be felt by the hand when the light was first switched on. The warm room, warm mouth, warm electric light, warm ether and oxygen, would all help towards the explosion. Ether vapour would take fire at a considerable distance from the source of heat. Dr. Squibb had related that he had seen ether take fire at a measured distance of 15 feet between the source of escaping vapour and the source of fire. Considering the absolute coincidence of the explosion with the introduction of the lamp, the cause must be found in the electric bulb of the laryngoscope.

Dr. McCardie related the only other recorded case of ignition of ether vapour in the presence of a closed electric light. Other instances of ether vapour ignition were brought forward by members of the section.

Mr. RAYMOND APPERLY read a paper on

The Importance of an Examination of Patients by the Anæsthetist Previous to the Administration of Anæsthetics.

The speaker pointed out that improvements in anæsthesia during the last 15 years had been not in the increased number of drugs at our disposal but in the variety of more scientific methods of administering them. This placed on the anæsthetist an increased responsibility in his choice of method. There was still room for improvement both in diminishing fatalities and in reducing after-effects, and one step towards this lay in thorough examination of patients some time before operation. The condition of the cardio-vascular, respiratory, and nervous systems could only be ascertained in this way, as well as the efficiency or otherwise of the kidneys. Previous examination too gave the anæsthetist time to think out the line of action best suited to the individual. Moreover, cumbersome or elaborate apparatus might be required, which would not be present unless the need for it had been appreciated beforehand. The examination was an advantage to the patient, who felt that nothing was being left to chance, to the anæsthetist who might glean important facts for his guidance, and to the surgeon who was able to rely on the anæsthetist's opinion as to the patient's ability to stand a prolonged operation. The physician, who seldom saw an operation, was not so well qualified a guide. The risks which a patient ran were not confined to serious operations. For minor ones they were often grave just because of the slightness of the operation leading to neglect of necessary precautions regarding the anæsthetic. In private practice patents in nursing homes were at hand and could be seen on the day before operation. In hospital practice there was routine examination by house officers and the anæsthetist was supplied with the information acquired. One class of patient, that which was admitted to the cancer department of the Middlesex Hospital, had especially emphasised for us the importance of preliminary examination. Mr. Apperly said that cachectic debilitated persons, often with secondary

growths in mediastinum or pleura and obstructed air-passages, make one extremely cautious in examination before deciding to give an anæsthetic. He related cases illustrative of his argument.

The Purification of Anæsthetics: A New Preparation.

At a meeting held on April 1st Dr. R. L. MACKENZIE WALLIS and Mr. C. LANGTON HEWER read a paper entitled "A New General Anæsthetic, its Theory and Practice." The first part of the paper, dealing with the theory upon which the anæsthetic was based, was given by Dr. Mackenzie Wallis. The development of the subject was given in detail and the various steps which led up to the final stage in production. The speaker referred to his work on the impurities in anæsthetics, especially those which exist in a preformed state. The impurities which develop as a result of oxidation on standing were also described. One of the chief and most objectionable impurities in anæsthetics appeared to be the mercaptans and other organic compounds containing sulphur. The removal of these compounds was beset with many difficulties, but was ultimately overcome by the use of finely divided permanganate. This reagent absorbs the mercaptans from ether, and after distillation the distillate is found to be free from them. It was soon found, however, that such highly purified ether had lost its anæsthetic properties. The gases carbon dioxide and ethylene as devised by Dr. Cotton in America were passed into this ether, but still the desired result was not obtained. After a laborious and concentrated search it was found that the higher ketones were responsible for the anæsthetic action, and for the retention of the gases in the ether. As a result of these experiments the preparation of an anæsthetic was devised. On account of the quantity available, and also from the question of cost, pure ether was used as the vehicle. This pure ether could be made quite easily from ordinary methylated ether by means of permanganate and anhydrous copper sulphate. Into this pure ether, which possessed no anæsthetic properties, the gases carbon dioxide and ethylene were introduced along with the ketones. The exact ketone, or combination of ketones could not be determined, but this phase of the subject is now being pursued. The resulting product has a slightly sweet smell, and is practically odourless. It appears to keep better than ordinary ether, or even pure ether. The carbon dioxide in the ether appears to exert a stabilising action and is material in that it assists in the formation of the anæsthetic complex. It is possible that any non-volatile solvent may be used, but pure ether appears to be the best vehicle so far discovered. The anæsthetic prepared in this way has been tried on a large number of cases by Mr. Langton Hewer, and all of this was made by the speaker. It was, however, found to be impossible to cope with the demand, and so recently its manufacture has been taken up by a well-known chemical firm, and they have given their preparation the name of "Ethanesal."

The results of the application of this anæsthetic in surgery were given in the second part of this paper by Mr. Langton Hewer.

SECTION OF OTOLOGY.

A MEETING of this section of the Royal Society of Medicine was held on March 18th. Sir CHARLES BALLANCE, President of the section, being in the chair.

Pathological Demonstration.

Dr. ALBERT GRAY (Glasgow) gave, by means of the epidiascope, a minute demonstration of the conditions found in two cases of acute septic meningitis, contrasting the appearances with those found in the chronic disease.—The PRESIDENT expressed the gratitude of the section for the exhibit, and members discussed the path of infection.

Ears Under Modern War Conditions.

Papers on this subject were read by Mr. JEFFERSON FAULDER and Mr. LIONEL COLLEDGE, both based upon their experiences near the front line during the war.

Mr. FAULDER said that, especially in the excitement of the early days of the war, the examination of ears was not made easy by the conditions under which the recruiting medical officers did their work, and only high degrees of deafness or gross disease appeared on the medical history sheets. Contrary to expectation, the degree of concussion caused by firing a gun did not bear a direct relation to the gun's calibre. It was necessary to draw a distinction between the effects of the firing of these weapons and the effects of the explosion of their projectiles; the former was a complex process, whereas the effect of the latter was intensely disruptive and had a cumulative result on the ear. During 20 years' service with artillery he had never seen an ear-drum ruptured by the firing of a gun, except when the gunner inadvertently got too near the muzzle. He had seen many cases of hæmorrhage (in most cases slight) from the ears. Trauma of the drum should not be diagnosed solely on the presence of blood in the meatus. Men with damaged ears, which had left cicatrices, were found to have suffered less from war conditions than did those with normal ears. The men, as a rule, objected to plugs in the ears; he used nothing beyond wool moistened with paraffin or glycerine. A common phenomenon observed during the war was hyperæsthesia (as distinct from psychological nervousness), so that after a time the ordinary sounds and noises of life became painful. This appeared to have no relation to the presence of actual deafness. During the recent war he had seen only three certain cases of rupture of the drum; two of the men had other injuries also. In all three the drum was torn into strips, and in one no malleus could be seen. Deafness, nystagmus, and tinnitus were present in all when investigation could be made, and two had a staggering gait; the injuries of the third prevented walking. He discussed the condensation and rarefaction pressure agencies in the production of actual tympanic rupture by explosions.

Mr. COLLEDGE said his observations were made from a less perilous position. Of 456 ear cases he saw, 66 were in gunners. He divided his cases into (1) those in whom the deafness was progressive through continual gun-fire; (2) cases in which the condition followed proximity to one explosion. Those in the second class recovered much the more rapidly; in some of these the membrane was dotted over by punctate hæmorrhages. Genuine primary rupture of the normal tympanic membrance was not very common; many cases diagnosed as such were instances of old perforation. In cases of simple torn membrane the prognosis was good. Actual malingering was uncommon in regard to deafness during the war, but he had some clear instances, and he detailed the tests by which deception was discovered.

Device for Tuning-fork Testing.

Mr. E. A. PETERS and Mr. R. LAKE exhibited a device for attachment to tuning-forks when testing bone-conduction. The greater the pressure on the bone the longer the vibrations of the fork were heard by the patient, and this arrangement ensured the continuance of a certain known pressure. When the pressure was 8 ounces, the fork was heard by the normal person 29 seconds; when it was 16 ounces the sound was heard 8 to 10 seconds longer.

Lateral Sinus Thrombosis without Otorrhœa.

Mr. W. M. MOLLISON showed two cases of this condition. The first was that of a young woman, aged 20, who, three weeks before being seen, had pharyngitis. During the past fortnight she had had left earache and deafness, but no pus had come from the ear. On several occasions the temperature rose to 104° F., but there were no rigors. The left membrane was found to be dull and irregular, and there was tenderness over the mastoid and neck. At the operation granulations were found in the antrum, which led backwards and upwards to the lateral sinus, on the wall of which there was pus. The internal jugular was ligatured. As the temperature continued high a further operation was done two days later, when the sinus was found to be thrombosed 1½ inches further back. The patient recovered. The second case was that of a boy, aged 17, who ten days ago commenced to complain of earache, and the temperature rose until it reached 104° F. Mr. E. W. Sheaf operated and found pus in the mastoid. As the temperature still remained high and the boy looked very ill the wound was reopened by Mr. Mollison and the sinus exposed, when an extra-dural abscess was discovered. Treatment of this brought about recovery.

Mr. G. W. DAWSON and Mr. SYDNEY SCOTT related similar cases in their own practice. Mr. Scott thought such cases occurred oftener than was generally supposed. The discussion was also carried on by Sir WILLIAM MILLIGAN, Mr. E. M. WOODMAN, Mr. W. STUART-LOW, and others. The PRESIDENT referred to cases which healed in one direction and extended in the other. Mr. F. J. CLEMINSON referred to the case of a boy who came with fluctuating disease over the right mastoid, but who had good hearing and a perfect drum. An abscess was found at the operation leading down to a fistula over the lateral sinus. The sinus and the remainder of the mastoid process were healthy. Culture tests were negative. He considered it must have been a localised tuberculous osteomyelitis.

SECTION OF LARYNGOLOGY.

EXHIBITION OF CASES AND SPECIMENS.

A MEETING of this section of the Royal Society of Medicine was held on April 1st, Dr. W. JOBSON HORNE, the President, being in the chair.

A Case of Pharyngeal Pouch in 1760.

Mr. ARCHER RYLAND showed, by means of the epidiascope, illustrations of a case of pharyngeal pouch which was investigated and reported upon 160 years ago. The case was fully and frankly reported, and was followed through to the post-mortem room. There was a definite association with the lodgment of a foreign body: the patient swallowed a cherry stone. The pouch appeared to have originated from the lower part of the pharynx, opposite the cricoid. The authors of the description seemed to have satisfied themselves that the whole thickness of the pharyngeal wall was represented in the wall of the pouch. The man, aged 60, was unable to pass food into the stomach. Five years before the acute difficulty he had swallowed a cherry stone, which had remained in the pharynx three days before being coughed up. The proportion of a meal which was injected became gradually larger. The use successively of a probang, a bullet strung on silk, catheters, &c., having failed, half a pound of quicksilver was given in one quantity. Death occurred 13 days after the first attempt. At the autopsy there was found a considerable muscular bag between the œsophagus and the vertebræ, and it was thought that during the three days of its retention the cherry stone must have been forced in between the irregular folds which abound in the lower part of the pharynx, and the food taken thereafter was forced into the cavity so formed. It was afterwards agreed that nothing worse than the quicksilver could have been used.

Dr. WILLIAM HILL doubted whether the pouching included all the structures of the pharyngeal wall; neither did he feel convinced that the diverticulum was a direct result of swallowing the cherry stone and getting an impaction. Probably the stricture existed before, and as it became smaller it succeeded in holding a foreign body up, so that the foreign body was only an incident in the case.—Lieutenant-Colonel MYERS narrated a case in which the frequent passage of a stomach-tube to carry out lavage resulted in the formation of an œsophageal pouch. The present state of affairs was that two-thirds of each meal was ejected.

Lateral Nasal Proboscis.

Mr. PHILIP FRANKLIN showed a case of this condition in a male child, and exhibited by the epidiascope, illustrations of cyclops and demicyclops. Demicyclops was due to an early fusion of the maxillary process to the exclusion of the mesial and lateral nasal processes of the affected side. This accounted for the absence of a premaxillary bone, which developed from the mesial nasal process. In true cyclops, he said, the orbital and nasal cavities, the eye and the optic nerve were fused into one. The eye of this child should be removed with the appendage, so as to avoid a fistula, and obviate lacrymation. In three cases examined there was no trace of the olfactory nerve. He expressed his intention of having an examination made of the secretion from the proboscis.

Large Dental Cyst.—Retention Cyst of Nostril Floor.

Mr. G. W. DAWSON showed a woman, aged 44, who for 25 years had had a painless hard swelling in the left cheek; she also had local neuritis and occipital pain. When seen the floor of the left nostril was bulged upwards, and that side was dark on transillumination. A cyst was found full of thick purulent matter. Its entire outer wall was removed.—Mr. W. STUART-LOW discouraged packing and syringing the cavity, and recommended swabbing with chloride of zinc of increasing strength.—Dr. DAN MCKENZIE referred to the plan of closing such a cavity by a plastic flap taken from the inner surface of the cheek. He suggested the making of a communication between the present cavity and the antrum, so that drainage could be carried on through the nose.

Mr. DAWSON also brought a girl, aged 23, who last year had a retention cyst of the right nostril, which was removed. She now had a similar formation on the floor of the left nostril, and complained of pain on the left side of the head, and aching on the bridge of the nose.

Tumour of Supra-tonsillar Fossa.

Mr. C. W. M. HOPE showed a patient with a tumour growing from the right supra-tonsillar fossa region, which members who spoke on it considered to be a mere overgrowth of the tonsil itself, consisting of ordinary lymphatic tissue. Mr. Hope expressed his intention of removing it with the tonsil.

Scarlatinal Scarring of Pharynx.

Dr. DAN MCKENZIE exhibited a middle-aged woman whose uvula was shifted on to the right side of the palate by old cicatricial contraction. Wassermann was negative. The condition was probably a sequel of the ulceration, which occurred during acute scarlatina at 5 years of age.

Bilateral Abductor Paresis of Vocal Cords.

Mr. M. VLASTO showed a man, aged 64, with this condition. He had had hoarseness and difficulty of breathing 20 years. Wassermann had been positive, and in 1916 he had a course of injections. He was now worse, and had breathlessness on exertion and inspiratory stridor.—Sir STCLAIR THOMSON regarded the case as one of syphilitic peripheral neuritis, but said that in 20 to 30 per cent. of the published cases the cause of the paralysis could not be definitely determined. He advised prompt tracheotomy owing to the danger of sudden death due to back pressure on her heart. He related a similar case in which this was the end.—Professor F. HOBDAY, speaking from a large veterinary experience, advocated the ventricle-stripping operation for such cases in the human subject, as he had done many times on horses which were afflicted with "roaring." Instead of doing tracheotomy, the lining membrane of the ventricle was stripped behind the paralysed vocal cord. The result in the horse was a permanent success. He quoted cases.

Sore-throat, with Excessive Mucous Secretion.

Mr. JEFFERSON FAULDER showed a man, aged 64, who for the last 12 months had had a sore-throat and excessive secretion of mucus, with an alteration in his voice. Dyspnœa was at times severe, but he had no dysphagia. Wassermann was negative. On the right half of the larynx there was an irregular growth, which might be intrinsic cancer advancing towards the hypopharynx. This view Mr. J. F. O'MALLEY expressed his agreement with. Sir JAMES DUNDAS-GRANT, however, in the absence of pain on swallowing, did not think it was malignant, especially as the voice was well preserved. Sir STCLAIR THOMSON did not regard it as cancerous, and said the case reminded him of one of fatty tumour. He counselled removal by the direct method and a microscopical examination. The PRESIDENT thought the free movement of the cord and the lack of evidence of infiltration were against the condition being malignant.

SOCIETY OF MEDICAL OFFICERS OF HEALTH:

TUBERCULOSIS GROUP.

HOSPITAL TREATMENT OF ACUTE AND ADVANCED PULMONARY TUBERCULOSIS.

AN ordinary general meeting of this group was held at the house of the society, 1, Upper Montague-street, W.C., on April 1st, Dr. **HENRY A. ELLIS** in the chair, when a paper was delivered by Dr. **H. HYSLOP THOMSON**, M.O.H., county of Hertford, on this subject.

Dr. Thomson said: The question of the treatment of tuberculosis may be regarded from two points of view—that of the soil and that of the seed. Hospital treatment has for its aim to eliminate the bacillus. One cannot but be impressed with the limitations of our knowledge with respect to tuberculosis, and reference must be made to certain questions regarding the ætiology of the disease, since the chief aim of hospital treatment is to secure the segregation of those individuals who are expelling the bacilli in vast numbers.

The Origin of the Bacillus.

Whence does the bacillus come? Two sources of origin have been discussed—(1) the bacillus is derived from a pre-existing case of the disease, or (2) it may arise by *transmutation from some non-pathogenic type* of organism. There are those who hold that evolution may be at work with the tubercle bacillus as with other forms of life, subjecting it to the influence of the forces of natural selection and the survival of the fittest, that we only know it in its parasitic phase and that the disease is practically unknown in natural conditions of life. The bearing of the problem on the question of hospital treatment is that if the chief source of origin of the bacillus is the sputum from a case of the disease, then the provision of adequate hospital accommodation will lead in time to its elimination as a pathogenic organism, whereas if the supply be renewed by transmutation of a non-pathogenic organism, then unless the conditions which give rise to this transformation are modified or changed, elimination will become impossible. The disappearance of leprosy in the Middle Ages was due not only to the provision of adequate accommodation for the patients, but also to the fact that altered conditions of living led to modifications in the virulence of the organism which caused the disease.

Fourfold Aims of Hospital Treatment.

Too much attention has been paid in the past to institutional treatment of tuberculosis other than hospital, which should form the foundation of all treatment. Its aims are fourfold: to secure the segregation of advanced cases; provide conservative and curative measures; provide facilities for the diagnosis of doubtful cases and measures of relief for the hopelessly diseased. Segregation in advanced cases is necessary because, owing to increasing weakness, the patient becomes unable to expel his sputum properly and is liable for that reason to contaminate his clothes and other things. Koch himself expressed the opinion that the fall in the death-rate from tuberculosis in England was due largely to the provision made in infirmaries for the segregation of the advanced cases of the disease. But many cases of tuberculosis begin with acute symptoms when the most important thing required is rest in bed, and this can only be carried out satisfactorily in a well-equipped hospital, as also certain specific methods of treatment—e.g., artificial pneumothorax. A number of beds should be set aside for observation cases, since there are numerous instances of patients who have been diagnosed as suffering from tuberculosis in whom the diagnosis has not been confirmed. It is unfortunate that the line of least resistance is for the tuberculosis officer to make a positive diagnosis. Palliative treatment of advanced cases can be much more efficiently carried out in hospital than at home under unsatisfactory and often unhygienic conditions. Borderland cases and those where there is doubt as to the best method of treatment should be admitted to hospital for observation. Perhaps the most difficult cases of all to deal with would be those of the advanced ambulant type, who are unable to work, and, if admitted to hospital for an indefinite period, would make heavy demands on the available accommodation. This difficulty might, at least partially, be got over by admitting them for short terms at intervals. Treatment, however provided, must be efficient, economical, and have regard to the psychology of the patient.

In addition to the special hospital it has been suggested that a special hospital block should be provided in every sanatorium, and that the patients should be distributed in separate homes, which would be a solution of the question not only unsatisfactory but costly. One or two special institutions, the number varying according to the needs of the population in which they are placed, would be the ideal to aim at, although the problem is not an easy one to solve in regard to small areas. At present the advanced case is refused admittance into a general hospital, but the advanced case is surely entitled to treatment, and this can only be provided in a special institution. No doubt difficulties would arise with regard to the distance to which patients and their friends might have to travel and to the depressing effects which the death of one patient might have on the others, but, whatever the disadvantages, they would be far outweighed by the advantages which would accrue from the best of nursing and attention and treatment. And together with this higher standard of treatment would go economy of structure and administration. Four or five beds to each 1000 of the population would suffice. The lecturer concluded by stating his opinion that rest is the one great essential in the treatment of tuberculosis, and that nowhere can this be more effectively carried out than in a special hospital.

A discussion followed the reading of the paper in which Drs. **H. A. ELLIS**, **C. ROLLESTON**, **CAMPBELL McCLURE**, **G. MACDONALD**, **J. SORLEY**, and others took part, and a very hearty vote of thanks was awarded to Dr. Thomson for his paper.

LIVERPOOL MEDICAL INSTITUTION.

AT a meeting of this society held on March 31st, Mr. **THURSTAN HOLLAND**, Vice-President, in the chair, Mr. **BLAIR BELL** discussed the

Indications for Blood Transfusion,

giving illustrative cases. He divided the conditions for which blood transfusion is required into three main groups, with various subdivisions in each.

Group A contained those cases in which there is loss of all the constituents of the blood from an acute large hæmorrhage, of the solid constituents occurring in chronic limited hæmorrhages, or of much fluid, as in cases of shock.

Group B contained those cases in which there is absent from the blood some constituent present in normal circumstances, or one usually formed in response to specific stimulation. In this group are such conditions as hæmophilia, in which disease operations may safely be performed immediately after blood transfusion. Included also are cases of eclampsia when a chemical antibody to placental toxin is believed to be absent from the blood, and acute and chronic infections in which the patient's own bacterial antibodies are insufficient.

Group C contained those diseases in which there is blood destruction. Although good results were claimed for the treatment by blood transfusion of pernicious anæmia it is probable that the result was only temporary and that transfusion must often be repeated.

Mr. Blair Bell gave a short account of the blood grouping of donors of blood and of the problems which may be connected with the grouping, such as the heteroplastic grafting of tissues and selective sterility. Finally he discussed the various methods of blood transfusion and emphasised the fact that, in his opinion, the citrated blood method is the only generally applicable and safe procedure. He described and demonstrated his own apparatus (a full account of which will be published) whereby the blood of the donors is automatically citrated as it leaves the vein, and all the fluids are kept at body temperature during the necessary steps in the operation.

Dr. **J. H. RAWLINSON** presented the subject from the surgical point of view.

Dr. JOHN HAY read a paper dealing with

Prognosis in Patients presenting a Rapid Heart Action.

Patients with rapid action of the heart could be classed into two groups: (1) those in whom the rhythm is physiological, and (2) those in whom it is pathological. In the first group the rapid action is secondary to such causes as emotion, effort, toxins, &c., and the prognosis depends on an accurate recognition of the primary cause. Dr. Hay referred to the rapid action in patients suffering from aortic regurgitation, and also to apyretic tachycardia of early tuberculosis, and discussed the combination of functional and organic diseases of the heart. In the second group he dealt with three conditions—paroxysmal tachycardia, auricular flutter, and auricular fibrillation—and described typical cases, defining the general principles on which prognosis depended.

NORWICH MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Cases and Specimens.

A CLINICAL meeting of this society was held on March 1st, Sir HAMILTON BALLANCE, the President, in the chair.

Dr. W. TYSON showed a girl on whom he had operated for Thrombosis of the Lateral Sinus. He had opened the mastoid cells to relieve symptoms of severe pain in the right ear, tenderness over the mastoid, foul discharge from the ear, and an oscillating temperature. After the mastoid operation she had a severe rigor, and he therefore explored the lateral sinus, having first tied the internal jugular vein in order to limit the infection. He removed a foul-smelling clot from the lateral sinus, and the patient made a good recovery.

The PRESIDENT congratulated Dr. Tyson on the result of the case, and remarked that there were several symptoms which were pathognomonic of lateral sinus thrombosis, including a history of purulent discharge and a sudden onset, with oscillating temperature, vomiting, repeated rigors, local tenderness, and stiffness of muscles.

Dr. W. WYLLYS showed a patient in whose orbit a Mule's globe which had been inserted several years previously had suddenly burst. He removed the fragments under an anæsthetic and inserted another Mule's globe, which, however, also got broken. After eight days he had to remove some fragments, and as the eye was now septic he determined to try the effects of yadil as an antiseptic, using a solution of ʒi. to 4 oz. of water, which was instilled every two hours for two days, when another globe was inserted with satisfactory results. He brought the case forward chiefly to show the beneficial results of what he considered a suitable antiseptic to be used where a plastic operation was undertaken in an inflamed area.

Dr. E. B. HINDE showed a case of Hemianopia with Visual Hallucinations, and also related a peculiar case of Sudden Prolapsus Uteri after delivery, in which the patient stated that she had felt a sensation of "something giving way inside her," and the midwife and another nurse reported that they had heard a loud noise as of something giving way immediately after the birth of the child.

Dr. TYSON showed a specimen of Adeno-carcinoma of the Cæcum, for which he had performed resection of the bowel.

Dr. V. H. BLAKE showed the Kidneys from a Man with Polycystic Disease. At the autopsy the liver was found covered with tiny cysts, and the kidneys were composed entirely of cysts. It was remarkable that the subject of this disease had lived an active life for over 70 years, that there had been no albuminuria, and the only signs of uræmia were occasional attacks of vomiting.

Dr. DARLEY WYNNE read notes and showed microscopic slides of an unusual case of Endothelioma of the Leg, with presumed recurrence in the brain. The patient was a woman aged 70, who for some years had suffered from extensive varicose veins in the right leg. A tumour about the size of a small walnut developed over the internal saphenous vein, about half-way between the saphenous opening and the knee. This was at first considered to be a thrombosis in the vein, an opinion shared by Mr. J. Burfield in consultation. Mr. Burfield operated and found a series of small tumours growing from the vein, which were at first thought to be melanotic sarcomata, but a microscopic examination by Dr. Claridge showed that the nature of the growth was endothelioma, growing from the endothelium of the vein. [Microscopic slides of the tumour were exhibited.] The subsequent history of the case was interesting. The patient never had any further trouble with the veins and enjoyed good health for 18 months, when she was one day suddenly seized with vomiting and rapidly became unconscious and died three days later. There had been some prodromal symptoms, such as left-side headache and dimness of vision. The left pupil was widely dilated and inactive to light, the right normal, and there was marked left optic neuritis. Unfortunately no post-mortem could be obtained, but from the association of optic neuritis, dimness of vision, headache, and vomiting Dr. Wynne came to the conclusion that the patient's death was due to a recurrence of the tumour in the brain. Dr. Claridge agreed that there probably was a secondary growth in the brain connected with some of the blood-vessels, but thought the final issue was due to hæmorrhage, possibly from a vessel involved in the growth.

Dr. G. P. C. CLARIDGE exhibited a Uterus which was the subject of Chorion Epithelioma. The patient had suffered from uterine hæmorrhage for two years and was curetted by Mr. Burfield, who afterwards removed the uterus, as curetting had given no relief. The uterus contained two tumours, which were found on microscopic examination to be chorion epithelioma. There was also a tumour in the vagina, probably secondary.—Mr. BURFIELD, the PRESIDENT, and other speakers discussed the connexion between chorion epithelioma and hydatid mole, as it had been stated that nearly half the cases of chorion epithelioma were subsequent to hydatid moles, an opinion which did not meet with general agreement.

Dr. J. DUNCAN HART exhibited an Ovarian Dermoid, the clinical history of which was interesting from the point of view of diagnosis. The patient was a young, healthy, robust woman of 28 who was taken suddenly ill with severe pain in the epigastrium and tenderness on deep pressure, but no rigidity of muscles. Some albumin was found in the urine, but after a fortnight's illness she apparently recovered. As the abdominal tenderness persisted she was sent to see Mr. Burfield, who found tenderness in the appendix region, and took her into hospital, where she was X rayed by Dr. A. J. Cleveland, who gave it as his opinion that there was a calculus in the right ureter. On operation the appendix showed signs of recent inflammation, but no stone was found in the ureter, which was quite free. An ovarian dermoid cyst on the right side was found and removed. On examination of the contents of this cyst after removal a small perfect tooth was discovered, and it was this foreign body which had caused the shadow on X ray examination and had been mistaken for a calculus in the ureter.

SHEFFIELD MEDICO-CHIRURGICAL SOCIETY AND BRITISH MEDICAL ASSOCIATION.

Venereal Disease Commission to the Far East.

A JOINT meeting was held on March 24th in the Firth Hall of the University. Dr. RUPERT HALLAM was the lecturer, and the chair was taken by Dr. F. J. SADLER.

Dr. Hallam gave a short account of his journey round the world as the medical member of a Commission which was dispatched to the Far East by the National Council for Combating Venereal Diseases with the approval of the Colonial Office. The Commission first visited New York, arriving there early in November, 1920, where Dr. Hallam had the opportunity of seeing several of the well-known skin and venereal clinics. It is interesting to note that the majority of patients pay for their treatment, but that necessitous patients are able to obtain free treatment. Compulsory notification and treatment of venereal disease has been in force for more than a year, and the consensus of opinion is that this has not acted as a deterrent to patients to seek treatment. He next visited the New York State Laboratory at Albany, a large, splendidly equipped building presided over by Dr. Wadborough.

The Commission journeyed across Canada, making brief stays at Toronto, Winnipeg, Regina, and Victoria, where meetings were held under the auspices of the Canadian Council for Combating Venereal Disease. In Japan useful information was obtained from the officials of the Government Health Department, and visits were paid to two hospitals in Tokio. At the invitation of the Shanghai Municipal Council the Commission conducted a campaign of public enlightenment in that city, and Dr. Hallam gave a series of lectures and demonstrations to the medical practitioners in the diagnosis and treatment of venereal disease. The incidence of both syphilis and gonorrhœa among the Chinese in the seaport towns is very high, and before the visit of the Commission there was no treatment by modern methods available for them. The Commission conducted a similar campaign at Hong-Kong, Singapore, and Colombo, and in each of these ports recommended that the free diagnosis and treatment of venereal disease should be provided.

Dr. Hallam afterwards showed a kinema film produced by the American Hygiene Association, New York.

Reviews and Notices of Books.

HYGIÈNE ET RÉGIMES.

By G. H. LEMOINE and F. RATHERY. Paris: A. Maloine and Fils. 1921. Tome XXVIII. Pp. 390. Fr.28.

A COMPREHENSIVE work is being published at present in France under the direction of Drs. Émile Sergent, L. Ribadeau-Dumas, and L. Babonneix, dealing with medical pathology and applied therapeutics. The twenty-eighth volume in the series, written by Dr. G. H. Lemoine and Dr. F. Rathery, is devoted to hygiene and dietetics. Dr. Lemoine discusses the effect upon health of environment—air, light, drinking-water, food, the disposal of refuse, prophylaxis, and hospital provision; but he does not touch upon the personal note which is pervading preventive medicine in this country. He has collected and clearly sets forth up-to-date information on the subjects dealt with. The work is essentially a text-book for reference which reproduces accepted opinions. But occasionally the author lags behind knowledge, as, for instance, when he ascribes the harmful rôle of confined air in living rooms to anoxæmia due to lack of oxygen in the air, and when, in the same connexion, he claims that the presence of an excess of carbon dioxide must above all be looked upon as an indication of human contamination. Our readers hardly require to be reminded of the investigations of Haldane and of Leonard Hill, which entirely discount such views. Appreciation is expressed of our own garden cities, and we are here able to recognise familiar places under such noms de plume as Boudary Street, Port-Sunglith, and Lecht-worth. This portion of the book is accompanied by a useful bibliography of works published for the most part in France, of which hygienists in this country may be unaware.

Dietetics are discussed at considerable length by Dr. Rathery; indeed, half the volume under review is devoted to the subject, the first portion dealing with food in health, and the second with food in disease. Food has during recent years, especially in war-time, received so much attention that a work summarising available knowledge must be of value. But the author appears to be unacquainted with much that has been done in this country and the United States, particularly by Greenwood and by Benedict, to determine the energy requirements of various classes of the community and establish the cost of living. Gautier's standard, a distinctly low one, is given for the daily number of calories needed, rather than that of the Food Committee of the Royal Society, and no effort is made to indicate the needs of different occupations. Similarly, when vitamines are under discussion, while fat-soluble A and water-soluble B are described the absence of any reference to the antiscorbutic factor is notable.

Apart from such omissions knowledge relating to food is well and fully stated, but the case for the exposition seems somewhat discounted by the conclusion that "la question de régime est ici comme dans beaucoup d'autres cas, questions d'espèces et de personnes et un exclusivisme trop étroit paraît devoir être écarté." The position, of course, is different in the case of dietary in disease; this subject is dealt with at length for various maladies. Those seeking information on the subject are more likely to turn to text-books dealing with the diseases in question; but writers of such text-books may welcome an expression of opinion such as is here given by a specialist on food. This part of the book suffers from frequent quotation of authorities without reference to their original papers and from the absence of any bibliography. The whole volume may be recommended as a useful book of reference, but its value is seriously impaired by an unusually sparse index which is not even always accurate. Any index may be said to be better than no index at all, but when a book is carefully written and documented, and on the large side, a good index is an asset.

SYNOPSIS OF SURGERY.

By IVOR BACK, M.B., B.C. Cantab., F.R.C.S. Eng., and A. TUDOR EDWARDS, M.C.Cantab., F.R.C.S.Eng. London: J. and A. Churchill. 1920. Pp. 480. 15s.

THIS is frankly a cram-book, but a quite sound cram-book, as the authorship would lead us to expect. The authors appeal to those students who are not industrious enough to make a complete synopsis for themselves, and leave the more conscientious to work out their own salvation. The subject-matter is clear, complete, and modern. Above all, its perspective is good, and there are few candidates for an examination of the standard of the final M.B. who would not be the better for running through its pages. In the account of each lesion its cause, pathology, signs, and treatment are given with directness and refreshing truth. There is no nonsense about memorising from 9 to 14 causes for a disease which has at most one or two. The sections on treatment, although short, are particularly complete and leave little to be desired; though many surgeons would object to the statement that cholecystectomy is only indicated in gangrene or malignant disease of the gall-bladder. Where all is good it is unnecessary to pick out portions for praise, but there are many small points that he who reads may note with advantage. The chapter on shock is well up to date; burns and scalds come under the heading of "Gangrene due to heat." It is well to see in print that nitrous oxide anæsthesia is contra-indicated in cellulitis of the neck, as its popularity as an anæsthetic is likely to cause this to be overlooked. We note one solecism, "parotiditis," which appears to be negatived by its derivation, and has no beauty either as a written or spoken word to recommend it.

"Synopsis of Surgery" before an examination should be looked on as a kind of vacuum cleaner to remove cobwebs and as a purge for verbosity.

DISEASES OF THE NEW BORN.

Diagnostik der Kinderkrankheiten. Mit besonderer Berücksichtigung des Säuglings. Von Professor Dr. E. FEER, Direktor der Universitäts-Kinderklinik in Zurich. Berlin: Julius Springer. 1921 With 225 illustrations. Pp. ix. + 276. M.40.

SINCE the appearance of a book on the Symptomatology of Children's Diseases by the late Professor Filatov, of Moscow, some thirty years ago, there has, as far as we know, been no book published which adopts the semiotic method, so useful to the practitioner of pædiatrics. The volume before us, written by an experienced clinician and teacher, is an attempt to supply this want. The author starts with a few brief remarks on history-taking, and then goes on with a very generously illustrated account of the facies and everything that can be learned therefrom. Disturbances of growth, discolourations and other abnormalities of the skin, derangements in structure and function of muscles, glands, bones and joints are then illustrated and described. The next 146 pages are devoted to a discussion of symptoms and of the methods of examining the chest and abdomen and detecting any abnormalities within those cavities. The blood and the various symptoms associated with urogenital diseases are then dealt with, and lastly there comes a consideration of the examination of the nervous system and the symptomatology of nervous diseases. The final 15 pages are taken up with pyrexia, the diagnosis of typhoid and tuberculosis, and the causes of sudden death in infancy.

In each section the salient anatomical and physiological peculiarities of the organs or systems are given. The book is profusely illustrated with photographs which are mostly, but not always, helpful. A picture (Fig. 186, p. 164) of a healthy, smiling child, meant to illustrate the needless anxiety of a devoted mother, has no clinical value. Fig. 205 on p. 230 is a poor photographic illustration of severe opisthotonos. Certain redundant photographs might well have been replaced by a few blood pictures, and the inclusion of diagrams of the lesions in various nervous diseases would have been useful in illustrating the methods of differential diagnosis, to which, by the way, Professor

Feer gives little space. Brief descriptions of some of the more recent clinical methods would have been helpful. For example, though the increased fragility of the red cells in acholuric family jaundice is noted, the clinical method of testing its presence is not even mentioned. In the paragraph on Babinski's sign the author accepts the common statement that this sign is nearly always positive in infants under 1 year. Recent work indicates that although a positive Babinski phenomenon is of no pathological significance in young infants the majority of them show a flexor plantar response in type even in the youngest infants. We criticise only minor points. The volume as a whole is good and serviceable.

INITIATIVE IN EVOLUTION.

By WALTER KIDD, M.D., F.R.S.E. London: F. H. and G. Witherby. 1920. Pp. 252. 15s.

THE failure of Lamarckism to prevail against Weismannism lies in the difficulty experienced by its supporters in adducing facts in its favour which cannot be brought, by those opposed to them, within the range of action of natural selection, or shown to possess some probable useful end. The followers of Weismann, on the other hand, are faced with the difficulty—which would seem almost insuperable—of proving that the evidence brought forward by their opponents has reference to facts which cannot be attributed to the inheritance of acquired modifications. Each party in this stalemate is therefore waiting for "something to turn up," and, in the meantime, taking every new fact which appears as supporting its own contentions, largely because the other side is unable to prove a counter claim. Dr. Kidd is a convinced supporter of the tenets of Lamarck on the inheritance of acquired characters, and has been collecting for many years evidence in favour of these tenets which he has now made public in this book. To reduce the opposing utilitarian argument to a minimum, or to obviate it completely, he has concerned himself only with the small things which "don't matter," the arrangement of hair-streams, papillary ridges and flexure lines, bursæ, and so on. The examples which impressed us were those in which the effects of harness on draught horses were transmitted to their foals; this line of observation seems to us of great value, differing in its direct simplicity from the other extensive observations, such as, for instance, those on lines of hair streams, which depend for their force on what is, after all, an assumption concerning human descent. We do not give detailed reference to the ground which is covered by this volume, but it may be said that the examples produced by its author seem to vary in their freedom from the range of "utilitarian" attack; this is, perhaps, more evident in the last few chapters.

The book is eminently readable, and the illustrations introduced are clear and appropriate. We think that Dr. Kidd has done good service to his cause in producing the results of his investigations and has brought forward evidence of considerable value, even though, as he says, it has only to do with humble and lowly things. Whatever views they may hold on the general question, or whatever the value they may allow to Dr. Kidd's individual instances, we think that readers of the work will find in it much food for reflection and a great deal to stimulate their interest.

THE AUTHOR PSYCHOLOGIST.

Woman. By MAGDALEINE MARX. Translated from the French by A. S. SELTZER. London: George Allen and Unwin, Ltd. 1921. Pp. 288. 7s. 6d.

Hunger. By KNUT HAMSEN. Translated from the Norwegian by GEORGE EGERTON. London: Duckworth and Co. 1921. Pp. 310. 8s. 6d.

EVERY author worthy the name is a psychologist, though he need not necessarily be steeped in the jargon of the text-books. Some quite modern professional psycho-analysts are fond of illustrating their theories from the fiction of an age that knew them not. In Shakespeare may be found problems for analysis as complicated as those presented in the clinics of an asylum. With time comes change, and the authors of to-day seek new methods wherewith to clothe in flesh the complex personalities created by a skilful adjustment of their own observation and experience. Two recent translations of books already famous in their original tongue give interesting illustration of one of these modern methods. Each is written as an autobiographical narrative, the first so strictly that even the conversation of the foils to the narrating character is practically eliminated. In both one is reminded of a trick of the kinematograph in which the hero goes through his evolutions in the centre of the screen, whilst the houses, the road and its traffic, pass mistily across the background. It seems almost inevitable under these circumstances that the central figure will appear self-conscious, over-assertive, and tiresome, and, in spite of the undeniable skill with which this danger is combated, the impression does in both cases remain. Neither is it to be gainsaid that the reader's eye is focussed from start to finish upon the evolutions of the author's synthetic puppet—and that is, no doubt, just as it was meant to be.

"Hunger" is more than a study of starvation; it is a text-book on the physiology as well as on the psychology of destitution. It expounds the eccentricities of the fasting stomach as well as those of the under-nourished brain, and ranges the city of Christiania in search of new stimulants to provide varying reactions of these two to their environment. To say that one grows hungry in reading would be faint praise, one is gnawed by a despair of life such as no previous experience has ever unfolded. In these days the accomplishment is as useful as it is brilliant.

The writer of "Woman" has a more difficult task. If we are to believe Henri Barbusse, who has written the introduction, this book expresses what has never been exactly expressed before. It expresses woman. But what woman? Someone very different certainly from the numerous female decorations who flit across the background. Someone certainly unlike anything our grandfathers would have admired. A type, in short, neither of women of all time nor of all women to-day, but of the sort of women whom the writer most admires among her contemporaries. As such the heroine is not incongruous; she is even a little lovable and very much to be pitied. But she will pass. She is no more the woman of a hundred years hence than of a century ago. Already we suspect she is a little out of date. We cannot imagine her paying the wages of a mentally deficient Breton girl to act as servant in a three-room flat—not with rents as they are in Paris to-day.

That both books are well worth reading is due in no small measure to the skill of the translators who have succeeded in preserving an unusual style in both cases without apparent effort. "Hunger," however, should be revised for some minor alterations if it is printed in English again. On page 37, for example, "not a little bewildered" should surely be "not the least ......," which would alter the sense helpfully.

SYMPTOMS AND THEIR INTERPRETATION.

Fourth edition. By Sir JAMES MACKENZIE, M.D., F.R.C.P. London: Shaw and Sons. 1920. Pp. 331.

THE study of clinical medicine has for several years been overshadowed by the study of clinical methods and, as a result, an undue significance is often attached to the data obtained by the use of the more modern clinical methods, such as blood examination, blood-pressure measurement, and radiography. To an even greater extent the recent advances in bacteriology, immunology, and biochemistry have eclipsed the interest attached to the study of symptomatology. Sir James Mackenzie restores the balance and directs research along new lines in old fields by strongly advocating the more exact study of symptoms in disease; he is especially qualified to preach this gospel because of the success he has achieved in advancing the knowledge of medicine by the clinical investigation of irregularities of the heart and the distribution of hyperæsthetic zones in disease. In this book the study of symptoms is taken a further stage; the reader is asked to pause for a moment in the constant effort to isolate new symptoms of disease and to turn his attention to a study of the interpretation of the numberless symptoms already known.

The author aims at establishing the fundamental principles that underlie the production of symptoms in order that the confused mass of detail now included under symptomatology may be simplified in terms of general principles or Laws of Nature. Professor Karl Pearson would feel some surprise at the author's idea of a "Law of Nature," and the paragraphs that discuss general principles and laws of nature require editing by someone acquainted with *The Grammar of Science*. In these opening chapters certain important definitions are framed; thus the word "symptom" is defined as the reaction of the tissues of the body to a noxious agent, and so includes advisedly both signs and symptoms (using the words in their more ordinary sense). As a result of framing the definition so broadly, it follows that a mitral systolic murmur or the absence of free hydrochloric acid in a test-meal examination are symptoms of disease, and the common distinction between subjective and objective phenomena is lost. But this distinction is sometimes required for the sake of lucidity, and the author is forced to acknowledge it in using the phrase "physical signs" in contra-distinction to "symptoms." The definition of pain is also difficult to accept, for it excludes the possibility of a sensory cortical representation of vegetative nervous impulses by referring all painful sensation to the peripheral distribution of cerebro-spinal sensory nerves in the external body wall.

The main thesis of the book turns on the discovery that the majority of symptoms of disease are disturbances of normal reflexes; many illustrative clinical cases are given in the text, and the observations and train of thought that led to this discovery are given in an appendix. This thesis loses none of its interest in the fact that this discovery has been made before. We owe most of our knowledge of reflex action to the work of Professor C. S. Sherrington, and he put the whole matter in a nutshell when he defined pain as the psychical adjunct of a protective reflex. The author maintains that the prevailing ignorance of the nature and interpretation of symptoms is due to a lack of appreciation of their significance and importance, yet the study of medicine has concerned itself in the past with little else, and since the time of A. von Haller (1752) physiologists have laboriously worked at the same subject. The fact really is that the anatomy and physiology of the vegetative nervous system have not been sufficiently known owing to the inherent difficulties of its study, and that it is due to the work of such men as Langley, Anderson, and Sherrington that a new dawn is breaking on clinical medicine. Other workers in this field are scarcely referred to, and the book would be improved if some of the knowledge possessed by such men as Cannon, Hurst, Higier, and Pottenger were mentioned.

Despite these criticisms we do not lose sight of the fact that the book is pioneer work and stimulating to read. It contains much original observation, and marks the slow but sure step of an original investigator. A careful study of it will repay every student and practitioner of medicine, and will open their eyes to the opportunities that lie all around of advancing medical science and professional art.

WHY DO WE DIE?

By T. BODLEY SCOTT, M.R.C.S. Eng. London: T. Fisher Unwin. 1921. Pp. 123. 6*s*.

THE real title of this book is given in the first sentence—namely, "Why do we die so long before our time?" and the answer is, "Because of arterio-sclerosis." Dr. Scott pleads for a more rational way of living, all through life, but especially in that period of life which comes after 40 years, and his advice is sound. Temperance in eating, as much as in drinking, work, not mainly for selfish objects, regulated exercises, and contentment, are, he says, and with truth, the best ways of staving off arterio-sclerosis with its accompaniment of raised blood pressure. His chapter on The Way of Safety is good, but as we so often notice in books of this class when talking about alcohol, not enough stress is made upon the difference between alcoholic drinks, such as light beers or wines, and spirits. We are sure that for everyone, and especially for old people, light beer or light sherry or claret is a far safer and profitable drink than either whisky or brandy, though the latter, if genuine and old, is better than the former. Another word of warning which we must give is that, as this book is evidently intended for the laity, the laity should remember that no preparation of thyroid should be taken except under strict medical supervision. Taking it all round, the book is useful.

JOURNALS.

Journal of the Royal Army Medical Corps, February and March.—In the February issue J. B. Orr and J. P. Kinloch suggest that proteid food stimulates increased body metabolism and rise of temperature, for they observed that the same short task done fasting or soon after a meal was accompanied by a greater output of energy, a greater production of calories, if the meal was preponderantly proteid.—Professor L. S. Dudgeon and A. L. Urquhart, in a paper on the Paratyphoid "C" Bacillus, mention a case of enterica due to this bacillus occurring in St. Thomas's Hospital in March, 1920. Lieutenant-Colonel P. H. Henderson, telling of medical conditions in Transcaucasia, which extended from the Caspian to the Black Sea, mentions as the prevalent diseases, malaria, typhus, smallpox, relapsing fever, dysentery, cholera, enterica, and the three venereal diseases. The British garrison suffered severely from malaria. Prophylaxis of venereal disease with potassium permanganate and calomel cream was of definite value if well carried out. The other diseases do not seem to have seriously affected our soldiers.—Captain W. J. Rutherfurd tells how frequent are the risks run by men in tunnelling companies from carbonic oxide poisoning consequent on the use of explosives in mining work.—Ex-Captain C. Samut and Captain W. T. Munro relate several cases to show that autogenous vaccines may arrest profuse and diffused suppurations and ulceration in apparently hopeless cases.—Captain H. J. B. Fry narrates at greater length the remarkable history of a projectile in the blood stream which was recorded in THE LANCET, 1920, i., 13. A gunner was wounded by a bullet half an inch below the left anterior superior iliac spine. He thought he was hit in the foot, but on examination there was found a small wound as noted above. The bullet had found its way to the left external iliac artery and had caused an arterio-venous aneurysm with the left internal iliac vein. The left leg was congested, swollen, and pulseless. It became gangrenous, was amputated, and ultimately the stump, too, showed gangrene. Patient's pulse had been 100-120, but became 136; pressure was low. Respiration rose to 60 or 70, and he died in coma. The bullet had passed up the great veins, through the heart (quite painlessly), and was found in a descending branch of the left pulmonary artery, where it was impacted as an embolus, causing two infarcts in that lobe. At the post-mortem there was marked passive congestion of the abdominal organs. Patient had bled into his venous system through the arterio-venous aneurysm. There had been no infection of the blood stream.—Lieutenant-Colonel J. H. Douglass and Captain H. Carlton report from Sierra Leone a case of blackwater fever cured by injections of trypsin and amylopsin into the gluteal muscles. This treatment is said to be useful in all malarial cases, especially first attacks in which sexual forms have not appeared, also in cerebral malaria and blackwater fever.—There is also a most useful paper on "India from the Mem-Sahib's Point of View," by Mrs. P. Hope-Falkner, which should be read by all before taking families to India. It discusses expenses, children, servants, food, clothes, furniture, and trunks, and is most instructive.

The issue for March opens with the paper on Tick Fever by Major-General Sir William Leishman, which appeared in THE LANCET of Dec. 18th, 1920, p. 1237.—Major Athelstane Hill contributes a careful clinical research on "Upward Displacement of the Diaphragm, with special reference to the diagnosis of Amœbic Hepatitis." He concludes that inflammation, in immediate contact with any part of the diaphragm (amœbic hepatitis, malarial perisplenitis, perinephric abscess), causes a reflex dilatation of that leaf of the diaphragm with which it is in contact. This may be recognised by percussion or X rays, as the upper surface of the liver rises above its normal position. This dilatation goes on to stasis, the chest cavity is lessened, the tension of the lung reduced, and predisposition to serious intrathoracic infections is increased. In endemic centres amœbiasis and malaria are the commonest causes of right- and left-sided dilatation respectively. In acute cases the use of emetine is imperative, laboratory confirmation not being awaited, since "amœbiasis" is commoner in endemic centres than is indicated by the prevalence of dysentery or the results of laboratory investigation." The new physical signs described are illustrated by excellent diagrams.—Lieutenant-Colonel H. M. Perry and Captain R. C. Robertson describe a combined influenza-pneumococcus-catarrhalis septicæmia of the mouse; the lesions in the lungs are those found in human influenza, a very important observation.—Major Julius Burnford has an interesting paper on influenza as seen in France, Woolwich, Salonica, and the Dardanelles in 1918. An earlier paper by this author is quoted by Sir George Newman in his introduction to the Influenza Report, but does not appear to be included in the bibliography there. Major Burnford very wisely draws attention to the facilities given by crowded troop trains and transports for the spread of epidemics. Cyanosis is of great prognostic value, yet some badly cyanosed cases do recover. The albuminous, possibly antitoxic, effusion into the lung may pour out of the patient's mouth while by it he is being veritably drowned. The striking post-mortem appearance is the extreme friability of the lung tissues, and, with that, emphysema. Glands of thorax and neck are much enlarged. He tried many treatments, but ultimately opium for sleep and poultices for pain, and advises that patients be kept warm but in the open air, with all the food they can take, and stimulants. Camphor, atropine, digitalis, strychnine, and expectorants disappointed him; 15 gr. of Dover's powder on admission became the routine, with linseed poultices when evidence of pneumonitis appeared. Major Burnford would appear to have treated a case successfully with the serum of recovered patients before that had been tried elsewhere as mentioned in the Influenza Report on p. 95. This paper was sent in two years ago.

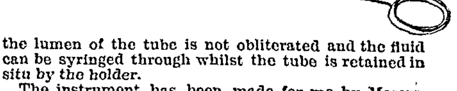
British Journal of Ophthalmology, January to March, 1921.—In the January number there is an interesting account of a case of Melanosarcoma of the Bulbar Conjunctiva, by Dr. L. K. Wolff and Dr. H. Deulman, of Amsterdam. The growth originated in a black pigment spot which had been noticed by the patient herself for ten years. It was removed and the eye was treated with X rays. Recurrence of pigmentation took place, however, and it was considered safer to excise the eye, in spite of the fact that it possessed good sight. The infiltration of the sclera found on examination of the excised eye justified the decision. Dr. James Taylor relates some cases of Encephalitis Lethargica of peculiar interest to ophthalmic surgeons.—In the February number the causation of Detached Retina is discussed by Mr. Charles Killick. Excluding cases in which some definite cause can be assigned, most of which are either traumatic cases or cases associated with albuminuria, all others, including myopic ones, are termed "idiopathic," and these are all attributed to bands formed in a degenerated vitreous forming adhesions with the retina, the contraction of the bands causing either tears in the retina or a detachment without tears. This theory, which is by no means new, is probably the correct one for a proportion of cases. When one considers, however, the extreme rarity with which tears of the retina can be demonstrated ophthalmologically, one cannot but doubt whether they play such a large part in the causation of detached retina as is maintained. Doubtless in a certain proportion of cases they do occur, but if they are so frequent as alleged, why are they not more often seen? They might, it is true, well escape notice when in the region of the ora serrata. On the other hand, in the few cases where they are seen at all the appearance is unmistakable.—In the March number Dr. Harrison Butler, after giving some examples of idiosyncrasy, concludes with the wise dictum that when our patients tell us that they react abnormally to certain drugs, we must act upon their information, however unusual it may appear.—In the correspondence section of the same number a suggestion is put forward by Mr. William Lang as to the causation and treatment of migraine. His theory is that an attack is started by a wave of contraction of the cortical occipital vessels, causing partial or complete hemianopia; that the wave of contraction is followed by dilatation of the vessels, causing intense headache and vomiting. In accordance with this theory he recommends to his fellow sufferers the treatment of hot fomentations to the back of the head when the attack is beginning, followed by cold applications as soon as the headache begins.

British Journal of Children's Diseases. Vol. XVIII. January to March. Edited by J. D. ROLLESTON, M.D.—In a paper on Malaria in Children at Smyrna a well-known Greek pædiatrist, Dr. Solon Veras, states that though malaria is very prevalent throughout Asia Minor the town of Smyrna was relatively immune before the war, only 3 per cent. of the children brought to his out-patient department from 1906-1913 suffering from the disease as compared with 11 per cent. from June to December, 1920. The largest proportion of cases occurred between the ages of 1 and 2 years. The form of malarial fever observed was the quotidian type, which is the most frequent at Smyrna. A characteristic tertian was met with in only 8 out of 88 cases seen between June and December, 1920. Dr. Veras has never seen the quartan type. Concetti's statement that malaria in children has a greater tendency to chronicity than in the adult is confirmed by the present series, in which 66 of the 88 cases belonged to the chronic type. The tendency of malaria to affect the nervous system in children is exemplified by the frequency of convulsions as the initial manifestation and the tendency of the disease to simulate meningitis. Alimentary disturbances, which may be of a very severe character, are a frequent complication of malaria in young children, especially in Asia Minor, where enteritis is the chief cause of infantile mortality. In acute forms of the disease Dr. Veras has obtained the best results by hypodermic injection of quinine, 0·25 g. or 0·50 g. of the hydrochloride, or preferably, owing to its being less painful, the formate of quinine, being given at a time. In the chronic form he recommends an Italian preparation known as *esanofele*, which is a mixture of quinine hydrochloride, arsenic, and citrate of iron, in the form of pills or a syrup.—In a paper on the Cœliac and Allied Types of Infantilism: A Retrospect and Bibliography, Dr. Reginald Miller reviews the literature from 1888, when the late Dr. Samuel Gee published his paper on the cœliac affection, down to the present year.—In his notes on Mongolism Dr. Hugh Thursfield records his observations on 42 Mongolian imbeciles seen at the Hospital for Sick Children between the beginning of 1912 and 1916. After discussing possible ætiological factors, such as the frequency of the condition, the place of the Mongol in the family, the age of the mother, health during pregnancy, history of miscarriages, character of the labour, infective diseases and prevention of conception, Dr. Thursfield gives figures as to the frequency of cardiac and other defects among his cases. Of 25 patients whom he was able to trace, 14 were dead, the causes of death being chiefly bronchopneumonia and diarrhœa. The oldest survivor was aged 15 years, the youngest 6 years, and the rest between 6 and 12 years. None of them showed the least tendency to become normal with increasing years, though the more obvious signs of mental defects were certainly lessened. Like certain French physicians who have kept Mongols under observation for a long period in institutions, Dr. Thursfield is convinced that both physical and mental improvement can be derived from small doses of thyroid, though there is no prospect of obtaining the effects commensurate with those observed in the cases of cretins.—A Case of Hemi-hypertrophy is reported by Dr. E. George Hall, with comments by Dr. F. Parkes Weber.—Dr. W. M. Feldman writes on the Nature of the Plantar Reflex in Early Life and the Causes of its Variations, in a paper which is an abstract of his London M.D. thesis, his observations being based on 500 cases from birth up to 7 years.—A Case of Œsophagectasia in a Child is reported by Dr. D. H. Paterson. The patient, a boy, aged 4½ years, had vomited his food on and off since birth. X rays showed a dilatation of the œsophagus in its upper part and a constriction below. An exploratory operation was performed, and a finger was readily passed through a small hole in the stomach up the œsophagus without any stricture being found, showing that the condition was due to spasm.—Mr. E. E. Hughes records a Case of Hydatid Disease of the Liver in a Child, the patient being a boy aged 11 years. The diagnosis of hydatid cyst was confirmed by operation, at which a pint of fluid containing characteristic hooklets was removed. The abstracts from current literature are devoted to diseases of the newborn, diseases of the blood, and diseases of the liver.

New Inventions.

CATHETER-HOLDER FOR INTRA-UTERINE TREATMENT OF GONORRHŒA.

IN order to facilitate the introduction of the catheter into the fundus uteri I have devised the catheter-holder here illustrated. It is a light, handy instrument and has the advantage that, owing to its size and to the bend in the shank, the line of vision of the catheter is not obscured. When the catheter has been inserted the lumen of the tube is not obliterated and the fluid can be syringed through whilst the tube is retained in situ by the holder.



The instrument has been made for me by Messrs. J. H. Montague, 69, New Bond-street, London, W. 1.

REMINGTON HOBBS, M.D., M.R.C.S.,
Medical Superintendent of Kensington Infirmary.

# Reports and Analytical Records
FROM
THE LANCET LABORATORY.

COLLOSOL FERROMALT WITH CASCARA.

(BRITISH COLLOIDS, LTD., THE CROOKES' LABORATORIES, 22, CHENIES-STREET, LONDON, W.C.)

OUR analysis shows that this preparation contains 0·018 per cent. of iron (0·028 Fe_2O_3) in a colloidal state which it is claimed is absorbed without the usual disadvantages associated with iron, such as constipation and dyspepsia. To ensure a laxative action each fluid ounce contains 2 gr. of cascara extract. Collosol ferromalt is agreeable to the palate, and it has been prepared so as to contain the accessory food factors essential to cell metabolism. A case is cited in which an anæmic woman with a colour index of 68, after three months' treatment with collosol ferromalt, increased her index to 90. Other organic and inorganic iron preparations had failed. In THE LANCET for May 15th, 1920, we drew attention to the increasing interest which is being taken by practitioners in colloidal medications.

DIMOL: A NEW INTESTINAL DISINFECTANT.

(THE ANGLO-FRENCH DRUG CO., LTD., 238A, GRAY'S INN-ROAD, LONDON, W.C.)

The claims made for this new intestinal disinfectant are put forward on the favourable clinical experience of specialists in this country and in the United States. The preparation has been introduced by Captain Ainslie Walker. It is possible to destroy all bacteria in the fluid contents of the intestinal tract with a duodenal douche of dimol, but the dosage recommended in the form of tablets or pulverettes (2 to 4 after each meal) is so regulated that the *B. coli* normally present are not affected, a fact which can only be ascribed to their greater powers of resistance. In this way all apprehension of digestive disturbance by its administration is avoided. The chemical constitution of dimol, $C_6H_2(CH_3)_2(OCH_3)OH$, reveals the presence of a phenyl radical, but this is not split off in its passage through the intestine; in other words, dimol is voided with the fæces, unchanged. Examination for phenol in the urine after a week's course of treatment gives a negative result. Tests made for us confirm a coefficient of 35·0 and the freedom from toxicity claimed by the manufacturers.

NEW SEASON'S COD-LIVER OIL.

(ALLEN AND HANBURYS, LTD., BETHNAL GREEN, LONDON, E.)

The manufacturers claim that this Norwegian oil is prepared from fresh and selected cod livers with the minimum of exposure to oxidation. The preservation of the fat-soluble accessory substance, to which is attributed much of the therapeutic value of cod-liver oil, is thus assured. On analysis the oil was found to have the customary constants. No deposit of stearin was observed on keeping at the temperature of melting ice.

(1) ENERGEN GLUTEN TAPIOCA; (2) ENERGEN ENRICHED PASTRY FLOUR WITH ADDED GLUTEN.

(THERAPEUTIC FOODS CO., ENERGEN WORKS, ROUNDWOOD-ROAD, WILLESDEN, LONDON, N.W.)

(1) We have isolated from this tapioca about 6 to 7 per cent. of powdered gluten, which is present as a fine brown powder; the tapioca itself is of clean and good quality. We consider the statement on the carton, recommending its use to diabetics, to be at least questionable. Because gluten itself is free from starch, the addition of a small proportion to tapioca—which is practically all starch—can do little towards mitigating the disadvantages of a starchy diet for those whose starch tolerance is low.

(2) We find on analysis that the total protein content of this flour is 18·3 per cent., and calculation shows that the gluten present is about 6 per cent. and cannot possibly exceed 10. No baking powder is present. The ash is 0·54 per cent. As in the case of "gluten tapioca," we do not follow the suggestion that the addition of this small quantity of gluten in any way enhances its value for the use of diabetics, and the expression "richness in gluten" is hardly warranted by the composition of the flour.

MENTHOFAX.

(BURROUGHS, WELLCOME, AND CO., SNOW HILL BUILDINGS, LONDON, E.C.)

Menthofax is a compound methyl salicylate ointment containing 50 per cent. of methyl salicylate, along with menthol, eucalyptol, and oil of cajuput. It is designed as a topical application for rheumatic, neuralgic, and other painful affections. Synthetic oil of wintergreen has long been recognised as a useful local analgesic and counter-irritant, and menthofax is an elegant form in which to apply it. It is put up in collapsible screw-topped tubes.

SOAPS.

(WM. LYND AND CO., BOWMAN-LANE SOAP WORKS, LEEDS.)

We have received three samples of soap: (1) Lynd's City Quick Washer; (2) Lynd's City Carbolic Soap; and (3) Lynd's City Soap. Our analyses of the first two named show the following percentage composition:—

	City quick washer.	City carbolic.
Water	25·8	29·1
Fatty anhydrides	67·5	65·7
Free alkali as Na_2O	nil.	nil.
Alkali (Na_2O) combined as sodium carbonate	0·02	0·02
Alkali (Na_2O) combined as soap	7·6	7.28
Phenol	nil.	1·00

Both these soaps are of good quality, well made, and free from caustic alkali and insoluble matter; they are suitable for the respective purposes for which they are intended.

"FULCREEM" PRODUCTS.

(PLAISTOWE AND CO., LTD., KING'S CROSS, LONDON, N.)

We have received for examination the following preparations:—"Fulcreem" Cake Flour, "Fulcreem" Custard Powder, "Fulcreem" Concentrated Egg Substitute, "Fulcreem" Cakies, "Fulcreem" College Pudding, "Fulcreem" Blancmange, and "Fulcreem" Baking Powder. These different materials are put up in a convenient form in tins or packets with full directions for use. "Fulcreem" cake flour consists of a flour and sugar mixture, currants, sultanas, and peel in appropriate amounts being separately enclosed in the containing packet. On the addition of margarine and egg all the necessary ingredients for a cake are present. The fruit is dry and free from stalk, and the flour consists of wheaten flour only. We find the sweetening material is cane sugar and not saccharin. We deprecate the use of the descriptive term "Fulcreem," as the erroneous impression will probably be conveyed to the minds of most purchasers that the preparations are associated with full-fatted dried milk.

"Fulcreem" concentrated egg substitute when analysed was found to consist of a mixture of starch, colouring matter (turmeric), a phosphatic baking powder free from sulphate, and 8 per cent. of protein. Fat was not present. It is difficult to understand why such a preparation is claimed to be a substitute for eggs, as it does not even remotely resemble—with the exception of the colour—a genuine preparation of dried egg. The tin bears the inscription, "Not made from eggs but a complete alternative." We hold the opinion that a material differing so widely in its composition from eggs should not be described as a complete alternative.

"Fulcreem" baking powder is guaranteed free from alum. Our analysis confirms this statement, and shows that it is one of the well-known class of baking powders composed of acid calcium phosphate, bicarbonate of soda, and maize starch. An impurity sometimes found in this class of material, and against which a warning was issued in Dr. J. M. Hamill's report to the Local Government Board in 1911, is calcium sulphate introduced with inferior kinds of the acid phosphate. This we find on analysis to be absent, and the powder is also entirely free from arsenic.

THE LANCET.

LONDON: SATURDAY, APRIL 9, 1921.

Prevention of Heart Disease.

AMERICA has inaugurated a thoroughgoing campaign for the prevention and relief of heart disease. The movement originated with a number of New York physicians and social workers whose sympathies were aroused by the large and preventable waste of health and life among cardiac patients discharged as convalescent from the hospital wards, mainly attributable to the lack of facilities for ensuring efficient after-care. In 1911, as a tentative measure, an evening out-patient clinic was opened at the Bellevue Hospital, New York City, for the treatment of these patients, a number of social workers coöperating with the medical staff. Patients were visited at their homes, partly with the object of teaching them how to look after themselves and partly to assist them in getting employment suited to their physical capacity. The success of this combined work, in saving hearts from periods of breakdown and in enabling the patients to continue as wage-earners, was surprising. In 1912 a trade school was established in connexion with the clinic, and three years later came the incorporation of the Association for the Prevention and Relief of Heart Disease. This organisation has a central office, an executive secretary, and a large board of governors, subdivided into sectional committees having to do with the professional, economic, and social aspects of the problem. The first report of this Association, which now reaches us, contains information such as could only have been gathered by collective study. Much attention is devoted to heart disease in children, the association having been fortunate in obtaining the coöperation of the Board of Education, which authorised a study of the conditions in three schools situated near to children's cardiac clinics. Cardiac cases were all referred to the clinics for examination and classification, some being placed in segregated classes, others sent back to the regular school. At the clinics, which are directly in touch with convalescent homes, hospitals, dental clinics, and laboratories, records are kept bearing upon cause. Not the least important part of the work is the education of public opinion.

It is nothing less than deplorable that so little similar effort has been made in this country to stem the tide of heart disease; indeed, it is difficult to comprehend why this great source of death and disability should have remained so long neglected. In a recent leading article[1] attention was directed to the serious pathological and economic results arising from chorea and rheumatism; the same was pointed out by Dr. F. J. POYNTON and others at a debate of the Medical Society of London, and by Dr. CECIL WALL in his Bradshaw lecture. We then suggested that if some concerted action could be taken in regard to rheumatism far-reaching results might accrue. Local enterprise frequently has the effect of provoking national effort, and we have at least one example to emulate. The Royal Liverpool Country Hospital for Children at Heswall many years ago put into action a scheme using the local Invalid Children's Association as a clearing house. Children recommended for treatment by hospitals, school medical officers, or the workers of the association are collected, classified, and distributed to the institutions best adapted for their treatment, suitable rheumatic and heart cases being transferred to the Heswall Hospital. As in the American organisation, the social workers of this child-welfare agency carry out after-care work under the direction of the medical officers, the children being periodically brought to the clinics for observation. The death-rate from heart disease is small during childhood, but the incidence is high and accounts for many deaths in later years. Sir GEORGE NEWMAN'S report for 1919 indicates a tendency towards an increase in the number of heart defects of children attending the elementary schools. Between 1915 and 1919 there was a rise from 3·0 to 3·8 per cent. among boys, and from 3·3 to 4·9 per cent. among girls. These are high rates and betoken a large amount of heart disease among the people of the country. An examination of four of the reports of the medical officer of health of Liverpool taken at random between the years 1909–1916 showed an average of 962 deaths from heart disease, or about one-fifteenth of the total deaths. These included deaths from all types of heart disease and at all ages, but a considerable number of them had occurred in the early adult and middle periods of life, representing, no doubt, cases originating during childhood.

The plan followed for many years in connexion with the Heswall Hospital has been to cater for children suffering from conditions apt to promote heart disease—for instance, the minor and major rheumatisms, the so-called rheumatic types of chorea, and other diseases likely to be followed by cardiac infections. In addition, early cases of heart disease are admitted, but not the chronic ones. All of these children are treated for prolonged periods, many of them entirely in the open air, and it has been found by experience that at least 70 per cent. of them are discharged with sound hearts. Every child afflicted with chronic heart disease may be regarded as being crippled beyond repair. They frequently have quite good health for many years, during which much money and energy is expended upon them educationally. Later on it only too often happens that they break down under stress of work, and we find them swelling the numbers of the inefficient and crippled. Much scientific work is being done on the clinical side of heart disease, but not enough on the preventive aspect. The infectivity of rheumatism and of some of the choreas is still insufficiently recognised by the medical profession. Quite recently in a large boys' school a number of cases of typical acute rheumatism occurred in rapid succession, and there was every reason for believing that the source of infection was a carrier, himself presenting no symptoms. Dr. POYNTON has been preaching this doctrine of infectivity for many years, and its importance in relation to a preventive campaign is quite as great as that of the therapeutic and diagnostic measures which have been so thoroughly discussed, and to which the Brooklyn Cardiological Society is devoting its whole interest. The lessons derived from the work of the American Association and from the Liverpool scheme fully warrant us in promoting a national campaign against rheumatic conditions which are the ultimate cause of so much death and inefficiency.

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[1] THE LANCET, 1920, ii., 1105.

Medicine in India.

WITH the meeting of the Legislative Assembly at Delhi has opened a new era of self-government in India. So much is evident to all who have eyes to see, even though they do not possess that life-long personal knowledge of Indian affairs which is regarded by many as the sole qualification for opinions on a series of problems which are founded on religious and racial divergencies, complicated by historical and financial associations, and aggravated by fundamental differences in estimating the responsibilities of more advanced civilisations towards those less fortunately situated. The existence of irreconcilables on all sides makes the future dark enough even to the experts. But it may be noted that Sir WILLIAM VINCENT, in the last sitting of which we have any detailed report, while regarding Dominion Home Rule as impracticable within the short period demanded by Noncoöperation, showed that the powers of the present Assembly are very large, and offer, indeed, ample scope to those who desire to do practical service for the country. Certain it is that within the constitution a vast field has been opened up for public health effort, and alone among the public services medicine has always and everywhere been common ground for men and women of opposing political camps. The opportunities of medicine in India are boundless, and those who are familiar only with the problems of preventable disease, as presented in the Mother Country and its self-governing dominions, are appalled when they are first brought face to face with the abysmal ignorance of the hygiene of life in the East; the quiet acceptance on the part of the people and of their rulers of preventable disease in every form passes understanding.

We have for some years given space to the reports of executive health officers in India, and have marvelled sometimes at the little interest which these amazing records have excited at home. But this apathy is passing away. For many reasons India is rapidly coming nearer, and the introductory remarks of Dr. J. E. SANDILANDS (on p. 783) to his first report from Bombay will not fail to receive attention. The conditions of public health during the year, he says, were not satisfactory. They certainly were not, and we should like to see his report published in parallel columns with his last report as medical officer of health for the Royal Borough of Kensington. The public health officer in India will be aided in his survey by the decennial census taken on the night of March 18th, a quality of assistance which his colleague in Ireland may shortly be without, and we are glad to see the *Times of India* pointing out that all large plans for the benefit of the people have to be based upon accurate statistical information. India has something like one-fifth of the population of the world: the Bombay Presidency alone has some 20 million inhabitants distributed among more than 28,000 towns and villages. To deal with such multitudes will need the utmost coöperation in medical effort, and this feeling is brought out in a remarkable leading article in the *Indian Medical Gazette* of February forecasting the possibilities of the year 1921. It is unfortunate that from inevitable circumstances the medical men of India have become divided into a number of separate classes, but it is certain that a rearrangement of service will sooner or later occur, whereby India will receive, in the task of improving the physical and moral status of its heterogeneous population and of upbuilding native activities to that end, the full support which can only come from conjoint design.

The forces of division are becoming from year to year less straitly divided. Both the Army and the Indian Medical Service are increasingly interested in civilian health problems. It is still fresh in the memory how the R.A.M.C. in Flanders, and even in England during the war years, was compelled to safeguard the soldier against ill-health in the community among which he was living. A similar tendency is at work in India. At the same time the Women's Medical Service grows, and from year to year the output of the Indian medical schools recognised by the General Medical Council is larger. The difficulty in obtaining sufficient obstetric experience will not prove insurmountable. Natives of India in increasing numbers come over to this country for part or the whole of their medical study. An article by Dr. CECIL WEBB-JOHNSON in the current issue of the *Asiatic Review* gives voice to the confidence felt in the future by some. Indian medical men, he writes, educated in Europe and conversant with all the latest scientific knowledge, will be the custodians of their country's health, and he pictures them working without jealousy side by side with the Aryan colleagues whose methods they have adopted. True it is that the Esher and Lovett Committees have not solved the obvious difficulties in the way, but these difficulties have been stated and faced; that is a great gain. There will be heavy sacrifices to be made, and more than one fine ideal will not materialise along projected lines. But such disappointments are the everlasting comrades of big changes, while everything good that we can expect from the future will be based on the splendid work of the past. That credit can never be taken from the old order, even though it may have to give place to the new.

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The Physiology of Pain.

KNOWLEDGE of the sensory, affective aspect of mind has not advanced so far as that of the motor aspect. In the main this has been due to the greater complexity of the physical apparatus, corresponding to the greater rôle played in our life by the affective side of our nature. One result of this comparative neglect has been that the "mystery of pain" has remained even into our time a mystery. Meeting us at every turn, in ourselves or in others, we yet remain in ignorance of its mechanism and significance. The moralists would have us believe that pain exists for the finer tempering of our souls; the physiologists, unconsciously influenced by the moralists it almost would appear, have defined pain as "a physical adjunct to a protective reflex." Such a definition cannot satisfy us, for it is clear that much of the pain which we suffer in no way acts as a protection or warning, while we meet many conditions in which pain does not occur until they have reached a stage when they are irremediable.

In the April number of *Medical Science Abstracts and Reviews*, Mr. WILFRED TROTTER reviews the evidence, experimental and otherwise, of the last 15 years, and as a biologist reaches the conclusion that sensibility to pain is the survival in us of the primordial mode of sensation. The known facts of the normal mechanism of pain warrant the statement "that the peripheral pain mechanism is excitable by a number of different stimuli which have no single physical character in common, that while it requires a stimulus relatively intense, it yields a reaction relatively excessive, and that its characteristic anatomical feature differs strongly from all other so-called end-organs in being a mere free and naked terminal arborisation." Pain differs from all other sensations in its urgency and unpleasant affective tone; other sensations, as it were, flow quietly and smoothly into the sensorium, the mind is capable of discrimination between them and their degrees; pain bursts suddenly upon the sensorium, liberating a veritable explosion of reactive energy. The study of experimental nerve section in man has shown that during recovery all sensations tend to show intensification; this has been interpreted as a defect phenomenon by HEAD, but TROTTER holds that the pathological process must be considered as a causative factor in its production, the essential part of the process being contact between the nerve fibrils and the somatic tissues. He directs attention to the thoroughness with which nervous tissue is normally insulated from the somatic tissues, the dura acting as insulator for the brain and spinal cord, the neurilemma for the finest nerve twigs; even the blood-vessels supplying the central nervous system are carefully separated from the nervous tisue by the so-called perivascular lymphatics. The only parts of the system normally in intimate contact with the somatic tissues are the free naked arborisations which subserve pain; other sensory nerve-endings are various in form, but all have one characteristic in common, they are shut in by a well-marked encapsulating formation. Further, in the case of amputation the nerve fibres are brought into intimate contact with the somatic tissues, and it is well known that the element of pain is added to the other sensations constituting the phantom limb.

It is suggested that the pain nerve is constantly exposed to a mild subliminal excitation and that the secret of the peculiarities of the pain sensation lies in the fact that the nerve by which it is originated is a nerve differing from all other nerves in being normally in a state of continuous excitation. The completeness of the insulation would appear to be a means of damping down sensation and thus rendering deliberation and discrimination possible. Animals with a diffuse nervous system respond to stimulation immediately and urgently, and we may suppose their sensations to have the quality which survives in us only as pain. In man any break in the insulation, by bringing into play the hostility between neural and non-neural tissues, throws back all forms of sensibility more or less into the primitive type, and this explains why pain is the commonest of symptoms, and why it is so apt to become inveterate.

GUY'S HOSPITAL: DENTAL RESEARCH FELLOWSHIP FUND.—This Fund consists of a sum of money not exceeding £300 per annum, to be awarded wholly or in part for dental research. Applicants, whether graduates or undergraduates, must have studied in the Medical or Dental School of Guy's Hospital, unless the Advisory Body decides that the circumstances are exceptional. Holders of grants from the Fund may, at the discretion of the Advisory Body, be part-time research workers. All research work undertaken with the aid of the Fund must be carried out entirely in Guy's Hospital or the schools attached thereto, unless the Advisory Body agrees that some portion of the study might with advantage be pursued elsewhere. Applications for grants should be made to the Clinical Research Committee of Guy's Hospital, London Bridge, S.E. 1.

Annotations.

"Ne quid nimis."

DR. ADDISON.

THE retirement of Dr. Addison from the Ministry of Health forms a fitting opportunity to indicate what has been done under his rule, both because recognition is due to him for a large amount of pioneer and difficult work, and because in this way we shall see what is the legacy of responsibility left to his successor, Sir Alfred Mond. The Ministry of Health came into existence in June, 1919, in deference to a very general feeling of all classes and political schools of thought that the health of the people was of sufficient importance to demand for its care a first-class Government Department. In the beginning the labours of the Ministry were largely directed towards the amalgamation and rearrangement of scattered duties previously discharged by six or seven separate bureaux, the majority of those duties having been the work of the Local Government Board and the National Insurance Commissions. To continue the activities thus indicated, and abolish overlapping while securing practical results, would have been a large task in itself, even had we as a nation been enjoying the peace and prosperity of pre-war days. But just as to some extent the lessons of the war led at length to the establishment of a Ministry whose creation had been talked of for half a generation, so the results of the war gave that Ministry, when created, a programme of extraordinary arduousness. Not only were there endless things to do, but they all had to be done in the face of unusual obstacles. Under Dr. Addison the course for the future has been in many directions made secure. The housing question, which lies at the back of preventive medicine, has been tackled; it is true that only a commencement has been made, but the national needs have been estimated and the local responsibility to meet those needs indicated. The many problems epitomised in the phrase "the hospital question" have been under discussions in which officials and medical men, philanthropists and men of business, have taken part with the Government, and the result has been the throwing of much light upon the position of the voluntary hospitals, so that practical steps were initiated to assist them in their beneficence. On many subjects of public health wise advice has been published by the Ministry, and throughout these publications, as well as in the activities already mentioned, a non-political attitude has been maintained, though that fact has not protected the Ministry from considerable political attack. Dr. Addison has had to discharge difficult and thankless duties, and his inventiveness and wide sympathies have been an asset to the country. To have been the first Minister of Health must remain for him an abiding source of legitimate pride.

ROYAL ARMY MEDICAL CORPS WAR MEMORIAL.

IN the war no unit played a grander part than the Royal Army Medical Corps, the greater proportion of which, in a short time after the catastrophic beginning, consisted of civilian officers. The way in which the Corps met and discharged its responsibilities requires no praise from us—it has received universal praise. Early in 1919, when the closing episodes of the great conflict were in progress, a scheme was put forward for the erection of a memorial to the officers and men of all branches of the Corps who had been killed in action or who had otherwise laid down their lives. For this purpose a comprehensive committee was formed consisting of representatives of the Regular, Territorial, Special Reserve, and Temporary Officers, as well as of non-commissioned officers and distinguished physicians and surgeons, consultants to the Corps. This committee made tentative proposals with respect to the form which the memorial should take, and these have since been the subject of consideration by a subcommittee. A definite scheme has now emerged, and was laid before a meeting of the General Committee held a few weeks ago. Roughly speaking, the sum of £19,000 has been collected, and of this amount about £1500 has been ear-marked by donors for families and dependents of the fallen. This money will be allocated for administration to the R.A.M.C. Regular and Auxiliary Funds in proportions still to be determined.

There remains a sum of nearly £18,000, and much anxious thought has been spent on its disposal. The Chairman, Sir Alfred Keogh, explained to the committee that the inevitable suggestions of memorials in stone, of scholarships and gold medals, had been considered and eventually discarded in favour of a scheme which he described as beautiful, essentially national, and almost without precedent. This proposal, emanating from Colonel C. R. Tyrrell, the acting secretary, envisaged the erection of a tablet in Westminster Abbey, near to the grave of the Unknown Warrior, commemorating the dead, and the inscription of their names in a Golden Book to be kept in the Chapter House. This scheme would allow of handing over a considerable sum of money towards the restoration of the Abbey, and the chairman appeared to interpret the feeling of the committee when he said that this gift alone would form a most fitting memorial. Sir Norman Moore, Sir Arthur Sloggett, Sir Launcelotte Gubbins, and Sir W. G. Macpherson spoke in favour of the suggestion; the President of the Royal College of Surgeons of England had previously expressed his approval, while representatives of non-commissioned officers present at the committee gave enthusiastic support. Eventually a resolution was passed approving the allocation of a sum not exceeding £10,000 to the Abbey Restoration Fund; of the erection of a tablet in the Abbey, with replicas in Edinburgh and in Dublin; of a distribution of photographs of the tablet and of plans showing its position in the Abbey to relatives of those who had lost their lives. A small executive committee consisting of Sir John Goodwin, Sir Norman Moore, Sir W. G. Macpherson, Sir L. Gubbins, Colonel Tyrrell and Major E. B. Waggett (joint secretaries), and Sergeant-Major Walton was elected to consider the appointment of a Custodian of the Book, the wording on the tablet, and other details.

TEA INTOXICATION.

Dr. M. Allen Starr,[1] of New York, remarks that, though acute cases of tea poisoning are extremely rare, subacute and chronic cases are not uncommon and are liable to escape recognition. He reports the case of three members of a college football team who were brought to him by their captain on the suspicion of poisoning by strychnine in a tonic ordered by the medical man who belonged to a rival college—the same being a cheery view of the results of athletic rivalry. The rapid pulse, increased knee-jerks, and excessive irritation of the nervous system rendered the idea of strychnine poisoning plausible, but this supposition was negatived by inspection of the prescription of the tonic, which contained only 1/60 gr. of strychnine, as well as by the high character of the physician. Further investigation showed that the trainer had been in the habit of giving the team large doses of tea, each member drinking at least two quarts a day. The three men in question had apparently been less tolerant than the rest, but all their symptoms disappeared when the tea was withdrawn. Dr. Starr also relates a case of chronic tea poisoning in a tea taster from Japan, who had been in the habit of tasting about a hundred samples of tea a day. The patient gradually developed a condition of extreme restlessness, nervousness, mental depression, and insomnia, with tremor of the hands, attacks of headache, vertigo, and palpitation. It was not until he had had three months' rest and hydrotherapeutic treatment that he finally recovered. Dr. Starr further alludes to the prevalence of chronic tea intoxication described by James Wood in 1912 among Irish servant girls in Brooklyn, in many of whom the diagnosis of the cause had been overlooked and the treatment had been directed to indigestion or general nervousness without result.

LIVERPOOL PORT ADMINISTRATION.

FOR many reasons a special responsibility rests just now upon the sanitary authorities of our ports, if only on account of the great volume of emigration and transmigration. Some public anxiety may therefore have been created by certain widely-circulated strictures on the Liverpool port administration. We learn, however, that nothing is known by the Port Sanitary Department at Liverpool of the visit of Dr. Emile Nadeau, nor can it be ascertained that he visited representatives either of the Mersey Docks and Harbour Board, H.M. Customs, Ministry of Health, nor the Immigration Officer. If Dr. Nadeau had represented the Canadian Government as has been stated, it is improbable that he would have made strictures through the press and have left the port without communicating in any way whatever with any responsible authority. By a coincidence the U.S. Commissioner for Immigration visited Liverpool during the same week and expressed himself as greatly pleased with the arrangements made to deal with the transmigrants to the United States. As a matter of fact, an attempt is being made, with the coöperation of all interested parties, to perfect the arrangements for the inspection of aliens coming into this country, although difficulties stand in the way of extensive structural alteration.

EGYPTIAN OPHTHALMIC HOSPITALS.

THE seventh annual report[1] of the Director of Ophthalmic Hospitals follows the lines of those published in previous years. The number of ophthalmic hospitals which have been established in the country districts of Egypt since Sir Ernest Cassel made his gift of £40,000 in 1903 is 18, including four travelling camps under canvas. The principal diseases with which they have to deal are, on the one hand, trachoma, and, on the other hand, contagious ophthalmia due to various infective micro-organisms. With regard to trachoma, its incidence in the schools has been diminished, in its active or serious stage, from 62 per cent. when systematic treatment began to 8 per cent. Contagious ophthalmia, and especially that due to the gonococcus, is responsible for by far the greater part of the blindness that exists, but it is to be noted that the gonococcus has not a venereal origin in Egypt, but is transferred from eye to eye, mainly by fingers, garments, and towels. The part played by flies in the transmission of bacterial eye infections is the subject of investigations now in progress. Gonococcal ophthalmia, on the whole, seems to be a milder affection than it is in this country, and the suggestion is made that in Egypt the strain of gonococcus may be less virulent, or even that it may not be the gonococcus at all as we know it in Europe but another morphologically similar organism. The study of the incidence of the different forms of contagious ophthalmia in relation to the temperature of the air, which has formed a feature in previous annual reports, is continued in this.

OCULAR PALSIES.

THE debate on ocular palsies at the joint meeting of the Ophthalmological and Neurological Sections of the Royal Society of Medicine (see p. 748) served to bring into prominence both the immensity of the subject and the variety of point of view. If, as is often the case, an ocular paralysis is the earliest, or for a time the sole, symptom of incipient nervous disease, it is natural that the ophthalmologist should be consulted; but it is desirable that he should be conversant with, or at least able to recognise those nervous affections of which ocular palsies may be the expression. In tabes dorsalis, disseminated sclerosis, myasthenia gravis, encephalitis in one or other form, in ventricular tumours, motor neuron disease, and a host of other intracranial conditions, an ocular palsy may be the first symptom to attract attention, so that the practical value for the ophthalmologist of a discussion of the subject by the neurologist must be considerable. This ætiological multiplicity, of course, increases the difficulty of reaching an accurate diagnosis at an early period, and when the clinician is confronted by monosymptomatic cases he may be unable to come to a definite conclusion; even throughout the whole course of a recovering case diagnosis may never pass the provisional stage. There can be little doubt that absence of pathological examination creates a lacuna in not a few instances which nothing else can fill, and although present-day fashion rather decries morbid anatomy, the relative paucity of pathological knowledge in such conditions as recurrent ocular palsies, ophthalmoplegic migraine, and the ophthalmoplegias of Graves's disease—to mention but one or two—is certainly to be regretted. Accuracy in prognosis being the desideratum, any advance even in morphological pathology is to be welcomed, for more than one speaker at the discussion was forced to admit the purely speculative nature of the explanation offered for this or that clinical condition. Wide as was the ground covered, there were still certain aspects of the subject ignored or scarcely touched. Something more, for example, might have been said of the occurrence of ocular paralysis in ordinary hemiplegia, on the same side as the latter, and on the curious fact of its being much less common in adult than in infantile cases. Dissociation of bilaterally acting muscular couples by a cerebral hemiplegia is a point of some physiological interest, which, along with a similar dissociation not infrequently seen in Jacksonian epilepsy, suggests the desirability of some modification of the long-accepted Broadbent's law. Allusion was made by one speaker to the apparent "unwillingness" of some patients with cerebellar disease to direct their gaze in a particular direction, a phenomenon of some importance which is, perhaps, but part of a wider physiological disturbance. Years ago Hughlings Jackson recorded the case of a patient in whom an examination of the eyes was altogether impracticable; "he made efforts, but he never did what I told him, whether it was to look in a particular way or to keep his eyes still. He could not be got to look in any particular direction, although he seemed on the alert to act and was all the time doing something with his muscles." This apraxia of the ocular muscles is on a par with other apraxic disorders, though there may be difficulty in distinguishing an apraxia from a psychical aboulia on the one hand, or from some motor defects of a lower level on the other. A further defect to which allusion may be made is that in which the patient is unable to turn his eyes conjugately to one or other side, but if he is asked to fixate on an object in front of him, and his head be then passively turned to one side, his eyes, remaining fixed on the object, are found to be occupying that lateral position which they cannot assume voluntarily. Occasionally a patient is seen who cannot keep his eyes closed to order, an "Apraxie des Lidschlüsses" also worthy of some attention. The whole topic of ocular "palsies" beyond the middle level deserves careful clinical study.

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[1] Medical Record, March 19th, 1921.

[1] Published for the Egyptian Ministry, Cairo, 1920.

BENCE-JONES PROTEINURIA.

Dr. Waltman Walters, Fellow in Medicine of the Mayo Foundation, who reports[1] three cases, states that this condition was first described by Bence-Jones in 1847, who found a peculiar form of protein in the urine in a case of osteomalacia. Only two other cases were recorded between 1847 and 1889, by Kühne and Kahler respectively, but Rosenbloom collected 205 examples from the literature between 1889 and 1917, the great majority being in cases of multiple myeloma. The other diseases in which Bence-Jones proteinuria have been found are lymphatic leukæmia, myeloid leukæmia, myxœdema, exophthalmic goitre, carcinomatosis, nephritis, hypertension, and experimental poisoning by pyrodin. Of Dr. Walters's cases one had generalised carcinomatosis, one multiple myeloma, and in one the diagnosis was obscure. The most characteristic reactions of Bence-Jones protein are its precipitation from acid urine at temperatures of from 55° to 60° C., its disappearance at the boiling point with the formation of a clear solution, and its reappearance as the solution cools. When concentrated nitric acid or hydrochloric acid is added to urine containing Bence-Jones protein the latter is precipitated in a dense white cloud, which becomes dissolved as the temperature is raised to boiling point and reappears as the urine is cooled. As regards the origin of the protein Dr. Walters is in favour of the hypothesis of Hopkins and Savory, according to which it represents either normal, abnormal, or aberrant stages of bone synthesis, the completion of which is hindered by indeterminate pathological conditions. Dr. Walters conducted metabolic studies on each of his three patients to determine variations in excretion on various diets with the following results: (1) the quantity of Bence-Jones protein excreted was independent of the protein intake, as was shown by an approximately constant excretion for three periods irrespective of changes in diet; (2) the amount of Bence-Jones protein excreted during the night when food was not taken was only slightly less than the amount excreted during the day; (3) there was not a constant relationship between the quantity of Bence-Jones protein and the total urinary nitrogen excreted. As the presence of Bence-Jones protein in the urine led to detection in the blood, Dr. Walters suggests that possibly other proteins of a similar or dissimilar nature are in existence in the blood and are not excreted by the kidney.

ATMOSPHERIC CONDITIONS IN BOOT FACTORIES.[1]

THE introduction by Dr. Leonard Hill of the kata-thermometer has provided us with a much-needed means for testing the physiological efficiency of atmospheric conditions. The Industrial Fatigue Research Board, perceiving this, instituted an inquiry based upon the use of this instrument in boot and shoe factories, and have now published results which represent the first systematic attempt to investigate on a large scale the physiological state of persons exposed to particular conditions of ventilation. The writers of the report, Messrs. W. D. Hambly and T. Bedford, are to be congratulated on the way in which they have pursued this new line of investigation and have presented their observations. They accept the aim of ventilation physiologically to be to produce an atmosphere cool rather than hot, dry rather than damp, diverse in temperature rather than uniform and monotonous, and moving rather than still. The difficulties associated with estimating these desiderata, and the reservations which have to be made, are clearly stated. Evidence is steadily accumulating that a definite standard of rates of cooling, as measured by the kata-thermometer, may soon be fixed for a healthy atmosphere; certain tentative suggestions are now put forward which propose different temperatures and rates of cooling for different processes, a rate of cooling of 8 to 9 dry kata with a temperature of 55° to 60°F. being suggested for heavy work, and a rate of cooling of 6 to 7 dry kata with a temperature of 65° to 67°F. for sedentary work requiring delicate manipulation. The report is based on a large number of observations made in 35 factories during summer and winter. The data are excellently presented in the form of frequency curves, the exact meaning of which is neatly explained in an appendix; by this means the trend of the observations, which would be lost in a table of figures, can be seen at a glance. The best way of ventilating large rooms such as are found in modern factories is discussed with special reference to the methods found efficacious in aircraft doping rooms in which a high standard of air movement has to be maintained to carry off noxious vapour. The employment of suitable ventilating fans, as used in doping rooms, with adequate air inlets on the opposite side of the room, is advocated. Multi-story buildings were found rather easier to ventilate than single-story ones, and ventilation was usually found better in summer than in winter. Generally no particular attention was discovered to be paid to maintaining different rates of air movement and warmth according to the amount of physical exertion entailed by the work in progress. Sedentary work was being carried on in rooms too cold in winter and too hot in summer, and heavy manual work in rooms with unsatisfactory rates of cooling and temperatures in both seasons of the year. This report is the second of a series dealing with the boot and shoe industry, further additions to which are promised. It is a good piece of work, throwing valuable light on conditions of labour and on the way in which health and efficiency can be improved by attention to the human factor in industry.

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[1] Journal of the American Medical Association, March 5th, 1921.

[1] Preliminary Notes on Atmospheric Conditions in Boot and Shoe Factories. Industrial Fatigue Research Board Report, No. 11. 1921. Pp. 69. H.M. Stationery Office. 3s.

BROMISM THROUGH MATERNAL MILK.

A CURIOUS case of bromism is reported from the pediatric department of the diagnostic clinic of the State Department of Health at Carthage, New York.[1] A breast-fed infant of 6 months presented an apparently painful papulo-pustular eruption. There was a history of a general "white" rash at birth, followed by the appearance of this papulo-pustular eruption at the age of 6 weeks. The diagnosis of bromism was made and was confirmed by the discovery of bromine in the mother's milk. The origin of the bromine was not far to seek. The mother, a nervous individual, had been taking for two years a proprietary remedy called Miles' Restorative Nervine, shown by the American Medical Association to contain bromides of ammonium, potassium, and sodium, along with chloride and benzoate of sodium. No record has been found in the literature of bromism acquired in this way, though it is noted that some American authors have observed the secretion of bromides in human milk. This is mentioned also in Hale White's "Materia Medica," but we have found no allusion in accessible medical literature to the danger of producing bromism in the infant from administering bromides to the nursing mother.

FILIPPO RHO.

As we have already mentioned, Professor Filippo Rho, "Medical Lieutenant-General of the Royal Italian Navy," its medical Director-General during the war, retired last September after 40 years of distinguished service. The *Annali di Medicina Navale* for December expresses the respect in which he was held in the department and the regret felt at his retirement, which is technically due to the reduction of the Naval Medical Service by the abolition of his, its highest, rank. Professor Rho joined the Italian Navy in 1880, and in the following year joined a ship, which took him round the world, as her zoologist. He early took up the study of tropical diseases, and was for ten years demonstrator of tropical disease at the University of Naples, where he, with others, built up a Post-graduate School of Naval and Colonial Medicine, and also established the *Annali*, which budded off from the *Italian Medical Journal* in 1895. His was the foresight that, for the Italian Navy, decided in 1898 that there should be in action not one dressing-station but two, and planned the medical equipment of ships accordingly; he also took an early share in the establishment of hospital ships. In January, 1912, he maintained the need for anti-typhoid inoculation and later for Castellani's triple vaccine (T.A.B.). In 1913 he secured that Metchnikoff's calomel ointment should be used in the navy prophylactically, and the practice spread to the army. It is also claimed that owing to his initiative and his methods it was that the naval brigade on the lower Piave in 1918 suffered far less from malaria than did the army generally, and he took a forward part in Italy, as the war advanced, in finding out how to feed the army with equal calories at less expense. He maintained that Rubner's allowance of meat in his diet for heavy labour was excessive, and got the soldiers' diet in Italy altered accordingly. That alteration certainly assisted Italy to remain in the war. He published his book on tropical diseases in 1897. He has a long record of original work, and leaves the service followed by the regrets of all his brother officers and the respect of everyone who is acquainted with his original investigations.

RESEARCH SCHOLARSHIPS AND GRANTS OF THE BRITISH MEDICAL ASSOCIATION.

THE Council of the British Medical Association is prepared to receive applications for research scholarships as follows:—

1. An *Ernest Hart Memorial Scholarship*, of the value of £200 per annum, for the study of some subject in the department of State medicine.
2. *Three Research Scholarships*, each of the value of £150 per annum, for research into some subject relating to the causation, prevention, or treatment of disease.

Each scholarship is tenable for one year, commencing on Oct. 1st next. A scholar may be reappointed for not more than two additional terms. The Council of the Association is also prepared to receive applications for grants for the assistance of research. Preference will be given, other things being equal, to members of the medical profession, and to applicants who propose as subjects of investigation problems directly related to practical medicine.

Applications for scholarships and grants for the year 1921–22 must be made not later than Saturday, June 25th. Each application should be accompanied by testimonials, including a recommendation from the head of the laboratory, if any, in which the applicant proposes to work, setting out the fitness of the candidate to conduct such work, and the probable value of the work to be undertaken. This is not intended, however, to prevent applications for grants in aid of work which need not be performed in a recognised laboratory. The conditions of award and application forms will be supplied on application to the Medical Secretary of the Association, 429, Strand, London, W.C. 2.

WAR RISK INSURANCE IN U.S.A.

IN the *Military Surgeon* for February Surgeon J. G. Townsend, of the U.S. Public Health Service, tells how the War Risk Insurance of the United States is taking care of those disabled by the war. Every officer, man, or nurse, injured, or with disease contracted on duty, if insured against damage, has a claim against this insurance on account of the disability. Total and permanent disability receives some £240 a year, temporary total disability about £200; 50 per cent. and so on disabilities receive in proportion. In addition the U.S. gives a further compensation quite independently of the insurance; this latter compensation is not discussed in the article under notice. The examination and treatment of the ex-Service man has been turned over to the capable and ready hands of the valuable U.S. Public Health Service. Over 4,000,000 people have been discharged, all of whom are possible clients, and of them half a million have filed claims. The United States has been divided into 14 districts, each with a commissioned officer of the Public Health Service as district supervisor. He and his office hunt up and keep record of the disabled in the district, gather them in for examination, sending passage warrants, meal vouchers, &c.; patients with tuberculosis, if summoned, are sent packets with paper spittoons and paper napkins; doctors are appointed in large towns and at important railway junctions to examine the disabled and furnish reports, which are kept filed, each patient's dossier by itself; a pathological index of all cases in the district is kept up to date, so that the number of any sort in the district can be stated at any time; also there is an office personnel to deal with pay and leave, and an accounts section. 30,000 claims are examined monthly, and between 5 and 6 million dollars paid out every month in insurance. Disabilities are still developing, the tuberculosis maximum is expected in 1923, the mental and psychical in 1926. Of 3500 amputation cases, 11 had lost both arms, 68 both legs. Double total permanent disabilities such as these mentioned, or eyes, get £500 a year. Of 82,000 hospital cases, 19,000 were tuberculous (23 per cent.).

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[1] Bromin Poisoning through Mother's Milk, Frank van der Bogert, M.D., Am. Jour. of Diseases of Children, February, 1921, p. 157

EXPECTED AND ACTUAL MORTALITY.

THE Prudential Assurance Company recently published curves showing the actual mortality amongst its industrial branch policy-holders compared with the expected mortality of the population as a whole. The two lines run approximately close to each other except during the war years, when the mortality curve leaps up to tragic heights. In fact, the line of deaths experienced falls below the line of expected mortality. It is obvious that the further below the expected line the line of actual mortality falls, the more profitable it is for the company and the more profitable to the public could the terms of assurance become. The bonus would be greater or the premiums could be more favourable. There are two factors tending the one to pull the line upwards, the other to pull it downwards: these are adverse selection, conscious or unconscious, on the part of the public and the favourable selection afforded by medical examination. Let us examine these factors to see what they mean and how they work out in actual practice. By adverse selection is meant this: if a man knows or suspects himself to be a poor life he will naturally choose the table which gives him the greatest return for the least possible outlay; not expecting to reach the full span he will not pay the higher premiums of an endowment policy, but will choose a whole-life table or some long-dated assurance with its smaller premium. If three representative tables are taken from the ordinary branch of this Company, and the ratio of actual to expected deaths amongst healthy males noted, some interesting comparative figures will be obtained. The three tables taken for comparison are: A, an endowment table with medical examination; B, a 10 years table without medical examination; C, a whole-life table with medical examination. It will be seen that adverse selection militates against B and C. Against B because there is no medical examination, and against C because it is a whole-life table with low premiums. The unfavourable factor in this last group, however, should be eliminated or controlled by medical examination. Taking the actual mortality experienced in the first four years and comparing this with the expected mortality in this same period amongst unselected healthy males the result can be represented approximately by the following figures: if the result for Table A is represented by the figure 100, that for B will be 152 and for C 167. That is to say, the most unfavourable mortality is experienced in the whole-life table. Medical examination has not eliminated and only very imperfectly controlled the adverse selection. If we analyse the causes of death, it is found that a large proportion of early claims are due to deaths from pulmonary tuberculosis or from cardio-vascular conditions, apoplexy, uræmia, and other results of arteriosclerosis or chronic Bright's disease. To eliminate the first of these causes is admittedly difficult, but the early claims resulting from the others could be very largely reduced if blood-pressure estimation and interpretation and methods for estimating myocardial efficiency were more widely known and employed.

FOOD AND THE PEOPLE.

THE business of obtaining food is the most important one in which man is engaged. The fear of starvation may be the ultimate reason for the non-acceptance by miners of a lower rate of wages when Government control ceased on March 31st. If that is the case and they are not reassured the struggle must needs be a bitter one, for the social instinct to provide for wife and child is stronger than most other motives. The economist ought to tell us whether such a fear is justified by the industrial outlook, and he cannot do so for the number of x's in the economic equation. One of these unknowns is a proper standard of nutrition, and it is a tragic coincidence that the Ministry of Food, which was at one time assisted by a committee of the Royal Society to fulfil this task, was wound up on the fateful day when its guidance again became imperative. As scientific adviser to the Ministry, Professor E. H. Starling solemnly warned us two years ago against demobilising the official Food Department without creating a board of human and animal nutrition to continue for the public benefit the scientific work which grew up during the war at the Ministry of Food. And here we are with, as far as we know, the only surviving asset, the satisfaction of getting a full pound of tea without the packing paper being included in the weight. But it is hardly exaggeration to state that nutrition became almost an exact science during the existence of the Ministry. Long before the war, of course, Voit and Chittenden had demonstrated that good mental and physical work required a certain level of protein in the diet, but their figures differed so widely as to make reconcilement difficult, and the civilised world measured its food requirements, like the savage, by the comfortable sense of abdominal tension. The need for strict rationing, international and national, brought home elementary dietetic principles to all ranks of society, and particularly to those at the two extremes who needed it most. Stimulated by the Eltzbacher report in Germany, the Food Committee of the Royal Society drew up in 1916 a report on the Food-supply of the United Kingdom, and the late Sir William Thompson did a similar service for Ireland; more complete knowledge led to the issue in March, 1919, of a report on the Food Requirements of Man, including their variations according to age, sex, size, and occupation, which placed on a secure basis the quantitative aspect of the national food-supply as determined under conditions of sufficiency, if not exactly of plenty. The study of a scanty diet, which begins with Sir James McGrigor's prejudiced survey of prison diet in 1823, is now being continued with benevolent intent in several parts of the continent. Applying the Rohrer formula of weight to height, 70 per cent. of German children are found to be undernourished by the American Friends' Service Committee, and are to receive a supplementary daily meal. Thus the pre-war plenty, the war sufficiency, and the post-war scarcity are providing material for a scientific analysis of the quantitative needs of the human body, which no Government that has to deal with economic questions can afford to ignore. It might have been assumed that the Ministry of Health was collecting and codifying this material for use both in Government counsels and for popular education had not Dr. Addison specifically disclaimed in the House of Commons the need for the issue of such food lore. We regard the action of the German Health Department as well-advised in the issue of a manifesto on accessory food substances. For with the growing realisation of their place in the bodily economy much of the older teaching, based on mere food value, will go overboard. And it is the function of a Ministry of Health to instruct the people in the right conduct of the common everyday things of life.

Viscount Astor's resignation as Parliamentary Secretary to the Ministry of Health leaves the position open for the appointment of a medical man.

THE Oliver Sharpey lectures will be delivered at the Royal College of Physicians of London on April 12th and 14th at 5 P.M. by Dr. Thomas Lewis, the title being "Observations upon the Nature of Auricular Flutter and Fibrillation."

AT the next election to the Council of the Royal College of Surgeons of England, which will take place on Thursday, July 7th, there will be four vacancies, and the following 11 candidates will submit themselves to the vote of the Fellows: Mr. H. J. Waring, Mr. F. F. Burghard, Mr. W. Thelwall Thomas, Mr. A. H. Cheatle, Mr. J. H. Fisher, Mr. William Turner, Mr. C. H. Fagge, Mr. Victor Bonney, Mr. L. Bathe Rawling, Mr. Donald J. Armour, and Mr. Russell J. Howard. Mr. Waring and Mr. Burghard are retiring by rotation and offering themselves for re-election.

A DEFENCE OF THE MINISTRY OF HEALTH:

DR. ADDISON'S SPEECH AT EXETER.

SPEAKING at a dinner given by the Mayor of Exeter (Dr. A. C. Roper) on March 30th, Dr. Addison, Minister of Health, said the man who deserted a professional career and entered upon the uncertain path of a political life was rather looked upon as a suspect by the average professional man. He was glad that, at all events, the citizens of Exeter had recognised that medical men in their city council could, and ought to, render service. And what was true of the city of Exeter, he thought, ought to be true in the councils of the State.

Outlook of Medical Men on Public Affairs.

It always seemed to him to be a singular drawback to their profession that, immersed as most of them were in attendance upon the individual, they were apt to overlook, or perhaps they had not time to think about, the community of which that individual formed but a single part. They did not require to think far before recognising things which, as professional men, they knew should and could be done, but only by some measure of collective action of instruments of government. He believed that the suspicion with which a good many medical men regarded the medical politician existed only because their profession was so interesting and their work so absorbing that they had neither the time nor the disposition to study health questions from the State point of view. Whether or not that was the explanation, he recognised the fact and endured it with all the fortitude he could. While there had grown up in this country a collection of responsibilities, powers, and duties, scattered about through various departments of the State, concerned more or less with promotion, preservation, or protection of the life and health of the individual citizen, they had never been brought together as far as was possible, organised collectively, and directed as one.

First Efforts of the Ministry of Health.

The Ministry had not yet been at work very long; it had had a good many teething troubles, and was not without its critics, especially in certain sections of the press, which were perhaps sometimes more interested in the ventilation of a personal grudge than in the statement or consideration of the facts of the case on their merits; and so it came about that there were many things which had never been stated or even understood. In the first place, he thought that the motive of the Government organisation and development of the health services of the State ought to be increase of the value and efficiency of those services for the prevention of sickness and disease.

Housing.

No subject undertaken at the Ministry of Health had brought them more ridicule than that of housing; but he put housing first as a preventive health service. A start had been made, and they at least knew where they were going. For the first time a duty had been cast—and he did not apologise for its being a duty—upon local authorities to make a return as to what were the needs of the community in terms of houses. According to the 1911 standard two million people were said to be living under insanitary conditions. He wanted to alter that standard; it was useless to talk of stamping out tubercle when so many people were compelled to live in houses condemned as unfit for human habitation. It might well be that it would take 20 years to get the rehousing of this country on a well-established basis: but that was a matter of no consequence. What mattered was that they had obtained a minimum standard, based upon the health requirements of the people for two-thirds of the hours they lived. This measure was more essential, he believed, to improving the health and well-being of the child and other population than any other that could have been taken up. The Ministry had been beset with all manner of difficulties, but they had ploughed their way through some of them; the rest would be overcome in time. Soon they would be coming to the second stage—the allocation to every city and town within the limits of finance available a sum to help in dealing with the insanitary dwellings in their midst, and he believed the views of the medical profession thereupon would be unanimous.

Medical Advice in Public Policy.

Proceeding, Dr. Addison said there could be no doubt that the medical profession would more and more be forced into public affairs by public opinion and the spread of education. It was one of the first requirements of their profession that there should be central and local bodies of men accustomed to meet together and discuss public questions in which professional knowledge or interests were concerned, so that considered professional advice might be available when required. Public bodies and the State also, he thought, had often gone wrong, or missed an opportunity because of the lack of such guidance and advice; and he would repeat what he had already said in London a short time ago—a request to his professional brethren to get busy on this matter.

Passing on to the question of hospitals, Dr. Addison said the great masses of the people were needing more expeditious hospital treatment, and that the accommodation available for them in the voluntary institutions was at present insufficient. Side by side with this was the mass of empty accommodation, and it was impossible to think that they could go on for ever like that. There was the demand on one side and the supply on the other, but the two never met; and because the Ministry ventured to think a little in advance, they got into trouble; nevertheless, they were going on with it.

Cancer.—Tubercle.—Child Mortality.

Referring to the cancer problem, Dr. Addison said he should like to see a more comprehensive attempt made to tackle it. Looking at the results from such knowledge as could be gleaned, it did not seem to him that they were much further ahead as yet. The tale of death was still as great, if not greater, and he thought there was a great opportunity for a wise expenditure of money in the interests of economy. Statistics showed that in 1918 58,000 persons died of tuberculosis in this country, the previous lowest year being 1913, when there were 49,000 deaths. In 1919 the number fell to 46,000, and last year it dropped to 42,000. The cost of the whole tuberculosis service, taking the country as a whole, worked out at rather less than a penny rate in regard to local authorities, and a farthing out of every £ in regard to the Exchequer. With regard to infant mortality, the death-rate in London fell to 85 in 1919 and last year was down to 75. He understood it was still going down; but if the work was handled properly it could go down to 50.

Preventive Medicine.

In conclusion, Dr. Addison said that preventive medicine was the cheapest investment for the State. Well-considered and well-directed health efforts paid; and they were only just beginning to see it in this country, and as time went on the medical profession would be dragged further into those efforts. Therefore he had no manner of doubt that as on every other occasion which had called for their response they would rise to it easily in characteristic British fashion; the time was at hand and great would be their opportunity.

AT the Queen's Hall, Langham-place, London, Sir Arthur Conan Doyle will deliver next week three lectures entitled "Death and the Hereafter: the New Revelation." The first lecture, on Monday evening, April 11th, is termed "The Human Argument"; the second, on Tuesday evening, is termed "The Religious Argument"; and on Friday evening the Summary and General Conclusions will be delivered. The proceeds of the lectures, which will commence each evening at 8 o'clock, will be devoted to a special fund for the furtherance of spiritualistic work. Tickets for the lectures may be obtained at Queen's Hall box office and of the usual agents.

MEDICINE AND THE LAW.

The Defence of Warranty in Milk Prosecutions.

A CONFERENCE held at Battersea recently, at which 20 borough councils were represented, condemned in a plainly worded resolution what are known as the warranty provisions of the Food and Drugs Act as applied to the sale of milk. The resolution was to the effect that the section relating to warranty defences operates to the prejudice of the purchaser and the public health, and should be repealed. The section of the Sale of Food and Drugs Act referred to enables the seller of that which is not of the nature, substance, and quality of the article demanded, to prove in his defence that he himself bought it as being of the nature, substance, and quality demanded, and with a written warranty to that effect, and that he had no reason to believe it to be otherwise when he sold it, and that it was then in the same state as when he purchased it. He is then acquitted, but remains liable to pay the costs of the prosecution unless he has given notice to the prosecutor that he will rely upon the above defence. The effect of this defence in milk prosecutions has been what might have been expected, and particularly so since it has been held that there need not be a warranty given with each delivery of milk, but that it is enough to show by oral evidence that the particular consignment was purchased under a warranty intended to cover a series of consignments. At the conference referred to a case was mentioned in which Mr. Bankes, the magistrate, had said that he was bound to dismiss any charge before him, even though the milk sold was adulterated with 50 per cent. of water, if a warranty were proved to have been given to the defendant and the other conditions fulfilled.

The Question of Irresistible Impulse.

In the case of R. *v.* Quarmby, argued before the Court of Criminal Appeal, Mr. Justice Darling, Mr. Justice Avory, and Mr. Justice Sankey made it clear that the bench is not likely to allow any modification or alteration of the legal test of insanity when put forward as a defence to a prosecution. In the case in question counsel in effect asked the court to decide that an irresistible impulse urging a man to commit murder might be recognised as having induced him to do so, and as excusing him from responsibility for his act. Mr. Justice Darling, in the course of his judgment, said that Mr. Madden, counsel for the appellant, had complained that the judge had left to the jury the law of England as other judges had left it, and did not leave it to them to decide whether the prisoner acted from an irresistible impulse—whether it was not his subconscious rather than his conscious mind which was acting. If he had done so it would have been the first time it had been done by an English judge.

The Risks of a Neglected Cut.

At an inquest held recently at Bow on the body of a publican, 59 years of age, it was proved that the deceased had cut himself when shaving and had paid no attention to the wound beyond covering it with a piece of paper. Severe erysipelas had followed and the man had died. A verdict of accidental death followed, the coroner, Dr. R. L. Guthrie, observing that it might be a counsel of perfection to advise a man who cut himself with a razor to use an antiseptic immediately. It is not stated whether the paper used was a piece of the gummed edge of a sheet of postage stamps, but that certainly is regarded by many ignorant people as a convenient kind of "sticking plaster," regardless of either the original composition of the adherent or any subsequent impurity acquired. The postage stamp is less dangerous than the cobwebs which were used popularly for the stopping of bleeding before postage stamps were invented, and which are still employed in country districts, where barns and outbuildings make them easily obtainable. The knowledge that a wound of any kind should be kept as clean as possible is no doubt spreading, and deaths from such causes as the above are less common than formerly.

Need for Compulsory Cleanliness.

The necessity for revision of legislation dealing with cleanliness of the person was emphasised at a recent inquest held by Dr. F. J. Waldo, H.M. City Coroner, on a woman who died at Holloway Prison whilst undergoing a sentence of 14 days' imprisonment for being drunk and incapable. She had been found lying in a gutter, and when received into the prison was found to be in a very verminous condition and also to be suffering from scabies. Everything possible was done for her. The jury returned a verdict of death due to coma from blood-poisoning, following upon cellulitis of the neck caused by the bites of lice and from self-neglect, and the following unanimous rider was added:—

> "We are strongly of opinion that the Adoptive Act known as the Cleansing of the Persons Act, 1897, should be made compulsory, and that all local authorities should be called upon to provide cleansing and disinfection free of cost to all persons infested with vermin, and applying to the said authority for the cleansing of the person and clothing from vermin; further, we suggest that compulsory powers be given to the police to take any persons found in a public place, and visibly infested with vermin, to a local authority to be cleansed."

Dr. Waldo pointed out that vermin have been spread amongst children and others through verminous persons making use of seats intended for the public in such places as the Embankment and public parks, and also through merely lying on the ground. He pointed out that filth diseases, such as typhus and relapsing fever and trench fever, were spread by the agency of lice; the danger arising from these insects having been increased by the return home of soldiers and sailors. He personally did not at any time favour Adoptive Acts; in the past 10 years he had known of several deaths due directly to lice, and he had constantly advocated the conversion of the Cleansing Act into a compulsory measure. Persons like the deceased refused treatment when it was suggested by the police and others, and spread vermin broadcast in shelters and common lodging-houses, and sometimes even in prisons. When the Act was passed in 1897 he was medical officer of health at Southwark, and his local authority refused to adopt it on the score of expense. The Marylebone and St. Pancras authorities had first made use of the Act. He said that he would forward one copy of the rider to the Home Secretary and another to the London County Council.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Irish Census.

As was anticipated, the Government has recognised the futility of proceeding with an Irish Census in view of the opposition of a large proportion of the Irish people. An official statement has been issued to the effect that owing to the existence of a state of rebellion in the South and West of Ireland and the disturbed conditions in other parts of the country the Government, recognising that the returns of a Census would be incomplete or misleading, has decided to postpone the holding of a Census. It is further stated that under the Government of Ireland Act all responsibility in regard to the Census question passes to the Governments of Southern and Northern Ireland.

Asylums and the Deadlock.

The financial position of certain of the asylums of which the managing committees have declined to recognise the Local Government Board is rapidly reaching a crisis. For example, in Ballinasloe Asylum the officials and the great body of the attendants have been for the past two months without salaries or wages, and the present liability of the institution is £25,000. If the committee were willing to submit its books to Local Government Board audit the immediate advantage would be to secure the Government capitation grant, which originated under the Act of 1874, and was then fixed at 4*s.* a week, the principle adopted being that the Government should be responsible for half the cost of the inmates' maintenance. Under the Act of 1898 (Local

Government Act) the payment of these sums was transferred from the Consolidated Fund to the Irish Local Taxation Fund, which proved insufficient to pay the claims made upon it, and the asylum grant was accordingly reduced to 3*s*. 6*d*. per week per patient—a sum which, instead of paying half the cost, as originally intended, is now only a fourth of the cost of maintenance. Small as this sum may appear, in the case of Ballinasloe Asylum it amounted annually to £16,000. The anomaly in the case of the Ballinasloe Asylum is that while the committee refuses to recognise the Local Government Board, the Galway County Council, under which it works, recognises that Board.

Mental Disease in Ireland.

The annual report of the inspectors of lunatics for 1919 has recently been issued; it is founded upon official figures which in the near future, it seems, will not be forthcoming from any effective numbering of the people. The number of lunatics under care at the end of 1918 was 22,868 (males, 11,819; females, 11,049), and at the end of 1919 22,578 (males, 11,690; females, 10,888). The decrease in the total number of the insane under care, which has been going on since 1915, still continues, although at a reduced rate, the decrease in 1919 having been 290, as compared with 1025 in 1918. The total decrease during the five years from 1914 to 1919 amounted to 2602, or an average of 520 per annum. The last report referred to the fact that the reduction in the numbers was not due to any lessening of the admission rate in the district asylums, but to a heavy death-rate. The admission rate continues to increase, but the death-rate in these institutions, which amounted to 10·5 per cent. of the average number resident in 1917, and to 11·1 per cent. in 1918, fell to 9·3 per cent. in 1919. In spite of the decrease in recent years the number of the insane under care has increased from 268 per 100,000 of the average estimated population in the quinquennium 1880-84, to 546 per 100,000 in the quinquennium 1915-19. The total number of deaths was 1796, of which 9 were due to violence—viz., 2 from suicide, 5 from misadventure, and 2 from injuries inflicted by fellow-patients. In the previous year the number was 7—viz., 3 from suicide, 3 from misadventure, and 1 from injuries inflicted by a fellow-patient. One of the deaths from misadventure was from an unusual cause, the eating of yew leaves which had been distributed as "palm" on Palm Sunday.

Farewell Luncheon to the Medical Commissioner of Ministry of Pensions.

Medical men working in Ireland in connexion with the Ministry of Pensions feel much regret at the departure of Dr. D. A. Carruthers, who has been for two years Commissioner of Medical Services, and a luncheon was held on April 2nd at Mills's Restaurant, Dublin, attended by the members of the medical boards, by the medical referees, and the medical staff of the Ministry of Pensions in the Ireland (South) Region, to entertain him on the occasion of his departure from the Region. About 40 members of the medical profession engaged in the various branches of work in the Ministry of Pensions in the Region were present. Dr. C. R. Kilkelly (in the chair), Dr. F. E. Rainsford, Dr. H. B. Beatty, and Dr. R. J. Rowlette each voiced the esteem in which Dr. Carruthers was held by the various departments over whose work he has presided. A presentation and address subscribed by 70 medical men was made, and a further one on behalf of the clerical staff of the Medical Services Branch. Dr. Carruthers is succeeded in Ireland by Dr. H. S. Sugars, D.S.O.

Royal Victoria Hospital, Belfast.

The annual meeting of this institution was held on March 31st, Lady Pirrie, President of the hospital, being in the chair.

The medical report showed that 4270 intern patients had been treated during the year, an increase of 347 on the number for the previous year. Of the new cases admitted 2878 were surgical and 1099 medical. There were 2148 surgical operations performed in the wards, with 64 deaths after operation, giving a mortality of 2·98 per cent. The average stay of each patient in hospital was 25·4 days. In the extern department 30,236 new cases were treated during the year, as against 27,262 in 1919. The total attendances in this department numbered 90,708 (daily average 248); 418 surgical operations were performed in the extern theatre. Over 300 students received clinical instruction in the hospital during the year. The honorary treasurer, Mr. Henry Berrington, submitted the financial statement, which showed that the total revenue receipts from all sources during 1920 were £55,716 13*s*. 9*d*., an increase of £11,466 9*s*. 3*d*., as compared with the year 1919. The total revenue disbursements were £56,796 1*s*. 7*d*., an increase, as compared with 1919, of £11,466 9*s*. 3*d*. The cost per bed had risen from £65 in 1913 to £157 per bed in 1920. Mr. Berrington referred gratefully to the large increase in receipts. Lady Pirrie, in her presidential address, congratulated the hospital on its comparatively favourable financial position, and announced the receipt of two cheques which would more than wipe out the small adverse balance upon the year's working. She referred sympathetically to the retirement of the late superintendent, whilst giving a hearty welcome to his successor, Colonel J. V. Vincent. Colonel A. Fullerton, in submitting the medical and surgical report, dwelt on the great pressure upon the various departments of the hospital and on the need for further extensions. During the meeting it was announced that the hospital had received possession of an additional grant of six acres of ground and a portion of the buildings of the former asylum from the city corporation of Belfast.

A hearty vote of thanks to Lady Pirrie for presiding was passed on the motion of Professor Lindsay, chairman of the board of management of the hospital.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Cases of Bubonic Plague in a Paris Hospital.

AT a recent meeting of the Société Médicale des Hôpitaux Mr. P. Teissier made mention of 43 cases of bubonic plague treated at the Hôpital Claude Bernard from August to December, 1920, during an outbreak of the disease in Paris. In all the cases the diagnosis was controlled bacteriologically; 9 proved to be severe forms of the disease, 17 were of moderate severity, 17 were mild forms. All the patients were cured. Mr. Teissier has come to the conclusion that serum should be injected without delay as soon as the disease is suspected, and that the treatment should be intensive. These two principles were adopted in the treatment of his own patients, who were given injections of serum from the Pasteur Institute. Mr. Teissier recommends a daily intravenous injection of 100 c.cm. of serum, and if the first injection has not caused the temperature to drop, two injections of 100 c.cm. on the next day. Some of his patients suffering from severe forms were injected with 800 c.cm. of serum in the course of eight days; in children between 6 and 10 the dose of serum was 40 to 50 c.cm. When dealing with the bacteriological findings Mr. Teissier said he thought that laboratory investigations should not merely consist in looking for Yersin's bacillus in the serous fluid or pus from the enlarged glands, and emphasised the necessity of a blood culture, since in most of the cases he has treated Yersin's bacillus has been present in the blood right from the onset of the disease.

Remuneration of Practitioners Treating Pensioners.

According to a French Parliamentary Act of March, 1919, the remuneration of practitioners who are treating ex-service men in receipt of disability pensions is a State obligation when they are consulted for sequelæ due to war wounds or diseases contracted in or aggravated by service. At the time the Bill was passed it was decided that the rate of remuneration was to be settled by arbitration. A committee was appointed to deal with this matter; since its formation meetings have been held, to which the various medical associations and syndicates have sent delegates. Decisions arrived at had to be sanctioned by the Ministry of Pensions and the Treasury: a decree has just been published in the Journal Officiel, standardising professional fees. In boroughs where there are less than 200,000 inhabitants 4 to 5 francs will be the fees for every attendance; in boroughs where there are more than

200,000 inhabitants the fees will be 8 to 10 francs. Each time a medical consultation is needed the rate of remuneration will be increased by 50 per cent.; travelling expenses must on no account exceed 1 fr. 50 per km.; surgical operations will be performed free of charge in State hospitals. The committee of the Union des Syndicats Médicaux de France held a special meeting to consider the decisions of the Minister of Pensions and protested against them, at the same time urging doctors to refuse to comply with the decree in the presence of the disabled ex-service men whom they attend. This attitude is due to the fact that the committee of the Union des Syndicats Médicaux de France is of opinion that the provisions made under the arrangements of the decree are not sufficient to secure adequate treatment for the men concerned.

Scottish Medical Students in Paris.

You have already announced the visit of Edinburgh medical students to Paris. Lectures and demonstrations on midwifery, to be delivered in English, have been organised in three of the hospitals for their benefit. This course was organised by Professor P. Bar in order to give Scottish students the opportunity of conducting a fair number of labours, since the course of practical midwifery is restricted in Edinburgh hospitals as compared with those of Paris owing to the relatively small number of confinements. On their arrival in Paris the Edinburgh students were greeted by some of the members of the Association Générale des Etudiants, who have arranged accommodation for them. Professor H. Roger, dean of the Faculté de Médecine de Paris, gave the students a warm welcome at the Clinique Tarnier. In the course of his speech he emphasised the common Celtic origin of the Scottish and French nations, and said that for that reason he wished to greet them as fellow countrymen rather than as foreigners; he also referred to the great popularity of the works of Sir Walter Scott in France, and finally commended the industry, culture, and hospitality of the Scottish people, expressing the hope that those whom he was addressing would find an equivalent hospitality here. It was arranged that the men students should attend the Baudelocque and Tarnier Cliniques; women students, of whom there are 17, will attend the clinic of the Hôpital de la Pitié. The professors who will superintend these special courses are MM. P. Bar, A. Brindeau, A. Couvelaire, J.-L. Faure, and P. Lequeux. In a few weeks' time new groups of Scottish students will replace those who are at present in Paris.

March 31st.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Malaria in Austria.

BEFORE the war malaria was a very rare disease in the part of the Empire which now constitutes the Austrian Republic. In Vienna, where all sorts of patients came together, cases from the southern districts were occasionally encountered, and students were always on the look out for one of these interesting and rare patients. But when soldiers were sent from the fighting lines in Italy, Serbia, Albania, Roumania, and Russia, malaria of all varieties prevailed, and it soon became necessary to organise a special malaria service. Apart from laboratories and other arrangements behind the fronts, a central malaria hospital was instituted in Vienna for treatment and study under a malaria board, to which all cases of the disease had to be reported. With the return of prisoners of war who had spent years of captivity in unhealthy districts (Siberia, Turkestan, Sardinia, Asia Minor), the numbers of new cases continued to increase. In Vienna alone there were no less than 10,610 cases of malaria caused directly by captivity; 1603 of these were first reported in 1920, the bulk being reported in 1919, when most of the homecoming prisoners arrived in the country. All these cases were carefully examined before permission was granted to mix with their people; cases requiring treatment were detained and properly dealt with. All infected persons are required to report as soon as symptoms return, and at least once a year, because exact records are kept of every case. Treatment is gratuitous and compulsory, and frequent public instruction is given as to the dangers of neglect of hygienic precautions.

Exploratory Laparotomy in a Hermaphrodite.

The problem of definitely settling the question of sex in a case of hermaphroditism is at times so difficult as to baffle all hitherto applied methods. It is well known that individuals regarded as masculine and educated on these lines have proved after all to be really females, and vice versa. Professor Meixner recently resorted to laparotomy to discover the sex of a 9-year-old child. The child, who was shown at a recent meeting of the Vienna Medical Society, had two well-developed labia majora and a very large penis-like clitoris, but no vagina; rectal examination did not give a clear result as to presence or absence of internal female organs. On opening the abdomen a small uterus was found, with two appendages, which were recognised by all those present as a normal ovary; on the left side a small, brownish body was also present, which microscopic examination proved to be a rudimentary testicle. The child was manifestly a true hermaphrodite, but to all intents a female, especially as the testis was removed. An animated discussion followed the demonstration, in which the advisability of laparotomy was questioned. But Professor Meixner pointedly remarked that nowadays an exploratory laparotomy, even in a child, is much less serious than some other operations performed for less urgent indications on children and adults. The importance of determining the actual position in life of an individual in infancy was of such an overwhelming nature that the slight risk involved was admissible. This was also the opinion of the majority of those present.

Increase of Fees for Foreign Students.

By an Order of the Board of Education the fees payable by students at the institutes and laboratories of the medical faculties of the three Austrian universities have been raised in such a way that foreigners have to pay more heavily than Austrians. In the coming summer term the general increase of fees will be 50 per cent., but for foreigners it will be 2500 per cent.; and for the latter the fee for graduation will be 1000 per cent. of the present fee. The rate of exchange, now so favourable to foreigners, will thus be partly compensated, but the foreign student will still be able to study here with a very small expenditure of money. He will have to pay for the whole term as many times 250 kronen (equal to 2*s.*) as his hours of study during the week. A class on gynæcology (four hours per week) will cost him 8*s.* for the whole term, on materia medica (six hours per week) 12*s.* Special courses do not come under the scope of this Order. The increase of regular fees was necessary owing to the grant by the Rockefeller Foundation of $60,000 to the University for the purpose of laboratory and institute outfit, made on the condition that the numerous foreign students taking their classes here should be forced to contribute by increase of fees to the State expenditure for the universities. It was considered unjust that an impoverished State should enable foreign students to obtain first-class medical instruction not only very cheaply, but at a cost so far below that of equivalent education in their own countries. It is expected that by these means a sum of 5 millions of kronen will be raised for the above-mentioned purposes within one year.

The Effects of the War on the Number of New Practitioners.

The Vienna Board of Health has published, amongst other interesting figures, a few statistical data as to the number of medical men who began practice in this city since the beginning of the war. Of the following figures the first after the date is the number registered, the second the number who still remain in practice in Vienna—1914 (from August 1st), 107-15; 1915, 104-28; 1916, 49-18; 1917, 60-25; 1918, 256-161; 1919, 424-332; 1920 (till end of September), 302-248. At the beginning of the war many doctors came to Vienna as refugees from country occupied and devastated by the Russians; and after the break up of the empire in 1918 all, or nearly all, practitioners of German origin in the various districts of the empire were driven away by the new governments and thereupon settled down in Vienna. They soon found out that the city could not provide a decent living for all of them, and some went into country places or changed their occupations altogether and became tradesmen or clerks.

The First Female Director of a Dental Clinic, and Unique Dental Conditions.

Dr. Erna Greiner is the first female dental surgeon appointed as director of a dental clinic in this country. The appointment is at the dental clinic in the Rainer Spital, our chief hospital for war invalids. The new chief is highly esteemed by patients and colleagues. In this hospital the dental cases met with are of an unusual type and severity, being mostly direct war injuries in the shape of partial or total loss of teeth. These are chiefly visible in the prisoners of war who returned recently from Siberia. The pathological changes of the dentures are more severe than any before seen in this country. The majority of these patients had suffered from scurvy, so that their teeth had become loosened and displaced, and when the men came under better hygienic conditions their teeth became firmly fixed in the new positions. In some cases renewed attacks, perhaps in the following year, loosened them once more, and the abnormality of position was sometimes fantastic. The masses of tartar deposit found on the teeth of some prisoners of war were huge—layers of more than a centimetre in thickness were found. Such cases were shown to the Viennese learned societies, as their conditions were unique, at least for this country. Elaborate treatments were devised to rotate displaced teeth into normal positions, or at least into positions where they might be used, but in many instances artificial teeth were found to be preferable.

Health of Vienna.

An unusually prolonged period of glorious sunshine and dryness has been enjoyed for more than four weeks in this city, the average being eight hours of sunshine daily and less than three millimetres of rain for the month. The health of the population has naturally benefited. Diseases of the respiratory tract have been rather frequent, owing to the dust and wind, whilst diseases of the alimentary canal, as so often happens in periods of bright weather, became infrequent. A constant increase of diseases of the circulatory system has been manifest for several years, perhaps due to the mental strain and over-exertion of the last few years. A mild epidemic of influenza which is prevalent at present is, no doubt, also alleviated by the bright weather, as formerly March used to be the month for colds in the head in this city. These colds are now slight and of short duration. The mortality has also been lower than in any of the previous 18 months.

April 1st.

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

Federal Health Department.

THE Prime Minister has announced that a new Department of Public Health will be created with a special Minister in charge. Hitherto the Quarantine Act has been administered by the Customs Department, with a medical Director-General. Mr. Hughes stated that the representatives of the Rockefeller Institute now in Australia, Dr. Heiser and Dr. Sawyer, had undertaken that their institute would supply several experts if the Commonwealth Government would inaugurate a special department of public health. After conference with Dr. J. L. Cumpston (the Director), it was decided to inaugurate a new department by the establishment of research laboratories in various parts of Australasia. A list was given which comprised Bendigo (Victoria) Port Pirie (S. Australia), Lismore (N.S.W.), Rockhampton, Mackay, and Cairns (Queensland), Darwin (N. Territory), Port Moresby, Thursday Island, and Rabaul. The terms of the arrangement with the Rockefeller Institute were not disclosed, and it is probable that the conjunction has political rather than scientific foundation, since there is likely to be opposition to any new Federal expenditure.

Mysterious Death of a Sydney Doctor.

The remarkable circumstances which led to the death of Dr. C. Tozer, of Sydney, have not been further investigated owing to the continued illness of Mrs. Mort, who is detained on suspicion as the result of an inquest. The late Dr. Tozer was a graduate of Sydney University and a well-known figure in New South Wales, although little more than 30 years of age. He had played cricket in inter-State matches and was a batsman of the highest class. He had also a good war record. So far as meagre details are disclosed, it appears that he and Mrs. Mort had known each other for many years. The lady is supposed to have been addicted to drugs and was under medical care. Her husband asked Dr. Tozer to call and see her professionally. He went to visit her and after some hours was found dead in the room with a bullet wound in the head. Mrs. Mort was in another room in a state of collapse, from which she has not yet recovered sufficiently to allow of her attendance at any judicial proceedings. The latest report was that her condition showed no improvement. She was committed for trial after the coroner's inquiry.

Research on Native Fauna.

The Victorian Government has granted some 80 acres of mountain land in the district round Healesville to Dr. Colin Mackenzie as a farm on which Australian native animals may be kept in their original condition and observed as to habits and food proclivities. Dr. Mackenzie will make this an important adjunct of the Research Institute which he has successfully founded in Melbourne for the study of the comparative anatomy and developmental changes in native animals. His work on the comparative anatomy of the cæcum and vermiform appendix in Australian mammals, and his research on the glandular system in the platypus are already well known to your readers.[1] The importance of having work of this character done is emphasised by the fact that some of the native animals are already almost extinct.

Friendly Societies.

The dispute between the Victorian Branch of the British Medical Association and the lodges has almost reached a final stage in that all the objectors have accepted the terms demanded by the branch except the Manchester Unity Independent Order of Oddfellows. How long peace is likely to continue is problematical, as in consequence of the constant increase in prices and wages the medical men will possibly soon be compelled to insist upon a further increase in the lodge remuneration. The advance which caused the prolonged dispute only amounted to about *4d.* a week. Casual labour at present demands and obtains from 15*s.* to 25*s.* a day, while domestic servants' wages range from 25*s.* to 60*s.* per week and food. No advance has been made in the general standard of medical fees.

Feb. 8th.

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[1] THE LANCET, 1916, i., 183.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society will be held in the Gymnasium (old Board Room) of the Miller General Hospital, Greenwich, to-day, Friday, April 8th, at 8.45 P.M. Dr. A. M. Cato, the President, will occupy the chair, and Mr. C. J. S. Thompson, curator of the Wellcome Historical Medical Museum, will give an Historical Sketch of Military Surgery from the Earliest Times, illustrated by lantern slides.

A MODEL HYGIENIC CENSUS:

HOSPITAL AND HEALTH SURVEY IN CLEVELAND, OHIO.

THE Hospital and Health Survey of Cleveland, Ohio, has been made at the request of the Cleveland Hospital Council, a body representing 20 hospitals with a total of 3088 beds, by a committee appointed in October, 1919. The work was initiated with a view to promoting the public health and diminishing the number of preventable deaths in a particular American city, but the result has been a series of reports of more than local interest. Eleven paper-bound volumes containing in all 1000 pages may appear to be more than the subject should demand, but the task before the committee has involved the consideration of past history and present conditions and the visualising and providing for probable future development.

Founded in 1796, incorporated as a village in 1815, and chartered as a city in 1836, Cleveland is now the largest city in the State of Ohio, and the fifth city in size in the United States, having a population of about 800,000. It occupies an area of 58·7 square miles and extends for about 20 miles along the southern shore of lake Erie, being situated on both sides of the Cuyahoga River, where it flows into the lake. It stands 600 feet above sea-level, upon a soil which associates gravel and sand at some points with shale and clay at others. As may readily be appreciated, the lake and river, which combined to invite the founding of a town and to facilitate its early sanitation, are not unconnected with the problems that accompany a population already approaching a million. Sewers which empty themselves into a lake, adapted also for the dumping of drier refuse, have to be taken into serious consideration by those concerned with the purity of a city's water-supply, and the health of a population which in hot weather seeks its bathing beaches.

We are little concerned here with the bathing beaches that invite a population liable to experience 92° F. in May, 100° in August, and 98° in September, but it is necessary to remember such figures in reading the Survey not only where it deals with water. They are fully as relevant to the consideration of housing and house sanitation, the collection of refuse, and questions of health generally. Lack of housing accommodation and over-production of refuse in crowded areas are among our own problems, and we, too, in some of our cities find conditions aggravated by the presence of foreign elements of population not over-zealous for cleanliness. In any case, the Survey of Cleveland's difficulties contains lessons applicable, *mutatis mutandis*, to questions of public health that are cosmopolitan.

In the first volume of the Survey general introductory matter is followed by the consideration of water-supply, sewage disposal, and housing, including the sanitation and environment of dwellings, some of which are described in detail. The difficulty of rendering and keeping slum dwellings sanitary is not confined to Cleveland, and some of the photographs which illustrate its waste places might have been taken in many cities of the old world as well as in the new. Photographs, by the way, can afford but little more than arid impressions of dismal streets and untidy back yards. They are as inadequate for the representation of the horrors of decaying refuse and filth as they are for recording the turbulence or the majesty of a stormy sea.

The second volume, devoted to Public Health Services and Private Health Agencies, contains details of organisation of an interesting character and some outspoken criticisms. The coroner system, for example, which exists in the United States for much the same objects as with us, is not only condemned as a whole as presenting opportunity for "graft" and for the covering up of crime and preventable deaths, but on the same page it is frankly declared that as long as coroners and their medical examiners and assistants are selected with a view to their political usefulness rather than for their fitness for their posts "our cities, and among them Cleveland, will continue to be ill-served in this respect." We are inclined to envy the authors of the Survey their apparent freedom from anxiety on the score of possible libel actions (taking into consideration the fact that there cannot be many coroners in Cleveland) as well as to sympathise with them in their desire to see the coroner's office rendered useful and effective. The struggle of THE LANCET in a like direction in the past will be remembered by all familiar with its history. We also note here that Boston and New York have solved the difficulty by substituting a "medical examiner" for the coroner. In a country where so much independence is allowed to local legislatures we may learn some day that Cleveland or Ohio has done the same. There is, however, one subject in Cleveland which the Survey confesses "must be approached in a tactful manner because of the large amount of capital involved," patent medicines to wit. It is also recognised that many people buy them and practise self-medication, and that local newspapers exist largely upon their advertisements. We sympathise here with the authors of the Survey. We are not ourselves afraid of criticising the quack nostrum vendor or the newspapers who advertise his wares, but we recognise the weight of his financial interests and his vested rights. We observe, without much hope of its efficacy, that as a partial remedy at Cleveland a committee is suggested to examine and obtain the cessation of the worst advertisements and to find for the newspapers affected others of an innocuous character.

Part VIII. of the Survey is devoted to Education and Practice in Medicine, Dentistry, and Pharmacy, and Part X. to Hospitals and Dispensaries. Hospital service and its maintenance must everywhere depend largely upon traditional usage peculiar to the country concerned. The maintenance of hospitals has for its object the provision of institutional medical aid for those who cannot pay for it at the expense of others who can, and therefore much must depend upon the willingness or power of the wealthy to tax themselves, and upon the willingness or power of the legislature to institute taxation. These are local conditions affecting different countries in different ways. In such a work as the Survey, however, interesting records may be found of experience obtained in such matters as the contribution of patients to hospital funds and the value of "social service" in supervising and ameliorating conditions in the homes of poor patients. It is pronounced impossible in Cleveland in present circumstances to discharge all patients to convalescent homes, and at the same time it is recorded that visits to 200 discharged patients found 87 per cent. of them in home environment unfavourable to convalescence. The problem of convalescent care is dealt with briefly, but valuable suggestions are made in a memorandum by Dr. Frederic Brush, of New York.

CHILD HEALTH WORK.

The report drawn up by Dr. Josephine Baker gives a clear and comprehensive account of the various functional activities coming under this heading. They include prenatal, maternity and infant care, and the care of children under school age; also schools, institutions, and dispensaries for children. Under each of these subdivisions both the present status and needs, as well as recommendations for the future, are set forth in some detail, in accordance with the two fundamental bases laid down for effective child-hygiene work, these being (1) that prevention of disease is the first consideration, with such corrective health measures as may be necessary to ensure a normal physique during childhood and sound health during adult life; and (2) the necessity for continuous coördination and effective health supervision from the prenatal period through adolescence.

The three main criticisms of the organisation as it stands at present are the lack of coördination of the activities for child welfare as a whole; the weakness—apart from antenatal work—on the side of prophylactic measures; and the tendency, repeatedly referred to in the course of the report, to view the immediate results of any given effort for child hygiene as an adequate test of its success, whereas it is, of course, only after the lapse of time that the measure of success achieved can be truly gauged—e.g., proper maternity service should be measured not only by the reduction in the maternal mortality-rate but by the future health of the mother and child.

Various ways are suggested for meeting the existing lack of coördination, one of them being the establishment of a Central Child Hygiene Council, which should, among other duties, coördinate the work of all public and private agencies, and also maintain a central clearing house to receive and tabulate all essential statistics on child-welfare work, and to act as a link between the executive groups. The second criticism, dealing with the inadequate attention paid to the prophylactic side of the work, is met by various specific and very practical recommendations under each heading.

Some of the more important sections of the report deal with the antenatal and maternity work done in Cleveland. The marked reduction in the university district of the stillbirth-rate among cases receiving prenatal care—these forming a very limited proportion of the total number—is quoted as showing that Cleveland needs three times the facilities it possesses at present for prenatal care. Dr. Baker adds:—

> The figures given by the Maternity Centre Association of New York City show that among 502 women supervised during their pregnant periods and receiving proper care at time of confinement there was only one death. Maternal mortality ranks second highest in the list of causes of death among women between 15 and 45 years of age in the United States, being exceeded only by tuberculosis. Reduction in the death-rate of mothers and babies as a result of prenatal care can be effected with mathematical certainty. It is simply the question of providing the type of case that has already been recognised and standardised.

Among the various recommendations appended to this section are included suggestions as to the composition and function of a committee on Prenatal Care as a part of the Central Child Hygiene Council; while under the section of Maternity Care important and far-reaching recommendations are made, dealing with birth registration (at present not more than 80 per cent. of the births occurring in Cleveland are reported to, and registered by, the Bureau of Vital Statistics of the Division of Health), with hospital facilities, and with a suggested programme for the control of midwifery.

In the section on School Health Supervision many important points are brought out, such as the disproportionate time given to finding defects and recommending treatment compared with that given to seeing that those defects are remedied and the child's mode of living and home surroundings improved. In the Department of Medical Inspection for the school year 1917–18 32,918 children were found to have physical defects, while only 38·1 per cent. of these were reported as having been corrected, these corrections being, moreover, almost all of the most obvious defects, while defects such as anæmia, scoliosis, and defective nutrition were uncorrected.

VENEREAL DISEASE.

In the past, apart from such treatment facilities as have been available through the dispensaries, the city hospital, and the general medical profession, no special steps have been taken, or work performed, for combating venereal disease. A special programme has now been drawn up containing a large number of recommendations for the diminution of the incidence of such diseases. Amongst these recommendations are the following, which for the sake of convenience may be placed under three headings: (1) measures directed to the protection of individuals from exposure; (2) the elimination of environmental conditions favouring dissemination of venereal diseases: (3) provision and maintenance of facilities for diagnosis, treatment, and control of infected persons.

Under (1) come such measures as educational work in schools, homes, and churches for the purpose of character building, the instruction of the public on hygiene, the dissemination of knowledge on the prevalence, method of spread, and serious consequences of V.D., the improvement and regulation of amusements, recreations, and athletic organisations, the safeguarding and bettering of home surroundings, and the encouragement of early marriage.

Under (2) are grouped such measures as the elimination of the commercialised aspects of prostitution, the prevention of solicitation, and the prosecution of persons employing premises for illicit purposes.

Under (3) are included such measures as the maintenance of advisory clinics fitted with facilities for early diagnosis and efficient treatment. The control of infected persons is provided for through instruction on the subject of venereal diseases by the physician responsible for treatment. Definite standards of cure are to be established, and penalties enforced for exposing others to infection. In order to stimulate and direct the campaign against venereal diseases the report recommends the establishment of a special bureau in charge of a full-time medical man. This medical officer in charge of the bureau is a full-time official, having under his command various assistants (such as nurses, clerks, &c.), in order that he may be able to conduct a comprehensive campaign for the eradication of gonorrhœa and syphilis. The duties of such a bureau will be the organisation, the supervision, and the stimulation of treatment facilities, the returning to treatment of those patients who fail to continue under medical care until cured, and the education of the public upon the methods of contraction, spread, control, prevention, and treatment of venereal diseases. The duties of the chief of this bureau in completing a comprehensive programme would preclude any clinical work, either private or public. In order to gain the absolute confidence of the medical profession he should have had clinical experience in the treatment of V.D., although he should not be required or permitted to undertake clinical duties.

The following plan of organisation for the venereal disease bureau of the Division of Health is suggested:—

Working under the M.O. in charge of the bureau is a staff consisting of two nurses, an agent, and clerks. The main function of the bureau is apparently educational—the instruction of the public upon the general subject of prevalence, mode of transmission, serious consequences of syphilis and gonorrhœa, and the necessity for prompt and continuous treatment. This educational work is to be undertaken by means of lectures, cinemas, and pamphlets, and is directed so as to reach all classes and ages of the community. A special "follow-up" system is recommended for such patients as fail to complete their course of treatment at the venereal clinics by means of cards being sent out in sealed envelopes.

Finally, certain recommendations are made with regard to alterations in legislation. The campaign that is contemplated is, however, mainly of an educational nature, and does not include an appreciable alteration or extension of the legislation dealing with these diseases. The "age of consent law" should, according to the memorandum, be amended so as to protect young boys as well as girls under 16, and more protection is to be given to mental defectives generally. Provision is made for the work of women police, and an educational campaign is to be undertaken amongst female prisoners appearing at police-courts. Altogether the crusade sketched in the memorandum is very complete. It should certainly result in a marked diminution of venereal disease in the town of Cleveland.

MENTAL DISEASE AND MENTAL DEFICIENCY.

The Cleveland Hospital Council directed that all hospitals and kindred organisations in the city of Cleveland should be passed under review, and a section of the report deals with the medical and social problems arising from mental disease and deficiency. It is prepared by Dr. Thomas W. Salmon and Dr. Jesse M. W. Scott, and contains 511 pages of interesting details describing the provision made for the insane, for mental deficiency, for epilepsy, and the methods of dealing with delinquents, the juvenile courts, and the agencies for correction, welfare work, after-care, and the treatment of atypical children. A Survey such as this is extremely valuable in enabling the community to take stock of its medical and social work; it gives the public an opportunity of knowing what is done and learning some of the defects, and at the same time it indicates in what direction new legislation is needed.

If any doubt existed in the minds of the Cleveland City Fathers that the mental annexe of the Cleveland City Hospital needs to be reconstructed, the frank statements in this report will convince the most reactionary. We are told:—

> "The wooden floors are nearly worn through, and it is impossible to keep them clean. ...... A short time ago a woman pulled up part of the floor in one of the rooms and escaped through the hole she had made. Rats and bed-bugs are numerous. ...... There is no classification of patients, the anxious and depressed occupy the same ward. Childhood and old age mingle. ...... The hard-working, self-respecting American woman, who has reared her children in a clean American home, ... listens all day to the curses of a young prostitute in a bed adjoining hers."

Plain speaking such as this must lead to reform, especially when accompanied by a striking series of photographs contrasting what is with what should be.

It is rather singular that in stating the defects of the existing system of treatment the same complaints are made with which we in this country are familiar—viz., that there is lack of provision for the early treatment of mental disorders. Physicians complain that there is no method of securing temporary observation of doubtful cases, especially for the poor, and that the present procedure prevents patients from applying for treatment in the early stages of their illness. One would have thought the City Hospital referred to was exactly what is needed, but this appears to be so managed that—

> "When one leaves the general wards of the hospital and crosses a little strip of grass to the doors of the building devoted to mental cases he leaves behind him not only the medical science of the present century, but in large part its humanitarian attitude towards disease and suffering."

It is surprising to find that there are no laws in Ohio providing for the inspection of private institutions for the insane, and anyone can at any time, regardless of qualifications, set up a private sanatorium for mental cases. The State mental hospitals are managed by a State Board of Administration, and there are no local boards of managers. The four salaried members of this board control 21 institutions, including the eight State mental hospitals. This centralisation of responsibility does not seem satisfactory. The Cleveland State Hospital is overcrowded, 1737 patients in space designed for 1450. In 1919 617 new patients were admitted, and about 10 per cent. of the patients die annually. It is parsimoniously administered throughout. The medical superintendent receives only $2500 yearly. The reference to this hospital concludes:—

> "The superintendent is trying in the face of these conditions to make his institution a hospital in fact as well as in name. ...... He will inevitably fail, if the people of Cleveland are unable to induce the legislature to change the policy of neglect that keeps its work upon the asylum level."

It is well to note the breadth of view which pervades the report. Custodial care in an asylum is repeatedly contrasted with treatment in a hospital, an attitude of mind needed in our own country. Space will not permit any reference to the great institution in Ohio containing 3125 feeble-minded persons, or of the excellent organisation dealing with delinquency criminals and other social failures.

It is disappointing to find that a wealthy State such as Ohio is not more advanced in its care of the insane, and at first reading it may be concluded that we have little to learn from the report. But before we can judge we ought to have one equally frank report of the conditions obtaining in one of our larger English counties. It is doubtful whether such a report would give ground for self-complacency. Although we may perhaps safely conclude that English mental hospitals and English lunacy administration are better than appears to be the case in Cleveland, we must admit that not all our public institutions really deserve the name hospital, whilst everywhere there is still a grave lack of any provision for the effective treatment of a poor person in danger of mental breakdown. The reproach remains that voluntary patients cannot be received in any of our public mental hospitals. If anyone in fear of such illness should apply for admission the only possible answer is in effect—

> "Go away; and when you get worse perhaps a doctor will sign you up. Then you must see a magistrate and persuade him to sign a Reception Order. If you will bring this with you we will gladly do all we can!"

HEALTH AND INDUSTRY.

The section devoted to a Survey of Industrial Medical Service and the Employment of Women and Children is not the least interesting of this series of reports. Dr. Wade Wright deals with medical service after carefully studying over 100 industrial concerns.

He found that 43 per cent. of the employees work in establishments employing 1000 or more, only 2·6 per cent. of all organisations; hence, by concentrating at first on the few larger concerns health supervision could be ensured for a large proportion of the workers. He reports that industrial medical service as at present conceived is comparatively new, crudely developed, and far from being standardised; while industrial nursing is perhaps even less standardised. Here objection is rightly raised to nurses freely administering sedatives for headaches and the like, and cocaine for removal of foreign bodies from the eye. Nevertheless, he remarks as worthy and creditable that about one-half of the industrial workers of Cleveland are upon occasion receiving some sort of medical attention in industrial plants, the cost at one large establishment amounting to $10.92 a year per employee and at another to $11.23. Industrial concerns, especially the smaller ones, are urged to combine for the purpose of starting industrial dispensaries in order to secure a medical and nursing personnel. Full medical care of the workers could by this means be ensured and possibly also of their families. Insistence is laid on the value of standardised medical records and on not accumulating useless statistical material; otherwise accurate estimates and comparisons of losses due to accidents and illness cannot be made or steps for their avoidance planned. A frequency rate of 93·7 accidents per 1000 workers per year, with an accident severity rate of 4·5 days lost per worker per year, which occurred in Ohio in 1914, gains insignificance when compared with a frequency rate of 201·7 accidents, with an accident severity rate of 2·6 days lost in 1919. Sickness, which leads to an average of seven days of lost time a year per worker is even more important, though studiously neglected; yet industry presents an unparalleled opportunity for detecting the causation of disease and observing treatment, since here many persons are brought together into groups, each of which is exposed to a different industrial environment.

The need for physical examinations is stressed, not for the purpose of rejecting workers but for selective placement. Cripples and persons handicapped by orthopædic conditions, deaf and dumb, partially and totally blind, and even pronounced and recognised mental defectives were found usefully employed. But, to prevent industrial unrest, psychological selection is required to avoid the burdens of fatigue and of unhealthy working conditions falling on those of deficient mentality. Dental service is strongly advocated; wherever it has been installed it has been enthusiastically accepted. The rôle an industrial medical service can play in combating tuberculosis and venereal diseases is noted. The need for special orthopædic work for rehabilitating industrial cripples is reviewed. Industrial hospitals are called for to treat the workers and to train industrial physicians and nurses. Finally, the establishment of a Bureau of Industrial Hygiene within the Municipal Division of Health is strongly recommended.

There can be little doubt that if action follows on the lines suggested by Dr. Wade, Cleveland will see a new industrial revolution.

The subject of Women and Industry is shortly reviewed by Marie Wright, who points out the great need for the working environment of women to be healthful since domestic duties render them less likely than men to take healthy recreation.

Recently more has probably been done for women than for men in order, during scarcity of labour, to attract them into employment; rest rooms, change rooms, lockers and overalls have appeared, and with them an increased feeling of well-being and self-respect among the workers. Cafeteria (canteens) have often been provided and welfare directors appointed for women and girls only. Still the need for extension of these things and for improved toilet facilities and washing accommodation is pointed out, and also the importance of providing, wherever possible, seats at work for intermittent or occasional use. In one particular Cleveland is behindhand—viz., in permitting the employment at night of women over 21 years of age; this practice is rightly condemned. Generally speaking, the recommendations made are sound, and fall into line with those put forward by Dr. Wright.

The Industrial Employment of Children is reported upon by Florence V. Ball:—

The Child Labor Law of Ohio, which is often cited for its excellence, prohibits the employment of boys under 15 and girls under 16 years of age. But "if the law is not enforced its excellence is without virtue," and reports were received from all sides of under-age children being regularly but illegally at work. Possibly the conditions may be better now that labour is less scarce. Nevertheless, improved methods and an increased personnel are called for to enforce compliance with the law upon both employers and parents, to whom children too often represent so much potential earning power for the family income; indeed, many children were employed doing adults work because of the labour shortage. Care and supervision of juvenile employment, in regard to alternate sitting and standing at work, change of posture, the wearing of sensible working clothes, a nourishing diet, plenty of sleep and fresh air, are pointed out to be much more important than for adults if the workmen of the future are not to be irretrievably damaged during adolescence.

Attention is particularly directed to juvenile employment in the manufacture of hosiery, the metal trades, printing factories, and telephone and telegraph work. Blind-alley occupations for boys are commented on, and the necessity is stressed for apprenticing each youth to a definite trade; left to themselves they will work themselves out at piece work in order to earn comparatively high wages without regard to their future or their health; in this connexion street-trading is specially condemned.

Medical examination of employed juveniles is claimed to be an inevitable extension of the medical inspection of school children, which has recently been started in Cleveland and is already of proved value. A medical permit preliminary to industrial work is suggested to be medically endorsed periodically as noted on the permit, and upon every change of employment. The author points to the need for scientific investigation into the effect of different classes of work upon the physique, morbidity, mortality, fatigue, and physiological development of adolescents; and recommends it should be undertaken.

This portion of the report has been most carefully considered and thought out; standards of physical fitness are suggested and methods of examinations set out; the organisation of a Junior Vocational Bureau is planned; and finally the recommendations requiring legislation are clearly summarised.

NURSING.

The Nursing Survey, which was in charge of Miss Josephine Goldmark, Secretary of the Committee for the Study of Nursing Education, is not only of inestimable value as an exhaustive study of the existent nursing services, but by the recommendations made it has revealed the tremendous possibilities which may be achieved by each department of nursing in health administration throughout the State. To study the "Nursing" Section of this Survey is to realise more forcibly than hitherto the vital part which must be played by the trained nurse as a "missioner of health" in getting over to the individual members of the community the laws of health which can alone evolve a healthy nation.

In reviewing the *Hospital Training Schools* in Cleveland it is obvious that nursing authorities are facing the same difficulties in producing an efficient nursing service as our authorities are facing in this country, the most prominent of which are financial difficulties: dearth of candidates; inadequacy of medical service for training; difficulty of arranging affiliated training that nurse students may have a broad general training; failure to correlate the theory and practice of nursing owing to lack of sufficient direct supervision by the instructor and to lack of suitable equipment.

The recommendations suggested to ameliorate some of these difficulties include—

(*a*) The establishment of a university training school which would bring about the independence of the hospital and training school, and would ensure better students and better instruction. The university would give a definite period of college training, an equal length of time for hospital training, and a final academic period for additional courses in nursing specialties. Such a scheme has been worked out in other States in America with great success.

(*b*) An adequate system of cost accounting in the training schools, which would include a separate budget for the training schools and would state the financial value of work done by the student nurses and the saving to hospitals from the utilisation of their services.

(*c*) Compulsory minimum educational requirements. (An urgent need in this country as a means of reaching the right type of woman and increasing the number of candidates.)

(*d*) Improved equipment and qualified instructors for the education of the nurses.

(*e*) Affiliation of the different hospitals in order to furnish adequate clinical facilities for the general training, and special courses arranged for students intending to enter the field of public health.

(*f*) The payment of all lecturers.

(*g*) The provision of ward helpers, which would enable the three years' hospital course to be reduced. The principles underlying such reduction to be (1) that all nurses in training should have the same basic education, after which they may be graduated with the certificate or diploma of nurse; (2) that, in addition, courses should be provided leading to a special diploma for public health nurses, for teaching and administrative positions in hospitals, and for specialties in private duty.

The Western Reserve University has provided an excellent course in Public Health Nursing for district nurses; such a scheme is highly commendable, and could be developed with advantage in this country.

The most commendable feature of the *Public Health Work* in Cleveland is the correlation of the various services under the Central Nursing Committee, which represents the Division of Health of the City Department of Welfare; the Board of Education; Babies Dispensary and Hospital; District (Visiting) Nurses Association; Anti-Tuberculosis League; Western Reserve University Teaching District.

The existence of such a committee has proved a valuable asset for public health nursing in Cleveland, and results in a generalised system maintaining a uniform high standard of nursing care, and lessens the chance of duplication and misunderstanding among the various agencies at work.

CONCLUSION.

This Survey of the Public Health Services of Cleveland, which is a realisation of its responsibilities in health education by the Western Reserve University, is impressive; splendid work is being done in a district having an estimated population of 65,000 inhabitants. One of the poorest and most congested areas has been set aside as a practice field for the practical training of public health nurse students, and has proved a valuable laboratory for experimentation in policies and methods of an educational character. Industrial nursing is being widely developed, and, although one of the youngest of the Public Health Services, it is nevertheless one of the most important.

In dealing with *Private Duty Nursing*, the employment of trained attendants has been a subject of lively controversy, but it is rightly felt that the framing and enactment of suitable legislation must first take place before trained attendants are officially recognised.

One gathers from this Survey that the medical, educational, and health authorities of Cleveland are obviously alive to the fact that, unless women responsible for carrying out prescribed medical treatments and instructing the people in the laws of healthy living are expert and fully qualified to do so, the efforts of the medical profession and health authorities are proportionately frustrated. It cannot be denied that the work of the medical profession could be immensely enhanced by a body of educated women possessing not only a sound academic education, but a professional education qualifying them for the important work of bringing to the people the benefits of medical and sanitary science. Surely the moment is ripe for such a body as the Ministry of Health to make a survey of the nursing services available in this country, that we may realise where the weaknesses lie, and by adjustment and development of all available clinical opportunities may more adequately meet the needs of the community.

The concluding volume, Part XI., contains information on the method of survey adopted, under the title Method of Making a Community Diagnosis, followed by a Bibliography of Survey, in itself a valuable work of reference. and an index.

URBAN VITAL STATISTICS.

(Week ended April 2nd, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18½ million persons, the annual rate of mortality, which had been 15·2, 13·9, and 13·0 in the three preceding weeks, was again 13·0 per 1000. In London, with a population of 4½ million persons, the death-rate was 13·2, or 1·6 per 1000 above that recorded in the previous week, while among the remaining towns the rates ranged from 6·2 in East Ham, 7·5 in Barrow-in-Furness and in Wimbledon, and 7·7 in Enfield, to 20·8 in Oldham and in Sunderland, 21·3 in Middlesbrough, and 23·3 in Barnsley. The principal epidemic diseases caused 237 deaths, which corresponded to an annual rate of 0·7 per 1000, and comprised 69 from infantile diarrhœa, 62 from diphtheria, 49 from whooping-cough, 37 from measles, 17 from scarlet fever, and 3 from enteric fever. Measles caused a death-rate of 4·1 in Stockton-on-Tees and whooping-cough of 1·3 in Sunderland

and 1·5 in Rotherham. The deaths from influenza, which had been 149, 151, and 121 in the three preceding weeks, rose to 130, and included 44 in London and 5 in Manchester. There were 3535 cases of scarlet fever and 2689 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 3609 and 2777 respectively at the end of the previous week. During the week ended March 26th 3 cases of encephalitis lethargica were notified in the County of London, and comprised 1 each in Camberwell, Hampstead, and Wandsworth. The causes of 35 of the 4643 deaths in the 96 towns were uncertified, of which 8 were registered in Birmingham and 3 each in London and South Shields.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2¼ million persons, the annual rate of mortality, which had been 18·5, 17·8, and 15·3 in the three preceding weeks, rose to 15·5 per 1000. The 353 deaths in Glasgow corresponded to an annual rate of 16·7 per 1000, and included 34 from whooping-cough, 7 from influenza, 5 from infantile diarrhœa, 3 from scarlet fever, 2 from diphtheria, and 1 from measles. The 132 deaths in Edinburgh were equal to a rate of 15·4 per 1000, and included 4 from diphtheria, 3 each from measles and influenza, and 1 from infantile diarrhœa.

Irish Towns.—The 156 deaths in Dublin corresponded to an annual death-rate of 19·2, or 2·4 per 1000 above that recorded in the previous week, and included 5 each from infantile diarrhœa and influenza. The 140 deaths in Belfast were equal to a rate of 17·4 per 1000, and included 8 from whooping-cough, and 1 each from diphtheria, infantile diarrhœa, and influenza.

VITAL STATISTICS OF LONDON DURING THE YEAR 1920.

IN the accompanying table statistics of sickness and mortality in the City of London and in each of the metropolitan boroughs are summarised for the 52 weeks of the year 1920. With regard to the notified cases of infectious disease, it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to a rate of 8·9 per 1000 of the population, estimated at 4,531,971 persons in the middle of the year; in the three preceding years the rates were 4·2, 4·4, and 5·9 per 1000 respectively. Among the various boroughs the rates last year ranged from 5·3 in the City of London, 5·4 in Hampstead, 5·5 in the City of Westminster, 5·9 in Chelsea, 6·5 in St. Marylebone, and 6·7 in Kensington, to 10·1 in Finsbury, 10·6 in Bermondsey, 10·9 in Fulham, 13·9 in Stepney, 14·1 in Poplar, and 15·7 in Bethnal Green. Excluding 2 cases of which the diagnosis proved incorrect, 16 cases of small-pox were notified during the year against 11, 1, 0, 35, and 26 in the five preceding years; of these 11 belonged to Poplar and 2 to Stepney. The prevalence of scarlet fever showed a considerable increase last year; 22,713 cases were notified, against 6110, 6811, and 12,931 in the three preceding years. Among the metropolitan boroughs the greatest proportional prevalence of this disease was recorded in Bethnal Green, Stepney, Poplar, Bermondsey, and Deptford. The Metropolitan Asylums Hospitals contained 4729 scarlet fever patients at the end of the year, against 1246, 1087, and 2841 at the end of the three preceding years; 21,538 new cases were admitted during the year, against 6056, 6676, and 11,750 in the three preceding years. Diphtheria also showed a marked increase in prevalence; 13,784 cases were notified during the year, against 8174 and 9479 in the two preceding years. This disease was proportionally most prevalent in Fulham, Islington, Holborn, Shoreditch, Bethnal Green, and Poplar. The number of diphtheria patients remaining under treatment in the Metropolitan Asylums Hospitals at the end of the year was 2615, against 1089 and 1845 at the end of the two preceding years; the number of new cases admitted during the year was 13,203, against 8256 and 9053 in the two preceding years. The prevalence of enteric fever was somewhat greater than in the two preceding years, but was considerably below other recent years, 391 cases being notified, against 779, 647, 463, 452, 358, and 344 in the six preceding years. The greatest proportional prevalence of this disease was recorded in Kensington, Fulham, St. Marylebone, Hampstead, Holborn, and Greenwich. The number of enteric fever patients admitted into the Metropolitan Asylums Hospitals during the year was 196, against 470, 446, 324, 271, 242, and 215 in the six preceding years; 15 cases remained under treatment at the end of the year, against 68, 50, 37, 32, 23, and 25 at the end of the six preceding years. The greatest proportional prevalence of erysipelas occurred in Fulham, St. Marylebone, Finsbury, Bethnal Green, Stepney, Southwark, and Deptford. The cases of puerperal fever notified during the year numbered 452, against 199, 158, and 313 in the three preceding years; this disease was proportionally most prevalent in Hammer-

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING THE YEAR 1920.

(*Specially compiled for* THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1920.	Notified Cases of Infectious Disease.												Deaths from Principal Infectious Diseases.									Deaths from all causes.	Death-rate per 1000 living.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	4,531,971	16	22,713	13,784	—	391	7	452	2590	156	42	40,151	8·9	4	1007	207	1009	759	49	1141	4176	0·9	56,038	12·4
West Districts:																								
Paddington	149,673	—	503	465	—	19	—	16	80	1	2	1086	7·3	—	24	3	25	14	—	42	108	0·7	1653	11·1
Kensington	164,177	—	642	348	—	26	1	10	71	5	1	1104	6·7	—	22	5	22	23	1	70	143	0·9	2135	13·0
Hammersmith ...	136,200	—	727	384	—	8	—	21	57	5	6	1208	8·7	—	16	6	35	12	1	23	93	0·7	1525	11·2
Fulham	158,621	—	932	626	—	25	—	32	104	5	2	1726	10·9	—	23	9	45	17	4	35	133	0·8	1790	11·3
Chelsea	62,987	—	185	143	—	7	1	8	26	1	—	371	5·9	—	9	2	8	—	1	10	30	0·5	748	11·9
City of Westminst'r	132,615	—	391	237	—	16	1	10	68	2	—	725	5·5	—	12	5	9	4	3	23	56	0·4	1532	11·6
North Districts:																								
St. Marylebone ...	101,856	—	435	122	—	31	—	6	67	2	2	665	6·5	—	8	9	7	13	—	23	60	0·6	1267	12·5
Hampstead	91,519	1	265	164	—	23	—	1	39	2	2	497	5·4	—	8	4	5	6	2	5	30	0·3	822	9·0
St. Pancras	228,178	—	836	739	—	16	1	17	120	6	—	1735	7·6	—	62	11	30	62	1	44	210	0·9	2808	12·3
Islington	335,907	—	1306	1330	—	24	—	29	165	15	7	2876	8·6	—	93	12	134	72	1	73	385	1·1	4447	13·3
Stoke Newington...	52,984	—	223	166	—	2	—	2	24	1	1	419	7·9	—	5	4	20	10	—	13	52	1·0	676	12·8
Hackney	225,372	—	1093	774	—	14	—	23	124	7	—	2035	9·1	—	86	6	69	67	1	63	292	1·3	2827	12·6
Central Districts:																								
Holborn	39,676	—	122	147	—	6	—	1	22	1	3	302	7·6	—	6	2	5	2	—	10	25	0·6	588	14·9
Finsbury	78,291	—	432	226	—	6	—	5	113	4	3	789	10·1	—	11	4	27	12	—	16	70	0·9	1136	14·5
City of London ...	14,447	—	37	33	—	1	—	—	5	1	—	77	5·3	—	1	—	1	1	1	2	6	0·4	192	13·3
East Districts:																								
Shoreditch	102,014	—	521	398	—	11	—	11	61	3	3	1008	9·9	—	48	6	27	12	1	64	158	1·6	1567	15·4
Bethnal Green ...	114,471	—	1054	581	—	5	—	13	133	7	3	1796	15·7	—	62	12	35	56	2	49	216	1·9	1676	14·7
Stepney	241,770	2	2455	684	—	14	—	23	155	14	1	3348	13·9	—	49	15	40	73	3	86	266	1·1	3465	14·4
Poplar	159,766	11	1402	698	—	17	—	24	84	11	—	2247	14·1	3	35	14	57	54	4	47	214	1·3	2319	14·6
South Districts:																								
Southwark	187,142	—	893	457	—	8	—	17	178	8	—	1561	8·4	—	63	5	37	27	5	53	190	1·0	2685	14·4
Bermondsey	129,189	—	1001	278	—	6	1	21	54	6	—	1367	10·6	1	56	7	26	37	1	35	163	1·3	1673	13·0
Lambeth...	293,572	—	1240	714	—	16	—	32	140	6	5	2153	7·4	—	79	16	77	35	1	77	285	1·0	3800	13·0
Battersea	165,664	—	694	563	—	13	—	31	90	9	1	1401	8·5	—	45	7	36	33	2	52	175	1·1	2040	12·3
Wandsworth... ...	346,930	—	1470	1089	—	23	1	35	176	15	—	2809	8·1	—	49	11	66	19	3	48	196	0·6	3455	10·0
Camberwell	284,712	—	1305	912	—	16	1	20	148	5	—	2407	8·5	—	59	15	63	37	5	80	259	0·9	3275	11·5
Deptford...	115,636	—	727	320	—	11	—	18	83	—	—	1149	10·0	—	20	2	21	15	2	44	104	0·9	1386	12·0
Greenwich	102,408	1	585	301	—	15	—	5	53	2	—	962	9·4	—	26	3	13	20	2	15	79	0·8	1216	11·9
Lewisham	174,438	—	716	464	—	7	—	9	71	6	—	1273	7·3	—	9	8	45	12	1	21	96	0·6	1872	10·8
Woolwich	141,665	1	531	421	—	5	—	12	79	6	—	1055	7·5	—	21	4	24	14	1	18	82	0·6	1463	10·4

* Including membranous croup

smith, Fulham, Poplar, Bermondsey, Battersea, and Deptford. The 156 cases of cerebro-spinal meningitis included 15 in Islington, 15 in Wandsworth, 14 in Stepney, and 11 in Poplar; while of the 42 cases of poliomyelitis, 7 belonged to Islington, 6 to Hammersmith, and 5 to Lambeth.

The mortality figures in the table relate to deaths of civilians actually belonging to the various metropolitan boroughs, and are obtained by distributing the deaths in institutions among the boroughs in which the deceased persons had previously resided. During the 52 weeks ended Jan. 1st last, the deaths of 56,038 London residents were registered, equal to a death-rate of 12·4 per 1000; in the three preceding years the rates had been 14·7, 18·6, and 13·4 per 1000. The lowest death-rates last year were 9·0 in Hampstead, 10·0 in Wandsworth, 10·4 in Woolwich, 10·8 in Lewisham, 11·1 in Paddington, 11·2 in Hammersmith, and 11·3 in Fulham; the highest rates were 14·4 in Stepney and in Southwark, 14·5 in Finsbury, 14·6 in Poplar, 14·7 in Bethnal Green, 14·9 in *Holborn*, and 15·4 *in Shoreditch*. The deaths from all causes included 4176 which were referred to the principal infectious diseases; of these, 4 resulted from small-pox, 1007 from measles, 207 from scarlet fever, 1009 from diphtheria, 759 from whooping-cough, 49 from enteric fever, and 1141 from diarrhœa and enteritis among children under 2 years of age. The death-rates from these diseases in the aggregate ranged from 0·3 in Hampstead, 0·4 in the City of Westminster and in the City of London, 0·5 in Chelsea, and 0·6 in St. Marylebone, in Holborn, in Wandsworth, in Lewisham, and in Woolwich, to 1·3 in Hackney, in Poplar, and in Bermondsey, 1·6 in Shoreditch, and 1·9 in Bethnal Green. Of the 4 deaths from small-pox 3 belonged to Poplar. The 1007 fatal cases of measles were 411 fewer than the average number in the five preceding years; this disease was proportionally most fatal in Hackney, Shoreditch, Bethnal Green, Southwark, and Bermondsey. The 207 deaths from scarlet fever were 42 above the average number; the greatest proportional mortality from this disease was recorded in St. Marylebone, Stoke Newington, Bethnal Green, and Poplar. The 1009 fatal cases of diphtheria were 349 in excess of the average number; this disease showed the greatest proportional fatality in Islington, Stoke Newington, Hackney, Finsbury, Bethnal Green, and Poplar. The 759 deaths from whooping-cough were 120 below the average; the highest rates from this disease were recorded in St. Pancras, Hackney, Bethnal Green, Stepney, Poplar, and Bermondsey. The 49 fatal cases of enteric fever were 37 fewer than the average, and included 5 in Southwark, 5 in Camberwell, 4 in Fulham, 4 in Poplar, 3 in the City of Westminster, 3 in Stepney, and 3 in Wandsworth. The 1141 deaths from infantile diarrhœa and enteric were 480 below the average; the proportional mortality from this disease was greatest in Kensington, Shoreditch, Bethnal Green, Stepney, and Deptford. In conclusion, it may be stated that the aggregate mortality in London last year from these principal infectious diseases was 13·6 per cent. below the average of the five preceding years.

The Services.

A DENTAL SERVICE FOR THE ROYAL NAVY.

NEW regulations have been issued for admission to the Royal Naval Dental Service. Dental mischief has been the cause of much disability, pain, and discomfort in the Navy, and it is well that steps should have been taken to provide officers and men with adequate dental treatment. The qualifications for admission to the service are as follows: The candidate being British, sound in mind and body, and willing to engage for general service at home or abroad, must be a fully qualified dentist registered under the Dental Acts. He must produce a favourable report from the responsible authority of his medical school, and must pass certain tests of physical fitness imposed by a board of naval medical officers. He must then present himself for examination and will receive appointment in accordance with the place which he obtains in the test of successful candidates. Possession of certificates from an Officers Training Corps will be worth additional marks at the entrance examination. Special arrangements are to be made to admit candidates from dental schools in the Dominions and Colonies. Successful candidates will be required to attend certain courses of instruction laid down by the Admiralty, when they will receive commissions as surgeon-lieutenant. A sensible precaution against slackness or rust is the provision of a post-graduate course of three months' duration. The course is given to surgeon lieutenant-commanders of after two years' seniority; it is optional, and those who take it will be accommodated at the Royal Naval College, Greenwich. The relative rank, pay, and allowances of the dental officers will be as follows.

Relative Rank in the R.N. Dental Service.

—	Military branch.	Army rank.
Surgeon Commander (D)	Commander.	Lieutenant-Colonel, but junior to that rank.
Surgeon Lieutenant-Commander (D).	Lieutenant-Commander.	Major.
Surgeon Lieutenant (D).	Lieutenant.	Captain.

Full Pay.

—	Year of 365 days.			One day.		
	£	*s.*	*d.*	£	*s.*	*d.*
Surgeon-Lieutenant (D)—						
On entry	401	10	0	1	2	0
After three years	492	15	0	1	7	0
Surgeon Lieutenant-Commander (D)—						
On promotion	593	2	6	1	12	6
After 3 years' seniority	629	12	6	1	14	6
„ 6 „ „	656	2	6	1	16	6
„ 9 „ „	730	0	0	2	0	0
Surgeon Commander (D)—						
On promotion	775	12	6	2	2	6
After 3 years' seniority	839	10	0	2	6	0
„ 6 „ „	912	10	0	2	10	0

Note.—20 per cent. of the rates of full pay, half pay, and retired pay are considered as due to the present high cost of living, and are subject to change on or after July 1st, 1924, and thereafter every three years, either upwards or downwards, according as the cost of living rises or falls.

Allowances.—Dental officers will be eligible for allowances on the same scale and under the same conditions as for medical officers of equivalent rank, except that "flag allowances" and "specialist allowances" will not apply.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. N. Tyacke is placed on retired pay, and is granted the rank of Colonel.

Lieut.-Col. T. E. Fielding relinquishes the acting rank of Colonel.

Lieut.-Col. A. R. O'Flaherty retires on retired pay.

Temp. Major E. H. Marshall relinquishes the acting rank of Lieutenant-Colonel.

F. J. Scrimgeour relinquishes the local rank of Major.

Temp. Capt. A. S. Plant to be Captain.

Temp. Capts. P. Kitchin and A. Cowes relinquish their commissions and retain the rank of Captain.

TERRITORIAL FORCE.

Capt. H. J. G. Wells, R.A.M.C., to be Adjutant of the R.A.M.C. School of Instruction, West Riding Division.

Lieut.-Col. H. L. de Legh resigns his commission, and retains the rank of Lieutenant-Colonel, with permission to wear the prescribed uniform.

Capt. A. M. Baillie resigns his commission and retains his rank.

J. A. L. Louden to be Lieutenant.

Capt. R. Ellis resigns his commission and is granted the rank of Major.

Supernumerary for Service with the O.T.C.: Major H. Emerson (late R.A.M.C.) to be Captain, for service with Belfast University Contingent, Senior Division, O.T.C., and to relinquish the rank of Major.

Capt. H. Emerson to be Major.

2nd London Sanitary Company: Capt. F. S. Carson resigns his *commission and retains the rank of Captain.*

The King has conferred the Territorial Decoration upon the undermentioned officers:—

Army Medical Service.—Col. A. D. Sharp.

Royal Army Medical Corps.—Lieut.-Cols. T. Donovan (1st Welsh Field Ambulance), A. Callam (2nd East Lancashire Field Ambulance), R. W. Brimacombe (Home Counties C.C.S. (ret.)); Majors L. A. Avery (East Anglian Division), J. Owen (attached Lan. Fort. R.E.), G. Mackie (1st S. Middlesex Field Ambulance), W. G. Paget (attached 4th Bn., The Queen's Regiment), C. A. Spooner (2nd London Sanitary Company).

ROYAL AIR FORCE.

Medical Branch.—The undermentioned are granted temporary commissions in the ranks stated:—Flight Lieutenants: D. Le Bas and W. R. Reith. Flying Officer: J. A. Perdrau.

INDIAN MEDICAL SERVICE.

Lieutenants to be Captains: Bager Zainulabiedin Shah, Prabodh Chandra Banerjee, Bishambhar Sahai.

The King has approved the admission of the following as Captains: C. Burnham, J. J. Rooney, and P. H. S. Smith.

The undermentioned have relinquished their commissions and rank has been granted as shown: Temp. Capt. Ram Nath Sharma, Temp. Capt. Maung Ba Yin, Temp. Capt. Kantilal Kalynji Mankodi, and Temp. Capt. Vinculathoor Ramasami Sundaresan. And are granted the rank of Captain on relinquishing their temporary commissions: Sita Nath Ghosh, Aaron Joseph, Umedram Lalbhai Desai, Homi Shivax Dastur, Vasudeo Gopal Bhandare, and Ram Narain Sad.

The King has given orders for the following appointments:—

Most Excellent Order of the British Empire.—To be Members of the Civil Division: Dr. Subramanyam Yenamundram, Civil Surgeon, Upper Chindwin, Mawlaik, for services during minor operations in Burma and Persia; and Miss Sheerburn, M.B., B.S., for services during the operations against Afghanistan.

The King has granted unrestricted permission to the undermentioned to wear the Cross of Chevalier of the Legion of Honour conferred upon them by the President of the French Republic in recognition of their services to the French sick and wounded at Hôpital bénévole, No. 115 bis, at Villeneuve-sur-Lot during the late war: Dr. W. R. Dakin, Dr. F. M. Graham, and Dr. A. K. Henry.

Obituary.

ROBERT MURRAY LESLIE, M.D. ED., M.R.C.P. LOND.

THE unexpected death, at the comparatively early age of 55, of Dr. Robert Murray Leslie will be keenly felt by a wide circle of friends, medical and lay. For the past few months his health had failed, and he had on that account just resigned the position of senior physician to the Royal Chest Hospital. Dr. Leslie came of an old Scottish Highland family, being the son of the late Alexander Leslie, J.P., of Suddie, Munlochie, Ross-shire, and one of six brothers, four of whom entered the medical profession. He received his schooling at George Watson's School and at the University of Edinburgh, in which he graduated M.A. in 1888, B.Sc. in 1889, and M.B. in 1892, in each case with first-class honours. In science and in medicine he was the most distinguished graduate of his year, being awarded the Baxter and the Ettles Scholarships in these faculties respectively. After graduation he became house physician to the late Sir Thomas Grainger Stewart, and, while Stark scholar in clinical medicine, he worked in the laboratory of the late Professor Greenfield, whom he assisted for a short time in the pathological department of the University. Migrating to London soon after, he held many hospital and other medical posts, including a house physicianship at Brompton and the medical registrarship at King's College Hospital. At the time of his death he was still senior physician to the Prince of Wales Hospital, in the development of which and of the North-East London Post-Graduate College he had played no small part, and he had just surrendered a similar position at the Chest Hospital, the amalgamation of which with another hospital, and the consequent loss of its traditions and identity as the oldest hospital for diseases of the chest in the world, he keenly regretted. Dr. Leslie was an excellent lecturer and teacher; he also contributed widely to medical literature, including child welfare and eugenics, a volume on Pneumonia and its Modern Treatment, to which he had given much thought and attention, being ready for the press. He was widely recognised as a consultant upon diseases of the chest, and his hospital colleagues will miss a loyal and generous personality, whose services were ever freely at their disposal. His interest in the nursing profession was very keen, and his work for child welfare, especially in the form of travelling exhibitions, had made him a prominent member of that movement. His own love of travel was highly developed and he was an enthusiastic mountaineer. A distinction he greatly valued was that of officer of the French Academy.

A few years ago Dr. Murray Leslie founded a medal in Edinburgh University, in honour of his mother, the foundation being suggested by the fact that three of her four medical sons were graduates of the University. To her and to his widow, daughter of Captain Knox Keith, R.N., the sympathy of the medical profession will go out.

THE LATE DR. W. F. CROSSKEY.—Dr. Walter Francis Crosskey died at Lewes, his native town, on March 29th, after a few days' illness. Born in 1843, he studied at Glasgow University, and took the M.D. and C.M. degrees in 1865. He practised in Lewes for 30 years, holding a number of public appointments, and retired in 1912. He took a prominent part in local affairs and was the second mayor of the borough—in 1882–83. He was placed on the Commission of the Peace in October, 1909. He married in 1872, and his wife survives him.

Correspondence.

"Audi alteram partem."

LEUCOCYTOLYSIS IN TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—The claims made in Dr. Ivan I. Manoukhin's interesting article in your last issue are not new in the realm of tuberculosis, for lysis of leucocytes in the affected area in the lungs appears to be what occurs after the exhibition of tuberculin. But one would have liked to know more of the after-history of the 8000 cases of pulmonary tuberculosis personally treated by the author. Dr. Manoukhin regards the treatment as inapplicable only in cases of extreme exhaustion accompanied by a vigorous intoxicative affection of the blood-forming apparatus. What form of tuberculosis of the lungs with any degree of activity is not associated with such a toxic action? Where there is also lysis of the tuberculous area, antigen is set free and interaction in the blood is enhanced, while no one can tell where the process will stop. One would imagine, therefore, that the 8000 were cases where the colloids of the blood had not been impaired to any extent, corresponding to our cases with early hæmorrhage and an infiltration of an apex. The reaction might then be regarded as a greater extension of the auto-inoculation complex of Marcus Paterson. To generalise in tubercle from one race to another may lead to mistaken conceptions of therapeutic value. Possibly a Russian, and especially a Russian Jew, would stand this treatment, while in a negro, or a North American Indian, a miliary spread might result.

On the other hand, artificial pneumothorax therapy, by collapse of the lungs, shortens the lines of attack and conserves the leucocytes, improves and maintains the colloids of the blood, and although it does not make for rapid cure, follows very closely nature's method. Then there are the two types of therapy, and it will probably be found later on that the truth lies between them.

Most of our own race appear able to handle the infection of tubercle by themselves. Irradiation of the spleen will in the main help those cases in which the lymphatic tissue is involved, but in which the coagulability of the blood is normal and the white cells are not changed to any degree. In America, and especially in the West, electrical treatment of enlarged prostate, strictures, and even of cancer, by means of lysis, has been the fashion for a long time. Here we have not forgotten the days of Coley's fluid. And in tuberculosis many cures probably have their origin in this process of increased katabolism. Increase the antibody, there will be fibrotic change somewhere.

To sum up, the processes through which the tuberculous patient passes are these:—

1. Sensitisation, with disease limited by lymphatic tissues, blood normal, especially coagulability.
2. Hyper-sensitisation with spreading disease, marked hypocoagulability, great strain on leucocytes.
3. Often a rapid change to fibrosis, with normal or plus coagulability and less strain on the leucocytes, the disease is beaten, the patient desensitised; often, however, he is left with sequelæ by no means comfortable, dyspnœa, and tendency to cardiac failure.

In process of curing tubercle nature has to adapt herself slowly to changing conditions. Furthermore, in infections where immunity is gained in a relatively short time the leucocytes rapidly provide by phagolysis the adequate plasma, as in croupous pneumonia, and this is followed by fibrinolysis soon after defervescence. In active pulmonary tuberculosis, however, the two processes of phagolysis and fibrinolysis seem to be concurrent. The balance between them appears connected with the line-up of the leucocytes in the morbid lung. In watching the formation of clots where fibrin formation is poor the larger leucocytes appear, owing to their greater stickiness, to form up in line, while the reds pass through unhindered, the lymphocytes tending to crowd in towards the centre of the coagulum, owing to retraction of the fibrin. Does this occur in a pathological state? The basophil elements seem to be in great demand, and in sputum the lymphocyte predominates, pointing to a greater mobility on its part, in that the lymphocyte gets right into the centre of the necrotic area, which will be softened and discharged.

It takes a case of pulmonary tuberculosis, where there is any active softening disease, months so to adjust the materials in the blood that it can carry on the processes of holding the enemy, and reinforcing itself behind the lines. Can radiation of the spleen help this? Certain cases may respond to more radical methods, but in the main we cannot afford to discard the older conservative principles.

I am, Sir, yours faithfully,
J. J. THOMSON, M.B.,
Senior Assistant, Middleton-in-Wharfedale Sanatorium.
Ilkley, April 2nd, 1921.

ANALYSIS OF THE GASTRIC CONTENTS.

To the Editor of THE LANCET.

SIR,—I apologise to Dr. W. J. Adie and Mr. S. W. Cole for giving the old end-point for thymol-blue at $HCl.N \times 10^{-2\cdot6}$ instead of that proposed by them—namely, $HCl.N \times 10^{-2}$. There are two reasons for retaining dimethyl as an indicator: one is that data have been accumulated with its use; the other that it gives information of the degree of acidity of the material when that acidity, though considerable, is not high enough to affect thymol-blue. As I stated in my paper (THE LANCET, March 19th), the term "free HCl" applied to dimethyl titration is a misnomer. I think the best plan would be to use both indicators. The meaning of the term "free HCl" would not matter provided a reasonable measure of the concentration of hydrogen-ions in test-meals were so obtained, not only in those where the hydrogen-ions happen to be high.

I am, Sir, yours faithfully,
Guy's Hospital, S.E., April 4th, 1921. J. H. RYFFEL.

A CONTROLLED STUDY OF SANATORIUM RESULTS.

To the Editor of THE LANCET.

SIR,—With reference to Dr. E. Ward's article on the results of sanatorium treatment in your issue of March 12th it has occurred to me that perhaps Dr. Ward and also Dr. T. Campbell and Dr. J. Crocket may be correct in what they state. It seems clear that, whatever Dr. Ward's statistics may be worth, he himself is not satisfied with the results in cases which he has sent to sanatoriums. If the results had been in any way encouraging he would doubtless have observed this. The confusion of results probably depends on the application of the term sanatorium treatment. It is generally assumed that all institutions which are labelled as sanatoriums are the same, and carry out the same treatment. This is, of course, a fallacy, for so far as my knowledge goes, only a few sanatoriums use rest as the main form of treatment, and only a few trouble to take rectal temperatures. A large number have no resident medical superintendent, and doubtless a number have superintendents who have never learnt the elements of treatment.

We find here that on the whole almost all the patients improve, and that early cases get well to the extent of 70 per cent., medium cases show a percentage of 45 per cent., whilst what are usually described as third stagers remain well in 12 per cent. of cases. I quite agree with Dr. Ward that graduated labour as such should be abolished from sanatoriums, with this proviso, that, when afebrile, the patients should be given as much exercise and work as possible without provoking obvious auto-inoculation.

I notice Dr. Ward did not send some cases because of the stigma attached to going to a sanatorium; of course, if this idea is allowed to pervade our thoughts when dealing with these patients, it becomes impossible to treat cases so that they can be cured in a reasonable time; in addition, a vicious circle is formed, as very poor results will be obtained at the sanatorium, with the result that most persons observing the fatal tendency of sanatorium cases will prefer to remain unnotified until they cannot escape. If cases are treated sufficiently late, then whatever treatment is adopted the results will be similar, ending in the death of the patient. I remember some years ago visiting the dispensary of one of my late assistants; among other things he showed me four or five patients which he had sent away to the sanatorium, and explained to me they had all come back worse, and, as he said, they would have done better at home. I asked him if this kind of thing occurred at the Ayrshire Sanatorium, and he replied that it did not. The first essential for a sanatorium is that cure should be aimed at and not palliation, all dodges for propping up patients should be eschewed: the idea getting abroad that if you go to a sanatorium you will thereafter be only able to lead some kind of maimed existence is absolutely discouraging.

The methods at sanatoriums should be inquired into, and it should be arranged in all, that at long last, they shall be used for early cases, and that the cases shall get the treatment which they require and be given the requisite amount of rest necessary, as estimated by the study of a correctly kept temperature chart. Further, neither work nor occupation nor amusements should be allowed to interfere with the progress of these cases to complete recovery. It was a tragedy, that when it was discovered that pulmonary tuberculosis, like surgical tuberculosis, is best treated by rest, and when sanatoriums were provided to carry out this purpose, then the practice was instituted of working these patients, who should have been in bed, with the lamentable result that we have depicted in Dr. Ward's paper.

I am, Sir, yours faithfully,
EDWARD E. PREST.
Ayrshire Sanatorium, New Cumnock, April 4th, 1921.

BACTERIOLOGY IN THE CURRICULUM: A CORRECTION.

To the Editor of THE LANCET.

SIR,—In reference to the report of the discussion at the Society of Medical Officers of Health, which appears in your issue of to-day's date, I fear I must have given a wrong impression in what I said concerning the late Dr. Washbourn's successful advocacy of the inclusion of bacteriology in the curriculum for medical students. I took no part in the matter. The credit belonged to him, and so far as I know, almost entirely to him.

I am, Sir, yours faithfully,
Hampstead, April 2nd, 1921. E. W. GOODALL.

A DISCLAIMER.

To the Editor of THE LANCET.

SIR,—There have recently appeared in the lay press articles which purport to be abstracts of a paper recently read by us at the Royal Society of Medicine on a new anæsthetic. These were published entirely without our knowledge or permission.

We are, Sir, yours faithfully,
R. L. MACKENZIE WALLIS, M.D.
April 8th, 1921. C. LANGTON HEWER, M.B.

THE DIPHTHERIA SWAB ON DISCHARGE.

To the Editor of THE LANCET.

SIR,—In the report of the meeting of the Society of Medical Officers of Health on "Relation of Laboratory to Preventive Medicine" given in THE LANCET last week, it is to be observed that several of the speakers seemed to consider that no swab should be taken from diphtheria cases on discharge from hospital. I have in mind two instances recently, one fatal, which were associated with the insufficient taking of swabs. The first was a boy treated at home in whose case a negative swab from the nose was obtained on one occasion; unfortunately swabs both from the nose and throat were in consequence not taken consistently. To put the matter more clearly, a swab was taken both from the nose and the throat, the swab from the throat was positive, the one from the nose negative. In consequence, next time the child was swabbed no examination was made of the nose. When the throat swab proved negative the boy was released from isolation, but unfortunately his brother contracted the disease. Swabs were again taken of the first patient, with the result that the nose proved to be harbouring diphtheria bacilli. The brother unfortunately died. In the second instance the disease was introduced into a family by a boy sent home from boarding-school after an attack of diphtheria. Apparently swabs had only been taken of the throat. Shortly after his arrival home another child in the family was affected, and on swabs being taken from the convalescent patient the organism was found to be present in the nose.

Another point of interest was the remark of the President that the medical officer of health could spend his time most profitably in administrative work, and that he should not devote himself very much to laboratory work. Why should not a member of the staff of the medical officer of health carry out such bacteriological work with advantage to the community?

I am, Sir, yours faithfully,

April 2nd, 1921. M.O.H.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Changes at the Ministry of Health.

As a result of the changes which have been made in the personnel of the Government, Dr. ADDISON has retired from the office of Minister of Health, but remains a member of the Cabinet as Minister without Portfolio. Dr. ADDISON, since he entered Parliament as Member for the Hoxton Division of Shoreditch in 1910, has taken a special interest in legislation dealing with health matters, and was prominently associated with the passing of the Insurance Act. In 1919 he was appointed the first Minister of Health on the formation of a new department to take the place of the Local Government Board, and to take over certain powers formerly exercised by other Departments of State. He was the Minister in charge of the Ministry of Health Act during its passage through the House of Commons. He is succeeded as Minister of Health by Sir ALFRED MOND, who has for some time been the First Commissioner of Works.

HOUSE OF COMMONS.

MONDAY, APRIL 4TH.

Scottish Board of Health Report.

Mr. MORISON (Lord Advocate) informed Dr. Murray that it was expected that the annual report for 1920 of the Scottish Board of Health would be published in the course of the present month.

TUESDAY, APRIL 5TH.

Bradford Corporation Hospital.

Mr. GEORGE THORNE asked the Minister of Health the present position in regard to the acquisition of a Poor-law infirmary by the Bradford corporation, to which he at one time gave his sanction, which was afterwards withdrawn.—Sir ALFRED MOND replied: Provisional sanction was given to the scheme in June last, and this has never been withdrawn. But before giving a final decision I urged on the council the importance of full consultation with the medical profession in Bradford. As a result of this a local Advisory Medical Committee was appointed, and this committee has put forward certain suggestions which are being considered by the council, from whom I am expecting to hear shortly.

Superannuation of Local Government Board Officers.

Mr. ARTHUR HENDERSON asked the Minister of Health whether, in view of a statement made by him to a deputation from the Association of Municipal Corporations on the subject of the superannuation of Local Government officers, it was proposed to introduce the Bill this session and pass it into law.—Sir ALFRED MOND replied: The Government regret that they cannot proceed with this matter at the present time in view of the heavy charges which the scheme would impose upon the rates.

Medical News.

UNIVERSITY OF DURHAM.—At the Convocation held on March 26th the following degrees were conferred:—

Doctor of Medicine for Practitioners of 15 Years' Standing.—Charles Corfield and Richard J. C. Thompson.
Master of Surgery.—James A. Berry, William A. Hewitson, and Norman Hodgson.
Bachelor of Medicine and Bachelor of Surgery.—James S. Clark, Robert C. Davison, Thomas W. K. Dunscombe, Norah H. Hamilton, Robert T. E. Naismith, Joseph D. Silverston Thomas S. Severs, Habib Toma, and Robert P. Wanless.
Bachelor of Surgery.—Margaret B. Herbst.
Bachelor of Hygiene.—William L. Glegg.
Diploma in Public Health.—William L. Glegg.
Licence in Dental Surgery.—Fred Wilkinson.

UNIVERSITY OF ABERDEEN.—The following degrees have been conferred:—

DOCTOR OF MEDICINE.

James B. Milne.

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

Charles D. Allan, John J. H. Anderson, *Nicholas C. Bodenstein, Foong Kong Chen, *John Craig (second-class honours), Lilian F. Gall, Ronald K. Grant, George G. W. Hay, *Eleanora M. P. Law (second-class honours), Margaret Lipp, *Matthew H. Logg, *Douglas R. Macdonald (second-class honours), Alexander MacKay, Elsie Mackie, Katharina F. E. van der Merwe, Mary G. Milne, D. Mitchell, John I. Moir, Marion E. Mowat, Isabella M. H. Murray, *Janet C. Nicol, *Mary M. Pyper (second-class honours), Alexander E. Reid, Edwin N. D. Repper, *James P. J. Rossouw, George Saint, Norman C. Simpson, Ethel V. G. Smith, Ian R. Spark (second-class honours), *Alexander L. G. Thomson, Ian S. Thomson, and Alexander R. Wood.

* Passed Final Medical Professional Examination with distinction.

DIPLOMA IN PUBLIC HEALTH.

Douglas W. Berry, Alexander M. Dugan, Francis A. Innes, Harry R. Neilson, William W. Nicol, James A. Sellar, and Agnes L. Semple.

UNIVERSITY OF DUBLIN, SCHOOL OF PHYSIC, TRINITY COLLEGE.—At examinations held recently the following candidates were successful:—

INTERMEDIATE MEDICAL EXAMINATION.

Part I., Anatomy, Physiology, and Organic Chemistry.—Robert F. J. Henry (high marks), Ernest M. Landau (high marks), Louis E. J. Werner (high marks), Reginald R. J. Brandt (high marks), Morris Cohen and George Robinson (equal), Etienne R. Hafner, Harold Renton, Samuel M. Geffen and Joseph Morris (equal), Charles W. J. Ingham, John L. Stuart, Jack A. Levitt, Solomon Narunsky, Victoria J. Wilson and Albert V. Wood (equal), Gerard A. A. Powell, John G. Maguire, Herbert Birney, Francis V. Duke and George R. L. Jordan and James L. Marshall (equal), Dorothy J. Booth and Alexander Hawthorne (equal), Norah M. Smith, and Israel Marin and Robert Y. Crichton (equal).
Anatomy only.—Tobias Freedman, Cecil McQuillan, James Craig, Eileen Brangan, John S. Glasgow.
Part II., Applied Anatomy and Applied Physiology.—Agnes McLaughlin (high marks), Bernard Gluck (high marks), Robert H. Micks (high marks), Joseph A. Gaynor and Robert T. Jackson (equal, high marks), William F. Whaley (high marks), Francis J. O'Meara (high marks), Florine I. Irwin, Eric C. Downer and Ernest M. Landau (equal), Anthony B. Monks, Lazarus Heyman, William E. Hutchinson and David J. Malan (equal), Bernard Morris, Reginald Hegy and Marjorie F. Sibthorpe (equal), Cecil A. V. Ovendale, Benjamin W. D. Fayle and Dermod H. F. Milmo (equal), Ely G. Copeland, John C. Earl and George F. T. Saunders (equal), Wilfrid E. C. Wynne, Percy Samolsky, Arthur Darlington, Henry M. Martin, Etienne R. Hafner, James E. Deale, Frederick G. Brown and James O'Neill McKenna (equal), Douwe M. Vellema, Louis J. Coetzee and Cecil G. S. Van Heyningen (equal), Alice M. A. Downing and Richard C. L. Griffiths (equal), Max Wulfsohn, Reuben Lipschitz, Mossy Jaffe, Norman E. H. P. Williams, Asher Asherson and Philipp F. H. Wagner (equal), William S. Dixon and Thomas G. Wilson (equal), Hans J. Hugo and Raymond J. G. Hyde (equal), John D. Wicht, Herbert Rollins and Maria E. Wagener (equal), Frederick W. G. Smith and Isabella H. Speedy (equal), Michael Gallivan, Charles T. MacCarthy, Harold Lewin, Alexander Bernstein, Robert L. C. Fisher, Lionel S. Levitt, Victor O. McCormick and Jan H. Rauch (equal), James J. Fitzgerald, Edward Harvey, John Kalmanson and Julius Kruger (equal), and Charles Gordon.
Applied Anatomy only.—Mary E. Hardy.

FINAL MEDICAL EXAMINATION.

Part I., Materia Medica and Therapeutics; Jurisprudence and Hygiene; Pathology and Bacteriology.—Leopold Stazunsky (high marks), Allen L. Drotske (high marks), Francis C. B. L. R. Crawford (high marks), David S. Spence, John V. Carroll and Robert A. O'Meara (equal), Minnie Alper, Richard Seale, Charlotte A. Stuart, John D. Watson, Francis B. D'Arcy and Ruth Lemon (equal), Cecil W. R. McCaldin, Francis Malone-Barrett, Petrus H. S. Fouche, Joseph E. Deane and Joseph O'Connor (equal), Henry J. L. Murphy, Max Sayers, John G. Russell, Donald H. Saayman, Dorothy O. H. Dornan, Muriel V. Odlum, Mary H. Harcourt, Laurence Phillips, Izidore P. Myers, and Joseph C. Byrne.
Materia Medica and Therapeutics; Jurisprudence and Hygiene.—Herbert Hall and William T. Hogan.

Jurisprudence and Hygiene; Pathology and Bacteriology.—Robert N. Perrott.

Pathology and Bacteriology.—Arthur G. Bewley, Ninian McI. Falkiner, and Albert E. Phillips (equal), George S. Moran, Henry L. Hanna, Harry C. Dundon, James J. P. Kelly, and James Devane.

Part II., Medicine.—James A. Smith, David J. Browne, Robert H. J. M. Corbet, Thomas F. L. Cary, and Elinor D. Stopford (equal), Hector C. C. Deane, Edith F. Willock, Francis Y. Pratt, and Robert H. Satchwell (equal), Dorothy A. Daly, Cecil S. Wilson, Eric S. Horgan, Ruth F. Flavelle and Donald V. Latham (equal), Robert S. Chapman, James A. Acheson, Patrick M. J. Bobbett, Richard W. Power, Thomas W. Panter, James D. Leahy, James C. Davis, Anthony D. Ward, and Patrick Joseph Healy and George Cyril Brereton Robinson (equal).

Surgery.—Edmund C. Smith (high marks), Daniel de Bruijn, Richard V. Dowse and James D. Leahy (equal), Hector C. C. Deane, William H. Smith and Margaretta T. Stevenson (equal), Dorothy A. Daly, Leo Herzenberg, Robert S. Chapman, Percival I. Levitt, Gideon C. Malherbe, Patrick J. Healy and *Charles W. Parr (equal), James A. Acheson*, John C. Brennan, Francis M. Hilliard, Alida C. Burt and Edward G. Campbell (equal), and Mary Horan and Robert H. Satchwell (equal).

Midwifery.—Anthony D. Ward (high marks), Eric R. Murray (high marks), Robert H. J. M. Corbet (high marks), Michael R. Coolican and Nannette Norris (equal, high marks), Alfred H. N. *Todd, Leo Herzenberg, William A. Murphy, Robert Dormer*, John D. Thompson, Thomas G. Warham, Alida C. Burt and Robert S. Chapman (equal), and Rita Dillon-Leetch and Eric S. Horgan (equal).

INTERMEDIATE DENTAL EXAMINATION.

Anatomy and Physiology.—John H. B. Tuke and Robert H. McKeag.

DIPLOMA IN PUBLIC HEALTH.

Part I., Chemistry, Bacteriology, Physics, and Meteorology.—Thomas J. KilBride, Thomas P. Chapman, Thomas D. Gordon, and Hilgard Muller.

Part II., Sanitary Engineering, Sanitary Inspection and Report, Hygiene, Epidemiology, Vital Statistics, and Public Health Law.—Thomas J. KilBride, Hilgard Muller, Thomas P. Chapman, and Thomas D. Gordon and Anna M. K. O Halloran (equal).

HARVEIAN SOCIETY.—A meeting of this society will be held at the Town Hall, Harrow-road, Paddington, on Thursday, April 14th, at 8.30 P.M., when Mr. Duncan Fitzwilliams will give a paper on the Nævi of Children and their Treatment.

CHARTERED SOCIETY OF MASSAGE AND MEDICAL GYMNASTICS.—The annual meeting of this society will be held on Saturday, April 16th, at 3 P.M., at the Armitage Hall, 221, Great Portland-street, W. Among the subjects to be discussed are an insurance scheme for registered members, Red Cross clinics and civilian patients, and a proposed club for professional women.

SOCIETY OF MEDICAL OFFICERS OF MATERNITY AND CHILD WELFARE CENTRES.—A meeting of this society will be held on Friday, April 15th, at 5.30 P.M., in the Central Committee Room, University College, Gower-street, London, W.C., when a paper will be read by Dr. Marion Cockerell entitled "Infant Feeding after the Ninth Month." A discussion will follow. Members are invited to bring friends provided that they are officers of centres.

POST-GRADUATE COURSE ON MENTAL DEFICIENCY. A course of post-graduate lectures on Mental Deficiency with clinical instruction has been arranged by the University Extension Board of the University of London in coöperation with the Central Association for the Care of the Mentally Defective. The course will begin on Monday, May 23rd, and end on Saturday, June 4th; it is intended for qualified medical practitioners, and more especially for those who are engaged as certifying officers to local authorities under the Mental Deficiency Act, 1913, as school medical officers, or as medical officers of institutions, or who are otherwise definitely concerned with defectives. The course is based on the requirements of the syllabus for the University of London Diploma in Psychological Medicine, and the University will grant a certificate of attendance to those who have attended the whole course regularly, taking both theoretical and practical work. The syllabus includes 11 lectures on Mental Deficiency by Dr. A. F. Tredgold, five lectures on Administrative Procedure in the Ascertainment and Treatment of the Mentally Defective by Dr. F. C. Shrubsall, and three lectures on the Psychology of Mental Defectives by Mr. Cyril Burt, psychologist to the L.C.C. Miss Lucy Fildes, B.A., holder of Board of Control Research Studentship at the Psychological Laboratory, Cambridge, will give two lectures on Methods of Training Mentally Defective Children. Dr. Eric Prideaux will lecture on Psychoneuroses in Relation to Mental Deficiency, and Dr. W. C. Sullivan on the Relationship Between Crime and Mental Defect. In addition demonstrations and visits to schools and institutions will be arranged. The registration fee is £1 1s., and the fee for the course £5 5s. Applications d all communications with reference to the course should addressed before May 2nd to Miss Evelyn Fox at the versity of London, Imperial Institute-road, South ington, London, S.W. 7.

Mr. Alexander Thomas Scott, *M.B.E.*, M.R.C.S., has been appointed an Esquire of the Order of St. John of Jerusalem in England.

MEDICO-LEGAL SOCIETY.—A meeting of the society will be held at 11, Chandos-street, London, W., on Tuesday, April 19th, at 8.30 P.M. A paper will be read by Mr. W. G. H. Cook, *on the Liability of the Insane in Respect of Civil* Wrongs.

SOCIETY FOR THE STUDY OF INEBRIETY.—The annual meeting of the society will be held in the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, W., on Tuesday, April 12th, at 4 P.M., when Dr. H. H. Dale, F.R.S., will open a discussion on the Use of Alcohol in Medicine. Each member and associate is at liberty to introduce visitors. Subscriptions for the session 1921-22 were due on April 1st, and should be forwarded to the honourable treasurer, Mr. Arthur Evans, M.S., F.R.C.S., 28, Devonshire-place, London, W. 1.

HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET: NURSING STAFF SALARIES.—The following scale of *nursing staff salaries has been adopted by the Committee of* Management: Matron, £275, annual increment £10 to £350; assistant matron, £100, annual increment £10 to £140; home sister, £90, annual increment £10 to £130; night sister, £85, annual increment £10 to £125; ward sisters, £80, annual increment £5 to £120; *staff nurses, £50, annual increment* £5 to £60; probationers, first year, £20; second year, £25; third year, £30; all to be retrospective to Jan. 1st, 1921.

LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY.—The report of the Council of the society, which was presented at the annual meeting held at the offices, 22, Craven-street, Strand, on April 6th showed a very satisfactory year's working in 1920. The temporary check to membership on account of the war has now abated and during the year under notice 733 new members were added to the roll, while 69 members died and 190 withdrew. The total membership on Dec. 31st, 1920, amounted to 6162. The funds of the society have increased from a surplus balance of £25,825 11*s.* 1*d.*, shown on the balance-sheet for the year ended Dec. 31st, 1919, to a balance of £26,168 19*s.* 11*d.*, shown on the corresponding date at the end of 1920.

DONATIONS AND BEQUESTS.—By the will of the late Miss Blanche Elizabeth Pinnock, of Oakdene, Caldy, Cheshire, the testatrix, among other bequests, left £1000 each to the Sir Alfred Jones Memorial Hospital, Garston; the Convalescent Home for Children, West Kirby; and the Home for Epilepsy at Maghull.—The late Mr. John Padbury Gillett, of Banbury, left by will £200 to the Horton Infirmary, Banbury; and £100 to the Society for the Prevention of Cruelty to Children.—By the will of the late Mrs. Georgina Ann Birks, of Kingsbridge, Devon, the Hospital for Women, Soho, will benefit by £500.—The late Miss Gertrude Agnew, of Pendleton, Manchester, left by will £1000 each to St. George's Hospital, London; St. Mary's Hospital, Manchester; the Manchester and Salford and District Branch of the National Society for the Prevention of Cruelty to Children.—Under the will of the late Mrs. Lucy Elizabeth Dangerfield, of Eastbourne, the testatrix left, on the failure of certain trusts, £1000 to the Princess Alice Hospital, Eastbourne, for a "Tate Dangerfield" bed; £500 to St. Dunstan's Hostel; and £500 to the National Institute for the Blind.

FEDERATION OF MEDICAL AND ALLIED SOCIETIES (INC.).—At a meeting of the Exective Council of the Federation held on April 5th it was announced that its incorporation had been satisfactorily completed. Sir Berkeley Moynihan was elected the first president and Sir Malcolm Morris, the chairman of Council, was elected vice-president. In view of the increasing activities of the Federation, and in accordance with its Articles of Association, the Executive Council now delegates the control of its various sections to the following branch councils: (1) a Medical Council, (2) a Council of Allied Professions, and (3) a Citizens' Council. Each society is now to have a representative on the Council appropriate to its professional interests. These councils will meet quarterly as the Executive Council, and at other times in joint conference.

It is anticipated that the offices will be transferred to more suitable premises at a very early date, where it will be possible to provide the constituent societies with a conference hall and certain secretarial and other advantages. Current literature dealing with the public aspect of medicine is also always to be available.

The meeting had many matters under its consideration, including reports as to recent action undertaken on behalf of the societies in regard to the Dangerous Drugs Act Regulations and the change of Minister at the Health Ministry. The British Association of Radiology and Physiotherapy was elected to membership.

THE mail service with Russia reopened on April 7th at the usual continental rates of postage.

LITERARY INTELLIGENCE.—Messrs. Putnam announce for immediate publication "The Psychology of Nursing," by *Aileen Cleveland Higgins.*

SOCIETY FOR THE PREVENTION OF HYDROPHOBIA.—A meeting of the committee of this society was held on Monday, April 4th, at the Royal Society of Medicine. In the course of a discussion with regard to rabies, Mr. F. W. Fletcher stated that the authorities at the Board of Agriculture considered the official action already taken to be sufficient to control any recurrence of the outbreak of 1918. The last proved case of the disease occurred in Buckinghamshire during January, 1921. The greatest care, he said, was exercised by Customs officials at ports and aerodromes, but pet-dogs had probably been introduced into the country in a drugged condition. He pointed out that the existing muzzling order sometimes left unprotected districts islanded by scheduled areas, while dog-owning magistrates might be too lenient in the interpretation of their powers. Major Penberthy, *from* the chair, said that during one year in the history of the society about 700 cases of hydrophobia had occurred in England and Wales, and contrasted this state of affairs with conditions obtaining at the present time, observing that no cases of hydrophobia had been reported during the recent outbreak of rabies. A resolution was unanimously carried in support of legislation to amend the Diseases of Animals Act (1894), by which the contravention of any muzzling order in force shall be rendered punishable by imprisonment without option of a fine.

Communications, Letters, &c., to the Editor have been received from—

A.—Actors' Orphanage, Lond., Hon. Sec. of; Dr. G. C. Anderson, Lond.

B.—*British Medical Journal*, Lond., Editor of; Mr. W. V. Ball, Lond.; Dr. H. W. Barber, Lond.; Dr. J. Blomfield, Lond.; Dr. P. Bousfield, Lond.; Mr. A. C. Bisharad, Calcutta; Mr. W. J. Balls, Cambridge.

C.—Miss G. Cowlin, Lond.; Dr. R. H. Cole, Lond.; Dr. J. Crocket, Bridge of Weir; Dr. H. C. Cameron, Lond.; Central Association for the Care of the Mentally Defective, Lond., Hon. Sec. of; Prof. E. M. Collis, Cardiff; Continental Publishing Co., Toronto, Gen. Manager of; Major B. J. Courtney, I.M.S.; Dr. C. F. Coombs, Bristol.

D.—Dr. W. E. C. Dickson, Lond.; Prof. G. Dreyer, Oxford.

E.—Dr. G. Evans, Lond.

F.—Federation of Medical and Allied Societies (Inc.), Lond., Gen. Sec. of; Dr. W. E. Falconer, Lond.

G.—Dr. A. E. Giles, Lond.; Dr. M. Greenwood, Loughton; Dr. J. S. Goodall, Lond.; Dr. E. W. Goodall, Lond.; Guy's Hospital Medical School, Lond., Dental Sub-Dean of.

H.—Dr. C. L. Hewer, Lond.; Hospital Almoners Council, Lond., Hon. Sec. of; Hospital for Sick Children, Lond., Acting Sec. of; Mr. S. J. Hawkins, Exeter; Miss I. Hett, Lond.; Dr. F. Hernaman-Johnson, Lond.; Dr. C. T. W. Hirsch, Lond.; Dr. R. C. Holt, Didsbury.

J.—Jury's Imperial Pictures, Lond., Directors of; Dr. R. C. Jewesbury, Lond.

K.—Kensington, *Medical Officer of Health of*; Dr. C. H. Kellaway, Lond.

L.—London and Counties Medical Protection Society, Gen. Sec. of; Lecture Agency (Gerald Christy), Lond.; Dr. L. M. Ladell, Lond.; Liverpool Medical Institution; Dr. C. Lillingston, Gorleston; Dr. F. E. Larkins, Lond.

M.—Mr. J. E. May, Lond.; Dr. P. Manson-Bahr, Lond.; Ministry of Health, Lond.; Dr. M. Manson, Whitehaven; Dr. S. G. Moore, Huddersfield; Margate Chamber of Commerce, Sec. of; Chartered Society of Massage and Medical Gymnastics, Lond., Sec. of.

N.—Navy, Medical Department of, Director-General of; North-East London Post-Graduate College, Dean of; National Housing and Town Planning Council, Lond.

O.—Dr. H. J. Orr-Ewing, Jerusalem.

P.—Count de Penha Longa, Lond.; Dr. K. B. Pinson, Manchester; Mr. H. M. Page, Lond.; Dr. E. E. Prest, New Cumnock; Dr. R. H. Plimmer, Aberdeen; Dr. F. W. Pilkington, Kencott.

R.—Royal Society of Arts, Lond.; Dr. J. D. Rolleston, Lond.; Royal Society of Medicine, Lond., Asst. Editor of; Major A. J. H. Russell, I.M.S.; Royal Institution of Great Britain, Lond.; Royal College of Physicians of London; Mr. J. H. Ryffel, Lond.; Mr. C. Roberts, Manchester.

S.—Prof. W. Stirling, Manchester; Summer School of Civics, Lond.; Rev. W. E. Sealy, East Grinstead; Dr. A. G. Shera, Eastbourne; Dr. Marie Stopes, Leatherhead; Société des Sciences Médicales et Biologiques de Montpellier; Dr. J. Sorley, Lond.

T.—Messrs. E. B. Treat and Co., New York; Trinity College School of Physic, Dublin; Dr. V. D. Thandavaroyan, Secunderabad; Dr. J. J. Thomson, Ilkley.

U.—University of Edinburgh, Sec. of.

V.—Mrs. J. G. Vogt, Peterhead.

W.—Miss M. A. Willis, Lond.; Dr. G. Wilkinson, Sheffield; Dr. A. Whitfield, Lond.; War Office Publicity Department, Lond.; West London Post-Graduate College, Lond.; West London Medico-Chirurgical Society, Hon. Sec. of; Dr. R. L. M. Wallis, Lond.

Y.—Dr. A. G. Yates, Sheffield.

Communications relating to the editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, April 11th.

An interesting Demonstration of Lantern Slides in Natural Colours of Dermatological and other Medical Subjects will be given at 5 P.M., and all Fellows and Members of Sections interested in the subject are cordially invited, as it is a new method (*"Uvachrome") in colour production, requiring no "screen"* on the slide.

Tuesday, April 19th.

GENERAL MEETING OF FELLOWS: at 5 P.M.
Ballot for Election to the Fellowship.

MEETINGS OF SECTIONS.

Monday, April 11th.

WAR SECTION: at 5.30 P.M.
Paper:
Surg.-Commdr. S. F. Dudley, R.N.: A Few Observations on the Influenza Epidemic as it Affected the Royal Navy.

Wednesday, April 13th.

SECTION OF SURGERY: SUBSECTION OF PROCTOLOGY: at 5 P.M.
Discussion:
On "Pruritus Ani," to be opened by Mr. Lockhart-Mummery and Sir Charles Gordon-Watson.

SECTION OF SURGERY
SECTION OF DERMATOLOGY
Members of these Sections are cordially invited to attend the above Meeting.

Saturday, April 16th.

SECTION OF OTOLOGY, at the Leicester Infirmary; at 2.30 P.M.
Papers:
Mr. T. B. Layton and Mr. Archer Ryland: The Quantitative Estimation of Hearing, with Special Reference to Unilateral Deafness.
Mr. F. J. Cleminson: Sinusitis in Children.
Cases will be shown by Dr. Macleod and Mr. Keen.
There will also be a Demonstration at the Aural Clinic of the Leicester Education Committee.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.
MONDAY, April 11th.—8 P.M., Cantor Lecture (I.):—Dr. S. J. Lewis: *Recent Applications of the Spectroscope and the Spectrophotometer to Science and Industry.*
WEDNESDAY.—8 P.M., Prof. H. E. Armstrong: *Low Temperature Carbonisation and Smokeless Fuel.*

HARVEIAN SOCIETY OF LONDON, at the Town Hall, Paddington Green, W.
THURSDAY, April 14th.—8.30 P.M., Paper:—Mr. D. C. L. Fitzwilliams: The Naevi of Children and their Treatment.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.
Museum Demonstrations in the Theatre of the College for Advanced Students and Medical Practitioners:—
FRIDAY, April 15th.—5 P.M., Prof. Keith: *Specimens illustrating* the Comparative Anatomy of the Cæcum, Appendix, and Great Bowel.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, April 11th.—2 P.M., Dr. S. Pinchin: Medical Out-patients. Mr. MacDonald: Surgical Out-patients. Dr. Morton: X Ray Department. Mr. D. Armour: Operations. 2.30 P.M., Dr. A. Saunders: Visit to Medical Wards.
TUESDAY.—10 A.M., Dr. McDougal: Electrical Department. 2 P.M., Dr. Burnford: Medical Out-patients. Dr. Pernet: Skin Department. 2.30 P.M., Mr. Baldwin: Operations. Mr. Addison; Visit to Surgical Wards.
WEDNESDAY.—10 A.M., Dr. A. Saunders: *Medical Diseases of* Children. Mr. MacDonald: Genito-Urinary Department. 2 P.M., Mr. Gibb: Eye Department. Mr. D. Armour: Visit to Surgical Wards. Mr. Addison: Operations.
THURSDAY.—2 P.M., Mr. B. Harman: Eye Department. Mr. Baldwin: Orthopædic Department.
FRIDAY.—10 A.M., Mr. D. Buxton: Dental Department. 2 P.M., Mr. Banks Davis: *Diseases of the Throat*, Nose, and Ear. Mr. T. Gray: Surgical Out-patients. 2.30 P.M., Dr. Pritchard: Visit to Medical Wards.
SATURDAY.—2 P.M., Dr. Owen: Medical Out-patients. Mr. Sinclair: Surgical Out-patients.
Daily:—10 A.M. Ward Visits. 2 P.M., In-patient, Out-patient Clinics and Operations.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.
Post-Graduate Course on Infant and Child Welfare.
A Course of Twelve Practical Demonstrations on the Management and *Feeding of Infants and Young Children by Dr. E.* Pritchard to Qualified Practitioners.
TUESDAY, April 12th.—10.30 A.M., Demonstration III., Breast Feeding.
THURSDAY.—3 P.M., Demonstration IV., The Artificial Feeding of Infants.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.
THURSDAY, April 14th.—6 P.M., Chesterfield Lecture:—Dr. W. Griffith: The Treatment of Skin Diseases.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
TUESDAY, April 12th.—4.30 P.M., Lecture:—Mr. F. H. Westmacott: Suppuration in the Accessory Cavities of the Nose.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BERRY, W. A., M.D. Lond., D.P.H., has been appointed Medical Officer of Health for the city of Bloemfontein.

GAUVAIN, Sir H. J., M.A., M.D., M.Ch. Camb., Honorary Consulting Surgeon to the Welsh National Memorial.

JONES, J. D., Medical Officer of Health for the Festiniog Urban Council.

LYNHAM, J. E. A., M.D. Belf., Radiologist to the Italian Hospital, Queen-square, Bloomsbury.

ROBINSON, W., M.B., Ch.B. Leeds, Superintendent of the Brentwood Mental Asylum.

WHITEHEAD, H., M.D. Manch., Medical Officer of Health of Wigan.

Certifying Surgeons under the Factory and Workshop Acts; GILMOUR, J., M.B., C.M. Glasg. (Duntocher); HALLEY, T. C., M.B., Ch.B. Aberd. (Stanford-le-Hope); LISTER, T. E., M.B., Ch.B. Leeds (Horbury); PIRRIE, R. R., M.D. Durh. (Eastbourne); RIGBY, C. S., M.B., C.M. Aberd. (Sedgeley); SMART, E. N. (Catwick); WELLS, W. W., M.B., Ch.B. Oxon. (Bromyard); WILSON, N., M.D. Camb. (Sherborne).

Vacancies.

For further information refer to the advertisement columns.

Barnsley and Wakefield Joint Sanatorium Committee.—Asst. Tuberc. O. and Res. M.O. at Mount Vernon Sanatorium. £400.

Birmingham and Midland Homœopathic Hospital.—Res. H.S. £175.

Birmingham, Queen's Hospital.—Pathologist. £100.

Bootle Borough Hospital.—Third H.S. £120.

Bridgwater Hospital.—H.S. £165.

Bristol General Hospital.—H.S. £175.

Chiswick and Ealing Hospitals Committee, Maternity Hospital, South Ealing.—Consulting Obstet. 20 gs.

Dartford, Kent, Darenth Training Colony.—Jun. Asst. M.O. £515.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Res. M.O. £200. H.S. and H.P. £125. Cas. O. £120.

Edinburgh University, Department of Physiology.—Assistant.

Evelina Hospital for Children, Southwark, S.E.—Hon. Dent. S.

Gloucester County Asylum.—Jun. Asst. M.O. £300.

Great Northern Central Hospital, Holloway, N.—H.S. £150. Also Anæsth. £10 10s.

Guildford, Royal Surrey County Hospital.—H.S. £150.

Herefordshire General Hospital.—H.S. £200.

Heston and Isleworth Urban District Council.—M.O.H. and Sch. M.O. £600.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Res. Asst. M.O. £200. Also H.P. £50.

Hospital of St. John and St. Elizabeth, 40, Grove End-road, N.W.—Anæsth. £50.

Huddersfield Royal Infirmary.—Two Jun. H.S.'s. £150.

King's College Hospital, Denmark Hill, S.E.—Hon. Jun. Dent. S.

Kirkburton, Storthes Hall Asylum, near Huddersfield.—Asst. M.O. £400.

Liverpool Royal Infirmary.—Hon. Asst. Surg.

London Homœopathic Hospital, Great Ormond-street and Queen-square, Bloomsbury, W.C.—Two Res. M.O.'s. £100.

London Lock Hospital, 91, Dean-street, W.—Pathologist. £500.

Manchester County Asylum, Prestwich.—Asst. M.O. £572 18s.

Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—P., Dent. S., and Radiographer. Also Jun. Res. M.O. £120.

Miller General Hospital for South-East London, Greenwich-road, S.E.—Sen. Res. M.O. £350.

Newcastle-upon-Tyne, Hospital for Sick Children.—Hon. Asst. S.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—H.P.'s, H.S.'s., and Accident Room H.S.'s. £50 each. H.S. to Out-Patient Dept. £100.

Newport, Mon., Royal Gwent Hospital.—H.S. £200.

Nottingham City Asylum.—Second Asst. M.O. £400.

Ochil Hills Sanatorium, near Milnathort.—Res. Med. Supt. £500.

Oldham Royal Infirmary.—Three H.S.'s. £250, £250, and £200 respectively.

Pembroke County.—County M.O.H. and Sch. M.O. £700.

Prince of Wales's General Hospital, Tottenham, N.—H.P., H.S. £200. Jun. H.S., Jun. H.P. £120.

Queen Mary's Hospital for the East End, Stratford, E.—H.P. and H.S.

Rotherham Hospital.—Sen. H.S. £250.

Royal Chest Hospital, City-road, E.C.—H.P. £120.

Royal College of Surgeons of England.—Examiners.

St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—Jun. H.S. £75.

St. Thomas's Hospital, Albert Embankment, S.E.—Jun. Asst. in Venereal Department. £400.

Salford Royal Hospital.—H.S.'s £150. Cas. H.S. £150. Also Anæsth. £50

Sheffield Royal Hospital.—H.S. and Asst. Cas. O. £150.

Sheffield Royal Infirmary.—H.S.'s, H.P.'s, Aural H.S., and Asst. Cas. H.S. £150 each.

Southampton Free Eye Hospital.—Asst. Hon. Ophth. Surg.

Staffordshire General Infirmary, Stafford.—H.S. £250.

University College Hospital.—Obstet. Registrar. £150.

West End Hospital for Nervous Diseases, 73, Welbeck-street, W.—Hon. Anæsthetists.

West London Hospital, Hammersmith-road, W.—Cas. O. £5 5s. per week.

West Middlesex Hospital, Isleworth.—Asst. Med. Supt. £300.

Westminster Hospital.—H.S.

Westmorland Sanatorium, Meathop, Grange-over-Sands.—Asst. M.O. and Asst. Tuberc. O. £350.

Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.

Worcester County and City Mental Hospital, Powick.—Sen. Asst. M.O. £450.

Births, Marriages, and Deaths.

BIRTHS.

ALLCHIN.—On March 27th, at "The Briars," Northwick Park-road, Harrow, the wife of F. M. Allchin, M.B., B.S. Lond., of a son.

PERN.—On March 25th, at Botley, Hants, the wife of Alfred Spearman Pern, M.R.C.S., L.R.C.P., of a son.

WILKINSON.—On the 29th of March, to Dr. and Mrs. K. Douglas Wilkinson, at 91, Cornwall-street, Birmingham, a son.

MARRIAGES.

MILLER—WATSON.—On April 2nd, at St. Andrew's, Ashburton, Devon, Douglas Alexander Miller, M.B., Ch.B., to Paula Barbara, daughter of the late Francis Robinson Watson and Mrs. Watson, Ramsey, Isle of Man.

OLDERSHAW—LATTEY.—On March 31st, at St. Albans, Streatham Park, by the Rev. Canon J. C. V. Durell, C.B.E., B.D., cousin of the bride, Martin Herbert Oldershaw, M.D., F.R.C.S., 30, New Cavendish-street, W. 1, to Olive, second daughter of Henry Lattey, Tarmon, Streatham Park, S.W. 16.

DEATHS.

BLYTH.—On March 30th, suddenly, at Upper Gloucester-place, N.W., Alexander Wynter Blyth, M.R.C.S., F.I.C., &c., Barrister-at-Law, Public Analyst for the County of Devon and the Borough of Marylebone, in his 76th year.

CLARK.—On April 4th, at Ladbroke-gardens, W., John George Clark, M.R.C.S. Eng., aged 66 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, London.
Aids to Dental Surgery. By Douglas Gabell, M.R.C.S., L.D.S. Eng. 3rd ed. Pp. 132. 3s. 6d.
Manual of Midwifery. By Prof. H. Jellett, M.D., and D. G. Madill, M.B. Dub. 3rd ed. Pp. 1200. 42s.
Squint: Its Causes, Pathology, and Treatment. By C. Worth, F.R.C.S. 5th ed. Pp. 242. 12s. 6d.

FROWDE, HENRY, AND HODDER AND STOUGHTON, London, Edinburgh, and Glasgow.
Outlines of Zoology. By J. A. Thomson, LL.D. 7th ed. Pp. 867. 18s.
A Physical Interpretation of Shock, Exhaustion, and Restoration: an Extension of the Kinetic Theory. By G. W. Crile, M.D. Edited by A. F. Rowland, B.S. Pp. 232. 25s.
Electro-Therapeutics for Practitioners. By F. H. Humphris, M.D. 2nd ed. Pp. 300. 21s.
Skin Diseases in General Practice: Their Recognition and Treatment. By H. Davis, M.B. Pp. 355. 25s.

KIMPTON, HENRY, London.
Essentials of Medical Electricity. By E. P. Cumberbatch, B.M. Oxon. 5th ed. Pp. 388. 10s. 6d.

SAUNDERS, W. B., COMPANY, London and Philadelphia.
The Endocrines. By S. W. Bandler, M.D. Pp. 486. 35s.
The Anatomy of the Nervous System from the Standpoint of Development and Function. By S. W. Ranson, M.D. Pp. 395. 32s. 6d.

UNIVERSITY OF LONDON PRESS, London.
Artificial Light: Its Influence upon Civilisation. By M. Luckiesh. Pp. 365. 12s. 6d.
Creative Chemistry: Descriptive of Recent Achievements in the Chemical Industries. By E. E. Slosson, M.S. Pp. 311. 12s. 6d.

UNIVERSITY PRESS, Cambridge.
The Essentials of Mental Measurement. By W. Brown, M.D. Oxon., and G. H. Thomson, D.Sc. Pp. 216. 21s.
The Clinical Pathology of the Blood of Domesticated Animals. By S. H. Burnett, A.B., M.S., D.V.M. 2nd ed. Pp. 166. 13s.

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Notes, Short Comments, and Answers to Correspondents.

PUBLIC HEALTH IN BOMBAY, 1919.

IN the introductory remarks to his first annual report on the administration of public health in Bombay for 1919, Dr. J. E. Sandilands, who took over the duties in February, 1920, states that it is, in fact, the report of Dr. Sorab C. Hormusjee, who was in charge of the department from April 27th, 1919, when Dr. J. A. Turner (author of the well-known treatise on "*Sanitation in India*") proceeded on leave, pending retirement, after having served as executive health officer since February, 1901. The conditions of public health during the year were far from satisfactory: there were epidemics of cholera, small-pox, plague, and influenza, though much milder (except in the case of cholera) than in 1918. It has to be borne in mind that the ratios for disease prevalence and death are still calculated on the census enumeration of 1911 (979,445), though the increase since then, owing to natural as well as adventitious causes, has been estimated at not less than 200,000. The birth-rate, as calculated in the usual way, was 21·16 per 1000 of the total population, representing 20,730 births; but if adjustment be made for children vaccinated, whose births had not been registered, and for a (presumed) similar unregistered proportion who escaped vaccination, a ratio of 21·71 per 1000 is obtained (representing 27,114 births) which is perhaps an approximation to accuracy as near as can be obtained. For the Hindu communities as a whole, who form the majority of the population, the ratio was 20·54; ranging from 11·35 among Brahmins to 60·88 among Hindus "of low caste," and 89·83 among Lingaits. For Mussulmans and Negro-Africans it was 21·00; for Indian Christians, 26·99; for Europeans, 12·02. As compared with 1918, the general birth-rate was slightly lower, 21·16 against 22·18 per 1000. There were, as usual, very wide variations in different parts of the city, though it is pointed out that these may be largely accounted for by the uneven distribution of women and married women of fertile age. The highest ratio was recorded in Upper Colaba section (50·09), which was, however, not so high as that of the preceding year (55·87); the next highest were 31·20 in Tarwadi and 30·86 in Mahim; the lowest were in the business locality of Fort South (8·95) and in Market section (9·81). The general death-rate was 70·04, compared with 59·61 in the previous year, and 36·08 for the decennium 1909-18; but after applying corrections for new arrivals not belonging to Bombay, and inmates of war hospitals, the mortality, as based on the available data, works out to 67·22 per 1000, representing 65,847 deaths. This ratio needs further correction for deaths of Bombay inhabitants occurring "up country"; but these may be held to be balanced by the deaths of visitors and persons passing through the city, as the chief port of arrival and embarkation in India. The infant mortality was 499·15 per 1000 live births, compared with 434·8 and 304·2 in 1918 and 1917 respectively: the chief causes of death were diseases of the respiratory and nervous systems and debility, which, combined, accounted for 10,143 out of the total 13,534 infantile deaths. Among Hindus the ratio was 737·92, among Mussulmans 562·36; while for Europeans it was 230·76, and for Parsees only 224·56. The highest infant mortality (891·8 per 1000 births) occurred in Market section, and the lowest in Walkeshwar (307·6). An instructive diagram shows that the infant mortality among families living in single-room tenements was 83·1 per cent. of the births registered; in those living in two rooms it was 56·5, in three rooms 35·8, in four rooms 18·9, and in hospitals only 11·1 per cent. Unfortunately 79·9 per cent. of the population live in single-room tenements. The work of the Bombay Sanitary Association, according to the scheme inaugurated by Lady Willingdon in 1914, has been continued and extended. Maternity homes, infant milk depôts and infant welfare centres are in operation, under a ladies' committee, with Her Excellency Lady Lloyd at their head.

Incidence of Disease amongst the General Population.

In regard to the general population the largest number of deaths was, as usual, recorded under respiratory diseases, amounting to 24·55 per 1000, as compared with 23·97 in 1918, and 10·51 in the preceding decennium (1909–18). Next to this group cholera was the most fatal, with 8455 deaths, or 8·63 per 1000, compared with 1·69 in 1918 and 0·50 in the decennium. It became epidemic in the middle of December, 1918, and was gradually declining in January, but unfortunately, owing to the labour strike, "which began on 9th January and was unprecedented in duration as well as in magnitude, the incidence of the disease attained appalling proportions," reaching its height in the week ending 1st February. After this it began to subside. Of the 9658 attacks and 8455 deaths from cholera in 1919, 9304 attacks and 8206 deaths occurred during January and February. The type of the disease was evidently most severe; the case-mortality, or fatality, was 87·5 per cent., and for the two months, January and February, when the epidemic was at its height, 88·2 per cent. Deaths occurred in every registration section throughout the city, those most severely affected being Parel (22·27 deaths per 1000) and Sewri (20·29). Vigorous measures were taken, the medical, conservancy, and disinfecting staffs strengthened, and inoculation was offered free to all. Owing to this energetic action of the medical and municipal authorities the epidemic was practically brought to an end in February, although cases occurred sporadically throughout the rest of the year. There were 826 cases of plague, with 702 deaths (0·71 per 1000), this being the 24th year of its continuous presence in Bombay. Influenza was prevalent, especially in May and June, but the mortality (1·98) was much less than that of 1918, which had been 4·04 per 1000. The deaths registered as due to tuberculosis (2780, or 2·83 per 1000) were in a higher ratio than in the preceding quinquennium (2·06), but it is pointed out that this does not necessarily signify a corresponding increase in the incidence of the disease, as owing to modern methods of diagnosis many cases, formerly returned as fevers and bronchitis, are now correctly shown as tuberculosis. It was most prevalent in Upper Colaba (9·63 deaths per 1000) and Sion (8·93) sections; in Mazagaon the ratio was only 0·29. For Hindus the ratio was 2·62, for Mussulmans 4·13, and for Europeans 0·84. The King George V. Anti-tuberculosis League carries out a good work in close coöperation with the Health Department; 1003 patients attended the two dispensaries which the League maintains, and patients too ill to attend are visited by the medical officers at their own homes. A sanatorium was opened on Bhoiwada Hill, at Parel, in April, with 20 beds, where 57 cases were cared for, greatly to the comfort of the patients, and with much value in preventing spread of infection in their homes. Ague and remittent fever caused 5071 deaths, and in addition 262 are returned under "malaria." The results of an extensive inquiry into the prevalence of enlargement of the spleen showed that, among 11,140 children examined, this condition was present in 1·37 per cent. for Bombay as a whole; in Ward G, comprising Mahim and Worli sections in the north of the island, among 5106 examined not a single case of enlarged spleen was detected; on the other hand, in Dhobi Talao section (Ward C) 4·22 per cent., in Fort North, 4·56 per cent. and in Esplanade section 5·65 per cent. of the children examined were found to have enlargement. In 1918 these last two sections had shown spleen rates of 4·73 and 2·96 per cent. respectively; in 1909 the ratios had been 49·44 and 73·88. The water reservoirs on Malabar Hill have been protected with reinforced concrete, and all filters abolished; many ponds and tanks have been filled in, and many wells either filled in or effectually protected. Almost all the cisterns in the city have been made mosquito-proof.

Dr. Sandilands draws attention to the need of hospital accommodation for tuberculous patients, and for extending the existing provision for the treatment of infectious diseases; he considers that a total accommodation of 1000 beds is required. The condition as regards vaccination in Bombay cannot be considered as satisfactory. The number of children vaccinated, under one year of age, was 12,064; it has been already stated that there were probably 27,114 births during the year. The deaths from small-pox under one year of age numbered 198; 161 of these cases had not been vaccinated; in the remaining 37 the condition as regards vaccination was unknown. On the other hand, out of 9218 pilgrims leaving for Mecca 97·54 per cent. were vaccinated in Bombay before embarkation. This exhaustive report is fully illustrated with diagrams and tables. A plan of the city would have increased its interest, and this addition we suggest should be made in subsequent issues.

MEDICINE AND THE PUBLIC.

To the Editor of THE LANCET.

SIR,—Modern medical progress means a recognition of the fact that disease in the individual affects in greater or less degree the whole community. From this it follows that the whole community ought to be interested in medical science. Evidence of the growth of public interest in this direction is shown by the amount of space which the daily press devotes, sometimes well and sometimes not so well, to medical questions of the day, but if the revelation of medical science is to keep pace with its progress there is needed a strong movement to interest and educate the constituency. Has all been done that might be done? During the war the Royal College of Surgeons of England did excellent work by organising lectures and demonstrations for ambulance workers and V.A.D.'s, and there does not seem to be any reason why its facilities as well as its authority should not be used to broaden public knowledge of matters which concern the national health. There are many directions in which this idea could be developed, with valuable results. I am, Sir, yours faithfully,

April 4th, 1921. WILLING TO LEARN.

A GERMAN MANIFESTO ON VITAMINS.

A RECENT issue of the Official German Health Publications contained the following manifesto on accessory food substances:—

"The coming months threaten us with grave food difficulties, similar to those of the winter and spring of 1917. Lengthy research has established the fact that the ill consequences of insufficient diet depend not only on the lack of total quantity, but, in much higher degree than was once thought, on the lack of certain accessory substances (vitamins), essential alike in adults and children to the well-being of the body, but distributed very unevenly in the usual food-stuffs. Added in sufficient amount these substances can to a certain extent compensate for insufficient total quantity of food. Conversely, in their absence, even the most abundant diet is not able to ward off English disease (rickets), bone softening, watery swellings (œdema), nutritional changes in the blood and the nerves, loss of resistance to tubercle and other diseases. Unfortunately, a great part of the food-stuffs which contain in high degree these important accessory substances—e.g., fresh milk, best dried milk, butter, whole-milk cheese, cream, fresh meat, liver, kidneys, heart, brain of animals, fat fish, eggs, dripping, and lard—are hard to obtain and very costly. Their lack can, however, be made good also by cheaper material.

Emphasis should therefore be laid on such food-stuffs, of which the most important are: *Animal*—cod-liver oil. *Grain*—wheat (wholemeal, including the bran as in Graham bread); the germ of corn, specially of wheat, as in the preparation "materna"; germinating grain, as in the production of malt. *Pulses*—peas, beans, lentils, soya beans (also in dry form). *Greens*—all forms of fresh green leaves, all kinds of cabbage and spinach, provided that they are only steamed and not brought to the boil. According to recent research, the stinging nettle provides a tasty dish rich in vitamin. Any kind of salad, varieties of lettuce at the head; further, carrots (also expressed carrot-juice for children). *Fruits*—nuts, dessert fruit, lemons and lemon-juice. As vitamin-rich fruit are apples specially to be noted; oranges are rich in vitamin, but are at present costly. *Various*—fresh yeast and its preparations; malt extract in certain forms has been found to contain vitamin. The substances in question pass from the expectant mother to the fœtus, and from the nursing mother into her milk. When these substances are lacking the body of mother and child suffers even with abundant food. For detailed information ask your doctor!"

The signatories to the manifesto are Professors V. Bergmann, Ellinger, Embden, v. Noorden, Quincke, and Strasburger, members of the faculty of medicine at Frankfort University, and Hr. Schlosser, president of the City Health Department.

A PROGRAMME OF DIET.

A MEDICAL practitioner forwards to THE LANCET a rather quaintly worded advertisement in the form of a typewritten letter that he has received, possibly in common with many of his colleagues. It professes to come from a person who has suffered severely from asthma, but who "by following out a carefully thought out Programme of Diet," has cured himself. "It is very easy to follow, being straightforward and concise (if typed about a page and a half), and no more expensive than ordinary fare, being really a guide to asthmatics what to avoid than recommending special foods, and in no way interferes with business." The advertiser is too modest to fix a fee, or is afraid that his modesty might underestimate the gratitude of his possible correspondents, and so operate to his detriment. He offers to send his rules of diet "on receipt of your cheque or Treasury notes for what you consider would be fair for above information." It leaves one wondering how many Treasury notes the sender expects to extract from the medical profession by such simple means.

COMMERCIAL VACCINES.

Messrs. Parke, Davis and Co. have issued a tenth edition of the pamphlet on vaccine therapy, which contains instructions for using the bacterial vaccines prepared in the vaccine laboratory of the Department of Therapeutic Inoculation at St. Mary's Hospital, London. The sections of this pamphlet relating to acne, streptococcal infections, influenza, typhoid fever, and whooping-cough have been largely rewritten. New vaccines have been added as follows: Diphtheria bacillus vaccine for the treatment of "carriers" and convalescents, Anti-rheumatic vaccine, Anti-plague vaccine, several Anti-influenza vaccines and Mixed gonorrhœa vaccine. The composition of the following vaccines has been altered: Acne and Mixed acne, Antisepsis and Whooping-cough. The Mixed vaccine for colds, the Anti-catarrh vaccine, and the Mixed anti-influenza vaccine (St. Mary's Hospital formula) are now issued in sets of three graduated doses for the prevention and treatment of coryza and influenza. The stock vaccines are the same as those used in the Inoculation Department, St. Mary's Hospital, and have been standardised by observation of their effects on patients. A proportion of the proceeds of the sale of these vaccines goes to the upkeep of the in- and out-patient departments, and the laboratories of the Institute of Pathology and Research at St. Mary's Hospital.

Messrs. Allen and Hanburys, Ltd., in their "Medicamenta Recentia" present in concise form details of the materia medica of their manufacture. The method of arrangement is alphabetical, and a therapeutic index with cross references makes for convenient use. There is a very complete list of vaccines and kindred preparations, many of them deriving from the Lister Institute, with suggestions as to dosage and method of administration. The series includes Acne bacillus vaccine, Bacillus septus (Hofmann) vaccine, Calf vaccine lymph, Cholera vaccine (multivalent), Coley's fluid (new) for cancer, Colon bacillus vaccine, Compound catarrhal vaccine, Compound influenza vaccine, Dental streptococcus vaccine, Gonococcus vaccine, Micrococcus catarrhalis vaccine, Paratyphoid vaccine, Plague prophylactic, Pneumobacillus (Friedländer) vaccine, Pneumococcus vaccine (multivalent), Pollen toxin vaccine, Staphylococcus vaccines, Streptococcus rheumaticus vaccine, Typhoid vaccine, Typhoid and paratyphoid vaccine, Typhoid, paratyphoid, and cholera vaccine, Whooping-cough vaccine, and various Tuberculins for diagnostic and curative use. Prices are not given.

WILLOCINE: A FRUIT-ACID TOOTH-PASTE AND TOOTH-POWDER.

Dr. W. J. Henson, who calls our attention to this fruit-acid tooth-paste and tooth-powder, accounts for the prevalence of pyorrhœa and dental caries by the use of alkaline dentifrices which retard the natural flow of saliva. Willocine combines a colourless salt prepared from willow charcoal (THE LANCET, 1917, ii., 53) with citric and benzoic acids and such soluble antiseptics as menthol and thymol. Potassium bitartrate and acid phosphate of calcium take the place of chalk as a base. Willocine can be obtained from Messrs. W. E. Lowe and Co., Ltd., 8, Stafford-street, Old Bond-street, London, W.

EMIGRATION FOR THE HARD HIT.

THE Department of Colonisation and Development of the Canadian Pacific Railway have recently issued a small brochure briefly setting forth the need for migration within the Empire—both to relieve the pressure of over-population in England and to develop the resources of the great Dominions—together with information as to specific opportunities offered by Canada to a new class of emigrants, such as the younger members of formerly well-to-do families whose economic position has been rendered difficult by the war and its consequences. This new class may be subdivided into: (1) those desirous of making new homes under conditions similar to those in the old country—i.e., settlement in or near a town; (2) those who wish to acquire land near to available markets, where market-gardening or poultry-farming may be profitably carried on, or who wish to follow their old profession or business in a new country; and (3) those anxious to settle on the land with experience already gained in England or under guidance by Canadian experts, as individual or group ranchers. Such emigrants have generally sufficient means to pay for their passages and to make a start in their adopted country; and there is room for all of them, no less than for the farmers, agricultural labourers, and domestic servants who are in constant demand. The recently formed "Western Canada Colonisation Association," the aims of which are described as "largely altruistic," proposes to establish a welfare section to assist settlers taking up land under its auspices—and, presumably, also to help anyone wishing to settle in or near a town for residential or business purposes.

A few localities are instanced, short descriptions of them being given at the end of the brochure. Of the Columbia-Kootenay Valley, between the Rocky Mountains and the Selkirks and south of the Railway Belt, we read as follows:—

"The climate is healthful and enjoyable at all seasons, although the temperature shows a wide variation. Blizzards and cyclones are unknown, and bright, sunny weather, winter and summer, is the rule. The summers are dry, with occasional hot days, the mean temperature being about 60° and the maximum about 95° F. The heat, being dry, is not oppressive and the nights are always cool. From May 1st until the end of September the general climatic conditions are delightful. The winters are long and subject to the Chinook winds, which temper the cold, but there is a great deal of sunshine during the winter months, and when the temperature is low there is little wind. Sleighing usually lasts from two to three months. ...... The conditions are particularly well adapted for horses, cattle, and sheep. The large, open ranges provide an abundance of summer grazing, and the cultivated portions provide good hay for winter feeding. Dairy cattle give good returns, and the climatic conditions are also very favourable to the production of honey and the rearing of poultry and turkeys. Alfalfa and clover grasses, peas, and potatoes are some of the most successful crops grown in the valley. Cereals of all kinds produce heavy yields. Peas do exceptionally well and are free from the attacks of weevil; the growing of peas for seed should prove a profitable undertaking. Potatoes cannot be surpassed in yield or texture; other hardy vegetables do remarkably well, as do tomatoes and bush fruits."

Similar short descriptions, including notes on timber, irrigation, and railway transport, are given of the Columbia Valley and of the Elko Lands, East Kootenay. Those who feel attracted by the opportunities offered by the Dominion are invited to ask for general and detailed information from the C.P.R. Department of Colonisation and Development, 62-65, Charing Cross, London, S.W.1, or from any of the agents of the Company in the United Kingdom.

Oliver-Sharpey Lectures

ON THE

NATURE OF FLUTTER AND FIBRILLATION OF THE AURICLE.

Delivered before the Royal College of Physicians of London on April 12th, 1921,

BY THOMAS LEWIS, M.D., F.R.C.P. LOND., F.R.S.,

PHYSICIAN TO THE STAFF OF THE MEDICAL RESEARCH COUNCIL; PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL, LONDON; HONORARY CONSULTING PHYSICIAN TO THE MINISTRY OF PENSIONS.

LECTURE I.—AURICULAR FLUTTER.

[AFTER some introductory remarks, in which he mentioned as his co-workers Dr. Thomas Cotton and Dr. A. N. Drury, of this country; Dr. H. S. Feil, Dr. W. D. Stroud, and Dr. H. A. Bulger, of the United States; and Dr. C. C. Iliescu, of Bucharest, Dr. Lewis proceeded:—]

SOME NORMAL FEATURES OF THE CONTRACTION PROCESS.

Let me first briefly describe the relevant events when normal heart muscle contracts in response to a natural or artificial stimulus. The first event of which we possess knowledge is that it passes into what is termed the *state of excitation.* By this we mean that the muscle develops a charge, just as a battery develops a charge, and that currents flow through it and the surrounding tissues. The charge is such that the active muscle becomes relatively negative to that which is still inactive, in the sense that the zinc terminal of a copper-zinc battery is negative to the copper. These electrical changes, associated with muscular activity, are of sufficient magnitude to be recorded by means of sensitive instruments, and they yield the pictures now spoken of as electrocardiograms. The electrical change in the muscle is the immediate precursor of contraction[1]; first the muscle becomes excited (or charged), secondly it contracts. The two events are separated in the mammalian auricle by a small time interval of three-hundredths of a second or less.

Now the process of excitation is not simultaneous in all parts of the muscle; it begins at the point first stimulated and spreads from this point. Stimulate a point in the centre of a sheet of muscle and the wave spreads concentrically, as does the ripple on the surface of a pond into which a pebble is thrown. It is conducted from one muscle element to the next as a wave, which is termed the *wave of excitation.* Similarly with the contraction process itself; this also spreads as a wave which accurately follows the course travelled by the wave of excitation. It may be likened to the second ripple on the pond. For our present purposes and to simplify the conception we may regard these waves as one, signalling itself as it proceeds, first electrically (first ripple), then mechanically (second ripple). When, therefore, I speak of the wave of excitation in the auricle and of the course it takes, you may picture in your minds the wave of contraction without fear of serious misconception. Nevertheless, I should, perhaps, be guilty of inaccuracy if I spoke of the wave of contraction, because our studies have been mainly, though not exclusively, directed to the wave of excitation; for movements of the latter are to be recorded with far greater accuracy than movements of the former.

Movement of the excitation wave is recorded by connecting a sensitive galvanometer directly to the surface of the muscle. As the wave passes the chosen point the galvanometer yields a sharp deflection, and this may be photographed and accurately timed against the events in some other region of the muscle. I do not propose in the present lectures to enter upon a detailed description of this delicate method, but am content to declare that we can time the arrival of this excitation wave at any point of the muscle surface with such accuracy that the error is no more, and usually less, than one-thousandth of a second; that by using two or more recording instruments simultaneously we can trace out the paths taken by waves of excitation as they travel through the muscle; and that we can estimate very accurately the time lost in the passage from point to point in different circumstances.

The wave of excitation, the first of the contraction process, travels until it involves the whole surface of the muscle; it travels in every available direction until it has exhausted all tracts of responsive muscle. Starting in the centre, it travels until it comes to the boundaries; there it ends, for at the boundary it finds no further tracts of responsive muscle through which to pass. Appropriately you may liken the spread of the excitation wave to the flame of a prairie fire. It spreads concentrically wherever it finds inflammable material; it cannot return over its scorched wake, neither can it proceed when it reaches the bounds of the dried acres. The wave of excitation leaves the muscle over which it passes in a non-inflammable, or, as it is termed, *refractory state,* and that muscle is incapable of carrying a second wave of excitation until its original inflammable state is restored. The period during which this restoration is effected is called the *refractory period* of the muscle; in the natural beating auricle of the dog it lasts from a fifth to a tenth of a second; its duration is approximately the same as the duration of the contracted state of the muscle.

From these preliminary observations I pass to what may be termed the "ring experiment."

THE RING EXPERIMENT.

The ring experiment was first performed by Mayer in 1908; he used the contractile bell of the jelly-fish and subsequently he utilised rings of muscle cut from the ventricles of turtles. His experiments were repeated and amplified by Mines in 1913 upon rings of muscle cut from the auricles of teleostean fishes. In 1914 both Mines and Garrey reported that they had obtained similar effects in rings of muscle cut from the dog's ventricle.

The experiment from our present standpoint is fundamental; I shall describe it therefore in some detail.

Suppose that we stimulate a ring of muscle, such as is depicted in Fig. 1, at *a*, the centre point of its lowest quadrant, and start in it by means of a single shock a *wave of excitation.* This wave, as soon as it has involved the whole cross section of the ring, develops two crests, which travel rapidly along the two limbs of the circle until, as shown in the serial diagrams (Fig 1, *1–4*), they meet at point *b*, the centre point of the highest quadrant. At the instant the crests meet the whole ring has become involved by the wave; the whole has passed into a state of excitation; it has all become "refractory." When, therefore, the two crests meet at point *b* movement is brought to an end; like two waves of flame, two waves of excitation meeting do not over-ride, each crest forms an impassable barrier to the other. The ring of muscle remains in this state of excitation for a period and then recovers. It recovers in the order in which it has become involved, it begins to be "responsive" in its lowest quadrant (at *a*) first of all. The wave of "responsiveness" travels similarly as two crests along the two limbs of the ring (Fig. 1, *5–8*) until they also meet and coalesce at *b*, the centre of the highest quadrant. The ring of muscle has now returned to its original condition; it is once again wholly in the responsive state.

Such is the series of events when the muscle of the ring responds to a single stimulus. If the ring is stimulated by means of slow rhythmic shocks each shock awakens a like series of events, providing that the intervals between the shocks are amply sufficient to permit recovery. Each stimulus yields a double-crested wave of response, which ultimately involves the whole ring. It will be evident that if in rhythmic stimulation the second shock falls upon the ring while it is in the

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[1] That the electrical change precedes the contraction is at the moment the accepted view, though the interval is acknowledged to be very short.

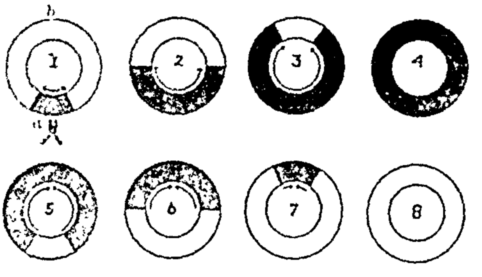

FIG. 1.—A diagram illustrating the progress of a single wave passing through a ring of muscle as a result of stimulating it at *a*. The black portion of the ring represents the refractory state, and the figure shows its progress through the ring till it involves the whole (*4*); later the figure shows its subsidence.

condition represented by Fig. 1, *6*, a fresh wave may be propagated at *a* before the response to the first shock has subsided at *b*. In such circumstances two waves will be moving through the ring at one time, as depicted in Fig. 2, *6–8*.

We come now to a different form of reaction; it is that which especially concerns us. It happens when the rate of rhythmic stimulation is raised to a critical point—namely, when the intervals between the shocks are such that each falls on the muscle at a time when responsiveness in this muscle has not wholly recovered. In such circumstances the wave propagated by stimulation may be unable to travel with its usual freedom in all directions. From time to time it is found that a wave propagated from the point of stimulation can pass in one direction only. It starts well enough, perhaps, and reaches two points of the ring A and B (Fig. 3); but at *A* it finds the muscle still insufficiently responsive, while at B recovery is more advanced. At A progress comes to an end, while at B the crest continues to move. Suppose that at this instant stimuli are withdrawn; the conditions are peculiar. Instead of two crests advancing to meet and interfere, there is now but one, and it is free to circulate, for as it comes to each new segment (C, D, E) of the ring it finds this segment excitable (Fig. 3, *2* to *4*). The single-crested wave consequently progresses around the whole ring, and, coming back to its starting-point, finds that this muscle also has recovered (Fig. 3, *5*); it proceeds so long as the conditions remain unaltered; it continues its course as a circulating wave which has no ending (Fig. 3, *6* to *10*). Thus it has been shown that, the conditions being nicely controlled, the last stimulus of a series may originate, not a single response of the ring, but an unlimited series of responses. Mines saw the wave continue to circulate for minutes, Mayer saw it continue for very many hours; this is what is meant by circus movement; it is constituted by a wave of response, which travels continuously along a re-entrant path of muscle.

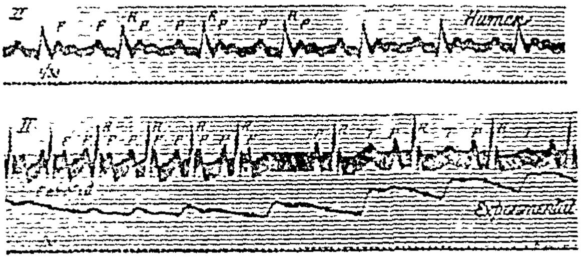

FIG. 4.—Examples of auricular flutter, clinical and experimental. The upper or clinical curve was taken from a patient in whom flutter was continuous. The auricle (*P*) is beating at a rate of 228 per minute and regularly; the ventricle (*R*) at half that rate. The ventricle responds to alternate beats of the auricle; the beat of the auricle to which there is no response falls with the beat of the ventricle. The lower or experimental curve shows the end of a period of flutter and the return of the normal rhythm. The *first half* of this curve is to be compared with the upper curve. During the period of flutter the auricle (*P*) is beating rapidly and regularly; the ventricle (*R*) at half the rate. The ventricle responds to alternate beats of the auricle; the beat of the auricle to which there is no response falls with the beat of the ventricle.

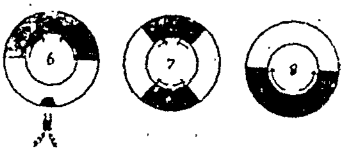

FIG. 2.—A second stimulus enters the ring while it is in the condition shown in Fig. 1, *6*. While the first wave is subsiding the second wave spreads.

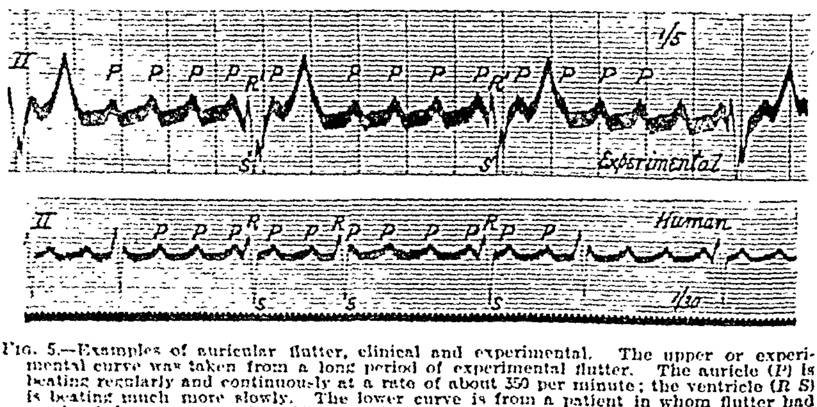

FIG. 5.—Examples of auricular flutter, clinical and experimental. The upper or experimental curve was taken from a long period of experimental flutter. The auricle (*P*) is beating regularly and continuously at a rate of about 350 per minute; the ventricle (*R S*) is beating much more slowly. The lower curve is from a patient in whom flutter had persisted for many months. The auricle (*P*) is beating regularly and continuously at a rate of about 270 per minute; the ventricle (*R S*) is beating much more slowly.

AURICULAR FLUTTER.

We may now examine a condition of the mammalian auricle, to-day called auricular flutter. Flutter, as we now understand it, was first clearly described in a patient by Hertz and Goodhart in 1909; they studied their case by means of venous curves, showing the auricle to be beating continuously and regularly at a rate of 234 per minute. Their description was quickly followed by the more ample records of Jolly and Ritchie, and of other writers. The rate of the auricular beating in flutter is from 230 to 350 per minute; the action of this chamber is remarkable, not only for its high rate, but for its regularity. It is to be recognised with the greatest certainty in electrocardiograms, of which examples are shown in Figs. 4 and 5. The condition is also remarkable because it continues uninterruptedly for long periods of time. Sometimes it may occur in short paroxysms, more usually it comes to stay for months or years. Its nature until quite recently has remained altogether mysterious, though very numerous observations have indicated its close affinity to the condition called fibrillation. Thus flutter is often converted into fibrillation by the administration of digitalis. There have been few satisfactory records of a similar experi-

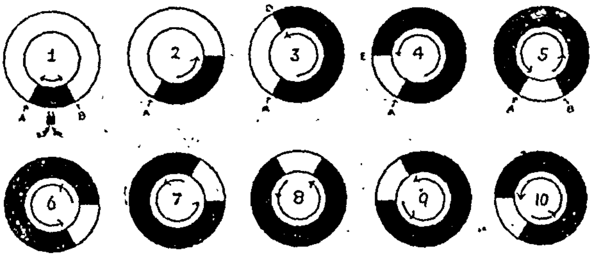

FIG. 3.—A diagram to illustrate the establishment of a circus movement in a ring of muscle. The ring is stimulated in its lower quadrant and the wave spreads to A and to B. At A it is blocked, but from B it continues around the ring. When it arrives at E (*4*) the refractory state at A is passing, and so the wave continues to travel around the circle (*5–10*).

mental condition. The term "flutter" was used by McWilliam as early as 1887; that was in the days when the two conditions, flutter and fibrillation, were not definitely distinguished. The first electrocardiograms of experimental flutter—and these curves are alone really distinctive—have been obtained during the past few years. We are now certain that a condition identical with that found clinically may be produced experimentally in the dog's auricle; this we have been taught by clinical and experimental electrocardiography.

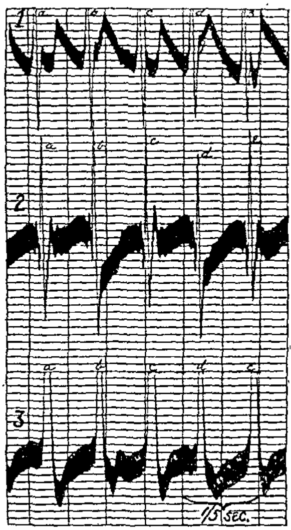

FIG. 6.—Three electrograms recorded simultaneously from the tænia terminalis of a dog while the auricle was fluttering. The top curve (1) was taken from the inferior caval, the bottom curve (3) from the superior caval, and the centre curve (2) from the mid region of the tænia. The record corresponds to five cycles of flutter (*a–e*). As each excitation wave passes, it signals itself by means of a sharp upward movement of three recorders. Recorder *1* moves first, recorder *2* a fraction of a second later, and recorder *3* a fraction of a second later still. The order of excitation is 1, 2, and 3; the wave is passing up the tænia.

In investigating disease there is one well-known and most fruitful method of approach—it is to produce in animals a condition identical with that seen in the patient. When this has been accomplished it becomes possible to inquire into the precise nature of the disturbance. If and when that knowledge is obtained we are in a position to consider rational plans of treatment. As I have related, in the case of flutter of the auricle, the first step has been taken. A continuous and rapid action of the dog's auricle can be produced in several ways, notably by rhythmically stimulating the organ with induction shocks at a rate of 300 to 600 per minute. The auricle is driven rhythmically and rapidly for a few seconds, and the stimuli are then abruptly withdrawn. In a certain proportion of such experiments a rapid action of the auricle continues after stimulation has ceased. The rate of action is not usually that of the rhythmic shocks which provoked it; it is usually less. For the moment our chief concern is not the method of producing this rapid and continuous action, but its nature. Its nature is variable, but amongst the after-effects of stimulation a condition identical with clinical flutter is seen from time to time. It is not every auricle which is predisposed to flutter; it is not every stimulation which will invoke flutter in the predisposed organ. That, however, is immaterial, providing that we can produce it, and can be certain when it is produced that it is identical with the clinical condition. The electrical curves, clinical and experimental (Figs. 4 and 5), leave us with no doubt on this subject; these curves, so delicately analytical, place the conclusion beyond question.

Experimental flutter having been produced, its nature is investigated by mapping out the path taken by the excitation wave while flutter is in progress. A single illustration of method will perhaps suffice. The auricle of a dog has been forced into a state of flutter, as ascertained by electrocardiograms taken by methods comparable to those used clinically. The flutter continues uninterruptedly. Three points are now chosen in the line of the tænia terminalis, and to each of these a sensitive galvanometric recorder is connected. The curves of these recorders write simultaneously. (Fig. 6.) As the excitation waves flow through the muscle they pass beneath the several contact points, and at each the passage is signalled. The curves, considered together, show that each wave is passing regularly up the tænia from the region of the inferior to the region of the superior cava, and we are able to measure the rate at which it is travelling. This record is published to illustrate the orderly character of the events as the cycles are repeated, and to indicate with what certainty the direction taken by the excitation may be ascertained. Actually a slightly different plan of campaign to that described is usually adopted. It consists of maintaining one lead as a standard and moving a second to various points of the auricle, timing the arrival of the excitation wave at its several parts relative to the standard lead, and finally of its arrival at the several parts relative to each other. To exemplify in a simplified fashion a complete experiment I may use Fig. 7. This figure shows the natural outline of the auricle as it is seen from above. The two appendices project upwards in the diagram; the superior and inferior venæ cavæ are represented as transsected. The figures *1*, *2*, and *4* in the lower diagram lie on the tænia terminalis. The

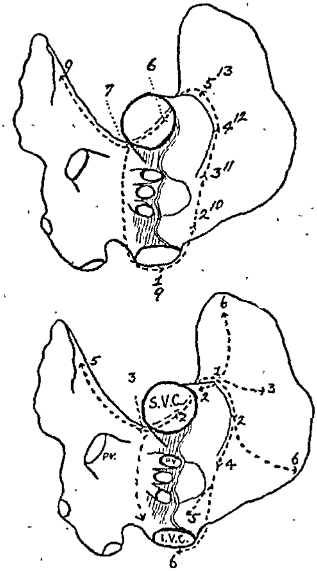

FIG. 7.—A natural outline of a dog's auricle, showing the paths of the excitation wave (broken lines) while the heart beats naturally (lower diagram) and during flutter (upper diagram). The numbers indicate the approximate order in which various parts of the musculature received the excitation wave.

order of excitation displayed by this animal while the heart beats normally is indicated in the lower diagram by the figures *1*, *2*, *3*, *4*, &c. The excitation wave, as is usual when the heart beats normally, starts in the region of *1*, the point at which the sino-auricular node or "pacemaker" lies. A little later it is to be found simultaneously at the points marked *2*. Follow the numerals and you perceive the course which it takes. It flows simultaneously along the muscular paths which radiate from the region of the node. Thus, it flows down the tænia to the inferior cava; it flows from the base to the tip of the right appendix; it flows through the intra-auricular band to the left auricle, and, still flying from its point of origin, traverses the left appendix from its base to its tip. The wave is not visible as a wave; it travels too fast for that; the whole process of spread occupies the twentieth part of a second.

In the top diagram of the figure is the essential part of the map for the same auricle in a state of rapid flutter. The order of excitation is quite different. The wave is first traced at the inferior vena cava (*1*), and it passes up the whole length of the tænia (*2*, *3*, *4*, and *5*). Reaching the top of the tænia it moves around the superior cava and flows through the intra-auricular band (*6* and *7*) to reach the left auricle. It reaches the left appendix (*9*), and at the same instant a wave is timed to emerge from the inferior vena cava (*9*). The question which at once arises is whether this second wave, emerging from the inferior cava and repeating the course (*10*, *11*, *12*, *13*, &c.) of the first wave, is a new wave, or whether it is the continuation of the old one. Is there a succession of regular waves, each arising de novo in the inferior cava, or is there a single circulating wave? This question is answered by two considerations. If we propagate a wave artificially from the inferior cava this spreads equal distances in equal times; it arrives at the two points *4* and *7* simultaneously. That is not the case in flutter; here it passes through point *4* to reach point *7*. But the *decisive argument is found in the time relation of the* wave: knowing the rate at which it travels along its path (*1*, *2*, *3*, *4*, *5*, *6*, and *7*) we can calculate how long it should take to move from *7* to *9*, and can compare this calculated time interval with the actual interval observed; these are found to be the same within an inconspicuous margin of error. There can be no doubt, then, that we are dealing with a wave which circulates. It circulates in this experiment around a natural ring of muscle formed by the orifices of the two venæ cavæ. Looked at from above, the movement is in the opposite direction to the hands of a clock. In this instance it completed one circuit in 0·16 of a second; it completed, therefore, 380 circuits in one minute, and that was the rate at which the auricle beat.

The experiment which I have described is one of several, but it will suffice to illustrate the kind of evidence we possess of circus movement in the auricle. Flutter consists essentially of a continuously circulating wave. The path which this central or re-entrant wave usually takes is the one I have described, but that is not invariable. Sometimes in flutter the course is different: thus, the flow may be clockwise over the same route. In other cases only one cava is encircled; the path is shorter, and the circuits are more quickly completed consequently. In other cases, though these are not so clearly evidenced, the circus movement is around other natural orifices, such as the mitral orifice. These variations are chiefly of consequence because they render the experimental work more difficult; the important conclusion is that the wave can be shown to circulate when the auricle flutters. The proof of circus movement in the auricle is not confined to the class of experiment which I have cited; there is much more evidence that I can now give you; taken as a whole I believe it to be quite conclusive.

Now the wave as a whole is not, of course, confined to the central or re-entrant path; as it passes along this path offshoots are sent through the appendices to their tips and into all other regions of the auricular muscle. Thus the movements of the whole auricular tissue is controlled by the circulating wave. There is the central or mother-wave, and there are its centrifugal offshoots into the remaining tissue.

Such is flutter as it occurs in the dog; such, therefore, is flutter as it occurs in man. In the dog we may see flutter last for hours; in man it may last, not for hours, but for years. I have known it to continue unceasingly for as long a period as seven years; for all we know it may continue even longer. A single wave continuously circulating for seven years: that, perhaps, may seem to be a remarkable conclusion; nevertheless, it is one we are now bound to accept.

THE FACTORS CONTROLLING FLUTTER.

A condition comparable to clinical flutter may, then, be produced in experiment; we have seen that when this experimental flutter is investigated it proves to consist essentially of a circulating wave. We may next consider the precise factors which maintain this circus movement. Refer back to the diagrams of the ring experiment and it will be clear that three factors are involved. They are:—

1. The length of the central path.
2. The rate at which the wave travels.
3. The duration of the effective refractory period.

It must be evident that if the wave is to continue circulating a gap must exist between the crest of its advance and the wake of its retreat. As the crest travels it must always find the muscle which it enters in the responsive state. If for any reason the gap becomes closed the wave will proceed no longer and the rapid action of the auricle will cease. The three factors named, and these alone, control the length of the gap. The duration of the refractory period at any given point must always be less than the time spent by the travelling wave in completing its circuit; this circulation time depends on the length of the path and the rate of travel. Now the rate of travel from point to point in the dog's auricle beating normally is approximately 1000 mm. per second, and the length of the refractory period at normal heart-rates is approximately 0·15 to 0·2 of a second. In 0·15 to 0·2 of a second the wave will travel through 150 to 200 mm. of muscle. On the basis of these values a circus movement could not establish itself in a ring of muscle of less than 150 to 200 mm. circumference. But it is known that much smaller circuits than these become established. What is the reason? The reason is that when the auricle flutters the refractory period is reduced; also, the rate of travel is usually reduced. These reductions both occur in response to an increased rate of beating such as prevails in flutter. Both changes facilitate the establishment of relatively short circus movements. The precise relations of the three controlling factors have now received close investigation. They are variable in different circumstances, but may be illustrated by a type experiment. A dog's auricle is fluttering at a rate of 500 per minute. Each circuit is completed in 0·12 of a second. The circuit has a length of 60 mm. The rate of travel is not 1000 mm. per second but 500 mm. per second. The rate of travel is but one-half the natural rate; that is so because the rate of beating is so high that the muscle is hard put to it to conduct the impulses. The length of the effective refractory period is not 0·20 but 0·10 of a second; it has become reduced with the rise of heart-rate. The cycle is divided into two parts—a refractory phase of a tenth of a second, a responsive phase of a fiftieth of a second. The crest of the wave is constantly but a fiftieth of a second behind its own wake; it travels behind it at a distance of only 10 mm. We have direct and conclusive evidence that these figures may be taken as usually representative of the gap which exists; it is a minute gap, yet upon its existence the continued progress of the wave absolutely depends. To the question of this all-important gap I shall return at a later stage; it is a gap which will command the attention of many workers in the near future, for upon our power to influence its length our success in treating flutter and, as we shall see, the closely allied condition fibrillation, will very largely depend. If by any means we could close that gap we could bring flutter to an abrupt termination.

A Hunterian Lecture

ON THE

GENERAL INDICATIONS FOR OPERATIVE EXPLORATION IN NERVE INJURIES.*

Delivered before the Royal College of Surgeons of England on Feb. 9th, 1921,

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IT has been found impossible to enunciate any hard-and-fast rules in connexion with the *indications for* the operative exploration of an injured nerve trunk. In actual experience the patient does not come under the observation of one surgeon from the time of the infliction of the injury to the period at which the necessity for a reconstructive operation arises. But certain broad principles are to be followed in arriving at a decision on this point. It is assumed that before any exploratory operation is undertaken the condition of the limb as regards general nutrition shall have reached the optimum stage, and that after the occurrence of sound healing of the wounds every effort has been made to loosen cicatrices in the skin and deeper parts and to obtain the mobilisation of stiffened joints. The operation performed under the conditions of massive scarring will in any case be difficult, and may even be unsuccessful in effecting repair of the nerve. The chances of prospective failure must dominate the immediate outlook of the surgeon.

We may state that an exploratory operation is either justified, or is inevitably needed, under the following conditions:—

1. Where the syndrome of complete interruption has persisted unchanged after a period of observation during which repeated clinical examinations have been carried out. In the choice of the limits of this period of delay we are influenced by the known time after the injury or suture at which the signs of recovery should be expected. The early sensory changes—viz., recession of the area of protopathic loss, or the clinical evidence of the neurotisation of muscles supplied by the proximal branches—are seen at the earliest at or about the fourth month. As a working plan a period of observation lasting six months is reasonable, although it must be admitted it is essentially an arbitrary one. Recognising that the anatomical limits of the lesion are sometimes definable in a given case before operative exploration, this full period of delay is often unnecessary, and, in fact, inadvisable, providing that the condition of the limb is such as to render any operation feasible. With regard to the stage of safety, after complete healing of the wound a period of four to six weeks should be taken as a minimum, but may be prolonged according to the influence of local conditions. In a considerable number of cases the attainment of sound healing, and the preliminary nutritive treatment, occupy the full six months' period of probation.

2. Where the syndrome of incomplete interruption has continued without change for six months and particularly when this is represented by the distal syndrome.

3. In the presence of the syndrome of irritation, either of a moderate degree showing no signs of subsidence, or in the severe type—causalgia—at the earliest possible moment.

THE PRINCIPLES OF OPERATIVE TECHNIQUE.

I. *Preparations for the Operation.*

Before the actual operative exploration of the injured limb is undertaken, in anticipation of the probable discovery of an extensive lesion which will necessitate the wide mobilisation of the nerve trunk, every precaution must be taken to obviate or minimise the inevitable difficulty of achieving repair. Chief amongst the important preliminary steps are the provision of a wide area of prepared skin—as a routine the whole of the limb—a trial of the appropriate position of the patient and limb on the operation table, and the assembly of suitable splints or other forms of fixation apparatus which have been accurately fitted to the limb in the posture which will be reproduced at the end of the operation. Upon such careful planning depends often the ultimate success of the operation, and particularly the comfort of the surgeon during its performance, for many of the operations of suture for extensive nerve injuries are, as regards difficulty and tediousness, without parallel in the whole realm of operative surgery.

During the course of the operation the position of the limb will often be changed in order to facilitate the final steps of the actual suture. The resulting position is usually one which increases the difficulties of the closing steps of the operation, and it is essential that such a change should be carried out with as little disturbance as possible. In dealing with the individual nerves these points will be further elaborated.

II. *The Exploration Technique Proper.*

(*a*) *Exposure of the nerve trunk.*—In general most peripheral nerves are exposed in a convenient intermuscular interval, and as an invariable rule the nerve trunk is to be exposed first well above and then below the area of the actual lesion. Before the lesion proper has been rendered accessible, the physical appearance of the nerve trunk is to be noted and recorded, and particularly the changes, if any, seen at the proximal and distal limits of the region of the injury.

Next the physiological activity of the nerve trunk and motor branches, if seen, and of the muscles exposed in the operation field, are to be investigated by direct stimulation with the faradic current.

(*b*) *Importance and significance of direct electrical testing.*—It should be more universally realised that in a truly efficient technique direct electrical stimulation of the nerve trunk is an essential feature. By this method information is afforded which cannot be obtained as easily or as exactly by any other form of examination. Experience has shown that the bipolar mode of stimulation is superior to the unipolar method. Using a bipolar electrode with fine points closely approximated, any tendency to diffusion is minimised and an accurate localisation of the stimulus can be obtained.

A minimum strength of current should be used as a routine so that a rough quantitative standard can be established. One of the most obvious practical advantages of direct electrical stimulation is seen in the ease with which nerve trunks are recognised in such regions as the upper arm or axilla, especially when ordinary anatomical landmarks are lost in the scarred and destroyed tissues. Further, motor branches arising from the nerve trunk above the area of the lesion are identified at once and their physiological integrity confirmed.

Information is also provided as to the quality or absence of excitability in the muscle bellies in the operation field; but the direct use of faradic stimulation is seen in the investigation of the presence or absence of conductivity in the nerve trunk itself. A response elicited from the nerve indicates the presence of a continuity of motor axis cylinders from spinal centres to peripheral end organs, except during the period immediately following the infliction of the injury. It has been shown by Perthes,[1] in experiments on divided nerves in dogs, that the distal part of the nerve loses its capacity for faradic response in about 72 hours after section, and that during the course of the subsequent regeneration the return of faradic excitability is coincident with the appearance of voluntary power; also that for a time newly regenerated fibres require a greater intensity of stimulus to produce reaction than is the case with normal adult fibres. These observations, which confirm the older physiological studies on nerve conduction, have an important bearing on the interpretation of the stimulation results obtained at operation.

It is, of course, only in dealing with incomplete anatomical lesions that the presence or absence of the electrical response is of practical value. Under such conditions various types of response may be elicited—viz., complete silence on stimulation of the nerve both above and below the lesion, a response evoked below the lesion but not above it, and, with the positive reaction above or below, a response limited to the proximal muscle groups only. In interpreting any of these results the period after the infliction of the injury must be considered.

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* Being an abridgment of the second of two lectures which will appear in full in the British Journal of Surgery.

General Indications for the Choice of the Particular Type of Operative Repair.

We now approach the consideration of the type of operative repair applicable to the individual lesions which may be encountered. Returning for the moment to the classification of the pathological appearances dealt with in an earlier section it is seen that the lesions belonging to the first great group which are in actual fact, or for practical purposes, of a complete anatomical type, can be repaired by the operation of complete nerve suture only. Thus the indications in this group are simple and clearly defined. But in the second group containing a variety of lesions representing wide variations in conductivity it is necessary to consider carefully the arguments for the adoption of any particular form of repair. This involves a separate consideration of the radical procedure of resection and end-to-end suture, and the conservative manœuvres neurolysis and partial resection.

(a) *Indications for resection.*—Resection will be indicated where the extent and nature of the lesion is such as to prohibit a sufficient downgrowth of regenerating fibres to ensure adequate function, motor and sensory. If the operation is undertaken within the period of regeneration it is often difficult to decide in the presence of a negative faradic response in the nerve, and a clinical syndrome of complete interruption, to what extent the lesion is capable of preventing the occurrence of regeneration. The estimation of what constitutes a prohibitive degree of intraneural fibrosis is largely a matter of assumption, and therefore it is impossible to be dogmatic. But a study of cases explored at remote periods shows that certain lesions as a general rule will effectually act as a permanent block. It may be said that in the case of the nerve spindle when the intraneural induration is very dense, and particularly if the spindle is incompletely encapsuled, and connected by sprouts of nerve "callus" to the surrounding tissues, resection is justifiable. The same applies to the other forms of symmetrical lesion. When the operation is conducted at a greater period than six months from the time of the original lesion, resection of the lesion is to be regarded as indicated as a routine where the clinical syndrome is stationary and the electrical response is absent, but it must be admitted that the personal element enters into such decisions to a considerable degree.

(b) *Neurolysis.*—The operation of neurolysis has come to include several distinctive forms of procedure, but should properly be limited to the pure release of a nerve trunk from the scar tissue in its immediate surroundings. It is convenient, however, to consider under this heading every manœuvre which is short of the actual suture of the nerve trunk as a whole or in part. Two distinct variations can be distinguished.

(1) The endo-neurolysis operation introduced by Stoffel,[2] in which an attempt is made to remove the scar tissue between the individual nerve bundles. Such an operation, which makes a strong theoretical appeal, has proved in actual practice to be of little value. The claims made for it by its author have not been enthusiastic, nor are the reported results beyond criticism. In the few cases in which I personally have attempted to do this operation the intraneural dissection has left intact at the end perhaps one or two nerve bundles, so that the problem of the filling up of the remaining gap has at once arisen. It would be fair to say that in the case where endo-neurolysis might possibly be indicated the lesion will either be so small as to produce little interference with the nerve-conduction, and therefore is unlikely to be explored by the surgeon, or will be so extensive as to indicate without doubt the performance of total resection and suture.

A crude variant of endo-neurolysis is the operation of "hersage" of the French surgeons, in which longitudinal incisions are made into the substance of the nerve in order that the containing bundles may be released from the compression effect of the endoneural scar. This operation is obviously of a haphazard type; it has no anatomical boundaries, and is illogical in its conception. It is difficult to see how it can be done efficiently without producing harm. In the recent American literature on nerve surgery it is claimed that no permanent damage has been caused by this operation, and that its results, still to be investigated, are likely to be good. (Babcock and Spear[3].) It is fair to condemn both these procedures and to eliminate the operations of endoneurolysis and hersage from the recognised forms of legitimate nerve repair.

(2) Neurolysis proper, in the actual technique of which simple operation wide variations in detail must necessarily be seen. It has long been a recognised principle that in every operation on an injured nerve trunk the perineural scar tissue should be removed as completely as possible and the nerve restored to a bed closely approximating the normal. Neurolysis then, as a technical procedure, is the usual accompaniment of any nerve exploration in which the slightest deviation from the normal is found in the immediate surroundings of the nerve trunk.

But in connexion with the application of this procedure as the appropriate method of dealing with certain types of incomplete anatomical lesions, the potential or proved effect on the immediate and future conductivity of the nerve must be clearly defined. The rationale of the operation is based on the experience of the classical compression lesions seen in the injuries of nerve trunks in civil life and where the surgical removal of the perineural compressing agent is rapidly followed by the restoration of conductivity or function. But, as has already been emphasised, warfare lesions are primary in origin and the block to conduction intraneural in location. In the production of the loss of conductivity, the perineural fibrous tissue plays a minor or negligible part, and it is difficult to prove that the process of regeneration is delayed or even completely retarded by the continued existence of extraneural scarring. It is still more difficult to prove that after the removal of such external scar the occurrence of recovery is necessarily due to the operation per se. Such proof should be forthcoming from a study of the effects of the neurolysis operations, and would be afforded by a clear demonstration of the rapid return of function, or the appearance of steady recovery after a prolonged stationary syndrome of blocking. The downward march of steady recovery seen over a period corresponding to the time taken by normal or even abnormally slow regeneration, or the ultimate recovery seen in a nerve operation long after the operation, and where no clinical observations on the rate and type of regeneration have been made in the intervening period, is not in any way indicative of the beneficial effects of the operation. From my own observations in a considerable number of the operations classed as neurolysis, such distinctive proofs are not forthcoming. The exact manner in which removal of perineural scar tissue might influence the conditions in the interior of the nerve trunk is also not easy to explain. That a new vascularisation of the immediate surroundings will be promoted is obvious. But, as we have seen, the extraneural vascular supply has little significance in relation to the process of regeneration. Souttar[4] has suggested that the effect of neurolysis is to restore the mobility of the nerve trunk in the area of the injury, and thereby eradicate a factor which is indirectly productive of a continuance of intraneural trauma from the repeated slight stretching of the nerve during the movements of the limb.

It is important to recognise that in the warfare nerve operation the operation of neurolysis has a distinctly limited application if it is to be judged as an entity and regarded as a method of repair competing on almost equal terms with resection and suture. When a lesion of the incomplete type is exposed at operation the decision to be made is whether resection is justifiable, and if this is decided against—that is to say, it is considered that the nerve trunk will show ultimate spontaneous regeneration—the nerve is placed in the best possible surroundings with the expectation that in some way the improved nutritive standard of the bed will help to promote the development of such spontaneous intraneural repair.

Summary.—We may conveniently summarise the position of the neurolysis operation as follows:—

(1) The technical details included in the full scope of the operation are an essential feature of every nerve exploration in an endeavour to provide a normal bed and the local free mobility of the nerve trunk.

(2) The influence of the operation itself in the restoration of future conductivity is difficult to estimate. Owing to the special characteristics of the lesions typical of warfare injuries any operation which is limited to repair of the extraneural lesions is a priori likely to play a subordinate part.

(3) The operation is not an equivalent alternative to resection and suture in any given incomplete type of lesion.

Partial resection and suture.—Reference has already been made to the suggestion that in theory the recognition of a lesion confined to a limited area of a nerve trunk, with an absence of conductivity demonstrated by direct faradic excitation at operation and with the clinical syndrome presenting a paralysis limited to the muscle group which fails to respond, would have afforded opportunities for the trial of the conservative operation of partial resection. From a technical point of view, if this operation is feasible the resulting gap must either be closed by direct suture with inevitable looping of the intact portion or by the insertion of a nerve graft, both procedures which do not fulfil the ideals of repair. The method of partial resection and partial grafting has been advocated by the French school, but the literature offers no detailed reports which can be submitted to a critical examination. Doubling or looping the intact part of the nerve trunk is in no way inherently harmful, and later on disappears, as may be seen at re-explorations after suture of one component of the sciatic trunk. But apart from technical objections, it is certain that the indications for partial resection cannot be clearly defined except in theory, and conditions under which the operation would be feasible are so rarely reproduced in practice that the operation may be eliminated as a standard method of nerve repair.

Difficulties in obtaining End-to-End Suture.

It is necessary to return to a review of the difficulties which are so often encountered in the attainment of the end-to-end apposition which precedes the actual suture.

1. *Mobilisation and relaxation of the nerve.*—Of the methods employed to surmount these difficulties, some have established themselves as legitimate steps in the operation technique about which there can no longer be any question of conflicting opinions. These are the widest mobilisation of the nerve afforded by the most extensive anatomical exposure, the stripping or even the sacrifice of muscular branches, such displacement of the nerve as will shorten its course, and the relaxation obtained by the appropriate changes in the posture of the limb. Such measures will enable almost every gap to be closed and the number of true irreparable lesions will then be small.

2. *The two-stage operation.*—If end-to-end apposition fails at the first exploration it is legitimate to re-explore after an interval. The two-stage operation, in which the untrimmed ends are anchored by sutures, and rapid stretching is carried out over a short period, is sound in theory, and certainly in practice seems to facilitate the achievement of suture, but in my opinion not for the reasons generally attributed to it. There is really little, if any, true stretching of the nerve trunk during the intervening period, and the actual gap does not diminish. In my own two-stage operations I have been struck by the fact that the anchored stumps have rapidly become fixed to the surrounding tissues at a time before the condition of the patient and limb has allowed stretching to begin. In a certain number of cases re-exploration has to be postponed for a period beyond that during which the hypothetical stretching is completed.

In the sciatic nerve, for which the two-stage operation is especially useful, the long tedious primary operation which is often provocative of a considerable degree of shock, and is followed by considerable post-operative pain and discomfort, can rarely be repeated within a few weeks.

I would suggest that the success obtained in the two-stage operations is due to the fact that instinctively a wider exposure of the nerve is made, and this with the sheer determination to effect repair, plays a dominating part. I am confident that this is the correct explanation in the successful two-stage sutures in my own operations. In fact, the period between the two explorations can be prolonged with advantage, as the intensive physio-therapeutic measures applied during the interval undoubtedly can produce a greater degree of softening and extensibility in the tissues of the limb.

3. *Bone shortening.*—There remains to be considered one other procedure which has been freely advocated—viz., the operation of bone shortening. It should be said at once that to this method there are serious objections. It belongs essentially to the type of operation which depends for its popularity on pictorial representations which appeal to surgeons who are inexperienced or ill-trained in the technique of reconstructive surgery. In the limb in which an extensive gap in an injured nerve trunk is found the coexisting injuries of the soft parts and often of the bony skeleton are sufficiently grave to render the operation mechanically difficult and provocative of a recrudescence of sepsis. In the lower limb the operation is to be condemned under any circumstances. In the upper limb it is justifiable for one indication only, and that is where an ununited fracture of the humerus accompanies a musculo-spiral nerve injury, and where bone shortening, the performance of the recognised stepcut operation, is a necessary preliminary to exploration and suture of the nerve.

4. *Bridge operations.*—In the few operations where, in spite of the measures indicated above, end-to-end apposition is still unattainable the lesion must be written off as irreparable by the method of direct suture. At this stage the divergent views of two schools are to be examined. On the one hand, the idea of nerve repair is abandoned permanently and recourse is had to those alternative methods for the restoration of function, which involve plastic operations on muscles, tendons, or joints. On the other, the gap in the nerve trunk is to be filled by the insertion of some form of bridge across which it is hoped or claimed that regenerating fibres will travel. Perhaps no one section in the surgery of nerve injuries has excited so much interest and discussion as the question of the utility of the various forms of bridge operations. Such are neuroplasty (repair by flaps), nerve grafts, and tubulisation, and though not in the strict sense a bridge operation, the various forms of nerve crossing.

(a) *Flap operations.*—This operation, illogical on physiological grounds and proved to be totally incapable of facilitating regeneration in experiments, has received its final deathblow in a recent review by Stookey[5] of the published results in the whole of the literature of nerve surgery.

(b) *Nerve grafts.*—The nerve graft has long held an honoured place in the surgery of peripheral nerves and during recent years has been extensively employed. It has been an acknowledged fact that axis cylinders can cross a gap and may utilise existing channels afforded by the graft. This is shown quite definitely in the modern histological work of Lewis,[6] Nageotte,[7] and Ingebritgsen.[8] But as a method of practical repair the operation will be judged by its capacity for the conveyance of such a large number of axis cylinders as will invade the distal trunk and ultimately function. From this viewpoint a clear distinction must be drawn between the various types of graft operation. Those practised are the single small trunk graft, multiple or cable grafts, and the single large trunk graft. The autogenous or homogeneous nature of the transplants does not appear to influence the fundamental question of their utility. Other things being equal, the large trunk graft or cable grafts which provide opportunities for the crossing of the total number of axis cylinders of the injured nerve should be superior to the single cutaneous graft of small calibre. This latter technique has, perhaps, been the common routine in nerve surgery and particularly in this country, whereas in America and France the use of cable grafts and large homogeneous trunk grafts has been the rule. In reviewing the recorded results of these operations in an attempt to estimate their functional value, if any, it is important to recognise these quantitative differences in the technique. In the warfare literature, successes have been reported in nerve grafts particularly by the French School of Surgeons (Sencert). In this country Joyce,[9] Forrester Brown,[10] and others have recorded cases in which restoration of conductivity has been exhibited, and in the addendum of the report of the Medical Research Council details are included of two cases in which success was confirmed by members of the committee. Dean Lewis (loc. cit.), whose contributions to nerve surgery have been amongst the most authoritative in the American literature, has seen slight return of motor power in 2 out of 12 cable graft operations.

A year ago I reported[11] the complete failure of 18 bridge operations performed in my series which had been studied over varying periods extending up to two years, and of which 11 were examples of nerve grafting in which a single cutaneous graft had been used. From the additional evidence derived from the re-exploration of four and the histological examination of one resected graft it was urged that the operations from a practical standpoint were to be considered as failures, and the re-exploration of all bridge operations was advocated where at a second attempt end-to-end suture would be feasible. Since then a further number of these bridge operations have been re-explored, making six in all, and in addition one has had an opportunity of resecting two grafts inserted by other surgeons. My colleague J. S. B. Stopford[12] has examined seven additional cases, all of which have shown failure of recovery. From the appearances revealed in my secondary explorations of five grafts the hypertrophy of the grafts described by various observers (Joyce, Lewis, and Forrester Brown) was not confirmed.

This experience caused me to range myself alongside those who have unhesitatingly condemned the use of nerve grafts. But the recent secondary exploration of one of my cases three and a half years after the insertion of a graft for an ulnar nerve injury in the forearm has provided me with an interesting and instructive experience. When the nerve trunk was fully exposed a definite response was elicited in the hypothenar muscles and adductor pollicis from stimulation of the nerve above, below, and in the area of the graft. This particular graft had retained its original calibre, and at each extremity there was a slight enlargement of the nerve trunk, but without any obvious induration. The original fascial sheath was recognised closely enveloping the area of the bridge. In view of the electrical findings it was decided to leave this nerve *in situ*, and a careful examination of the patient since the operation shows that it is possible to recognise the existence of a very slight recession of the area of protopathic loss in association with a positive Tinel's sign. The ulnar intrinsic muscles are still completely wasted as before, and the external electrical tests gave the typical sluggish galvanic response only.

It is not to be questioned that conduction can be established through nerve grafts, but it should be realised that even for incomplete success the operation must provide a passage for a considerable number of motor and sensory fibres. In anything less than restoration of the full calibre of the nerve trunk the chances of a useful regeneration are small. It is therefore in the future to the reports of the results of the operations of cable grafts or homogeneous large grafts that we may look for confirmation of their value. Until such reports are forthcoming condemnation of these procedures, not on physiological grounds, but as practical manœuvres is still reasonable.

It is further essential to discourage the half-hearted attempts at obtaining suture in difficult cases which are likely to be characteristic in the future of the technique of the inexperienced surgeon who is comforted by misleading and enthusiastic reports of the value of the operation of nerve grafting.

(c) *Tubulisation.*—The operation of tubulisation demands brief reference only. Successful in animal experiments, it has proved a complete failure in nerve surgery, and this has been commented on in the literature from all countries (Dean Lewis, Platt, Stracker, Wollenberg[13]).

(d) *Nerve crossing.*—The probable failure of the operation of incomplete nerve crossing (nerve anastomosis) has already been foreshadowed in the earlier part of this paper. Of the examples of incomplete distal anastomosis performed elsewhere which have passed under my notice, in all the distal end of the ulnar nerve had been implanted into the median. These patients have been carefully examined on repeated occasions by Stopford, who has demonstrated in all not only complete failure of regeneration, but the interference in the conduction in the median nerve which had directly followed the operation. In four of these the ulnar nerve has been re-explored, divided at its junction with the median trunk, and end-to-end suture obtained.

In my opinion this operation should be condemned in no measured terms.

GENERAL CONCLUSIONS ON THE POSITION OF BRIDGE OPERATIONS.

It is reasonable to emphasise that the recorded success of a small number of operations of the bridge class should not be allowed to influence the surgeon in the direction of relaxing his efforts to obtain end-to-end suture, no matter how exhausting and tedious any operation may be. The two-stage operation should be considered as an established method, and if failure is again experienced at the second attempt the gap may be legitimately closed by the insertion of a full-size graft or cable graft; but at the best little or no recovery can be expected. Under such circumstances, after a prolonged period, and if an alternative operation of equivalent functional value is available, as in the case of the musculo-spiral nerve injuries, this should be performed without further delay.

RESULTS OF OPERATIONS FOR THE REPAIR OF NERVE INJURIES.

Analysis of a Personal Series of Operations.

General survey.—In Table I. is shown an analysis of the total operations performed in my services over a period extending from March, 1915, to December, 1920. They may be taken as representative of an average individual operative experience, and it is therefore safe to refer briefly to certain general information that the statistics themselves afford. In the first place it is seen that the ulnar nerve has dominated the whole surgical field. Further, the infrequency of the operations on the brachial plexus and the complete absence of any operation on either the musculo-cutaneous and circumflex nerves in the upper arm, or the anterior crural nerve in the lower limb, are facts to be noted but requiring no special comment. In the various types of operation the phases through which the operator passed are illustrated in the large number of operations of the bridge type and those in which repair was abandoned.

Analysis of Results.

Of the operations in this series it has been possible to investigate the early and later results over periods extending from six months onwards in 247 only.

It must be admitted at the outset that this study includes few if any *true* end-results. The most reliable records in our possession are those accumulated on the operations performed since 1917, when the advantages of a more efficient segregation of the patients, and the inauguration of the follow-up system were available. But even under conditions which from the point of view of civil surgery might be considered ideal, the greater number of the patients could be kept in hospital for short periods only, and ultimately were distributed in various parts of the country. This difficulty has been experienced by all surgeons working in this field, and it explains the comparative paucity of the operation statistics produced in this country up to the present date. But the same deficiency is seen in the literature of the European countries. From America, however, where practically every nerve injury was sustained in 1918 and the prompt segregation of all patients was effected from the beginning, and where the operations were carried out under conditions of less physical strain, valuable contributions should be forthcoming in the near future.

In this post-operative study the presence or absence of signs of recovery have been recorded after personal examinations only. Whilst many patients living at a distance have from time to time replied to inquiries as to their progress, the inclusion in their reply of suggestions indicating recovery or otherwise have always been ignored. It is perhaps unnecessary to stress the fallacies of conclusions drawn from such impersonal investigations; my excuse is that one has occasionally seen in the possession of out-patients forms which were to be filled up recording the impressions of the man himself on the alterations in the sensory and general functional condition of his limb.

The 248 operations from which information as to results have been available include, the following: end-to-end suture, 150; neurolysis, 80; bridge operations, 18. The results of the bridging operations have already been alluded to in the general exposition of the technique of operative repair, and therefore demand no further consideration.

Results of End-to-end Suture—150 Operations.

My colleague, Stopford,[14] issued a year ago a preliminary report based on a study of 271 suture operations, and in his series included the bulk of my own operations up to date, in addition to the observations made on a considerable number of our out-patients who had been operated on in other surgical centres. The experiences of a further period of

TABLE I.—*Total Operations.*

—	Suture.	Neurolysis.	Bridge.	Repair abandoned.	Partial suture.	Exploration.		Injection.	Exploration first stage.	Total.
						No lesion.	Nerve left in situ.			
Brachial plexus ...	5	4	—	—	—	2	—	—	—	11
Musculo-spiral... ...	51	15	5	14	—	1	—	—	1	87
Median ...	70	45	6	—	5	2	3	1	—	132
Ulnar	115	49	12	—	—	1	5	—	—	182
Posterior interosseous	1	—	1	—	—	—	—	—	—	2
Sciatic ...	51	9	3	—	2	1	—	—	4	70
External popliteal ...	14	2	—	6	—	—	—	—	—	22
Internal popliteal ...	—	2	—	—	—	—	—	—	—	2
Posterior tibial	—	1	1	—	—	—	—	—	—	2
—	307	127	28	20	7	7	8	1	5	510

Operations for severe causalgia, 25: median, 14; sciatic, 10; internal popliteal, 1. Operations in which end-to-end suture failed, 53. Successful suture at second attempt, 1. Failure of suture at second attempt, 3.

TABLE II.—*End-to-End Sutures.*

—	Total cases.	Number of recoveries.	Analysis of recoveries.						Total failures.
			Motor.				Sensory		
			Proximal muscles only.	Proximal and distal.		Distal alone.	Associated.	Alone.	
				Incomplete.	Total.				
Musculo-spiral	35	26	10	11	5	—	All.	—	9
Median upper arm	10	10	7	3	—	—	In 5.	—	Nil.
Forearm ...	20	17	3	—	—	6	In 6.	8	3
Ulnar upper arm	27	21	19	3	—	1	In 14.	1	3
Forearm ...	20	17	—	—	—	10		7	3
Sciatic—trunk	21	16	16	Nil.	Nil.	—	In all	—	5
Segmental	4	2	2						2
External popliteal ...	9	4	4	Nil.	—	—	In all	—	5
Posterior interosseous	1	Nil.	—	—	—	—	—	—	1
Plexus .. .	3	2	2	—	—	—	2	—	1

Recovery, 118 (79%); failure, 32 (21%).

12 months have allowed one to collect additional evidence concerning the fate of a considerable number of the patients with whom we have been in touch. It is a simple matter to accumulate a mass of details in the case of each patient under observation which are interesting to the individual neurologist or surgeon, but it is not an easy task to concentrate them into skeleton form. At the same time, however desirable broad conclusions accompanied by figures representing percentages of this or that type of recovery may be, the lessons of failure, which, as in all surgery, form the real foundation of teaching, can be acquired only from a consideration of each individual case in full detail. Such can hardly be presented in the limits of this lecture.

In the accompanying tables are shown the figures illustrating the frequency and type of recovery in nerve suture. The recovery of motor function is divided up under the headings of the proximal and distal muscle groups, a classification which is found to be convenient, particularly for the upper limb. In the whole series there are no examples of absolutely complete and perfect recovery excepting possibly in five of the musculo-spiral and two of the external popliteal sutures. The operations in which the existence of recovery is charted include every variety and type of incomplete restoration of conduction in the sutured nerve. It is not considered a logical procedure to classify such recoveries into further arbitrary special divisions, such as "slight," "marked," and so on, for the simple reason that the periods of post-operative observation are not constant for any one group of allied operations. This is strikingly illustrated by the figures for the musculo-spiral nerve, where in the first column, the majority of the patients were examined at an interval less than one year (with two exceptions), in the second column under 18 months (two over 2 years), and in the third all over 18 months. To a lesser extent this applied to all other nerves, and it indicates, that given long periods of time, many of the imperfect recoveries of to-day will progress, or have already progressed, towards the stage of complete recovery. The standard of failure adopted in my analysis is the existence of complete and stationary absence of recovery after a year or more, and in some cases confirmed by the evidence of re-exploration. With regard to the sensory recovery noted, as a whole, in very few cases has there been more than a slight recession or incomplete restoration of protopathic sensibility.

The information and conclusions as to the late results of suture may best be embodied in a consideration of the main factors which have determined, delayed, or entirely prevented success.

1. *Period of delay between original injury and performance of the operation.*—In my own series the influence of the time factor has been definitely proved. As a general rule sutures performed within a period of 18 months show little appreciable differences in the time of the onset of recovery or the rate and ultimate completeness of the recovery. After a delay of two years recovery is often seen to be tardy, incomplete, or in some cases fails completely. This truth has long been established as a fundamental factor in prognosis in the older nerve surgery (Kennedy[15]). My records show what has been pointed out in Stracker's careful analysis of the operations performed in the clinic of Hans Spitzy, of Vienna, that the degrees of delay within the safe period does not influence the percentage of cases showing recovery, but does seem to prejudice the ultimate quality and type of the regeneration. In the complete failures, quite apart from other influences, the time factor plays an important part. It is assumed that this is dependent on the development of permanent retrogressive changes in the spinal cells and to a much lesser degree to peripheral degenerative changes in the muscles. On the other hand, in the analysis of the operation results in the service of Sir Harold Stiles, of Edinburgh, it would appear that this factor has exerted a negligible influence (Forrester Brown).

2. *Recrudescence of septic infection in the limb.*—The recrudescence of infection at a period after the suture has been seen in a number of the cases in my series. Where this has arisen spontaneously it does not appear always to have affected the regenerative process, but it has been my fate to see a definite recession in the regeneration which had already begun, after the exploration of an associated ununited fracture, followed by infection. This unfortunate sequela, due to imperfect surgical judgment, is one which could have been avoided, and, perhaps, is hardly to be cited as a fair test of the resistance or lack of resistance to sepsis of the regenerating nerve. In the recovery stage of a number of sciatic nerve sutures the trophic ulceration seen under the base of the fifth metatarsal or in the terminal phalanx of the great toe where definite necrosis has resulted provides a continued source of infection which might conceivably be absorbed and travel upwards towards the area of suture. Delay or cessation in recovery has been invariably associated with this complication, and I would suggest that it is in some way connected with the absorption by the regenerating nerve of distal sepsis.

3. *Anatomical situation of suture.*—The distance of the line of suture from the spinal centres, or conversely from the distal extremity of the limb, is seen to be an important factor in determining the fate of the regenerative process. This is illustrated by a study of the time of onset of the appearance of recovery in the muscles supplied at successive levels, and in a comparison between the results of suture in the proximal and distal parts of the limb respectively.

The times of the appearances of recovery in the chief muscle groups have been carefully charted in Stopford's recent contribution, and are seen also in Stracker's monograph. Recovery in the proximal muscles begins at an early or later date according to the proximity of the suture to the spinal cord, and occurs in regular descending fashion in accordance with the anatomical origin and distribution of the motor branches. Thus, for example, after suture of the musculo-spiral nerve in the upper, middle, and lower third of the arm, return of power is manifest in the supinator longus at about the seventh, sixth, and fourth months respectively. Distal recovery also shows these differences in time relation.

In Stracker's figures[16] no recovery was seen before one year after suture in the distal muscles of the musculo-spiral, median, or ulnar supply, and this irrespective of the level of the suture. On the whole this is borne out by the records of my own operations. Thus the time taken in neurotisation of the distal muscles is not entirely dependent on the distance which downgrowing axons have to travel. It has been concluded from this that the results of suture are better in the proximal part of the limb than in the distal. Stracker states that in general sutures below the origin of the proximal muscle branches give bad results. This would appear to be correct as a broad statement, but on careful examination requires certain qualifications. If the results of suture of the median and ulnar nerves in the upper arm and forearm are compared as regards distal recovery alone, both motor and sensory function combined, which means that a period of 12 months at least must have elapsed, the quantitative recovery appears to be roughly equal in each group.

4. *Influence of topography.*—The inaccuracies of regeneration due to the shunting of motor fibres along sensory channels and vice versa are undoubtedly one of the causes of imperfection in the recoveries and may be of such a degree as to determine complete failure. It has been impossible in a close perusal of one's operation records to correlate in each case the potential influence of this factor with the type of recovery seen. In the sciatic nerve sutures it has been easy to retain an accurate topography, whilst in the musculo-spiral the comparatively scanty sensory bundles, even when misdirected, have not prevented the transmission of a large proportion of motor fibrils along appropriate channels. The exact rôle of topographical errors as applied to the individual operations cannot be settled until it is possible to examine a large number of successful sutures of the median and ulnar nerves after a period of three years or more.

In certain situations—e.g., in the lower half of the forearm where suture of either the ulnar or median nerves has been achieved with what might be claimed as faultless topography, one has had little direct proof of its beneficial effect. Topographical failure is best illustrated by the suture of a nerve of smaller calibre to a larger trunk, as in the case of suture of the posterior interosseus to the musculo-spiral and of the anterior tibial and musculo-cutaneous to the external popliteal, operations which account for eight cases traceable in my series and in all of which complete failure resulted. The topographical factor in regeneration is, however, usually cited as an illustration of the apparent superiority of the results of suture of the musculo-spiral nerve over those of the median and ulnar nerves and of the delay or absence of recovery in the distal muscles.

5. *Influence of perineural surroundings.*—The nerve bed. It does not appear from my own observations that the perineural surroundings have influenced the occurrence of recovery after nerve suture in any way except in a few cases where the nerve trunk has been subjected to the friction of a bony groove, as in the case of the ulnar at the elbow, or has been left in close relation to bare tendons—e.g., median suture at the wrist. The deleterious effects of a nerve bed of this type have contributed to the complete failures of one ulnar and one median suture, but failures of this type are to be regarded as preventable with a more efficient technique.

6. *Influence of complications.*—(a) Vascular. In a number of upper arm sutures of the median or ulnar nerves, or both, where ligature of the brachial artery has been performed in the early days of the injury, there has been little appreciable effect on the rate and degree of recovery. Where contractures and other signs of ischæmia have coexisted and the total mechanical disability is naturally great, the

clinical evidence of the recovery of the nerve has often been masked.

(b) Non-union of fractures. The continued existence of non-union of a fracture without active inflammatory signs in the neighbourhood of the recovering nerve has retarded or prevented recovery in two musculo-spiral sutures in my series; one showed a failure of distal regeneration after four years; and the other, a total absence of any sign of recovery. The cause of these failures is to be attributed to the effect of tension and friction.

7. *Continuance of active interstitial neuritis in the proximal nerve.*—This is a potent cause of delay or failure which theoretically is avoidable by a free resection preparatory to suture. But it is certain that histological evidence of interstitial change may often be present in the proximal part of the nerve trunk when there is little or no macroscopical sign of its existence. Where there has been a long delay owing to the presence of inveterate sepsis in the limb the interstitial neuritis finds its maximum development. In my own operations complete failure or imperfections in recovery have been dependent on this factor, and particularly in the sciatic nerve, where the ill-effects are manifested during the stage of tardy recovery by the development of the signs of irritation. In three cases, after a period of more than two years, the pain in the internal popliteal distribution is a most serious handicap to the patient, and continues to defy every form of treatment. On the other hand, in one of the complete recoveries after musculo-spiral suture, definite evidence of interstitial neuritis was seen in the proximal part of the nerve trunk at the time of operation, and owing to the size of the gap the suture was performed at a level which was considered far from ideal.

It now remains to judge the results of these nerve sutures from a qualitative standpoint. In this estimation it is necessary first of all to eliminate from the total disability of the limb the contribution of the coexisting injuries of other tissues. But function dependent on a restoration of nerve conductivity alone is itself essentially complex. Success depends not merely on the simple restoration of adequate motor and sensory conduction, but on the development of coördination in the particular movements, in which the efferent and afferent supply of the sutured nerves are concerned. In the musculo-spiral sutures, where full conductivity has been restored, and where recovering muscle groups have achieved considerable power, there has been as yet no perfect individual extension of the fingers, no synergic function in the extensor muscles of the wrist, and there is on the whole an imperfect control over the extensor muscles of the thumb.

In the median nerve poor function has been the rule, chiefly owing to the very limited sensory recovery. The helpless anæsthetic index finger which is characteristic of most of these cases long after the operation is a striking illustration of the importance in function of a restoration of the median sensory mechanism. In the ulnar nerve, where there is often a mobile hand without contractures, the gross function is little diminished even in the presence of a complete syndrome of interruption, and full restoration is of little moment except for the skilled worker. To many of these hands the addition of conductivity in the ulnar nerve has made little or no difference in function. The full sciatic syndrome in itself does not cause gross loss of function in the lower limb as regards the act of walking. It is difficult to estimate the increased value of the motor recovery, which at the best has been moderate power in the calf and a less complete and powerful action in certain muscles of the extensor group.

Results of the Operation of Neurolysis.

Whilst it is possible to study the results of end-to-end sutures in a truly mathematical fashion, a scrutiny of the results of the operation of neurolysis is beset with many difficulties. It will be sufficient to reiterate and amplify from a consideration of the results in 80 cases what is regarded, in my opinion, as the legitimate scope of this operation.

In the results are seen both recoveries, partial and complete, and complete failures. There have been no rapid recoveries within the period of nerve regeneration, for the type of lesion in which this might have occurred has not been explored. Where recovery has been seen it has been on the conventional lines of the ordinary regeneration as regards time and general progress. A certain number of operations have been premature explorations for lesions of a low grade, in which spontaneous regeneration was at the time proceeding. Where failure of recovery has occurred the intraneural changes have been of such a nature and extent as to inhibit the downgrowth of regenerating axons, and the extraneural operation has failed to alter the intra-ural conditions. Whilst improvement has occurred in the urological syndrome after the operation of neurolysis, in er cent. of cases it has been impossible to prove that the ation itself alone has determined this.

r these reasons I would urge that the limitations of the ation of neurolysis as a definite factor in the surgical treatment of the warfare lesions of nerves are to be fully realised.

Results of operation for causalgia.—My series includes 25 operations performed for severe causalgic manifestations, 14 on the median nerve, 10 on the sciatic nerve, and 1 on the internal popliteal nerve.

General Conclusions on the Late Results of Nerve Operations.

References have been made from time to time to the results quoted in other contributions in the literature of the peripheral nerve surgery of the war. From this literature, already vast, it has been impossible to collect and compare on any recognised standard the total statistics as to the late or end-results of the various forms of operations. From a wide study of this literature, and a personal intensive study of one's own material, it is possible merely to enunciate broad generalisations, influenced in particular by the consideration of the causes of failure and success.

During the past year it has become increasingly difficult in this country, at any rate, to keep in touch with the patients who have been operated upon, even during the last two years. The chances of an acquisition of further comprehensive knowledge regarding true end-results would therefore seem to be slender. This is a bitter disappointment after the labours of a number of years. But, for some little time, a small stream of patients with nerve injuries still unoperated on, or showing failure after previous operation, will continue to flow into the surgical centres of the Pensions Ministry. Such patients, on the whole, are now undesirous of submitting to operative procedures. But the surgical lessons gained from the amount of experience behind us are yet to be applied for the benefit of a few. And it is of great economic importance that clear indications as to the advisability at this date of the exploration or re-exploration of the injured nerves should be laid down. Every lesion will date back at least two years, so that the optimum period for the surgical repair of the nerve is now past. But for perhaps a year longer it will be worth while advising operation in selected cases. Before doing so the economic value of the restoration of nerve conduction to the future capacity of the limb must be gauged. In many limbs an operation is now a waste of time. From a serious consideration of this problem, which is entering into one's surgical work at the present time, it is suggested that the exploration or re-exploration should be considered under the following conditions:—

1. In complete lesions of the median or ulnar nerves in the upper arm. The restoration of function in the proximal muscles is to be expected, even after long periods of delay, but distal recovery may probably not take place. For lesions of those nerves in which conduction is already present as far as the proximal branches with the total failure of distal regeneration, exploration is on the whole advisable, but short of resection and suture, which may be unjustifiable, nothing can be done.

2. In complete lesions of the median and ulnar nerves in the forearm. The potential restoration of sensation in the median is of such great importance as to warrant every effort to be made to ensure its occurrence. In lesions of the median in which partial sensory conduction is present, but with complete motor loss, resection and suture at this date should be strongly condemned. For the ulnar, where the intrinsic muscles are alone inactive, resection is always worth while.

3. In all complete sciatic lesions where end-to-end suture can be reasonably expected.

4. In musculo-spiral lesions exploration of the nerve should precede the performance of tendon transplantation.

Alternative Operations.

Although a technical consideration of those alternative operations for the restoration of function when nerve repair has been deliberately abandoned, or has failed to ensure conduction or function, is outside the scope of the present study, the question of the appropriate time and indications for their exhibition is one which is intimately concerned with the observations of the failures and successes of the suture operations.

Where the nerve lesion is declared to be irreparable after an exploratory operation the indication for the performance of an alternative operation is clear. But in the case of imperfect function following the incomplete restoration of conduction the rôle of the alternative operation cannot be so readily defined. Many of the operations performed under the latter heading have been premature and have been done early in the reconstructive surgery of the war when the normal prolonged stage of recovery of the injured or repaired nerve was not fully realised. The capacity for regeneration and ultimate function of the nerve after repair is apt to be minimised. Every surgeon who has lived close to this problem must have felt at times despondent. The immediate failures or late failures are easily explained and many of their causes in the future can be avoided. It is likely from what we have seen of the behaviour of the regenerating nerve, that after long periods of time, in a considerable number of instances, there will be well-marked recovery of function. It is to be admitted, on the other hand, that to wait for a future recovery of uncertain value is likely to be unsound. Again, the alternative operation itself may in no way jeopardise the recovery of the nerve, and therefore little harm can be done by its early performance. Few of the alternative operations have entered permanently into one's surgical repertoire. In the upper limb these are, above all, the now classical operation of tendon transplantation for irreparable musculo-spiral injuries, the results of which are extremely gratifying; the simple tendon transplantations for restoration of flexion of the fingers or thumb in median and ulnar injuries; and in the lower limb the destructive operation of tenodesis of the ankle as an alternative to the lifelong wearing of apparatus. A new procedure has recently been added to the alternative operations which belongs to peripheral nerve surgery itself. This is the implantation of the proximal end of the radial nerve into the median nerve at the wrist—an attempt to restore that lost sensory function in the median area which produces such a grave incapacity. This operation was introduced by Harris,[17] of Toronto, and is supported by the report of one successful case. For the few irreparable lesion of the median nerve in the forearm this operation may be worth a trial.

I am indebted to a number of colleagues for their invaluable coöperation in the work upon which these lectures have been founded—to Professor Stopford above all, to Mr. E. S. Brentnall, and to Dr. E. H. Linell. Finally, I owe to Sir William Thorburn, my former chief, my early training and interest in peripheral nerve surgery, and to Sir Robert Jones the opportunities afforded for this work in the surgical direction of a special hospital.

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RESEARCHES ON THE BIOCHEMISTRY OF GERMS AND OTHER PROTEINS.

WITH SPECIAL REFERENCE TO THE PROBLEMS OF IMMUNITY.

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PART I.—THE SPLITTING OF GERMS AND OTHER PROTEINS INTO THEIR COMPONENT PARTS.

1. *Preliminary Note.*

THE history of man's research on the human body and its diseases has shown a definite series of stages, wherein he has passed from the gross to the minute and from the minute to the microscopic. We are now advancing rapidly to the study of the ultra-microscopic, a study which is all-important to our further progress. Anatomy led to pathology, pathology led to histology and to bacteriology, and bacteriology in its turn has directed us to biochemistry. The dominant importance of these previous stages may not be gone for ever; when those who come after us have analysed more finely still these mysteries of nature, man will no doubt turn again to study the process by which from the infinitely fine the grosser substance is built up.

2. *Introduction.*

The biochemical researches which I am about to describe were commenced in the early part of 1917. At that time I was engaged largely in growing the gonococcus and in making large quantities of gonococcal vaccine for the army.

The gonococcus is a germ which undergoes autolysis or disintegration very readily. On certain culture media the cocci swell up and fuse to form a viscid material, in which *no discrete* organisms can be distinguished. After many experiments carried out to ascertain the cause of this phenomenon I eventually discovered that *gonococci are very readily soluble in dilute alkalis*, such as normal or even decinormal sodium hydroxide; suspended in an alkaline urine they disappear or melt away in a few hours, but in an *acid urine they remain distinct and discrete* for many months. Thus when emulsified in Na_3PO_4 solution, which is strongly alkaline, the germs rapidly dissolve; in Na_2HPO_4 solution (slightly *alkaline*) *they autolyse more slowly*, while in NaH_2PO_4 solution (definitely acid) they remain discrete and unchanged. These facts impressed me very strongly, and I eventually found that if a considerable mass of gonococci is treated with an equal volume of N/1 NaOH, the mass completely dissolves *in a few hours*, to form a yellowish syrupy fluid. Solution is brought about more *rapidly* with gentle heating. By adding an acid such as N/1 HCl to this alkaline solution, it is possible to bring it to a state of neutrality without any apparent change. I made use of this neutral gonococcus solution as an antigen in the complement-fixation test for gonorrhœa, and it *worked very well* (*D. Thomson*,[11] 1918, confirmed by W. Magner[6]). These researches showed that the *germ* can be dissolved in alkali without thereby altering its antigenic properties. When an *alkaline or neutral solution* of the gonococcus is boiled for five minutes it does not coagulate, and it still *remains* a tolerably good antigen. When boiled for 30 minutes or longer, however, its *antigenic properties* are largely destroyed.

When an alkaline solution of gonococci is *neutralised* with N/1 HCl and then rendered definitely acid to litmus, a heavy white *precipitate* is *thrown down*. At first I believed that the gonococcus was largely composed of a fatty substance which was *saponified* and dissolved by the alkali, and that the precipitate thrown down by acid *consisted of a fatty acid*, but it was subsequently proved that the precipitate was a protein substance.

3. *First Attempts at Producing Detoxicated Vaccines.*

Having ascertained that the gonococcus substance (thrown out of solution by acidification) is antigenic, I commenced to test the therapeutic value of this precipitate by subcutaneous injections in gonorrhœal subjects. It was found, *after many injections*, that the precipitate was some 50 times less toxic than the *actual* untreated gonococci themselves. Moreover, the larger doses of the non-toxic precipitate appeared to confer more immunity and gave better therapeutic results than the necessarily smaller doses of the untreated germs.

In order to test scientifically the relative value of the non-toxic precipitate and *the ordinary toxic vaccine* in the production of immunity I made use of the complement-fixation test. A large number of such tests were carried out in four parallel series of patients, and clinical *observations were carried* out simultaneously by the same clinician (Lees,[4,5] 1919).

Series A, in which the gonorrhœal subjects received no vaccines, showed on the average *three units of immunity* acquired naturally in the course of the disease.

Series B received ordinary gonococcal vaccine in doses of 5 to 100 million germs, and developed about four units of immunity.

Series C received ordinary gonococcal vaccine in doses of 25 to 200 million germs, and developed an average of five units of immunity.

Series D received the non-toxic precipitate in doses corresponding to 2000 to 10,000 million gonococci, and developed as a rule 8 to 12 units of immunity.

Further injections of the comparatively large doses of the non-toxic gonococcus precipitate into normal subjects rendered their blood positive to the disease, whereas the necessarily small doses of the toxic untreated germs had no such effect. (Thomson,[13] 1919, and D. Lees,[4] 1919.) These immunisation experiments have been more or less repeated and confirmed by H. B. F. Dixon and A. H. Priestley[5] and by W. V. Corbett and T. E. Osmond.[2]

4. *The Toxic Material from the Gonococcus.*

Having ascertained that the gonococcus protein precipitate[*] thrown down by acidification (from the original alkaline solution) was comparatively non-toxic it naturally occurred to me that the toxic properties of the germ would be found in the acid supernatant fluid, which was separated from the precipitate by centrifuging or by filtration. This belief proved to be correct; small doses of the supernatant fluid caused quite an intense local reaction when injected subcutaneously. The acid supernatant fluid was neutralised before injection, so that the local reaction produced was *not due to the acidity of the fluid. This supernatant* fluid has also a provocative effect in the disease, since it increases the symptoms and renders the urethral discharge more profuse; it was found to contain protein substances which can be precipitated by the addition of picric acid, ammonium sulphate, or absolute alcohol.

5. *Parallel Researches with other Proteins.*

These preliminary researches on the gonococcus led me to a similar study of other pathogenic organisms and of proteins in general. First of all I carried out a series of parallel experiments on germ protein (gonococcus), animal protein (ox heart), and vegetable protein (pea flour). The gonococcus, minced ox heart, and pea flour were easily soluble in N/1 NaOH, but a certain proportion of undissolved substance remained which could be removed by filtration.

Table I. shows the salient results of this investigation.

TABLE I.

Tests applied to minced ox heart.	Tests applied to gonococcus.	Conclusions.
N/1 NaOH added—Mince dissolved after standing 12 hours at 37·5° C. Distinct odour of ammonia.	N/1 NaOH added—Germs dissolved after standing 12 hours at 37·5° C. Distinct odour of ammonia.	Similarity in both.
Alkaline meat solution gives biuret, xanthoproteic, Millon, and other protein tests.	Alkaline germ solution gives biuret, xanthoproteic, Millon, and other protein tests.	Both solutions consist largely of alkaline meta-protein.
On neutralisation with N/1 HCl a heavy precipitate is thrown down giving a straw-coloured supernatant fluid which is decanted or filtered off.	On neutralisation with HCl a heavy precipitate is thrown down, giving a straw-coloured supernatant fluid which is decanted off.	Similarity in both.
In both tests the precipitate is easily soluble in N/10 NaOH and gives the protein tests. It is insoluble in neutral H_2O, neutral alcohol and ether.		Both precipitates consist of meta-protein.
In both tests the precipitate is readily soluble in 50 per cent. acid alcohol.		Similarity in both.
In both tests the supernatant fluid or filtrate gives the protein tests and yields a precipitate on half saturation with ammonium sulphate and with 70 per cent. alcohol. This precipitate is partly soluble in water.		Both supernatant fluids contain protein resembling proteose.†
In both tests the supernatant fluid from the primary proteose gives the protein tests and also a precipitate on full saturation with ammonium sulphate and also with excess of absolute alcohol. The precipitate is almost completely soluble in water.		Both supernatant fluids contain protein resembling deutero-proteose.‡

N.B.—All of the above tests apply equally, except for some very minor differences to the pea flour.

From these tests it appears very evident that the meat (ox heart), the gonococcus, and pea flour are very similar in nature, and that all three substances consist largely of protein, which can be split up into meta-protein, primary proteose, and deutero-proteose. The non-toxic gonococcus vaccine, already described, consisted of gonococcus meta-protein, and it is now evident that the toxic supernatant fluid contained primary and secondary gonococcus proteose.

6. *Antigenic and Therapeutic Values of the Gonococcus Proteoses.*

Having reached this stage of the investigation, one was naturally curious to know whether or not the gonococcus proteoses were the cause of the toxicity of the supernatant fluid already referred to in paragraph 4.

Experiments on gonorrhœal subjects showed that the primary and secondary proteoses from the gonococcus were no more toxic than the comparatively non-toxic meta-protein itself. They produced no marked local or general reaction such as fever and malaise. It was, however, noted that an injection of these proteoses caused quite a definite provocative reaction at the focus of the disease. Thus, when there was an existing urethral discharge a subcutaneous injection of gonococcus proteose caused an increased flow of pus within the next 48 hours; a return of discharge after the latter had dried up, or an increase of shreds in the urine of chronic cases, were also often induced in the same way. For these reasons a subcutaneous injection of the proteoses has been found useful as a provocative test of cure in gonorrhœa. In gonococcal iritis an injection of the proteose may cause an acute flare-up in the eye; it is, therefore, not recommended as a diagnostic test in this condition.

A certain amount of immunity appears to be developed against the proteoses, since after repeated injections they lose their focal provocative action. Moreover, I found that the primary and secondary proteoses were antigenic, as they gave positive results when used as antigens in the complement-fixation test for gonorrhœa. They appeared to be good antigens when precipitated with alcohol, and comparatively poor antigens when precipitated with ammonium sulphate. It is just possible that the ammonium sulphate alters them in some way.

7. *Alkali Solubility of other Germs and Proteins.*

Having ascertained that the gonococcus is easily soluble in N/10 to N/1 NaOH, and that minced meat is easily soluble in N/1 but scarcely soluble in N/10 NaOH, it naturally occurred to me that I should test the alkali solubility of other germs and proteins.

I found that the meningococcus was about as easily dissolved in alkali as the gonococcus, and that the influenza-bacillus of Pfeiffer was even more soluble. When the meningococcus was dissolved in alkali and the solution brought back to the neutral point it was found to act as a good antigen in the complement-fixation test for cerebro-spinal fever. A gonococcal antigen gave positive results with the serum of meningitic cases, and a meningococcal antigen gave weakly positive results with the serums of gonorrhœal subjects. These facts are sufficient to show the close relationship between the two germs. This finding was confirmed by A. S. G. Bell.[1]

Other germs, however, were found to be much less soluble in alkali than the gonococcus; the *Micrococcus catarrhalis*, for example, shows scarcely any evidence of solution in either N/10 or N/1 NaOH. N/1 represents 4·2 per cent. NaOH, but the *M. catarrhalis* required for its solution strengths as high as 15 to 20 per cent. NaOH. Organisms of the typhoid, dysentery, and *B. coli* group were found to dissolve fairly easily in alkali, but were not so soluble as the gonococcus. Gram-positive organisms were, as a rule, but not always, more difficult to dissolve in alkali than Gram-negative germs; the pneumococcus and streptococcus were, as a rule, more easily dissolved than the various staphylococci. The most difficult germ of all to dissolve was apparently the tubercle bacillus. Various animal tissues also showed marked differences in alkaline solubility. Leucocytes (pus cells) were more easily dissolved in alkali than epithelial cells, and brain and testicular tissue was apparently more difficult to dissolve than muscle. It was found that antiformin, which consists of 15 per cent. NaOH + 15 per cent. sodium hypochlorite, was a much more powerful solvent than NaOH alone. Germs like the gonococcus, pneumococcus, and steptococcus, as well as those of the typhoid, dysentery, and *B. coli* group, can be dissolved in antiformin in a few minutes. The tubercle bacillus, on the other hand, is much more resistant, requiring several hours. Although all germs, and apparently all proteins, were found to be more or less soluble in alkali, it was noticed that some, like the gonococcus, appeared to dissolve entirely; others, such as diphtheroids and the tubercle bacillus, dissolved only partially and left a considerable amount of undissolved material behind. In all cases, however, a considerable amount of protein went into solution in the alkali; and all these solutions behaved in the same manner, as indicated in the table under paragraph 5. All gave the protein colour tests. Meta-protein was always thrown out by the addition of acid, and the acid supernatant fluids always contained proteins resembling proteoses.

8. *Further Biochemical Components of Germs and Other Proteins—viz., Acid-Soluble, Alcohol-Soluble, and Chloroform-Soluble Fractions.*

The above researches apparently proved that the various germs and proteins examined each contained an alkali-soluble protein material. A further study was made with regard to the substances which remained insoluble in the alkali; the tubercle bacillus afforded the most striking example.

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[*] The precipitate can be further detoxicated by alternate solution and precipitation repeated several times until the supernatant fluid no longer gives a precipitate with picric acid.

† The substance resembling primary proteose is precipitated with half saturation with ammonium sulphate and with 70 per cent. alcohol.

‡ The substance resembling deutero-proteose is precipitated with full saturation with ammonium sulphate and with absolute alcohol.

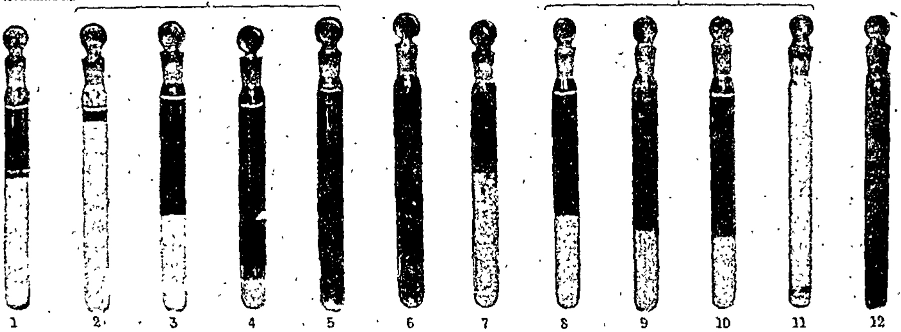
When a mass of solid tubercle bacilli is treated with twice its volume of antiformin and placed in the incubator for several hours it is apparent that a considerable part of the solid has gone into alkaline solution. The tube of the material, especially after centrifugalisation, separates more or less into three layers. In the bottom of the tube there is a heavy, insoluble substance, above this is a deep yellow fluid, and floating on the surface is a whitish, undissolved material of low specific gravity. The yellow fluid, which consists of the alkali-soluble protein of the tubercle bacillus, is separated from the insoluble parts by filtration through a fine paper. The insoluble substance is collected from the paper, placed in a tube, and treated with twice its volume of N/1 HCl. After standing for a few hours the acid mixture is also filtered through a fine paper.

The acid-soluble protein.—On examination of the acid filtrate it is found to give the protein colour tests. Moreover, when this acid filtrate is rendered definitely alkaline by the addition of N/1 NaOH, a white, flocculent precipitate is produced. When this precipitate is removed by centrifuging or filtration it is found that the supernatant alkaline fluid or filtrate contains proteoses which can be precipitated by addition of ammonium sulphate or alcohol.

QUANTITATIVE BIOCHEMICAL ANALYSES OF THE GONOCOCCUS (FIGS. 1–6) AND THE TUBERCLE BACILLUS (FIGS. 7–12).

Detoxicated Gonococcus Vaccine
(contains all of the non-toxic antigenic fractions shown below).

Detoxicated Tubercle Bacillus Vaccine
(contains all of the non-toxic antigenic fractions shown below).



1. Mass of gonococci, unchanged, toxic.
2. Gonococcus, meta-protein, alkali-soluble, non-toxic, antigenic.
3. Gonococcus, proteose, alkali-soluble, non-toxic, antigenic.
4. Gonococcus, protein, acid-soluble, non-toxic, antigenic.
5. Gonococcus, lipoid (?), alcohol-soluble, non-toxic, antigenic.
6. Gonococcus, endotoxin, toxic, not antigenic.

Note the relatively large amount of alkali-soluble protein present in the gonococcus, whereas the amount of alcohol-soluble substance (lipoid ?) is very small. The intracellular toxin in the right hand tube is in solution and its brown colour is not demonstrated in the photograph.

7. Mass of tubercle bacilli, unchanged, toxic.
8. T.B., meta-protein, alkali-soluble, non-toxic, antigenic.
9. T.B., proteose, alkali-soluble, non-toxic, antigenic.
10. T.B., protein, acid-soluble, non-toxic, antigenic.
11. T.B., lipoid (?), alcohol-soluble, non-toxic, antigenic.
12. Tubercle bacillus, endotoxin, toxic, not antigenic.

Note the large amount of alcohol-soluble substance (lipoid ?) present, which is light and tends to float to the top. The quantity of alkali-soluble protein is much less than in the case of the gonococcus. The intracellular toxin in the right hand tube is in solution in alcohol, and its brown colour is not demonstrated in the photograph.

Before proceeding further let us note that we have isolated from the tubercle bacillus the following components:—

(*a*) An alkali-soluble meta-protein which is precipitated with acid and whose acid supernatant fluid contains proteoses.

(*b*) An acid-soluble meta-protein which is precipitated with alkali and whose alkaline supernatant fluid also contains proteoses.

Now (*a*) behaves to an alkali as (*b*) behaves to an acid; conversely (*a*) behaves to an acid as (*b*) behaves to an alkali; so that as far as acids and alkalis are concerned, their action is diametrically opposite. Indeed, it would almost appear that protein (*a*) is negatively charged with hydroxyl-ions, and that protein (*b*) is positively charged with hydrogen-ions.

(*c*) *The alcohol-soluble substance.*—Returning again to our chemical analysis of the tubercle bacillus it is found after the alkali and acid soluble proteins (*a*) and (*b*) are dissolved therefrom that a residue still remains. This residue is now treated with three times its volume of absolute alcohol, and after standing for an hour the mixture is filtered. When we add to this alcoholic filtrate twice its volume of water a dense white cloud appears in the fluid. After standing for one or two days the fine colloid particles of this white cloud clump together into masses, which usually float towards the surface of the liquid. I take it that this white precipitate of low specific gravity, which is thrown out of alcoholic solution on the addition of water, is of the nature of a lipoid or lipo-protein. This lipoid alcohol-soluble substance is insoluble in acid and even in boiling NaOH. The lipoid precipitate when first formed is so fine that it will pass through a filter paper. After standing for two days, however, the particles, having clumped together, are easily removed by filtration from the alcohol-water medium.

(*d*) *The chloroform-soluble substance.*—After successive treatments with alkali, acid, and alcohol respectively, it is found that an appreciable quantity of the tubercle bacillus substance is still left undissolved; but this remnant appears to dissolve entirely in chloroform. This chloroform-soluble material may be precipitated by the addition of alcohol to the chloroform, and the precipitate may then be separated by filtration.

From the above analysis it is apparent that the tubercle bacillus can be split up into four main fractions or components.

(*a*) Alkali-soluble meta-protein + proteoses.
(*b*) Acid-soluble meta-protein + proteoses.
(*c*) Alcohol-soluble substance.
(*d*) Chloroform-soluble substance.

For successful splitting up of the tubercle bacillus, as well as of other germs and proteins, it is interesting to note that the above order of analysis must be maintained. For example, if we first treat the mass of tubercle bacilli with N/1 HCl or with alcohol at blood heat, practically nothing is dissolved away. It would almost seem that these four fractions of the germs are closely compounded and cannot readily be dissolved out separately until the compound has been broken up with alkali or antiformin.

9. *Content of Different Germs and Proteins: Same Types but Varying Proportions of Component Substances.*

Having definitely ascertained that the tubercle bacillus is made up of the four distinct components described above, one turned again to make a more careful analysis of the gonococcus. The gonococcus had at first appeared to consist almost entirely of alkali-soluble material, but careful analysis of a large mass of this germ, amounting to 20 c.cm. of solid wet substance, revealed that the organism also contained acid-soluble and alcohol-soluble fractions; no chloroform-soluble substance was detected. Large masses of many other species of germs and proteins were now treated in the same manner; it was found that all contained the fractions (*a*), (*b*), and (*c*), whilst some also contained the chloroform-soluble fraction (*d*).

In this series of analyses the interesting fact was revealed that each different germ and each different animal tissue contained the various components common to all in widely varying proportions. I have not sufficient space here to give the results of my whole series of analyses, but Table II. will suffice to demonstrate my contention.

It must be noted that the percentages given are very approximate, being estimated from the volume of wet precipitate obtained after centrifuging. Much more accurate results would be obtained by weighing the dried precipitates. In spite of the crudeness of my methods the results are striking. I am indeed convinced that by developing this method of technique we shall be able in the future to diagnose accurately the different species of tissues and of germs and even of the different strains, by pure biochemical analysis.

Even with the crude volumetric measurements which I have employed one can detect distinct differences in the biochemical composition of such closely allied organisms as *B. typhosus*, *paratyphosus A*, and *paratyphosus B.* I have already pointed out that some germs and tissues are very easily dissolved, even in weak alkali, whilst others are very difficult to dissolve and require strong solutions like antiformin. My analysis of many varieties of germs and tissues brought to light the interesting fact that this solubility depended upon the lipoid content of the germ or tissue. The less the amount of alcohol-soluble substance (lipoid) present the greater is the solubility in alkali, and vice versa. The influenza bacillus contains only the merest trace of lipoid, and is in consequence very soluble even in N/10 NaOH. The tubercle bacillus, on the other hand, contains some 32 per cent. of alcohol-soluble material, and on this account is very resistant to alkaline solution. It requires the action of antiformin for several hours. This fact is indeed so striking that one can prophesy a low lipoid content in a protein which dissolves readily in weak alkali; and conversely, when a protein disintegrates with difficulty it assuredly contains a high percentage of this alcohol-soluble material. (See Figures.)

TABLE II.—*Percentages of Content.*

Germs or proteins.	Tubercle bacillus.	Gonococcus.	Staphylococcus.	B. typhosus.	B. coli.	Ox heart.	Ox testicle.
Alkali-soluble substance	28	75	48	60	25	76	36
Acid-soluble substance	25	7	26	27	26	10	22
Total proteose	7	17	3	11	44	8	7
Alcohol-soluble substance... ...	32	1	23	2	5	5	34
Chloroform-soluble substance...	8	0	0	0	0	1	1

10. *Antigenic and Comparatively Non-toxic Nature of Protein Split Products Described Above.*

In the early part of my investigation I had ascertained that the alkali-soluble fraction of the gonococcus was antigenic, as estimated by the complement-fixation reaction and by the therapeutic results obtained when injected into gonorrhœal subjects. It was found, moreover, that this alkali-soluble fraction was very much less toxic than the actual germ itself. Further, the proteoses associated with the alkali-soluble fraction were also antigenic, and although they had a provocative power they were nevertheless comparatively non-toxic.

Similar experiments were now carried out with regard to the acid-soluble, alcohol-soluble, and chloroform-soluble fractions. It was found that the two former components gave good results when used as antigens in the complement-fixation test for gonorrhœa. Further inoculation experiments in human subjects showed that they were apparently no more toxic than the alkali-soluble component of the germ. These experiments were repeated with the component parts of the tubercle bacillus, with approximately the same results.

E. P. Pick[7] and other observers have inclined to the belief that the alcohol-soluble "waxy" substances from the tubercle bacillus and other germs were toxic and non-antigenic, but it would appear that this belief is erroneous. It is now well known that lipoid substances may be highly antigenic, one of the most notable examples being the alcoholic extract of heart employed in the Wassermann test. Lipoids, moreover, are not necessarily highly toxic, since the staphylococcus contains a large amount of alcohol-soluble substance, and yet is one of the least toxic of all germs. Pfeiffer's bacillus, on the other hand, is very highly toxic, yet it contains practically no lipoid or alcohol-soluble material.

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OBSERVATIONS UPON A CASE OF
FILARIA (LOA) LOA INFECTION.

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General Symptoms.

INFECTIONS with the nematode parasite *Filaria loa* (*Loa loa*), though often exhibiting few or no clinical symptoms of any definite importance, are nevertheless of great interest to the filariologist. Occasionally the adult parasites in their wanderings about the connective tissues pass under the conjunctiva on to the eye, and they have been removed from this position in many instances. Such an occurrence as a worm in the eye naturally makes a great impression on the layman, who does not forget it when he comes to detail his troubles to the doctor. Calabar swellings, swellings of a fugitive nature, about the size of a pigeon's egg or larger, are also met with; these come up suddenly, are painless, do not pit on pressure, and generally disappear in two or three days of their own accord. In rare cases[1] a generalised swelling of a part is met with or a pruritic condition may be seen, while in one case there was great pain in the eye with photophobia. We have recently seen a case where, instead of a small local swelling, there was a generalised swelling of the forearm of the nature of a solid œdema. This lasted for a considerable time and ultimately disappeared. When the adult worms are near the surface they often give rise to pricking sensations with itching, and the patients soon get to know these and can locate where the worm is quite accurately.

Pathogenesis of Calabar Swellings.

Students of the subject will remember that Sir Patrick Manson suggested[2] that the Calabar swelling might be produced by the adult female worm giving birth to a generation of embryos at that spot, and in one case he demonstrated embryos from such a swelling. The experiment was vitiated, however, by the fact that the patient had many embryos in the peripheral blood at the time; their presence in the films was no doubt due to the needle wounding blood-vessels on its way in. That such was so one of us (G. C. L.) was able to demonstrate recently in a case of *F. loa* infection where there were no embryos in the peripheral blood. In this instance, though the Calabar swelling—which was a perfectly typical one—was punctured in many directions, no embryos could be detected in the juice aspirated.

There is no doubt that these swellings are caused in some way or other by the worms; they are probably due to the excretion of a toxin into the tissues, a possibility rendered still more likely in such cases by the fact of the presence of a well-marked eosinophilia as well. This eosinophilia is a very constant feature, the numbers varying between 12 and 20 per cent. as an average. In the absence of other causes one has been able to diagnose loa infections correctly by this feature alone.

Diagnosis.

Four distinct points will help one, then, in diagnosing *F. loa* infection: (1) the actual presence of the adult worm or worms, have any been extracted from or definitely seen in the eye? (2) the presence of *F. loa* embryos in the peripheral blood—they are easily differentiated from *F. bancrofti* embryos by anyone who has studied the subject closely; (3) the presence or definite history of Calabar swellings; and (4) eosinophilia in people from the endemic area, with nothing else to explain its presence.

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[1] Low, G. C.: Jour. of Trop. Med. and Hyg., Jan. 2nd, 1911.
[2] Trans. Soc. of Trop. Med. and Hyg., vol. iii., No. 5.

One or more of those cardinal symptoms may be present in any individual case. Embryos are often absent from the peripheral blood; this absence, often of a prolonged nature, is difficult to explain. Those interested may consult the paper on this subject already mentioned.[1]

History of the Case.

B., male, aged 28. Admitted to Hospital for Tropical Diseases Jan. 21st, 1921. Born in Scotland; went abroad to Southern Nigeria 1914; Cameroons 1916; came home to U.K. December, 1920, this being his fourth leave home.

Previous illnesses.—Suffered a good deal from malaria; gastritis in 1918; diarrhœa once; no definite clinical dysentery.

Present illness.—Went to doctor for fever in Nigeria November, 1920; an examination of the blood for malaria showed the presence of diurnal filarial embryos, as well as malarial parasites. On arrival in England as fever was still troubling the patient; he came into the Hospital for Tropical Diseases to have it treated.

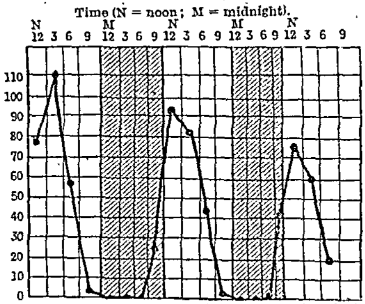
Examination.—Temp. raised; spleen enlarged. These symptoms quickly disappeared on proper doses of quinine being administered, and, of course, had nothing to do with the filarial infection.

Filarial history.—No definite Calabar swellings; (?) perhaps one. Knocked his right forearm one day; on the same day his right hand became swollen, remaining so for two days, after which it went down of its own accord. No history of worm ever being seen in eye.

Blood examination.—Many *F. loa* embryos present in day blood; none in night blood. Also a few *F. perstans*. No malarial parasites found.

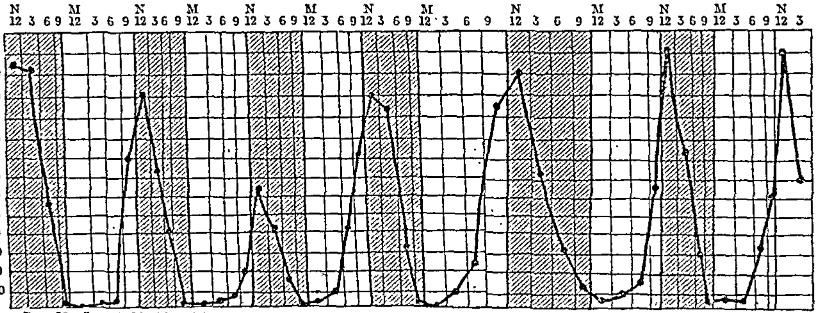
CHART 1.

In each of the Charts the shaded portions represent the time during which the patient slept. The figures at the side are the numbers of *F. loa* embryos in 20 c.mm. of blood.



CASE M.—Ordinary habits of life. Showing diurnal periodicity of *F. loa* embryos.

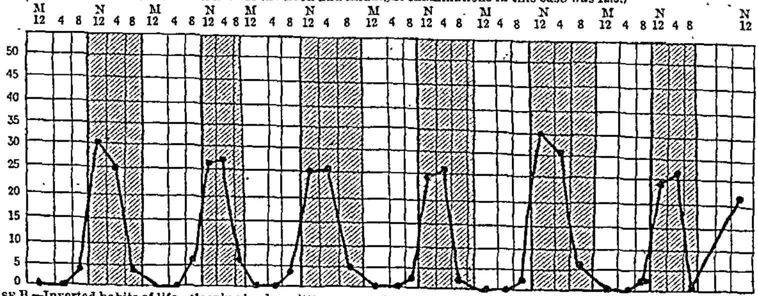
CHART 2.



CASE M.—Inverted habits of life—sleeping by day, sitting up and working at night. No change or inversion of periodicity.

CHART 3 (Case B).

(The actual time of the noon and midnight examinations in this case was 12.5.)



CASE B.—Inverted habits of life—sleeping by day, sitting up and keeping awake all night. No change or inversion of periodicity.

Count of corpuscles.—R., 4,108,000. W., 8800. Hb. 90 per cent. Differential: P.M.N., 45 per cent.; L.M., 6 per cent.; L., 31 per cent.; E., 18 per cent. = 100. Slight anæmia then, due, no doubt, to the malarial element in the case. Well-marked eosinophilia.

Stool examinations.—No ova of any helminths present. No protozoa.

Urinary examinations.—Nothing abnormal, no albumin, blood, or sugar.

Subsequent history.—The routine blood examinations will be seen on the charts.

In March a typical Calabar swelling developed on the right wrist, thus it will be seen that the patient had eventually three of the cardinal signs of the infection—viz., the Calabar swelling, the day embryos of *F. loa*, and the eosinophilia.

Experiments upon the Periodicity.

Filarial periodicity has never been satisfactorily explained, though many theories have been put forward from time to time. The term has been applied to the presence in the blood of the embryos of *F. bancrofti* by night and their absence by day, or conversely, in the case of *F. loa*, to their absence by night and their presence by day. Chart 1 shows the diurnal periodicity of *F. loa* very well. The maximum number of embryos are in the blood about midday or a little later and quite absent from the blood at night. This regular habit goes on day by day without much variation. One of the suggested explanations of periodicity is that it is due to the habits of the intermediate host, this being nocturnal in the case of *F. bancrofti*, diurnal in the case of *F. loa*. This, however, will not explain the non-periodicity of most of the other filaria, such as *Dirofilaria immitis* of the dog, whose intermediate host is nocturnal, *F. perstans*, and *F. demarquayi*; nor does it completely explain the non-periodicity of the South Sea variety of *F. bancrofti*. The possibility of the latter being a different species, or at least a distinct sub-species, still remains. If not that, at any rate it is a very well marked variety, differing from the common *F. bancrofti* in other respects (pathologically) as well as in its irregular periodicity.

Inversion of Periodicity.

Stephen Mackenzie first showed that it is possible to change the periodicity of *F. bancrofti* by changing the habits of the patient—e.g., by making him sit up all night and sleep all day. If this is done the periodicity changes right round, the embryos now appearing in the peripheral blood by day and not by night.

Many years ago now (1904) one of us (G. C. L.) had the opportunity of trying a similar experiment on a case of *F. loa* infection, under the care of Sir Patrick Manson at the Albert Dock Hospital. Though the protocols and details of this work have never been published, mention of the bare fact that the experiment was unsuccessful has appeared from time to time in the different editions of Sir Patrick Manson's book on Tropical Diseases. I have had the opportunity of verifying those facts again, in the case at present under discussion, and have found that they harmonise completely with those obtained in 1904; it may therefore not be out of place to publish them together now. For convenience the results have been put in the forms of charts (Charts 2 and 3) and a perusal of those will show that though the habits of the patient were completely inverted no corresponding change in the periodicity of the embryos took place, this being in direct opposition to similar experiments on *F. bancrofti*, as just mentioned above. In both cases the patients went to bed at 9 A.M. and stayed there till 9 P.M. At the latter hour they got up and sat up all night, reading or doing some work about the wards. Both slept well during the day. Measured quantities of blood as first recommended and practised by one of us in 1903[3] were always taken, the standard quantity of 20 c.mm. being adopted.

Attempts to Eradicate the Infection by Antimony.

A series of antimonium tartaratum injections were given intravenously to determine if they would have any effect on eradicating the infection. They failed entirely, just as they have done in a series of cases of *F. bancrofti*, treated in a similar manner by ourselves.[4] A table of the examinations made and the amount of antimony injected has been constructed similar to those on our *bancrofti* cases, and a glance at it gives all the details necessary. There might be a slight diminution of the numbers of embryos towards the end of the course, but even this is not certain. A total of 25 gr. of antimonium tartaratum in all was given, the injections having no bad effects upon the patient.

In addition to the *F. loa* infection there was also a scanty infection of *F. perstans*, not sufficient, however, to do any accurate counts upon. These were not destroyed by the antimony either, an interesting observation, as this embryo is non-sheathed, and some have suggested that it is the sheath of the *bancrofti* and *loa* embryo that protects them. As regards eradication of the infection, of course, this is not the point: it is no use destroying the embryos, even if we could, so long as the adults are not destroyed, as the latter cause the symptoms, and if still alive will go on pouring embryos into the blood stream. The embryos are just an index or means of determining what effect, any, the drug used is having on the adult worms. henever those are destroyed, as by an attack of phangitis in *F. bancrofti* infections, then the embryos quickly disappear from the blood and do not return.

Table Showing Examinations made and Amount of Antimony Injected (Case B).

A = number of *F. loa* embryos in 20 c.mm. of blood.
B = number of grains of tartar emetic injected, these being given in the afternoons between 4 and 5 P.M.
The examinations were made at 12 noon on every occasion.

1921.	A	B	1921.	A	B	1921.	A	B	1921.	A	B
Jan. 24	32		Feb. 7	30		Feb. 23	15		Mar. 9	14	
25	37		8	20		24	18		10	21	2½
26	40		9	23	½	25	14	2	11	10	
27	44		10	37		26	21		12	20	
28	35		11	25	½	27	14		13	15	
29	30		12	34		28	16	2	14	17	2½
30	27		13	30		Mar.			15	10	
31	25		14	27	1	1	15		16	11	2½
Feb.			15	15		2	12		17	10	
	24		16	25	1	3	17		18	10	2½
2	35		17	24		4	11	2½	19	12	
3	24		18	12	1½	5	18		20	22	
4	21		19	20		6	12		21	15	
5	15		21	22	1½	7	15	2½	22	20	
6	12		22	10		8	19				25 gr.

J. B. Christopherson has recently again raised the question of the non-toxicity of large doses of antimony in different tropical affections in which this drug is used. We agree with him that, with ordinary care, there is little or no danger in giving such injections, and that if necessary large amounts may be given, as in our own series of cases of bilharzia.[5] In cases of kala-azar and ulcerating granuloma quantities up to 53½ gr., 64¾ gr., and even 114 gr. have been administered by us. In most of the tropical diseases now being treated with antimonium tartaratum such large amounts will not be found necessary, 30 to 40 gr. probably being the maxima required. The methods of giving the drug and the slight toxic symptoms which may follow its administration are now so well known that it is quite unnecessary to reiterate them here. These details may be studied in the paper referred to above and in the different publications of Christopherson and others.

SPINAL ANÆSTHESIA FOR SUPRAPUBIC PROSTATECTOMY.

By H. M. PAGE, F.R.C.S. ENG.,
ANÆSTHETIST TO THE WEST LONDON HOSPITAL.

A FORMER report on this subject was published in THE LANCET of May 15th, 1915. Since then, owing to the kindness of Mr. John Pardoe and Mr. Sydney MacDonald, I have greatly increased my experience in the use of this method of anæsthetising for suprapubic prostatectomy, with the result that though I still use it for choice in almost every case I have modified my technique in some particulars.

I now use a 10 per cent. solution of stovaine (Billon's) without the addition of glucose. I have gradually cut down the dose of stovaine to a maximum of 0·03 of a gramme (three-tenths of a cubic centimetre of a 10 per cent. solution). In some cases, on account of great age, a much broken-down constitution, or comparatively low blood pressure, I have used a dose of 0·025 of a gramme of stovaine successfully. The patient is always operated on with the table slightly inclined, head downwards, and this position should be retained for carrying the patient back to bed, and when in bed until all effects of the spinal injection have passed off. The foot of the bed should be raised high enough to make a more decided slope than that of the operating-table. The Trendelenburg position can of course be used if desired. In every case I produce unconsciousness, never surgical anæsthesia, by administering some general anæsthetic in combination with oxygen.

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[3] Filaria Perstans, Brit. Med. Jour., March 25th, 1905.

[4] THE LANCET, 1920, ii., 551, and 1921, i., 221.

[5] Low, G. C., and Newham, H. B. G.: THE LANCET, 1919, ii., 633.

According to the condition of the patient, I have used nitrous oxide and oxygen and ether, A.C.E. and oxygen followed by ether and oxygen, or ether and oxygen alone. A subcutaneous injection of morphia and atropine, of a dosage suitable to the age and condition of the patient, is given half an hour before the operation.

I still inject in the second lumbar space, with the patient lying on his side. I withdraw very little more spinal fluid than the quantity of solution I am going to inject. My experience in the use of spinal anæsthesia for these cases and for a great number of operations in general surgery has made me think that the best way to avoid after-headache is to withdraw little spinal fluid, use as fresh a solution of stovaine as possible, and avoid collapse by position maintained until the effect of the spinal injection has completely passed off.

In the preparation of the patient I avoid starvation as much as possible, and he should be allowed to drink water up to the time of operation. It is a great advantage to the patient to continue to drink water up to the time of the administration of an anæsthetic for every kind of operation, provided there is no obstruction in the alimentary tract. Dehydration is prevented, the stomach is washed clean, and the risk of post-anæsthetic vomiting is diminished.

Results from the Modified Technique.

With the use of the above technique I have had no trouble or anxiety during the operation. In every case there has been good relaxation of the abdominal muscles. There has been no stovaine collapse and no increased tendency to recurrent hæmorrhage. Headache has been extremely rare and negligible. As the general anæsthesia is not carried to the surgical degree and is of very short duration, the patient recovers from it with extreme rapidity, even if a chloroform mixture or ether has been used, and soon takes drink and food. There has been no post-anæsthetic vomiting. In every case the patient has left the table in an exceedingly good general condition. There has been no case of immediate death, and the operative mortality, including the cases in my first report, has been under 5 per cent. The list of cases contains a large percentage of the aged, two over 90 years old, and a full proportion of patients with broken-down constitutions. I have not yet found it necessary to use spinal anæsthesia for a preliminary cystotomy.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF

ACUTE APLASTIC ANÆMIA.

BY F. E. LARKINS, M.D.

ATTENTION has recently been directed to the risks arising from exposure to gamma rays, and the following case is reported to sound a note of warning.

A. B., aged 43, had been working at radiography for 15 to 18 years. He was of excellent physique, and for the past 18 months had been putting on weight; his general health had never been better. His complexion was always sallow, a fact which, unfortunately, masked the onset of the fatal anæmia.

In October, 1920, a blood count was taken, one might say quite accidentally, as far as the present illness was concerned, but which, in view of subsequent events, turned out to be of great interest. The result then was:—

Blood count: Reds, 4,200,000; whites, 7200; Hb, 85 per cent.

Differential leucocyte count[*]: L., 38 per cent.; P., 60 per cent.; E., 1·7 per cent.

This suggests that at that time disease had already actually begun—that is, five months before its termination and three months before any symptoms were complained of.

In January the patient's colour was noticeably changing from his normal sallow to a peculiar lemonish tinge. He then began to complain of shortness of breath and loss of appetite. He still kept on working at high pressure, and refused to consult anyone. On Feb. 4th, however, he gave in. At this stage he was well nourished and of powerful physique. His temperature was 100·6° F. at night, pulse 90, and he now said he thinks he had been running a night temperature for a month past. This temperature came on regularly every afternoon at about 4 o'clock, and increased to 10 P.M. with intense backache. His blood pressure was 110. Slight dilatation of heart with hæmic murmur at the apex. He had a troublesome cough, and a few moist sounds were found at both bases.

Blood count: reds, 2,700,000; whites, 1600; Hb, 54 per cent.

Differential count: L., 76 per cent.; P., 20 per cent.; E., 3 per cent.

Thus showing a serious drop in both red and white corpuscles and complete inversion of the ordinary percentage relation of lymphocytes to polymorphonuclears. No poikilocytosis, no nucleated reds, no variation in the size of the red cells were to be seen. Urine showed nothing.

He was put to bed, given arsenic by mouth, and daily injections of cacodylate of iron and strychnine, and salicin 10 gr. every day to control the intolerable backache he got every evening with the temperature. During this first week he appeared to improve. His temperature came down, his appetite got better, and he seemed stronger.

Owing to the possibility of an infective endocarditis I had his heart examined by Dr. Strickland Goodall, who came to the conclusion that there was none present, but that it was purely a hæmic heart. Bacteriological examination of the blood on two separate occasions gave a negative result. Septic foci were sought for from every conceivable source, but none were found anywhere excepting for one septic tooth which was extracted.

At this stage he appeared so much improved that I let him go to the country to pick up. In a week he had to come back, as his temperature had run up to 103° at night and he was evidently much worse.

On Feb. 21st his red cells had dropped to 2,850,000 and hæmoglobin to 45 per cent. His urine now showed a trace of albumin with a few blood discs. The fæces were examined for blood but none found. His nose began to bleed, slightly oozing in the night; severe headache complained of; chest clear; pulse 88–90; temperature, 100°–101°.

On March 1st cerebral symptoms began to be noticed in some loss of memory and clearness, which previously had always been acute. On the 6th blood count still showed a steady rapid fall.

Blood count: Reds, 1,350,000; whites, 1030; Hb, 26 per cent.

Differential leucocyte count: P., 20 per cent.; L., (large) 72 per cent., (small) 6·5 per cent.; E., 5 per cent.; B., nil; H., 1 per cent.

Macrocytes and microcytes present; poikilocytosis present; no nucleated reds.

March 9th: Complained of blurring of vision in right eye.

10th: Ditto in left eye. Examination showed extensive retinal hæmorrhages in both eyes. Temperature still ran between 100°–101° every evening, with morning drop to normal. Pulse steadily rose to 90–100.

It was now decided to resort to transfusion of blood. Patient's blood was tested for agglutination and was found to be of group 4, and a group 4 donor was procured.

16th: Mr. Norman Lake transfused 9½ oz. of blood. This was followed by a very severe rigor and intense general discomfort. Temperature rose to 106·2°; pulse to 150.

17th: He felt and looked somewhat better and the temperature dropped to 99·2°. Nose began to bleed slightly.

18th: Nose oozed continuously and nothing could stop it. The temperature rose again to between 101°–103° and pulse about 120. The headache, which previously had been troublesome, left him. He still took his food very reasonably well and was constantly sleeping.

19th: Blood count was again taken. It will be seen that a very noticeable change had taken place in the differential count.

Blood count: Reds, 1,005,000; whites, 840; Hb, 18 per cent.

Differential count: P., 41 per cent.; L., (large) 54 per cent., (small) 4 per cent.; E., nil; B., nil; H., 1 per cent.

Poikilocytosis present; macrocytes and microcytes present.

21st: The heart got rapidly weaker and the patient died.

Commentary.

The rapid diminution in the red and white corpuscles was very noticeable in this case, the reds disappearing at the rate of roughly 250,000 a week. The colour index was never over 0·9. The differential leucocyte count was remarkable, especially as it corresponds exactly to Dr. A. E. H. Pinch's two cases of a similar nature, that have been, or are just about to be, reported, due to the effect of radium, and which ran an almost identical course.

There seems no other possible cause for the onset of this case other than X rays, and the interesting thing about this is that this radiographer had recently changed over from the soft tubes to the hard tubes for the greater part of his work. So the warning to be got from this case is that the protection hitherto employed in the use of harder tubes is not efficient. Further, it would appear advisable for radiographers and all those who are employed in radiographic work or with radium to have their blood examined periodically—say every six months—as by so doing the disease could be recognised at a very early stage, and probably be stopped.

In this case the transfusion did not appear to help in arresting the progress of the disease in any way, but I understand that in children with aplastic anæmia not due to X rays or radium it has been employed [illegible] excellent results.

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[*] P. = polymorph. L. = lymphocyte. E. = eosinophile. B. = basophile. H. = hyaline.

A NOTE ON

A SMALL OUTBREAK OF DYSENTERY IN A PROVINCIAL TOWN.

By J. S. MANSON, M.D. EDIN., D.P.H.,
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AND
H. A. MITCHELL, B.A., M.B. TORONTO,
BACTERIOLOGIST, RESEARCH LABORATORIES, RUNCORN.

CASES of dysentery in England at the present time are of some importance in view of its importation by large numbers of men who have been in the Eastern theatres of war. Following is a brief description of a recent small outbreak in the town of Warrington with the bacteriological findings.

One of us (J. S. M.) was called on Sept. 6th, 1920, to see a girl, aged 5 years, who was suffering from tenesmus and frequent stools, largely, and at times wholly, composed of blood and mucus. On the 15th her brother, aged 9 months, took ill with the same complaint, but in a more severe form. He had about 20 motions per diem, frequently passing only pure blood. Temperature ranged from 101° to 103° F.; the child died on the 23rd.

On the 22nd in the next house but one in the same row a child (I. K.), aged 6 years, was attacked; and in succession the following children in the same family fell ill; on the 28th, her brother (H. K.), aged 10 years; on the 30th (L. K.), aged 11; on Oct. 2nd (E. K.), aged 8. I. K., H. K., L. K., were all seriously ill with tenesmus, frequent stools, 18-20 per diem, with passage of blood and mucus; after the end of a week from the onset of the illness, only shreds of tissue were seen in the stools. E. K. had the disease in a milder form; the stools, although containing blood and mucus, only numbered 8-10 per diem. There was another child who was only ill for a day with one attack of diarrhœa. The mother and father were not attacked.

On Oct. 3rd two adult females, the occupants of the house at the end of the row, 30 yards distant from the heavily infected house, were attacked with severe diarrhœa. The clinical features in all except the two last mentioned were those of true dysentery—tenesmus, frequent passage of blood and mucus in stools, which at the end of a week changed to tissue shreds, tenderness over splenic flexure and descending colon, flushed face, furred tongue, and temperature from 101° to 102°. There was no vomiting.

Treatment consisted in withholding milk and giving beef-tea, thin arrowroot gruel, thin, well-strained pea-soup, and egg-albumin water. Bismuth carbonate, catechu, and 2 minim doses of liq. opii sedativus every four hours. On Oct. 16th all were convalescent, with only one or two normal stools per diem.

A stool from the boy (H. K.) containing only tissue shreds was sent to one of us (H. A. M.) for bacteriological investigation with the following result:—

Fæces from H. K. showed the presence of a few squamous epithelial cells, probably of extraneous origin, and a considerable amount of mucus, connective tissue, but no blood. Cultural examination revealed the presence of two organisms, one the *Bacillus coli*, the other belonging to the dysentery group. This latter organism was a Gram-negative bacillus, non-motile, giving a fine glistening growth on potato, and a very slight turbidity in broth. It produced no gas, but gave an acid reaction in the presence of the following sugars—viz., glucose, galactose, lævulose, and to a lesser degree in maltose and mannite. From this will be seen a close relation to the Y-type as described by Harris, Gay, and Woolstein[1 2 3].

The serum from two of the cases—viz., L. K. and I. K.—showed very strong agglutinative powers for this organism, and two others—H. K. and E. K.—also agglutinated it, but to a lesser degree.

Injected into guinea-pigs it killed in nine days, and post-mortem examination of one of these revealed a large subcutaneous abscess at site of inoculation, and another in the liver. There was also marked congestion of the intestine. The organism was obtained in pure culture from both abscesses. These results point to a *Bacillus dysenteriæ* closely related to the Y-type. (It might be observed that the organism responsible for ulcerative colitis, summer diarrhœa, and asylums dysentery, all fairly common in England, is not of this type but of the Shiga-Kruse type.[4])

The bacteriological examination thus confirms the clinical diagnosis, and it is interesting that the outbreak should be so localised. No source of infection could be traced; inquiry as to the presence of a discharged soldier or other person from an infected area proved negative. Railway stables across the street were investigated as to the presence of horses from abroad. Only one horse there had been to France. A sample of dung was examined for the organism and proved negative. The sanitary system is one of pail closets, and at the time of the outbreak the weather was warm—in fact, the warmest period of the summer—and flies were numerous. The clinical history shows that the virulence soon died out and that children were the chief sufferers.

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[1] Jordan: General Bacteriology. [3] Marshall: Microbiology.
[2] H. T. Hewlett: Bacteriology.
[4] Hewlett: Trans. Path. Soc. Lond., vol. lv., 1904, p. 51.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

CLINICAL SECTION.

REPORTS AND EXHIBITION OF CLINICAL CASES.

A MEETING of this section of the Royal Society of Medicine was held on April 8th, Sir ANTHONY BOWLBY, the President, being in the chair.

Dr. IVOR J. DAVIES reported two cases of

Hair-cast of the Stomach,

together with an abstract of 108 cases.

CASE 1 was that of a woman, aged 34, who had always enjoyed good health until six months before admission to hospital. At that time her legs became swollen and shortly afterwards the abdomen swelled and gradually increased in size. She was breathless and complained of palpitation on exertion. Indigestion had been present for some years and now took the form of pain and vomiting after meals, with slight hæmatemesis on a few occasions. A few days before admission the arms swelled. There had been headache and sleeplessness and for eight months amenorrhœa. The urine had diminished and was passed with a little difficulty. There was a tendency to diarrhœa. The case was first regarded as an unusual form of pregnancy. In the out-patient department there was seen to be a moderate degree of œdema of the limbs. The abdomen was distended and found to be occupied by a large mass extending from the left hypochondrium, across and below the umbilical region, upwards to the right costal margin. It was crescentic in shape, with a sharp depression on its upper surface. The outline was definite, the surface hard, smooth, and free from tenderness. The mass was freely movable in all directions. The normal splenic dullness merged with that of the mass. The urine was normal. The case was admitted with a tentative diagnosis of splenic anæmia, but in the ward the idea of pregnancy was revived, since external ballottement was obtained and hard parts could be felt per abdomen, which were firm and rounded, were all connected, and could be moved freely, apparently in a fluid sac. Various other diagnoses were made. The vomiting increased.

At an operation by Mr. Cornelius Griffiths the stomach was found to be enormously dilated and filled by a compact mass of hair which formed a perfect cast of the stomach and pylorus. The weight of the hair-ball was 6½ lb.; its length along the greater curvature 24½ in., and its greatest circumference 12½ inches. The hairs varied from 6 to 12 inches long, and were dark and like those of the patient. The mass was thickly covered by a slimy foul mucus, together with flakes of sebaceous or adipocere material. The stomach wall was hypertrophied, and its mucous membrane inflamed in places; there were also areas like those of leukoplakia. An hour after the operation the patient died.

CASE 2 was that of a woman, aged 33, who had noticed an increasing lump on the right side of the abdomen for three years. For two years she had suffered at intervals from vomiting in the morning, but never after meals. Occasional slight pain was felt over the swelling. She was a healthy-looking, well-nourished woman. On abdominal examination a hard, smooth, rounded, movable, painless lump was found in the right lumbar region, but did not appear to fill the loin. There was dullness distinct from the liver dullness. At an operation by Mr. A. W. Sheen a hair-cast of the stomach, with a prolongation into the pylorus and duodenum, was removed. The stomach wall was hypertrophied. The mass was 21½ inches long and 11 inches in its greatest circumference, the appendage withdrawn from the pylorus being 7 inches in length. It weighed 3½ lb. A few adherent strands of cotton were seen on its surface, also a hook similar to one shown in the interior on subsequent X ray examination. There were a large papilloma in the lesser curvature and several smaller ones over the antrum pylori. These were removed. The patient made a full and speedy recovery, and was discharged 14 days later.

After referring to the radiographic appearances of the disorder, during which he exhibited some radiograms taken by Mr. Thurstan Holland of two cases which he described in detail, Dr. Davies dealt with the diagnosis. This was mainly one of differentiation between malignant disease and hair-mass. The early age, sex, long history, good health, and the particular features of the tumour were significant, and if radiographic methods were used there should be no difficulty in the diagnosis. The mobility of the stomach with the enclosed mass and of the latter within the stomach, as made out by radioscopic palpation (Barclay and Ramsbottom) during fluoroscopic examination, were characteristic. History of hair-eating was seldom obtained, probably because the habit was, for the most part, unconscious. Small masses of hair might be passed per rectum, and lavage of the stomach might bring up a few strands of hair. According to Hausmann the presence of fatty acid plates and needles in the contents of the fasting stomach provided an additional feature. Butterworth in 1909 had collected 42 cases, Moore in 1914 53 cases, Ledra-Heazlit in 1914 70 cases, Matas in the same year brought the number of cases to 77, and the present paper concerned 108 cases.

Dr. B. T. PARSONS-SMITH showed a case of

Congenital Aortic Atresia.

The patient was a man aged 24. The symptoms were shortness of breath, even with slight exertion, pain in the left side of the chest, forcible beating of the heart, lack of ability for effort of any kind, frequent headache, giddiness, fainting sensations, general weakness of muscular power with excitement, and a functional incapacity of the lower limbs, particularly noticeable after resting. In March, 1915, the patient came up for military service, but general physical incapacity, which became manifest at the beginning of training, rapidly increased, and he was invalided four months later. In March, 1916, he again entered the army and in spite of recurrent disabilities remained at full duty for the greater part of the time until he was invalided in October, 1917. He was a pale-faced man of delicate appearance and his muscular development and general physique were distinctly below the average. The heart was enlarged, its rhythm regular, and the sounds clear. The second aortic sound was accentuated, the first sound at the apex was reduplicated, and a systolic murmur was audible in this region. The vessels were slightly thickened. Blood pressure readings were: systolic, 144 mm.; diastolic, 100 mm. Hg. There was no venous engorgement, no enlargement of the spleen, no clubbing of fingers, no cyanosis. Pulsation was exaggerated in the suprasternal notch and in the carotid and subclavian arteries, and there was a definite discrepancy in the pulses of the upper and lower extremities, those of the latter being diminished in size. Several thick-walled and tortuous vessels in the scapular region presumably indicated an anastomotic circulation between the arterial channels above and below the seat of the aortic occlusion. Electrocardiograms showed a bifid P wave in lead 2, a T wave whose ascending limb was unusually steep in lead 2, a slight increase in the length of the P-R interval which varied from 0·18 to 0·2 sec., and a bifid R wave in lead 3, the height of the second limb of the wave being conspicuously greater than that of the first. X ray examination confirmed the cardiac enlargement and showed a narrow aortic shadow extending to an abnormally high level.

The diagnosis was held to be congenital aortic atresia of adult type in which it might be inferred that the seat of the occlusion was situated below but in the vicinity of the entrance of the ductus arteriosus.

? Neoplasm of the Lung: Post-Mortem Findings.

Dr. M. CASSIDY reported the post-mortem findings of his case of ? Neoplasm of the Lung which was shown at a previous meeting of the section.[1]

The patient remained in good health till the end of January, 1921. During the first fortnight of February he had several slight hæmoptyses, and on the 16th he was readmitted suffering from great dyspnœa and stridor. He died two days later, having been at work up to four days before his death. A post-mortem examination, performed by Dr. E. Wordley, revealed a firm white growth which appeared to originate in the root of the left lung and had invaded the greater part of the lower lobe; the upper lobe, though free from growth, was completely collapsed, accounting for the upward and outward displacement of the apex beat observed clinically. The mediastinal glands were normal, and no other deposits could be found elsewhere. Histologically the appearances were those of endothelioma, though owing to much post-mortem autolysis an absolutely positive conclusion as to the nature of the growth was not possible.

Mr. C. W. G. BRYAN showed a case of Osteitis Fibrosa treated by resection of four inches of the humerus and insertion of boiled beef-bone graft.

Mr. G. MASSIE showed a case of

? Fibrocystic Disease of the Skull

in a girl, aged 21, who complained of inability to see properly from her right eye owing to increasing depression of the right eyelid. She said that she had had a swelling of that side of the head ever since she could remember, but that during the previous three weeks a smaller swelling had appeared, which she thought was softer. She also complained of headaches. The Wassermann reaction was negative; nothing abnormal was found on physical examination; the urine was normal and there was no family history of syphilis. The smaller and softer swelling for which she had sought treatment had almost disappeared, the main mass of the swelling was about the same size, but a smaller lump had appeared in the middle of the forehead. She was unwilling to have an operation. Mr. Magnus Redding reported that the radiograms showed diffuse absorption of bone and overgrowth of imperfectly defined new cancellous bone (? osteoid tissue) affecting the right frontal bone. Both horizontal and vertical plates were affected. Osteitis fibrosa was suggested. There was a single small cystic cavity above the internal condyle of the right femur. Otherwise the lower limbs, pelvis, and spine showed no abnormality. The left frontal sinus was very much enlarged.

Dr. S. A. K. WILSON said that he had seen three cases resembling this one which had proved to be endothelioma of the bone, and in two of the three the endotheliomatous growth had extended inwards to the cortex as well as outwards. He asked whether there was any evidence of intracranial lesion in this case. He suggested operation. Two of the three cases he had seen had been operated upon by Sir Victor Horsley.—Mr. MAGNUS REDDING said that he would like to see the case in a year to see if there was any alteration. Osteitis fibrosa in other bones gave rise to appearances similar to those in this case.—Mr. MASSIE, in reply, said that the neurological examination revealed nothing abnormal.

Mr. PHILIP TURNER showed a case of

Cystic Tumour of the Left Cheek.

The patient was a man aged 45. The swelling had been present for about five years and was about the size of a walnut. The man stated that he went to bed one night and found it next morning. Since then the tumour had persisted and had not altered in size. Removal of a carious tooth while in the army had not affected it. The tumour appeared to be a cyst in the substance of the cheek and not adherent to the skin or mucous membrane, and though related to the superior maxilla, the inferior maxilla and the malar bone, not attached to these structures. X ray examination showed nothing abnormal. The tumour was in front of the parotid gland, which was not enlarged and did not swell during meals; saliva was normally excreted, Stenson's duct not obstructed, and the cyst could not be emptied by pressure. It had been suggested that the tumour was a lipoma or a dermoid cyst, but its sudden appearance was not in keeping with either of these views. On retraction of the cheek from the alveolar process of the upper jaw a small patch of mucous membrane showing a number of dilated vessels could be seen, an indication of an old nævus which had atrophied. He suggested that the cyst might have developed in a nævus and been due to a hæmorrhage.

Mr. W. H. OGILVIE showed a case of

Parovarian Cyst

in a baby of 3 months who had been ailing since birth and treated for marasmus and cough.

She was admitted into the hospital in the middle of December, 1920, with cough and dyspnœa, and bronchopneumonia developed. Early in January a lump was noticed in the abdomen. The abdomen was distended and tympanitic. In the left lower quadrant was a large globular elastic swelling, dull to percussion, and giving the sensation of fluid. It was only slightly movable and its lower border could be felt per rectum. The temperature was 103° F., the pulse over 180 and very feeble, respirations 60. There were patches of solid lung at both bases. An ovarian tumour was suspected owing to the presence of two abnormalities of congenital type: a large rugose vulva like a cleft scrotum and a partial stricture at the recto-anal junction. The preceding child had been born with a hare-lip. However, the fixity of the mass and the distension of the intestine led to the diagnosis of an inflammatory exudate, shut off between coils of intestine. Under chloroform anæsthesia the mass was felt to be spherical, and was displaced by manipulation from the hypogastric to the umbilical region, where it lay slightly to the right of the mid line. A right paramedian incision was therefore made, whereupon greatly distended coils of gut presented, and free serous fluid was found in the peritoneal cavity. A globular swelling about 4 in. in diameter was exposed. As it could not be delivered it was punctured a trocar and about 12 oz. of golden yellow fluid
The flaccid cyst was then drawn out, its narrow clamped, divided, and tied off, and the abdomen
The pedicle sprang from the right side of the

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[1] THE LANCET, 1920, ii., 1305.

operation took 15 minutes, and the child made a slow recovery.

Dr. G. W. Nicholson reported that the cyst wall was denuded of epithelium, but as there was a well-developed parovarian in its walls there could be no doubt that it was a parovarian cyst. No ovarian tissue could be found. The fluid, according to Dr. J. H. Ryffel, was rich in protein and contained no mucin. There were some red blood cells and white cells, mainly polymorphs. Methæmoglobin was present and a little bile pigment or hæmatoidin.

The chief interest lay in the rarity of the case. Ovarian tumours were not common in childhood, and the majority of those which had been reported had been in children between the ages of 7 and 15, while the solid growths, either dermoids or sarcomata, outnumbered the cysts by about 3 to 1. Only 7 cases of ovarian cyst occurring in the first year of life were on record, and of these 5 were post-mortem reports. Successful ovariotomies were published by Sant Anna of Brazil in 1896 and by D'Arcy Power in 1898. Parovarian cysts were still more uncommon, and no case had previously been reported in a baby. It was hard to see how so large a cyst could have become impacted in so small an abdomen. There was no twisting of the pedicle, but the cyst wall showed at one place a well-defined area of pressure necrosis. He attached importance to the closure of the abdominal wall by mass sutures. Every minute saved in a laparotomy of a baby was of importance, while the delicate tissues had little power to deal with buried sutures even when of an absorbable nature.

Mr. OGILVIE also showed a case of

Multiple Brodie's Abscesses in the Scapula.

The patient, a boy now aged 17, was admitted into an infirmary in July, 1917, with subacute osteomyelitis of one week's duration, affecting the right femur and right tibia. Pain in the right shoulder was followed later by swelling, and the joint was drained for a purulent synovitis. No sequestrum was found and he recovered full range of movement. In March, 1921, he was admitted to hospital with pain in the right shoulder and a swelling in the right supraspinous fossa. A skiagram taken by Mr. Magnus Redding showed three cystic cavities, one expanding the base of the coracoid process and two in the neck of the scapula. These were exposed at operation and found to contain a jelly-like substance. They were curetted out and the cavities obliterated by removal of the superficial wall. A culture gave *Staphylococcus aureus* only and microscopical examination of scrapings showed a vascular type of granulation tissue.

Mr. Ogilvie's reasons for showing the case were, firstly, the contrast between the widespread periostitis, as seen in a radiogram taken by Dr. G. H. Stebbing four years ago and that of localised central abscesses in a second taken three weeks ago; and, secondly, the unusual site for a Brodie's abscess. Alexis Thompson in 1916 had collected 161 cases, of which 119 were in the tibia, the remainder being divided between the femur, humerus, radius, and ulna. No cases had been reported in the scapula. There was a good deal of confusion as to what was meant by Brodie's abscess. Many text-books mentioned central abscesses of bone only as a tuberculous condition. Some authors confined the term Brodie's abscess to a chronic central abscess of the tibia, while others included all abscesses of a similar pathology. Brodie's description was based on nine cases, all in the tibia; but he clearly recognised the condition as one not limited to any particular bone. It was surely better, if the term Brodie's abscess was to be retained, to include all chronic abscesses of bone septic in origin, in whatever bone they might occur. The point brought out by Thompson that Brodie's abscess is liable to follow mild attacks of infection rather than those in which an acute process has gone to sequestrum formation was well illustrated by this case. The process was acute in the tibia and femur and these bones now showed only periosteal thickening, while in the scapula a milder infection had resulted in the persistence of still living cocci in the interior of the bone and the appearance of central abscesses four years later.

Mr. A. W. SHEEN showed a case of

Abdominal Tumour

a man aged 26. He had had malaria, sandfly fever, and dysentery during the war, and in August, 1920, when before a medical board for malaria, complained of a pain which had recently developed below his left ribs, and was recommended to hospital. The pain became worse, particularly after exertion.

In March, 1921, he was admitted to hospital, having continued at his work until the day he came in. He had become slightly thinner. He was seen to be a thin, apparently healthy man. In the left umbilical region was an abdominal tumour, the size of an orange, and reaching to the mid-line with its lower border at the transverse umbilical level. It was smooth, firm, slightly movable, and had a communicated aortic pulsation. It was slightly tender on pressure. An intermittent pain, worse after exertion, was referred to its region. A barium meal showed a normal alimentary tract, except that there was a bulge at the left end of the greater curvature of the stomach, not in the situation of the tumour. Early in April he was seen again. The tumour was difficult to make out clearly, there being only an indefinite tender fullness.

Among numerous diagnoses which had been made those which, to Mr. Sheen, appeared to be most probable were displaced kidney, tumour of stomach, cyst of tail of pancreas. He proposed to operate and report later. At the meeting the tumour was again quite distinct.

Dr. BERNARD MYERS showed

A Case for Diagnosis.

It was that of a girl, aged 13 years, who had attended hospital in February complaining of swelling of the stomach. She was found to be moderately developed and mentally to be up to the standard. A distinct yellow tinge of the conjunctivæ and skin was present, and apparently had existed since the age of 7. It was said to become a little worse when she caught cold. Telangiectases were noted on the cheeks and forehead. The spleen and liver were both increased in size, the former extending to one inch below the umbilicus, and its right border crossing the middle line of the body. It was moderately firm and not tender. The liver extended from the fourth rib in the right nipple line to three fingers-breadth below the costal margin. It seemed to be rather hard and what appeared to be little nodules were palpable on its anterior surface and lower border. One small area was a little tender. There was no ascites. The apex beat of the heart was in the fourth space in the nipple line and a reduplicated first sound was heard at the apex. At the apex of the right lung there were slight impairment, harsh breath sounds, and increased expiration and vocal resonance. Some moist sounds were audible over this area and most of the right front. The urine contained a trace of bile but was otherwise normal. The tongue was fissured. A few lymphatic glands could be felt in the neck and a doubtful one over the internal condyle of the right humerus. There was no history of a similar case in the family. The patient had apparently had no symptoms until she was 7 years old, but since then had never been quite well and had suffered from slight epistaxis. Banti's disease seemed to be negatived by the absence of hæmatemesis and ascites and by the leucocyte count. The leukæmias were excluded by the blood examination and the history. The case seemed possibly to be one of acholuric jaundice of the Hayem type. The fæces were coloured normally, the urine contained a distinct trace of bile, and initial hæmolysis occurred between 0·45 and 0·5 per cent. saline, with total hæmolysis by naked eye at 0·275 per cent. and by microscope at 0·2 per cent. It was necessary therefore to look elsewhere for the diagnosis. The history in some ways was like that of Hanot's cirrhosis, but not altogether, nor was the liver typical of that complaint. The first Wassermann reaction was negative, a second by another pathologist two weeks later doubly positive, and a third by a different pathologist was negative. It was decided, however, to give glucosegalyl, 0·02 g. intramuscularly every fortnight, and also intramuscular injections of ½ gr. of mercury in cream form, and hyd. c. cret. gr. 1, with pot. iodid. gr. 4 were administered three times a day. After a month's treatment the spleen had become a little softer and slightly smaller. The liver was a finger's-breadth less than formerly. The icteric tinge had diminished a little, and she stated that she felt better generally than she had done for some years.

Mr. B. S. SIMMONDS showed a case of

Gunshot Wound of the Right Arm,

with fracture of the humerus and lesion of the musculo-spiral nerve.

The patient had been wounded in February, 1918; the wound healed in June, 1918, but had broken down twice afterwards. In January, 1919, exploration of the musculo-spiral nerve revealed a gap in its continuity of four inches, and it was found impossible to bring the ends together. In May, 1919, tendon transplantation was performed with success, the pronator radii teres being transplanted into the extensores carpi radiales longior and brevior, the palmaris longus into the extensor ossis metacarpi and primi internodii pollicis, the flexor carpi radialis into the extensor communis digitorum and the flexor carpi ulnaris into the extensor secundi internodii pollicis and extensor indicis. The after-treatment consisted of splinting the wrist with the thumb and fingers in hyperextension, and in re-education.

Mr. SIMMONDS also showed a case of

Gunshot Wound of the Left Shoulder and Chest,

which had been accompanied by fracture of the left clavicle and first rib, lesion of the brachial plexus, lesion of the axillary artery and vein, and hæmothorax.

The patient, a man, aged 22, was wounded in October, 1918, his wound being healed in March, 1919. Examination in May, 1919, revealed a complete lesion of the brachial plexus. In June of that year the plexus was explored by division of the clavicle and of the pectoral muscles. The fifth, sixth, seventh, and eighth cervical and first dorsal roots were found to enter a dense mass of scar from which the cords of the plexus emerged. Faradic stimulation of the roots gave no result and the scar tissue, including the plexus, was excised. Nerve suture was performed as follows: the fifth cervical to the posterior cord, the sixth cervical to the outer cord, and the seventh cervical to the inner cord. The clavicle and pectorals were then sutured. When seen in October, 1920, weak voluntary contraction had reappeared in the biceps and weaker in the deltoid. A faradic response was obtained in all the muscles and there were evidences of regeneration of sensation. Examination in January, 1921, showed voluntary contraction in the deltoid, biceps, triceps, supinator longus, extensor carpi radialis longior, and extensor carpi radialis brevior.

SECTION OF SURGERY: SUBSECTION OF ORTHOPÆDICS.

EXHIBITION OF CLINICAL CASES.

A MEETING of this section of the Royal Society of Medicine was held on April 5th, Mr. E. LAMING EVANS, the President, being in the chair. Among the cases shown and reported were the following:—

Mr. A. H. TODD showed a case of

Chronic Arthritis of the Knee

in a syphilitic boy aged 9 years. He was one of four children, three of whom were living. There were no miscarriages.

He first attended hospital in June, 1918, complaining of "pains all over," on and off, for a month, and that at the beginning of the attack his skin had come out in blotches. His deep reflexes were normal and his nutrition was good. The knee contained no fluid, it was not tender, and his temperature was normal. The diagnosis then made was tuberculosis of the right knee-joint, with erythema nodosum, and fading secondary nodules on the legs and arms. The Wassermann reaction was positive. He continued to limp till December, when he had pains in the hips and ankles, and then pain and swelling of the right knee, lasting for over three weeks; his heart was found to be normal. He was admitted with a diagnosis of ? rheumatism, but the pain, fluid, and swelling persisted in spite of rest and salicylate treatment. In February, 1919, a splint was applied, and a week later the movements were described as "fairly free and painless," but there was much more peri-articular thickening. Pot. iodid. was now administered for the first time, and was continued for more than a year. In March, 1919, the Wassermann reaction was still positive. The condition fluctuated in severity till June, by which time (the limb being in plaster) the pain had subsided somewhat. The Wassermann reaction was now negative. In August, 1919, he was admitted to hospital, and a calliper splint was applied instead of the plaster, and between then and now he had been readmitted several times to have the knee straightened.

At the present time the knee was still puffy, especially on the inner side above the patella; the thigh was one inch wasted, there was tenderness on moving the patella laterally across the femur, and flexion was much limited. The Wassermann reaction was negative. The teeth and eyes were normal and the patient showed no signs of congenital syphilis, except that he was somewhat deaf; the aurist could find no lesion of his auditory nerve. The skiagrams showed marked rarefaction of the bones of the right knee-joint, together with considerable erosion of the articular cartilages and the surface of the underlying bone. The appearances were very like those seen in tuberculous disease of the knee-joint, but the destruction of the articular surfaces was rather greater than would be expected in a knee that showed so little evidence of activity at the present time.

The main interest of the case lay in the question of whether the condition was one of true syphilitic arthritis or one of tuberculous disease in a syphilitic child. Mr. Todd said that when he was an out-patient officer at Guy's Hospital he had Wassermann tests made as a routine upon all patients who had any sort of chronic arthritis; some of them proved to be positive, and of these particular cases some presented close analogies to tuberculosis, whilst others looked like rheumatoid arthritis or even osteoarthritis. While he was careful not to assume that a positive blood test meant that the disease present was actually caused by syphilis he gave salvarsan to all those who had positive reactions, and some of them not only got well rapidly but remained permanently well. That opened his eyes to the fact that numerous cases diagnosed as tuberculous or other chronic arthritis were really and truly syphilitic, and he advocated the examination of all patients who had chronic arthritis of any sort by the Wassermann test as part of the routine examination. It had been suggested that syphilitic persons were more liable than normal persons to tuberculous infection. That seemed to him to be a confusion of thought, and we could draw an analogy from other groups of known syphilitic cases; children with syphilitic keratitis were certainly syphilitic, yet their general health was often very good, and he did not remember ever having seen one of them with a tuberculous joint. In his experience syphilitic joints rapidly got well under vigorous antisyphilitic treatment if they were diagnosed early, and they healed very slowly or not at all if antisyphilitic remedies were only used late in the case. In the case shown it might be argued that the persistence of pain, swelling, and limitation of movement after so much treatment were in favour of tuberculous disease. On the other hand, the left knee seemed to him to be not quite normal; the posterior surface of the patella in the radiogram showed a distinctly crenated and rather fuzzy appearance, which was different from the very clear and definite outline of the normal bone at this age. If that indicated that the left knee was also involved it would be a strong point in favour of syphilitic arthritis, and would make a diagnosis of tuberculosis much less probable.

Dr. W. T. GORDON PUGH said that cases of congenital syphilis were not infrequently admitted to Queen Mary's Hospital, Carshalton, as tuberculosis, especially cases with glands of the neck. With regard to joint affections, in syphilis of the knee the condition was generally symmetrical and cleared up after administration of kharsivan.

Tuberculous Dactylitis.

Mr. P. MAYNARD HEATH showed a case of Tuberculous Dactylitis in an unmarried woman aged 31.

Her illness began ten years ago with enlarged glands in the neck. She was taken to hospital and was said to have enlarged glands all over her body. Seven years ago the right thumb became painful, and swelling followed in two or three days. The pain ceased after two months. Gradually all the fingers became affected. A gland in the neck was aspirated four years ago, and this was followed by the appearance of lupus on the face and neck. She had been treated for ulceration of the cornea five years ago, and had suffered from winter cough since the age of 7. There had been an attack of hæmoptysis at Christmas, 1920, and on four occasions since. There was no definite history of tuberculosis in the family except that the mother's sister had two daughters suffering from phthisis. At the present time the hands were extensively crippled by firm swellings, apparently involving the tendon sheaths of all the digits. Considerable deformity was produced and the movements of the fingers and thumbs were limited. The glands on both sides of the neck were enlarged and there were patches of lupus on the face and neck. There were signs of phthisis in the upper lobe of the right lung.

X ray examination of the hands showed discrete areas of rarefaction scattered through all the bones. There was no new bone formation. X ray pictures of the feet showed a similar condition, though clinically the feet were unaffected. No changes had been detected in the long bones. The Wassermann reaction was negative. The hands had been treated by Bier's passive congestion, the application of dry heat, and the inunction of collloidol iodine oil. Very slight amelioration had been produced.

Finger Injury.

Mr. A. W. **SHEEN** described the case of a woman aged 49, who, in December, 1920, fell and dislocated her left ring finger at the proximal inter-phalangeal joint, the finger being bent to the ulnar side. She pulled it in herself. Subsequent treatment was by massage and movements, and later by strapping of the joint. The pain and swelling which were present became less, but did not disappear. X ray examination in February, 1921, showed a chip fracture of the distal end of the proximal phalanx on the ulnar side. She was now being treated by massage, hot air, and ionisation, and, as an inability to extend the finger completely had developed, a small splint was worn to pull the finger into full extension. Swelling was still present, pain was slight and intermittent, and active movements were good. Sagittal and lateral skiagrams were shown.

The **PRESIDENT** showed a case of

Bilateral Radio-Ulnar Synostosis

associated with Bilateral Congenital Dislocation of Hips in a girl aged 5, who was first seen in May, 1918. The mother complained that the child was unable to roll the forearms. The patient had three sisters and one brother without deformity, and there was no history of deformity in the family. A synostosis of the upper ends of the radius and ulna were present on both sides, the forearms being in position of pronation. In the routine examination of the child for other deformities it was found that a bilateral congenital dislocation of the hips was present. These were reduced in September, 1918, and a radiogram was shown before reduction and one taken in February, 1921, which confirmed the physical findings that the treatment had been successful. He had not attempted to treat the radio-ulnar synostosis because (1) the functional disability was slight and could be compensated to a large extent by external rotation of the shoulder, and (2) attempts at nearthrosis had resulted, in the cases he had seen, in failure.

Mr. D. **MCCRAE AITKEN** reported that he had recently had a case of synostosis of the radius and ulna in a girl of 13, otherwise well developed and intelligent.

The synostosis involved the superior radio-ulnar joint and extended nearly to the bicipital tuberosity. An operation was performed on the left arm, when an incision was made along the posterior border of the ulna, the anconeus separated from its insertion to the back of the olecranon, and the whole block of bone between the radius and ulna removed, including a considerable portion of the adjacent parts of both bones. When taking out this block of bone the portion of muscle attached to the coronoid processes was pulled right through to the back. This was secured to the edge of the anconeus, and when released pulled the anconeus as a complete buffer between the two. Free rotation was possible at the time. The operation was performed three days ago, and Mr. Aitken said that he would report the result in six months' time.

The **PRESIDENT** also showed a case of

Multiple Cartilaginous Exostoses,

associated with congenital dislocation of hip in a girl aged 9, who was first seen at age of 2 years and 9 months in October, 1914.

The left leg was noticed to be shorter than the right, and examination showed a dislocation of the left femur on to the dorsum ilii. Nothing abnormal could be detected either on the femoral head or at the site of the acetabulum. A thickened mass could be felt on the anterior surface of the left femur below the level of the great trochanter and a small irregular mass on the crest of the right ilium. It was noted at the time that these masses were of the nature of cartilaginous exostoses. The child was not seen again until March, 1921, when the case had then developed into a typical one of multiple cartilaginous exostoses. There was no history of deformity in either the father's or mother's family. One sister and two brothers were normal. Exostoses could be felt on the left femur at the insertion of the adductor magnus, and at its upper end on its anterior surface just below the level of the great trochanter, on the left tibia at the insertion of the sartorius, and at the lower end of the left fibula. The X ray appearance of the left acetabulum strongly suggested a cartilaginous exostosis rising from the Y-shaped cartilage, but this could not be onfirmed by palpation. Exostoses were also present on right iliac crest, right femur, and right fibula, the lower d of the right radius, and the vertebral borders of the pulæ.

The **PRESIDENT** considered that this was a case of so-called congenital dislocation of the hip in which the cause had been a shallowing of the acetabular floor caused by a cartilaginous exostosis arising from the Y-shaped cartilage, and projecting above the level of the floor of the acetabulum.

ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

A **MEETING** of this society was held in the Faculty Hall on March 18th, Professor **WALTER K. HUNTER**, the President, in the chair.

Mr. J. **MILL RENTON** made a communication on

The Surgical Treatment of Chronic Sciatica.

He thought that the benefits of surgical treatment were not widely recognised, possibly on account of a lack of appreciation of the type of case suitable for operation, and also possibly because nerve stretching is an unsatisfactory operation. He advocated, in suitable cases, nerve freeing. To ensure success the diagnosis must be correct and non-inflammatory causes of sciatic pain ruled out before the operation is undertaken of nerve-freeing. Mr. Renton divided cases of chronic sciatica into three groups:—

1. Cases where the patient is quite free from pain while at rest but begins to have pain on exercise or on assuming some special position.
2. Cases where there is a certain amount of pain during rest, which becomes really intense on exercise or on the assumption of a particular position.
3. Cases where the pain is indefinite, present at rest off and on, and sometimes improving to a certain extent on exercise.

In the first type of case the inflammation has subsided and left adhesions and even bands of adhesions which drag on the nerve. This type of case is pre-eminently suited for nerve-freeing. In the second type of case there is presumably also some degree of inflammation of the nerve still present, which is possibly kept up by the pull of the adhesions. In a majority of cases operation benefits these cases but not in all. In the third type of case the pathology is not clear and operation does not seem to benefit the condition. The operation consists in exposing the nerve and removing all adhesions from the sacro-sciatic notch to the middle of the thigh. A certain amount of stretching of the nerve is unavoidable, but the principal part of the treatment is the separation of the adhesions.

Injury of the Thoracic Duct.

Mr. G. H. **EDINGTON** read a short account of two cases in which the thoracic duct was injured in the operation for removal of tuberculous cervical glands.

Early in 1911 he operated on a boy, aged 7, for tuberculous cervical glands involving an extensive dissection on the left side of the neck. The thoracic duct was not seen and there was nothing unusual in the wound at the conclusion of the operation. There was post-operative rise of temperature to over 100° F., and in 36 hours the dressings began to be soaked with watery discharge. On the fourth day the wound was opened and fluid sponged out; the welling of fluid had ceased, but the jugular vein was found to be very fragile. There was no pus in the wound and the muscles were peculiarly clean and bare. Death took place on the night of the sixth day with a copious flow of blood from the wound.

On the second case, a woman aged 28, Mr. Edington had operated in the summer of 1920. Extensive dissection on the left side of the neck was required, but the thoracic duct was not identified. The following day there was copious watery discharge, and two days later there was ballooning of the lower part of the neck, and through the lower incision there spouted fluid like whey, of a pale-greenish colour. The temperature rose to 101°, and, as milky fluid continued to pour out, the cavity in the posterior triangle was packed with gauze. The tissues in this case also were macerated. After the firm packing of the posterior triangle the milky discharge became gradually less, and the wound healed without further event.

In the discussion Mr. **ARCHIBALD YOUNG** recorded a third case of a man, aged 52, whom he operated on in 1910 for a very extensive tuberculous involvement of the cervical gland on the left side.

Dissection of the glands was carried out laboriously and with much difficulty, and the sterno-mastoid muscle, part of *the parotid gland, and part of the internal jugular vein were* removed in the course of the operation. During the operation *Mr. Young* became aware, *through soaking of his gown* and the sheets on the operating table with a glairy, sticky *fluid, that injury of the thoracic duct had taken place.* An attempt was made to find the injured duct but without success, and in the end recourse was had to packing with iodoform gauze. From the time of the operation there was *no further escape of chyle, and on the removal of the packing*, which was not disturbed for several days, it was found *to be soaked with serum only. Recovery was uneventful.*

Mr. J. Hogarth Pringle, Dr. L. T. Stewart, and Professor J. H. Teacher made a communication on

Digestion of the Œsophagus as a Cause of Post-operative and Other Forms of Hæmatemesis.

The main points in the paper, which was illustrated by specimens, sections, and lantern slides, were as follows:—

Post-operative hæmatemesis is a *symptom of great* importance to the practical surgeon and associated with serious danger to the patient. In recorded cases various explanations are given, but digestion of the œsophagus is not mentioned. A few cases of intra-vitam œsophagomalacia and ulcus a digestione have been recorded, and in July, 1914, Glynn demonstrated to the Pathological Society of Great Britain and Ireland, sections of the œsophagus which showed ulceration and inflammatory *reaction. Prior to* January, 1914, one of us had seen two cases of destruction of the lower part of the œsophagus which looked *as if it might* have commenced during life. Then a case occurred under Mr. Pringle in which vomiting of brown material was observed after operation and about 36 hours ante mortem. There was also complaint of pain behind the *sternum. No* cause of these except the digestion of the œsophagus (which had not gone the length of perforation) could be *made out and* the observation then ceased to be a pathological curiosity and became a matter of practical importance. In 1919 the authors made a communication to the *British Journal of Surgery* (Vol. VI., No. 24, p. 523) on this subject. In that article they described a number of cases in which digestion of the œsophagus appeared to have been the cause of hæmatemesis or vomiting of brown or black material, and in some cases the cause of death. Several of the cases in the series were not surgical but medical cases —e.g., anthrax, pneumonia, and puerperal eclampsia. On clinical and morbid anatomical grounds the digestion of the œsophagus was regarded as a vital phenomenon. Sections from a number of these cases were shown to the Pathological Society at the meeting in Leeds in January, 1921, and full publication will be made in the *Journal of Pathology and Bacteriology*. A short abstract of the communication appears in the *Journal* (Vol. XXIV., 1921, pp. 119-120), in the Proceedings of the society.

Intra-vitam digestion of the œsophagus is supposed to arise in the following manner: Vomiting of active gastric juice occurs, but the œsophagus fails to clear itself and some of the fluid remains in it, accumulating particularly just above the cardiac sphincter, in which region the injury to the tube is usually most advanced. In post-operative hæmatemesis the fluid ejected is usually extremely acid, and those patients who are sufficiently conscious to be able *to express* themselves frequently complain of the scalding effect which it has upon the throat and lips. The lesions produced ante mortem by gastric juice which has escaped into and lain in the œsophagus are apt to be more or less *obliterated* by changes due to continuation of the digestion post mortem. In 12 of the 15 cases which were *described in 1919*, and 4 new ones, however, microscopic examination has revealed unmistakable signs of vital reaction *in the form of* abundant leucocytic infiltration of the mucous membrane and other tissues, congestion of blood-vessels, accumulation of leucocytes in the vessels, thrombosis, and inflammatory œdema. The picture is that of an acute *ulceration*. It is easier to recognise these changes than to assess the extent to which they may have been obscured or *obliterated* by continuation of digestion, or to decide the relative amounts in which that digestion is a continuation of *the lesion* which developed during life or a post-mortem change. Probably these cases have been observed, but the *lesions have* been put down as merely post-mortem digestion, from which, however, we do not now find it difficult to distinguish them. It is therefore clear that digestion of the œsophagus during life does occur, that it may be the cause of death, *that it* occurs in other than operation cases, and that it may be arrested and healing take place. Its occurrence *is shown by* hæmatemesis, and in some cases by pain behind the sternum. It is therefore open to diagnosis, and must, *in some cases* at any rate, be amenable to treatment. The commencement of healing has been recognised in two specimens.

In *most of the cases recorded* in the *Journal of Surgery* the digestion probably began not more than 36 hours before the death of the patient; in some cases the *duration* was much less, reckoning from the occurrence of the hæmatemesis. The *morbid anatomy of the cases* showed *great variation, from* slight condition in which the phenomena were superficial *erosion of the mucous membrane* with *hæmorrhages into* the affected tissue and black fluid in the œsophagus to cases *in which perforation or extreme maceration of the lower* third of the œsophagus and extensive digestion of the *adjacent surfaces of the lungs had taken place.* Nine examples of the most advanced type, five severe but not *perforated, and five slighter lesions* have been observed—17 of them since January, 1914.

A *most important diagnostic* feature available at post-mortem examination is the relatively slight change in the *stomach, which may show only slight* post-mortem digestion *or* a total absence of that condition, contrasting with advanced *digestion of the* œsophagus immediately above the cardiac ring. In most cases, at least of the severer types, *there is a well-marked zone* of deep ulceration immediately above the cardiac ring. At a varying distance above this the *changes* are less of the nature of destruction, the predominant features being superficial erosion and hæmorrhages *into the* mucous membrane, such as are seen in the slight cases. Signs of reaction may be unrecognisable or *very slight* in the lower parts, but well marked in sections prepared from the upper parts of the damaged œsophagus.

Mr. G. H. Edington and Dr. A. S. Strachan showed a card specimen of a Pendulous Fibroma *of the* Labium Majus suggesting at first sight pseudo-hermaphrodism, taken *from* an aged *female* subject in the dissecting-room. A microscopic section of the tumour was also shown.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Cases and Specimens.

A clinical meeting of this society was held at the West London Hospital on April 1st, Dr. F. J. McCann, the President, in the chair.

Mr. Aslett Baldwin *showed* a case of Recurrent Dislocation of the Hip in a girl of 17, the subject of old-standing poliomyelitis *affecting the whole lower limb.* Recurrence of the dislocation had not taken place since the hip had been placed in plaster *after reduction in the* abducted position four years ago. Since the final reduction the limb had *developed considerably.*

Mr. B. Sangster Simmonds showed: (1) A case of Persistent Headache and Recurring Fits, following gunshot wound of the parietal bone. The case had been treated by Sergeant's method of inserting celluloid plates, after the brain had been released from its adhesion to the scalp. *Since* operation headache and fits had ceased completely. (2) A case of Gunshot Wound of the Knee in which an arterio-venous aneurysm of the popliteal vessels had been successfully removed. (3) A man in whom a Largely *Functional* Ataxia had followed a temporary organic paralysis. (4) A case of Functional External Popliteal Nerve Paralysis *following* a gunshot wound of the thigh.

Mr. Neil Sinclair showed radiograms of an Ossifying Ecchondroma of the Upper End of the Humerus in a boy of 9. The tumour was solitary.

Dr. W. N. Goldsmidt showed: (1) A case of Friedreich's Ataxia in a girl of 17. No other member of the family was affected. (2) A boy of 15 with Congenital Syphilitic Liver and Spleen. Tumours were present in the liver and spleen, and there was a positive W.R.

Dr. Clifford Ellingworth *showed a case of* Myelocythæmia in a woman. Attention had been directed to the large spleen when the *patient* was *under treatment* for excessive bleeding following a miscarriage. The blood changes were typical.

Dr. W. R. Marshall showed: (1) A case of Pernicious Anæmia improving under *treatment* with neoarsenobillon injections. (2) A case of Colitis in a woman. Full investigation of the cause *of the condition had not* been completed yet.

A discussion *on the* Diagnosis and Treatment of Colitis followed, in which the President, Drs. A. Baldwin, H. W. Chambers, Vaughan Pendred, Rickard Lloyd, W. N. Goldsmidt, S. D. Clippingdale, and D. G. Rice-Oxley took part. The importance of *sigmoidoscopic examination* was referred to. The influence of diet as a cause and in the treatment of the condition was *emphasised*. Bacteriological examination of the fæces and treatment by vaccines was part of the routine *treatment. The influence* of climate was also commented on by several members.

Reviews and Notices of Books.

ORTHOPÆDIC SURGERY OF INJURIES.

By Various Authors. Edited by Sir ROBERT JONES, K.B.E., C.B., F.R.C.S., Director of Orthopædics, St. Thomas's Hospital; Honorary Adviser to the Ministry of Pensions (Orthopædic Surgery). London: Henry Frowde and Hodder and Stoughton. 1921. In two volumes. Vol. I., pp. 540; Vol. II., pp, 692. £4 4s.

THESE two handsome volumes embody the principles and practice of the British orthopædic centres and special surgical hospitals in and after the Great War. To their editor belong the honour and credit of having organised and directed this great work, with which he was entrusted by Sir Alfred Keogh, who selected a man pre-eminently qualified to inspire all under him with his energy and enthusiasm. It would be a calamity if the knowledge acquired in the practice of war orthopædics, which is largely applicable to the treatment of the injuries of peace, were lost for want of an adequate record, and it would have been discreditable to British surgery if such a work as the "Traité de Chirurgie Reparatrice et Orthopédique" were to have no counterpart in this country.

Sir Robert Jones gives an interesting account of the genesis of the special hospitals, and of their increase from 250 to nearly 30,000 beds as the need for specially skilled treatment increased. He emphasises the immense superiority of voluntary over passive movement, and he rightly asserts the necessity of a thorough knowledge of general surgery in the surgeon who would succeed in orthopædic work.

The article by Professor Arthur Keith on the Principles and Practice of Hugh Owen Thomas amounts to a dedication of these volumes to the memory of that brilliantly original surgeon, who was so little appreciated by his contemporaries, and whose inventions have probably been the means of saving the lives or limbs of thousands of wounded soldiers. Sir H. M. W. Gray brings this out clearly in his article on the prevention of deformities, in which he deals with first-aid, the transport of the wounded, and treatment in casualty clearing stations. In one army alone, after the use of the Thomas splint had been demonstrated in all the field ambulances, the mortality from fractured femur was reduced from 50 to 15·6 per cent., and in this series the proportion of amputations was only 17·2 per cent.

Colonel Goldthwait, who was senior consultant in orthopædic surgery to the United States Expeditionary Force, also recommends the Thomas splints in the first treatment of wounds and sets forth his well-known views as to the importance of posture and of weak or flat feet.

The treatment of simple fractures in our civil hospitals had fallen into a bad way. The brilliant advance of abdominal surgery so dazzled the eyes of surgeons and students that they could not see the great importance of adequate knowledge and experience of the treatment of fractures of the limbs. Fractures of the lower extremity were either not admitted to the wards or when admitted were treated as beneath the notice of visiting surgeons.

The article by Mr. W. H. Trethowan on simple fractures deals duly with principles as well as details and should prove useful and suggestive to all who would adequately treat these injuries. The uses of central and external bone grafts and of plates are well considered, the latter being preferable only when great strain has to be borne during the process of union. A valuable hint is given as to fractures of the toes: "a minor fracture may give a major disability." In no department of surgery have greater advances been made than in the splinting of war fractures, and this is treated by Dr. Henry G. Carlisle in a chapter well illustrated with photographs.

Mr. W. Hey Groves was well known before the war for his original methods of treating fractures, and the article on ununited fractures is safe in his competent hands. The details and the good results of the bold and ingenious procedures adopted by him are well shown in his diagrams and radiographs. The editor himself deals very briefly with the subject of mal-union of the femur and the procedures necessary for its correction; he never uses plates. Chronic osteomyelitis and the persistent sinuses and suppuration which have been so troublesome to surgeons and patients are dealt with by Mr. R. C. Elmslie succinctly and clearly.

Mr. Naughton Dunn and Mr. S. W. Daw describe the treatment of disabilities of joints of the upper extremity above the wrist, showing the good results of their treatment. Dr. Walter Baldwin, of San Francisco, deals with the hand and wrist, and points out how all important is function in this region, where, as he says, no criterion other than function can be of the slightest interest to the patient applying for relief. We suggest, however, that appearances are often given great importance by the patient. Since stiff joints of the fingers and hand are, unfortunately, common as the result of war injuries and are equally disabling and resistant to treatment, the recommendations of Dr. Baldwin are sure to arouse interest. The ingenious splints employed by him are well shown in the illustrations.

Dr. F. C. Kidner, late consultant to the United States Expeditionary Forces, gives a brief account of disturbances of the lumbar spine and pelvic girdle. These conditions have not received so much attention here as in America, and the ætiological relation between some cases of sciatica and subluxations of the pelvic joints is not generally recognised. The subject deserves more study in this country. An excellent article on the knee-joint, contributed by Mr. Alwyn Smith, deals with injury and with secondary conditions such as arthritis.

In an important article on ankylosis and stiff joints, Sir Robert Jones confines his remarks to the later treatment to which joints injured in the war must be subjected. As regards early treatment, he insists on the supreme importance of the principle of relaxation of damaged structures such as ligaments, of far more importance at an early stage than any form of physiotherapy. His advice on the breaking down of periarticular and articular lesions is clearly set forth and of peculiar value. For the successful treatment of the conditions found in stiff joints great experience and sound judgment are required; Sir Robert Jones places his own unreservedly at the disposal of the reader. His article on the treatment of flail joints also is full of practical wisdom and instruction.

Mr. Elmslie writes briefly on amputation and artificial limbs, and the conclusions to which he comes will be approved by surgeons familiar with these subjects. Sir John Lynn Thomas describes the limb-fitting centre at Cardiff.

The second volume is devoted to injuries of the nervous system and their treatment, to so-called purely functional disabilities and their treatment, and to physiotherapy, &c. This volume is surely unique in surgical literature, in that it contains an article by a lately reigning monarch. Ex-King Manuel of Portugal contributes an article upon curative workshops, a subject that he made peculiarly his own at Shepherd's Bush, where he did so much to help forward the work of rehabilitation of the disabled. The subjects here dealt with are not so completely surgical as those of the first volume, some of them being written by physicians, but they are all subjects which may not be neglected by orthopædic surgeons.

The anatomy of the spinal nerves is well treated in the article by the late Professor A. Melville Patterson, the diagnosis of their injuries by Dr. Grainger Stewart and Mr. Rowley Bristow, the prognosis by Dr. Farquhar Buzzard, operative treatment by Sir Harold Stiles, post-operative treatment by Mr. Rowley Bristow, and end results by Mr. Beresford Alexander, some of whose conclusions have already been published in the *British Medical Journal*. An analysis of 500 cases of peripheral nerve lesions which passed through Alder Hey Hospital, and could afterwards be traced, showed as a result 35 to 44 per cent. of recoveries. The same subject is treated by Dr. Maud F. Forrester Brown, who studied the results obtained at the Edinburgh War Hospital at Bangour. Failing recovery after nerve suture, &c., tendon-transplantation and tendon-fixation have given most gratifying functional results, especially in musculo-spiral nerve lesions. This subject is well presented to us by Mr. T. P. McMurray. Dr. Buzzard and Mr. Percy Sargent write of injuries of the head and spine. These articles are, as might be expected, accurate and informing. An interesting chapter by Dr. J. le F. Burrow and Dr. W. Cuthbert Morton deals with functional and reflex disabilities and their cure. In the experience of the writers hysteria uncomplicated by wound or other injury was rare among soldiers.

In the course of the treatment of the many nerve lesions of the war anomalous and puzzling voluntary movements have sometimes been noticed, when the muscles which normally produce these movements are completely paralysed. The Croonian lectures on muscular movements by the late Dr. C. E. Beevor did not receive the notice and appreciation they deserved, and it is gratifying to find that a somewhat similar study has been undertaken by Professor F. Wood Jones, D.Sc., who has had the great advantage over Dr. Beevor of being able to test the muscles electrically when they are exposed on the operating table. He shows how many and how remote the muscles may be that are pressed into service in attempting to perform a movement, when the proper muscles are paralysed, and what caution is necessary before we assume that, for example, because the patient is able to flex the elbow the musculo-cutaneous nerve is not completely divided. "No man can flex his wrist with his platysma, but ...... many men will attempt it." The photographs reproduced in this chapter are most illuminating. The ancillary but most important subjects of splints and plaster are adequately treated by Mr. McCrae Aitken, plain metal splints by Mr. Lane Joynt, the electrical department by Mr. Rowley Bristow, massage by Dr. J. B. Mennell, the Ling system by Dr. Murray Levick, hydrotherapy by Dr. Fortescue Fox, while orthopædic X ray work has been entrusted to the competent hands of Mr. Thurstan Holland, who records the startling fact that there are some 250 methods of locating foreign bodies. The comparatively simple method described by Mr. Holland has given good results and stood a long test. The double exposure method both with screen and plate has been shown to be thoroughly sound and useful, although in unaccustomed hands it may not be so immediately convincing as the stereoscopic method, which is also described. Dr. Holland's work in his specialty is so well known that it is hardly necessary to state that his contribution to this volume is of great value.

Dr. Walter de M. Hill's article, although the last in the book, is not the least informing. He gives an account of the organisation and equipment of a special military (orthopædic) hospital of 1000 beds, which is interesting as a record and as a guide to future possibilities.

As the editor admits in his preface, it is very difficult to define orthopædic surgery. No operations or appliances can be differentiated as peculiar to orthopædics, but there is an attitude of mind which is definitely orthopædic and which sets forth the restoration of function as the end and aim of treatment. Operating surgeons have been too apt to consider their work done when the operation wound is healed. The orthopædic surgeon considers that his task is often scarcely begun at that stage, although much preoperative work may be necessary; operations may be only minor events in the course of successful treatment.

PHENOMENA OF MATERIALIZATION.

A Contribution to the Investigation of Mediumistic Teleplastics. By Baron VON SCHRENCK NOTZING, Practising Physician in Munich. Translated by E. E. FOURNIER D'ALBE, D.Sc. Lond. and Birm. London: Kegan Paul, Trench, Trübner, and Co., Ltd.; New York: E. P. Dutton and Co. 1920. Pp. 340. 35*s.*

THIS is a monograph of considerable size and profusely illustrated dealing with the particular phase of mediumship usually called materialisation and termed by the author "mediumistic teleplastics." From the preface to the first German edition, which appeared a year before the war, we gather that Baron von Schrenck Notzing has been earnestly engaged for some time in spiritualistic inquiry, while photographs are published, in evidence of the occurrences related, dating from as far back as 1909. Detailed observations over the same period of time are contributed by a lady who acted as protectress to the medium through whom the more important manifestations were apparently obtained. We have no reason to doubt the complete sincerity of Baron von Schrenck Notzing, but we cannot think that scientific readers will find his work in the least convincing. "Nothing is too wonderful to be true," said Faraday, and quotes the author, but whether the occurrences which are recorded in this work are capable of explanation in accordance with known physical lines or not, it is not a scientific attitude to postulate explanation of any transcendental sort, while simpler explanations can be put forward. This is not to say that we are capable of explaining away all the things that have been said to happen or to comprehend the mechanism by which the photographic appearances may have been obtained, but it is perfectly clear that neither the statements nor the pictures have been subjected to anything like the scrutiny which the pièces d'évidence in an ordinary scientific experiment are bound to undergo.

In a large proportion of the manifestations the medium was one called Eva C——, who seems to have been engaged from youth at séances, and to have lived during a large proportion of the time dealt with in this book under the care of a Mme. Bisson, who was usually present at the conduct of the séances. Why, one must ask in face of the claim of the observation of scientific precautions, was such an obvious opportunity for collusion allowed to continue? It is impossible not to regard the minute safeguards, stated by the translator to be "excessively severe to eliminate the hypothesis of fraud," as a little comical when so excellent a chance for fraud was permitted to go unchallenged. Appeals to the spotless honour of the medium and of Mme. Bisson have nothing to do with the case, the moment the claim is made that scientific precautions have been taken.

We doubt whether this work, imposing though it is in appearance and solemn in claim, will do much to remove scepticism; further, we can even conceive its shaking the faith of those who are already believers in occurrences of "materialisation."

LES CARDIO-RÉNAUX.

Étude théoretique et pratique. Par O. JOSUÉ et MAURICE PARTURIER. Paris: E. Le François. 1921. Pp. 230. Fr.12.

THE problems presented by cardio-renal cases are among the most difficult in both clinical medicine and pathology. In the more obviously cardiac cases with signs and symptoms of heart failure it is a matter of considerable difficulty to determine how far failure of renal function is a complicating factor in the case. And even when a part of the clinical picture is obviously the result of renal inadequacy the clinician is faced with the further difficulty of differentiating between a condition of primary renal inadequacy and one merely secondary to vascular stasis. Genuine renal cases present a similar problem, for in these the difficulty turns on the estimation as to how far an accompanying and relative degree of heart failure is an aggravating factor in the case. It is with these obscure problems that this book concerns itself, and thus fills an important gap in medical literature. The authors take a simple view of their subject and make an important distinction between true and false cardio-renal cases, based on the determination of renal adequacy after cardiac efficiency is restored. The group of "true" cardio-renal cases includes those only in which signs of renal inadequacy persist after cardiac efficiency has been re-established. The authors have been occupied for many years in the investigation of renal efficiency in cardiac and cardio-renal cases, and they have simultaneously made a close clinical study and analysis of their cases. Their results are here collated and presented with originality of thought, clearness of expression, and disregard of many time-honoured conceptions of cardio-renal disease. They discuss the chemico-physical theories of œdema and renal excretion in so far as they are necessary for a proper clinical understanding of the subject, and at the same time their work has an immediate practical interest since it establishes principles on which treatment should be based. Ample references to the current French literature are given. It is interesting to find that this book reflects the present trend of thought in regarding renal disease as cardio-vasculo-renal, a conception that gains less ready acceptance in England, where the classical observations of the late Dr. Richard Bright tend to maintain their dominating influence.

A FIRST COURSE IN GENERAL SCIENCE.

By FREDERIC DELOS BARBER, *Professor of Physics, Illinois State Normal University, and Others.* London: G. Bell and Sons; New York: Henry Holt and Co. 1921. Pp. 608. 9*s.*

A MASTER at a well-known school who had a mind which soared beyond questions of grammar, syntax, and prosody, used to set a paper entitled "A Common Sense Paper," in which the scholars were asked such questions as "Why does the barometer go up and down?" "How does a pump work?" "Why do chimneys smoke?" "What is the difference between the working of a gas light, an oil lamp, and a candle?" and so on. The book now before us supplies the answers to all these questions, and to a great many similar, and is altogether a most useful and informing work. It deals with such matters as the production and use of light and heat, refrigeration and its uses, the weather and the seasons, ventilation, food, micro-organisms, soil, water-supply, machines, work, energy, and applied physics generally.

In the matter of lighting surely the authors are incorrect when they say (p. 6) that "up to about 1860 candles were by far the safest and best sources of artificial light which the world had ever used." The moderator lamps of our fathers' and grandfathers' time, burning colza oil, were perfectly safe, and if properly looked after gave a very good light. The statement above quoted is all the more remarkable, as the authors tell us on p. 101 that coal gas was used for street lighting in Baltimore so long ago as 1817. In the sections on machines, it seems to us that the statement in par. 618 needs making clearer. "A locomotive owes its power to pull a train to the friction between its drive wheels and the rails. The largest locomotive ever built weighs 336 tons and can exert a pulling force of about 60 tons and can easily pull a train of 200 cars, each weighing 50 tons. If this locomotive were attached to a train requiring a force of more than 60 tons to move it, the locomotive would be unable to start the train because its drive wheels would then slip on the rails."

We must note that the test given on p. 365 for distinguishing between butter and butterine or oleomargarine is incorrect, at least as regards the margarine sold in this country, for margarine sputters more than butter when melted. As they both contain a certain proportion of water this must be so, but margarine melts in a different way from butter, owing to the fats of which it is composed having different melting points.

Taking it all round, however, the book is very good, and, except for the passages to which we have alluded, is eminently clear and simple. Anyone who lives in a house should have a knowledge of the problems contained in this book, for not only will he then be in a position to deal with the various troubles which always arise in connexion with water-taps, lighting arrangements and other matters, but he will also be educated in the thousand and one things which are at once the comfort and the bane of civilised life.

THE LOGIC OF THE UNCONSCIOUS MIND.

By M. K. BRADBY. London: Henry Frowde and Hodder and Stoughton. (Oxford Medical Publications.) 1920. Pp. xiv. + 316. 16s.

THE title of this book is somewhat misleading, for it does not deal with any logic peculiar to the unconscious, but with the influence of the unconscious mind on logical thinking. The writer, indeed, denies that the unconscious mind has any peculiar logic of its own, and maintains that "all logic is one, that of rational mind continually developing." Miss Bradby, however, does not give any very explicit account of what she understands by the unconscious mind, and although she deprecates the censure of the psycho-analysts, who declare the unconscious to be non-logical, it seems clear that she is more frequently speaking of the pre-conscious than of the true unconscious of Freud. For whenever the processes of the true unconscious are in question, as, for example, in dream symbolism, it is hard to see how the logic of identity can be discerned, even in the germ. When the dreamer fails "to distinguish the separate and continuous individuality of things," when "it is not unusual for things to turn into each other, and to be each other, and to be the dreamer," all the rules of formal logic must be inapplicable. But Miss Bradby has little love for formal logic. Those processes of reasoning which are expressions of purpose rather than statements of fact are her chief interest, and the source of logical fallacies which affect the conduct of life rather than their formal classification is the main topic of her book. This source she finds in unconscious motives.

> "We may argue from a false premiss, neglect the laws of deductive inference, argue irrelevantly, use words ambiguously, beg the question, argue in a circle, or fail to apply a general principle to a particular case; but the reason we do so is to be found in unconscious interests and emotions. A thinker can only become more logical by discovering in what direction these habitually tend to mislead him."

This is the main theme of Miss Bradby's book, and it is expounded with a wealth of illustrations derived from many different sources, both ancient and modern, and accompanied by a profusion of references which is somewhat intimidating. Typical cases of illogical conduct are given, many arising in connexion with contemporary political and social problems, and the common fallacies to which we are prone are classified and illustrated by examples. The final section of the book deals with "logic applied to life." Education, social problems, the phenomena of spiritualism, love, and religion, are considered in the light of the views put forward in the earlier part of the book. As is said in the preface, "So vast is the subject of this book that only an enthusiastic amateur would dare attack it on so small a scale." And, indeed, the chief impression we get from Miss Bradby's work is one of intense enthusiasm—an enthusiasm for the rational, for freedom in thought and in life, for the cause of the oppressed, and for the progress of humanity.

A HANDBOOK OF SKIN DISEASES AND THEIR TREATMENT.

Second revised edition. By ARTHUR WHITFIELD, M.D. Lond., F.R.C.P. London: Edward Arnold. 1921. Pp. 291. 18s.

DERMATOLOGISTS throughout the world will rejoice that a second edition of Dr. Whitfield's book has at last appeared, for it differs entirely from any other treatise on dermatology. It is not a text-book, but is rather an eminently scientific account of the commoner diseases of the skin, in which the author's own views on their ætiology and treatment are set forth very clearly. For this reason it will be read with great interest by dermatologists, and will be appreciated also by general practitioners and students who have already digested one of the ordinary text-books. The chapter on ringworm infection is particularly good; stress is rightly laid on the importance of eczematoid ringworm of the feet and hands, which, in Dr. Whitfield's opinion, is commoner since the war. The X ray treatment of ringworm of the scalp is described, but a detailed account of the croton-oil method is also given, and will be found useful by practitioners who have no access to X ray treatment.

In his account of staphylococcal infections of the skin Dr. Whitfield states that in several cases of furunculosis he has found the coagulation-time of the blood increased, and he suggests that the apparent beneficial effects of calcium sulphide in some patients may really be due to the administration of calcium. He considers treatment with staphylococcal vaccine of great value, but has found stannoxyl only occasionally successful, and collosol manganese by no means the specific that some writers claim it to be. About the chapter on eczema it may be said that Dr. Whitfield has dealt with this dreaded subject in a very thoughtful and sane manner. With Darier he considers cheiropompholyx merely an acute eczema of the extremities, and points out that some cases of "relapsing dysidrosis" are really epidermophyton infections. It is perhaps unfortunate that the seborrhœides are included in this chapter; we think it would have been better to describe them apart. In considering the ætiology of eczema the author discusses the association of one form with asthma, and thinks that many of these cases are dependent on chronic focal bacterial infection, but the relationship of asthma and eczema to food idiosyncrasy is not considered. The section on the external treatment of eczema is, on the whole, well written, but the management of acute and subacute cases of the disease in seborrhœic persons, which was one of the chief problems of war dermatology, is hardly dealt with at all, and, since the author is convinced that "there is no internal treatment which has the slightest influence on eczema itself," it is not surprising that there is little to be learnt from his remarks on internal medication. The tuberculides are described fairly fully. There is hardly sufficient justification for the inclusion of lupus erythematosus in this group. No mention is made of the treatment of the true tuberculides, such as Bazin's disease, folliclis, &c., by injections of neosalvarsan and of tuberculin.

One of the most interesting sections is that concerning the treatment of syphilis. In the first place Dr. Whitfield attaches very great importance to the Wassermann reaction, provided that it be carried out by a reliable expert, and he insists that the aim of treatment is to establish and maintain a permanent negative reaction. He believes, moreover, in vigorous treatment by neosalvarsan and mercury in patients with a positive reaction, but with no active clinical manifestations of syphilis. As regards mercurial treatment, he considers the oral administration of hydrarg. c. cret. gr. i. t.d.s. as superior to intramuscular injections. For ordinary cases of early infection he gives three intravenous injections of 0·9 g. of neosalvarsan at intervals of three weeks, and mercury by the mouth; at the end of six months a W.R. is performed, and, if negative, the mercury is continued to the end of the year, when a further test is done. If at either of these two examinations the reaction shows signs of becoming positive, a further course of three injections of neosalvarsan is given. At the end of the year of treatment, if the reaction is negative all treatment is stopped, and the blood is examined at three-monthly intervals. If it remains *clearly* negative a year after treatment has been stopped, the patient is dismissed as cured, but further examinations of the blood are recommended from time to time, and the cerebro-spinal fluid is also tested. We have described this method in detail because it differs materially from that employed by most syphilologists. It is so simple that, if Dr. Whitfield's claims for it are justified, it might well be adopted as a standard method in venereal clinics with much saving of time and trouble.

The descriptions of the tumours of the skin are brief but excellent; we observe that Dr. Whitfield disagrees with Mr. Sampson Handley's view that in Paget's disease of the nipple the epidermal changes are secondary to lymphatic obstruction dependent on malignant infiltration of the underlying tissues. Mycosis fungoides is classed as a primarily malignant disease, and not as an infective granuloma, owing to "the richness in mitosis of the new cellular collections."

In the next edition it is to be hoped that the author will include descriptions of certain diseases of which no mention is made in the present one, even though this may involve an increase in size of the volume. Thus pruritus ani and vulvæ are not considered at all, and we can find no reference to granuloma annulare, the sarcoids, and granulosis rubra nasi. On the other hand, conditions such as chigœ disease, myiasis, cysticercus cellulosæ, glanders, and blastomycosis, which are hardly ever met with in this country, might well be omitted. The illustrations are admirably produced.

JOURNALS.

The Journal of Biological Chemistry (Vol. XLV., 1920–21) contains useful contributions on various problems of nutrition, of which the following may be specially mentioned:—

Relation of Fodder to the Antiscorbutic Potency and Salt Content of Milk (p. 228), by A. E. Hess, L. J. Unger, and G. C. Supplee.—Feeding experiments on guinea-pigs with the milk of pasture-fed cows and cows fed on a dry fodder (antiscorbutic-free) diet, showed that with the milk of the latter all the guinea-pigs developed scurvy within 21 days and died within 56 days, whereas with the pasture-fed milk the guinea-pigs were still alive after 120 days, two only showing mild signs of scurvy. Chemical analysis of the milk showed that pasture-fed samples had a higher calcium, phosphorus, and citric acid content, and although the percentage of protein was slightly greater than in the dry fodder milk, the sulphur content was lower.

The Influence of Diet of the Cow upon the Nutritive and Antiscorbutic Properties of Cow's Milk (p. 119), by A. A. Dutcher, C. H. Eckles, C. D. Dahle, S. W. Mead, and O. G. Shaefer.—Two cows were placed upon a diet poor in vitamine content in the middle of January, and their mixed milk fed in varying quantities to several groups of guinea-pigs. Beginning June 1st, the cows were given a diet rich in vitamine and the feeding experiments repeated. From the data obtained it was concluded that the vitamine content of cow's milk is dependent upon the vitamine content of the ration ingested by the cow. 20 c.cm. of summer milk were superior in nutritive value and in antiscorbutic potency to 60 c.cm. of winter milk. There is a tendency for the milk to become slowly poor in vitamine content when the diet of the cow is low in vitamine, but with a ration rich in vitamine diet the milk becomes of higher nutritive value almost immediately. (For this subject see also Hart, Steenbock, and Ellis, *Jour. Biol. Chem.*, 1920, xlii., 383, and Barnes and Hume, THE LANCET, 1919, ii., 323.)

Studies on Experimental Rickets: I. The Production of Rachitis and Similar Diseases in the Rat by Deficient Diets (p. 333); II. The Effect of Cod-liver Oil Administered to Rats with Experimental Rickets (p. 343), by E. V. McCollum, N. Simmonds, H. T. Parsons, P. G. Shipley, and E. A. Park.—I. This preliminary communication deals with feeding experiments with various faulty diets. Administration of some of these diets to young rats results in the development of pathological changes in the osseous system which are identical with those found in the bones of rachitic children. Each of the diets described produces in young rats disturbances in the growth and formation of the skeleton. The large variety of dietary formulæ, the administration of which results in rickets and kindred affections, gives abundant evidence of the complex nature of the causes operating in the production of the disease and their analysis will form the subject of later papers. II. Preliminary experiments afford conclusive evidence of the specific beneficial effect of cod-liver oil on rats suffering with experimental rachitis, in that some substance or substances in the oil will cause calcium to be deposited in the same fashion in which deposition occurs in spontaneous healing of rachitis in man. They also prepare the way for the elaboration of a test for the determination of the calcium-depositing potentiality of any substances in terms of cod-liver oil units.

Growth on Diets Poor in True Fats (p. 145), by T. B. Osborne and L. B. Mendel.—Work on the rôle of fats in nutrition is reviewed and the results given of feeding experiments on young rats, with diets presumably containing adequate amounts of both fat-soluble and water-soluble vitamines, but exceedingly poor in true fats (i.e., compounds soluble in pure ether). The authors conclude that if true fats are essential for nutrition during growth the minimum necessary must be exceedingly small.

The Comparative Effects of Thyroid and Iodide Feeding on Growth in White Rats and in Rabbits (p. 69), by A. T. Cameron and J. Carmichael.—Continued small doses of desiccated thyroid gland fed to young white rats produce (*a*) a definite and invariable decrease in growth rate; (*b*) hypertrophy of the organs concerned with increased metabolism—heart, liver, kidneys, adrenals, &c.; (*c*) disappearance of fat (confirmatory of Hoskins and Herring). The decrease in rate of growth is proportional to (*a*) the amount of thyroid fed and (*b*) the iodine content of the thyroid fed: the hypertrophy varies with dose and length of application of dose, and appears to be proportional to the iodine content of the dose. Sodium iodide fed in quantities varying from amounts equal in iodine value to the thyroid doses to amounts 100 times as great produces no effect on growth rate and no hypertrophy. Both thyroid and iodide feeding increase the colloid in the thyroid. Thyroid feeding inhibits the growth of the thyroid, but iodide does not produce this effect. Similar results were obtained from thyroid feeding with rabbits.

The Effect of Alkali on the Efficiency of the Water-Soluble Vitamine B (p. 423), by T. B. Osborne and C. S. Leavenworth.—This investigation confirms the observations of those who have reported the destruction of water-soluble vitamine B when heated with alkalies, but it appears that in attempting to concentrate, or isolate, water-soluble vitamine B dilute alkaline solutions can be used without materially affecting its activity provided that a low temperature and a short time of exposure to the alkali are employed.

Comparative Metabolism of Proteins of Unlike Composition (p. 289), by W. G. Karr.—From experiments on dogs, as far as is indicated by the urinary nitrogenous end products, the metabolism of two proteins, casein and wheat gluten, widely differing in their chemical composition, is essentially the same. In metabolism experiments with comparable quantities of yeast as the sole source of protein, the partition of urinary nitrogen compared favourably with what was observed after feeding with the other two proteins. The utilisation of the yeast nitrogen was about 80 per cent.

Relationship between Cholesterol and Cholesterol Esters in the Blood during their Absorption (p. 255), by A. Knudson.—A series of experiments carried out on dogs, feeding them with cholesterol and cholesterol esters respectively, shows that free cholesterol content of the blood is increased considerably in all experiments during the absorption of the diets, but there is no apparent change in the amount of cholesterol in the ester form.

Other articles deal with quantitative relations of the constituents of various body fluids:—

Determination of Chlorides in Blood (p. 113), by A. S. Whetmore. The Determination of Chlorides in Trichloracetic Acid Filtrates from Whole Blood and Plasma (p. 437), by M. Smith. Simplified Method for the Determination of Chlorides in Blood or Plasma (p. 449), by J. C. Whitehorn. The Determination of Chlorides in Blood Plasma (p. 461), by J. H. Austin and D. O. Van Slyke.—The above papers describe methods in which the removal of blood proteins is carried out with copper hydroxide, trichloracetic acid, tungstic acid, or picric acid, and subsequent estimation of the chloride in the filtrate by the Volhard method or the iodometric method of McLean and Van Slyke. It is concluded that the simultaneous precipitation of blood proteins and silver chlorides is open to error and not advisable. The simplified method form Supplement II. of "A System of Blood Analysis" (Folin) and the thiocyanate titration is made on the protein-free filtrate (tungstic acid precipitation) after addition of standard silver nitrate solution and without removal of the silver chloride precipitate.

The Determination of Sodium in Blood (p. 312), by Edward A. Doisy and Richard D. Bell.—The method of Ball (*Jour. Chem. Soc.*, 1910, xcvii., 1408) depending on the precipitation of sodium as sodium cæsium bismuth nitrite has been elaborated and details are given for the estimation of small quantities of sodium in blood and urine by gravimetric, volumetric, and colorimetric procedure. See also Kramer (*Jour. Biol. Chem.*, 1920, xli., 263) for method of estimation of sodium based upon the insolubility of sodium pyro-antimonate.

Absorption and Elimination of Manganese Ingested as Oxides and Silicates (p. 133), by C. K. Reiman and A. S. Minot.—The analysis of the blood of manganese workers showed no marked variation from the normal manganese content (0·012 mg. per 100 c.cm). Experimental work showed that ores containing manganese as oxides and silicates are soluble in gastric juice; that manganese is absorbed in the blood stream causing a slight temporary rise in manganese concentration followed by a quick return to the normal. In none of the cases studied was the manganese content of the blood increased by the ingestion of manganese ores to a value more than double the normal level, and in some of the subjects no increase was noted. Prolonged feeding of large amounts of manganese ores to dogs failed to produce significant changes in the manganese content of blood and tissues or to cause pathological symptoms. Manganese ores are non-toxic, and in order to produce symptoms of poisoning must be ingested by individuals who are peculiarly susceptible; such individuals are rare.

Gasometric Determination of Nitrogen and its Application to the Estimation of the Non-protein Nitrogen of Blood (p. 223), by R. L. Stehle.—5 or 10 c.cm. of the filtrate obtained from the blood after tungstic acid precipitation are submitted to the usual Kjeldahl digestion, after which decomposition with sodium hypobromite is carried out, and the volume of nitrogen measured. The method is stated to have certain advantages over the Kjeldahl procedure.

The Iodometric Determination of Copper and its Use in Sugar Analysis: (1) Equilibria in the Reaction between Copper Sulphate and Potassium Iodide (p. 349); (2) Methods for the Determination of Reducing Sugars in Blood, Urine, Milk, and Other Solutions (p. 355), by P. A. Shaffer and A. F. Hartmann.—The reversible reaction $Cu^{++} + I^- \rightleftharpoons Cu^+ + I_2$ has been investigated and applied to the determination of the mixture of cuprous and residual cupric copper resulting from the action of reducing sugar upon alkaline copper solutions. The reaction may be caused to take place to completion in either direction, thus enabling the determination by iodometric titration of the cupric or the cuprous copper in a mixture of the two forms. Details of methods for both titrations are given and their application to the determination of reducing sugar in milk, blood, urine, and other solutions.

The Estimation of the Bile Acids (p. 415), by C. L. A. Schmidt and A. E. Dart.—A method is described for the estimation of the nitrogen of bile acids of the taurine and glycocoll series. It is based on the fact that on hydrolysis with NaOH the bile acids are split giving taurine and glycocoll which react quantitatively with HNO_2. The taurine nitrogen can be estimated from the total sulphur-content of the protein-free bile.

A Method for the Determination of Chlorine in Solid Tissues (p. 427), by R. D. Bell and E. A. Doisy.—The method depends on the rapid digestion of the tissue with concentrated sulphuric and persulphuric acid, the digestion gases being carried over by suction into alkaline sulphite solution in which the chlorine is estimated by the Van Slyke-Donleavy method. Details of technique and special apparatus used are given.

Relationship between Plasma Bicarbonate and Urinary Acidity following the Administration of Sodium Bicarbonate (p. 101), by W. J. Palmer, H. Salvesen, and H. Jackson, jun.—In normal and pathological cases following the administration of sodium bicarbonate the plasma bicarbonate CO_2 approaches 68·7 ± 10 volumes per cent. at the time the first depressing effect of the alkali on the urinary acidity is noted. The use of the first significant effect on the pH of the urine, therefore, in controlling the therapeutic use of sodium bicarbonate, is safe and reliable, but owing to the inconstancy of the level of the plasma bicarbonate CO_2 at this point the accurate estimation of the degree of diminished alkali reserve cannot be made. The observation of Palmer and Van Slyke is confirmed that "absorbed sodium bicarbonate is distributed in approximate uniformity...... to the blood"; and "the effect of a given dose in raising the plasma bicarbonate may be calculated by assuming that the body contains 700 c.cm. of fluid per kilo and that the bicarbonate is distributed therein uniformly." On this subject see also Calvert, Myers, and Milroy, *Jour. Path. and Bact.*, xxiv., 91, 1921.

Relation of the Alkali Reserve of the Blood to Glycosuria and Hyperglycæmia in Pancreatic Diabetes (p. 51), by B. M. Hendrix and C. Y. Crouter.—A decrease in the alkali reserve of the blood, as shown by the CO_2 capacity of the plasma, is not simultaneous with the appearance of hyperglycæmia and glycosuria in pancreatectomised dogs. A slight increase in the CO_2 capacity of blood plasma was observed on the first or second day after removal of the pancreas, later decreasing and gradually reaching about 30 volumes per cent. in two cases. Definite acidosis appears comparatively late in pancreatic diabetes in dogs.

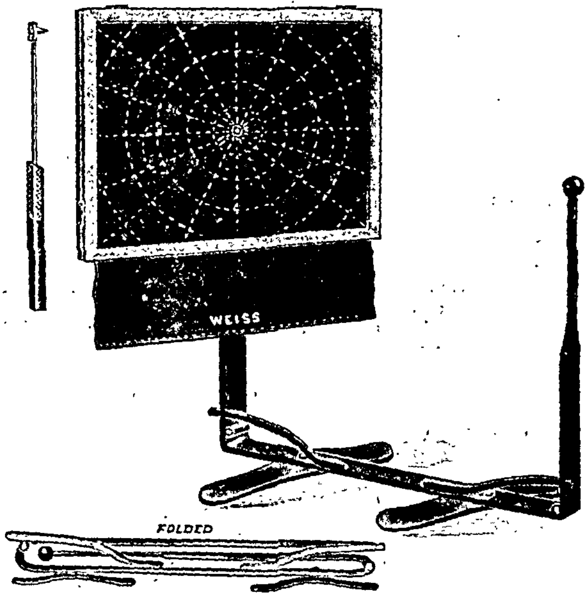
Studies of the Distribution of Carbon Dioxide Between Cells and Plasma (p. 245), by L. W. Smith, J. H. Means, and M. N. Woodwell.—From the investigation of the CO_2 content of the whole blood and plasma of both venous and arterial blood it has been found that as the blood passes from the arterial to the venous side of the circulation in normal man its corpuscles gain from 4 to 11 volumes per cent. of CO_2; the corresponding gain in the plasma is only from 0·0 to 1·8 volumes per cent., and the conclusion is drawn, therefore, that the nsport of CO_2 is accomplished mainly by the corpuscles. The me holds true in anæmia and certain other diseases, although e actual distribution of CO_2 between cells and plasma is ered.

New Inventions.

A DIRECT RECORD SCOTOMETER

FOR INVESTIGATING THE CENTRAL FIELD OF VISION.

VARIOUS instruments have been devised for the purpose of mapping out central fields of vision, but the chief difficulties in this kind of perimetry have been due to the slowness of the means of taking the observations. For the past two years I have been using an instrument which overcomes this difficulty. Observations may be made quickly and accurately, and at the same time a direct record of the observations is taken. The apparatus consists of a rigid iron stand to which is fitted a frame carrying the screen against which the observations are to be made. The screen is of grey cloth, fixed into it in the central position is a small white metal stud; this is the fixation point. Behind the screen is a sheet of carbon and a paper chart, ruled for convenience in the usual degree circles and radii. Red and blue tracing papers are also supplied, which enable three records to be taken, at intervals, on the same chart. The object is carried on a suitable object holder and held in the surgeon's hand, which is obscured from the patient's view by a grey cloth bag-glove. At the back of the frame knobs are fixed in the usual positions of the blind spots, so that the surgeon has a reliable guide from which to work. In taking observations the patient's face at the naso-buccal groove is pressed against the knob on the free upright of the stand. One eye is covered, the other looks at the fixation spot. The surgeon moves the object over those parts of the field he desires and notes when the patient sees it and when he does not. The records of the observations are made by pressing the small stylo on the back of the object holder against the screen, when the impress is conveyed by the carbon sheet to the chart. The whole of the movements of the object over the screen may be traced in this fashion by a light continuous pressure and salient points marked by deeper pressure.



The real advantage of this recording instrument is the speed and accuracy with which observations may be made. If the surgeon has to move about, take notes, shift the instrument, or do anything that takes time or diverts the patient's attention, accuracy of observation is diminished or indeed may be lost entirely.

The instrument has been well made by Messrs. John Weiss and Son, Ltd., of 287, Oxford-street, London, W. 1.

N. BISHOP HARMAN,
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THE LANCET.

LONDON: SATURDAY, APRIL 16, 1921.

Sanatorium Treatment under the County Councils.

ON May 1st next sanatorium benefit under the Insurance Acts ceases to exist and the duty of providing institutional treatment for persons suffering from tuberculosis falls to the county councils. Parliament will be asked to vote a sufficient amount of money to the Ministry of Health to enable grants to be made to the councils equal to the lapsed sanatorium benefit income, and the annual Exchequer grant will make up the amount to one-half of the approved expenditure. A further 50 per cent. grant is to be sanctioned to provide extra nourishment for patients not in residential institutions provided the amount expended for this purpose does not exceed £2 per 1000 of population. Some restiveness is apparent in the House of Commons at the increasing burden on tax- and rate-payers on account of the residential treatment of tuberculosis. It is, perhaps, not an unmixed evil that sanatorium treatment is at present the subject of much criticism. Were its position secure there would be little hope of lifting it out of a stereotyped groove and of remoulding it in conformity with present needs and recent advances in our knowledge of tuberculosis. A curious feature of many criticisms of the results of sanatorium treatment is the total absence of any definition of the term "sanatorium treatment." Yet it is obvious that definition should precede discussion. We must, for example, define the time limit within which residence in a sanatorium is so short that the patient cannot, in common fairness, be said to have enjoyed sanatorium treatment. No one would condemn university education because an undergraduate who left college at the end of his first term proved an illiterate man. But sanatorium treatment is freely condemned in this country because many patients relapse after three months' treatment in a sanatorium. No case of active pulmonary tuberculosis has ever been cured in three months by sanatorium treatment, and no case ever will be. Though it is easy enough to fix the limit within which sanatorium treatment is farcically inadequate, it is a far more difficult task to fix the maximum limit beyond which sanatorium treatment can do no further good; for, as Dr. J. CROCKET[1] has pointed out, a brilliant result achieved by three years' sanatorium treatment would probably have been stultified had this treatment been limited to two years.

Apart from the question of time, there are very divergent views as to what constitutes sanatorium treatment. Wielding a pick and shovel, sleeping in a draught, and imbibing much milk is the order of the day in certain institutions where the comparative amounts of rest and exercise are graduated by the mouth temperature and by such signs of toxæmia as headache and lassitude. In other institutions no exercise but walking is allowed, and then only in carefully graduated doses, auto-inoculation is controlled by the rectal temperature taken many times a day, the warmth and general comfort of each patient are studied, and the physician plays the part of providence in tempering the wind to the shorn lamb. Again, in several sanatoriums an elaborately devised system of heliotherapy has lately been introduced, while in others hydrotherapy plays an important part. Many other methods included under sanatorium treatment could be mentioned, but the diverse systems referred to will suffice to show how varying are the conditions under which patients are put when given "sanatorium treatment." The time may come when sanatorium treatment will be "standardised" by the elimination of comparatively useless or even harmful methods, and by concentrating only on those methods that survive the test of time; and in the meantime our judgment of the results at present achieved should be tempered by the regretful admission that the term "sanatorium treatment" covers a variety of methods of very different value. Another important factor in the problem of sanatorium treatment is the class of case selected for this treatment. In the past the selection of candidates for admission has often been determined by other considerations than those actuating the medical advisers consulted. And, more unfortunate still, it has often happened that advanced and incurable cases have been given long spells of sanatorium treatment at the expense of early cases which are discharged after a few months. A most important step to remedy this state of affairs has lately been taken by the London County Council, the Public Health Committee of which has recommended that all patients should, if possible, be passed through observation beds before being sent to an institution such as a sanatorium. By the reservation of 250 such beds at the Brompton Hospital, and 75 at the City of London Chest Hospital, and by the detention of patients in these beds for two to four weeks, valuable information can be obtained as to the needs of the individual case, and an example is set which will no doubt be followed by other bodies concerned with the welfare of the working-class tuberculous patient. It is a curious fact in the evolution of sanatorium treatment that, while preventoriums and sanatoriums for children often have waiting lists, sanatoriums for adults are sometimes only partly filled, although the sanatorium accommodation available for adults is, in theory, notoriously inadequate. This tendency may, perhaps, be a reflection of the results achieved by the two classes of institution, and we would venture the prophecy that sanatorium treatment will more and more develop on the lines of prevention in the young than "cure" in the adult.

In a recent report[2] five of the leading tuberculosis specialists in Canada have published the results of a tour of inspection of 26 Canadian sanatoriums. Appointed by the Department of Soldiers' Civil Re-establishment, these specialists were given the task of scrutinising all the conditions under which soldiers were treated in sanatoriums and other institutions for the tuberculous. This report dwells on the facts that "the vast majority of patients are treated for too brief a time," and that the "medical service of most sanatoria was relatively under-staffed." Some, indeed most institutions were run as well as circumstances permitted, but in others "inadequate medical supervision was responsible for an atmosphere of depression ......" Many other pertinent observations are made, the shady as well as the sunny side of sanatorium administration being shown up in true relations. This searching survey and candid discussion will provoke in those concerned with sanatorium treatment a divine discontent with all that is make-shift and second-rate. Such a tour of inspection in this country, if it were made by a body of experts with many years of sanatorium experience, would, no doubt, ultimately do much to raise the standard of sanatorium treatment. Already there are certain influences at work which should help to promote efficiency in the sanatorium service. Under Dr. JANE WALKER'S vigorous direction the Society of Superintendents of Tuberculosis Institutions has become a vocal body which, to judge by the reports of its various subcommittees just issued, is animated by the ambition to set its house in order. A tell-tale book with the title of "Anti-Tuberculosis Reconstruction,"[3] by an author who designates himself D.P.H., R.C.P.S.I., shows an almost uncanny knowledge of the seamy side of the sanatorium service, and the proposals for the betterment of the tuberculosis service of the country are evidently the offspring of long and varied experience. These and similar influences augur well for the future. At present, however, the position is obscured by conflicting evidence; on the one hand, Dr. E. WARD[4] thinks that the calculation that two out of 10 early cases are cured or materially relieved by sanatorium treatment is too optimistic; and, on the other hand, Professor SAUGMAN[5] has shown that complete and permanent recovery can be effected by sanatorium treatment in eight to nine out of every 10 cases of early pulmonary tuberculosis.

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[1] THE LANCET, April 2nd, 1921.

[2] Summary of Report, Board of Tuberculosis Consultants, December, 1920, Ottawa. Copies sent gratis to any physician interested.

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Income-Tax.

THE new Revenue Bill just introduced, separately from the annual Finance Bill, contains provisions regarding income-tax to which members of the medical profession will, sooner or later, require to attend personally or by deputy. If the profession is nowhere specifically mentioned in the Bill, there are many provisions in which incomes of the average professional sort are concerned. The Bill, indeed, contains only one clause which relates to other than commercial or professional aspects. By that clause power is given to the taxpayer to require the Bank of England to deduct tax from interest on dividends on War Loan and other Government securities which would otherwise in ordinary course be payable without deduction of tax at the source. Presumably some desire must have been manifested for this discretion, but we cannot say that we are impressed with its advantage as against allowing the tax to be directly assessed. However, the power is there, and no doubt there are cases where it may be useful. With this exception the Bill contains nothing that can be described as of a domestic nature. There is no change in the family allowances, and the subject of wear and tear is never mentioned. In an obvious direction this is of importance to our readers, for it leaves the medical profession where it is as regards any allowance for cars. There can be no account taken of wear and tear—in other words, there is no allowance for depreciation. But all repairs are chargeable, and can be brought into account for remission of tax; also renewals where one car is exchanged for or replaced by another will be allowed for, less the salvage of the old car.

These matters concern a section of the medical profession; but all will be affected by the new basis of assessment. Public appointments are to remain chargeable on the figure of the year of assessment. But ordinary professional profits are to be placed on a new basis, beginning with the tax year 1922–23—that is, one year hence. The basis is at present the average of the three preceding years, but in the following year the basis will be altered to the figures of the year preceding. Thus in 1922–23 the tax will be charged on assumed profits equal to the actual ascertained profits of the last professional financial year, according to the date on which the accounts of the practice are usually closed. That, for instance, may be the present calendar year 1921. The rules will remain the same as at present, but there are important new regulations applicable to new practices, discontinued practices, successions in practice, and partnership changes. These matters are too involved to be gone into here. To mention their existence is to justify the advice that the medical man should study all the directions closely, and should not be reluctant to call in expert aid. He may often need it.

There is one thing to which attention ought to be distinctly directed, and that is the possibility of hardship on changing over from the one assessment basis to the other. Thus, suppose the accounts of the practice are made up annually at Dec. 31st. If the present system of the three years' average continued in force, the 1922–23 assessment would be on the average of the years ending Dec. 31st, 1919, 1920, and 1921. But under the new basis the standard will be the 1921 profits only, and it may easily turn out that those are materially higher than the average of 1919–1921. If so, there may be a remedy; but it will be hopeless, it seems to us, to expect to obtain it if there are not accounts in existence for a good many years back. There is no remedy unless the practitioner can prove that the profits of 1919 *or* 1920 were less than the average of the six years preceding 1919 (1913–1918). If this can be proved then the practitioner will be entitled to claim that the assessments of 1922–23 and 1923–24 shall be made on the present three years' average basis. In that case the assessment for 1922–23 would be on the average of 1919–20–21, and that for 1923–24 on the average of 1920–21–22. That would be the end of the exceptional transition relief, and the assessment for 1924–25 would be on the profit of 1923.

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Hypno-Narcosis.

GREAT discoveries seem to bide their time and to appear when due almost irrespective of human agency. Otherwise it would be difficult to explain how DARWIN and WALLACE came to propound independently the principle of evolution, why Neptune was discovered simultaneously in two observatories, or whence exophthalmic *goitre* derives its three eponyms. So it was that painless operating emerged during the eighteen-forties in four several places, and with a different method in each. The tale of nitrous oxide (1844), of ether (1846), and of chloroform (1847) has often been told, but it is not so often recalled that in 1845 James Esdaile, at the Native Hospital, Hooghly, performed the first painless operation under what was then known as mesmeric influence. Before he left India in 1851 he claimed to have performed thousands of painless minor operations and some 300 capital ones. James Braid, surgeon, of Manchester (1795–1860), to whom we owe the term hypnotism, did not himself use it as an analgesic for other than dental extractions and small surgical interferences such as the opening of an abscess. Hypnosis as an analgesic could hardly expect to get a fair hearing in a world newly impressed by the magic powers and apparently simple technique of ether and chloroform. To the *Deutsche Revue* of March Professor A. A. Friedländer, of Freiburg-i-B., contributes an interesting article on the psychology of hypnosis and its relation to surgery, in which he goes over with striking fairness some of this old ground. He points out of what inestimable value for suffering humanity were the experiments of Braid and Esdaile, and how they were rendered nugatory by the rapid popularisation of narcotic drugs. From his own experience of hypnotic phenomena Professor Friedländer became convinced that hypnosis could be enlisted to aid surgery in a fashion quite different from that in which Braid had used it. From 1905 on he was led to treat patients by hypnotic suggestion before and during operation, calling this combination of hypnosis with narcosis hypno-narcosis.

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[3] Maunsel and Co., Ltd., pp. 33, 6d.

[4] THE LANCET, March 12th, 1921.

Meddelelser fra Vejlefjord Sanatorium, 1920. G. E. C. Gad, Copenhagen.

The advantages of hypno-narcosis in its author's hands are these. Light hypnosis induced before an operation will establish the patient's equanimity and prevent the natural anxiety associated with the operation and with the taking of an anæsthetic. The principal induction takes place just before the operation, the patient then being slowly anæsthetised so that the narcotic state supervenes upon the hypnotic. Narcosis ceases as soon as the operation is completed and hypnosis is again brought into use. The benefits are immediate. The amount of narcotic used is reduced by one-third, or two-fifths of what would otherwise be required. Any toxic action is, therefore, of the slightest, after-effects being correspondingly reduced. The patient awakes from a sleep rather than from a narcosis. A similar treatment may be employed in childbirth, the patient being fortified by preliminary suggestion. The small consumption of the anæsthetic is specially important in Germany in view of the present high cost of chemical products. Hypnotic after-treatment is directed to securing rest and sleep. In this way secondary hæmorrhage is avoided, and the recourse to sleep-inducing drugs. Prolonged hypnotic sleep extended over hours, or even days, renders possible any special treatment of the patient, forced feeding, and the establishment of physical and mental repose. All this without any alteration of the surgical department other than the addition of an assistant instructed in psychotherapy, for skill in inducing hypnosis is all-important. Professor Friedländer sees a great future for hypno-narcosis. It is destined, he thinks, to become the common property of practising physicians, and to play the part in therapy that anatomy accomplishes for surgery. Without supporting him all along these diverging lines we may say that he makes out a good case for extended trial of hypno-narcosis.

Annotations.

"Ne quid nimis."

THE NECESSITY OF REGISTRATION.

In view of the recent legislation and prospective regulations, medical practitioners are reminded that no matter what qualifications may be possessed, a man is not "legally qualified" or "duly qualified" unless he is registered; and that the Medical Register is alone evidence upon this point "until the contrary be made to appear." For those who specially require them, lists are prepared each month giving the names of all those registered during the month, and also of those who have died or whose names have been removed from the Register for any other reason. All communications should be addressed to the Registrar, General Medical Council, 44, Hallam-street, London, W. 1.

THE RÔLE OF PREFORMED CARBOHYDRATES IN NUTRITION.

The interesting question whether preformed carbohydrate in the diet is required for growth has recently been raised by T. B. Osborne and Lafayette B. Mendel, of Yale University, in the number of the *Journal of Biological Chemistry* reviewed in our present issue. Their results would seem to show that even what are now considered established principles in dietetics may require revision, for carbohydrates are ordinarily regarded as indispensable components of the food intake. This belief is based on the presence of more or less carbohydrate in the food mixtures consumed by the higher animals and man and on the fact that sugar is a constant constituent of the blood. Some observations connected with diabetes seem to confirm this view; since ketone substances may be excreted in diabetes when sugar fails to be burned up in the normal manner, it would seem that carbohydrates are essential for the proper metabolism of the fats. It is known, however, that meat contains very little carbohydrate; yet purely carnivorous animals grow and maintain health on a practically pure animal diet. What can then be said about omnivorous vertebrates? Rats were fed successfully on rations which included protein—casein, edestin, or lean beef which had been thoroughly extracted with boiling water—inorganic salts, agar-agar, lard, butter-fat, and 0·4 g. daily of dried brewery yeast furnishing vitamin B. The yeast can scarcely be regarded as a significant source of available carbohydrate. Success was likewise attained in experiments in which no agar-agar was given. In these experiments the only obvious sources of preformed carbohydrates were the yeast employed and such carbohydrate impurities as might still adhere to the protein preparation in the dietary. Osborne and Mendel, as the result of their experiments, found that rats receiving a diet in which the amount of carbohydrate was at most exceedingly small can grow from an early age to adult size.

TOWN SCHOOL HYGIENE.

> "It would pay local authorities to scrap all school buildings in the centre of the cities and to build on the outskirts, where the winds blow, the flowers grow, and the birds sing."

This ideal was set by Mr. C. T. Wing, the representative speaker at the recent conference of the National Union of Teachers at Bridlington. It is in essence a plea for rural life and the open-air school, natural enough at a holiday conference on the bracing East Coast, but it may be doubted whether the proposal would justify itself economically. The borough of Poplar has recently demanded the rebuilding of its schools, but Dr. Leonard Hill has shown that if overheated air is avoided and constant movement of air ensured, healthy physical conditions of atmosphere can be obtained in the centre of a town as well as in the country. Rural and urban schools evidently share the same disadvantages to a large extent. Many village schools are insanitary. Much of the trouble arises from the control of the schools being much in the hands of a section of the community other than that which uses them. If every child in the country, irrespective of the amount of income his father earns, had to put in five years in an elementary school, that school would be a different place. Knowledge of school hygiene is still ahead of its practice. Teachers appear to be moving forward to take their place as professional workers, but they have still to realise as a whole that they must teach for physical as well as mental results. Over and over again, before the school doctor came on the scene, teachers were shown how filthy were the heads of school children, a fact which hardly needed the elaborate statistical analysis given to it in official reports. The plea raised by speakers at the same conference that teachers should attempt to improve their status would be greatly strengthened if they determined to add to their equipment a competent knowledge of the physical conditions requisite for the growth and development of their charges. Hitherto this side of the teachers' work has needed continual impressing upon them by outsiders. Cleanliness, neatness, tidiness, and a joyous outlook on life are requisites whose importance is urgent in these days when the basic value of Freud's discovery is emerging from the slime with which it has been surrounded. The all-powerful effect on the juvenile mind of suggestions of healthy ways and means cannot safely be neglected by any teacher, for one-ninth of a child's life during educational years is passed in school. Still, it is only a ninth, and the slum in which the remaining eight-ninths is spent will pay better for improvement than will the removal of schools to the suburbs.

A FATAL PRACTICAL JOKE: PNEUMATIC RUPTURE OF THE INTESTINE.

DR. J. R. Buchbinder has reported a fatal form of joke which has been practised in America for some years—we have ourselves reported instances of its occurrence. A man was admitted to the Wesley Memorial Hospital, Chicago, with the history that two hours before, while stooping, a fellow-workman had placed the nozzle of an air hose close to his rectum. The nozzle had an inside diameter of 1¼ inches, and delivered air at a pressure of 85 lb. The man screamed with pain and collapsed. On admission he was in a state of profound shock. His face was slightly cyanosed and respiration was scarcely noticeable. While being lifted into bed, and thereafter until removal to the operating-room, he was seized with violent clonic spasms of the trunk. The heart was scarcely audible. The abdomen was greatly distended, but the distension was different from that of peritonitis; the tension was so great that the palpating hand could hardly make an impression. The abdomen was not merely rigid; it was extremely hard. The skin of the chest, abdomen, scrotum, penis, and perineum was emphysematous. Under procaine anæsthesia a left rectus incision was made. The transversalis fascia was not incised, but sharp-nosed forceps were pushed through in order to control the escape of air. The fascia tore like wet paper under great tension, the air rushed out with a report, and the abdominal wall dropped in. The sudden escape of air proved nearly fatal, but in a few minutes the patient rallied. There was a tear in the convexity of the sigmoid, which admitted three fingers. For a distance of 6–8 inches the serosa was stripped off and ribboned. The colon was collapsed and practically empty. The mucosa had herniated through the tear in the serosa and was frayed out as though it had been scraped. The meso-sigmoid was studded with small hæmorrhages, but there was little blood and no fæces in the peritoneum. The sigmoid tear was closed and the peritoneum sutured as well as it could be with what was left of it. A loop of descending colon was pulled out for colostomy. The patient was urned to bed and treated for shock, but died hout fully recovering from it four hours later. necropsy showed that the anus and rectum had escaped injury, probably because of pelvic support. The colon, from the sigmoid to the splenic flexure had become gangrenous, which was attributed to destruction of its blood-supply by the impact of air. The remainder of the intestinal tract showed no injuries. In *Surgery, Gynecology, and Obstetrics* for January, 1911, E. W. Andrews collected 15 cases[1] of this injury, of which 13 were fatal, and reported one in which the damage of the sigmoid was so great that he performed lateral anastomosis and the patient recovered. In the same journal for January, 1914, Bendixen and Blything reported a case in which operation was successful and added six more cases. The combined statistics give a mortality of 81 per cent. in cases in which operation was performed. When no operation was performed the mortality was over 90 per cent. In most of the cases the anus and rectum escaped injury. In nearly every case the sigmoid was the site of injury probably because its loop and kinked junction with the descending colon offers obstruction to the rush of air. The peritoneal coat was torn to ribbons and the mucosa protruded. Dr. Buchbinder recommends that the intraperitoneal pressure should be immediately relieved, allowing the air to escape slowly, preferably by a rectal tube, and then that laparotomy be performed under local anæsthesia for repair of the ruptured bowel. Colostomy should be considered when there is extensive destruction at the site of rupture or when the blood-supply of a considerable length of colon is compromised.

MILITARY AMBULANCE TRAINS.

QUICK transport for wounded and sick of the armies from the battle line to the base hospitals came to be of far greater importance in the late war than in previous wars. The large numbers of slightly wounded and sick who were quickly cured with proper treatment away from the front, and so able to resume their active parts in the war within a reasonable space of time must have formed important items in the military use of man-power. There was also the humanitarian consideration. Swift and comfortable transport saved many lives and an almost incredible amount of suffering. From the point of view of medical administration, there was also the enormous relief given to casualty clearing stations. During a heavy engagement thousands of wounded would be collected at a C.C.S., many more than the available accommodation would hold, and many more than the medical and nursing staff could cope with, even working 24 hours a day. By the use of ambulance trains it was possible to keep selected and urgent cases at the clearing stations, and yet be sure that the remainder would immediately get food and medical attention, and that within a few hours they would be right away from the battle zone at base hospitals. An instructive chapter in Mr. E. A. Pratt's book "British Railways and the Great War," tells us of the development and organisation of ambulance trains. Mr. Pratt points out that the experience of the South African campaign had been embodied in plans drawn up before the outbreak of the late war for immediate expansion of the ambulance-train service. Five ambulance coaches were used constantly from 1900 onwards by the L. and S. W. Railway to transfer sick troops arriving at Southampton from India and elsewhere to inland hospitals. These were expanded to 30 fully equipped hospital trains for overseas ambulance work. Further, by the end of the war 19 trains had also been provided for the United States Army, bringing the total of overseas ambulance trains supplied by the railways to 49. Moreover, some 24 of these trains were organised for service in England. This work was carried out by committees chosen from general managers and superintendents of the railways, the military organisation being under Sir William Donovan and his staff. The story is one of ever-increasing demands for trains and also of steady improvement in their standardisation. A typical train was composed of 16 vehicles—viz., one combined brake-car for lying infectious cases, one staff car, one kitchen and sitting officers' car, nine ordinary lying ward-cars, one pharmacy car, one kitchen and mess car, one car for personnel, and one brake and stores car—accommodating lying cases 320, sitting 76 (at least), staff 8, personnel 39—total 443. Each new train conformed to this general standard, but each had its improvements. To develop an organisation to supply all the ambulance trains overseas and for the extremely wide distribution of patients in Great Britain was no light undertaking. Arrangements were made to send the patients who were entrained chiefly at Dover and Southampton to hospitals which had sprung up in all parts of the country, and an extremely complicated system had to be evolved to enable the authorities to know how many beds were vacant in all and in each of these hospitals, what class of cases they took, and how best to divide, say, a shipload of 500 patients amongst these various institutions, and avoid waste of mileage and of beds. Combined with this work were the transfers from hospital to hospital in the United Kingdom, designed to place patients nearer their own homes or in special hospitals From the outbreak of war until April 7th, 1919, the total number of sick and wounded received into ports in the United Kingdom and conveyed therefrom in ambulance trains was 2,680,000. These were distributed all over the country to 196 receiving stations, trains going as far north as Aberdeen. Mr. Pratt closes his excellent account with a short summary of the ambulance work done by railwaymen.

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[1] See THE LANCET, 1911, i., 524.

THE TRANSMISSION OF KALA-AZAR.

THIS very fatal disease has long presented difficulties to investigators desirous of discovering the methods of its transmission. Its specific organism, the Leishman-Donovan body (*Leishmania donovani*), is a protozoon which is stated to pass through three stages of development (pre-flagellate, flagellate, and post-flagellate). The chief endemic area of kala-azar is at present in Assam, where, according to recent reports, an increased incidence has been observed during the last three or four years. Formerly the case mortality-rate of kala-azar in Assam was at times as high as 98 per cent., but a reduction has lately been effected by the treatment of cases by the intravenous injection of tartar emetic. The ætiologist has been anxiously striving to find out how kala-azar is spread so that appropriate measures might be formulated for preventing its diffusion, but as yet without much success. In the *Indian Journal of Medical Research*, Vol. VIII., No. 1, Captain R. Knowles, I.M.S., of the Pasteur Institute, Shillong, Assam, has published a series of "Studies of Kala-azar," in one of which he deals with some of the possible methods by which the disease may be transmitted. The occurrence of direct fæcal transmission from person to person by contamination of hands, bedding, clothing, &c., is quite possible, for dysenteric symptoms are generally present in kala-azar cases throughout the course of the disease, and the bedridden, dying patient commonly contaminates, by his bowel discharges, his clothes, and bedding, as well as the floor of the house and the furniture. It is known that the natural intestinal flagellates of insects are transmitted from insect to insect in encysted form through the fæces. It is certain that in man *L. donovani* is passed from the ulcers of the intestinal mucosa into the fæces. So that if the infection is transmitted by means of fæcal contamination, the parasite should be present in the stools in some encysted or resistant form not yet discovered. In the careful investigations conducted by Captain Knowles at Shillong, however, no positive results were reached to support the above views; nevertheless, he concludes that this possibility deserves more careful consideration than it has hitherto received from investigators. It is also worth noting that in Assam, at least, the distribution and incidence of kala-azar is closely associated with insanitary conditions and with an absence of proper provision for excrement disposal.

The almost universal prevalence of hookworm disease in Assam has led to the suggestion that perhaps the ankylostoma may act as a carrier of the kala-azar infection to man. To test this suggestion Captain Knowles carried out a series of careful experiments extending over a period of two and a half years; but he failed to obtain any results in support of it. The hookworm may possibly be a secondary host of the kala-azar parasite, but there is no experimental evidence at present in favour of the suggestion. For some years, and especially after the work of Patton was published, it was believed that the Indian bed-bug was the transmitting agent of kala-azar. More recently other ecto-parasites have also been suspected, including pediculi and acarinæ. The position as regards the relation of the Indian bed-bug and kala-azar seems at present to be that either the bug is the true secondary host, and the infection passes by salivary infection, or, on the other hand, that there is so close an approximation to a true cyclical development of the *L. donovani* in the bed-bug that the true cycle may occur, not in the bed-bug itself but in some other blood-sucking insect. Captain Knowles points out that the flagellate body is almost certainly a part of the extra-human cycle of the parasite, otherwise, he asks, why it should develop uniformly in both culture medium and the mid-gut of the bug. On the other hand, serological work, and the great difficulty met with in attempts to infect animals experimentally with flagellate cultures, seem to indicate that the flagellate body is not the final stage of the parasite infective to man. The form of *L. donovani* infective to man is probably some post-flagellate stage of development of the organism. The experimental investigation of kala-azar is greatly hindered by the want of an animal which can easily and certainly be infected under experimental conditions. The incidence of the disease among Europeans in Assam has so far been limited to males, and the suspected channels of infection seem to be confined to ecto-parasites, such as the bed-bug, louse, or acarus, or to be the result of infection possibly acquired elsewhere, as, for instance, through infected ankylostoma larvæ on the tea-garden soil getting into the human body through leaky or damp boots. The incidence of kala-azar in young children negatives the suggestion that coitus is the usual mode of spreading the disease. Lastly, Captain Knowles states that, whatever the true ætiology of kala-azar may be, three factors seem essentially concerned in its spread—namely, close personal contact, site infection, and repeated or prolonged exposure to the infecting agent. Proof that there existed some extra-human reservoir of the infection in some animal, amphibian, reptile, or fish, would explain several of the most puzzling features of the epidemiology, its occasional latency on the one hand, and on the other the existence of areas so saturated with the infection that every living person in them becomes infected sooner or later. Captain Knowles's investigations, we are glad to learn, are being continued.

LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY.

THE annual general meeting of this society was held at 32, Craven-street, London, on Wednesday, April 6th, the President, Sir John Rose Bradford, in the chair. Sir John Rose Bradford, in proposing the reception of the annual report and balance-sheet, pointed out that the number of members added to the society during the year had been very considerable, while the strength of their organisation was proved by the fact that, unlike so many other associations, their annual subscription had remained unaltered. Dr. C. M. Fegen, the honorary treasurer, in seconding the motion from the chair, stated that a reserve fund of £30,000 had been banked up by the Society, the expenditure had been carefully guarded, and that the value of their securities had been written down as lately as last December, so that the members might not be deluded into thinking that their very good position was a better one still. Dr. C. O. Hawthorne moved an amendment approving of the annual report but asking that the Council should reconsider a decision to send representatives to the Federation of Medical and Allied Societies. He took up no legal standpoint, but submitted that the money paid by the members of the Society was intended for particular purposes in which the pursuit of a medico-political policy was not included. The amendment having been duly seconded, the policy of the Society in subscribing to the Federation was defended by Dr. Fegen, who pointed out that the value of being affiliated to the Federation would be that sympathetic hearing could be secured from Governments, which could not pass over joint representations as they could those of individual groups. Two members only having voted in favour of the amendment the original motion, that the report and balance-sheet be adopted, was put and carried *nemine contradicente*. The meeting ended with the re-election of Sir John Rose Bradford as President, Dr. Fegen as treasurer, Mr. A. G. R. Foulerton as financial secretary, and Dr. Hugh Woods as general secretary, and all the appointments were received by the meeting with great cordiality.

AN ECHO OF THE WAINWRIGHT MURDER CASE.

Mr. F. G. Larkin, who was one of the chief medical witnesses in the Wainwright case 45 years ago, has presented to the medico-legal collection of the Royal College of Surgeons of England the uterus and neighbouring pelvic parts of Harriet Lane—Henry Wainwright's victim. The evidence relating to this case is very clearly given by the late Mr. H. B. Irving in the Notable Trial Series. It will be remembered that Wainwright placed the dead body of his victim under the floor of his workroom, where it lay, surrounded by quicklime, for the greater part of a year. Yet at the end of this time Mr. Larkin was able to recognise that the body was that of a woman who had probably borne children. The identification of Harriet Lane was made, however, on other grounds. And this was fortunate, for at the Obstetrical Society Dr. Alfred Meadows read a note of the evidence which he gave at Wainwright's trial, in which he pointed out that the organ presented appearances not believed to exist in a uterus which has been gravid.

THE "HÉMOCLASIQUE" CRISIS.

IN a recent communication P. Brodin and Charles Richet[1] use this term to describe the circulatory changes which occur in anaphylactic shock, or which follow the intravenous injection of peptone. These changes, most of which have been noted by other observers, are the following: fall of blood pressure, delay in the coagulation of the blood, concentration, leucopenia, and, finally, changes in the viscosity and refractive index of the serum. These occur in both conditions, but in anaphylactic shock there are two additional phenomena—i.e., the appearance of nucleated red corpuscles and a change in the normal differential leucocyte count. Biedl and Krauss some years ago drew attention to the resemblance between the respiratory symptoms and the pulmonary lesions in these two conditions, and Brodin and Richet now present the additional evidence of the similarity of their "hémoclasique" crises, as proof, if not of their absolute identity, at least of the very close relationship between them. There can be little doubt that in the dog such a close resemblance exists between peptone poisoning and anaphylactic shock, for in this animal the point of attack is, in both cases, the endothelial lining of the capillaries. In the guinea-pig, however, anaphylactic death is due to the asphyxia which follows the contraction of the plain muscle of the bronchioles, and though peptone in sufficient dose also produces such contraction of the bronchial musculature with acute asphyxial death, it can cause subacute death in smaller doses by its action as an endothelial poison. No superficial resemblance between the blood changes in these two conditions can obliterate the essential difference in poisonous action of peptone in the normal, and the specific antigen in the sensitised animal, the former functioning as a general endothelial poison, and the latter, as Dale and Weil have shown, following the union of specific antibody with antigen within the body cells. More important are the experiments in "crossed immunity" which Brodin and Richet report. A series of 13 dogs were sensitised by a preliminary injection of horse serum. One or two months later seven of these were given large doses of horse serum intravenously, with the result that one died of acute anaphylaxis, and three others showed severe symptoms. The remaining six dogs were given an intravenous injection of peptone one hour before they received the "déchaînante" injection of horse serum, which in this case caused no symptoms in one dog and only slight effects in the others. This experiment affords some evidence that peptone administered to the sensitised animal affords a partial protection against the subsequent injection of the specific antigen. The dose of peptone used was rather large, 0·1 to 0·15 g. per kilo of body weight, about half the dose necessary to render the blood of a dog incoagulable. This fact renders the experiments inconclusive in regard to the possible value of intravenous peptone injections as a prophylactic measure against anaphylactic shock in man.

THE MANUFACTURE OF AERATED WATER AS A DANGEROUS INDUSTRY.

DRAFT Regulations have been circulated by the Home Secretary, under the powers given by Section 79 of the Factory and Workshop Act, 1901, which it is proposed to substitute for the Special Rules at present in force for the protection of workers in mineral water manufactories. The dangers which beset such workers arise entirely from the bursting of bottles or syphons in the various processes to which they are submitted, and all the regulations are framed with a view to such bursting, except one which orders the provision of waterproof aprons and boots or clogs for persons working in processes which involve exposure to wet. Such changes as are made in the draft regulations as compared with the Special Rules, framed in 1898, are due to the changes in the system of manufacture since that date. For example, the wearing of face guards and gauntlets is no longer imposed upon all bottlers, because automatic filling machines now in general use prevent the escape of the fragments of a burst bottle.

WOUND OF THE KNEE-JOINT TREATED BY CLOSURE AND IMMEDIATE ACTIVE MOVEMENT.

WE described some time ago[1] an advance made during the war by Dr. C. Willems, a Belgian surgeon, who treated acute arthritis, principally of the knee, due to infected bullet wounds, by incision and drainage, followed by immediate active movement, with remarkable success. Although this treatment is contrary to the current teaching its rationale is simple: the movement expels pus and prevents adhesions. In the *Boston Medical and Surgical Journal* of Feb. 17th Dr. L. Allen has reported a case of lacerated wound of the knee-joint in a child which he treated in this manner. A boy, aged 5 years, fell on a broken bottle embedded in the ice, making a jagged cut about 3 inches long to the outer side of the patella, which opened the joint. He was 40 miles away, and his medical attendant telephoned that he was bringing him to hospital, and asking what should be done for first aid. Dr. Allen told him to paint the wound and its neighbourhood with tincture of iodine, and put on a sterile dressing. About five hours after the accident he enlarged the wound under ether, picked out all clots, trimmed all the edges and washed out the joint with 2 per cent. boric acid solution, using several quarts, and keeping his fingers out of the wound entirely. He closed the synovial wound with No. 00 interrupted catgut, sutured the capsule with interrupted No. 2 chromic catgut and kangaroo tendon, closed the skin wound with No. 00 catgut and continuous silkworm-gut and a few interrupted silkworm sutures, carried a small cigarette drain down to the capsule, and painted with tincture of iodine. Light sterile dressings were put on with the knee flexed and then extended so that movements could be kept up. The nurses were instructed to make the child flex and extend his knee to the full extent every two hours day and night, and to use passive movement if he refused. At first the child was afraid to move his knee, but he soon found that it was not painful, and a game was invented which encouraged him to do it. Healing took place by first intention. The drain was removed on the third day, and the sutures on the ninth and tenth days. The child was in bed eight days, and went home on the twelfth day. A report nine months after the accident shows that the joint is quite normal. This case is in strong contrast to one treated by Dr. Allen a short time before by the ordinary method. A young man had a bullet wound of the knee-joint. The treatment consisted in removing the bullet, débridement, drainage, and splint. He died from a streptococcic infection. The contrast is maintained on turning to Willems's results. In 100 cases, of which 18 were accompanied by purulent synovitis of a virulent type, chiefly streptococcic, he had no deaths and no amputations. There was one resection and only two stiff joints.

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[1] Brodin and Richet: Compt. Rend. Soc. de Biol., lxxxiv., 233.

[1] THE LANCET, 1920, ii., 81.

FOOD AND THE PEOPLE.

A RECENT question addressed to Dr. Addison in the House of Commons asking what steps he was taking to alter war-time food substitutes, in view of their effect on the physique of the worker and his children, elicited the reply that substitutes such as margarine had generally been adopted by consumers for economic reasons, and, so far as he was aware, all staple articles of food were now freely available. The reply read somewhat as a disclaimer and misled us, along with others, into supposing that the Minister of Health was unable to offer the practical dietetic advice of which as a nation we stand so much in need just now, forgetting that—as appeared elsewhere in our columns—the issue of a pamphlet on these very matters had been foreshadowed by the Minister. It is, of course, well-nigh impossible for anyone to make general statements on food values which are not liable to be misconstrued. Professor Gowland Hopkins found this so early this year when his Huxley lecture, which we published in full, gave a section of the daily press occasion to bury "those d——d calories" along with all the carefully measured demands of the body which they represent and the slight intellectual effort required to appreciate them. After all, calories can be measured, while accessory food substances, until they have been isolated, cannot. We propose to spell "vitamin" in future without the "e" in order to avoid the appearance of spurious accuracy implied by the ending "ine," which should strictly now only be given to organic bases. When the researches being conducted jointly by the Ministry of Health and the Medical Research Council are completed, and the pamphlet follows, its issue will be very welcome.

ANÆSTHETICS FOR AN UNUSUAL PURPOSE.

THE National Anæsthesia Research Society, whose activities in America we have commented on with admiration on previous occasions, publish in their latest bulletin an interesting example of a novel use for anæsthetic administration. Hitherto what association there has been between anæsthetics and crime has been for the benefit of the criminal. Actually such an association is rare in real life, although very common in fiction. The novelists' criminal, we may remark *en passant*, when he employs chloroform has a positively supernatural skill in obtaining rapid results. The handkerchief appears to be applied to the victim's face one moment and the next he, or more often she, lies at the mercy of the administrator. The induction, moreover, appears to be as safe as it is rapid, for the victim always awakes. Anæsthetics have now been turned in real life against the criminal. They have been used to demonstrate the possibility of phonation on the part of a man accused of murder who steadfastly refused to utter a word for two weeks. The account presented[1] is not perfectly clear, but apparently the man was given nitrous oxide first, to what stage of narcosis we are not told, and then ether to the excitement stage. At this point he exclaimed loudly and the physician in attendance was satisfied that "he could have talked all along if he had so desired."

DELAYED REPORTS.

IN *almost identical words do the Sanitary Commissioner for the Madras Presidency and the medical officer of health for the county of Gloucester deplore the failure of subordinate health officers punctually to submit their sectional reports. The delay in each case has impeded the preparation of the larger and more comprehensive report from which alone hygienic lessons can be drawn, with the result that these lessons are unduly held back. Reports for 1919 are still coming in, and it is difficult to believe that they have not lost their freshness for the wider public whom every active-minded medical officer of health hopes to reach. We have more than once dwelt on the official report as popular educator, and we hope that this view may be found to lighten what is too often regarded as mere clerical drudgery. Everyone cannot hope to write with the racy pen of some county medical officers, but all should bear in mind the educational value of a prompt and vivid report.*

WE regret to announce the death of Dr. Henry Barnes, O.B.E., LL.D. McGill, consulting physician to the Carlisle Infirmary, and the author of well-known works on Cumberland medical topics.

AN Interim Report presented on April 12th by the King's Fund Policy Committee to King Edward's Hospital Fund for London recommends a careful inquiry to see whether the problem of voluntary hospital finance could be solved if the voluntary subscriptions of the charitable public were supplemented by a graduated system of patients' payments from those able to pay at the time of illness and by insurance on the part of those who are unable to do so, the hospitals agreeing to limit free treatment, except in emergencies, to those unable either to pay or to insure.

The Services.

QUEEN ALEXANDRA'S MILITARY FAMILIES' NURSING SERVICE.

THIS service, consisting of matrons, sisters-in-charge, and staff nurses, will take over the permanent nursing establishment of the military families' and military isolation hospitals. The rates of pay and pension will be the same as those laid down for the corresponding ranks in Queen Alexandra's Imperial Nursing Service.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lieut.-Cmdr. (D.) E. E. Fletcher to be Surgeon-Commander (D.).

Surg. Lieut. J. B. Crawford to rank of Surgeon Lieutenant-Commander.

ROYAL ARMY MEDICAL CORPS.

Temp. Lieut.-Col. E. W. White relinquishes his commission and retains the rank of *Lieutenant-Colonel*.

Major W. Byam relinquishes the temporary rank of Lieutenant-Colonel on reduction of establishment.

Temp. Major E. H. Marshall (Major, R.H. and R.F.A., T.F.) relinquishes his temporary commission.

Capt. and Bt. Major J. D. Kidd relinquishes the acting rank of Major.

Temporary Captains relinquishing their commissions and retaining the rank of Captain: E. J. Maxwell, J. A. Martin, R. H. Balfour-Barrow, P. G. Simpson, D. Evans, T. L. Davies, D. C. Smelzer, H. P. W. Lincoln, W. Pritchard-Airey, J. H. Whiteside, and A. G. Leitch.

ROYAL AIR FORCE.

Medical Branch.—A. F. Wright, A. E. Jenkins, and W. B. Wilson are granted temporary commissions as Flight Lieutenants. M. J. Cahalane, O. St. L. Campion, and S. E. Elphick are granted short service commissions as Flight Lieutenants.

The undermentioned relinquish their temporary commissions on return to naval duty: Wing Commander G. D. Bateman (Surgeon Commander, R.N.) and Squadron Leader A. R. Sharrod (Surgeon Lieutenant-Commander, R.N.).

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[1] Current Research in Anæsthesia and Analgesia, Bulletin. March, 1921.

EXCESSIVE PRESCRIBING BY PANEL DOCTORS.

(FROM A LEGAL CONTRIBUTOR.)

WHILE it may reasonably be supposed that every practitioner having charge of a panel is more or less acquainted with the rules under which he carries out his duties, he is probably not very familiar with the decisions of the tribunal which is called upon to consider alleged breaches of the rules. They are not reported, like ordinary cases, in the daily press, and are only published at long intervals. The following notes set forth some general principles laid down in the cases which have been reported; the references are to two volumes of reports published in 1917 and 1919 respectively as Parliamentary papers.

The Drug Fund.

With respect to excessive claims upon the Drug Fund, Article 40 of the National Health Insurance (Medical Benefit) Regulations (England), 1913, is in the following terms:—

> 40.—(1) Where it appears to the Panel Committee that by reason of the character or amount of the drugs or appliances ordered for insured persons by any practitioner or practitioners on the panel, the cost of the supply of those drugs and appliances is in excess of what may reasonably be necessary for the adequate treatment of those persons, the Panel Committee may, and if any representations to that effect are made to them by the Pharmaceutical Committee shall, make an investigation into the circumstances of the case, whether in respect of the drugs and appliances ordered by an individual practitioner or generally as to the orders given for drugs and appliances by practitioners on the panel.
>
> (2) The Panel Committee shall, after hearing the Pharmaceutical Committee and any practitioner concerned, make a report to the Committee, and if, after considering the report, the Committee are of opinion that an excessive demand upon the Drug Fund has arisen owing to orders given by a practitioner which are extravagant either in character or in quantity they may, if they think fit, make such deduction from the amount payable to that practitioner by the Committee as they think fit, and shall pay the amount so deducted to the credit of the Drug Fund: provided that the practitioner shall be entitled to appeal to the Commissioners, whose decision shall be final.

Appeals.

Appeals are dealt with by the Commissioners under the provisions of Article 51 of the Regulations, which empowers them either to decide the case without a hearing, or, if they think that a hearing is required, to authorise any two or more of their number to hear and determine the appeal. It is to be observed that the Panel Committee must make the investigation, and that they must listen to representations made by the Pharmaceutical Committee. All the cases which follow, except the last, were decided under Article 40; but it is important to notice that this Article was revoked and replaced by Article 9 of the Regulations made in 1916. Under this Article the Pharmaceutical Committee no longer takes any part in the proceedings; the Panel Committee may, if dissatisfied with the Insurance Committee's decision, refer the matter to the Commissioners, when both the Panel Committee and the practitioner concerned may be heard.

Notwithstanding this change, the following cases lay down some valuable principles. The Panel Committee may not delegate their powers. In one case the Panel Committee appointed five of their members as a subcommittee to investigate cases of alleged excessive prescribing, and the appellant was invited to attend, and attended a meeting of this subcommittee. He was not given an opportunity of appearing before the Panel Committee itself. It was held that the Panel Committee had no power under the Regulations to delegate to a subcommittee their duty of hearing the practitioner, and that the irregularity of procedure invalidated the Panel Committee's report.

It does not appear to be necessary that the Committee shall be satisfied by evidence on oath. They may ply their own knowledge and experience. In a case ided on March 16th, 1915, the Insurance Committee held money from the appellant on the ground that quantities of lin. methyl. sal. ordered by him were excessive. The appellant, in a written statement addressed to the Panel Committee, had put forward the plea that the circumstances of the neighbourhood where his patients resided were such as to call specially for lin. methyl. sal. The Panel Committee, after considering this statement, recommended that money should be withheld from the appellant, and stated in their report that in arriving at this decision they had acted "on their knowledge as general practitioners as to the quantity likely to be necessary." It was held that on this point the Insurance Committee were entitled to accept the expert opinion of the Panel Committee as conclusive.

Statistical and Other Evidence.

There must, however, be evidence of some kind. Statistical evidence does not generally suffice, standing alone, to justify the inference of extravagance; but in conjunction with evidence derived from the character of the prescriptions themselves and in the absence of satisfactory explanation by the doctor, it may assist both in establishing the fact of extravagance and in enabling a reasonable estimate to be made of the additional cost thereby caused to the Drug Fund. But where statistical evidence is put forward and the practitioner fails to give an adequate explanation of a charge of extravagance, it may be sufficient. So where the cost of the appellant's prescriptions calculated on this basis as compared with the general average of the panel doctors' prescriptions on a similar basis is represented by a percentage of 214·4. The actual cost of the prescriptions for the period of six months was £58 13*s.* 9*d.*, and the number of persons on his list was 262. Having these figures before them, together with the other evidence referred to above, the Panel Committee reported that they found that there was evidence of general extravagance and unnecessary frequency in prescribing, and that they estimated the excess thus caused at 50 per cent. of the total cost of the prescriptions. The Insurance Committee, on the recommendation of their Medical Benefit Subcommittee, accepted this estimate and decided to deduct £29 6*s.* 10*d.* from the doctor's remuneration. The Commissioners reduced the deduction to £15, but stated that in so doing "they have acted on the view that the provision for a reduction is largely intended to be a deterrent, and have had regard to the fact this is the first occasion on which a charge of extravagance has been made and established against this practitioner."

A Concrete Example.

The following is a good example of what has been regarded as extravagant prescribing.

The average cost of the appellant's prescriptions for two quarters per insured person on his list was respectively 12·67*d.* and 8·59*d.* as compared with a general average for all practitioners on the panel of the area of 6·21*d.* and 5·83*d.* In addition to this and other statistical evidence, there was a report which showed that orders for malt and oil had been given by the appellant much more frequently than was warranted by the dosage which he himself directed. The Commissioners found that the Insurance Committee were justified in arriving at the conclusion that there had been extravagance and dismissed the appeal from a deduction of £21 13*s.* 3*d.*

In a case in which several panel doctors were concerned (Vol. I., p. 92) the Panel Committee had taken the view that the investigation by them of particular prescriptions would be an undue interference with the doctor's treatment of his patient. The Commissioners, however, stated that this view was inconsistent with the proper discharge of the Committee's functions under the Regulations.

It is not sufficient for a Panel Committee to invite a practitioner, against whom extravagant prescribing is alleged, to inspect his own prescriptions and give explanation; individual prescriptions which appear to indicate extravagance should be put to the practitioner.

A claim on the part of a practitioner to discuss with the Panel Committee seriatim the whole of his prescriptions (amounting to some three thousand) and to have the insured person for whom the prescription was ordered in attendance at the meeting was held unreasonable and not warranted by the Regulations. (Vol. I., p. 103.)

It should be mentioned that in the Scotch case of Mitchell *v.* The Insurance Committee of the Burgh of Aberdeen, (1918) 1 S.L.T. 316, Lord Salvesen decided that the Committee were not bound to investigate every case treated by the doctor.

The Panel Committee must not, however, act upon mere guess-work. Thus a procedure under which the Panel Committee invite practitioners on the panel, the cost of whose prescriptions exceeds a certain average sum, to submit to the deduction of one-fourth of the excess, involves the substitution of a mechanical process for a proper investigation into individual cases, and is open to criticism on this ground. (Vol. I., p. 101.)

The practitioner, however, must be prepared to rebut a charge of extravagance. So where in the opinion of the Panel Committee as a body of medical practitioners the use of certain drugs appears *primâ facie* to exceed what is reasonably necessary for adequate treatment, it is not a sufficient answer for the practitioner concerned to say he honestly thought them necessary.

It has also been held that it is dangerous for a doctor to ignore the proceedings of the Panel Committee, for it has been held that a doctor who declines to attend the meeting of the Panel Committee at which his prescriptions are discussed does so at his own risk, and it does not lie with him to take an objection on appeal, if the Panel Committee's report in consequence appears less conclusive than would otherwise be the case.

A distinction is drawn between "active" drugs and those which are used for flavouring, &c. In one case (Vol. I., p. 112) the Commissioners laid it down that the question of the legitimate use of sweetening and flavouring agents is one of degree and proportion. The view adopted by the Panel Committee, that the latter drugs cannot be placed in the same category, therapeutically, as "active" drugs, and that a reasonable moderation should be observed in their use, was approved.

The panel doctor sometimes has occasion to call in a consultant. If the consultant orders expensive drugs it does not necessarily follow that the expense will be allowed. The Commissioners have decided (Vol. I., p. 116) that the fact that a particular preparation has been recommended by a consultant does not divest the panel doctor of his ordinary obligations, and he cannot justify the prescription merely by reference to the consultant's advice; but the recommendation is a circumstance of which account must be taken in deciding whether the preparation was reasonably necessary for the adequate treatment of the patient.

As to proprietary medicines, it has been held that the use of such articles costing more than the B.P. preparations, though justifiable in exceptional cases, cannot be supported merely on the ground that the patients preferred the article. The view that the patient's judgment is to be the criterion of the necessity for the use of particular medicines would involve a dangerous abdication by medical practitioners of their professional responsibilities.

The question of the latitude to be allowed to a doctor's individual preference in methods of prescribing was considered in relation to an alleged excessive use of liquor morphinæ. The Commissioners decided, in the absence of evidence that the insured persons on the appellants' lists differed from those on the lists of other doctors, that the use of a drug such as liquor morphinæ in 75 per cent. of the scripts issued by one of the appellants could only be held reasonably necessary on the assumption that all persons who are not being treated on such methods are deprived of adequate treatment.

In another case a doctor, according to the report of the Commissioners, had "made extensive use in his practice of two proprietary articles—namely, ferro-glidine, stated to be a preparation of iron especially devised to secure easy assimilation; and iodex, a preparation of iodine in the form of an ointment, said to possess the advantages of being rapidly absorbed and of not staining. On careful consideration of the full evidence given as to the relative advantages of these preparations and of other preparations of iron and of iodine respectively, which might have been used for the same objects, we are not satisfied that many, at all events, of the patients treated by the use of these remedies could not have been treated with equal benefit, and at much less cost, in other ways." The Commissioners, however, made it plain that what they objected to was the routine use of these articles.

The individual discretion of the doctor must not be unduly interfered with. Thus, in deciding whether particular drugs are "reasonably necessary," due allowance must be made for the personal element, and within reasonable limits a doctor should be allowed to follow methods of treatment most congenial to him. But the exercise of individual judgment does not necessarily lead to the use in all cases of more expensive forms of treatment, and if a proneness to use more expensive drugs is coupled with a very high average cost, strong evidence would be required to show that the high cost is due solely to the conscientious exercise of a discriminating judgment.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

MADRAS CONSULTATIVE HEALTH COUNCIL.

THE Consultative Council of Public Health, the members of which were announced a few weeks ago, met for the first time on Feb. 12th at Fort St. George. At a previous meeting of the Board of Health suggestions had been made to divide up the Consultative Council into six committees, each committee to be responsible for a specified group of subjects. It was felt that in this way the Consultative Committee would be able to deal more efficiently and more speedily with the many problems which it would have brought to its notice. At its first meeting the Consultative Committee agreed to the formation of the following committees: (1) the Committee for Education and Research; (2) the Committee for Administration; (3) the Committee for Preventive Medicine; (4) the Committee for Water-supply, Drainage, &c.; (5) the Coördination Committee; (6) the Housing Committee.

Scope of the Sectional Committees.

The first Committee, consisting primarily of professional men, but including also a district board president, a sanitary officer, and an educational officer, would deal with such subjects as medical schools and colleges and their extension, location, curricula, &c., and the training of all classes of sanitary officers from medical officers of health downwards. The possibility of a Provincial Research Institute would also come into its purview, along with determination of standards.

The Committee for Administration would deal with matters connected with medical institutions, such as the standardisation of equipment, buildings, the provision of emergency wards in dispensaries, the important matter of itinerating dispensaries, and hospital accommodation for infectious diseases, whilst it would also deal with conditions of service of sanitary officers and the expansion of nursing and midwives' service. The members of this committee, with the exception of the Surgeon-General, are presidents of district boards and chairmen of municipal councils, but at least one sanitarian may also be considered essential.

The Preventive Medicine Committee, of which the Surgeon-General is chairman, deals with epidemic diseases like cholera, small-pox, plague, malaria, and the investigation of the history and periodicity of epidemics in South India is perhaps one of the most urgent questions which will arise.

The fourth Committee deals with the all-important problems associated with water-supply and drainage, and if it can hasten by a day some of the large schemes which have been held up for so long in the Madras Presidency it will have justified its creation.

The Coördination Committee has a difficult part to play. It will endeavour to coördinate the work of local bodies *inter se*, and to enlist voluntary agencies, delegating specific services to them and demarcating spheres of work, whilst encouraging the formation of district committees of public health. It will also have much to do with maternity work, as well as inspection of school children. But its most important duties will be in organising voluntary aid.

The Housing Committee will deal with civic surveys, town-planning schemes, coöperative buildings, &c., and its personnel comprises engineers, sanitarians, municipal chairmen and voluntary workers, along with the new director of town planning, and the chairman of the Madras City and Suburban Trust. Some of these committees have already met, and as most of the members are also members of the Legislative Council, when these several questions arise in the House they will be able to guide the Council.

An Ambitious Programme.

To indicate the work undertaken by these committees mention may be made of some of the resolutions passed by the Committee for Coördination at its first meeting. These include the following:—

(1) Recommended that the committee interview the Council of the Health and Welfare Association regarding the coördination of various associations, and (2) recommended that voluntary associations should be asked what they can do in the way of undertaking the following services: (*a*) maternity and infant welfare, (*b*) propaganda work, (*c*) ambulance and first-aid, (*d*) utilisation of students, boy scouts, and girl guides in public health, (3) recommended that the functions of the District Committee of Public Health should comprise provisionally the following:

(*a*) organisation of a district health service, (*b*) duplication of medical staff in order to bring medical relief within reach of rural populations, (*c*) to establish a record of the history and periodicity of epidemic disease within its jurisdiction.

No one will deny that this is an ambitious programme in itself, but it is only a fraction of what requires to be done, and it is to be hoped that some real benefit will accrue to public health in South India from the work of the Consultative Council.

Report of Sanitary Commissioner.

The Sanitary Commissioner's Report for 1919 has recently been published. As the Government remarks, "the utility of the report is greatly impaired by its late receipt, and the failure of certain local authorities to submit their returns punctually is unsatisfactory." The report covers a wide range of subjects.

In every district the birth-rate is markedly below the average for the five years ending 1918, and although defective registration is the cause assigned, the Government does not altogether accept this view and considers that the Sanitary Commissioner should endeavour by intensive examination in selected areas in each district to arrive at some coefficient of error to decide to what extent, if at all, the statistical decline in birth is real. A curious commentary made by the Board of Revenue is quoted—viz., that the registration of vital statistics is less satisfactory in areas where it is compulsory than in areas to which compulsion has not been extended. Public health in 1919 was under all heads much better than in 1918, and the death-rate in many districts was below the average for the previous five years. At the same time a very considerable number of districts and municipalities showed a very high death-rate, and there seems little doubt that influenza continued during 1919 to take its toll of victims over large areas in the Presidency.

Infantile mortality throughout the Presidency is appallingly high, and, as Government remarks, "does not reflect credit on local self-government." In Madras City, in spite of the child-welfare scheme which is now three years old, the rate is 332 per thousand, whilst the Presidency average is 246·2. Cholera accounted for 93,262 deaths, but so long as the provision of protected water-supplies is so backward—45 out of 74 municipalities having no protected supply—it is very unlikely that cholera will be effectively controlled. Moreover, nothing is known of the history and periodicity of the disease even in those areas most susceptible to infection, and this aspect of preventive work must receive attention before any definite policy can be laid down in regard to the protection of water-supplies.

Plague deaths totalled 5645, against 12,859 in 1918, but it is suggested that a more comprehensive programme of preventive measures should be drawn up, including intensive rat destruction, the provision of rat-proof godowns, &c.

General sanitation and conservancy are defective, and few municipalities are provided with a sufficiency of public or private latrines. Of 16 posts sanctioned for health officers only four are filled, as medical men are very reluctant to accept service under municipal councils. Even men qualified as sanitary inspectors avoid service under local bodies if they can get other employment, and this is not surprising when one is acquainted with the complete lack of interest taken in public health even by the more advanced local bodies.

Madras, March 17th.

HUNGARY.

(FROM OUR OWN CORRESPONDENT.)

The University of Kolozsvár (Klausenburg) in Budapest.

As Kolozsvár, the capital of Transylvania, has been in Roumanian territory since the Treaty of Versailles, the University of Kolozsvár (the Francis Joseph University, so named because it was erected at the private expense of the late King of Hungary), has been taken over by the Roumanians in the second half of the 1919-20 school year. The name of the University and the language in which lectures are delivered have been changed. Several professors have been asked to take the "oath of faith," which would have enabled them to retain their positions on understanding that they learnt Roumanian, after ich they would be required to lecture in that guage. Most of the lecturers have, however, refused take this oath, preferring to run the risk of dis ssal. Numerous professors and lecturers have voluntarily left Kolozsvár (Roumania) and have repatriated themselves by coming to Budapest. At the latter city it was a very difficult matter to house the university suitably in view of the great scarcity of available accommodation. The offices of the rector and dean have been placed in the building of a "middle school," but various university institutions are now scattered over the whole city. The great distances to be traversed between them cause serious difficulty in the working of the university, which at present contains 600 students. It is intended to move the university to Szeged or Debretzin. The former city (population about 150,000) has offered two palaces for the buildings, and has guaranteed suitable accommodation for all members of the staff, in addition to promising contributions towards maintenance, amounting to several million kronen. A decision will be reached by the university authorities in September.

A Professor's Relations with Bolsheviks.

In the autumn of last year the Hungarian Government issued an order that investigations should be made into the behaviour of public officials during the period of Bolshevik rule in Hungary. University professors and lecturers have also been considered as public officials, and those found to have shown Bolshevik tendencies were discharged from their positions. After these investigations had been held there appeared in a Budapest daily paper an article headed "Dr. Emil Gross, the Bolshevik University Professor." In this article the professor (who is well known in England, having been president of the Hungarian Section of the International Medical Congress in London in 1913) was seriously slandered. He was said to have erected marble tablets in his clinic to commemorate the visits of princesses who consulted him during the war, but to have taken them down during the Bolshevik revolution. The article also contained the indictment that Professor Gross offered his professional services to Bela Kun, the Bolshevik dictator, as his family doctor. Professor Gross, as a university man, was empowered by the Minister for Public Instruction to take legal proceedings against the writer of the article. The case was heard and the journalist who was responsible for its publication said that it was the work of a medical student, who confessed to having written it, but stated that he had given it to the journalist to edit and confirm the contents before publication. The article had appeared as it was written, however, and the journalist was sentenced to 60 days' imprisonment for calumny and fined the sum of 1200 crowns.

An Interesting Case of Medical Secrecy.

One day during March a venereal diseases specialist, seated in the large warm-water basin in the antechamber to the steam hall of the Turkish baths at Debretzin, recognised in a young man who was about to enter the water one of his own patients who had consulted him two weeks previously for an extensive syphilitic sore on the penis. The physician had ordered him calomel ointment, and, knowing that the sore could not be healed, got out of the water, went up to his patient, and whispered to him that he must not enter the basin on account of his chancre. The man told him that the chancre was already healed, whereupon the doctor remarked that he declined to sit with him in the same basin, and that he would summon the manager of the baths if the other persisted in entering the water against his advice. As the patient refused to comply with the request the specialist sent for the manager and explained matters to him. The latter pointed out that the rules of the public baths prohibited men with wounds, skin diseases, &c., from entering common baths. The young man thereupon dressed himself, went away, and consulted another specialist, who gave him a written certificate that on that day his sore had healed, leaving only a hard infiltration. The young man sued the doctor for trespassing the medical secrecy laws, but lost his case, the court decreeing that the specialist only carried out his professional duty, being right to presume that the chancre had not healed in so short a time, and acting in the interests of the community in so doing.

Persecution of Jewish Students at Budapest University.

A few days ago some women students, believed to be Jewesses, being seated in the front at a lecture by Dr. Paul Háry, professor of physiological and pathological chemistry, were ordered by certain male students to move to the back benches. The incident was reported in a morning paper, and on the following day, after a lecture, a student rose and declared that until the newspaper article had been withdrawn or corrected Jewish students would not be admitted to the lectures. No correction, naturally, did appear, for the article had contained only the truth. The door of the Institute of Physiological and Pathological Chemistry was barricaded against Jews, who were told they would only gain admission by revealing the name of the writer of the article. Professor Háry finally came and persuaded the men concerned, who belonged to the Anti-Semitic Union of University Students, to desist from such measures against their comrades, and undertook to find out who made the matter known to the press, promising to express his reprobation of this publication of the internal affairs of the University.

Foreign Bodies in the Stomach.

In Szombathely a commercial clerk, 19 years of age, recently sought the advice of a club doctor for pains in the stomach; on palpation the latter diagnosed a tumour and sent him to hospital, where X ray examination revealed the presence of material, probably metal, which gave a large shadow. Dr. Peto extracted at the operation 43 wire nails, 3½ inches in length, together with 20 pieces of lead of the same length as the nails. Finally he found among the intestines the blade of a penknife. The aggregate weight of these objects amounted to more than 500 grammes. After being awakened from narcosis the man was asked how the foreign bodies came to be in his stomach, but said he did not know how he could have swallowed them. His relatives stated that he was mentally unbalanced and excessively religious; they thought it probable that he swallowed the objects during his periods of exaltation.

URBAN VITAL STATISTICS.

(Week ended April 9th, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18½ million persons, the annual rate of mortality, which had been 13·9, 13·0, and 13·0 in the three preceding weeks, fell to 12·5 per 1000. In London, with a population of 4½ million persons, the death-rate was 13·4, or 0·2 per 1000 above that recorded in the previous week, while among the remaining towns the rates ranged from 4·1 in Acton, 6·3 in Ilford, and 6·4 in Edmonton, to 17·1 in South Shields, 17·2 in Halifax, and 17·5 in Oldham. The principal epidemic diseases caused 228 deaths, which corresponded to an annual rate of 0·6 per 1000, and comprised 64 from infantile diarrhœa, 57 from diphtheria, 52 from whooping-cough, 38 from measles, 14 from scarlet fever, and 3 from enteric fever. Whooping-cough caused a death-rate of 1·5 in Burnley, and diphtheria of 2·5 in Exeter. The deaths from influenza, which had been 151, 122, and 130 in the three preceding weeks, fell to 97, and included 38 in London and 5 in West Ham. There were 3453 cases of scarlet fever and 2626 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 3535 and 2689 respectively at the end of the previous week. During the week ended April 2nd 5 cases of encephalitis lethargica were notified in the County of London, and comprised 2 in Wandsworth, and 1 each in Camberwell, Paddington, and St. Pancras. The causes of 32 of the 4454 deaths in the 96 towns were uncertified, of which 7 were registered in Birmingham, 6 in London, and 3 in South Shields.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 17·8, 15·3, and 15·5 in the three preceding weeks, fell to 15·1 per 1000. The 343 deaths in Glasgow corresponded to an annual rate of 16·3 per 1000, and included 27 from whooping-cough, 3 from infantile diarrhœa, and 2 from scarlet fever. The 122 deaths in Edinburgh were equal to a rate of 14·3 per 1000, and included 3 from infantile diarrhœa, 2 from measles, and 1 each from whooping-cough and diphtheria.

Irish Towns.—The 154 deaths in Dublin corresponded to an annual rate of 19·0, or 0·2 per 1000 below that recorded in the previous week, and included 4 from infantile diarrhœa, and 1 each from enteric fever and scarlet fever. The 130 deaths in Belfast were equal to a rate of 16·1 per 1000, and included 9 from whooping-cough, 3 from measles, and 1 each from enteric fever and infantile diarrhœa.

Public Health.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

COUNTY OF DERBY.

Dr. Sidney Barwise makes some interesting remarks on the subject of the prevention and treatment of tuberculosis in his annual report for 1919. In common with most parts of England, there has been in Derbyshire during the previous few years an increase in the number of cases of tuberculosis and deaths resulting from the disease. The number of notifications and deaths respectively from all forms of the malady were in 1915, 990 and 557; in 1916, 1098 and 552; in 1917, 1146 and 621; in 1918, 1123 and 667; and in 1919, 1176 and 525. During the last 30 years, however, the death-rate from pulmonary tuberculosis in the county has declined much more rapidly than in England and Wales as a whole.

If any real advance is to be made in the prevention and treatment of tuberculosis, those engaged in the work should have in mind the many unsolved problems connected with the disease and take every opportunity of increasing our knowledge of the subject by observation and inquiry concerning aspects of the question that still remain obscure. As a result of study of the literature, Dr. Barwise gives an excellent synopsis of the more modern views, and allusion may be made to certain of the points discussed by him. Tuberculosis is the most widespread of diseases; it accounts for 10 per cent. of all deaths in England and Wales. It is widely distributed throughout the world. In America it is more common amongst the negroes, although it was almost unknown amongst them while they were in slavery. After the blacks, the Irish suffer most in America, while the incidence of the disease among the Jews is relatively small. Among the North American Indians tuberculosis was unknown while they were uncivilised. In 1896 half of certain tribes had been exterminated, in spite of a birth-rate of 41 per 1000. In nine reservations 66 per cent. of the deaths were from tuberculosis.

A few years ago the generally accepted view was that phthisis was due to inhalation of tubercle bacilli in dust from dried sputum, and that over 50 per cent. of glandular and abdominal tuberculosis was due to the consumption of milk containing the bovine type of the tubercle bacillus. Investigations on the portals of entry into the body of the specific micro-organism have modified our views on this subject. It is probable that the risk of infection from dried sputum is not very great. A leading authority, F. M. Pottenger, has recently described tuberculosis as primarily a disease of the lymphatic system, and there is a considerable amount of evidence in favour of the view that the tubercle bacillus gains access to the body through the tonsils or intestine. The droplets sent out in coughing by a person in certain stages of the disease are probably one of the chief sources of infection. Walsham, in 1903, called attention to the tonsil and the cervical glands as a common channel of entry. He found that in 34 consecutive *post-mortem* examinations on the bodies of patients who had suffered from tuberculosis, the tonsils were infected in no less than 20. Beattie and Dixon express the view that the commonest mode of entry in the human subject—*except in the case of young children*—is by way of the tonsils, and perhaps in some cases by way of the teeth. The bacilli pass to the cervical glands, and into the lungs by way of the peri-bronchial lymphatics. From the root of the lung the path of infection may be outwards and upwards, involving the apex of the upper lobe, or it may spread fanwise and involve the pleura. There is now fairly general agr
with Sanarelli's view that man only survives by
acquired immunity as a result of a mild att
tuberculosis early in life. Support is, of
to this view by the large proportion of bodies
either active or healed manifestations of the

post-mortem examinations made upon persons who have died from other causes.

Having discussed many of the problems in connexion with the transference of the malady Dr. Barwise makes a few practical suggestions on the public health application of the lessons learned. The improvements necessary in housing are better ventilation, better facilities for washing, better places for storage of food. The efforts of health visitors should be concentrated on preventing infection during the first few years of life. The child should not be allowed to crawl on the kitchen hearthrug, but have a clean washable crawling rug, and its hands and face must be washed before each meal. If infected during the first year of life the result is almost always fatal, and children should be removed from tuberculous mothers, as Bang, of Copenhagen removed the calves from tuberculous cows. Again, the campaign against tuberculosis in cattle must be proceeded with, and until milk is available from certified tubercle-free cows, that given to infants under two years of age must be sterilised. We must remember, however, that the child has to acquire immunity. It cannot always be kept wrapped up in cotton-wool. After it has reached the age of 2 years, it should, in Dr. Barwise's opinion, take its risk in acquiring immunity through a localised tuberculosis by allowing it occasional small doses of the ordinary milk of commerce.

COUNTY OF GLOUCESTER.

In presenting his annual report for the year 1919, Dr. J. Middleton Martin again refers to the difficulty experienced in obtaining from the district medical officers of health copies of their annual reports within a reasonable period of the end of the year under review. Many of these were sent to the county council at a very late date, thus impeding the preparation of the annual report for the county as a whole.

The number of births registered in Gloucestershire during 1919 was 5275, giving a rate of 16·4. This is the largest figure since 1916, and there is a distinct tendency toward a return to pre-war rates, though the recovery is as yet by no means complete. On analysis of the figures it is found that, when comparison is made with 1917, which was the year of lowest birth-rate, there has been an increase of only 9 per cent. in legitimate births and of 30 per cent. in illegitimate births. In rural districts the increase in legitimate births is as low as 5 per cent., and the corresponding figure for illegitimate births is 53 per cent. The total death-rates in both urban and rural districts are the lowest recorded since 1914. The rate for the whole county was 14·0, as compared with 13·8 for England and Wales. The statistics for 1919 show that influenza was again responsible for an unusually large number of deaths (335), though for by no means so many as in 1918 (849). Bronchitis was the cause of death in 319 cases, as compared with 234 in 1918, 292 in 1917, and 293 in 1916. The number of deaths ascribed to heart disease was 670, which is the maximum recorded, though not greatly above the numbers for 1917 and 1916, which were 652 and 650 respectively. The number of deaths from pneumonia was 222. From pulmonary tuberculosis it was 235, as compared with 329 in 1918 and 361 in 1917.

RHONDDA URBAN DISTRICT.

Dr. J. D. Jenkins's annual report for the year 1919, though not yet restored to its pre-war dimensions, contains much interesting material relating to the health and sanitary circumstances of the district. The general death-rate for the year under review was 13·1 as compared with a rate of 15·9 in 1918, and an average rate of 14·4 for the previous 10 years. The zymotic death-rate of 0·7 is the lowest for the last 30 years, and is less than half that of the previous year. The infantile mortality-rate was 111, which is rather higher than that for the two previous years. Housing is one [illegible] the chief public health problems in this district. [illegible] tendency to overcrowding which existed before [illegible] war has since become much emphasised. It is [illegible]lable that 1200 tenements give lodgement to more [illegible] two persons per room. As a result of inspection of over a fourth of the houses in the district within recent years it may be stated that between four and five thousand houses intended for the accommodation of single families have become occupied by two or more families per house. Overcrowding is steadily increasing owing to the dearth of houses, and it is estimated that it will be necessary to erect approximately 1000 houses a year to remedy the existing unsatisfactory state of matters in this respect. The majority of existing houses are comparatively new, commodious, and generally fairly well built of native Pennant sandstone, but the number provided with baths forms a small minority. The defects found in the houses that have recently been inspected were, for the most part, in the nature of general dilapidation attributable to inattention or neglect during the war years and consisting of defective walls, roofs, doors, and windows, insufficient or broken yard-paving, and dilapidated sanitary conveniences. Even before the war difficulty was experienced by owners of property in obtaining skilled labour, and this, of course, became progressively greater and ultimately insurmountable during the war years. The position was further aggravated by the increase in the price of building material and by the restrictions imposed upon its purchase. Having regard to these difficulties the Rhondda urban district council, under the provisions of the Housing Acts, 1890 to 1919, have decided to undertake themselves to a greater extent than formerly, the repairs of houses not in all respects reasonably fit for human habitation in instances where the owners fail to comply with the requirements of notices served upon them. Information concerning 115 such houses has been lodged with the surveyor to the council, whose department is entrusted with the work, which is now proceeding in three portions of the district simultaneously.

COUNTY BOROUGH OF BIRKENHEAD.

In the preface to the annual report for 1919 Dr. D. Morley Mathieson, who was appointed as medical officer of health of this county borough on the death of his predecessor, Dr. Sidney Marsden, makes reference to the circular issued by the Ministry of Health in January, 1920, in which it is stated that a survey in annual health reports of existing conditions and arrangements is specially needed at the present moment—

> "to form the basis of that careful and comprehensive scheme of health developments generally which it is hoped may shortly follow, in every locality, upon the recent unification in the Ministry of Health of the various central functions in respect of all matters affecting the health of the people; since this unification of the central administration implies and, indeed, cannot be effective without a corresponding coördination of local health activities."

Dr. Mathieson thinks that the Ministry's pronouncement will be welcomed as indicating a new policy and that it will have the effect of encouraging each local authority to look upon its health problem as a whole. This means getting away from the sectional view that the health of an infant, the health of a child attending school, the health of a tuberculous workman, the health of an expectant unmarried mother, are quite distinct problems calling for separate staff, isolated premises, and different methods. It means realising that all these and many other sides of public health work are essentially one, and that only when the machinery for dealing with them is gathered into one central workshop, and, so to speak, driven off the same shaft, can fully coördinated results be obtained.

Birkenhead occupies an area of 3850 acres, or about six square miles, and is the largest borough in Cheshire. In 1881 the population of the borough was 84,006; in 1891, 99,857; in 1901, 110,915; in 1911, 130,794, and the Registrar-General estimates the population in 1919 for the death-rate at 148,052, and for the birth-rate at 154,226. During the year 3385 births were registered, giving a birth-rate of 21·9 per 1000. There were 2067 deaths and the death-rate was 13·9. The infantile mortality-rate was 102 per 1000 births.

MISS RUTH DARWIN has been appointed a Commissioner (unpaid) of the Board of Control.

Correspondence.

"Audi alteram partem."

PREVENTION OF HEART DISEASE.

To the Editor of THE LANCET.

SIR,—The leading article under this title in your issue of April 9th regrets that while much work is being done on the clinical side of heart disease, the preventive aspect is comparatively neglected, and you commend to us the "thoroughgoing campaign" directed towards prevention and inaugurated in America. Doubtless your advocacy will command general sympathy, but at the best any practical outcome from it will be delayed. In the meantime we must utilise the measures which are at hand. Hence I repeat once more the proposal that the recognition of rheumatic events in any member of a family ought to be an occasion for warning parents of the risks run by their children even from apparently slight illnesses. The mischief in a large proportion of cases of cardiac disease is effected during the non-arthritic forms of rheumatism—tonsillitis, chorea, febricula, &c. Parents do not know this truth, and only when they know it will they realise the importance of giving their children early and complete rest in the disturbances just named. Were this early and complete rest generally practised there is at least a chance that many children would be saved from the terrible misfortune of organic heart disease. The responsibility rests with the medical profession, and it can be discharged by the universal adoption of the course here proposed. For the "national campaign" we needs must wait. But the individual practitioner has his opportunity here and now, and though it does not pretend to heroic possibilities it lies in the line of duty and is not without the promise of reward.—I am, Sir, yours faithfully,

Harley-street, W., April 12th, 1921. C. O. HAWTHORNE.

TREATMENT OF PSEUDO-DIPSOMANIA.

To the Editor of THE LANCET.

SIR,—Although probably every practitioner meets with cases of alcoholism in his practice, it does not appear to be universally recognised that in practically all such cases the only possible course is complete and total abstinence. I have come across so many of these unfortunate patients who have been advised to take one or two glasses a day and no more, with invariable failure, that I venture to write in the hope of saving some of the others from a like fate.

It cannot be too generally known that no case of pseudo-dipsomania (drinking in bouts) can, as a rule, take a single glass without craving following, and that whilst the individual who is liable to chronic alcoholism can for a short time take alcohol in moderation, it is utterly impossible for him to do so for any length of time. It is true that some pseudo-dipsomaniacs require a comparatively large amount of alcohol to start an attack, and that some of these habitually take beer with their meals without an attack, though in every such case which I have seen their period of immunity has been ended by their taking whisky. But in both these two forms total abstinence is the only possible line to take to avoid relapse. It is more difficult to speak with confidence regarding the true dipsomaniacs, who get attacks of craving at regular or irregular intervals, whether they take alcohol or not. Some of them can drink in moderation between their attacks. Some can be radically cured—the only form of alcoholism which can, though few have so far recovered.

In certain cases the attacks always end with a heavy discharge of urates, and I have found that in a few of these a bottle of Contrexéville taken every day for three days running every fortnight, and a saline purgative once a week will keep off attacks for long periods. Six such patients treated in this way have remained well for over six years, one of them who suffered for over 20 years having had no relapse for eight and a half years. In others repressions of various kinds seem to be the acting cause, and cure follows when they are unearthed, either by hypnosis or psycho-analysis. Many of them unfortunately suffer from pseudo as well as true dipsomania, and, of course, in such cases total abstinence is a sine qua non.

Nothing is more pathetic than the struggle against hopeless odds which these unfortunate patients undergo when trying to follow the well meant but fatal advice to take only a limited amount. It is impossible. Their only choice lies between total abstinence and drinking in excess. I am, Sir, yours faithfully,

Welbeck-street, W., April 6th, 1921. HUGH WINGFIELD.

BROMISM THROUGH MATERNAL MILK.

To the Editor of THE LANCET.

SIR,—With reference to an annotation appearing in THE LANCET of April 9th, under the above title, the notes of the following case, which occurred in my practice, may be of interest.

A breast-fed infant of 5 weeks was seen by me on April 11th, 1912, on account of a rash on the face and scalp which began as a single spot on the left cheek on April 4th, and by April 8th had spread over the face and scalp. On April 11th there was a papulo-pustular eruption on the face and scalp, each spot being round, raised on an inflamed base, and covered with a fairly thick dark crust. Most of the places were the size of a threepenny-bit, but three on the scalp were the size of a sixpence. The rash seemed to give the patient pain. Otherwise the child seemed to be perfectly well. The temperature was, and continued to be, normal. On April 13th there was a spot exactly similar to the above on the left wrist. The eruption seemed to me to be a typical bromide rash and difficult to account for, the child being breast-fed. Inquiry, however, elicited the fact that the mother had been taking a mixture of pot. brom. ʒ iss aq. ℥vi. in one table-spoonful doses thrice daily for ten days before the first appearance of the rash and until April 11th. The mother was duly instructed to avoid taking the drug. On the 24th there was a fresh crop of spots similar to the previous, and due apparently to the fact that the mother had, contrary to instructions, been taking the bromide mixture again since the 17th. The diagnosis was confirmed on the 20th by the opinion of a well-known dermatologist who saw the patient, but no examination of the mother's milk for the discovery of bromine was made. Recovery was not complete until the middle of June. A noteworthy feature of the case was the fact that the dose of bromide was only gr. viiss. taken thrice daily for ten days before the first appearance of the rash.

The character of the eruption was exactly that which is not infrequently seen in infants who are taking bromide as medicine by the mouth, but previous to this case it had not fallen to my lot to see a case where bromism had been produced apparently by administering bromide to the nursing mother.

I am, Sir, yours faithfully,

Streatham, S.W., April 9th, 1921. HARRY E. SMITH.

THE DIPHTHERIA SWAB ON DISCHARGE.

To the Editor of THE LANCET.

SIR,—There seems to be some confusion between the financial and clinical value of the diphtheria swab on discharge. If the cost is not considered, I do not think anybody would maintain that we should not obtain information from any method that may be available, and in this connexion it is well to remember that a positive result has a clinical as well as an administrative value, in enabling treatment to be directed to the infected area. When in charge of the Manchester City Fever Hospital I found that many diphtheria convalescents had positive noses and negative throats, and that the attention thus directed to the nose enabled one to adopt useful measures for ridding the patient of the bacilli. Surgical treatment, both in the throat and nose, was often necessary and successful.

Financially, the cost of the examination of 200 swabs in a central laboratory costs less than the hospital treatment of one return case. I do not think anyone will deny that—as pointed out by "M.O.H." in your last issue—the swabbing of convalescents does sometimes diminish the incidence of return cases, and in my own experience this influence was both beneficial and well marked. The bacteriology can be done more *cheaply* by an assistant medical officer of health because he is not paid much—if at all—for the work, but the advocates of this procedure do not always seem to realise that something more than a microscope and appropriate stains are necessary. It is in the preparation and accurate standardisation of media that the central laboratory has the advantage.

I am, Sir, yours faithfully,
A. KNYVETT GORDON, M.B.
Bedford-square, W.C., April 9th, 1921.

THE FIGURES OF VENEREAL DISEASE.

To the Editor of THE LANCET.

SIR,—My fault. I am sorry. The increase of 23,000 V.D. cases was "*at the London hospitals,*" not "*at the London Hospital.*" I misread my brief.

I am, Sir, yours faithfully,
April 9th, 1921. KNUTSFORD.

VENEREAL INFECTION IN RHINE ARMY.

To the Editor of THE LANCET.

SIR,—In a letter of mine you recently published (March 26th) I showed how very much better the American Forces in Germany were *in their control of* venereal infection than were the British Forces. The American rate I quoted was for the period January–October, 1920—viz., 142 per 1000 per annum. This rate has now been considerably reduced, and for the period Nov. 1st, 1920, to April 1st, 1921, the American rate is 114 per 1000 per annum. The lowest rate officially stated for the British Forces is 168 per 1000 per annum for the period Jan. 1st, 1920, to Jan. 31st, 1921, and the highest rate, quoted semi-officially, is that given by Dr. E. B. Turner in November last—viz., 500 per 1000 per annum.—I am, Sir, yours faithfully,

ETTIE A. ROUT,
Late Hon. Secretary, New Zealand Volunteer Sisters.
April 11th, 1921.

THE VALUE OF THE QUASI-CONTINUOUS TEMPERATURE RECORD.

To the Editor of THE LANCET.

SIR,—Since our paper on the Value of the Quasi-Continuous Temperature Record in the Early Diagnosis and Prognosis of Tuberculosis appeared in THE LANCET of March 19th we have received a number of inquiries as to how we take these temperatures—one as to whether it is not very disturbing to the patient to have his temperature taken at such short intervals. May we point out *that the method of taking* these temperatures was described in THE LANCET of Feb. 5th and 12th, 1916, and that the records published in our last paper are simply in continuation of work begun some eight years ago? The thermometer used—a rectal thermometer—is left in position for 24 hours or more (the patient lying in bed), except when the patient has to use the night-stool. One of us lay in bed with the thermometer in position for the greater part of six weeks. All aver that they experience no inconvenience even when the thermometer is left *in situ* for several days. The process of recording the temperature is purely mechanical and automatic.

We are, Sir, yours faithfully,
G. SIMS WOODHEAD.
P. C. VARRIER-JONES.
Cambridge, April 11th, 1921.

A CONTROLLED STUDY OF SANATORIUM RESULTS.

To the Editor of THE LANCET.

SIR,—If all investigations and trial of new methods of treatment were carried out with such patience and control as Dr. E. Ward has shown in his article in your issue of March 12th, it would be better for all concerned—viz., the patients, the doctors, and the State. Dr. Ward, who may be supposed to have begun his work with a prejudice in favour of sanatorium methods, has published his conclusions with a candour that is convincing. My own experience distinctly supports his experience. It is to be hoped that his article will be read by the lay enthusiasts who have been misled by the lay press, and especially by members of county councils and insurance committees, who can hardly listen to a suggestion that sanatoriums have failed to do a tithe of what was promised. I cannot help thinking that if much of the money which has been spent on sanatoriums had been used to enforce by-laws regarding fresh air and sunlight in cottages we should have had better results.

I am, Sir, yours faithfully,
Plymstock, April 6th, 1921. S. NOY SCOTT.

A FATAL CASE OF CŒLIAC INFANTILISM.

To the Editor of THE LANCET.

SIR,—Dr. R. Miller, in presenting in your issue of April 9th *the view of* cœliac disease that he supports, might, I think, have referred to the fatal case published by Dr. Hugh Paterson and myself in THE LANCET, 1914, i., p. 1533, *under the title,* "*The Occurrence of* Ascites of a Non-tuberculous Origin in Chronic Recurrent Diarrhœa in Childhood." I believe it to be in this country the first complete proof by necropsy of a clinical sign which is well recognised in the cœliac affection, though perhaps hardly yet generally appreciated. Ascites is so intimately associated in our minds with abdominal tuberculosis in childhood that its occurrence in a wasting disease with diarrhœa tempts us strongly to decide that the condition must be tuberculous. *The* completion of the proof of its non-tuberculous nature is thus, I think, worth a reference in a paper dealing with the necropsies upon cases of cœliac disease. It is *of some interest that a* wide-spread leucocytic infiltration of the intestinal walls and pancreas was found in this case as in the one criticised by Dr. Miller in his paper. There is no doubt that Dr. Miller has made a valuable contribution to the subject by publishing his case, which was investigated by a skilled pathologist; whether his conclusion that the disease is "a digestive fault" independent of organic affection is correct the future must decide, though in my opinion he does not gain by ruling out cases described by others which he had no opportunity of seeing himself. My experience of cœliac disease has been that it may appear suddenly in classical type or follow upon a definite entero-colitis; *it may* be complicated by a subsequent entero-colitis or by serious constipation with great atony of the bowel. Is it "independent" of organic change? Possibly; but I still think we require more research upon the subject, and prefer to suspend my judgment.

I am, Sir, yours faithfully,
F. JOHN POYNTON, M.D.
Devonshire-place, W., April 9th, 1921.

LUNACY IN EGYPT.

To the Editor of THE LANCET.

SIR,—I notice that in THE LANCET of March 12th, p. 553, under this heading there appears the statement that "at Khanka are received the more quiet patients and no women, a rather special class." As this statement *may give a wrong* impression of the type of cases admitted nowadays to Khanka Hospital for the Insane, may I point out that the classes of cases received at the two Egyptian hospitals for the insane are as stated on p. 3 of the report under review:—

> "Abbassia Asylum receives all female cases, all criminal cases, all paying cases, and male cases arising in Cairo. Khanka Asylum receives all non-criminal pauper male cases arising in Egypt except in Cairo."

Thus the cases admitted to Khanka Hospital include all types of insanity among men.

Prior to 1917, owing to deficient means of communication, Khanka Hospital only received cases transferred from Abbassia Hospital, but since that date patients are received direct from their homes. The admissions at Khanka Hospital, therefore, comprise all types of insanity occurring amongst the population of Egypt similar to male asylums in other countries.

I am, Sir, yours faithfully,
H. W. DUDGEON,
Director, Khanka Hospital for the Insane.
March 31st, 1921.

CORPORAL PUNISHMENT IN SCHOOLS.

To the Editor of THE LANCET.

SIR,—The report of the joint conference of the Medical Officers of Schools Association with representatives of educational associations in your issue of April 2nd (p. 699) contains an inaccurate summary of my speech. I am there represented as stating that I "used two-hour periods of detention, which had resulted in corporal punishment becoming obsolete, not because it was not wanted, but because there were persons who could not be trusted with it." The inference would naturally be made that there were persons (presumably masters, though here the headmaster is the only person who may inflict corporal punishment) of the kind referred to, in this school. That is not so. What I said was (1) that I hoped that corporal punishment *generally* would eventually become obsolete, because I had heard of or come across persons in the course of my experience (both masters and "prefects") who were not fit to be trusted with the power of inflicting it; (2) that the weekly two-hour periods of detention, available only for house masters (acting on their own behalf or on reports made by class masters) have so far resulted in corporal punishment becoming unnecessary. It still remains in reserve as a final resort.—I am, Sir, yours faithfully,

GUY KENDALL,
Headmaster, University College School,
April 10th, 1921. Frognal, Hampstead.

TREATMENT OF DISABLED SOLDIERS: WORK OF THE MINISTRY OF PENSIONS.

To the Editor of THE LANCET.

SIR,—There are some members of the medical profession who are not in the way of treating disabled soldiers, but who will be interested to hear what is done for their treatment and recovery by the Ministry of Pensions, whose good work for the disabled is, besides, not sufficiently made known to the public, who only hear the complaints that are made, made often without sufficient cause. A soldier who becomes unfit for service is "boarded," a sailor is "invalided" and discharged as permanently unfit. The board fills up a treatment card for him if it thinks good, and when he returns to his home he is visited by an emissary of the Local War Pensions Committee, and is put in touch with the person or institution which can give him the treatment required. If the board has found he requires no treatment just now, but yet a little later he becomes uncomfortable and complains to his Local War Pensions Committee, it has him examined by a local medical man on behalf of the Pensions Ministry, who, if he finds the trouble is the consequence of a disability contracted in the service and due thereto, will get for him the treatment that his condition needs, medicine, appliances, massage, electrical or sanatorium treatment, or he may send him to a pensions hospital should indoor treatment be required. The pensions hospital is a large well-staffed and well-equipped institution. I have one now in mind which had 600 beds established in an emergency hospital built for the war on the sunny slope of a hill in charming surroundings. It had a medical superintendent with some eight other officers resident, and a dozen visiting specialists in surgery, medicine, X ray, ear, eye, massage, electrical, and so on, each of whom had a well-equipped department at his control; the nursing is done by the Ministry of Pensions Nursing Service, and, if I may judge by the cleanliness of the wards and the evident care of the nurses dealing with disabled patients, the work of that Nursing Service is very well performed. Officers and other ranks are received, and so far as possible cured. But more is attempted than physical cure. Reconstruction is also a prominent aim. There are workshops and schools. Men are trained as basketmakers, carpenters, mechanics, tailors, shoemakers, bookkeepers, photographers, painters, &c. They are taught how to raise and care for fowls and other farm stock. There is a capital splint-room and a workshop for making artificial limbs. They cannot be doing work all the time, they have their prescribed treatment as their first duty; the man you see as you pass with his forearm in the whirlpool hot bath would have been found, had you come in the afternoon, in the shoemakers' shop, and so on. Insane patients are not received, but there are wards for consumptives, well isolated. The men, who wear their own clothing, not uniform, appeared well-fed and happy, the staff were cheerful and good-natured, there was a good recreation-room with a small stage, and a clean, well-kept dining-room. The public would be satisfied if it knew how much thought and care is being given to the treatment and reconstruction of its disabled heroes, and I recommend others to do, as I have just done, and see over one of these centres.

I am, Sir, yours faithfully,
March 29th, 1921. D.SC.

Obituary.

J. HOPKINS WALTERS, M.R.C.S. ENG.

IN Dr. J. Hopkins Walters, who died at Reading on March 4th, at the age of 76, there passes a notable character. Dr. Walters was educated at Guy's Hospital and practised during his earlier days at Faringdon, Berks. In 1878 he moved to Reading, where he speedily became one of the leading practitioners in the town—a position which he held until his retirement in 1913. He was on the active surgical staff of the Royal Berks Hospital from 1879 to 1904, and subsequently was appointed consulting surgeon. He was President of the Reading Pathological Society for two years. In his younger days he was a keen sportsman and good shot; he also took a great interest in the Volunteers, in which for many years he was a surgeon-captain. In local politics he was prominent, sitting for a considerable period on the Reading Town Council, where he was a formidable adversary in debate and prompt in action. Temperamentally a fighter, he was not afraid of stating his views, often original and always founded on reason, in vigorous and, at times, picturesque language. Dr. Walters, though of the older school of medical men, was readily receptive of new ideas, and up to the time of his retirement was more up to date than most practitioners of his years. Even after he relinquished active practice in Reading he made a voyage half-way round the world as ship's surgeon. On the outbreak of war he volunteered for various posts which the authorities, on account of his age, were unable to grant him, and he eventually acted as medical officer to the regiment quartered in the town and to two V.A.D. hospitals. He was a good speaker and a versatile writer, both in the medical press and as a controversialist in lay journals.

On the eve of his death he had seemed in better health than usual, and, indeed, played a game of billiards at his club. Death occurred suddenly in his sleep, as he had always desired—he was ever impatient of illness in himself. Like all able men of his type, he had some enemies and very many friends.

CHARLES ALBERT HINGSTON, M.D., B.SC. LOND.

Dr. C. A. Hingston's death at Plymouth on April 5th removes a well-loved practitioner who was also a wise and generous philanthropist. Son of the late Dr. Charles Hingston, he was born at Plymouth in 1843, and after being educated locally, entered as a student at St. Bartholomew's Hospital, London, and matriculated at the London University. On graduating M.B. in 1864 he joined his father in partnership, taking his M.D. and B.Sc. degrees a year later. His public appointments included that of consulting physician to the Plymouth Public Dispensary and Dental Dispensary, and physician to the Ear and Throat Hospital, Plymouth, and to the Devon and Cornwall Female Orphan Asylum. Dr. Hingston was particularly interested in the Y.M.C.A. movement and did much to put its local branch on a firm financial basis, presid[illegible] himself over the South-Western District of the A[illegible]tion. He made himself responsible for [illegible]ding [illegible] Crownhill Convalescent Home, and he [illegible] £5000 on a lodging-house for tramps. He will be missed in and around Plymouth.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Medical Committee of the House of Commons.

THE Medical Committee met on April 11th at the House of Commons. The following resolution was put and passed unanimously:—

> That the medical Members of the House of Commons express their cordial appreciation of the services of the Right Honourable Christopher Addison, M.P., as Minister of Health, and congratulate him on the excellent work he has done as the first Minister in the *face of many difficulties.* They wish to place on record their admiration for his zeal and devotion to duty, and his untiring work in the interests of public health.

The Public Health Officers (Security of Tenure) Bill was discussed, and the Committee decided to lend it their support. The Coroners Bill was considered, and it was decided that when this Bill reached committee a new clause should be moved to increase the fees paid for post-mortem examination and medical evidence. The Tuberculosis Bill and the Health Estimates were then considered. The Dogs Bill was discussed, and opposition to it was agreed upon unanimously.

Public Health (Tuberculosis) Bill.

On Wednesday, April 13th, Sir A. MOND (Minister of Health) moved the second reading of the Public Health (Tuberculosis) Bill, a measure the object of which is to transfer the institutional treatment of tuberculosis from the National Health Insurance Commissioners to the County and Borough Councils. The Bill was read a second time.

HOUSE OF COMMONS.

TUESDAY, APRIL 5TH.

The Case of Dr. Denning.

Mr. MONTAGU, Secretary for India, in reply to Mr. T. GRIFFITHS, said that the new Reform Act now in force in India in no way affected the pre-existing right of a British-born subject to sue for breach of contract for personal service in India. Contracts for service under the Government of India were made with "the Secretary of State in Council." Such subject would presumably sue the Secretary of State in Council in respect of a breach either in India or in this country. The action could be brought in India or in this country, according to circumstances. The position would remain unaltered in so far as an officer certified by the India Office Medical Board to be incapacitated for further service in India was not regarded as necessarily entitled to know the medical grounds on which such a certificate was given. Such contracts were not subject to the will and pleasure of the Crown, except that the Crown had in law the right to dispense with the services of its officers, and it would not be in the power of the Secretary of State in Council, or of a Government in India, to alter the law in this respect, or to limit this right of the Crown when entering into such contracts. The Secretary of State in Council would remain the authority for the recruitment of those services which were now known as "all-India services"—such as the Indian Civil Service, the superior police service, the Indian Educational Service, and so forth—and consequently would remain the contracting parties for these. Recruitment in this country of Services, the members of which were not to be appointed and controlled by provincial governments, would probably be made over for the most part to the High Commissioner for India, and he would necessarily, subject to instructions he received from the authorities in India, for whom he was acting, have power to contract on their behalf, but in the name of the Secretary of State in Council. It would, therefore, still be open to officers like Dr. Denning to sue the Secretary of State in Council.

WEDNESDAY, APRIL 6TH.

Local Rates and Public Health.

Colonel BOWLES moved "That a Select Committee of the House of Commons be appointed to inquire into the incidence of local rating by public authorities and to make a report." The present Prime Minister, he said, when Chancellor of the Exchequer in 1911, set up a Departmental Committee on local taxation, and that Committee reported that since the time of the Royal Commission, which reported in 1901, the following expenses had been placed on the rates: National Insurance for Tuberculosis Sanatoriums, provision of meals for scholars, provision for medical inspection in schools, asylum officers' superannuation, &c. Since 1911 there had been a great many further demands upon local authorities for the Mental Deficiency Act, the Venereal Disease Act, &c. He felt that it was rather hopeless for him to attempt to indicate exactly what line the Government should take in this matter. He understood, however, that the question was receiving the attention of the Government, and he hoped that it would be dealt with promptly.

Lieutenant-Colonel Sir A. WARREN, in seconding the motion, *pointed out that if the business of the House had followed the* course set down, there would have been a discussion on the previous day on the second reading of the Public Health (Tuberculosis) Bill which was a measure to transfer the institutional treatment of tuberculosis from the National Health Insurance Commissioners to the local authorities of the country. It was estimated that the additional services under the Bill would involve expenditure out of public funds of £40,000, of which £20,000 was to be met by the Exchequer, and £20,000 from the rates. Why should this expenditure be put on the rates? Surely if there was one question that could be regarded as eminently national it was the white plague, tuberculosis. In his opinion the time had come when the question of the rates had got to be seriously considered, and when some measure of protection had to be set up for the unfortunate ratepayers throughout the country.

Mr. MYERS said the Labour Party would support the motion, but for perhaps quite different reasons from some of those which had been already advanced. The present method of assessment in respect of local rates was very largely antiquated and out of date. Take a professional man—a medical man, solicitor, architect, or a man of that kind. He occupied perhaps very small premises in a side street, and made, say, £1000 a year. The business man making a like sum was mulcted in rates out of all proportion to what the professional man had to pay, and there was no equity in an arrangement of that character. In every Act of Parliament that came through the Ministry of Health or any of those departments that had to deal with local government more and more calls were being made on the local authorities. In 1914 the average rate per head of the population in England and Wales was £1 18*s.* 11*d*; in 1919 it was £2 5*s.* 1*d.*, an increase in five years of 6*s.* 2*d.* per head. In the same period the Government grants were: In 1914 *an average per head of the population of* 12*s.* 4*d.*; and in 1919 15*s.* 1*d.*, or an increase of 2*s.* 9*d.* He suggested that at the present time local rates had nearly reached breaking point, in so far as they were imposed upon houses and similar property. He held the view that one of the sources of new revenue that they had got to tap was the *taxation of land values. The Government themselves had* reached a point when they were trying to impose upon local authorities for the purpose of reducing the rates a very undesirable policy, which in the long run would operate both against the local authorities and the community as a whole. The two circulars which had reached *the local authorities from the Ministry of Health and* the Board of Education were nothing less than a public scandal, and they moved in the direction of national suicide. To attempt to economise upon education and public health for the purpose of keeping down the rates in his judgment bordered on national imbecility, and no House of Commons ought to countenance or encourage the general principles which underlay those two circulars.

Major GRAY said it was useless for the local ratepayer to expect much sympathy from that House when he would not make the least effort at elections to see that fitting persons were returned to take part in the work of local government.

Sir A. MOND (Minister of Health) said when they looked at the increase in the rates in this country from a total sum of £71,000,000 for 1913-14 to £149,000,000 for the financial year just ended, the figures were apt to stagger one, but they had to consider the fact that the value of money had very much diminished. It was not really the case that the reason for the increase in the rates was to be found in the number of large and heavy burdens which had recently been imposed on local authorities by new legislation. The real cause was of a much more normal and automatic character. The new work which had been imposed upon local authorities by health developments—in regard to tuberculosis, venereal disease, maternity and child welfare—did not amount to more than a 2½*d.* rate throughout the country. Not that he felt that new services, even of small amounts, should lightly be thrust upon local authorities at the present time. As Minister of Health, it was his firm intention to endeavour to avoid all unnecessary expenditure in the very difficult financial circumstances in which they now found themselves. Good strict administration and the application of the best intelligences in localities to their own affairs would do more in the long run for increased efficiency and lower rating than any juggling with local taxation. He had not yet had time to go fully into the matter, but a strong Cabinet Committee had been appointed by the Prime Minister to take up the question with the purpose and intention of introducing legislation next session. He thought they would proceed more quickly on those lines than by appointing a Select Committee.

After further discussion the House divided, and the motion was negatived by 49 votes to 48. The result was received with laughter.

Royal Naval Hospital at Yokohama.

Commander BELLAIRS asked the Secretary to the Admiralty whether the Admiralty could take steps to abolish the Royal Naval Hospital at Yokohama as a needless source of expense.—Mr. AMERY replied: The Royal Naval Hospital at Yokohama is required for the reception of convalescent cases from Hong-Kong to remove them from the period of hot and damp weather experienced there. Its abolition would result in a larger number of cases being invalided home from the China station with the consequent inconvenience and expense. I am therefore unable to agree with the view of my honourable and gallant friend that the hospital is a needless source of expense.—Commander BELLAIRS: Is my honourable friend aware that though this hospital has something like 80 or 90 beds in the year 1920 not a single patient was accommodated, and the maximum number accommodated in recent years was only eight; and is it not ridiculous to have such expense maintained?—Mr. AMERY: I noticed those figures, and was struck by them, but I understand that the reason was that the hospital was not open last year at the time when patients from Hong-Kong are usually sent there; but I will inquire further into the matter and see if any economy can be effected.

Dr. Addison's New Post.

Mr. CHAMBERLAIN (Leader of the House), replying to Major KELLEY and Major C. LOWTHER, said that the Minister without portfolio received a salary of £5000 per annum. He had attached to him two civil servants drawn from the Ministry of Health. He would discharge duties analogous to those performed by Sir L. Worthington-Evans and Mr. G. N. Barnes when they held a like post. In the present pressure of public business there was definite need for a Minister of Cabinet rank unburdened by departmental duties, and the work of his colleagues in that capacity was most valuable. No time had been fixed for the duration of the appointment.

Financial Aid for the Hospitals.

Colonel MILDMAY asked the Minister of Health whether he was taking any action, in accordance with the recommendations of the Interim Report of Lord Cave's Committee, with reference to the disposal, in the interests of hospitals, of the surpluses of Approved Societies.—Sir A. MOND replied: A copy of the Report has been sent to every Approved Society with a covering letter, in which the society is urged to give its serious consideration to the question of using part of its disposable surplus (if any) in making payments towards the cost of the treatment of its members in hospitals. The right honourable and gallant Member is, of course, aware that this is only one of many additional benefits which it is open to societies to provide.

Education of an Epileptic Child.

Sir BURTON CHADWICK asked the President of the Board of Education whether he was aware that the local education authority for Barrow-in-Furness, after having tried without success to obtain a place for an epileptic child in England, had now obtained a place for that child in a certified school in Scotland; whether the Board of Education had declined to sanction contribution towards the maintenance of that child on the ground that they were precluded by law from authorising such contribution; whether, if the Board had so declined, the legal ground on which the objection was made was that the certified institution willing to receive the child was in Scotland; and whether, the Board having stated that they recognised there was at present no vacancy in any certified school in England, it was possible for the authority, under the extraordinary condition, to contribute to the educational training and care of this child in a certified school in Scotland pending a vacancy arising in a certified school in England.—Mr. FISHER replied: The institution to which the honourable Member refers is not a certified special school, and is not recognised by the Scottish Education Department. The answer to the second part of the question is in the affirmative. A local education authority in England and Wales is precluded under Section 2 of the Elementary Education (Defective and Epileptic Children) Act, 1899, from educating an epileptic child in an institution not certified by the Board.

Dr. Denning's Contract.

Mr. ROBERT RICHARDSON called the attention of the Secretary of State to the stricture of a judge on the form of contract relied upon by the plaintiff in Denning v. the Secretary of State for India and asked whether he was aware that in certain respects the new form of contract was open to similar criticism.—Mr. MONTAGU replied that assurance had been given by the Attorney-General that the judge's remarks would receive attention, and pointed out that the new contract differed from the old in stating more explicitly that services may be terminated on account of medical evidence.

Mr. THOMAS GRIFFITHS asked the Secretary of State for India whether he was aware that Dr. Denning contended that the medical evidence, upon which his contract of service had been prematurely terminated, was wrong in fact and false in deduction; inasmuch as, while the position of the India Office was that Dr. Denning had developed cardiac disease after an attack of malaria in India, his condition was consequent on rheumatic fever at the age of 14, and was present when he was passed for service in India. Further, Dr. Denning declared that an eminent medical specialist considered that functional efficiency was not impaired.—Mr. MONTAGU replied that while Dr. Denning alleged that his condition was present in 1909 when he was passed for service in India by a medical board, he (Dr. Denning) at that time had signed a specific declaration that to the best of his knowledge and belief he was not afflicted with any form of disease.

Mr. SPOOR asked the Secretary for India whether the main difference in the new and old forms of contract for service in India was to make it clear that the officer served at the will and pleasure of the Crown, but that the new form of contract contained no provision safeguarding a civil servant against injustice through departmental blunders; and whether he would consider the advisability of arranging for future cases of dispute to be referred to an independent tribunal, and so avoid departmental mistakes inadvertently ruining the careers of able men and losing their services to the Indian Empire.—Mr. MONTAGU replied: The relevant point of difference between the present form of contract and that which was in use in 1909 is that the present form states explicitly a condition, which in the earlier form was contained by reference to the Civil Service Regulations—namely, that service may be determined by reason of medical unfitness on the report of a duly constituted advisory medical board. I do not understand the honourable Member's references to departmental blunders and mistakes and do not consider it necessary to insert any provision purporting to safeguard a civil servant against their occurrence nor to take the action suggested in the second part of the question.

THURSDAY, APRIL 7TH.

Cost of Pensions Administration.

Lieutenant-Colonel ASSHETON POWNALL asked the Minister of Pensions what was the total spent by his Ministry on central administration, local committees, in his estimates for 1921-22; and what proportion such administrative expenses bore to the total sums disbursed in pensions.—Mr. IAN MACPHERSON replied: In the Ministry's estimates for the year 1921-22 provision is made for the sum of £4,386,000 for cost of administration. The sum is made up as follows: headquarters and regional establishments (other than medical), £3,052,000; local committees, £1,334,000. The total sum is approximately 4 per cent. of the amount disbursed in pensions, allowances, and treatment.

Discharged Soldiers and Heart Disease.

Mr. RAPER asked the Minister of Pensions if the sum of £46,000 had been saved in pensions and grants to discharged soldiers suffering from heart disease; and what was the nature of the medical discovery by means of which this saving was effected.—Mr. IAN MACPHERSON replied: I have no knowledge of the figure referred to in the first part of the question. A sum of nearly £4,000,000 a year is at present being paid to men who are pensioned for heart disease. Every effort is being made by the establishment of cardiological clinics with improved methods of diagnosis and treatment to restore the health of men who suffer from this complaint.

Medical Care Allowances for Veterans.

Mr. WILLIAM GRAHAM asked the Minister of Pensions whether his attention had been directed to the hardship of men disabled in former wars being denied treatment allowances for their dependents during the period of medical care in connexion with their disablement; whether such treatment allowances for dependents were accorded to men disabled in the late war, although they had married after disablement; and whether it was proposed to continue this distinction against veterans and others disabled in former wars.—Mr. IAN MACPHERSON replied: The warrants and regulations of the Ministry of Pensions make no provisions for the medical treatment of men disabled in former wars, and it is only in exceptional cases that a man would need treatment at this date for a disability incurred so long ago. The question has, however, recently been raised in connexion with certain tropical diseases and is now under consideration.

Washington Maternity Convention.

Mr. CLYNES asked the Prime Minister whether, in view of the importance of the Washington Convention on Maternity, and also of the opinion that the Draft Convention of the Washington Conference must be submitted to Parliament, an opportunity would be given at an early date to discuss the Government's policy on the convention, and also the Ministerial declaration that it was for the Government to decide whether any particular convention should be submitted to Parliament.—Mr. Lloyd George replied: In view of the great pressure of Parliamentary business, I regret that I cannot at the present time make any definite arrangements for such a discussion, and I must remind my right honourable friend that it formed the subject of a discussion on March 22nd.—Mr. Clynes: If the Prime Minister cannot at present give an assurance for an early date, can he assure us that if things improve in the next week or two he will reconsider it?—Mr. Lloyd George: We will consider it afresh; yes.

Motor Traffic Regulations.

Mr. Alfred T. Davies asked the Minister of Transport whether his attention had been called to the urgent need for codifying and simplifying the numerous regulations for motor traffic; whether any representations on the subject had been made by the police authorities; and whether he would consider the practicability of issuing such a codification of the regulations at an early date.—Mr. Arthur Neal (Parliamentary Secretary to the Ministry of Transport) replied: I would refer my honourable friend to the answer given on Feb. 24th to the honourable Member for Wallsend relating to the matters at present under consideration by the Departmental Committee on the Regulation of Road Vehicles. I am sending a copy of this answer to my honourable friend. My right honourable friend the Minister of Transport is awaiting a further report from the committee before taking any steps to promote legislation.

Salaries of Ministry of Health Secretaries.

Lieutenant-Colonel Sir Frederick Hall asked the Minister of Health what was the salary and other emoluments paid respectively to the Secretary to the Ministry of Health and the Second Secretary on the appointments originally being made; what was the date of such appointments; what were these officers being paid at the present time; and was it contemplated making any increase either in their salaries or in any other manner in the near future.—Sir A. Mond replied: The salary and bonus of the First and Second Secretaries of the Ministry of Health when the appointments were originally made were respectively: First Secretary, salary £2000, war bonus £300; Second Secretary, salary £1700, war bonus £300. The date of these appointments was July 1st, 1919. The present salaries and bonuses are as follows: First Secretary, salary £3,000, war bonus £500; Second Secretary, salary £2200, war bonus £500. These increases in scales of salary are, of course, not confined to the Ministry of Health, but were approved by the Government for that and other large Departments of State in pursuance of the Report of the Committee (Mr. Asquith, Sir James Maclay, and Lord Colwyn) appointed to advise on the salaries of the principal posts in the Civil Service. The answer to the last part of the question is in the negative.

Stafford Asylum Officials.

Mr. James Wilson asked the Minister of Health if his attention had been drawn to the action of the visiting committee of the Dudley Board of Guardians in threatening to dismiss two of its officials at the Stafford Asylum for writing to the local press; and whether he will make representations to the guardians concerned on the matter.—Sir A. Mond replied: My attention has not previously been drawn to this case, but I will make inquiries and communicate the result to the honourable Member.

Standard for Unsweetened Condensed Milk.

Mr. Grattan Doyle asked the President of the Board of Trade if he was aware of the proposed standard for unsweetened condensed milk being about 12½ per cent. below the minimum cream contents recommended by the great weight of evidence heard by the subcommittee appointed by the Minister of Health; whether this was against trade interests in this country; whether it would tend to increase unemployment here; whether he was aware that the standards proposed by the condensed milk industry, manufacturers, importers, and the trade in this country were based upon the description officially given to this article in the public Chemists' Report for many years; and whether he would use his influence with the Minister of Health to fix a reasonable standard which could be met by producers in this country, and which importers should be required to reach if they desired to trade here.—Sir Philip Lloyd-Greame replied: I am aware that the proposed standard for the minimum cream contents in unsweetened condensed milk is lower than that recommended by English makers, but I am unable to accept the various suggestions made by my honourable friend. In determining the proposed standard, consideration had to be given, not only to the interests of British manufacturers, but to those of other sections of the trade, and still more to the necessity of maintaining at competitive prices adequate supplies for the requirements of the country.

MONDAY, APRIL 11TH.

Air-space in Dartmouth Dormitories.

Mr. Rawlinson asked the Secretary to the Admiralty the minimum amount of cubic air-space per boy allowed in the dormitories at Dartmouth next term when the proposed number of 589 cadets came into residence; and whether the Admiralty had been advised by their medical advisers that the amount of cubic air-space per boy was inadequate, and that in their opinion the reception of 589 cadets at Dartmouth would lead to overcrowding, and would be dangerous to the health of the cadets.—Mr. Amery replied: Reliable information is not available as to the minimum amount of cubic air-space allowed in any one particular case, as this necessarily depends upon the configuration of the dormitories and the arrangement of the beds. The number of boys at Dartmouth during the summer term, however, is not now expected to be more than 585, and this number allows of an average of about 750 cubic feet for each boy. The variation in the different dormitories is likely to be small. While this average is slightly below what would be considered desirable in normal circumstances, the amount allowed can, in the opinion of the Admiralty, be accepted for the summer term, when the amount of ventilation possible is greater than in the winter months. For the autumn term the average amount of air-space per boy will be increased to over 800 cubic feet. The dormitories at Dartmouth are better situated than those at Osborne, as they are not on the ground floor.

Institutional Treatment of Tuberculosis.

Mr. Trevelyan Thomson asked the Minister of Health the number of county and county borough councils which had made arrangements for the institutional treatment of non-insured tuberculous persons in their areas, and the number which had not made such provision for non-insured persons.—Sir A. Mond replied: 143 of the 145 county and county borough councils in England and Wales have made arrangements for the institutional treatment of non-insured tuberculous persons, but in one case the provision so far made only extends to dispensary treatment.

After-care Committees for Tuberculous Persons.

Mr. Trevelyan Thomson asked the Minister of Health the number of county and county borough councils for which he had approved schemes for the appointment of after-care committees for dealing with insured and non-insured tuberculous persons in their areas.—Sir A. Mond replied: The schemes of 27 county and county borough councils for the appointment of committees of this kind have been approved by the Ministry of Health or their predecessors.

Accommodation at Hong-Kong Hospital.

Commander Bellairs asked the Secretary for War the maximum number of patients that could be accommodated at the Hong-Kong Military Hospital; what were the maximum and minimum numbers accommodated in 1920; and what arrangements were made elsewhere, if any, for convalescent patients.—Sir L. Worthington-Evans replied: The maximum number of patients that can be accommodated at the Military Hospital, Hong-Kong, is six officers and 160 other ranks, but only four beds for officers and 122 beds for other ranks are at present equipped. The highest number of patients accommodated on any one day during 1920 was 64 in May and the lowest number was 25 in December. I am not aware of the arrangements at present existing for convalescents in Hong-Kong, but inquiries are being made. Prior to the war the sanatorium barracks were used as a convalescent centre.

Public Health (Officers) Bill.

Sir P. Magnus introduced a Bill "to amend the law relating to the tenure of office of medical officers of health, sanitary inspectors, and inspectors of nuisances, and for other purposes." The Bill was read a first time.

TUESDAY, APRIL 12TH.

Child Adoption.

Mr. Neville Chamberlain asked the Secretary for the Home Department whether he had yet received the Report of the Departmental Committee on Child Adoption, presided over by Sir Alfred Hopkinson, K.C.; and whether the Report would be published.—Mr. Shortt replied: The answer to both parts of the question is in the affirmative.

Criminal Law Amendment Bill.

Viscountess Astor asked the Prime Minister whether, in view of the wide support throughout the country accorded to the Bishop of London's Criminal Law Amendment Bill, he could give an assurance that the Government intend to adopt it and to introduce it into the House of Commons at an early date.—Mr. Chamberlain (Lord Privy Seal) replied: I can only say at the present time that if I find that this Bill can be treated as a non-controversial measure, the Government will endeavour to facilitate its passage towards the end of the session.

Government Health Policy.

Mr. Trevelyan Thomson asked the Prime Minister whether the recent change in the post of Minister of Health indicated any variation in the Government's policy with regard to health and housing administration; and could local authorities which had undertaken the erection of dwelling-houses under The Housing and Town Planning Act, 1919, rely upon the Government fulfilling in the spirit as well as in the letter the promises made to them by the late Minister of Health with regard to their financial commitments.—Mr. CHAMBERLAIN replied: Undertakings given by the Government are not affected by changes of individual Ministers and the Government have no intention of departing from any pledges given to local authorities with respect to financial commitments entered into by them with the approval of the Ministry of Health.

Costs of the Denning Case.

Mr. THOMAS GRIFFITHS asked the Secretary for India whether he was now in a position to state the cost to the country of the legal proceedings in Denning *v.* Secretary for India, and of the time and incidental costs of India Office officials in resisting Dr. Denning's claim; and, if so, would he state the money paid out in respect of legal proceedings, the estimated cost incurred by the officials, the moneys paid to Dr. Denning, and the loss of income alleged in his statement of claim.—Mr. MONTAGU replied: The costs of the legal proceedings incurred by the Secretary of State in Council were £703 18*s.* 3*d.* As stated in answer to the honourable Member's question on March 2nd the Secretary of State in Council also paid £500 to Dr. Denning on account of the latter's costs. These sums are chargeable to Indian revenues. There was no expenditure in respect of the time and incidental costs of India Office officials. The loss of income alleged in Dr. Denning's statement of claim was £2728, including allowances.

Salaries of Health Insurance Officers.

Viscountess ASTOR asked the Minister of Health whether the scale of salaries for health insurance officers in the Ministry of Health, which was formerly £80 to £200 for men and women alike, had now been altered to £80 to £250 for men and £80 to £180 for women; and, if so, in view of the intention of the Sex Disqualification (Removal) Act, would he reconsider this.—Sir A. MOND replied: The differentiation of salaries is as stated in the question, and follows the recommendations of the Civil Service National Whitley Council Reorganisation Committee's report of February, 1920, which apply to the whole Civil Service in respect of the clerical class, with which class the Health Insurance officers have always been associated. Women appointed before the change in scales will continue to rise to a maximum of £200.

BOOKS, ETC., RECEIVED.

AMERICAN SOCIAL HYGIENE ASSOCIATION, New York.
The Sex Factor in Human Life. A Study Outline for College Men. By T. W. Galloway, Ph.D. Pp. 142.

CHAPMAN AND HALL, London. J. WILEY, New York.
The Chemistry and Analysis of Drugs and Medicines. By H. C. Fuller, B.S. Pp. 1072. 55*s.*
Œdema and Nephritis. By Dr. M. H. Fischer. 3rd ed. Pp. 922. 55*s.*
Qualitative Analysis and Medicinal Preparations. By H. C. Fuller, B.S. Pp. 192. 12*s.* 6*d.*

CONSTABLE AND CO., London.
Radiographic Technique. By T. Thorne Baker, A.M.I.E.E. Pp. 196. 15*s.*

DAVIS, F. A., COMPANY, Philadelphia.
Optimistic Medicine, or the Early Treatment of Simple Problems Rather than the Late Treatment of Serious Problems. By a former Insurance Man. Pp. 318.

HEINEMANN, W., London.
Man's Descent from the Gods; or the Complete Case Against Prohibition. By Anthony M. Ludovici. Pp. 254. 14*s.*
An Atlas of Normal Labour. By G. D. Robinson, M.D. Lond. Pp. 104. 15*s.*

HOLDEN AND HARDINGHAM, London.
Thoughts of a Nature Lover. By K. Rogers. Pp. 125. 5*s.*

KEGAN PAUL, TRENCH, TRUBNER, AND CO., London. DUTTON, E. P., AND CO., New York.
The Great Riddle, or the Action and Effects of Natural Forces and Conditions in the Creation. By F. Horridge. Pp. 98. 3*s.* 6*d.*

LE FRANÇOIS, Paris.
Notions Pratiques d'Électrothérapie Appliquée a l'Urologie. Par le Docteur Denis Courtade. Pp. 244. Fr.18.
Précis de Rachianesthésie Générale. By G. Le Filliatre. Pp. 123. Fr.8.

LIBRAIRE FÉLIX ALCAN, Paris.
Atlas de Syphilimétrie (100 Graphiques). By Arthur Vernes. Pp. 121. Fr.35.

LONGMANS, GREEN, AND CO., London.
The Chemistry of Synthetic Drugs. By Percy May, D.Sc. 3rd ed. Pp. 248. 12*s.* 6*d.*

MACMILLAN AND CO., London and New York.
The Community Health Problem. By A. C. Burnham, M.D. Pp. 160. 8*s.* 6*d.*

MELROSE, A., London.
Intestinal Toxæmia or Auto-Intoxication in the Causation of Disease. By A. Bryce, M.D. Pp. 180. 6*s.*

MORITZ PERLES, Vienna and Leipzig.
Das alte medizinische Wien in zeitgenössischen Schilderungen. Von Dr. M. Neuburger. Pp. 266. M.35.

Medical News.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.—Professor Harold Pringle and Dr. T. M. Thomson have been elected Fellows of the College.

ROYAL SANITARY INSTITUTE.—A lecture will be delivered on Wednesday, April 27th, at 5.30 P.M., by Colonel C. H. Melville, R.A.M.C., on Some Lessons of the War, at 90, Buckingham Palace-road, London, S.W. 1.

CONJOINT BOARD OF SCIENTIFIC SOCIETIES.—At a general meeting of the board held in March last it was decided to discontinue the publication of the Annual Calendar and Fortnightly Bulletin of Scientific Meetings (Diary of Scientific and Technical Societies) owing to the heavy printing liabilities incurred.

ROYAL INSTITUTION OF GREAT BRITAIN.—On Tuesday, April 19th, at 3 P.M., Professor Arthur Keith, F.R.S., will give his first lecture on Darwin's Theory of Man's Origin (in the Light of Present Day Evidence). The Friday evening discourse on April 22nd will be delivered at 9 P.M. by Sir James Walker, F.R.S., on Electro-Synthesis in Organic Chemistry.

INSTRUCTION IN HOSPITAL ADMINISTRATION: *Diploma in Public Health.*—A three months' course of lectures and demonstrations in hospital administration is being held during April, May, and June at the Western Hospital, Seagrave-road, Fulham, London, S.W., by Dr. R. M. Bruce, on Tuesdays and Fridays, at 5 P.M. The fee for the course is £3 3*s.*, payable to the Clerk to the Metropolitan Asylums Board, Embankment, London, E.C. 4.

INSTITUTE OF PHYSICS.—A meeting to inaugurate this institute will take place on Wednesday, April 27th, at 6 P.M., in the hall of the Institution of Civil Engineers, Great George-street, Westminster, London. Sir Richard Glazebrook will preside and Sir J. J. Thomson will deliver an address. Mr. A. J. Balfour is expected to be present and extend a welcome to the gathering. Non-members of the institute or of the societies associated with it may obtain tickets of admission on application to the secretary, 10, Essex-street, Strand, London, W.C. 2.

LONDON DERMATOLOGICAL SOCIETY.—A meeting of the society will be held at 4.30 P.M. on Tuesday, April 19th, at St. John's Hospital, 49, Leicester-square, London, W.C. Clinical cases will be shown by Dr. J. L. Bunch, Dr. W. Griffith, Dr. M. G. Hannay, and Dr. D. Vinrace. A discussion of the following resolution: "That the London Dermatological Society considers some form of compulsory notification for V.D. cases to be necessary," will be opened by Dr. W. K. Sibley for the affirmative, and Dr. D. Vinrace will lead the opposition.

ROYAL SOCIETY.—The papers to be read on April 21st are as follows:—Professor J. Joly, F.R.S.: A Quantum Theory of Colour Vision. Professor A. V. Hill, F.R.S.: The Energy Involved in the Electric Change in Muscle and Nerve. Mr. H. M. Kyle: The Asymmetry, Metamorphosis, and Origin of Flat Fishes, communicated by Mr. W. B. Hardy, secretary of the Royal Society. Mr. T. L. Prankerd: Studies in the Cytology of the Statolith Apparatus in Plants, viewed in Relation to their Habit and Biological Requirements, communicated by Professor W. M. Bayliss, F.R.S.

At the meeting on May 5th the Croonian lecture will be delivered by Dr. Henry Head, F.R.S., on Release of Function in the Nervous System.

POST-GRADUATE COURSE ON TUBERCULOSIS IN PARIS.—Under the auspices of the North of England Tuberculosis Society Dr. E. Rist has arranged a ten days' advanced course on tuberculosis in Paris for the latter part of May. The subjects will be treated in English, and will include artificial pneumothorax, experimental re-infection, the extent to which X ray work has affected our ideas regarding the pathology and diagnosis of lung tubercle, modern dispensary work, and so forth. One day will be spent at the Marine Hospital for Surgical Tuberculosis at Berck-sur Mer, and a visit has been arranged to Bligny Sanatorium. Special visits will also be paid to the Rockefeller Dispensaries, Pasteur Institute, Laennec Hospital, and othe institutions. All tuberculosis officers, sanatorium cians, and others specially interested in tuberc invited to participate. The fee for the course provisionally fixed at Fr.200. Further had from Dr. W. H. Dickinson, 91, New Newcastle-upon-Tyne.

National Hospital for the Paralysed and Epileptic.—A syllabus of the post-graduate courses to be held at this hospital during May and June has now been issued. Lectures and demonstrations will be given by Dr. Hinds Howell, Dr. A. Saunders, Dr. Grainger Stewart, Dr. James Taylor, Dr. Farquhar Buzzard, Dr. H. H. Tooth, Dr. Gordon Holmes, Dr. J. Collier, Dr. Risien Russell, Mr. S. R. Scott, Dr. Aldren Turner, Dr. Kinnier Wilson, Mr. P. Sargent, Dr. Russell Reynolds, and Mr. D. J. Armour. A series of six lectures and demonstrations on Neurological Ophthalmology will be given by Mr. Leslie Paton on Wednesdays, at 3.30 P.M., beginning on May 11th, if sufficient entries are received. Dr. Greenfield will give a course of lectures and demonstrations in pathology if sufficient entries are received; fee £3 3s. The fee for the post-graduate course is £7 7s., and should be paid to the secretary of the hospital. A special arrangement can be made for students who can attend one day a week only. The fee for the course in ophthalmology will be £4 4s. if taken alone, or £2 2s. if taken in conjunction with the post-graduate course. The Fellowship of Medicine's ticket will not admit to the above courses. Further information can be obtained from Dr. C. M. Hinds Howell, Dean of the Medical School, at the Hospital, Queen-square, London, W.C. 1.

Association of School Medical Officers of Scotland.—A three days' conference was held last week in the Provincial Training College, Edinburgh. Dr. A. E. Kidd, president of the association, welcomed the delegates, and Dr. John Macpherson took the chair at the first session. In his opening address he dwelt on the importance of medical examination of school children, and alluded to the problem of the mental defective. In his opinion too much distinction had been drawn between mental and physical deficiency. Mental defect was a physical disease, just as were infantile paralysis or congenital heart disease, and ought not to be regarded as a thing apart. The great need at present was for institutions and special classes where defectives could be observed and sorted out. Dr. F. C. Shrubsall, speaking on mental deficiency, dwelt on the importance of excluding physical defects before judging a child, and also of estimating the extent to which the child had had continuous education, without frequent change of school and of methods. The aim of mental testing was to ascertain the extent to which the individual was able to appreciate the nature of any problem set before him, to direct his attention to this object, to profit by previous experience, and to criticise his results. At the second session of the conference Dr. Norman Walker delivered an address on Skin Diseases in Schools; and at the third session Dr. Angus MacGillivray read a paper on the Educationally Blind Child.

Royal Institute of Public Health.—A programme of the conferences to be held from June 2nd to 4th at the Guildhall, London, has been issued. The conferences will be opened on the 2nd, at 10 A.M., by the Duke of York. At the first session Municipal Hygiene and its Suggested Connexion with the Administration of the Poor-law, and the Future of Voluntary Hospitals will be discussed. Lord Burnham will preside, and among the medical speakers will be Sir Napier Burnett, Sir Alfred Fripp, and Sir Leslie Mackenzie. At 2 P.M. the Housing Problem in its Various Bearings will be dealt with under the presidency of Sir George McCrae. The medical speakers will include Lieutenant-Colonel F. E. Fremantle, M.P., and Dr. W. G. Savage. On June 3rd, at 10 A.M., Professor Edgar L. Collis will preside over a discussion on the Necessity for Greater Attention in Industry to the Maintenance of Efficiency and the Prevention of Ill Health; the speakers will include Professor Sir Thomas Oliver, Dr. H. M. Vernon, and Mrs. R. H. B. Adamson, M.D. At 2 P.M. the subject will be the Efficiency of the Present Machinery for Dealing with Venereal Diseases and the Additional Measures Essential for Effective Prevention, with the Bishop of Birmingham in the chair. The speakers will include Professor E. W. Hope, Sir William Milligan, Professor Winifred Cullis, D.Sc., Colonel C. J. Bond, Dr. F. N. Kay Menzies, Mrs. Mary Scharlieb, M.D., Dr. J. H. Sequeira, Mrs. Marie Stopes, D.Sc., and Dr. Mary Sturge. The fifth and last session will be held on June 4th at 10 A.M., when the Efficiency of the Present Machinery for Dealing with Tuberculosis will be the subject discussed. Professor Sir Robert W. Philip will preside, and the medical speakers will include Professor S. Lyle Cummins, Professor Sir German S. Woodhead, Dr. Noel D. Bardswell, Sir Henry Gauvain, Dr. T. Hartley Martin, Dr. J. J. Perkins, Lieutenant-Colonel Nathan Raw, Dr. P. C. Varrier-Jones, and Dr. Jane Walker. Fellows, Members, and Associates of the Royal Institute of Public Health can obtain membership tickets on pplication to the secretary at the offices of the Institute. r delegates and others desirous of taking part, tickets ll be issued at one guinea each. All communications to addressed to the Hon. Secretaries, 37, Russell-square, ndon, W.C. 1.

Great Northern Central Hospital.—At the monthly meeting on April 7th the committee of management passed a resolution recording its opinion that: (a) Insured persons treated both as in- and out-patients should be paid for in full by Approved Societies; (b) payment should be made to the hospitals by the societies concerned by means of capitation grants, and not by the handing over of lump sums; (c) in view of the general public's limited opportunities of gaining knowledge of voluntary hospital questions an effort should be made to form a Voluntary Hospitals' Publicity and Propaganda Committee, towards the funds of which all hospitals should be invited to subscribe according to their number of beds and out-patients; (d) such a committee should consist of hospital representatives with some of the best publicity experts. It should endeavour to promote the interests of voluntary hospitals generally, and leave it to individual institutions to make known their particular needs.

Manchester Children's Hospital.—Owing to financial stress last year this hospital was forced to close one of its wards, thus reducing the number of beds from 180 to 150. Fortunately a grant of £20,000 from the National Relief Fund has for the time being obviated further curtailment of the hospital's services. The daily cost of each child patient is now over 7s., against 3s. in 1913.

Leicester Medical Society: Post-graduate Lectures.—A course of post-graduate lectures will be given at the Leicester Royal Infirmary on Wednesdays, at 4.45 P.M., from April 20th to May 18th. Dr. Arthur Hurst will lecture on Gastric and Intestinal Diseases on April 20th and May 4th, Dr. G. F. Still on Urinary Disorders of Childhood and Dietetic Causes of Disorders in Infancy and Childhood on May 11th and 18th, and Mr. R. C. Elmslie on Manipulative Surgery on April 27th.

West Kent Medico-Chirurgical Society.—A meeting of this society was held in the Miller Hospital, Greenwich, on March 11th, Dr. A. M. Cato presiding. Dr. Beatrice Lovibond showed a case of Spina Bifida in a girl of 17. Dr. Hildred Carlill gave a lecture on the Manifestations of Hysteria, illustrated by lantern slides. Many of these showed the cure of long-standing palsy of one or other limb, or the relief of spasms, tremors, and contractures. He contended that more disabilities of all sorts are due to mental than to physical causes, also that every one of these former could probably be prevented if its onset were witnessed by someone with the requisite knowledge and personality. Dr. Carlill set out a broad grouping of the varying types of hysterical disorder, and read the notes of a case which was treated by psycho-therapy, and which ended in tragedy. He then discussed treatment under the headings (1) preventive, (2) curative, by (a) conversation and exploration, (b) suggestion, and (c) psycho-analysis.

Royal Aberdeen Hospital for Sick Children.—The annual meeting of this hospital was held on March 28th, Sir Thomas Burnett presiding. The annual report showed that the number of cases treated during 1920 amounted to 1063 in-patients and 3008 out-patients, almost double the numbers of 1919. The ordinary expenditure exceeded the income by £2134 9s. 2d. Towards the reduction of this sum the whole amount of the legacies received, £1171 6s. 8d., has been applied, leaving a net deficiency of £963 2s. 6d., which has been cleared off by reducing the capital funds by that amount. The average daily expenditure per patient now amounts to about 5s., more than twice as much as in 1914. During the year subscriptions to the amount of £1522 15s. 7d. have been paid to the honorary treasurer for the building fund. The total amount subscribed for the building fund on Dec. 31st, 1920, was £43,162 15s. 5d. A new department has been instituted for treatment of diseases of the skin.

Exhibitions of Colour Photography.—The exhibition of the Prizma Master Pictures, held at the Alhambra Theatre, London, on April 8th, illustrated what has been achieved in natural colour photography. A series of films showed the possibilities of this new process in reproducing bowls of fruit, butterflies, gorgeous gowns, scenes on sea and mountain, and most impressively a peep into the crater of Kilaueas. The value of colour films for nature study was also well brought out in a picture representing a day with John Burroughs, a well-known naturalist. Prismatic effect was not altogether eliminated, but on the whole the exhibit evinced a high standard in colour kinematography. A second effort in colour kinematography, based on a somewhat different process, was the subject of a preliminary exhibition at the House of the Royal Society of Medicine on April 11th, when the basis of this process was illustrated by a series of medical lantern slides. The colours in this case were remarkably vivid and free from any screen effect. This exhibit was by the European Art Publishing Society, of 21, Russell-street, London, W.C.

CHELSEA HOSPITAL FOR WOMEN.—The annual general meeting of governors will be held at the hospital, Arthur-street, London, S.W., on Thursday, April 21st, at 4 P.M., the President of the hospital, the Marquess of Londonderry, presiding. A public meeting will be held at 5.30 P.M. on the same day, at the Town Hall, Chelsea, in order to urge the claims of the hospital for public support.

NORTH-EAST LONDON POST-GRADUATE COLLEGE.—A special post-graduate course will be held at the Prince of Wales's General Hospital, Tottenham, London, N., from April 25th to May 7th. This course will include the practical demonstration of modern clinical and laboratory methods of the diagnosis and treatment of disease; the exhibition of groups of cases illustrating some particular subject; a series of clinical lectures closely associated with medical practice; and demonstrations of cases at special hospitals. The fee for the course, to those not members of the Fellowship of Medicine, is 3 guineas, or 2 guineas for either week. A detailed syllabus can be obtained on application to the Dean. The lectures, at 4.30 P.M. daily, are free to qualified medical practitioners. Names of those wishing to attend should be sent, not later than April 21st, to the Dean at the hospital or to the Secretary of the Fellowship of Medicine at 1, Wimpole-street, London, W. 1.

RONTGEN SOCIETY.—A general meeting will be held on Thursday, April 21st, at 8.15 P.M., in the Physics Lecture Theatre, University College, Gower-street, London, W.C. A paper on a New Form of Stereo-fluoroscope will be read by Professor A. M. Tyndall, D.Sc., and Mr. E. G. Hill, B.Sc. A special meeting of the society will be held at Manchester on Friday, May 6th, at 8 P.M., at the University. Professor W. L. Bragg will deliver a paper and Professor A. V. Hill, F.R.S., will give a demonstration of some electro-physiological experiments. The society's exhibition will be held at the Royal Photographic Society during the whole of June. The President, Dr. Robert Knox, offers silver and bronze plaques for the best and second best collection of four prints, the work of an assistant employed at a hospital or working for a qualified radiologist, which prints must be delivered, not later than May 24th, to the Secretary, Rontgen Society Exhibition, 35, Russell-square, London, W.C. 1. The Silvanus Thompson Memorial Lecture will be delivered by Professor A. V. Hill at the next general meeting of the society on May 19th, on Electrical Instruments and Phenomena in Physiology.

BRITISH HOME FOR AUSTRIAN CHILDREN.—The historic estate of Klessheim in Salzburg has been adapted as a permanent home for children, of which the legal ownership and ultimate financial responsibility rest with "The British Home for Austrian Children, Limited"—a company not for profit—which has been formed for the purpose by the Berkshire Committee of the Save the Children Fund. Thirty children are now in residence, but once clothing and funds are forthcoming there is accommodation for 500. It is not intended to make of Klessheim a convalescent home for seriously sick or diseased children, but primarily to admit children who are under-nourished and run-down. The management committee includes a medical man, Dr. G. S. Abram, and the Vienna Executive Committee includes Miss Harriette Chick, D.Sc., Dr. Ronald Macfie, and Dr. Ferrière, with Dr. Max Winter, Dr. Josef Griez, Herr Wilhelm Ofenheim, and Professor Dr. Clemens Pirquet among the Austrian Consulting Members. Donations, particularly annual subscriptions, are invited, and should be sent either to the hon. treasurer, J. H. Simonds, Esq., Barclay's Bank, Reading, or to the office at Threadneedle House, 34, Bishopsgate, London, E.C. 2.

UNIVERSITY OF BRISTOL.—On April 7th, at the invitation of the Vice-Chancellor and the Council of the University of Bristol, representatives of the press were entertained to lunch at the Royal Hotel. The Vice-Chancellor gave an interesting survey of the steps which had led up to the appeal for funds which the University is about to make. He recalled the leading part played by Bristol in the times of the Tudor sovereigns, and gave reasons for thinking that she might yet regain the place as the second port and second city of the kingdom. Coming to present times, he reviewed the advantages enjoyed by Bristol in the matter of University provision; he enumerated the colleges from which the University had been founded, and spoke of the central and spacious site on which most of the buildings—some complete and others being built—stand, alluding to the splendid generosity of the Wills family. Much more money was needed for endowments to meet the cost of maintenance, and the Vice-Chancellor expressed the hope that this would be collected from local and private benefactors rather than received, at some cost of freedom, from the Government. After lunch a visit of inspection was paid to the University buildings, and each guest received a portfolio of finely executed drawings of the buildings actual and prospective.

DONATIONS AND BEQUESTS.—By the death of Mr. Alexander Kilgour, of South Loirston and Cove, which took place recently, important bequests fall to the University of Aberdeen and Morningfield Hospital for Incurables. The proceeds of the estate will be divided as follows: one-fifth to the Mechanics Institution, one-fifth to Morningfield Hospital, and three-fifths to the University of Aberdeen. The estate has a rental of some £2000.—The Chelsea Hospital for Women has received from the trustees of the Zunz Bequest a grant of £400 in maintenance of its Annie Zunz Wards.

THE REFORMED PUBLIC HOUSE.—The People's Refreshment House Association, Ltd., which aims at the encouragement of temperance in the use of alcoholic drinks at licensed establishments and the provision of facilities for the supply of food and non-alcoholic refreshment at such places, can prove a satisfactory year's working for 1920. The annual report to be submitted to the annual general meeting to be held at 193, Regent-street, London, W., on April 25th shows that up to Dec. 31st last the association held 165 licensed inns, of which 26 were taken over during the year. After writing off a sum for repairs, placing £5142 to depreciation reserve, and paying £2500 interest on loan stock, the amount available for disposal is £14,417 6s. 11d. The profits for 1920 were at the rate of 12½ per cent. on the share capital issued. Grants totalling £747 have been made during the year out of the public utility fund to various local institutions. It is pointed out that if the good work of the association is to expand new capital will be needed.

TELEPHONE SERVICE IN DUBLIN.—At their last meeting the President and Fellows of the Royal College of Physicians of Ireland passed a resolution protesting against the proposed increase in the charges for the telephone service in view of the progressive deterioration of the service since it came into the hands of the Post Office. At the present time no subscriber can be confident of getting a call through. At night, owing to the curfew regulations, which prohibit the public from being abroad at night, no one can employ messengers, and important messages are sometimes delayed all night. In one of the hospitals a few months ago an urgent operation case arrived during curfew hours. No message could be got through on the telephone to the surgeon on duty, and were it not that a voluntary messenger, at the possible risk of his life or liberty, undertook to convey the message on foot a life would probably have been lost. The College adds to its protest a statement that, owing to the inefficiency of the service, medical practice in and near Dublin is hampered and life and health are endangered.

MILK ORDERS.—Orders have been issued, the effect of which is to continue in force the provisions already contained in the Orders of the Food Controller with regard to milk of special hygienic quality, the addition of colouring matter and water to milk, and the reconstitution of milk. With regard to the first matter, the effect of the new Order is that licences for the sale of Grade A and Grade A (Certified) milk will be issued by the Minister of Health instead of being issued as heretofore by the Food Controller on the advice of the Minister. It will be competent to the local authority to take such steps as may be arranged in connexion with the issue of licences, and to institute proceedings in any case in which milk is sold within their area under either of the specified designations, but without a licence in that behalf. The provisions of the Order as to the addition of colouring matter or water and as to the reconstitution of milk form a supplement to the powers of the authority under the Sale of Food and Drugs Acts. The licensing of wholesale dealers in milk and the registration of retail dealers will be continued for the present by the Board of Trade as the successor of the Food Controller, the latter function being exercised through the District Commissioners. Copies of the Orders may be obtained from H.M. Stationery Office.

KING EDWARD'S HOSPITAL FUND FOR LONDON.—The annual meeting of the President and General Council of King Edward's Hospital Fund for London, to receive the accounts and report for the year 1920, was held at St. James's Palace on April 12th, H.R.H. the Prince of Wales being in the chair. Lord Revelstoke, the honorary treasurer of the Fund, presented the balance-sheet which included the items relating to the emergency distribution on July 5th last, and the distribution of surplus Red Cross Funds carried out on July 23rd through the instrumentality of the Fund. A full statement as to the general receipts having been made at the meeting of the Council on Dec. 14th last (see THE LANCET Dec. 25th, 1920, p. 1230), when the scale of ordinary awards was adopted, the treasurer said he had nothing to add in these respects, and made the gratifying
that for the year ending Dec. 31st the
enabled to provide out of income nearly
ordinary distribution of £200,000. The

from reserve, whence also came the £250,000 to meet the emergency distribution, the effect of which had been to reduce the available funds of the corporation by about one-fourth, implying a loss of income amounting to £16,000 per annum. Lord Revelstoke added that the Finance Committee were compelled to point out that such emergency distributions could not be repeated without serious detriment to the position and utility of the Fund. The account of the receipts and expenditure and the balance-sheet having been unanimously adopted, the Chairman of the Executive Committee, Lord Stuart of Wortley, moved the adoption of the report of the Council for the year 1920. The resolution was seconded by Lady Hall and carried unanimously. The Prince of Wales, who was warmly received on addressing the Council, read a message of congratulation from the King, and then referred with pleasure to the fact that Lord Cave's Committee had reported decidedly in favour of the voluntary system of hospital management. "It was," said His Royal Highness, "for the maintenance of that system that King Edward founded the Fund, and that it still exists. I think that everybody here is convinced that it is the best system both for the patients and for the public. I am very glad that the evidence has already brought Lord Cave's Committee unanimously to the same opinion." The proceedings terminated with a vote of thanks to His Royal Highness for presiding.

Appointments.

GRIFFITHS, A., M.B., F.R.C.S. Edin., has been appointed a Medical Referee under the Workmen's Compensation Act for the Sheriffdom of Stirling, Dumbarton, and Clackmannan.

HAIRE, N., M.B., Ch.M. Sydney, one of the Hon. Physicians of the Saffron Hill Maternity Centre (Holborn, Finsbury, and City Border).

HIRSCH, Capt. C. T. W., late R.A.M.C., Anæsthetist, London Temperance Hospital.

SAVAGE, A. H., M.B., B.Ch. Oxon., D.P.H., Health Officer, Kuala Lumpur, Selangor, Malay Federated States.

THOMAS, C. N., M.B., B.Ch. Cantab., Medical Officer to the Infectious Diseases Hospital at Alvington, Gloucestershire.

Seamen's Hospital Society: Hospital for Tropical Diseases, and the London School of Tropical Medicine: ROGERS, Sir LEONARD, I.M.S., Extra Physician for Clinical Research and Lecturer; CLEMESHA, Col. W. W., I.M.S., Lecturer on Hygiene of the Tropics.

Certifying Surgeons under the Factory and Workshop Acts: VISORN, C., L.R.C.P. Lond., M.R.C.S. (Clevedon); JOHNSTON, C. H. F. (Frome).

Vacancies.

For further information refer to the advertisement columns.

Bethlem.—Two Res. H.P.'s. £25 per quarter.

Bethnal Green Hospital, Cambridge-road, E.—Fourth Asst. M.O. £400.

Birmingham and Midland Homœopathic Hospital.—Res. H.S. £175.

Birmingham, Queen's Hospital.—Pathologist. £100.

Bramshott, Hants, King George's Sanatorium for Sailors.—Med. Supt. £600.

Bristol General Hospital.—H.S. £175.

Buxton, Derbyshire, Devonshire Hospital.—Asst. H.P. £120.

Capetown City.—Asst. M.O.H. £850.

Charing Cross Hospital, Agar-street, W.C.—P. in Charge Department of Radiology and Electro-therapeutics.

Chester Royal Infirmary.—Hon. S. Hon. Asst. P. Also Asst. H.S. £175.

City of London Hospital for Diseases of the Chest, Victoria Park, E.—H.P. £100.

Cornwall Mental Hospital, Bodmin.—Locum Tenens. 7 guineas per week.

Dewsbury County Borough.—Asst. Sch. M.O. and Asst. M.O.H. £500.

Dr. Barnardo's Homes, Australasian Hospital, Girls' Village Home, Barkingside.—Female Res. M.O. £150.

Eastbourne, Princess Alice Hospital—H.S. £175.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Res. M.O. £200. H.S. and H.P. £125. Cas. O. £120.

Elizabeth Garrett Anderson Hospital, Euston-road.—Female Clinical Assistants in Venereal Diseases Department. £1 1s. per attendance.

Enham Village Centre for Disabled Ex-Service Men, near Andover, Hants.—Asst. M.O. £350.

Evelina Hospital for Children, Southwark, S.E.—Hon. Dent. S. Also H.P. and H.S. £150.

Gloucester County Asylum.—Asst. M.O. £300.

Great Northern Central Hospital, Holloway, N.—Anæsth. £10 10s.

Guildford, Royal Surrey County Hospital.—H.S. £150.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S. £50.

Hove, Carr-Burton Memorial Hospital, Sackville-road.—Res. M.O. £250.

Huddersfield Royal Infirmary.—Two Jun. H.S.'s. £150.

Johannesburg, University College.—Sen. Lecturer in Physiology. £[illegible]

[illegible] *Education Committee.*—Female Sch. Med. Inspector. £600.

[illegible] *Infirmary, Beckett-street.*—First Asst. M.O. £500.

[illegible] *Municipal Ante-Natal and Child Welfare Clinic, Catford, S.E.*—Holiday Engagement. 7 guineas per week.

[illegible] *Homœopathic Hospital, Great Ormond-street and Queen-square, Bloomsbury, W.C.*—Asst. S

London Temperance Hospital, Hampstead-road, N.W.—Hon. Asst. P.

Manchester, Booth Hall Infirmary for Children, Charlestown-road Blackley.—Asst. Res. M.O. £350.

Manchester County Asylum, Prestwich.—Asst. M.O. £572 18s.

Manchester, Crossley Sanatorium, Delamere Forest, Cheshire.—Asst. M.O. £350.

Metropolitan Hospital, Kingsland-road, E.—Cas. O. and Res. Anæsth. £120

Middlesbrough, North Riding Infirmary.—Jun. H.S. and Sen. H.S. £150 and £200 respectively.

Miller General Hospital for South-East London, Greenwich, S.E.—H.P. £150.

Newark Hospital and Dispensary.—Res. H.S.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—Res. M.O. £350.

Newport, Mon., Royal Gwent Hospital.—H.S. £200.

Oldham County Borough.—Asst. M.O. and Asst. Tuberc. O. £600.

Oldham Royal Infirmary.—Three H.S.'s. £250, £250, and £200 respectively.

Pembroke County.—County M.O.H. and Sch. M.O. £700.

Preston, Lancs, County Asylum, Whittingham.—Asst. M.O. £572 18s.

Queen Mary's Hospital for the East End, Stratford, E.—H.P. and H.S.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Two Cas. H.S.'s. £100.

Rotherham Hospital.—Sen. H.S. £250. Also Jun. H.S. £150.

Royal Chest Hospital, City-road, E.C.—H.P. £120.

St. John's Hospital for Diseases of the Skin, 49, Leicester-square, W.C.—Pathologist. £100.

St. Mary's Hospital for Women and Children, Plaistow, E.—Hon. Anæsth.

St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—Jun. H.S. £75.

Salford Royal Hospital.—H.S.'s £150. Cas. H.S. £150.

Sheffield, Jessop Hospital for Women.—Asst. H.S. £100.

Sheffield Royal Infirmary.—H.S.'s, H.P.'s, Aural H.S., and Asst. Cas. H.S. £150 each.

Southampton Free Eye Hospital.—Asst. Hon. Ophth. Surg.

Staffordshire General Infirmary, Stafford.—H.S. £250.

Wakefield, West Riding Asylum.—Jun. Asst. M.O. £400.

Warwick Union.—M.O. £100.

West London Hospital, Hammersmith-road, W.—Cas. O. £5 5s per week.

Wigan Infirmary.—Hon. S.

York County Hospital.—H.S. £200.

The Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy under the Factory and Workshop Acts at Burton-upon-Trent.

Births, Marriages, and Deaths.

BIRTHS.

READE.—On April 9th, at New End Hospital, Hampstead, the wife of Dr. Arthur G. L. Reade, O.B.E., of a son.

RUSSELL.—On April 10th, at the Little House, Gerrard's Cross, the wife of Trevor C. Russell, M.B., of a daughter.

SHOWELL-ROGERS.—On April 9th, at Nottingham-place, W., the wife of E. N. Showell-Rogers, M.B. Cantab., of a son.

WOODWARK.—On April 11th, at 4, Harley-street, W., to Hilda (née Robinson), wife of A. S. Woodwark, C.M.G., C.B.E., M.D., F.R.C.P.—a son.

MARRIAGES.

GRIFFITH—VISICK.—On the 11th April, at Lyndhurst-road Church, Hampstead, by the Rev. Dr. R. H. Horton, John Richard Griffith, F.R.C.S. Eng., son of Arthur F. Griffith and Mrs. Griffith, of 59, Montpellier-road, Brighton, to Elsie Maud Visick, M.R.C.S., L.R.C.P., daughter of Dr. and Mrs. Hedley C. Visick, of 35, Rosslyn-hill, Hampstead.

DEATHS.

DUNCAN.—On April 6th, at Park House, Croydon, Peter Thomas Duncan, M.D., in his 73rd year.

MINNS.—On April 6th, the result of a motor accident, Captain Allan Noel Minns, D.S.C., M.C., R.A.M.C., Alexandra House, Thetford, Norfolk.

TAYLOR.—On April 7th, at Lovelace Lodge, Surbiton, Arthur Sneyd Taylor, M.D. Cantab., F.R.C.S., after a short illness.

WRIGHT.—On April 2nd, accidentally drowned on Summer Lodge Moor, Swaledale, Yorkshire, Joseph Farrall Wright, M.R.C.S., L.R.C.P., of Chorley New-road, Bolton, in his 56th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

Thursday, April 21st.—Papers:—Prof. J. Joly: A Quantum Theory of Colour Vision.—Prof. A. V. Hill: The Energy Involved in the Electric Change in Muscle and Nerve.—Mr. H. M. Kyle: The Asymmetry, Metamorphosis, and Origin of Flat Fishes (communicated by Mr. W. B. Hardy, secretary of the Royal Society).—Mr. T. L. Prankerd: Studies in the Cytology of the Statolith Apparatus in Plants, viewed in Relation to their Habit and Biological Requirements (communicated by Prof. W. M. Bayliss).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, April 19th.

SECTION OF THERAPEUTICS AND PHARMACOLOGY: at 4.30 P.M.

Annual General Meeting—Election of Officers and Council for 1921-1922.

Papers: Sir Leonard Rogers: Treatment of Leprosy and Tuberculosis with *Sodium Gynocardate*.

Dr. R. R. Walker: The Action and Uses of Kaolin in the Treatment of Asiatic Cholera.

Section of Tropical Diseases and Parasitology.—Members of this Section are cordially invited to attend the *above meeting*.

SECTION OF PATHOLOGY: at 8.30 P.M.

Annual General Meeting—Election of Officers *and Council for* 1921-1922.

Communications: Sir Lenthal Cheatle: Parenchymatous Inflammation of the Breast.

Mr. A. T. Glenny, Miss K. Allen, and Dr. R. A. O'Brien: (1) Schick Reaction; (2) Diphtheria *Prophylactic Immunisation* with Toxin Anti-toxin Mixture.

Dr. E. H. Kettle and Dr. Joan Ross: A Contribution to the Study of the Endotheliomata.

Wednesday, April 20th.

SECTION OF HISTORY OF MEDICINE: at 5 P.M.

Papers: Dr. T. Wilson Parry: The Prehistoric Trephined Skulls of Great Britain, with Description of Operations Performed.

Dr. F. G. Chandler: The History of the Diagnosis and Treatment of Empyema.

Thursday, April 21st.

SECTION OF DERMATOLOGY: at 5 P.M. (Cases at 4.30 P.M.)

Cases: Dr. Parkes Weber: A Condition Somewhat Resembling Lupus Pernio in a Child.

Dr. MacCormac: (1) Extensive *Rodent Ulcer Treated by* Massive Dosage of Radium; (2) Granuloma Annulare.

Other cases will be shown.

Friday, April 22nd.

SECTION OF STUDY OF DISEASE IN CHILDREN: *at 5 P.M.* (Cases at 4.30 P.M.)

Cases: Mr. C. Max Page: A Case of Renal Dwarfism.

Other cases will be shown.

SECTION OF EPIDEMIOLOGY AND STATE MEDICINE: at 8.30 P.M.

Paper:

Dr. W. M. Willoughby: Collated Experiences of Plague on Ships.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

Monday, April 18th.—8 P.M., *Cantor Lecture (II.)*:—Dr. S. J. Lewis: Recent Applications of the Spectroscope and the Spectrophotometer to Science and Industry.

Wednesday.—8 P.M., Sir James Cantlie: (1) Thomson's Apparatus for Armless Men; (2) X Ray Motor Ambulance Service for the United Kingdom. (The Thomson Machine will be exhibited and its uses demonstrated by an armless man.)

Friday.—4.30 P.M., Sir George Birdwood Memorial Lecture:—*Lt.-Col.* Sir *Edward* W. M. Grigg: The Common Service of the British and Indian Peoples to the World.

LONDON DERMATOLOGICAL SOCIETY, St. John's Hospital, 49, Leicester-square, W.C.

Tuesday, April 19th.—4.30 P.M., Pathological *Specimens*. *Cases* sent for Consultation. Clinical Cases will be shown by Dr. J. L. Bunch, Dr. W. Griffith, Dr. M. G. Hannay, and Dr. D Vinrace. Discussion on the following resolution: "That the London Dermatological Society considers some form of compulsory notification for V.D. cases to be *necessary*," to be opened by Dr. W. K. Sibley for the affirmative and Dr. D. Vinrace for the negative.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Museum Demonstrations in the Theatre of the *College for* Advanced Students and Medical Practitioners:—

Monday, April 18th.—5 P.M., Prof. Shattock: Myxoma; Chondroma.

Friday.—5 P.M., Prof. Keith: Microscopic Structure of the Colon in Health and Disease.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Monday, April 18th.—2 P.M., Dr. S. Pinchin: Medical Out-patients. Dr. Simson: Diseases of Women. 2.30 P.M., Dr. A. Saunders: Visit to Medical Wards. Mr. Baldwin: Visit to Surgical Wards.

Tuesday.—10 A.M., Mr. Steadman: Dental Department. 2 P.M., Dr. *Burnford*: Medical Out-patients. Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Mr. Addison: Visit to Surgical Wards.

Wednesday.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 2 P.M., Mr. D. Armour: Visit to Surgical Wards. Mr. Sinclair: Surgical Out-patients. Mr. Gibb: Eye Department.

Thursday.—2 P.M., Mr. B. Harman: Eye Department. Mr. MacDonald: *Surgical Out-patients*. Mr. *Baldwin*: *Orthopædic* Department. Mr. D. Armour: Operations.

Friday.—10 A.M., Dr. Robinson: Gynæcological Operations and Visit to Wards. Dr. McDougal: Electrical Department. 2 P.M., Mr. T. Gray: Surgical Out-patients. Dr. Morton: X Ray Department. *Dr. Pernet: Skin Department.* 2.30 P.M., Dr. Pritchard: Visit to Medical Wards.

Saturday.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 2 P.M., Dr. Owen: Medical Out-patients.

Daily:—10 A.M. Ward Visits. 2 P.M., In-patient, Out-patient *Clinics and Operations.*

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Post-Graduate Course on Infant and Child Welfare.

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Tuesday, April 19th.—10.30 A.M., *Demonstration V., The* Modification of Milk.

Thursday.—3 P.M., Demonstration VI., The Uses of Dried Milk and Patent Foods.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, *Piccadilly*, W.

Tuesday, April 19th.—3 P.M., Lecture (I.):—Prof. A. Keith: Darwin's Theory of Man's Origin (in the *Light of Present* Day Evidence).

Friday.—9 P.M., Discourse:—Sir James Walker: Electro-Synthesis in *Organic* Chemistry.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

Tuesday, April 19th.—4.30 P.M., Lecture:—Mr. J. P. Buckley: Intussusception.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. H. el Arculli, Liverpool; Dr. R. E. Apperly, Lond.

B.—British Homes for Austrian Children, Lond., Sec. of; Mr. C. W. G. *Bryan, Lond.*; Dr. M. I. Balfour, Simla; British Museum (Natural History), Lond., Director of; Dr. D. de Broglio, Tunis; Messrs. *Burgoyne, Burbidges, and Co.*, East Ham; Mr. H. J. Bucklin, Lond.; Board of Control, Lond.; Mr. J. Burns, Edinburgh; Barnstaple, Medical Officer of Health *of*; Dr. G. Blacker, Lond.

C.—Mr. R. T. Cook, Workington; Mr. G. H. Clark, Glasgow; Dr. H. P. Cholmeley, Forest Row; *Miss G. Cowlin, Lond.; Chelsea* Hospital for Women, Lond.; Chicago School of Sanitary Instruction; Dr. C. Coombs, Bristol; Prof. E. L. Collis, Cardiff; *Conjoint* Board of Scientific Societies, Lond.; Dr. A. Cooke, Cambridge.

D.—Dr. H. Dutch, Lond.

E.—Dr. J. Elliott, Chester; Dr. G. Evans, *Lond.*

F.—Dr. A. G. T. Fisher, Radlett; Dr. J. G. Forbes, Lond.; Factories, Chief Inspector of, Lond.; Dr. H. French, Lond.

G.—Dr. A. K. *Gordon, Lond.*; Great Northern Central Hospital, Lond., Sec. of; General Medical Council, Lond., Registrar of; Prof. Galli, Rome; Dr. W. O. *Greenwood, Harrogate*; Mr. E. Greene, Brighton; Mr. J. S. Goodall, Lond.

H.—Hunterian Society, Lond.; Mr. H. R. Heber, Lond.; Dr. R. C. Holt, *Didsbury*; *Heritage* Craft Schools, Chailey, Hon. Sec. of; Dr. C. L. Hewer, Lond.; Mrs. F. A. Hornibrook, Lond.; Dr. C. O. Hawthorne, Lond.

I.—Institute of Physics, *Lond.*

J.—*Journal of Industrial Welfare*, Lond., Editor of.

K.—Mr. G. Kendall, Lond.; Lord Knutsford, Royston; Dr. W. W. Keen, *Philadelphia*; *King* Edward's Hospital Fund for London.

L.—Mr. E. P. Leavy, Lond.; Mr. N. C. Lake, Lond.; Dr. R. B. Low, Lond.; *London Panel Gazette*, Lond.; Dr. Lillienstein, Bad Nauheim; London Society, Lond.; Dr. C. Lillingston, Gorleston-on-Sea; Liverpool Hospital for Children; London and Counties Medical Protection Society, Lond.; Dr. H. C. *Lucey*, Lond.; Leicester Medical Society, Hon. Sec. of; Dr. A. W. Lemarchand, Barnstaple; London Dermatological Society; Dr. S. A. Lane, Bognor.

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N.—North of England Tuberculosis Society, Newcastle-on-Tyne, Hon. Sec. of; National Housing and Town *Planning* Council, Lond.; National Hospital for the Paralysed and Epileptic, Lond., Dean of; National League for Health, Maternity, and Child *Welfare*, Lond.; Dr. H. Nockolds, Lond.

P.—People's Refreshment House Association, Lond.; Dr. F. J. Poynton, Lond.; Mr. M. J. Parker, *Rotherham*; *Mr. H.* Platt, Manchester; Mr. W. B. I. Pollock, Glasgow; Dr. M. Ponzio, Turin; Dr. J. Phillips, Bradford; Mr. P. S. Price, Lond.; Parliamentary Medical Committee, Lond., Sec. of.

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S.—Dr. G. A. Stephens, Swansea; Dr. H. E. Smith, *Lond.*; Mr. W. B. Secretan, Reading; Dr. E. I. Spriggs, Banff; Dr. S. N. Scott, Plymstock; Savoy Hotel Laundry, Lond.; Mr. A. F. Shepherd, Lond.; *Prof. W.* Stirling, Manchester.

T.—Dr. W. W. C. Topley, Lond.; Dr. G. N. W. Thomas, St. Albans.

U.—University *of Edinburgh*, Sec. of.

V.—Dr. C. W. Vining, Leeds; Dr. J. C. Voigt, Southport.

W.—Dr. E. L. White, Southampton; Mr. A. J. Walton, Lond.; Dr. H. Wingfield, Lond.; West Kent Medico-Chirurgical Society, Lond., Hon. Sec. of; West London Post-Graduate College; Dr. J. *D.* Wynne, Norwich; Dr. J. Warnock, Cairo; Dr. J. Walker, Whitchurch; Sir G. S. Woodhead Cambridge.

Notes, Short Comments, and Answers to Correspondents.

DISEASES DESCRIBED BY MEDICAL MEN WHO SUFFERED FROM THEM.[1]

BY SIR HUMPHRY ROLLESTON, K.C.B., M.D CAMB., F.R.C.P. LOND.
EMERITUS PHYSICIAN, ST. GEORGE'S HOSPITAL SENIOR PHYSICIAN, VICTORIA HOSPITAL FOR CHILDREN.

IN the selection of a subject in response to your complimentary invitation it was obviously unwise to encroach on those aspects of medicine that your teachers deal with so much more advantageously, and I have accordingly chosen one on which it is to be hoped that none of them—though here I am not on safe ground—are personally competent to speak with real authority—namely, diseases described by medical men suffering from them. Stephen Paget, in his delightful *Confessio Medici*, says: "You cannot be a perfect doctor till you have been a patient; you cannot be a perfect surgeon till you have enjoyed" (and he goes on to emphasise his choice of this verb) "in your own person some surgical experience." According to this line of reasoning the perfect author should be a man of many joys (or sorrows?); and though I wish them well it is not this kind of joy that your teachers deserve.

Victims to Their Specialty.

Although the title, "Diseases Described by Medical Men who have Suffered from Them," excludes the examples of medical men who have paid particular attention to a disease and eventually fallen a victim to their specialty, a brief reference to this subject may perhaps be made. It has been said, possibly inspired by the attractive speculation that auto-suggestion is at work, that this sequence is common, and Sir William Hale-White tells me that Sir Samuel Wilks, who was a doctors' doctor, was firmly convinced of this association. On the other hand, this coincidence is so striking that there is a risk of exaggerating its frequency. Writers of complete text-books would of necessity swell this category and must therefore be disqualified. For example, Nothnagel died of what has from the toll it levies been called the doctors' disease—namely, angina pectoris—on which he was a recognised authority; but he was also the editor of a voluminous encyclopædia of medicine, and wrote on a number of other subjects. As examples of authors unconscious that the future would add a grim personal interest to their favourite professional subjects the following may be quoted: Laennec, who died from pulmonary tuberculosis; Sir William Gull, who, with H. G. Sutton, described arterio-capillary fibrosis, from cerebral hæmorrhage; Mikulicz from carcinoma of the stomach; S. O. Habershon, the author of a book on Diseases of the Stomach, of simple gastric ulcer; G. R. Fowler, an American surgeon, author of a "Treatise on the Appendix," and originator of the Fowler position, of appendicitis; Corvisart and Lancisi of heart disease.[2] The late Sir A. B. Garrod, who wrote in 1876 that, unlike Sydenham, he could not from personal experience describe the sensations of gout, became its victim, when 70 years of age, so his son the present Regius professor of medicine at Oxford tells me. Trousseau, whose clinical lectures covered nearly the whole field of medicine, pointed out that if thrombosis occurred in a case of gastric disease, carcinoma might safely be diagnosed; when himself ill he was visited on Jan. 1st, 1867, by his former pupil Peter, who, when thus calling to express good wishes for the New Year, had the painful experience of hearing his teacher say: "It is all up with me, the appearance of a patch of phlebitis last night leaves no loophole for doubt as to the nature of my illness." Trousseau was right in applying his diagnostic deduction to his own case; he lingered on for six months, dying at the age of 66 years on June 23rd, 1867.

Occupational Diseases among Medical Men.

Attention may be called to examples of what might be called occupational diseases among medical men; medical officers specially interested in infectious diseases, including tuberculosis, syphilis, and tropical affections, on which they may have written, are naturally liable to contract these diseases, and radiologists have suffered much in the past, especially from carcinoma. Those who have worked at the laboratory aspects of infections may fall victims to these diseases, and many examples might be given. Probably the best known are those cases in which the accident has rapidly proved fatal and so do not come under the category of those who have described the disease from personal experience. But of these martyrs to medical research the names of a few may be mentioned:—enteric fever: Allen MacFadyen, H. J. Tylden, L. Jenner; yellow fever: W. Myers; Rocky Mountain fever: T. B. McClintic; plague: Müller; spirillum fever: J. E. Dutton; glanders: J. H. Wells (1909). Another group contains those who have deliberately inoculated themselves with infective or probably infective material; thus J. W. Lazear allowed mosquitoes to bite him and by his fatal illness proved the transmission of yellow fever; the late Dr. P. T. Manson allowed infected mosquitoes to bite him, and by thus contracting malaria proved that they transmitted the disease; his death, however, was due to an independent accident; the late Dr. R. Cory, of St. Thomas's Hospital, frequently vaccinated himself with vaccine lymph from syphilitic infants and eventually became infected; and John Hunter[3] inoculated himself with pus from a case of gonorrhœa but developed syphilis, and was thus led to believe in the unity of venereal disease; it is, indeed, probable that his dramatic death from angina pectoris was due to syphilitic aortitis.

Great Names Connected with Special Diseases.

Bright, Addison, and Hodgkin—the great triumvirate of Guy's Hospital—did not suffer or die from the diseases so inseparably connected with their names. Bright died at the age of 69 after four days' illness attended with hæmatemesis, and the necropsy revealed pure aortic stenosis with healthy kidneys. He was known to have some cardiac affection, but it is said that inquisitive attempts to find out its exact nature were always frustrated by him; at consultations between several eminent physicians, including Bright, the problem was sometimes attacked by proposing to compare the patient's pulse with that of a presumably healthy man (Bright); but the erudite touch of the inquiring colleague was always skilfully evaded. About Addison's end kindly reticence drew a veil at the time of his death, but it appears that he became insane and jumped out of a window at Brighton when 67 years old. Hodgkin, who was pathologist, but never on the medical staff of Guy's Hospital, died of dysentery at Jaffa at the age of 68. Dr. Joseph Ignatius Guillotin (1738–1814), who was a zealous advocate of vaccination and the founder of a short-lived Académie de Médecine in Paris, did not, as poetic justice might well demand, have his head removed by the instrument to which his name is attached.

When giving descriptions of diseases from which they may happen to have had personal experience some writers record their own sensations under a modest periphrasis such as "a man known to us ...... whose heart stands work well in all other respects but in whom intermittence of the heart may occur for many days if he remain for an hour or two with many smokers. He dare not sit in a close smoking room or in a smoking carriage." Or "a case is known to the writer in which the patient suffered from a severe attack 18 years from the onset of the disorder (bilharziasis), which had been in abeyance for some years." The late L. G. Guthrie,[4] à propos of ophthalmic migraine, wrote: "In one case known to the writer permanent paralysis of the ocular sympathetic appears to have been the result of repeated migraine."

The accurate observations of medical men on their own diseases, in spite of the quip that "he has a fool for his patient," are interesting human documents, and may add to our knowledge of the earliest indications of disease. Such personal descriptions are of special value from the point of view of the subjective manifestations or symptoms as opposed to physical signs. The physical signs are best observed by the onlooker and may escape the attention of the patient. Thus L. P. Mark, for some 15 or 20 years, each day when he looked into the glass to brush his hair or to shave had a typical acromegalic literally staring him in the face,[5] as had been clear to his professional friends for years, and when 49 was spotted in a crowd by Professor Pierre Marie, who originally described the disease, while in London for a medical entente cordiale. His graphic account of his sensations and sufferings, on the other hand, give much fresh information, especially as regards the occurrence of exacerbations in the disease, or of periods which he calls the acromegalic state during which the symptoms, like the physical signs, are accentuated; these symptoms varied from malaise to complete incapacity to do anything and mental depression.

Julius Thomsen's[6] description (1876) of the disease of the muscles (myotonia congenita) *hereditary* in his family first drew attention to this disease. This is the best, if not the only, example of a disease first brought to our knowledge by a sufferer, for it is not certain that John Bostock gave the first account of hay fever. Otherwise the nearest approach to such an original document is probably that by Dr. R. Druitt,[7] who gave a full description, especially as regards the early symptoms, of paroxysmal hæmoglobinuria under the title Paroxysmal Hæmatinuria in 1873, a year after the disease had compelled him to retire from active practice. But as far back as 1831 Elliotson[8] briefly referred to a case as connected with malaria, and in 1865, at the same meeting (on May 9th) of the Royal Medico-Chirurgical Society, G. Harley[9] and W. H. Dickinson[10] read papers on intermittent hæmaturia; Harley recognised that the red blood corpuscles were dissolved, but he believed that the underlying factor was hepatic derangement, apparently on account of the accompanying icteric tint; Dickinson, on the other hand, more nearly approached our present views in saying that we must be content to regard the disorder as something *sui generis* and the blood itself as the seat of the primary change. Druitt's symptoms began when he was 52, six years before his account of the disease was published, and lasted until his death in 1883 at the age of 68; he was the author of a once well-known handbook, "The Surgeon's Vade Mecum," which went through 11 editions.

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[1] A paper read before the St. Mary's Hospital Medical Society on Feb. 23rd, 1921.

[2] For an interesting paper on "Diseases of Great Physicians of the Past" see William Pepper (Tertius), Medical Library and Historical Jour., December, 1907; abstract in New York Med. Jour., 1908, lxxxvii., 231.

[3] Works of John Hunter with Notes, edited by J. F. Palmer, 1835, vol. ii., pp. 145, 417.

[4] Guthrie, L. G.: The Diseases of Children (Garrod, Batten and Thursfield). Vide also Clinical Journal, August 5th, 1895.

[5] Mark L.: Acromegaly, a Personal Experience. Baillière, Tindall, and Cox. 1912.

[6] Thomsen, J. (of Kappeln, Schleswig): Tonische Krämpfe (Ataxia Muscularis ?), Arch. f. Psychiat., Berlin, 1876, vi., 702.

Migraine, Asthma, and Gout.

The diseases most often described by medical patients are naturally those of a chronic character, and especially those with intervals of fair health between acute attacks of paroxysms, such as migraine, asthma, and gout.

Migraine, or sick headache, has the distinction of having been portrayed by more distinguished victims than has any other disease, even gout, and it is noteworthy that some of the most careful accounts of the visual phenomena have been given, not by medical men, but by the leading lights of pure science, especially astronomers, such as Sir G. Airy, Sir John Herschell, Sir D. Brewster, and Sir C. Wheatstone. In 1886 Hilton Fagge wrote: "I do not know of any other malady which within the present (XIXth) century has been the subject of two papers admitted into the Philosophical Transactions, as well as of communications to the Philosophical Magazine and other scientific publications in this country and abroad." It may therefore be said of it, as Sydenham feelingly remarked of gout, that it attacks more wise men than fools. Among well-known medical contributors to the literature of the disease are W. H. Wollaston, interim President of the Royal Society in 1820, who, however, threw up the profession in disgust when he was rejected as a candidate for the post of physician to St. George's Hospital in 1800; John Fothergill, the Quaker physician and philanthropist, of whom Benjamin Franklin said, "I can hardly conceive that a better man has ever existed"; Caleb Hillier Parry, the "distinguished old Bath physician"; Dr. E. Liveing, who wrote a classic on megrim (1873), Sir Samuel Wilks and Dr. Alexander Haig, a life-long sufferer until he dieted himself. Dr. Hubert Airy and Sir James Mackenzie have published coloured representations of their own spectra. Mackenzie mentions that the scintillations once came on when he was about to operate on a case of appendicitis, but in the concentrated attention given to the operation they disappeared, only to return about a quarter of an hour after the operation was finished.

Asthma and hay fever, being examples of toxic idiosyncrasies on which Dr. John Freeman has thrown the light of the laboratory, may be considered together. In 1819 John Bostock,[11] later Vice-President of the Royal Society, described his own case as a "periodic affection of the eyes and chest," and nine years later, now under the new name "Catarrhus aestivus, or summer catarrh," was able to collect 28 examples of a similar nature, but the only reference to a previous description of the disease that he could find was one by Heberden. But asthma, which it must be admitted is a rather vague term, as it may include many causes of dyspnœa, was previously well known. Thus Sir John Floyer described his own case in his "Treatise on Asthma" (1698); and in Hutchinson's Biographia Medica (1799) it is stated that John Arbuthnot's "Essay on the Effects of Air on Human Bodies" (1733) was apparently the outcome of consideration of his own case, "*an asthma which gradually increasing with his years became shortly after unmanageable and incurable.*"

Arbuthnot, in his political skit "The History of John Bull," originated this familiar personification of the English nation: "Bull in the main was an honest, plain-dealing fellow, choleric, bold, and of a very inconstant nature." It may be added that in one of his lighter touches the late Sir Victor Horsley described our three British institutions—*John Bull, Father Christmas*, and King Henry VIII.—as examples of fatty degeneration due to chronic alcoholism.

Another instance, certainly interesting on account of the correspondents, is to be found in a letter written from York on June 3rd, 1795, by Dr. Thomas Fowler (1736–1801) whose name is so familiar in Fowler's solution (liquor arsenicalis) to Dr. William Withering, of Birmingham, the introducer of digitalis, detailing his symptoms as those of angina pectoris and asking for advice; Dr. Withering endorsed the letter with his opinion that the disorder was spasmodic asthma. Turning now to later authorities, Hyde Salter wrote a treatise on asthma in 1859; C. H. Blackley, in his monograph (1873) on Catarrhus Aestivus or Hay Fever, refers to T. Wilkinson King, G. T. Gream, and W. P. Kirkman as fellow sufferers, and Trousseau[12] described his own experience; W. E. Steavenson in his published thesis for the M.B. at the University of Cambridge (1879), says, "I have never been prevented by an attack of asthma from going in for or completing any examination; but when completed and the strain on my mind relieved, it has always been followed the succeeding night and day by a severe attack."

Many famous medical men have suffered from *gout*, and some of them have made their experiences public. Thomas Sydenham (1624–1689), the English Hippocrates, was a chronic victim of gout, and towards the end of his life, when suffering from renal calculus and hæmaturia, brought out his Tractatus de Podagra et Hydrope (1685) Benjamin Franklin (1706–1790) was also plagued with gout and vesical calculus and wrote a curious pamphlet "A Dialogue between Franklin and the Gout." Dr. William Stukeley (1687–1765), not only a distinguished physician, but so eminent in archæology and druidical history that his friends familiarly spoke of him as the "Arch-Druid of this age," became so overpowered by the fatigues of his profession and repeated attacks of gout that he turned his thoughts to the church and was appointed to the living of All Saints, Stamford, in 1730, where he was treated by Dr. Rogers with his oleum arthriticum. The successful result of this external application induced Stukeley to publish "A Treatise on the Cause and Cure of Gout, with a New Rationale" (1734). It should, however, be noted that in addition to rubbing on the oil Stukeley adopted a proper regimen and left off the use of fermented liquors. A famous example of a physician recounting his own ailments is that of George Cheyne, who described his obesity, neurasthenia, and hyperchlorhydria and his cure in "The English Malady" (1733). In "An Essay of the True Nature and Due Method of Treating the Gout" (1720) he also drew on his own experience.

The late Sir Robert M. Simon suffered from *Ménière's disease*, and a graphic description of his symptoms from his own hand was published posthumously.[13]

Sir George Murray Humphry of Cambridge, had *phlebitis* on three occasions—in 1843 after right-sided pleurisy, in 1846 after typhoid fever, and again in 1851 after pleurisy. He laughed at those who kindly told him that he would die, and wrote his M.D. thesis on "The Formation of Clots in the Venous System during Life,"[14] recording his own case: "My attention was first called to it by its occurrence in a member of the medical profession, a delicate man."

Other Diseases, Infections, and Accidents.

Alimentary canal.—Merycism or rumination has been described by several medical sufferers: Näcke, Cambay, Blanchard, and Halliday.[15] J. H. Keay,[16] from frequent personal experience, insisted that the initial pain of *biliary colic*, presumably due to the entrance of a stone into the cystic duct, is felt in the back and *not*, as is commonly stated, in the right hypochondrium or epigastrium, and Dr. Kraus, of Carlsbad, expressed the same opinion on similar grounds. Professor Lewellys Barker,[17] in an article on the diagnosis of gall-bladder disease, mentions that when 8 years old he had enteric fever, and that 35 years later four gallstones giving cultures of *B. typhosus* were removed from his gall-bladder. Dr. E. A. Cockayne[18] detailed his own experience of catarrhal jaundice.

Cardiac and renal disease.—The late Sir W. T. Gairdner, who wrote much on the cardio-vascular system, gave an account[19] of his own symptoms in Stokes-Adams's disease. W. C. Wells (1757–1817), the famous author of "The Essay on Dew," suffered from dropsy and cardiac asthma; he wrote on scarlatinal and other forms of dropsy, pointed out that the urine contained albumin in scarlatinal and cutaneous dropsy, but not in primary hydrothorax or ascites. He noted that in some of his cases the kidneys were diseased, and thus prepared the way for Bright's generalisation; he anticipated Blackall, who subsequently elaborated the observations on the presence of albumin in the urine. James Jurin (1684–1750), the first physician to Guy's Hospital (1725-1732), suffered severely from renal calculus, and described his painful experience in his "Account of the Effects of Soap-Lye, taken Internally, for the Stone," published in 1740.

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[7] Druitt, R.: Med. Times and Gaz., 1873, i., 403, 461.

[8] Elliotson: THE LANCET, 1832, p. 300.

[9] Harley, G.: Med. Chir. Trans., 1865, xlviii., 161.

[10] Dickinson, W. H.: Ibid., 1865, xlviii., 175.

[11] Bostock, J.: Med.-Chir. Trans., 1819, x., 161, and 1828, xiv., 437.

[12] Trousseau: Clinical Lectures, p. 625, vol. i., 1868, New Sydenham Soc.

[13] Vide Brit. Med. Jour., 1915, i., 53, 282.

[14] Ibid., 1859, 582.

[15] Vide Brockbank, E. M.: Brit. Med. Jour., 1907, i., 421.

[16] Keay, J. H.: Medical Treatment of Gallstones, p. 75, 1902.

[17] Barker, L.: Jour. Amer. Med. Assoc., Chicago, 1920, lxxv., 1105.

[18] Cockayne: Quart. Jour. Med., Oxford, 1912–13, vi., 8.

[19] Vide "Life of Sir W. T. Gairdner," by G. A. Gibson M.D., pp. 138–152, 1912.

Infections.—Murchison, who had typhus twice, graphically described his own sensations and delusions during the delirium of the disease, and quoted similar personal accounts by Hildenbrand and Gueneau de Mussey. Benjamin Rush, "the American Sydenham," after advocating bleeding and purgation with good results in yellow fever, contracted the disease, had his own treatment, and recovered. Surgeon-General G. M. Sternberg, who investigated many outbreaks of yellow fever, and wrote much, especially about the ætiology and prevention of the disease, had an attack after the third outbreak and was as energetic as ever in advocating measures for its prophylaxis. Sir James Paget in his account of his illness contracted from examination of a patient dead of pyæmia remarked, "Sir William Lawrence used to say that he had not known anyone to recover on whose case more than seven had been consulted. Our art has improved. I had the happiness of being attended by ten." In recording his own experiences as a case of staphylococcic infection Sir Lauder Brunton[20] noted that the pain was worse after meals, when hydrochloric acid was being absorbed from the stomach, and that relief followed the ingestion of sodium bicarbonate and its local application to the pustule; he referred to the diminished alkalinity of the blood, but did not use the term acidosis, which, though invented, was not then in popular parlance. Alexander Ramsay (1754-1824) who, according to some, was a compound of personal deformity, immense learning, uncontrollable temper, and inordinate vanity, wrote "Personal Experiences from the Bite of a Rattle-snake."[21]

Tuberculosis has naturally attracted its medical victims to its study, and has recently been responsible for a number of medical officers to sanatoriums. Sir Andrew Clark, when young, was gravely ill with tuberculosis, and when given an appointment at the London Hospital in 1853 was not thought likely to survive a year; no doubt his own condition led him to undertake inoculation experiments with tuberculous material, a subject to which Villemin's researches were then (1865) calling much attention; but his work was interrupted by an attack of hæmoptysis. He also did much to establish the existence of a non-tuberculous destructive disease of the lung under the name of fibroid phthisis or, as it is now called, chronic (interstitial) pneumonia. E. L. Trudeau developed pulmonary tuberculosis in 1871 and was the pioneer of the open-air treatment of the disease at his sanatorium at Lake Saranac, in the Adirondacks, where R. L. Stevenson was for a time, and where, according to E. V. Lucas[22] simplified spelling is in vogue and "that most august and mysterious of the functionaries of life, the physician, is able to watch his divinity dwindle and his dignity disappear under the style Fizisn." Dr. James Hughes Bennet went to Mentone for disease of the lungs and was the chief agent in establishing Mentone as a health resort; he wrote a book on "The Treatment of Pulmonary Consumption by Hygiene, Climate, and Medicine."

Rupture of his tendo Achillis about 1762 led Alexander Monro, primus (1697-1767) of Edinburgh, to record his accident; and John Hunter's similar experience while dancing in 1768 inspired him to investigate experimentally the healing of tendons in dogs. Percivall Pott's fracture, due to a fall from his horse in 1756, has kept his name in perpetual recollection.

Lastly, most of the writers on old age and its infirmities, such as Cornaro, Sir Anthony Carlisle, Charcot, Sir George Humphry, Sir Hermann Weber, and Dr. R. Saundby, have been approaching the sere and yellow. A few dying physicians have recorded their experience until the pen slipped from their fingers, and it is difficult to find a more comforting last word than that of the great William Hunter, "If I had strength enough to hold a pen, I would write how easy and pleasant a thing it is to die."

HEALTHY FEET.

ON April 6th a lecture on "Healthy Feet" was delivered at the Institute of Hygiene by Mr. W. H. Trethowan, who said that during and after the war, as surgeon to one of the great military orthopædic hospitals, he had had an extended opportunity for noticing how frequently deformities and disabilities of the feet contributed to the C3 element enrolled in the new army, and also the effect of these foot conditions on active service. A great number of cases of so-called "trench feet" were reported, but when, from the cases thus grouped, those really due to frost-bite were eliminated, the remainder were ordinary mechanical disabilities common in civil life, such as flat-feet, too arched feet, clawed toes, hammer toes, and similar troubles. Apart from frost-bite, he had never been able to convince himself that such a disease as trench feet existed.

It was, he continued, impossible to find in a civilised adult a perfect foot—one of ideal shape, which would do its work properly and gracefully, and give no trouble. To keep the feet healthy it was necessary to "catch them early," and the most effective work for reform can be carried out by the provision of proper footwear for children. Growing children must not be on their feet all day long, and should not be required to follow laborious occupations, entailing heavy lifting. Standing about was more harmful than prolonged vigorous walking, and in any collection of women, such as nurses, who had to stand about during their work, foot troubles were numerous.

Flatness and Falling-in of Foot.—Height of Heels.

Flat-foot was the commonest of such troubles. But generally, and nearly always in children, the first trouble was not really flat-foot—that is, a giving way of the long arch—but a falling-in of the foot, just below the ankle-joint, a condition often referred to as weak ankles, leading to more strain on the inner border of the foot, and, later, to the arch itself giving way. The best exercise for flat or weak foot was correct walking, developed until it becomes automatic. Slight turning out of the toes was correct when standing easy, but in walking the feet should be kept parallel. The essential use of a boot was to protect from over-strain the ligaments which bind the small bones together, and consequently the boot or shoe should correspond to the shape of the foot. Instead of the shoe fitting the foot, however, it was unfortunately the case that the foot is compelled to adopt the conventional standard shape of the shoemaker, narrower than the actual human foot, producing a pointed toe portion in which the great toe was cramped, turned outwards, and not permitted to move. So-called squared toes were a delusion and a snare; it was not the part projecting beyond the toes which mattered, the important point being that none of the toes must be subjected to side pressure. A good shoe should also have a well-curved and stiffened waist.

With regard to heels, Mr. Trethowan said the Cuban was the most satisfactory for general use, the Louis heel being bad on account of its curved mechanical shape and inefficient support, and also because it weakened the whole sole of the shoe. In a strong foot the lower, brogue heel could be used. Children with normal feet did not require much heel. Women, however, favoured high heels, and, while there was no doubt that some did so for purely cosmetic reasons, it was certain that the majority of women wore high heels as a response to the relief afforded to the ligaments of the foot. Women, being hampered by skirts, could not get such freedom of movement in the hips as men are able to do, and it might be from this cause they needed the more efficient support afforded by heels. The action of the foot in man was not nearly so marked as in women, as men propelled themselves with the hip movement of long strides, while women walked more with their feet. It was a universal and traditional idea that the majority of troubles occurring in the feet are the evil results of the use of heels, but the anatomy and movements of the foot showed fully that the strain on the long arch must lessen in proportion as the heel is raised; this was the experience of the vast majority of women, in spite of medical advice to the contrary. The most important measure in giving relief in cases of weak or overstrained feet was to raise the height of the heels, and not to lower it, as was nearly always advised. The height of the heel for remedial purposes should not exceed 2¼ inches, and in house-shoes should not be less than 1¼ inches. Naturally, the height should do no more than afford relief. In cases of overstrained feet slippers must be avoided. Heels not less than 1¼ or 1½ inches in height were suitable for general use in healthy feet.

Selection of Footwear.

Most ready-made boots, Mr. Trethowan said, failed miserably in the support afforded to the inner border of the foot, and this fact, together with waists that are thin and unyielding, and which bulge downwards after use for two or three weeks, was largely responsible for the inefficient support and breakdown of the foot. Where such an evil arrangement was combined with a flat heel, the shoe is of the worst description. The majority of people habitually wore shoes too narrow across the toes and the balls of the toes. Up to a point, just behind the balls of the toes, the snugger and narrower the shoe the better, for a good tight grip of the instep was very desirable.

In selecting shoes important points to be borne in mind were length, breadth of soles, the pointing inwards of the toe portion or straight inner border, and the roominess of the toe portion of the upper. In conclusion, Mr. Trethowan pointed out that pressure effects began very early in children, and that a single pair of ill-fitting shoes might be the cause of a considerable degree of permanent deformity. Socks and stockings were of some importance also, and were often too short, narrow, and made of unyielding materials. Socks, in order not to have any deforming effects, should be large, not pointed at the toes, and made of material that will readily expand.

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[20] Brunton, L. St. Bart.'s Hosp. Rep., 1903, xxxix., 227.
[21] American Medical Biographies (Kelly and Burrage), p. 951, 1920.
[22] "From an American Note-book," Times, Sept. 24th, 1920.

A Hunterian Lecture

[ABRIDGED]

ON

LOOSE BODIES IN JOINTS.

A STUDY OF LOOSE BODIES COMPOSED OF CARTILAGE, OR OF CARTILAGE AND BONE, OCCURRING IN JOINTS. WITH SPECIAL REFERENCE TO THEIR PATHOLOGY AND ÆTIOLOGY.[1]

Delivered before the Royal College of Surgeons of England on Feb. 11th, 1921,

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I.—INTRODUCTORY.

THE subject of loose bodies in joints is not only of considerable practical importance, but in addition it constitutes a pathological problem of very great interest, the solution of which has taxed the ingenuity of surgeons and pathologists from the time of Ambroise Paré until the present day. It is scarcely surprising, therefore, that the literature upon the subject is great, and the nomenclature diverse. Unfortunately, the subject of loose bodies in joints, like that of internal derangement of the knee, in spite of the progress that has been made in recent years, is still surrounded by a cloud of mystery and imagination which not infrequently brings discredit upon our profession, and under cover of which the charlatan and "bone-setter" pursue their dangerous and unscientific methods. This cloud can only be dissipated by knowledge of underlying pathological principles. The present article does not discuss the group of loose bodies comprising those formed of unorganised fibrin, fibrous tissue, fat, &c., but confines itself to those bodies formed of cartilage, or of cartilage and bone combined, occurring in joints. Foreign bodies in joints also form a class by themselves and do not come within the scope of this paper.

II.—PATHOLOGY AND SYMPTOMATOLOGY.

The loose bodies of cartilage, or of cartilage and bone, under consideration may be classified into three groups.

GROUP I.—Loose bodies occurring in connexion with some more or less general pathological process affecting the joint, such as: (*a*) osteo-arthritis; (*b*) tabes; (*c*) tuberculous disease accompanied by necrotic caries; (*d*) acute arthritis due to infection.

GROUP II.—Loose bodies occurring in joints that are otherwise apparently normal: (*a*) bodies having the microscopic, and frequently the macroscopic, appearances of detached portions of the articular surfaces; (*b*) bodies derived from inter-articular fibrocartilages; (*c*) bodies formed from detached epiphyses not forming portions of an articulating area.

GROUP III.—Synovial chondromata, laminated and non-laminated: (*a*) single; (*b*) multiple; (*c*) diffuse.

GROUP I.—*Loose Bodies Occurring with Some General Pathological Process Affecting the Joint.*

A. *Loose bodies occurring in osteo-arthritis.*—(1) Synovial chondromata; (2) detached osteophytes; (3) detached epiarticular ecchondroses.

1. *Synovial chondromata in osteo-arthritis.*—These will be dealt with below under Group III., as they present the same naked-eye and microscopic appearances as the synovial chondromata that occur unassociated with osteo-arthritis. They cannot be said, therefore, to be the typical osteo-arthritic loose body, which distinction belongs to the detached osteophyte to be dealt with below.

2. *Loose bodies formed by detached osteophytes.*—It is to John Hunter that we owe the first description of this mode of origin of loose bodies. Bodies of this category have certain definite features which differentiate them from the other varieties, and by which they may at times be readily recognised. They are peculiarly exposed to injury in certain situations, and it is not surprising, therefore, that they may become detached, either completely or incompletely, and in the latter case are often found attached by pedicles of varied thickness to the joint margins. When completely detached the fractured surface of the chrondro-osteophyte may be recognised, but later this may become covered by outgrowth from the surrounding cartilage. In section these bodies are usually somewhat pyriform. The more pointed extremity is less thickly covered with cartilage than elsewhere, and may be regarded as the spot where the osteophyte was attached to the parent bone, the fractured surfaces having become covered with cartilage of new formation.

Microscopical examination of a chondro-osteophyte shows features of great interest, which clearly differentiate this variety from the two other types to be described later, with which it is liable to be confused—i.e., the synovial chondroma and the "classical" type of loose body derived from the articular surface. A section through the entire body shows that the periphery consists of well-developed fibrocartilage with comparatively few, but uniformly distributed, cells. The latter differ from those of connective tissue in that the nuclei are spherical, although they are as yet unsurrounded with capsules. This fibrocartilage is invested with a zone of fibrous tissue furnished with flattened cells as in a perichondrium. In this fibrocartilage occur areas of hyaline cartilage. The bone in the centre consists of well-developed *cancellous tissue, but is quite dead.* The lacunæ are empty, and devoid of any stained elements. The contents of the spaces are mostly groups of fat cells, but there are no stained nuclei either in the fat cells or other tissues. At the junction of the osseous centre and the surrounding cartilage there is, in places, a zone of calcified cartilage between the fibrocartilage and the proper dead cancellous bone, the cartilage cells *in this* zone being alive, but the bone corpuscles dead. The overlying cartilage has nowhere the characters of normal articular cartilage, and there are no proper elongated or other groups at the free aspect.

To sum up: A detached osteophyte forming a loose body in a joint has definite naked-eye and microscopic appearances by which it may be recognised. *It is very unusual* for more than two or three of these bodies to be found in the same joint, and there is often only one of this variety present. In the same joint, however, there may co-exist cartilaginous loose bodies derived from synovial fringes.

3. *Detached epiarticular ecchondroses.*—Professor S. G. Shattock was the first to point out that bodies of the same essential nature as the periarticular ecchondroses growing from the articular margins might arise in the substance of the cartilage covering the normal bone. This takes place by local hyperplasia of the cartilage, in which central ossification subsequently occurs (Path. Trans. xl.).

These observations suggest (as Professor Shattock observes) that in certain cases the separation of such might lead to the production of loose bodies of a kind similar to those which are at times detached from the articular margins.

B. *Loose bodies occurring in tabes.*—These resemble the bodies described in the last group, but all the processes tend to become greatly exaggerated, so that the loose bodies, whether formed from synovial fringes or by detachment of osteophytes, are as a rule larger. In tabetic joints, especially in the "hypertrophic" form, the osteophytes may be indeed enormous; moreover, the formation of bone involves the planes of connective tissue between the capsule and the synovial membrane, *so that the joint may be surrounded eventually by bony* masses, sometimes accurately articulated.

C. *Loose bodies occurring in tuberculous disease accompanied by necrotic caries.*—Tuberculous necrosis of considerable portions of bone is not a common condition. It affects more frequently the articular end of the femur, and is probably due to interference with the blood-supply of the affected portion, which may account for the wedge-shaped or conoidal form of these sequestra. A remarkable feature is the slowness of the process by which their separation is accomplished.

D. *Loose bodies occurring in acute arthritis due to infection.*—These occur in the following forms: (1) Flakes of necrotic articular cartilage of variable size; (2) bony sequestra; (3) the whole of the articular end, when the epiphysis is intracapsular, may necrose and be found quite loose in the joint. (Fig. 1.)

GROUP II.—*Loose Bodies formed by Detachment of a Portion of the Articular Surface and occurring in otherwise Normal Joints.*

General Characteristics.

1. They occur more frequently in males than in
2. The commonest age-incidence is between the years 15 and 25.
3. The type of loose body most frequently seen I termed the "classical" form. This form has the follo

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[1] Published in more detail, and with 32 illustrations, in the current number of the British Journal of Surgery.

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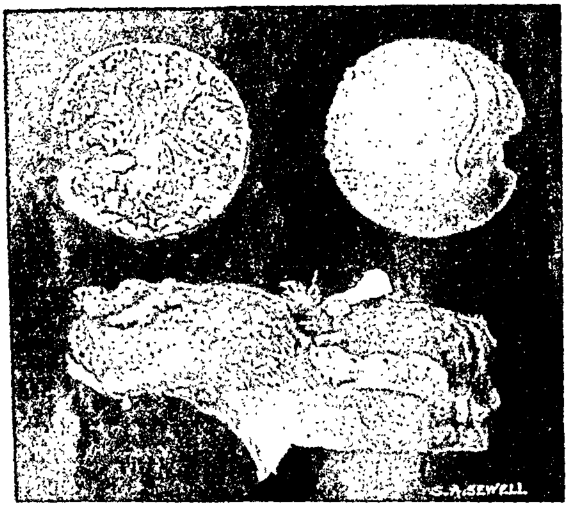
characteristics:—Shape, circular or oval; size, that of an almond; section, plano-convex. Surfaces: The convex surface has the typical appearance of articular cartilage, whereas the flattened surface is more irregular and may be rough, lowly nodulated, or smooth, according to the degree of proliferation that has taken place. The borders are smoothly rounded.

4. Their commonest site is the knee, next in frequency the elbow. Their presence has been recorded, although rarely, in the shoulder, hip, ankle, wrist, and other joints. In the case of the knee-joint they are usually derived from the articular surface of the femur or patella, and but rarely from that of the tibia.

FIG. 1.



Head of femur forming loose body in acute infective arthritis Natural size. [721 A, St. Thomas's Museum.]

5. Although usually single, occasionally two or even three of these bodies may be present in a joint.

6. The bodies may be completely or incompletely detached or may acquire a secondary adhesion to the synovial membrane. When incompletely separated they are usually attached by a hinge of articular cartilage to the margin of a defect or loss of substance in the articular surface which corresponds in size and shape to the loose body. In cases where more than one body is present, these may be quite free, or one may be incompletely detached and the remainder free.

7. Cases are recorded where such a gross detachment by injury as the head of the femur or of the radius may occur and form a loose body in the joint.

8. Their continued presence in a joint may bring about secondary changes of an osteo-arthritic nature.

9. These loose bodies themselves undergo certain remarkable changes in the joint which will be dealt with in detail below.

10. The part that trauma plays in their ætiology has been a subject of great controversy, and we will defer our conclusions upon that question until we have critically examined the series of cases to be next described.

11. They are occasionally bilateral and symmetrical (Bowlby, Clutton, Weichselbaum).

A. Loose bodies having the appearances of detached portions of the articular surfaces.—Classification: I have adopted the following subdivisions: (1) Recent detachments. Bone (where present) and articular cartilage living. No proliferative charges in articular cartilage. (2) Bodies whose sojourn in the joint has been longer. The articular cartilage shows proliferative changes. The "classical" type of loose body. (3) Marked degree of proliferation of cartilage. (4) Excessive proliferation of cartilage. (5) Feeble proliferation of cartilage. (6) Formation of new bone from the osteogenetic tissue in the cancellous spaces accompanying the formation of secondary adhesions, or incomplete detachment.

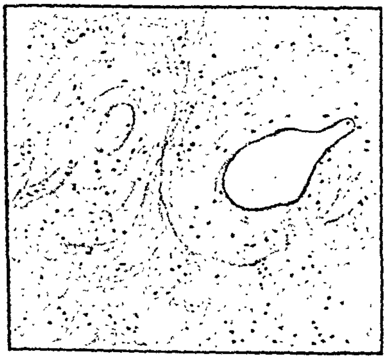
A series of cases illustrating recent detachments was then passed under review.

1. *Recent detachments.*—In this series a portion of articular cartilage, with or without a layer of the subjacent bone, is detached by direct or indirect violence. The following cases are typical examples representing four different varieties: Cases 1 and 2, detachment of articular cartilage and bone by direct violence; Case 3, detachment of articular cartilage and bone by indirect violence; Case 4, detachment of articular cartilage by direct violence; Case 5, detachment of articular cartilage by indirect violence.

2. *Loose bodies in which the cartilage shows proliferative changes. The "classical" type of loose body.*—In this subdivision a few cases only out of the large number examined will be passed under review. Although they are all alike in showing proliferation of cartilage, they present certain minor differences. The principal naked-eye features of this subdivision have been already described. It will be sufficient merely to draw attention again to the fact that the margins of the bodies comprising this group, instead of showing signs of recent traumatic detachment, are smooth and rounded. Many different theories have been held as to their origin, but I shall attempt to show that they are portions of the articular surface detached by trauma and not by any pathological process, and which have continued to grow until, as we shall see later, their origin may be obscured.

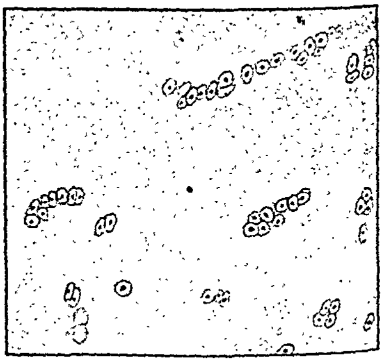
CASE 1.—E. J. D., 25, came under my care in November, 1919, with the following history. Before the war he had been a miner; he had never had any illness that he could remember, and had never had any joint trouble. In January, 1915, he joined the Royal Field Artillery, and almost immediately commenced to undergo the strenuous riding-school exercises. After a short time he noticed that his knee would occasionally become painful and swollen after riding. The pain and swelling recurred at intervals after strenuous exercise for about two and a half years. In August, 1917, his knee suddenly became fixed in the extended position as he was getting up to leave a train, and rapidly swelled. He was admitted to hospital with the knee locked in extension. He was treated for some months as a case of "arthritis," and the limb was immobilised by splints. The treatment caused the swelling to subside, but whenever he attempted to walk the pain and swelling recurred, and the limb was immobilised once more. After a long period of immobilisation the tendency for pain and swelling to occur after exercise subsided, and he was ordered a course of gymnastic exercises to remove stiffness that was present, and he was so far improved that he was able to return to duty in February, 1918, and returned to France again the following month. The result was disastrous; the pain and swelling constantly recurred, and at length, in December, he was discharged the Service permanently unfit. After discharge his symptoms continued, but in addition, he became subject to attacks of severe pain in the joint which caused him to fall to the ground. In November, 1919, he was going up some steps when his left knee suddenly "twisted inwards" and became locked in a semiflexed position, so that he was unable to straighten it.

FIG. 2.



Living bone corpuscles. [722 St. Bart.'s.]

FIG. 3.

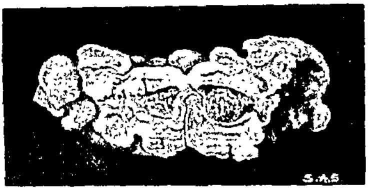


Living cartilage cells. [722 St. Bart.'s.]

When I saw him there was a considerable amount of effusion in the joint, and any attempt to extend the leg upon the thigh caused severe pain, more marked beneath the patellar ligament. At first sight this appeared to be a case of internal derangement of the knee due to injury and displacement of the internal semilunar cartilage. However, as all attempts to unlock the joint were unsuccessful, the patient was X rayed and a loose body revealed. At operation I found the loose body lying in the depression of the articular surface of the external condyle of the tibia between the external semilunar cartilage and the tibial spine. It was easy to see how its position mechanically blocked full extension of the leg. It was attached by a pedicle to the posterior crucial ligament in the region of the intercondylar notch. After division of the pedicle the loose body was removed, and the patient made an uninterrupted recovery.

From a consideration of the history it appears probable that during the riding exercises a portion of articular cartilage was gradually detached, probably by ligamentous strain or muscular spasm, and that eventually it became completely detached and caused the first locking of the joint. Afterwards the body perhaps acquired a secondary attachment to the synovial membrane over the crucial ligament, which, on stretching, gave rise to the second period of locking. Incidentally the history shows the difficulties and pitfalls that lie in the path of the clinician in these cases. The patient's condition remained undiagnosed for nearly four years; he suffered much pain and discomfort, and was eventually discharged "permanently unfit." An exploratory arthrotomy might have at once revealed the condition, spared him years of suffering, and supplied another soldier for the firing line.

FIG. 4.



Loose body derived from articular surface showing striking degree of proliferation. Natural size. [1931 B, R.C.S.]

Microscopical appearances.—A portion cut from the dried specimen after immersion in water regained its normal appearance; and microscopic sections, after staining with hæmatoxylin, displayed well-stained cartilage cells throughout—i.e., it is *not a sequestrum*.

I am indebted to Mr. Percy Sargent for loan of the following specimen.

CASE 2.—W. G., aged 20, came under Mr. Percy Sargent's care in May, 1920, with the history that nine months ago he "ricked" his right knee whilst swimming, and experienced severe pain in the outer side of the joint, and almost immediately after noticed a freely movable body in this situation. No locking occurred, but movements were painful. Afterwards the knee was apt to give way suddenly about once a fortnight, with excruciating pain—the loose body on these occasions being felt as before at the outer side of the joint. There was never any actual locking.

On admission the knee was slightly swollen and the synovial membrane thickened. Movements of the joint were full, and no loose body could be felt. There was some wasting of the thigh. Mr. Sargent obtained access to the joint by the vertical median division of the patella. The body lay quite loose behind the patella.

The loose body has the characteristics of the "classical" type already mentioned. The rounded bodies are well seen, and the deep surface shows that the articular cartilage has extended from the margin of the body over the surface of the bone. This process is more advanced than in Case 1.

Microscopical appearances.—From the fractured edge of the original large-celled articular cartilage a cushion of small-celled cartilage has been produced, which extends over the edge and over the under side of the fractured bone. The bone itself is necrosed, the corpuscles in the trabeculæ ceasing to take a nuclear stain. The connective tissue within the cancellous spaces is quite dead; the forms of the fat cells in the cancellous spaces, however, being still recognisable.

At the top of the specimen is seen the free surface of the reparative tissue or "callus;" which has spread from the proliferating fractured edge of the articular layer, over the opposite aspect of the fractured surface of the bone, as indicated by the fissure between the two.

The reparative tissue is well developed on the deep aspect, the cartilage cells being furnished with well-pronounced capsules. One process has intruded itself into one of the cancellous spaces laid open by the fracture. At the lower right-hand side another elongated cancellous space is completely filled with a deeper intrusion of cartilage, the matrix of which is coloured a vivid blue; there were several adjacent spaces occupied with similar newly formed cartilage. The lacunæ of the osseous trabeculæ are quite empty, the bone itself being dead.

[Professor Fisher next described the microscopical appearances in a number of other cases somewhat similar to the last but presenting minor differences.

In Case 6 (Spec. No. 722, St. Bart.'s Museum: Figs. 2 and 3), although in the absence of any history of injury it had previously been inferred that the body had become detached through "quiet necrosis," yet microscopic examination shows that the cartilage cells and bone corpuscles are all living.]

3. *Loose bodies exhibiting a striking degree of proliferation.*—The phenomena presented by this subdivision are truly remarkable; the cartilage cells proliferate with such exuberance that veritable cartilaginous tumours are formed. In the centre of the body can be seen the fragment of the articular surface originally detached.

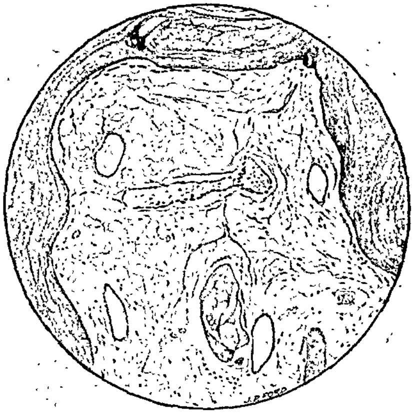
CASE 1.—Consists of two loose bodies of unusually large type which were removed from a knee-joint. They are both somewhat discoidal in form, and have a remarkably irregular, coral-like exterior, like some of the osteomata growing from the ends of the long bones; the larger has a chief diameter of 2¼in. The smaller of the two bodies has in the centre a nucleus of dense osseous tissue which is covered on one aspect by a layer of cartilage having the appearance of articular cartilage. Next succeeds a thick crust of cartilage which is obviously laminated in a circumferential manner. This external crust is traversed in places by fissures which have for the most part a radial arrangement. The accompanying description states: "They were removed from the knee-joint of a labourer, aged 25. The loose bodies lay in the cul-de-sac beneath the quadriceps extensors, and were very freely movable. The patient noticed a swelling in that situation after a fall on the knee five years previously. The margins of the femur were lipped but there was no other evidence of osteo-arthritis."

CASE 2 (Spec. 1931B, Museum, R.C.S., Fig. 4), is an equally remarkable example of very marked degree of proliferation of the articular cartilage. The short accompanying description states that: "It was removed by operation from the knee-joint of a man, aged 55, who had been unable to flex his leg to the full extent for some months. A hard movable body could be felt in the suprapatellar recess of the joint previous to operation. There were evidences of rheumatoid arthritis in the knee."

4. *Feeble proliferation of articular cartilage.*—This is a rare condition, and is represented by but one example among the large number examined in the course of this research. This specimen, kindly lent me by Professor M. J. Stewart, of Leeds, is the one described by Teale, who considered that it had been gradually exfoliated after injury.

Microscopical examination. The cartilage cells towards the free surface stain feebly (possibly the result of imperfect fixation). More deeply the groups of cells and their nuclei are sharp and the nuclei fairly, not intensely stained. On the free deep side here and there are portions of large-celled cartilage.

FIG. 5.



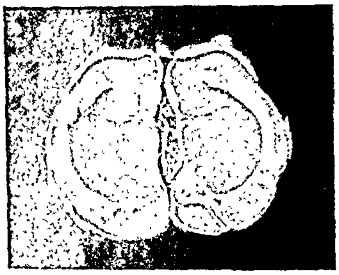
Formation of new bone in cancellous spaces of a loose body accompanying secondary adhesion to synovial membrane.

5. *Formation of new bone from osteogenetic tissue in cancellous spaces accompanying the formation of secondary adhesions or incomplete detachment* (Fig. 5).—In the cases hitherto described it is to be noticed that no case demonstrates new bone in process of formation. The cancellous spaces contain merely necrotic tissues, and no living and active osteogenetic cells. It will have been noted that these bodies were all quite free in the joint. The examples of the subdivision we have now to consider were found at operation to have acquired a secondary adhesion to the synovial membrane or to be incompletely detached. In this variety we find that the cancellous spaces still contain living contents and vessels, and that although many of the deeper bone corpuscles—that is, those lying nearer to the articular cartilage—are dead, yet the more superficial cancellous

spaces contain osteogenetic tissue actively engaged in laying down new bone upon the surface of the old. There can thus be little doubt that a loose body may, if attached secondarily to the synovial membrane or if incompletely detached, increase in size, not only by proliferation of its cartilage cells, but also by formation of new bone. Moreover, it appears that, should secondary detachment of the loose body occur, the formation of bone ceases, whereas the cartilage continues its growth. This increase in bony substance of an attached loose body is important from the ætiological point of view, as we shall see later, particularly in those cases where a loose body attached to the crucial ligament of the knee-joint occupies a pit on one or other femoral condyle. At first sight it would appear difficult to understand how such a body could be detached by traction of the ligament, unless we realise that the bone has probably continued its growth after incomplete detachment.

B. *Loose bodies derived from interarticular fibro-cartilages.*—The subject of injuries to the semilunar cartilages of the knee-joint is a large one, and is beyond the scope of the present article; I am, moreover, making it the subject of a further research. It will suffice to mention here that a portion of one of the semilunar cartilages—usually the anterior end of the internal semilunar—may occur as a rounded cartilaginous body, either attached by a pedicle of variable thickness to the remainder of the cartilage, or the pedicle may rupture and the body become quite free.

FIG. 6.



Epiphysis of ext. condyle of humerus forming loose body in elbow-joint. Natural size. [714 C, St. Bart.'s.]

I have seen the internal semilunar cartilage completely detached from its site and with a secondary attachment round the periphery of the patella. Occasionally the posterior horn of one of the semilunars may form a pedunculated loose body in the joint.

C. *Loose bodies formed by detached epiphyses not forming portions of an articulating area.*—(Spec. 714C St. Bart.'s Hospital, Fig. 6.) This loose body was removed by Sir Charles Gordon Watson from the elbow-joint of a boy, age 17, in whose joint it had been present for four years. There can be little doubt that the body is a detachment of the epiphysis of the external condyle of the humerus. One surface of the loose body is convex and lowly nodulated, the other surface being concave. The section shows that there is a nucleus of bone in the centre, and that the convex aspect is covered by a thick layer of cartilage, which has also apparently spread over the concave detached surface. This cartilage has none of the characteristics of articular cartilage.

GROUP III.—*Synovial Chondromata, Laminated and Non-Laminated.*

They may be divided into three classes: (*a*) Single (Fig. 7), pedunculated or free; (*b*) Multiple, pedunculated, free, or the two conditions combined; and (*c*) Diffuse (Fig. 8), usually associated with free bodies in the joint cavity. The discovery by Kölliker of cartilage cells in the villi of the synovial membrane and the observations of Rainey have already been referred to in Section I. The loose bodies of the important group we are about to pass under review, although they may differ in structure and form, have the common characteristic that they have originated from the cartilage cells of the synovial villi, and are, therefore, true chondromata. It is impossible in the present state of our knowledge to assign a cause for this behaviour of the cartilage cells. In many cases there is a history of injury; in others this is absent, and they often appear to occur in the course of chronic synovitis. Whether, however, the presence of the synovial chondromata caused the synovitis, or the latter was the exciting cause of the tumour formation, it is impossible in many instances to say.

[Professor Fisher then described the naked-eye and microscopical features of the three classes of synovial chondromata.]

III.—ÆTIOLOGY AND PATHOLOGICAL DEDUCTIONS.

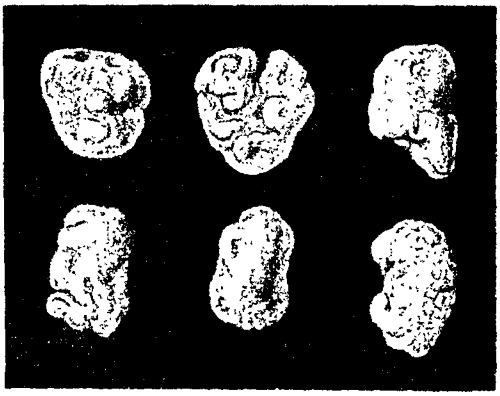
In the present stage of our knowledge it is impossible to dogmatise upon the ætiology of the more important loose bodies of Group I.—i.e., the osteophytes, since it is bound up with the larger question of the ætiology of osteo-arthritis. Similarly, the ætiology of Group III., the synovial chondromata, is bound up with the larger question of the ætiology of tumours. Although it is probable that the cartilage cells in the synovial villi from which they originate are, as Professor Shattock pointed out, derived from the primitive cartilaginous bar which in the developing embryo becomes cleft to form the knee-joint, the periphery remains to become the capsule and synovial membrane. Trauma, however, may undoubtedly be a contributory factor. In one of my cases the patient was struck a severe blow just above the patella a year previous to the X ray examination, which revealed multiple synovial chondromata developing in the suprapatellar joint recess. This section will therefore deal principally with the ætiology of the type of loose body derived from the articular surface (Group II., Class I.).

A.—*Deductions from the Pathological Data.*

1. When composed of articular cartilage only the later, so *far from being necrosed*, is *perfectly healthy* (except, perhaps, in the Teale case) and in many cases actually proliferates. Anything more unlike a sequestrum in its behaviour it would be impossible to imagine.

2. In the large series examined there were no signs of any pathological process, such as pitting due to phagocytic action such as a sequestrum shows, and no layer of granulation tissue or fibrous tissue on the deep surface. On the other hand, the deep surface had in many cases all the appearances of a fractured surface. The series examined has included many of the specimens from pathological museums labelled "*quiet necrosis.*"

FIG. 7.



Multiple chondromata of synovial membrane. Natural size. 720 B, St. Bart.'s.]

3. In those cases where it has been possible to ascertain whence they have arisen, they are found to arise from those parts of the joint surfaces most exposed to injury.

4. They often present to the naked eye the form of grooves on the articular surface associated with fracture of the subjacent bone of traumatic origin.

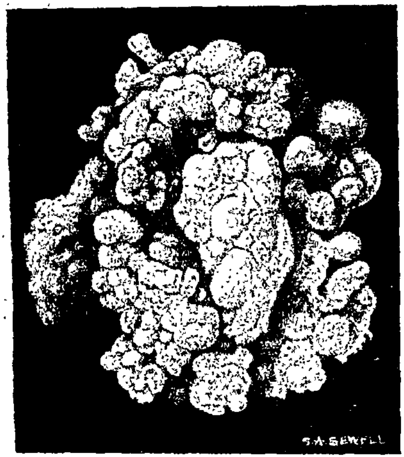
5. Although many of the bone corpuscles are dead in cases where the loose body consists of bone in addition to cartilage, yet it is clear that their death has taken place *after* and not before detachment, and this fact cannot therefore be adduced in favour of some pathological process such as "quiet necrosis." In the experiments to be described below, identical appearances are seen, and here there can be no question that the death of the bone corpuscles must have taken place *after* detachment of the loose body. We see exactly the same behaviour of the bone corpuscles in experimental bone grafting, for Hey Groves, Axhausen, and others have shown that the majority of the bone corpuscles in a bone graft die. We shall refer to *this* again later under conclusions. Moreover, as previously mentioned, in the only case in the whole series where there was no history of injury, and where we should expect to see marked evidence of some pathological process, such as "quiet necrosis," we find that the bone corpuscles are all living.

To sum up the pathological data, the naked-eye and microscopical features of this group of loose bodies demonstrate that they are detached by trauma.

B. *Deductions from the Clinical Data.*

1. *Traumatic factor.*—Martens, who made an analysis of König's cases, found that out of a series of 54 cases there were 20 with a definite history of antecedent trauma, and 34 where this was absent or of an insignificant nature. But, as we have shown above, all figures not based upon microscopic examination of every case are fallacious, owing to the way in which the solitary osteo-arthritic loose body may simulate the traumatic type. In my own series of cases quoted above, all of which were examined microscopically, there were 16 cases; of these, 3 cases had no accompanying history, and may be discarded for statistical purposes, leaving 13 with an accompanying history. In 12 out of the 13 there was a definite history of antecedent trauma, 6 being cases of direct and 6 of indirect injury. In only 1 case was there no history of antecedent injury, yet in this case not only the cartilage cells but all the bone corpuscles were perfectly healthy, and there was no sign whatsoever of any morbid process. The clinical evidence from this source strongly supports, therefore, the traumatic origin of this group. Further to investigate this point I searched through the surgical records of St. Bartholomew's Hospital, and found that in the last 17 years there have been 20 cases of solitary loose body operated upon. These were not all examined microscopically, and therefore almost certainly include a certain number of the solitary pathological variety, yet in no less than 80 per cent. of these cases was there a definite history present. If we were able to exclude the pathological type in this series it is obvious that the percentage would be still greater. Surely it is reasonable to assume that in the small percentage of cases remaining, in which no history of injury is present, leading questions were asked as to a direct injury and the possibility of indirect was overlooked or forgotten.

FIG. 8.



Diffuse chondroma of synovial membrane. Natural size. [720 C, St. Bart.'s.]

But it may be asked, How can indirect injury lead to a detachment of a portion of the articular surface? I believe that in many cases they are pulled off by the crucial ligaments, and it is certainly remarkable that these bodies are commonly derived from the area near the attachment of one or other crucial ligament. In the knee-joint of a full-term fœtus, by fully flexing the knee and then internally rotating, a very large piece of the inner portion of the external condyle of the femur can be wrenched off. Then another and, I believe, not infrequent detachment by indirect injury is produced by violent tension upon the posterior ligament of the knee-joint, which, it will be remembered, is attached immediately adjacent to the articular margin and is powerfully reinforced by the tendons of the gastrocnemius and semimembranosus muscles.

Sir Anthony Bowlby has drawn attention to a specimen in St. Bartholomew's Museum consisting of two portions of cartilage which were removed by operation from the knee-joints of a boy, age 18, by Holden, and each exactly resembles the cartilage over the posterior aspect of the condyles. There was a year's interval between the two operations.

2. *Interval occasionally occurring between injury and onset of classical symptoms of a loose body.*—Supporters of the theories of "quiet necrosis" or "osteochondritis dissecans" lay considerable stress upon this interval. Yet the interval can be satisfactorily explained if we bear in mind that the classical symptoms are due to the loose body being caught between the articular surfaces, this giving rise to sudden attacks of pain or even locking. If the loose body has become attached to the synovial membrane in such a position that it is unable to wander freely about the joint or get between the articular surfaces, or if it has not been completely detached and occupies a pit in the articular surface, then the classical symptoms may not arise. Should it eventually become completely free more definite symptoms may arise.

The clinical evidence would therefore appear to favour strongly the traumatic origin of loose bodies of the "classical" type.

C.—*Deductions from Experimental Observations.*

1. *Experiments upon the cadaver.*—Although it is scarcely logical to argue from the dead to the living, yet I have been able, exercising quite moderate violence, to detach, both completely and incompletely, portions of the articular surface of the femoral condyles in the cadaver. I found that a blow by a hammer upon the lateral margin of the condyle produced a detachment of a portion of articular cartilage, this detachment usually occurring through the brittle calcified zone. If, however, the surface of the condyle was struck, a much greater degree of violence was necessary to detach a portion of the articular surface. I have already referred to my artificial production of loose bodies by tension upon the crucial ligaments.

2. *Experiments upon animals.*—These yield results of great interest. I describe here a typical experiment upon the knee-joint of a rabbit, where a small portion of the articular end of the femur was detached by a chisel after opening the joint, the artificially produced loose body being subsequently examined. First operation: The right knee-joint of a rabbit was opened from the inner side. A small portion of articular cartilage with a portion of the subjacent bone was chiselled off—the portion involving the inner lip of the trochlear surface of the femur and a small portion of the inner condyle of the femur. The portion was completely detached and pushed up into the suprapatellar recess of the joint. The joint was then closed, the incisions in the capsule and skin being separately sutured with catgut and a collodion dressing applied. Second operation: The joint was reopened five weeks later, and the loose body found to have acquired a secondary attachment to the synovial membrane of the suprapatellar pouch. This attachment was divided with scissors and the loose body removed.

Microscopical examination revealed general features resembling a loose body of the classical type in that the majority of the cartilage cells are perfectly healthy but many of the bone corpuscles are dead. But the latter must have died *after* detachment; therefore it seems reasonable to assume that the bone corpuscles in the classical type of loose body have also died after the detachment by trauma, and that their death is not due to any morbid pathological process. The experimental data, in addition to the pathological and clinical data, are thus consistent with the traumatic origin of the classical type of loose body occurring in joints.

Deductions upon Cartilage Vitality Growth and Repair to be Drawn from a Study of the Pathological Data.

A. *Vitality of articular cartilage.*—The first fact of interest to be noted is that the behaviour of the cartilage cells demonstrates that their vitality has been considerably underestimated. A loose body of the traumatic type when free in a joint is essentially an autoplastic graft surrounded by the synovial fluid, and when the loose body is composed of both cartilage and bone we have an excellent opportunity of observing and comparing the behaviour of these two substances. One then observes that the cartilage cells retain their vitality in almost every case and after a time actively proliferate, but that the majority of the bone corpuscles die, as do also the contents of the bony spaces. As we have mentioned previously, we see the same difference in behaviour between cartilage cells and bone corpuscles after transplantation of joint ends.

B. *Growth and repair of articular cartilage.*—Present-day teaching is largely based upon the experiments of P. Redfern, performed in pre-antiseptic days. The general conclusions drawn from these experiments was that cartilage cells were destitute of the powers of repair. Yet there can be no doubt that the phenomena described above refute the conclusions arrived at by the earlier experiments. At present I am performing a series of experiments upon animals in order further to investigate growth and repair in cartilage, and which will be made the subject of a further communication.

C. Growth and repair of cartilage other than articular.—Professor Shattock has kindly allowed me to reproduce in this connexion one of his hitherto unpublished observations, showing the reparative production of new cartilage from the cut edges of one of the tracheal rings which was divided six years previously in a tracheotomy. The opposite edge of the cut surface of the same ring showed precisely the same repair. The actual interval between the two is filled with dense fibrous tissue. The specimen was obtained from a boy, aged 15, upon whom tracheotomy had been performed six years previously. This specimen shows with almost startling clearness that cartilage cells are capable of growth and repair.

Application of these facts to cartilage-grafting.—Owing to the inherent vitality of cartilage cells it is clear that the use of cartilaginous grafts in surgery is based upon sound principles. Morestin has done excellent work in this connexion, and has used autogenous grafts of costal cartilage to repair defects in the cranial wall and facial skeleton.

Deductions to be Drawn from a Study of the "Classical" Type of Loose Body upon the Behaviour of the Bone Corpuscles in an Autogenous Graft.

From a study of the pathological appearances in the cases that we have described of loose bodies of bone and cartilage quite free in the joint, it is clear that, except in one case, the majority of the bone corpuscles were dead, as exemplified by the lacunæ no longer holding stainable cells, and by the fact that the spaces contain nothing that stained and were, in fact, empty. Furthermore, in not a single case was there any evidence of proliferation of osteoblasts with formation of new bone. Yet we see a striking difference on examining those bodies of traumatic origin and containing bone which have acquired an early adhesion to the synovial membrane. For in these cases fresh capillaries can be seen to have penetrated the cancellous spaces, and active proliferation of osteoblasts with formation of new bone is taking place. Exactly the same thing can be observed in the experimental production of loose bodies which show secondary attachment to the synovial membrane with active proliferation of bone cells.

These observations therefore support Hey Groves's contention that the osteogenic cells in the Haversian canals and cancellous spaces of an autogenous bone-graft actively proliferate only if the graft becomes to some extent vascularised by the ingrowth of capillaries from surrounding parts. As, therefore, the vascular supply appears to be of such paramount importance in the osteogenetic function of the bone-graft it would appear to be advantageous to retain the periosteum in order to enable the graft to establish its vascular connexions as rapidly as possible. And in grafting cartilage the indication would appear to be to retain the perichondrium in order to supply an additional aid to any further production of the cartilage.

IV.—DIAGNOSIS AND TREATMENT.

Diagnosis of the traumatic loose bodies.—Considerations of space will not permit the enumeration of a number of case histories, and compels me to summarise my conclusions from these. If we bear in mind the pathological and experimental data it will help us to understand the often extremely puzzling symptoms to which a loose body may give rise. We have seen that a portion of the articular surface may in the first place be incompletely detached, in which case it may lie snugly in place, flush with the articular surface; or, on the other hand, it may be capable of considerable movement. Secondly, the detached portion may be quite free in the joint. Thirdly, it may acquire a secondary adhesion to the synovial membrane.

Now the classical symptoms of a loose body, which are sudden attacks of severe pain, often followed by swelling or momentary locking, are due either to the body becoming suddenly and momentarily nipped between the articular surfaces or between the capsule and the joint ends. These symptoms cannot arise when either the body is firmly attached to the synovial membrane at some point where it cannot get between the articular surfaces or when it is incompletely detached and lies snugly in situ. Bearing these facts in mind, it is possible to describe three different groups into which the symptoms fall and place side by side with the symptoms the corresponding pathological picture.

Group 1.—A portion of articular surface is completely detached; wanders freely about joint; and after an interval becomes secondarily attached to synovial membrane. An injury, direct or indirect, is followed almost immediately by classical symptoms; and after an interval these disappear.

Group 2.—The portion of articular surface is completely detached, becomes almost immediately adherent to synovial membrane; but after an interval it becomes detached therefrom. An injury, direct or indirect, is followed by freedom from classical symptoms; but after an interval the latter symptoms arise.

Group 3.—A portion of the articular surface is *gradually* detached; at length it becomes freely movable or completely detached. Here the process of gradual detachment is accompanied by attacks of pain and swelling, often increasing in severity, and these are followed at last by the classical symptoms. These again may disappear when the body becomes secondarily attached to the synovial membrane.

Symptomatology of the pathological varieties.—The symptoms to which the solitary osteo-arthritic body or the solitary synovial chondroma may give rise are almost identical with those we have already described. When, however, multiple synovial chondromata are present, we find that, as a rule, owing to their number and smaller size, the bodies are apt to become caught between the joint surfaces much more frequently. This occurrence is, however, not associated with such pain or inconvenience to the patient as in the case of the solitary varieties.

Treatment.—The treatment in the case of the traumatic loose bodies and of the synovial chondromata is, in most cases, removal. In the former group, provided the aseptic technique is beyond reproach, the results are naturally good, since they usually occur in a joint that is otherwise normal. However, if the traumatic loose body has been allowed to remain in the joint long enough to cause a chronic villous synovitis or commencing osteo-arthritis, although we may cure the sudden attacks of pain due to the body becoming impinged between the articular surfaces, yet the operation may be followed by pain, swelling, and feeling of weakness in the joint due to the superimposed condition. This forms one argument for early operation, another being that the presence in a joint of a loose body is a source of danger, as when a loose body suddenly becomes impinged between the articular surfaces of the knee when crossing a crowded street. These propensities of loose bodies also interfere with athletic pursuits.

In the case of the pathological loose bodies in osteo-arthritis, an operation is usually indicated in young or middle-aged people when troublesome locking occurs and when the joint is not seriously disorganised. The operation has naturally no effect on the course of the disease, and is of a palliative nature. The results of operation in the synovial chondromata are also good, provided the condition is not progressive, for the process may end as suddenly and mysteriously as it commences. If we are lucky enough to operate when the process has come to an end the result is generally good; if not, further operations may be required. I saw recently a man who, 15 years ago, while in India had over 700 cartilaginous loose bodies removed from his left knee. On examination his knee appeared perfectly normal, and it caused him no trouble whatsoever. Any operation for removal of a loose body or bodies should be preceded by an X ray examination taken in two planes, from which we may learn how and where to open the joint. An X ray is only helpful when the loose body contains bone. In every case incision through the skin and capsule should be liberal, in order to explore the joint as thoroughly as possible. To transfix and remove the loose body through a button-hole incision is an unscientific procedure reminiscent of pre-antiseptic days, for unless we explore the joint we are very apt to overlook other loose bodies or co-existent conditions which may give rise to a recurrence of the symptoms.

It is my pleasant duty to express my indebtedness to Professor S. G. Shattock, who has throughout the research given me much help, advice, and criticism, and has also kindly placed at my disposal the pathological collections at the Royal College of Surgeons and at St. Thomas's Hospital. To the Medical Research Council, under whose auspices the research has been conducted, my thanks are also due. I am also indebted to Dr. T. H. G. Shore, Curator of the Pathological Museum of St. Bartholomew's Hospital for loan of many specimens; to my chief, Mr. R. C. Elmslie, for many helpful suggestions; and to Professor A. Keith for kindly allowing me to work at the Royal College of Surgeons, and for other valuable assistance.

Oliver-Sharpey Lectures

ON THE

NATURE OF FLUTTER AND FIBRILLATION OF THE AURICLE.

Delivered before the Royal College of Physicians of London on April 12th, 1921,

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PHYSICIAN TO THE STAFF OF THE MEDICAL RESEARCH COUNCIL; PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL, LONDON; HONORARY CONSULTING PHYSICIAN TO THE MINISTRY OF PENSIONS.

LECTURE II.—AURICULAR FIBRILLATION.

IN the first of these lectures I have endeavoured to put before you the chief conclusions which we are able to form respecting that rather rare condition, auricular flutter, and have stated that flutter as it occurs in man is due to a single wave circulating continuously. In this lecture I propose to deal with the much commoner, and therefore more important, disorder, auricular fibrillation. Now these two conditions are very closely related, as has been recognised for some years; they are known to be related not only because of several resemblances, but because the one not infrequently passes into the other. Thus flutter of the auricle, as I pointed out some years ago, may usually be converted into fibrillation by the administration of heavy doses of digitalis—a conversion which is made use of in the present-day therapy of flutter. We shall see presently how the two states are related, and that circus movement underlies both. To explain the inter-relation it is necessary for me to expand what I have already touched upon—namely, certain reactions of the auricular muscle to increased rate of beating. We must study in more detail the change which occurs in the length of the refractory period and in the rate at which the waves travel as the rate of beating rises.

INFLUENCE OF HEART-RATE ON THE REFRACTORY PHASE, ETC.

The changes are somewhat complex and may be illustrated most clearly by means of the accompanying diagram (Fig. 1). To the left of the diagram is a double-headed arrow, which represents the length of the auricular cycle when the heart is beating at a normal rate. This cycle is divisible into two parts, as indicated by the two double-headed arrows which stand just to the right of the first; it is divisible into the *refractory period*, during which the auricular muscle is in the excited or contracted state, and into the *responsive period*, during which the muscle is inactive or resting. I represent the refractory period in black and the responsive period in white, and the remainder of the diagram shows, on the basis of direct observation, how these two periods are proportioned to each other as the heart-rate is raised. As the heart-rate rises by equal increments—say from 100 to 150 to 200 to 250, &c. —so the length of the cycle shortens. If the lengths of the cycles, as these shorten, are charted vertically upon a horizontal base line (as in the figure), their ends join up to form a curve, the steepness of which gradually decreases. The curve of the end of the cycle approaches the base line, at first rapidly, but gradually less rapidly. The two lines will meet at infinity. The end of the refractory period also forms a curve which moves towards the base line (it is represented by the top edge of the black portion of the figure). Briefly, the refractory period of the muscle shortens, as does the length of the contraction when the heart-rate is raised. But the refractory period does not shorten to the same extent as does the length of the cycle; consequently, the *responsive period* dwindles when the rate is advanced. It dwindles until eventually and at a very high rate of beating it disappears altogether. When this happens the muscle will not respond to every impulse reaching it; it breaks into what has been termed 2 : 1 (or half) response—that is to say, it responds only to alternate impulses entering it. That is but natural, seeing that only alternate impulses will fall during the responsive period of preceding cycles.

Now the precise manner in which this alternating response is foreshadowed in the mammalian auricle is peculiar and considerably important; it is necessary thoroughly to understand it. As the rate of beating rises and the period of responsiveness shortens a time comes when the muscle develops what is spoken of as a *partially refractory period*. It is a phase of the cycle during which the muscle as a whole *may* or *may not* respond to stimulation. When this partially refractory phase first develops the cycle seems to be divisible into three parts: at the beginning is the absolutely refractory phase; this is succeeded by a partially refractory phase; a short phase remains at the very end of the cycle, during which the muscle is always responsive to stimulation. But the end of the partially refractory phase is not sharply defined; it fades imperceptibly into the phase of responsiveness. If you will, the matter may be expressed somewhat differently. During the early and greater part of the cycle the muscle is quite refractory, but the end of this phase is no longer clean cut and determinate; if at one instant the muscle is wholly refractory, at the next instant it is not wholly responsive; the refractoriness fades away gradually (through the partially refractory period) and responsiveness gradually develops. The state of refractoriness is found to be denser as it is traced backwards through the cycle until at last it becomes absolute. The development of the partially refractory phase, which is a phenomenon of high rates of beating, expedites the closure of the gap between the end of the absolute refractory period and the end of the cycle. The precise instant at which the state of partial refractoriness ends is not measurable, but it is certain that, as the rate of beating advances, it soon bridges the gap completely. When this stage is reached the cycle is divisible into two—namely, a phase of absolute refractoriness and a phase of partial refractoriness; there is no true or wholly responsive phase. This state of the muscle is represented in a small diagram above the main figure.

The meaning of the change which I have described is not obscure; it is this: when the rate is sufficiently raised the muscle fibres do not all contract during each cycle; some contract in alternate cycles only, and the critical rate at which regular response fails is not the same for all the muscle fibres; some fail to respond earlier than do others. During the phase of absolute refractoriness all the fibres are refractory to stimulation; during the remainder of the cycle the fibres one after another recover their excitability, the muscle as a whole becomes more and more responsive therefore, but up to the very end of the cycle some fibres still remain refractory.

I have dealt with this question of partial refractoriness at some length, because it is essential that it be comprehended fully and clearly. It is a phenomenon which has fundamental influences upon the action of the auricle beating at very advanced rates. What I especially desire to emphasise is that, at these advanced rates of beating, each excitation wave entering the muscle finds that muscle imperfectly recovered from the passage of its predecessor.

Let us apply the small diagram in the upper part of Fig. 1 to our picture of a circulating wave. In the diagrams of the ring experiment shown in the last lecture I represented the circulating wave in its most simple form. The relations there shown between the advancing crest of the wave and its wake of retreat represent what is occasionally found in actual experiment. More usually, however, the relation in flutter is a little more complex. The gap between the crest and wake does not consist of wholly responsive but of partially refractory muscle (see Fig. 2). The onmoving crest encounters many fibres which are responsive; it finds some which are still refractory. These refractory fibres form minute barriers to its progress; it wends its way from side to side, passing only where it finds channels open and ready to receive it. It is as though a second prairie fire followed a first, but followed it at a time when the vegetation formerly burnt had not fully returned to its old condition; there would be places where the cinders of the first fire still blackened the earth, and the second flame in passing would creep around the edge of these before it could go forward. These barriers, by deflecting it, render the onrushing wave sinuous in its course, and delay its progress from point to point.

I said in my first lecture that in flutter the rate at which the wave is transmitted is not usually normal, but that it is slower than normal. We have proof that this delay is not due to change in the rate of fibre conduction, but to small barriers of unrecovered (or refractory) fibres. This observation is one of no little consequence, since it much simplifies our conception of those factors which are responsible for the maintenance of circulating waves. These factors are three—namely, the length of the muscle path, the rate of propagation from point to point, and the duration of the effective refractory period. We now see that the second factor is controlled by the third. In large measure the length of the path is also controlled by the refractory phase; for where several channels are open to the crest of the circulating wave it will take the shortest, and that is the path along which it most closely follows its own wake. In studies of flutter, and in those of fibrillation, refractory period becomes of prime importance. Its length, and especially the length and character of its partial phase, are responsible not only for the maintenance of circulating waves, but, as we shall see, for the particular form of disordered movement which the auricle assumes.

THE PRODUCTION OF EXPERIMENTAL FIBRILLATION.

It has been stated previously that a frequent first step towards knowledge comes when we produce, by experimenting upon animals, a condition identical with that seen in our patients. In so far as fibrillation of the auricle is concerned that step was taken 11 years ago.

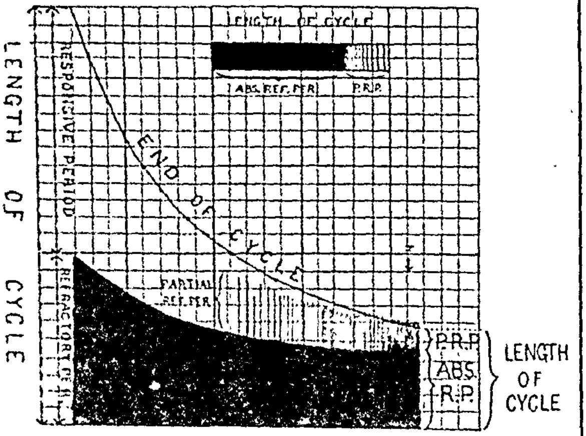
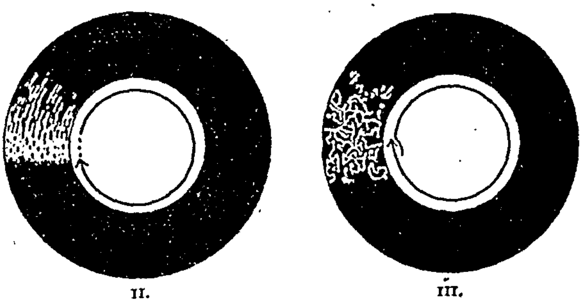


FIG. 1.—The main diagram illustrates the relation of the refractory period to the length of the cycles when the auricular rate is raised by equal increments from its normal rate to a high level. The black portion of the diagram represents the absolute refractory period, which shortens as the rate is raised (that is, reading from left to right); a curved line indicates the shortening of the cycle itself. P.R.P. = period of partial refractoriness. ABS.R.P. = period of absolute refractoriness.

At that time a condition termed fibrillation of the auricles was well known to experimenters, and a common form of disordered heart action was recognised in patients; but neither the experimental nor the clinical condition had been examined sufficiently closely to make it clear that the two states are one and the same. This identity was proved when the electrocardiograms of the experimental and clinical conditions were submitted to close comparison by Rothberger and Winterberg and myself in 1909, and when a little later I sought and obtained the opportunity of exposing to view the heart of a horse suffering from the same malady as do our patients.

Since the time of these demonstrations the term fibrillation of the auricle has come to be used universally in describing this particular disorder of the human heart. In Fig. 4 I show again electrocardiograms of the experimental and clinical conditions. Treated pictorially the curves of auricular fibrillations are, within certain limits, variable; but exactly comparable variations are to be seen in man and animal. The variability of the picture is in large part governed by the action of the ventricles. As you are aware, the rate of the ventricular action is not always the same, neither is the degree of its irregularity in different samples of fibrillation. It is not difficult to choose, from a collection of clinical curves on the one hand and experimental curves on the other hand, examples in which the resemblance is so close as to be convincing. With the details of the curves I need not now detain you, but would remind you of their most constant features. The ventricular representatives (*R* and *T*) are frequent and irregularly placed; the auricular representatives comprise a series of oscillations, of irregular form and somewhat irregular incidence and amplitude. The auricular representatives in flutter are united end to end; the action is quite regular and continuous and its mean rate is approximately 300 per minute. The auricular representatives in fibrillation are not very dissimilar to these; they are also joined end to end, and the action is again continuous. The auricular action in flutter and fibrillation differs, however, in important respects; thus, in fibrillation it is 50 per cent. faster, the oscillations having a mean rate of about 450 per minute; another difference is that in fibrillation the cycles are not accurately repeated, sometimes over short stretches of curve there may be at least a suggestion of repetition (as in the last record of Fig. 4), but close measurement will show that it is not precise; moreover, it is not long maintained. Change is the rule.



II. III.

FIG. 2.—A schematic representation of the excitation wave as it circulates in flutter. The blackened portions of the ring represent those portions of the muscle which are refractory at a given instant. The crest of the wave travels constantly through muscle in a partially refractory state. The border of the advancing wave is finely serrated.

FIG. 3.—A similar representation of the excitation wave as it circulates in fibrillation. The advancing border and retreating wave are deeply crenated, and these crenations overlap. The wave is constantly advancing through small and irregular channels of responsive tissue as these open up to receive it.

THE NATURE OF FIBRILLATION AND ITS RELATION TO FLUTTER.

I have pointed out that the first step in this inquiry was taken 11 years ago, when it was ascertained that the clinical disorder is identical with one which can be produced experimentally; but it is to be understood that we then obtained no close insight into fibrillation *quâ* fibrillation. We had obtained knowledge of a disorder of the human heart, and, more important, the means of further investigating it. It is in respect of these further investigations that I shall now speak. The method of research has been very similar to that employed in the case of flutter. We produce fibrillation of the auricles in an animal by suitable stimulation, and proceed to examine the paths taken by the excitation waves through the muscle while this fibrillation continues. It would be impossible for me to place before you in this lecture the details of this analysis; I can only attempt to acquaint you with the chief conclusions at which we arrive after fully considering the evidence derived from all sources. The main conclusion is that fibrillation, like flutter, is maintained by a circulating wave. As in flutter, the central circulating wave is a single wave, but the circuit is completed in a shorter time; the auricular cycles, therefore, follow each other more quickly. To what is this quicker movement due ultimately? It is almost certainly due to the path of the circus movement being somewhat shorter than is the case in flutter. Why should the path be shorter? Probably because in auricles predisposed to fibrillation the effective refractory period is shorter than in those predisposed to flutter. The crest of the circulating wave in both conditions tends to follow close upon its own wake. The refractory muscle forms a ring broken by a small gap; this broken ring, regarded as a whole, revolves. *Now the length of refractory tissue* in this ring at any given instant is obviously controlled by the duration of the refractory *period*. A decrease in the refractory period shortens the length of the tissue involved in this state at any given moment; consequently, if the gap remains unaltered the diameter of the ring must shorten. If a snake glides along the path taken by its own tail the size of the circle which it inscribes will be controlled by the length of the snake.

We believe that in fibrillation the circuit is smaller in diameter than in flutter. We cannot yet describe with confidence the precise paths which are followed, but there is some direct evidence to suggest that the mouth of the superior cava is one of the circuits which the central wave favours. Where precisely the circuit is situated is of little moment. To recognise that a single circuit exists should suffice.

The difference between fibrillation and flutter is in part one of rate; but that is not the sole difference or even the most important difference. It has been shown to be the rule that in flutter the crest of the circulating wave is constantly passing through tissue in a partially refractory state. The wave as it progresses strikes upon small barriers which render its course finely sinuous. In fibrillation this interference is much exaggerated; the barriers are larger and the crest travels along paths coarsely sinuous. Seemingly, the crest has not a straight or simply curved border of advance; it is deeply and irregularly crenated. Its wake is similarly crenated, and the crenations of the one and the other overlap and intertwine; this relation is shown diagrammatically in Fig. 3. The crest of advance moves through muscle, apparently in a denser state of partial refractoriness than is the case in flutter.

Picture the path travelled by the wave after it has circulated several times in flutter (*Fig. 5*). There is the track of the central re-entering wave; the path taken is finely sinuous, but apart from these very minor variations it is constant. As this mother wave circulates in the main channel it throws off centrifugal waves at each revolution, and these proceed into outlying areas of the muscle, such as the appendices and the sleeves of muscle on the cavæ; along these outlying channels the path is also finely sinuous, but in general constant. The whole muscle of the auricle is involved in each cycle. With each revolution the events are repeated; the waves are signalled with almost perfect regularity in every part of the musculature; at each revolution a wave passes to the region of the *a–v* node, the responses of the ventricle are, therefore, of an orderly character.

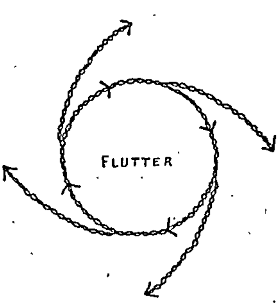


FIG. 5.—A diagram illustrating the successive paths followed by the excitation wave in flutter. The path is finely sinuous, but is in general accurately repeated from cycle to cycle.

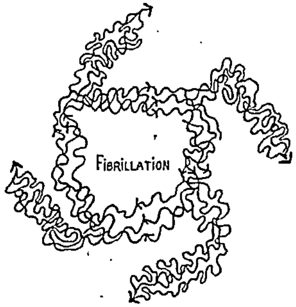


FIG. 6.—A similar diagram of the successive paths taken in fibrillation. The path is coarsely sinuous and ever-varying, though it continues to progress in a clockwise fashion around a central area.

Picture similarly the path which the wave has followed after it has circulated several times in fibrillation (Fig. 6). Everywhere the track is coarsely sinuous. There are the central tracks, spread over a wider band of tissue than in flutter,[1] because the path varies. Speaking very broadly, the same central path is trodden over and over again, but in detail there is no constancy. The wave may, and apparently *does*, encircle the same central area repeatedly if not continuously, but it staggers along its course; it is a road of many and serious obstacles. For that reason it does not return *to its starting point after constant* intervals of time; for that reason *and because of change in the actual* path pursued, the oscillations in the electrocardiograms are of irregular incidence and form. The *paths through the outlying muscle also* vary. Place contacts on any region of the auricular muscle and the waves are not signalled regularly as in flutter, but irregularly; a few even fail *to arrive at their proper destinations. With each irregular* revolution, or at least with most, a wave passes to the region of the *a–v* node.[2] These waves arrive at the node

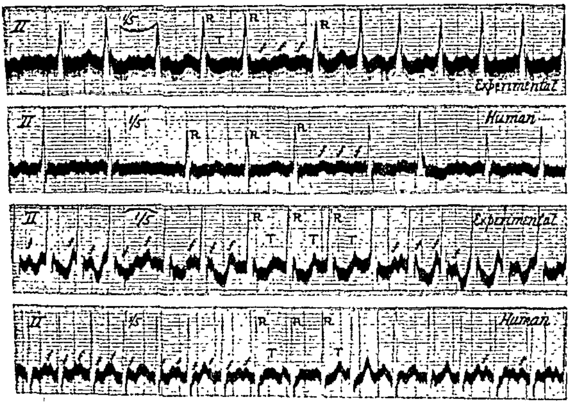


FIG. 4.—Four electrocardiograms (lead *II*) illustrating fibrillation of the auricles in man and the dog. The first and third curves are from dogs, and have been taken from recent experiments in which fibrillation of the auricles has been analysed. These two curves should be compared with the second and fourth respectively; these last are examples of clinical fibrillation. R and T are ventricular deflections; *f f* are the oscillations *arising from the fibrillating auricles.*

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[1] Though the band of tissue involved in successive circuits is wider, the average circle is probably of lesser diameter, as already stated. The shorter diameter is not represented in the accompanying diagram.

[2] The waves which reach the *a–v* node are approximately one-tenth less numerous than those which flow along the central path. In the average they number, therefore, about 400 per minute in human fibrillation.

more frequently than they do in flutter, for the general movement is somewhat faster; but because the path travelled is coarsely sinuous and variable they arrive at the node irregularly. The responses of the ventricle are therefore irregular.

THE ACTUAL CIRCUITS IN FLUTTER AND FIBRILLATION.

A single circulating wave is responsible both for flutter and for fibrillation of the auricle; in both conditions it follows the re-entrant path repeatedly, though in flutter this repetition is far more exact than it is in fibrillation. We possess some definite knowledge of the actual paths followed by the wave in the fluttering auricle of the dog. The wave may encircle the mouth of the superior cava and includes a variable amount of tissue lying between this vessel and the inferior cava, or it may encircle together the mouths of both superior and inferior vena cava; it is probable, though it is not proven, that circuits are formed in some instances around the auriculo-ventricular orifices.

In man the rates in flutter are from 240 to 350 per minute; in the dog the rates are 345 to 580 per minute. In other words, the rates in the dog are approximately 50 per cent. faster. Difference in the size of the organ in man is sufficient to explain this difference of rate, if we assume the rate of transmission in the human and canine auricles to be equal. We may arrive at a general, if we cannot arrive at a precise, idea of the ring's circumference in the human subject. Thus, if the rate of a human flutter is 240 per minute, the duration of each cycle is 0·25 of a second; if the rate is 350 per minute, the duration of each cycle is 0·17 of a second. Assume that the transmission rate in flutter is 500 mm. per second, then the length of the path will be 125 mm. in the one case and 85 mm. in the other, and the diameters of the corresponding circles will be 4 and 2·7 cm. respectively. Thus, if our assumed transmission rate is correct, the circular paths in flutter are of diameters somewhat exceeding the diameters of the chief orifices of the auricle. It is these natural orifices to which we look, especially in attempting to locate the actual paths of the waves.

In human fibrillation the rate of movement is faster; it lies usually in the neighbourhood of 450 per minute, the cycle having a duration of 0·13 of a second. If we assume the same transmission rate, then the length of the path would be 66 mm., and the diameter of the circle would be a little more than 2 cm. It will be evident that if this estimate is approximately correct, and if we suppose that the chief orifices of the auricle to be those encircled by the waves in fibrillation, that in this last condition the encirclement must be a very close one. The factor which remains in doubt is, of course, the rate of transmission.

The subject of possible remedies for the state of affairs which I have described is still unripe for discussion; perhaps I have said enough in indicating what seems to me one of the chief lines which investigation should take: it is an investigation of the refractory period of heart muscle, a search for remedies which will influence the duration of this refractory state, and which, by prolonging it, will help us to close the gap between the crest and wake of the circulating wave; for this gap is essential to the maintenance of the circulating wave, whether the circulating wave is responsible for flutter or for fibrillation.

Finally, the lecturer proceeded to demonstrate shortly his recent experiments with Dr. Drury and Dr. Iliescu upon the movements of the electrical axis of the auricle in clinical flutter and fibrillation. If suitable planes are chosen it can be shown, in both these conditions, that the electrical axis changes its direction in a definite and striking manner: it revolves through 360° as each auricular cycle is completed. As the electrical axis may be taken as an index of the general direction in which the wave is travelling, these observations demonstrate that in flutter and fibrillation the wave travels in a circular fashion through the auricle. Taken conjunction with the experimental evidence, they stitute proof of simple circus movements in the an auricle affected by these two disorders.

—Full references to the work on flutter and fibrillation will ind in the original papers published in *Heart*, Vols. VII. VIII.

PERMANENT DRAINAGE OF THE ONLY KIDNEY.

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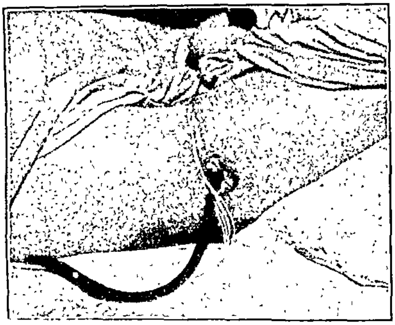
IN April of last year I was asked to see again a girl of 23 years of age who had been in St. Thomas's Hospital five years previously, and for whom I had performed an operation on the kidney. When she presented herself for examination it was difficult at first to believe that the operation which was mentioned as having been performed was correctly stated. The girl was of good colour, well developed, walking with ease, and had recently completed a period of four years' work in a munition factory. Her father, who lived in South Africa, was anxious to take her back with him if it was considered she would not be any worse for living in a warm climate; he also wished to know if a silver tube which she was wearing could be dispensed with. This tube was placed in the left loin, and all the urine which she passed came away through it, being then conveyed along a rubber tube to a rubber receptacle over the left hip. No urine was passed from the bladder. Her general health was good, but she had at times "a feverish cold," with some pain in the kidney region, and then the urine was cloudy; as a rule it was quite clear. Occasionally she had a pain in the left groin, especially in damp weather. Catamenia absent.

Examination showed that there was a silver tube about 1/3 in. in diameter and 4 in. long placed in the centre of a scar below the left lower ribs. This scar was that usually seen after the incision employed for nephrotomy. The skin around was healthy, dry, and without any trace of irritation. There was no leakage by the side of the tube, which was removed, cleaned, and easily replaced daily. A slight bend in the middle appeared to make the tube adapt itself exactly to the sinus in which it was placed. There was no urinous odour.

Mr. C. A. R. Nitch kindly admitted her to St. Thomas's Hospital for a few days when the photograph was taken. She was examined by the X rays, but nothing in the way of phosphatic concretion was shown in the pelvis of kidney or ureter, and the urine was quite normal. There was no ureteral opening on the right side on cystoscopic examination, nor was it possible to pass a catheter far along the left ureter. This confirmed the statement that she had only one kidney.

Previous History.

The previous history of the case was that she had undergone an operation at the end of 1911 for double uterus with complete septum, and retention of the menses in the closed right half. The patent half was pushed over to the left and the right half distended, forming a cystic swelling to the right and behind. The cervical canal was opened up from below, the uterus split, the septum cut out, and the two halves sutured together. She came under the care of Dr. J. S. Fairbairn in St. Thomas's Hospital in 1914. The operation had not been a success so far as the preservation of the uterus was concerned owing to the pooling of the discharges in the pouched and dilated half of the uterus and cervix. An exceedingly offensive discharge, especially at the menstrual periods, occurred, and in spite of dilatation and disinfection of the cavity of the uterus infective endometritis, followed by pelvic inflammation, necessitated a further abdominal operation—removal of uterus and tubes. An abscess was found in front of the uterus in the utero-vesical fossa and also behind the uterus. Difficulty was met with owing to the stretched condition of the cervix and lower part of the uterus, especially to the right. The softened bladder wall in the region of the abscess gave way whilst being pushed from the cervix and a vesico-vaginal fistula followed. This operation was done on Dec. 23rd, 1914. On the next day no urine was passed, but on the following day some came both from the bladder and from the abdominal wound. By Jan. 31st, 1915, she was well enough to return home, but was readmitted on Feb. 15th complaining of pain and tenderness about the left kidney which commenced six weeks earlier. This was associated with a rise of temperature. *Bacillus coli* was present in the urine. On March 9th she had a rigor with rise of temperature to 105·6° F. I was then asked to see her and operated the same day, placing a large drainage-tube in the renal pelvis, which was much distended with purulent urine. The renal pelvis was freely opened. The tissues round the kidney were matted and the capsule adherent. It was not attempted to suture the edges of the renal pelvis to the skin. After the 23rd there was no more urine passed by urethra—all came by the loin tube—and it was evident that she had only one kidney. The urine became clear by the 23rd and the symptoms of pyelitis passed away, but there was still some pus coming from the bladder. A retro-vesical abscess was opened at a later date, and she left the hospital June 21st, 1915, still wearing the rubber tube, through which all the urine was passed. Later, a silver-flanged tube was substituted for the rubber one for regular use, and kept in position by tapes passing round the waist.



Five years after operation: No irritation of skin. Tube in left loin with flange through which supporting tape is passed.

(See figure.) This tube fits closely at a point corresponding to the lumbar fascia, but is easily taken out and replaced by the patient's mother.

The Operation of Choice.

This case goes far to show the superiority of the operation of nephrotresis as the one of choice when the ureter has been badly injured and the circumstances make it impossible to re-establish the channel by any method of ureteroplasty. There were only two methods available here because the injury had been at a point deeply placed in the pelvis, and the amount of cicatricial tissue about it prevented the possibility of a successful search for the lesion. If such a search had been made and by some chance the injury could have been repaired, obstruction would have ensued later from the surrounding scar tissue as it contracted: This with a condition of pyelitis affecting what proved to be the only kidney would have been fatal. In the experience of many surgeons the operation of bringing the end of a divided ureter out on the skin of the loin and fixing it there is unsatisfactory. The flow is apt to become impeded by contraction of the orifice, whilst the urinary tract above becomes infected even in clean cases, so that a state of pyonephrosis with fever develops. This sooner or later necessitates removal of the kidney when the patients have a second which is healthy. This girl had already pyelitis with early dilatation of the renal pelvis, so it was imperative that the drainage should be free from the first. In addition, it is difficult to adjust an apparatus which will act efficiently when the ureter is brought up, so as to prevent irritation of the skin with constant wetting of the patient's clothing and a very annoying urinous odour.

The operations necessitated by the congenital deformity of the uterus were difficult, and the inflamed tissues prevented recognition of the position of the ureter, which quite possibly was *not* in its normal place. The improvement in the girl's health which has ensued on these operations is very great, for the constant offensive discharge, with local septic inflammation, was producing a state of chronic invalidism and unhappiness.

RESEARCHES ON THE BIOCHEMISTRY OF GERMS AND OTHER PROTEINS,

WITH SPECIAL REFERENCE TO THE PROBLEMS OF IMMUNITY.

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(*Concluded from p. 798.*)

PART II.—PREPARATION OF DETOXICATED VACCINES.

1. *Preliminary Note.*

ONE is naturally led by the foregoing to conclude that a detoxicated vaccine containing all of these fractions might be better than my original vaccine, which contained only the alkali-soluble non-toxic component.

2. *Preparation of Detoxicated Vaccines Containing all the Antigenic and Non-toxic Portions of the Germs.*

In order to detoxicate a germ so as to prepare a vaccine which shall contain all of the antigenic and non-toxic components it is necessary to isolate each component separately by successive stages. When isolated they are mixed together in the same proportions as in the given germ itself. This mixture, emulsified in normal saline solution containing 0·5 per cent. carbolic acid to keep it sterile, is then standardised to a strength suitable for injection into the human subject.

Stage 1. Isolation of the alkali-soluble substance.—A mass of the given germ amounting to 5 or 10 c.cm.† of moist semi-solid material is collected in a graduated centrifuge tube; to it is added about an equal volume of N/1 NaOH (in the case of easily soluble germs) or of antiformin (in the case of germs which dissolve with difficulty). The material is thoroughly mixed with the aid of a glass rod, and is then placed in the incubator at 37·5° C. for about three hours. The mass of germs plus alkali will gradually dissolve into a more or less transparent or semi-transparent fluid. In some cases this takes place in a few minutes, in others it requires several hours; three hours is usually sufficient. With certain germs, such as staphylococci, the dissolved mass often sets into a semi-solid transparent jelly, more especially if it is allowed to stand in an ice-chest. As soon as the action of the alkali has dissolved or disintegrated the germs the mixture is filtered through a fine filter paper. When the material is syrupy or gelatinous in consistence it is necessary to mix it thoroughly with some water in order to render the filtration process more easy. The filtrate is a clear yellowish fluid, and represents the alkali-soluble fraction of the germ.

Stage 2. Isolation of the acid-soluble substances.—The alkali-insoluble material is now washed off the filter paper with N/1 HCl into another tube, and after thorough mixing with the acid is allowed to stand in the incubator for a few hours. This mixture is again filtered. This filtrate represents the acid-soluble fraction.

Stage 3. Isolation of the alcohol-soluble substance.—The material left on the filter paper is washed off with absolute alcohol, and after standing in the incubator for a few hours is filtered. This third filtrate contains the alcohol-soluble component.

Stage 4. Isolation of the chloroform-soluble substance.—The material left on the filter paper is washed off with chloroform placed in the incubator as before and again filtered. This filtrate represents the chloroform-soluble component.

Precipitation of the four components from their respective solutions.—The original germ mass has now been dissolved into four fractions, each contained in a different tube. The next step in the detoxication process consists in precipitating each fraction from its respective solution as follows:—

(1) *Precipitation of the alkali-soluble fraction.*—To the tube containing the alkali plus alkali-soluble material add N/1 HCl until precipitation begins. Now add the acid drop by drop until the maximum amount of precipitation has occurred. It is possible to add too much acid, since the precipitate sometimes tends to be soluble in excess of HCl. The tube is now centrifuged at high speed for several minutes. The amount of deposit is measured and kept, and the supernatant fluid which contains proteoses is poured off into another tube and also kept for further treatment. See below under (5).

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† It is scarcely practicable to deal with quantities less than 5 c.cm

(2) *Precipitation of the acid-soluble fraction.*—To the tube containing the acid plus acid-soluble material add N/1 NaOH until the resultant fluid is definitely alkaline to litmus. A light flocculent precipitate is produced which does not tend to dissolve in excess of alkali. The tube is now centrifuged as before. The deposit is separated from the supernatant fluid, both components being kept for further treatment. (For recovery of the proteose from supernatant, see under (5)).

(3) *Precipitation of the alcohol-soluble-lipoid substance.*—To the tube containing the alcohol plus the alcohol-soluble germ substance add twice the volume of normal saline; a very fine precipitate is produced. Allow the tube to stand for one or more days until the fine precipitate flocculates into larger masses. When this has occurred filter, wash the precipitate off the filter paper with saline, and add 0·5 per cent. carbolic acid to keep it sterile.

(4) *Precipitation of the chloroform-soluble constituent.*—Place the tube containing the chloroform plus chloroform-soluble fraction in a drying oven, and when the bulk has been considerably reduced by the evaporation, add excess of absolute alcohol. The alcohol throws the chloroform-soluble material out of solution. Centrifuge and collect the deposit.

(5) *Precipitation of the proteoses.*—The supernatant fluids obtained after the precipitation of the alkali and acid-soluble fractions were kept as mentioned under (1) and (2). After bringing these fluids to a neutral reaction add twice their volume of absolute alcohol and allow to stand for about 12 hours. The proteoses separate out and can be driven down in the centrifuge.

N.B. *Toxic filtrates and supernatant fluids.*—The saline alcohol filtrate obtained in (3), the alcohol chloroform filtrate obtained in (4), and the alcoholic supernatant fluids obtained as in (5) should be kept for further examination, since they contain toxic substances, a fact which will be discussed later. For more complete detoxication the precipitates obtained as under (1), (2), (4), and (5) should be washed twice with fresh absolute alcohol, and the toxic alcohol washings kept for further investigation. The precipitate obtained as under (3) cannot be washed with alcohol, but should be washed with sterile water; by "washing" I mean that each precipitate is thoroughly mixed up with the alcohol or water and then centrifuged or filtered. This process is repeated twice.

Collection of the non-toxic precipitates and standardisation of the vaccine.—The five different precipitates obtained from the original mass of germs by the above process include the alkali, acid, alcohol and chloroform-soluble substances, and also the proteoses. These wet precipitates are now collected into a graduated tube and centrifuged at about 3000 revolutions per minute for a period of two minutes, after which the total bulk is estimated. The mass of precipitate is now transferred to a small flask or bottle containing glass beads. Add 50 c.cm. of normal saline + 0·5 per cent. carbolic acid and shake very thoroughly until a fine and uniform emulsion is produced.

I have estimated by Wright's method of counting bacteria that a mass of 1 c.cm. of semi-solid wet gonococci (centrifuged at about 3000 revolutions for two minutes) contains about 1,250,000,000,000 cocci. If this mass therefore be emulsified and made up to 125 c.cm. with saline, each cubic centimetre of the emulsion will contain 10,000 million germs. This is the normal strength to which I standardise a detoxicated vaccine—viz., 10,000 millions per cubic centimetre. It is not quite accurate to standardise a detoxicated vaccine according to the volume of wet semi-solid germs originally dealt with, since some of the material is lost during the detoxication process. For example, one might begin with 5 c.cm. of the original germ mass and end up with only 4 c.cm. of the non-toxic precipitates. In view of this fact I standardise the vaccine according to the volume of the precipitates obtained. Each cubic centimetre of precipitate is made up to 125 c.cm. with normal saline + 0·5 per cent. carbolic acid, the resulting emulsion is designated as representing 10,000 million germs per cubic centimetre. No doubt it would be more accurate to standardise the vaccines according to the weight of the dried precipitates rather than according to the bulk of the wet precipitate. The former method, however, is tedious and is impracticable in the case of autogenous vaccines, where the amount of germ substance dealt with is comparatively small.

It is hardly possible to standardise detoxicated vaccines by judging the opacity of the emulsion against a known standard, as is usually done in the case of ordinary vaccines. If this method was used very wide errors would result because the proteoses largely dissolve in the saline, forming a transparent solution. In consequence detoxicated vaccines made from germs containing a high percentage of proteose, as is found in the *B. coli*, typhoid, and dysentery group, would appear, according to the opacity test, very much weaker than those made from, say, the staphylococcus group, where the proteose content is very low.

3. *Investigation of Toxic By-products Obtained in Detoxication of Germs and Other Proteins.*

The toxic by-products of the germs are to be found in the various alcoholic filtrates, supernatant fluids, and washings obtained from the precipitates in the detoxication process just described. These alcoholic fluids are usually of a light yellow or straw colour. They contain peptones, amino-acids, salts, indicators, fatty acids, &c.

I should here mention that if a mass of minced meat or other tissue is put through the same process as just described for the detoxication of germs the same component precipitates are obtained. Moreover, the waste alcoholic filtrates and washings are toxic, yellowish in colour, and appear to be more or less similar to those obtained from the germs. Indeed, all the facts obtained in the parallel researches which I have carried out with germs, on the one hand, and with animal tissues on the other, go to prove conclusively that germ-protoplasm and animal tissue are very closely allied in their physico-chemical composition.

V. C. Vaughan[18] was apparently the first to note that germs and all other protein substances, whether animal or vegetable, could be split up into a toxic and a non-toxic portion. The toxic portion, a brownish substance with a characteristic pungent odour, he found to be soluble in absolute alcohol. He believed it to be more or less identical in all proteins. When injected into animals it killed them in a manner which suggested anaphylactic shock, and he attempted to prove that this toxic substance was in all cases the cause of anaphylaxis.

Vaughan's Method of Extracting the Poison from the Germs and Other Proteins.

(1) The mass of bacteria or other protein is thoroughly washed with alcohol, beginning with 50 per cent. and increasing to 95 per cent.

(2) The substance is placed in large Soxhlet's flasks and extracted first for one to two days with absolute alcohol, and then for three or four days with ether. These extractions with alcohol and ether should be thorough in order to remove all traces of fats and waxes.

(3) After extraction the cellular substance is ground first in porcelain and then in agate mortars, and passed through the finest meshed sieves. This finely ground cellular substance, in the form of an impalpable powder, may be kept in wide-mouthed bottles in a dark place, and if so kept retains its toxicity for years; when exposed to light, and even if kept perfectly dry, it becomes less poisonous. Therefore, although the toxic substance is soluble in alcohol it is not extracted from the germs or protein substance even with prolonged boiling with alcohol and ether. Vaughan points out that before the poison can be extracted by the alcohol the protein must first be disrupted or split up.

(4) The poison is extracted from the bacterial or protein powder by boiling it with from 15 to 25 times its weight of absolute alcohol, in which 2 per cent. sodium hydroxide has been dissolved. After boiling for an hour on a water bath the alcohol is filtered off, and is found to contain a large amount of the poison. Three such extractions were found necessary in order to split off all the poisonous group.

(5) The non-toxic residue after extraction is dried into a fine powder. The toxic alcoholic fluid is evaporated to dryness, and the toxin thereby obtained is reduced to the form of a fine powder.

Vaughan found in the case of *B. coli* that 20 mg. of the bacillary powder, before extraction of the toxin, was the minimum lethal dose, whilst the minimum lethal dose of the non-toxic powder was as high as 300 to 400 mg. This non-poisonous residue was therefore 15 to 20 times less toxic than the actual bacillary powder before extraction. The minimum lethal dose of the powdered toxic material extracted by the alcohol varied from 8 to 60 mg. according to its state of purity. From inoculation experiments carried out on guinea-pigs and rabbits Vaughan concludes that no immunity is developed against the toxic substances extracted from *B. coli* or other germs. With repeated injections the animals developed at the most only a small degree of tolerance. Definite immunity was, however, obtained after repeated injections of large doses of the *B. coli* powder from which the toxin had been extracted. The guinea-pigs so injected acquired an active immunity, so that they could withstand at least eight times the fatal dose of the living germ.

Comments on Vaughan's work.—I was unaware of the existence of Vaughan's valuable researches until the end of 1919, when I read his work with great interest. My researches have confirmed and coincided with his in many points. It is interesting to note that whilst his work was directed mainly towards the toxin and the cause of anaphylaxis, mine has been directed mainly towards the antigenic values of the non-toxic components, with the desire to develop and produce more perfect vaccines and more perfect immunity.

It seems to me remarkable that Vaughan and his co-workers did not appear to realise the importance of their work in its application to vaccines and practical therapeutics. In this respect they went no further than to carry out some inoculation experiments on animals, and no therapeutic inoculation experiments on human beings were recorded. Perhaps his non-toxic bacillary residues were tested in this respect and found to fail; I do not know if this was the case. At any rate, it appears to me that his process of removing the toxin must remain unsatisfactory from the point of view of producing non-toxic vaccines, since the prolonged application of heat is injurious to the antigenic properties of the non-toxic substances. My experiments have shown that boiling at 100° C. for half an hour largely destroys the antigenic properties of the gonococcus as estimated by the complement-fixation test. For this reason my detoxication process is carried out quickly at a temperature no higher than blood heat. On the other hand, it will be noted that Vaughan's process of removing the poison entails a temperature of 78° for one to two days and a further heating for three or four days (during the preliminary alcohol and ether extractions for the removal of the fats and waxes). Finally, there is an extra heating to 78° for three hours during the actual extraction of the toxin with alcohol and alkali. This continued heating for a period of five or six days must, according to my experiments, have a very marked deteriorating effect on the antigenic properties of any antigens prepared by his process.

Physical characteristics of the toxin.—According to Vaughan, the toxic substance, when more or less purified and dried into powder form, has the following characteristics:—

(1) It is a brownish powder.

(2) It is highly hydroscopic and freely soluble in water. Any portion of the powder which did not dissolve in water was found to be non-toxic.

(3) Aqueous solutions of the poison are decidedly acid to litmus. When a few drops of mineral acid are added to this aqueous solution a precipitate is produced. Vaughan believes that this precipitate is caused by the presence of some organic acid, and he considers this organic acid to be the cause of the acidity in the aqueous solution of the poison.

(4) When the aqueous solution of the toxin is neutralised with sodium bicarbonate a brownish non-toxic precipitate is formed.

Prolonged contact with alkali lessens the activity of the poison, and even neutralisation has this effect, which is more marked the longer the preparation stands. Vaughan is inclined to attribute this to the formation of a salt through the interaction of the acid poison and the alkali. It is interesting to point out here that M. H. Gordon[16] observed that NaOH, more especially when concentrated, tended to destroy the endotoxin of the meningococcus.

(5) The toxin, according to Vaughan, is more freely soluble in alcohol than in water. Alcoholic solutions were kept for five years without recognisable loss in toxicity. It is soluble in methyl as well as in ethyl alcohol, and insoluble in ether, chloroform, and petroleum ether. Each of the latter removes a small amount of fatty substance, which is non-toxic, but they do not dissolve any appreciable quantity of the poison itself. From its alcoholic solution the poison is precipitated by ether, but contact with ether decreases its toxicity to such an extent that this method is not applicable in attempts to purify the poison.

(6) The poison diffuses slowly through collodion sacs both within the animal body and when suspended in distilled water.

(7) Vaughan considers that the poison is either a protein itself or else is mixed with one or more proteins. In aqueous solutions it gives all the protein colour reactions with the exception of Molisch's test. The Millon reaction is the most characteristic; it gives the biuret, the glyoxylic acid, and the xantho-proteic reactions, and also reacts to Liebermann's test, but does not reduce Fehling's solution. Other tests indicate the presence of sulphur in the substance.

(8) Phosphotungstic, phosphomolybdic, and picric acids all give abundant precipitates, but after much careful analysis Vaughan and his co-workers concluded that the poison was more of a protein than of an alkaloidal nature.

Preliminary Investigations on the Toxic Extracts by the Author.

My researches on the toxic extracts obtained from various germs in the detoxication process described in paragraph 2 of this part of the paper are still far from complete. In the first place, this side of my research has been retarded by the difficulty and delay in obtaining a vivisection licence for the laboratory in which I had been working. Furthermore, the actual amount of concentrated toxic material obtained from a mass of germs is very small. I have been collecting this material for nearly two years, so that only now do I possess a quantity sufficient for a thorough investigation.

(1) *Method of Concentrating the Toxic Material.*

The toxic, straw-coloured, alcoholic, supernatant fluids and washings from the germ precipitates are placed in a flask and heated on an electric plate or water-bath in order to drive off the alcohol and concentrate the fluid. When all the alcohol has been boiled off the watery fluid left in the flask has a deep reddish-brown colour. This is transferred to an evaporating dish and dried in a drying chamber until only a semi-solid, moist residue remains. This residue, dark brown in colour, contains numerous crystals of NaCl, &c., and has a peculiar offensive odour. The mass, which is alkaline in reaction, is ground up thoroughly with about twice its volume of absolute alcohol, and then acidified with a few drops of concentrated HCl. The mixture is centrifugalised, and the crystalline material thereby separated from the reddish-brown solution of the toxic substance. The latter may be collected and concentrated still further by a repetition of the same process. This concentrated brownish, toxic material behaves as Vaughan has observed, being soluble in water and in alcohol and reacting to the protein tests which he has described. It is precipitated by picric acid, phosphotungstic acid, &c.

(2) *Presence of Indicator Substances in the Toxic Extracts.*

About two years ago I was greatly puzzled by the peculiar colour effects produced when certain germs were dissolved in alkali, and more especially in antiformin. When Friedländer's bacillus is dissolved in antiformin a deep green colour like crême de menthe is usually produced. This colour is somewhat evanescent and tends to disappear on standing, but when the germ solution is vigorously shaken up with air the colour often returns; the addition of a trace of permanganate of potash also tends to bring back the vivid green tint. Antiformin, by virtue of the chlorine it contains, is an oxidising agent, and it would appear from these facts that the green colour just described is produced by the oxidation of some protein product or by-product of the germ. Later I discovered that this colour substance was a true indicator and soluble in alcohol as well as in water. When a green alkaline solution of the Friedländer bacillus is acidified so as to throw down the meta-protein the colour changes to red and the precipitate produced has a reddish tinge. This red precipitate when treated with alcohol is more or less whitened, and the red colouring matter passes into the alcohol. The alcoholic solution of the colour material changes to green or red according as it is made alkaline or acid in reaction. This peculiar green-red indicator is apparently very unstable, since it gradually bleaches under the influence of light; moreover, if one attempts to concentrate the alcoholic solution by heating it on a water-bath the colour entirely vanishes. This green-red indicator is quite commonly found when germs are dissolved in alkali or antiformin. It occurs most often with Friedländer's bacillus, *Bacillus pyocyaneus*, Pfeiffer's influenza bacillus, various sarcinæ, and the tubercle bacillus.

A rare indicator which is amethyst or blue in colour when alkaline and apparently colourless when acid is occasionally observed during the detoxication of the gonococcus. The most common indicator appears to be of a turmeric nature, showing a brown colour when alkaline and a yellow colour when acid. This turmeric-like indicator is apparently present in all germs and in all proteins. At any rate, it has always been present in alkaline solutions of the germs and other proteins with which I have worked. I am inclined to believe that this indicator, or at any rate its parent substance, is actually present in the bacteria and in the animal and vegetable tissues, and that it is not entirely produced from the protein as a by-product due to the hydrolytic action of the alkali.

For example, if we dissolve turmeric root in alkali and then add absolute alcohol a precipitate is thrown down leaving a large amount of the turmeric indicator in the alcoholic supernatant fluid. If the precipitate is redissolved in alkali and precipitated with alcohol several times the alcoholic supernatant fluid finally becomes clear, and no more turmeric can be obtained even if the precipitate is kept in alkaline solution for several weeks. This would appear to show that a certain amount of turmeric can be obtained from the actual protein and that no more is produced by prolonged action of the alkali.

Since the turmeric and the other indicators described above are soluble in alcohol it is apparent that these colour substances will be extracted in the detoxication process of the germs, and will appear in the toxic alcoholic extracts. The green indicator is destroyed in the concentration process when boiling off the alcohol, but the turmeric material remains and is partly responsible for the brownish colour of the concentrated alcoholic solution of the toxin. From lack of vivisection facilities I do not yet know whether the actual indicator substances described above are toxic in nature or not; this point can only be tested by animal experiments. The amount of turmeric-like indicators produced from different proteins varies to a wide extent. A large quantity can be obtained from milk, and only a comparatively small quantity from meat, such as muscle or ox heart. A very large amount can be obtained from ordinary agar-agar. If agar is boiled with N/1 HCl and then excess of NaOH is added, a deep brown colour is produced which is found to be due to an indicator substance like turmeric. This substance inhibits the growth of the gonococcus. It is very soluble in acid acetone and in water.

I have stated that the reddish-brown alcoholic solutions of the toxic substance from various germs and proteins contain a turmeric-like indicator; the amount present is comparatively small, and the reddish-brown colour of the alcohol-toxic extracts is due, not so much to the presence of the indicator as to some other unknown colouring substance which does not behave like turmeric. These toxic alcoholic extracts show a reddish port colour when acid, and when alkaline the colour is more brownish, like sherry. The presence of the turmeric-like indicator is revealed by shaking up the toxic acid watery alcoholic extracts with ether, chloroform, or acetone. The ether, chloroform, and acetone in all cases become yellowish in colour, changing to brown with the addition of alkali. The bulk of the toxic extract is precipitated by the ether, chloroform, or acetone, only the turmeric fraction remaining in solution.

When the watery alcoholic toxic extracts are subjected to electrodialysis a yellow turmeric-like substance passes through the parchment to the positive pole, whilst a blackish-brown substance (not an indicator) passes to the negative pole. The yellowish material in the positive pole chamber is an indicator behaving like turmeric, whilst the blackish-brown material in the negative pole chamber does not behave as an indicator.

The effect of hydrogen peroxide and ozone on the concentrated toxic extracts.—When hydrogen peroxide is added to the concentrated reddish-brown toxic extract in the presence of alkali the colour is discharged and there is thrown down a white precipitate, largely amorphous but containing needle-shaped crystals, and insoluble in alcohol, alkali and water, but soluble in weak acid. A similar decolorisation and precipitation is produced when ozone is bubbled through an alkaline toxic extract. Ordinary air when passed through the toxic solution decolorises it very slowly.

Marked resemblance between the toxic extracts and urine.—Urine is highly toxic when injected into animals; the toxic substance in urine is soluble in water and in alcohol. When urine is evaporated down nearly to dryness a brownish material mixed with various salt crystals is obtained, which passes into solution when treated with alcohol. It resembles the concentrated alcoholic solutions of the endotoxins obtained from germs and other proteins both in colour and in smell. Like the toxic germ extracts, it contains a small quantity of a turmeric substance which passes into solution in acid acetone, ether, and chloroform, and moves to the positive pole on electro-dialysis. Like the toxic extracts from germs and other proteins, the concentrated urine solutions are decolorised by hydrogen peroxide and by ozone, producing a white precipitate containing some needle shaped crystals. The precipitate is insoluble in alkali, alcohol, or water. The crystals are quite insoluble in water. The above similarities are very striking and are almost sufficient to justify the speculation that the alcoholic extracts obtained by the detoxication process described under paragraph 2 represent the waste toxic products of the germs and other proteins, just as the urine represents the waste toxic products produced in the tissue metabolism of the living body.

4. *Value of the Endotoxic Substances in the Production of Immunity.*

J. A. Kolmer[17] and H. C. Wells[18] state that the endotoxins of germs, in contra-distinction to the highly organised exotoxins, such as diphtheria and tetanus toxin, do not induce the formation of antisubstances. Vaughan's experiments led him to believe that antisubstances were not formed against the toxic extracts obtained from germs by his process. Experiments with the toxic extracts obtained from the gonococcus by my process showed that this extract did not act as an antigen when used in the complement-fixation test for gonorrhœa. One would therefore conclude that the toxic extracts are not antigenic, and that no true antisubstances, such as agglutinins, precipitins, and lysins, are produced against them.

The fact that true antisubstances are produced against the exotoxins of diphtheria and tetanus, as well as against the snake venoms, seems to have engendered the belief that such antisubstances are produced against all germ poisons. It should remembered, however, that the "exotoxins" of diphtheria tetanus as well as the snake venoms are highly complex and highly organised protein substances, which are precipitable by alcohol and ammonium sulphate. Moreover, they are easily destroyed by heat. On the other hand, the endotoxic substances removed from germs by the detoxication process are not destroyed by prolonged boiling, and they are much simpler protein substances, not precipitable by alcohol or ammonium sulphate. If we bear these facts in mind it is not at all inconceivable that while the exotoxins and venoms can produce much immunity, the simpler endotoxins can produce none.

Some observers have been so greatly obsessed by the successful immunity produced against the diphtheria toxin as to maintain that the immunising power of a given germ inoculation is in direct ratio to its toxicity. They believe that any germ inoculation producing a highly toxic reaction produces more antisubstance than one wherein a less reaction results, due to low toxicity; but those who argue in this manner are obviously not well versed in these problems. They appear to forget or to be ignorant of the fact that there are other antisubstances besides antitoxins. A given bacillus or a given protein, as shown by Vaughan and myself, does not consist entirely of a mass of toxin. They consist in bulk of protein substances which are comparatively non-poisonous, and the toxin exists only in small amount. Are no antisubstances, such as agglutinins, precipitins, or lysins produced against the bulk of the foreign germ protein when injected into animals? The toxin advocates would appear to affirm that this is so, although experimental evidence is against them.

Agglutinins and lysins are well-known antisubstances produced against the bodies of germs, and I have never seen it stated anywhere that agglutinins or lysins are synonymous with antitoxins. Why, therefore, should they confuse immunity towards the exotoxins with immunity towards the bulk of the germ bodies? There is, perhaps, more reason in the argument that a given inoculation which produces a severe local and general reaction results in more immunity than one which produces only a mild effect. Yet again experience seems to disprove this belief. For example, if we inject tuberculin a very intense reaction may be produced, yet little or no perceptible formation of antisubstance occurs. On the other hand, it is well known that an extraordinary amount of antisubstance (lysin) is produced against sheep's red corpuscles when the latter are injected into a rabbit. The sheep's corpuscles are comparatively non-toxic to the rabbit and produce no great amount of reaction when injected. Quantities as great as 5 c.cm. of a semi-solid mass of the pure corpuscles can be injected intraperitoneally without killing the rabbit. The amount of hæmolytic antisubstance usually produced as a result of these inoculations is so great that the serum of the inoculated rabbit is often capable, even in a dilution of 1 to 20,000, of lysing the sheep red cells.

The above is an example of powerful immunity produced against a substance which might be classed as almost non-toxic. Tuberculin is a thousandfold more toxic, yet I doubt if it produces 1/1000th part of the immunity produced against the sheep corpuscles. In the face of such facts there is no reason why a detoxicated vaccine should not be a superior immunising agent to the corresponding toxic vaccine. Sheep's corpuscles are hundreds of times less toxic than even detoxicated germs. I believe therefore that one ought to aim at a still more perfect detoxication of vaccines. Indeed, it seems reasonable to suppose that if it were possible to inject 5 c.cm. of solid bacterial substance a much greater immunity to the germ would be produced than with a highly toxic inoculation of an almost invisible speck of, say, 1/100 mg. of tuberculin.

PART III.—THE COMPOUND NATURE OF PROTEIN ANTIGENS AND A PROBABLE BIOCHEMICAL EXPLANATION OF "COLLATERAL IMMUNITY" AND NON-SPECIFIC VACCINE THERAPY.

1. *Existence of Non-specific Vaccine Therapy and "Collateral" Immunity.*

It has been noticed by many observers that when a vaccine of a given germ is injected beneficial results are sometimes produced in diseases which are caused by an organism quite different from that injected. It is now well known, for example, that a curative effect is obtained in gonorrhœal rheumatism by injections of *B. typhosus* vaccine.

Sir Almroth Wright[23] states that "all of those who have had experience with vaccines will have seen cases where therapeutic effects lying quite outside the range of the particular vaccine employed, and therefore, as we thought, not quite creditable to science, have been obtained with vaccine therapy." Later[24] he says: "I confess to having shared the conviction that immunisation was always specific. . . . Presumptive evidence of collateral immunisation began gradually to filter in our minds. ...... Hints are conveyed to us that there may exist a useful sphere of application for collateral immunisation; and that such sphere may perhaps be found in cases where the infection is of very long standing. ...... We should discard the confident dogmatic belief that immunisation must be strictly specific. ...... We should proceed on the principle instead that the best vaccine to employ will always be the vaccine which gives on trial the best immunising response against the microbe we propose to combat."

We must go even further and face other facts, since it appears to have been proved that good results have been obtained by injections of non-bacterial proteins, such as milk, proteoses, and other protein split products (J. W. Jobling and W. Peterson,[19] C. Bull,[20] Dunkling and Jobling,[22] &c.). For the explanation of this non-specific protein therapy the theory of "protein shock" has been advanced. It is believed by some that the shock produced by the injection of a foreign protein stimulates the system to produce more antibodies towards any given germ which may be attacking it. Fr. Rolly and Meltzer,[27] H. Lüdke,[25] and numerous other workers found that a temperature of 104° to 107° F. artificially produced had a favourable influence on an established microbial infection. Heated animals were more resistant to injections of bacteria, and antibodies, such as agglutinins and bacteriolytic substances, were produced more abundantly in animals which were kept over heated. It may be that the heat (temperature) causes damage to the infecting organism; it may cause a more rapid formation of antisubstance or a more rapid and firm union between the antigen and the antibody produced against it. The beneficial effect produced by non-bacterial proteins, such as milk, &c., may therefore be due simply to the temperature reactions produced, since it is usually stated that for a good effect a temperature response is required. Although it may be admitted that injections of milk, &c., can occasionally have a favourable influence on the course of a bacterial infection, and although without doubt an intravenous inoculation of typhoid vaccine has often a curative action in gonorrhœal rheumatism, nevertheless it seems to me that such modes of treatment are a step backwards in the progress of vaccine therapy. It has been proved by thousands of experiments and by thousands of observers since the times of Pasteur and Pfeiffer that a specific antibody is produced against a definite germ by inoculation with the latter. We must never lose sight of this fact. Let us grant that "protein shock" and that temperature reactions have a beneficial action in the mechanism of antibody formation; but why shock the gonorrhœal subject with typhoid vaccine or milk injections when it is just as easy to produce the shock and temperature reaction with gonococcal vaccine, and at the same time produce specific antisubstances as well?

2. *A Possible Biochemical Explanation of Collateral Immunity and Non-specific Vaccine Therapy.*

It seems to me that an explanation of collateral or cross immunity can be found in the compound nature of antigens. An antigen as a general rule does not consist of one single protein substance. Professor Maurice Nicolle[26] has written as follows:—

> "Each cell and each humour represent in reality a '*mosaic of antigens*,' as first pointed out by Miss Raphael ...... Usually one of those antigens is dominant and generates an antibody equally dominant ...... Red blood corpuscles of the horse contain a dominant antigen and other secondary antigens which are also met with in the corpuscles of the ox and sheep (in which these secondary antigens are respectively the dominant ones)...... A famous antigen the Forssmann antigen, is to be found in varied cells and humours —viz., in the kidney and testicle of the guinea-pig, in the red blood corpuscles and serum of the sheep, in the kidney of the horse, and in the pneumococcus."

In the light of the biochemical researches which I have described in Parts 1 and 2 of this paper it is easy to understand how a given bacterium or protein consists of a "mosaic of antigens" since it is composed of a combination of several different substances or fractions, and when injected it will call forth the formation of a mosaic of antibodies towards these different fractions. I have shown that the gonococcus contains 75 per cent. of alkali-soluble substance. This alkali-soluble substance is, therefore, likely to be the dominant antigen in this case. An injection of gonococci will call forth antibodies to the alkali, acid, and alcohol-soluble fractions, but the dominant antibody is likely to be that directed against the alkali soluble part.

Although all germs contain alkali, acid, and alcohol-soluble fractions, &c., it must not be inferred that the alkali-soluble part of the gonococcus is identical, for example, with the alkali-soluble fraction of the tubercle bacillus. Recent researches by my brother, Dr. Robert Thomson, and myself have shown clearly that the alkali-soluble substance of various germs shows considerable differences, which can be demonstrated in the following manner. Let us take, for example, a solution of the alkali-soluble material from the gonococcus and the tubercle bacillus respectively. To each add a weak acid, such as N/1 HCl, until a precipitate is produced; centrifugalise and test the reaction of the supernatant fluids by means of suitable indicators.‡ In this way it is noticeable that the protein material is thrown out of solution at different points of acidity: thus some of the T.B. protein is precipitated at + 0·4 acid (Eyre's scale), whilst a second portion comes down at + 3·5 acid. With the gonococcus, on the other hand, the bulk of the protein comes down at + 3·4, + 3·5, and + 3·6 acid. Let us suppose for a moment that the proteins which are precipitated at the same hydrogen-ion concentration are similar, then it is conceivable that the tubercle bacillus and the gonococcus contain a small amount of a common protein or antigen—viz., that which precipitates at + 3·5 acid.

Again, it is found that when acid is added to milk the bulk of the casein comes down approximately at + 3·5 acid. It is, therefore, just possible that the casein is closely allied to the corresponding gonococcus protein which precipitates at the same point. If such similar proteins induce the formation of similar antibodies then the explanation of collateral immunity and the so-called "non-specific" protein therapy is simple and obvious. It appears to me that just as a crude oil is found to be a complex substance made up of several species of oil which may be separated by fractional distillation, so also the alkali-soluble and acid-soluble substances from proteins are complex, and made up of several species of proteins which may be separated by fractional precipitation.

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‡ The reaction of protein fluids cannot be estimated by titration. Various indicators must be employed according to methods similar to those described by S. W. Cole.[21]

Our researches so far appear to substantiate this belief, and if it should eventually prove to be correct then there lies open before us the possibility of preparing or compounding an antigen calculated to produce antisubstances to many pathogenic species of germs at the same time.

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BASAL METABOLISM AND ITS CLINICAL MEASUREMENT.

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METABOLISM can be measured either in terms of heat production (direct calorimetry) or in terms of the respiratory exchange and quotient (indirect calorimetry). In the one case expensive apparatus, in the other much time and experience, have hitherto been necessary before reliable data are obtained, and although the clinical measurement of basal metabolism has received a good deal of attention in America its study in this country can scarcely be said to have begun. The development, however, of a portable apparatus by Benedict[1] whereby a direct measurement of oxygen absorption may be made with very little inconvenience to the patient and a great saving of time to the investigator has placed the whole subject on a different plane, and has made routine measurement a relatively simple matter.

The Benedict Apparatus.

This machine consists essentially of a closed circuit containing (1) a spirometer bell, (2) an electric fan, (3) jars for soda-lime and calcium chloride.

The patient breathes into and out of this circuit through a special mouthpiece, nasal respiration being cut out by means of a nose-clip. The spirometer is filled with atmospheric air and oxygen in the proportion of 1 : 2, and this mixture, together with the expired gases, is kept circulating by the fan through the soda-lime and so back to the patient. The spirometer moves in a water jacket, rhythmically with each respiration, and generally downwards as the oxygen is absorbed by the patient and the carbon dioxide is absorbed by the soda-lime. The spirometer is accurately counterpoised by means of a weight suspended from a freely moving pulley wheel, so that there is little or no resistance experienced by the patient in breathing through the apparatus. An index attached to the weight enables a direct reading to be taken of the oxygen absorption.

The calcium chloride jars are not necessary except when it is desired to measure the carbon dioxide output by noting the increase in weight of the soda-lime. As will be pointed out later, this observation is not a very reliable one, and in routine work it is better to dispense with it.

Objections, Precautions, and Improvements.

This apparatus, as well as the more elaborate "unit" apparatus which preceded it, has been somewhat severely criticised by Boothby and Sandford[2] in their recent book on the subject. Their objection can be summarised under the following headings, and though by no means valid can be used to indicate the precautions that must be taken in using this machine.

1. "*Constant checking for leaks.*" We have now used this apparatus constantly for three months, and find that with proper precautions the danger of leakage is not a serious one. If leakage occurs it is generally due to the face-, mouth-, or nose-piece used for connexion with the patient. It is for this reason that we prefer the mouthpiece and nose-clip to the mask. It is very difficult to adjust the mask to a nervous patient so as to avoid all leakage, and we abandoned it at the outset for this reason. The mouthpiece, on the other hand, is easily inserted and can be sterilised after each experiment. It is true that most people rather object to the nose-clip, and that normal breathing becomes somewhat altered at first in depth and frequency, but, as Benedict points out, this only alters the carbon dioxide output, and does not affect the oxygen absorption which this apparatus is specially designed to measure.[3]

2. "*The absorbing chemicals must be changed frequently.*" After all this only means one jar of granulated soda-lime, and we have found that many observations may be made without changing its contents. Moreover, much more attention must be paid to "chemicals" if a gas analysis apparatus is used. It is true that with the absorption of moisture as well as of carbon dioxide from the expired air, the soda-lime is apt to cake, with the result that there are increased resistance and diminished absorbing power. This condition is, however, soon recognised by the dyspnœa which it produces and can be remedied by the immediate substitution of a new jar in the place of the old. It may be suggested that the use of a calcium chloride jar by removing moisture will prevent "caking" of the soda-lime, but it is found that soda-lime absorbs CO_2 better if it is kept moist and that the risk of "caking" is the lesser of two evils. Further, it is very simple to test both the absorbing power of the soda-lime and the resistance of the apparatus, and this should be done at definite intervals so as to avoid inconvenience to the patient and inaccuracy of observations. It should also be quite easy to insert a small bottle of lime-water in the circuit between the soda-lime and the inspiratory tube, which would at once detect any deficient absorption of CO_2.

3. "*The chief objection to the apparatus is that it cannot be cleaned and the patient is exposed to the serious danger of infection.*" If this is true it is a very serious objection to the use of the apparatus, and if there really is a danger to the patient the apparatus should not be used, but we fail to see why the apparatus cannot be cleaned. The mouthpiece can be sterilised by boiling after each observation and the spirometer with its connecting tubes can be readily detached and cleansed. Further, the patient does not, as stated by Boothby and Sandford, inspire "the exhalations of previous patients," since the spirometer is emptied after each observation and filled with fresh air and oxygen, while any "impurities" in the connecting pipes can be "flushed out" by the electric fan. There is no more risk to the patient in breathing through this machine than in breathing the air of our cities, and there is less risk than that involved in using the public telephone. Recent exact observations made by Dobbin and published by Roth serve to confirm above statement.[4]

The further statement that "in the early there is the danger of the oxygen rich mixture on fire," a danger which is totally impossible later models, rather suggests that their criticism apparatus is based on prejudice rather than on experience. As already stated, it is desirable that the open-circuit method should be used as well, since fuller data can be obtained and with greater accuracy, but that is no reason why false criticism should be employed to discourage the use of a method which has a very real value.

4. Lastly it is stated "that error is introduced by failing either to start or to stop the experimental period at exactly the end of a normal respiration, a difficult thing to do with accuracy in the case of patients who breathe irregularly." This we consider is a real objection to the use of the present form of the apparatus, but we believe that it can be overcome by taking a graphic record on a kymograph, as apparently was done in the case of the larger "unit" apparatus introduced by Benedict.

We have therefore devised a kymographic attachment, using glazed paper and a pen, whereby a permanent record in ink of the whole test is obtained, as in the case of a polygraph. With the kymograph clock travelling at a known speed and a scale similar to that attached to the apparatus the oxygen absorption can be determined from the record at any point of the test. Further, valuable information is obtained of the character of the respirations in respect of depth, frequency, and regularity, and any hyperpnœa, such as might be caused by deficient carbon dioxide absorption is at once detected. An attachment like this can be made with very little additional cost, and by using glazed paper which can be kept rolled, the kymograph can be reduced in size and the inconvenience of smoking and varnishing avoided.

Method of Making Observation.

The patient is admitted overnight, or if this is not possible, is rested for one hour after arrival in the morning before the observation is made. No food is permitted after the previous evening—in other words, the observation is made after a 12-hours fast. The patient is gradually introduced to the test and its nature and purpose explained. The mouthpiece is first introduced, then the nose-clip, then both are used, in each case free breathing being permitted from the room atmosphere. Next the patient is connected with the apparatus, the valve being turned so that the ordinary atmosphere is still breathed. The fan is set going and the patient's eyes being closed the valve is now turned so as to connect with the spirometer and the excursions of the bell noted. As soon as regular breathing is established a reading is taken at the end of expiration and the 10-minute period started by means of a stop-watch. At the end of the period a similar reading is taken and the exact duration of the test noted—the valve is then turned back and the patient disconnected. In some cases it may be better to take two five-minute tests (e.g., with excitable patients), but in any case the readings taken can be checked and amplified by analysis of the record.

Calculation of the Metabolic Rate.

(1) The temperature of the spirometer and the barometric pressure are taken and the reading for the volume of oxygen used reduced to normal temperature and pressure. (2) The oxygen volume thus reduced is expressed in litres per hour, and assuming an average respiratory quotient of 0·82 the number of calories produced is determined from standard tables. (3) The surface area of the patient is obtained by means of the Du Bois curve from the height and weight and the metabolic rate is expressed as calories per hour per square metre. A reference to the standard figures for age and sex shows how much above or below normal is the rate of the patient under observation, and the basal metabolic rate (B.M.R.) is expressed as + or − per cent. of normal. Full details of the calculation, together with tables and standards, are published in a convenient form in the book by Boothby and Sandford, to which reference has already been made.

Using this method, we now have under investigation bout 50 cases of thyroid and heart disease, and we all hope later to publish results which will demonstrate the importance of these observations in the diagnosis, treatment, and prognosis of exophthalmic goitre, &c.

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Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF
TUBERCULOUS SALPINGITIS.

By E. DRYBROUGH-SMITH, M.D., CH.B. EDIN.

THE following case is of sufficient interest, in view of its difficulty of diagnosis, to be recorded.

L. C., a girl of 20, was seen for the first time on Feb. 27th, 1918, when she complained of pain in the lower region of the abdomen and vomiting after meals. Her mother explained that at times patient had fits in which she tore her hair and bit herself. The illness started five years ago with pain in the abdomen and vomiting, and had continued more or less ever since, preventing her from walking and doing any kind of work. She had once been sent to hospital for operation, but was discharged without operation because, in a fit, she had bitten a nurse. She had one brother who was mentally deficient, and there was a history of tuberculosis in her father's family.

On examination patient was rather pale in general appearance, but well nourished; the abdominal pain was worse before menstruation, which was regular; the bowels acted normally. She could not stand upright, but with the body flexed and with the aid of a stick she managed to cross the room. The heart, lungs, and urine revealed no abnormalities; there were no enlarged superficial glands. Temperature was 99·4° F. and pulse 84. The abdomen moved freely, and in general appearance showed nothing abnormal. On pressure there was some tenderness over the appendicular region; on deep pressure an indefinite soft mass could be felt. Vaginal examination revealed slight tenderness in the region of the right tube; the uterus was normal in size and position and freely mobile. Nothing further was found on rectal examination. Considering the long history of pain and vomiting, the slight fever and mass felt in the abdomen, it was thought these might be due to adhesions connected with chronic appendicitis.

On March 13th, 1918, I opened the abdomen through the sheath of the right rectus. Adhesions were seen spread over the cæcum and termination of the ileum; there was no free fluid in the abdomen; the right Fallopian tube was thickened, its surface being rough, and scattered over its peritoneum were many small greyish-white tubercles; the ovary looked normal; the remaining organs and peritoneum of the pelvis appeared healthy. The appendix was abnormally thick and felt hard. On the cæcum and terminal portion of the ileum were seen a few tubercles; otherwise the intestines appeared free from disease. The right tube and ovary and the appendix were removed and the abdomen closed. The patient made a good recovery.

The pathologist's report stated: "This is a tuberculous lesion of the Fallopian tube and appendix. The tube shows adhesions of the plicæ, leucocytic infiltration, giant-cell systems, and small caseous foci. The appendix also shows masses of epithelial cells and giant cells in the lymphoid tissue; the mucous membrane appears to be destroyed, but curiously there are no tubercles on the peritoneal surface in the section. The ovary is not involved."

The patient remained well for a year; she could stand erect and walk several miles. An attack of influenza was followed by pulmonary tuberculosis from which she died in March, 1920.

Remarks.

In this case a definite diagnosis before operation seemed impossible. The hysterical attacks are of interest in showing the possibility of such attacks overshadowing the more serious condition. The various ways in which abdominal tuberculosis may reveal itself is very striking. In December, 1916, I operated for strangulated hernia on a stout woman of 58, whose intestine was covered with miliary tubercles; in spite of this fact she appeared to be in good health before the accident to her hernia. In 1917 I sent a girl of 21 to Dr. Edwin J. Toye, of Bideford; this patient had a large rounded mass growing up out of the pelvis, reaching nearly to the umbilicus, and Dr. Toye informed me that on opening the abdomen the appearance of this mass was carcinomatous. The abdomen was closed and the patient treated for a time in the fresh air; the mass has disappeared and the patient is living and apparently in good health.

Shebbear, N. Devon.

A CASE OF
TRANSFIXION BY STEEL ROD.

BY NORMAN C. LAKE, M.D., M.S., D.SC. LOND., F.R.C.S. ENG.,
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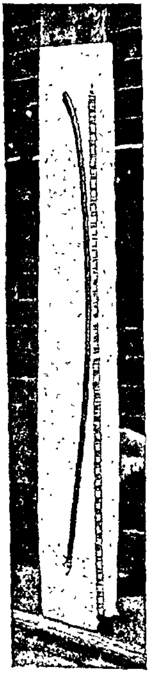
THE following case is reported primarily because it is in many aspects unique, and secondarily in view of the discrepant accounts which unfortunately found their way into the lay press.

The patient, aged 24, was working at the bottom of a lift shaft on March 30th, when a steel rod, ¼ in. in diameter and 54 ft. long, weighing 34¼ lb., fell vertically from a height of 50 feet. He was four or five steps up a ladder at the time, and was bending a little forward, and the rod entered his body just behind the left shoulder. After traversing his body it made its exit at a point on the inner aspect of the right knee, and, when some 9 ft. of the rod had passed through and embedded itself in the ground below, its career was arrested. While thus transfixed the man fell sideways with the rod until its upper end rested against the side of the lift shaft. As the lower end was firmly embedded in the ground bending occurred at the point of exit from the body. At this stage between 3 and 4 ft. of the rod traversed the man's body, while about 40 ft. projected above. He supported himself by clutching at some staging, while his fellow workmen, in order to extricate him from this position, divided the rod with a hack saw about 2 in. above and below the points of entrance and exit respectively. He was then transferred to hospital still "splinted" by the remainder of the rod.



Reproduction of photograph of steel rod after removal, showing curvature resulting from its fall.

Condition on Admission to Hospital.

Upon admission he was suffering from considerable shock, recovery from which was, however, rapid. The entry wound was situated behind the neck of the left scapula and was surrounded by an area of surgical emphysema. The wound of exit was immediately on the inner side of the right knee-joint, also surrounded by an area of surgical emphysema, and, of course, with two inches of the rod projecting. Except that a small portion of the rod could be felt by deep palpation below the right gluteus maximus muscle, there was little to indicate the course which it had taken. Examination of the chest revealed the presence of a left hæmo-pneumothorax. The abdomen was in a condition of absolute rigidity all over, rectal examination was negative, and the urine was normal. There were no signs of injury to nerves or to the spinal cord.

Further examination showed that the rod was very firmly embedded and that considerable force would be required for its removal. In view of the fact that so little of the rod was available externally, it was thought advisable to tap a screw thread on the lower end to enable sufficient tractive force to be applied for its removal. The patient was therefore anæsthetised by Dr. S. F. Fouracre and transferred to the X ray department, where a rapid screening showed that the rod took a somewhat curved course, convex to the right, but luckily with no angulation. It was impossible to screen in two directions owing to the fact that the man was effectually splinted by the rod. Since there was absolute abdominal rigidity, and as it was still impossible to say accurately what the condition of affairs might be inside the abdomen, a laparotomy was performed by an extensive mid-line incision. This was deemed advisable, not only on account of the rigidity, but also because it was very necessary to be prepared to deal with any eventualities which might occur during the extraction of the rod. Even with the abdomen open it was difficult to determine the exact course which it had taken.

Course of the Rod.—As far as could be made out after passing through the posterior aspect of the left lung, it penetrated very obliquely through the bodies of three or four vertebræ in the lower dorsal and upper lumbar regions, and as there was no leakage into the peritoneum from any viscus, it was obvious that the rigidity was due to irritation of the nerve roots in this situation. Leaving the vertebral column in the right lumbar region the rod could be felt below the pole of the right kidney and just behind the inferior vena cava. At this point it passed for about half an inch into the peritoneal cavity without causing any damage, and again became extraperitoneal by penetrating the psoas muscle. It appeared to have the abdominal cavity by drilling a hole through the brim of the pelvis behind the acetabulum, and having passed down the back of the thigh, guttered the internal condyle of the right femur before leaving the body.

The engineer now tapped a light screw thread on the lower end of the rod, the stock being used as a convenient handle for traction. The upper end of the rod having been sterilised, traction was applied in the direction of the curvature on the rod, which was thus slowly removed while a close watch was kept for internal hæmorrhage, &c. The shock of removal was very great but yielded to appropriate treatment, and as there was no excessive bleeding the abdomen was closed without drainage, while small tubes were placed in the entrance and exit wounds.

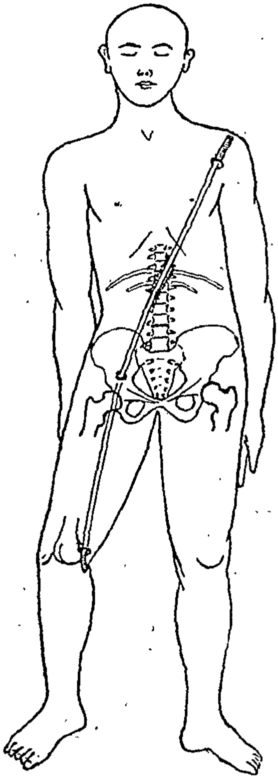


Diagram showing course taken by the rod through the man's body.

Sequel.—The subsequent history is rather uneventful; the temperature remaining down and there being no signs of extensive infection. The abdominal rigidity did not clear up until the fourth day, and the hæmo-pneumothorax is still present although diminishing. Further examination of the patient since the operation has revealed no signs of any extensive nerve injury nor damage to other important structures.

The portion of rod removed is 3 ft. 6½ in. long; there was nearly 2 in. exposed at either end, actually in the body being 3 ft. 3 in. in weighing 2 lb. 6 oz. The curvature of the occurred while it was in the body, and the stated to have been cut square and not in

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF TROPICAL DISEASES AND PARASITOLOGY.

LABORATORY DIAGNOSIS OF MALARIA.

A MEETING of this section of the Royal Society of Medicine was held on April 4th, Sir LEONARD ROGERS, the President, occupying the chair, when Dr. W. BROUGHTON-ALCOCK read a paper entitled

Laboratory Observations on Pensioners who Contracted Malaria in the Late War.

At the outset he emphasised the importance of collaboration between laboratory workers and clinicians and the need for research, particularly in the diagnosis of latent malaria in Europeans who had returned from tropical and subtropical endemic areas. To give an idea of the number of possible applications for a pension on account of malaria, and there were no fewer than 52,480 fresh claimants in Great Britain and Ireland as lately as last year, figures were quoted giving the number of admissions to hospital or malaria during the war in Mesopotamia (18,626), Salonika (161,559), Egypt (40,144) in 1916, 1917, and 1918, and East Africa (78,242) in 1917 and 1918, providing the formidable total of close on 300,000! The highest admission rates for malaria in one year were in Salonika 71,413 and in East Africa 58,236, both in 1917. His observations were based on recent work carried out at the Pensions Central Laboratory between October, 1919, and February, 1921, and were necessarily directed to the diagnosis of malaria among those who had returned from tropical and subtropical regions, including cases which could be regarded as having attained radical cure by quinine, or as suffering from latent malaria, or exhibiting recurrent attacks. A number of demobilised soldiers from the East were still claiming pensions for malaria or its results, but many showed no clinical signs of the disease, and no parasites could be found in their blood films. It was doubtful whether their condition was due to malaria or a disease simulating it. Hence arose the question of the reliability of the large mononuclear count as a guide to malarial infection, particularly in latent cases.

There was much difference of opinion as to what constituted an increase in the relative percentage of the large mononuclears, few authors stating the minimum figure. The tabulated results of the work done and observations made between October, 1919, and February, 1921, which were distributed at the meeting, showed that a total of 28,270 cases had been examined, coming from no fewer than 22 recorded areas of inspection, chiefly in the East, but including also East, West, and South Africa, England, France, and Germany. Nearly 12,000 alone of this total came from the Balkans and about 3000 from India. The laboratory work included the close search for parasites and pigment over a period of 15 minutes through both thick and thin blood films from each case, and the total and differential count of leucocytes, with particular reference to the large mononuclears. Longer than 15 minutes was devoted to the search for parasites when a large mononucleosis was found, or if the claimant showed enlargement of the spleen. The use of the thin film carefully spread was now advocated as yielding better results than the thick, and in the differential enumeration attention was directed to counting along each edge of the film and over the central portion as well. The term large mononuclear included the synonyms endothelial leucocyte, macrophage, hyaline and transitional cell, and was carefully separated in differential counting from the large lymphocyte. Out of the 28,270 cases, 777 had shown positive findings of malarial parasites, 759 being *P. vivax*, 14 *P. falciparum*, and 4 *P. malariæ*. Particulars were given under the 22 recorded areas of the number of cases found positive, including the type of parasite, on one occasion only and more than once; also of the positive findings and the period after return of the pensioner to residence in England. It was hoped to ascertain from these particulars whether cases coming from one area—e.g., Palestine—became free from parasites under quinine treatment at home earlier or later than those from another area—e.g., Salonika—but so far this had not been fully worked out. The question seemed one of considerable interest. A further table under separate headings gave the months between October, 1919, and February, 1921, and the number of blood examinations made in the central laboratory in each month, together with the total cases found positive on one occasion and more than once for each month, including the type of parasite; also the monthly number of cases found positive; it showed the tendency to clear up after 8 to 12 months' out-patient treatment. A table was also exhibited giving, out of a total of 801 most carefully detailed examinations, the number of cases presenting enlargement of the spleen (127), normal spleen (674), enlargement of the liver (52), normal liver (749), presence of anæmia (94), absence of anæmia (707), abnormal condition of heart—e.g., tachycardia, hæmic murmur, dilatation and disordered action (22), normal heart (779). The correlationship of the normal or abnormal clinical conditions of the spleen, liver, blood, and heart respectively were also included in the tabulation of the cases, together with the absence or presence of malarial parasites and the relative increase of large mononuclears (10 per cent. and over, as well as 15 per cent. and over); of lymphocytes (31 per cent. and over); and of the two types of cells combined. A second table including these 801 cases, and 18 others more recently infected, gave the classified relationship between the time from the date of the first attack of malaria (within six months, one, two, three years or over) and the recorded clinical observations with reference to the condition of the spleen, liver, and heart, and the absence or presence of anæmia, and the corresponding blood findings as to the relative increase or not of the large mononuclears, lymphocytes, and the absence or presence of malarial parasites. The percentage of cases showing the presence of malarial parasites within the various periods following the first attack of malaria was as follows:—

Within 6 months after the first attack ...	33·3 per cent.
,, 1 year ,, ,, ...	8·3 ,,
,, 2 years ,, ,, ...	4·5 ,,
,, 3 ,, ,, ,, ...	2·7 ,,

The clinical features similarly showed a marked decrease with the lapse of time and return to England, and the two gave support to the view that under rational quinine treatment at home the bulk of malarial cases cleared up in 8 to 12 months.

The conclusion to be drawn from these tables was that a relative increase of the large mononuclears was not constant in latent malaria, even in the presence of an enlarged spleen when the diagnosis of latent malaria was obvious. A further table provided details of other cases undergoing treatment which showed under or over 10 per cent., as well as under or over 15 per cent., of large mononuclears:—

(1) When no parasite was found and the duration of the period, 1 to 7 months, prior to finding of the parasite (71 cases).

Large	mononuclears	over 10	per cent. in	28	per cent.	of cases.
,,	,,	under 10	,,	72	,,	,,
,,	,,	over 15	,,	12·5	,,	,,
,,	,,	under 15	,,	87·5	,,	,,

(2) When the parasite was found (200 cases).

Large	mononuclears	over 10	per cent. in	59	per cent.	of cases.
,,	,,	under 10	,,	41	,,	,,
,,	,,	over 15	,,	32	,,	,,
,,	,,	under 15	,,	68	,,	,,

(3) In subsequently negative cases, from 1 to 11 months after disappearance of parasite (121 cases).

Large	mononuclears	over 10	per cent. in	36	per cent.	of cases.
,,	,,	under 10	,,	64	,,	,,
,,	,,	over 15	,,	18	,,	,,
,,	,,	under 15	,,	82	,,	,,

(4) In cases more than once positive for malarial parasites after 1 to 12 months (53 cases).

Large mononuclears	over 10 per cent.	in 49	per cent.	of cases.
,, ,,	under 10 ,,	,, 51	,,	,,
,, ,,	over 15 ,,	,, 27	,,	,,
,, ,,	under 15 ,,	,, 73	,,	,,

But no reliance could be placed on the figures in table (4) *owing to the uncertainty of the technique* applied—e.g., the use of the first drop of blood from the ear—now known to be fallacious; also the ill-defined relationship of the time of the blood film and positive findings to the period of the paroxysms; and the possible influence of quinine treatment in the leucocytolytic action, and consequent exaggeration of polymorphonuclear leucopenia, while leaving the mononuclears intact or increasing them—all factors responsible for erroneous conclusions if based on results of the differential counting of such blood films.

The conflict of views as to the relative percentages of large mononuclears in malaria and post-malarial conditions and what constituted an increase was dwelt upon as matter for discussion and clear definition, and the solution of such wide divergence of opinion was claimed to be provided by Dr. Lucey's work, showing particularly the fallacies attaching to the use of the first drop of blood taken from the ear. In the normal person the large mononuclear percentage showed a wide range, a figure as high as 10 per cent. being excessively rare. In his observations on malarial pensioners he had taken the low basis of 10 as well as 15 per cent. In taking the lower figure as a basis of mononucleosis he was influenced by the possibility of finding a constant for the large mononuclears in latent malaria, which might prove of value in the diagnosis, and so benefit the assessment of pensioners and give them opportunity for treatment. Response, too, varied in individuals, and a rise from a low figure to 10 in one person possibly signified as much as a response to 15 per cent. in another. Moreover, under the more favourable conditions associated with the soldier's return to a milder climate and better living at home, it was conceivable that in latent malaria in England the large mononucleosis was less developed and accompanied the disappearance of the parasite. Stephens and Christophers, from the examination of a large number of Europeans living in the tropics, regarded a mononuclear percentage of over 15 as evidence, now generally accepted for the tropics, of recent or existing malarial infection. This increase was most marked in the apyretic period, but was most often absent during the fever. Dr. Rieux's study, at the Val-de-Grâce Hospital, Paris, of the leucocytic formula in old malaria cases showed that the "monocytes," lymphocytes, and eosinophils returned to the normal with subsidence of the fever and disappearance of parasites from the blood; only the neutrophil figure was definitely diminished for several months, a year or even longer. Respecting the presence of parasites after the patients' return home, French authorities found that they rarely persisted after 8 to 12 months, and with this period experience in England generally agreed under the influence of rational quinine treatment. Mononucleosis was reported to last for some time after malaria in the tropics, but this was not found to be the case in observations on latent malaria at home, where, following quinine treatment and the disappearance of parasites, the relative increase in the number of large mononuclears did not persist beyond a few days. An explanation was needed to account for the differences in the duration of mononucleosis in the tropics compared with its short period after a malarial attack at home.

In cases of latent malaria at home Dr. Broughton-Alcock considered that the diagnosis and treatment should not be influenced by the absence of a relative increase of large mononuclears, when the clinical history and physical signs could be depended on. Moreover, though clinical evidence might be strengthened by a relative mononucleosis, often present between two attacks in the apyretic period, yet such increase could not be regarded as depending on or invariably associated with enlargement of the spleen, so important a clinical sign in latent malaria. Reference was made to the value to be derived from the estimation of quinine in the urine for the purpose of watching its *elimination during treatment and in the detection of* malingering.

Dr. H. C. LUCEY followed with a paper containing observations bearing on the reliability of the

Large Mononuclear Leucocyte Count as an Aid to the Diagnosis of Malaria.

The importance attaching to the diagnosis of latent malaria and conditions simulating malaria was one which could not be under-estimated in dealing with the large number of demobilised soldiers returned from the East and claiming pensions on account of reputed malarial relapses or the effects of past attacks. In the absence of clinical signs and with failure to find malarial parasites, reliance had been placed on the large mononuclear leucocyte count as an aid to correct diagnosis, the assumption being that a percentage of 12 large mononuclears, or over, should be regarded as evidence of malaria. Granted that an increase in the large mononuclears was an indication of malaria, he asked how long after an attack this increase lasted? In the event of a raised large mononuclear count, was the patient still to be regarded as suffering from malaria? What were the definition and significance of latent malaria and the blood condition associated with it? The further question as to whether the large mononuclears were ever increased in the normal person was dealt with at some length in his recorded observations. These went far to explain the fallacies which might arise by taking the blood from the ear for the differential count, particularly in the use of the first drop of blood. The results of his investigations showed that this procedure was apt to be followed by a quite erroneous picture of the state of the blood in the general circulation, notably in the case of the large mononuclears. The fallacies referred to were illustrated by a series of tables representing a large number of counts. These he had made from films taken under varying technique, from the first, second, and third drops of blood from both lobe and border of the ear, the finger pulp, below the nail-bed of the finger, and from a vein. A number of control tests were carried out on normal individuals as well as on malarial pensioners. He showed that it was possible for the first drop taken from the ear of a normal person to yield a percentage of large mononuclears as high as 30 to 40, whereas the succeeding drops, especially of the third, from the ear, and in the case of the finger the first drop of blood would yield only a normal percentage of 5 to 8 large mononuclears. This fallacious increase of large mononuclears he had found also to hold good with malarial patients when films were examined from the first drop from the ear, in which the percentage was also about 30, while succeeding drops yielded a picture of the true mononucleosis of 15–20 per cent. or more. Tables of further observations showed that when the ear was manipulated by firm handling or the application of friction previous to puncture, films from the first drop of blood gave no large mononuclear rise. Similarly, too, any measure tending to increase the rate of circulation, such as application of heat or ether to the ear, or muscular exercise, failed to produce any rise above the normal. Conversely, after ice had been applied to the ear as a consequence of the retarding of the blood flow through the capillaries, the false mononuclear rise shown by the first drop of blood previous to the application of the ice remained unaffected in the second drop.

He explained the error occasionally attaching to the use of the first drop, and to the second drop if the first was small, by the known fact that the circulation in the ear was sometimes slower than in the rest of the body. Consequently the large mononuclears tended to adhere to the walls of the blood capillaries or to collect perhaps in the lymph spaces. They therefore appeared in the first drop of blood shed in larger numbers than really existed in the general circulation, and in parts—e.g., the finger—where the circulation was brisk. For that reason the second and, preferably, the third drops from the ear gave the truer picture of the relative numbers of leucocytes in the blood stream. His observations showed that this stagnation and accumulation were overcome either by allowing the earliest drops to escape after puncture of the ear, or by the previous application of exercises, friction, ether, &c., to increase the rate of blood flow through the ear, and so yield a reliable film. He claimed that the conflicting opinions expressed as to the relative number of large mononuclears both in malaria and other conditions, as well as in the normal state, could largely be explained by the counts derived from films taken from the ear, particularly if the first drop of blood had been used. On the other hand, blood taken from the finger, whether friction was applied or not and whichever drop was used, was always trustworthy and therefore to be preferred for both total and percental leucocyte counts. Dr. Lucey concluded by stating his opinion that "a reliable large mononuclear count, done during or within a few days after a questionable attack of malaria is an aid to diagnosis if the count is high. If it is low, it is of no help one way or the other."

Discussion.

Sir RONALD ROSS spoke in high appreciation of the authors' work at the Ministry of Pensions Laboratory. He regarded mononucleosis as of doubtful value in the recognition of past malaria and not to be compared in importance with the finding of parasites or pigment particles, although an increase of the total mononuclear cells was regarded as associated with both sleeping sickness and malaria, but not in his own experience.

Professor WARRINGTON YORKE confirmed Dr. Lucey's observations as to the erroneous increase of large mononuclears shown by the first drop of blood from the ear. He questioned the validity of the results obtained by two different observers, not only in counting two separate drops taken from the same person at the same time, but also in their examination of one film. It was very doubtful whether the two independent counts would be in agreement. Such lack of conformity might show a divergence of as much as 10 or 12 per cent., and be due to the varying distribution of mononuclears and polymorphs in the same film, and to one count being made in the centre, the other along the edges, the most reliable part of the film. Had, therefore, differential leucocyte counts any value at all? He personally regarded them as useless in the recognition of malaria, and the only reliable blood diagnosis was the finding of parasites, after suspending the use of quinine in the case of pensioners under treatment. He asked for a definition of latent malaria, and whether enlarged spleen taken as a sign of latent malaria implied the persistence of parasites in the body.

Professor W. J. R. SIMPSON paid tribute to the excellent work being done by Dr. Broughton-Alcock and his staff at the Pensions Central Laboratory, and was of opinion that their results would prove of the greatest value in the recognition of malaria among pensioners.

Dr. A. POWELL, from his experience in Bombay, attached considerable value to the leucocyte count, particularly under the correct technique as detailed by Dr. Lucey, in the differential diagnosis of malaria, seven-day fever, and tuberculosis. He found it difficult to provide an answer to Dr. Broughton-Alcock's question as to the value to be attached to the leucocyte count in malarial cases at home. The conditions varied much in tropical countries compared with those at home, both as to the reliability of patients' statements and as to the circumstances under which blood examinations were made. The personal equation of the counter had to be taken into consideration, and it was therefore of importance that the counts if possible should be made by one observer rather than by several.

Dr. J. GORDON THOMSON referred to the time of blood examination during the malarial attack as portant. Bailey's observations, that during the roxysm there was a leucopenia, but in the interval ween the paroxysms a leucocytosis occurred due to increase of the large mononuclears, had been con- ed by David Thomson.

Dr. H. J. B. FRY quoted from observations which had been made on 1083 cases with history of malaria. In 27, or 2·5 per cent., *P. vivax* had been found; the large mononuclear count in 10 of these was above 10 per cent. and in the remaining 17 below 10 per cent. He had not found that the mononuclear count was related either to the period of the fever, the condition of the spleen, the anæmia, or cardiac insufficiency of the malarial cases.

Dr. BASIL PRICE spoke of the diversity of views which had been expressed as to the value of the large mononuclear count, and of the importance of the fallacies as exposed by Dr. Lucey, whose observations, he felt sure, would result in a considerable revision of opinions hitherto held and a revival of interest as to the significance of the large mononuclear cells in the diagnosis of malaria.

Professor LEONARD DUDGEON quoted the results of observations carried out on malarial carriers among the British Salonika Force in the Struma Valley during the winter of 1916–1917:—

1. Total number of cases* examined, 2836. Parasites present in 724.
No parasites present.
Pigmented leucocytes found in 111 cases. Number of large hyaline cells over 15 per cent in 312.

* Hospital admissions from all causes.

2. Total number of cases examined, 1053. Positive history of malaria, 1010.
Two relapses or more in 471 cases. Malaria parasites present in 219 cases.
No parasites found, but large hyalines over 15 per cent. in 399 cases.

At St. Thomas's Hospital during 1919 and 1920 there was no case in the records of the pathological department showing 15 per cent. or more of large hyaline cells, apart from malaria, and only 1 per cent. of cases with a large hyaline cell count as high as 10 per cent. He never took the first drop of blood for film examination, and recalled, as a student, that Professor C. S. Sherrington when lecturing on "The Blood" had warned them to avoid the use of the first drop owing to the fallacious increase in the large mononuclears contained in it.

Dr. A. CASTELLANI regarded mononucleosis of value as a subsidiary aid to the recognition of malaria, and from his experience in Ceylon he had found the large mononuclear increase to persist for a considerable period after an attack, but in greatly varying degree; he was unable to state to what extent this increase and variation prevailed at home as compared with the tropics.

Dr. J. B. CHRISTOPHERSON inquired whether any observations had been made as to the effect of other drugs than quinine on the leucocyte and large mononuclear counts, and what those drugs were.

The PRESIDENT asked how long mononucleosis lasted after malaria. He had found a marked increase of the large mononuclears in active malaria cases due to the benign tertian parasite, especially between the paroxysms, and, as shown by Stephens and Christophers, that increase was present after recent attacks.

Dr. ERNEST BLACK and Lieutenant-Colonel EDMUND WILKINSON, I.M.S., also spoke.

Reply to the Discussion.

Dr. BROUGHTON-ALCOCK, in his reply, stated that he still felt, even after the discussion, the need for the opinion of others as to the duration and degree of the large mononuclear increase among malarial pensioners at home. The use of the term latent malaria was applied to cases sent for quinine treatment, and among them enlargement of the spleen provided the most important clinical evidence of malaria. He quoted an observation made by Craig, in America, in which, out of 1267 cases showing malarial parasites 21 per cent. were cases of latent malaria. The average case usually cleared up at home and did not suffer further after a period of about 12 months. It was very difficult to apply the stoppage of quinine treatment to pensioners in the hope of finding parasites; similarly, as to the time of blood examination, films had to be taken when possible, and no definite time could be fixed. He vainly sought for an answer as to whether the large mononucleosis found in the tropics applied to malarial cases at home, and if the explanation lay in the difference between the two climatic conditions. From his experience in England the large mononuclears, if increased, showed an intermittent rise for a period of less than seven days following a malarial attack, and he gathered that in the tropics this period was considerably extended. Was this ever found to be the case in this country? He asked for a clear definition of the hyaline cells and large mononuclears, and pointed out that Professor Dudgeon's observations in the Balkans had been carried out on persons living under active service conditions in an endemic area and exposed comparatively recently to malarial infection, a state not comparable with that prevailing among pensioners at home. In reply to Colonel Wilkinson's question as to whether any other laboratory sign than mononucleosis was to be found among malarial pensioners, he could say that no other unquestionable laboratory diagnosis existed than the finding of malarial parasites or pigment, as his tables showed. If an increase of large mononuclears was found on the edge of the film it was important to search thoroughly for parasites. He could give Dr. Christopherson no particulars as to the influence of other drugs than quinine on the leucocyte count, but quinine had a leucocytolytic action in causing leucopenia, though leaving the large mononuclears unaffected.

SECTION OF SURGERY: SUBSECTION OF PROCTOLOGY.

PRURITUS ANI.

A MEETING of this subsection of the Royal Society of Medicine was held on April 13th, Mr. A. E. MILES, the President, being in the chair, when Mr. J. P. LOCKHART-MUMMERY opened a discussion on this subject.

Pruritus ani, he said, was a peculiar condition in that it had only one symptom—namely, itching. It had no established pathology, and we were still in the dark as to its cause or the best method of treating it. It was by no means the trivial complaint that its name would imply. The irritation was often so intense as to drive the patient to the verge of madness. The thickening of the skin, the rugæ and eczema, fissures, and other abnormal conditions of the skin around the anal orifice frequently associated with pruritus ani were secondary results of scratching, and beyond the fact that they tended to accentuate the itching and interfere with treatment had no causal relationship to it.

Certain definite types of pruritus ani were to be distinguished: (1) those due to some general condition, such as glycosuria, &c.; (2) those due to some parasite, such as worms, pediculi, &c.; (3) pruritus obviously secondary to some lesion of the anal region, such as fissure, prolapsed pile, &c.; (4) pruritus of old standing where no local lesion can be discovered; (5) paroxysmal pruritus. A local cause for the itching was present in a great majority of cases, and the first essential was to make a thorough search for this cause. Where a definite cause for the pruritus was discovered it was generally one which produced moisture of the parts, more particularly of a septic character, such as fissure or fistula, a polypus of the rectum, or a prolapsed pile. In the case of itching of recent origin removal of the cause was followed by prompt and permanent relief. The difficult cases were those in which no local cause could be discovered, and more particularly the paroxysmal cases, where it was unusual to find any local lesion. With a history dating back for more than two years removal of any local lesion present seldom stopped the itching. It seemed reasonable to conclude that under the circumstances definite changes took place in the skin or in the nerve-endings in the skin. He believed these changes to be of the nature of a fibrosis in the deeper layers involving more especially the end-plates in the dermis and caused by the constant scratching and rubbing. In fact, in these old-standing and severe cases of pruritus an actual disease of the nerve-endings in the skin existed, as was first realised by the late Sir Charles Ball. In 1912 Dr. Dwight Murray put forward the theory that pruritus ani was due to a chronic streptococcic infection of the skin of the anal region. He pointed out that careful investigation by bacteriological methods had proved the presence of *Strept. fæcalis* infection in the vast majority of cases. Mr. Lockhart-Mummery considered that the truth of this theory was now established. In support of it was the fact that a septic lesion was the common starting-point of pruritus. We also know that chronic septic foci of the skin in other parts of the body are frequently accompanied by intense irritation. It is possible that the disease of the nerve-endings in these old-standing cases of pruritus ani is due to this infection rather than to any immediate result of the scratching. Investigation was necessary, but it was difficult to obtain portions of skin for histological purposes, and histological investigation of nerve-endings was itself difficult.

General treatment, such as dieting, non-smoking, total abstinence, &c., Mr. Lockhart-Mummery did not believe in. We ought to try to cure the condition and not to make the patient a slave to his anal region. Rigid attention to local cleanliness and dryness was very important. Lotions and powders were better than ointments. Any local cause, such as fissure, ulcer, pile, hypertrophied papilla, &c., should be removed, and it was often advisable to investigate the anal region under an anæsthetic. Dr. Dwight Murray had suggested the use of a vaccine, but it did not seem reasonable to him, Mr. Lockhart-Mummery said, to treat a septic infection of the skin by vaccine. Antiseptics, such as alcoholic solution of iodine, might be used, either painted on or applied by ionisation. Zinc ionisation or the application of nitrate of silver 30–60 g. to the ounce had given good results. X rays applied to the skin through suitable screens had cured about 20 per cent. of his bad cases. Two or three applications were usually sufficient. It was unwise to persist if marked improvement did not follow two applications.

Operative treatment remained for the cases not remedied by other means. No operation which did not destroy the diseased nerve end-plates in the dermis would remedy old-standing cases. Twenty years ago such cases were treated by excision of the anal skin or the drastic application of the actual cautery. The results were bad owing to the scarring. No such drastic measures were necessary. Sir Charles Ball described an operation for the division of the cutaneous nerves passing to the skin in the anal region. Mr. Lockhart-Mummery had performed it at St. Mark's Hospital since 1905 with excellent results. Other surgeons had condemned it. It was essential that the whole of the irritable area of skin should be rendered completely anæsthetic. The day after the operation the patient should be quite unable to feel the prick of a needle anywhere within the flaps or at the anal orifice. It was easy to miss some of the nerves, but unless they were all divided success could not be expected. In raising the flaps the skin should be undercut well above the level of the internal sphincter. This operation gave immediate relief and left no disability. Normal sensation returned completely within six weeks, generally within four. In the vast majority of cases the cure was permanent. Mr. Lockhart-Mummery had performed this operation in 59 cases; there was a slight recurrence of itching in 7 cases. Four of these were easily cured by simple application, and in 3 cases the operation was repeated with complete success. There was no serious complication, and no patient was kept in hospital or in a nursing home for more than six weeks, the average time being under three weeks. In all these cases normal sensation was restored, and there was no disability.

Discussion.

Dr. ARTHUR WHITFIELD said that, in his experience, pruritus ani was frequently caused by the oxyuris, the presence of which was seldom suspected, and he instanced the case of a lady who consulted him. He from the ear gave the truer picture of the relative numbers of leucocytes in the blood stream. His observations showed that this stagnation and accumulation were overcome either by allowing the earliest drops to escape after puncture of the ear, or by the previous application of exercises, friction, ether, &c., to increase the rate of blood flow through the ear, and so yield a reliable film. He claimed that the conflicting opinions expressed as to the relative number of large mononuclears both in malaria and other conditions, as well as in the normal state, could largely be explained by the counts derived from films taken from the ear, particularly if the first drop of blood had been used. On the other hand, blood taken from the finger, whether friction was applied or not and whichever drop was used, was always trustworthy and therefore to be preferred for both total and percental leucocyte counts. Dr. Lucey concluded by stating his opinion that "a reliable large mononuclear count, done during or within a few days after a questionable attack of malaria is an aid to diagnosis if the count is high. If it is low, it is of no help one way or the other."

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Sir Ronald Ross spoke in high appreciation of the authors' work at the Ministry of Pensions Laboratory. He regarded mononucleosis as of doubtful value in the recognition of past malaria and not to be compared in importance with the finding of parasites or pigment particles, although an increase of the total mononuclear cells was regarded as associated with both sleeping sickness and malaria, but not in his own experience.

Professor Warrington Yorke confirmed Dr. Lucey's observations as to the erroneous increase of large mononuclears shown by the first drop of blood from the ear. He questioned the validity of the results obtained by two different observers, not only in counting two separate drops taken from the same person at the same time, but also in their examination of one film. It was very doubtful whether the two independent counts would be in agreement. Such lack of conformity might show a divergence of as much as 10 or 12 per cent., and be due to the varying distribution of mononuclears and polymorphs in the same film, and to one count being made in the centre, the other along the edges, the most reliable part of the film. Had, therefore, differential leucocyte counts any value at all? He personally regarded them as useless in the recognition of malaria, and the only reliable blood diagnosis was the finding of parasites, after suspending the use of quinine in the case of pensioners under treatment. He asked for a definition of latent malaria, and whether enlarged spleen taken as a sign of latent malaria implied the persistence of parasites in the body.

Professor W. J. R. Simpson paid tribute to the excellent work being done by Drs Broughton-Alcock and his staff at the Pensions Central Laboratory, and was of opinion that their results would prove of the greatest value in the recognition of malaria among pensioners.

Dr. A. Powell, from his experience in Bombay, attached considerable value to the leucocyte count, particularly under the correct technique as detailed by Dr. Lucey, in the differential diagnosis of malaria, seven-day fever, and tuberculosis. He found it difficult to provide an answer to Dr. Broughton-Alcock's question as to the value to be attached to the leucocyte count in malarial cases at home. The conditions varied much in tropical countries compared with those at home, both as to the reliability of patients' statements and as to the circumstances under which blood examinations were made. The personal equation of the counter had to be taken into consideration, and it was therefore of importance that the counts if possible should be made by one observer rather than by several.

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Dr. Ernest Black and Lieutenant-Colonel Edmund Wilkinson, I.M.S., also spoke.

Reply to the Discussion.

Dr. Broughton-Alcock, in his reply, stated that he still felt, even after the discussion, the need for the opinion of others as to the duration and degree of the large mononuclear increase among malarial pensioners at home. The use of the term latent malaria was applied to cases sent for quinine treatment, and among them enlargement of the spleen provided the most important clinical evidence of malaria. He quoted an observation made by Craig, in America, in which, out of 1267 cases showing malarial parasites 21 per cent. were cases of latent malaria. The average case usually cleared up at home and did not suffer further after a period of about 12 months. It was very difficult to apply the stoppage of quinine treatment to pensioners in the hope of finding parasites; similarly, as to the time of blood examination, films had to be taken when possible, and no definite time could be fixed. He vainly sought for an answer as to whether the large mononucleosis found in the tropics applied to malarial cases at home, and if the explanation lay in the difference between the two climatic conditions. From his experience in England the large mononuclears, if increased, showed an intermittent rise for a period of less than seven days following a malarial attack, and he gathered that in the tropics this period was considerably extended. Was this ever found to be the case in this country? He asked for a clear definition of the hyaline cells and large mononuclears, and pointed out that Professor Dudgeon's observations in the Balkans had been carried out on persons living under active service conditions in an endemic area and exposed comparatively recently to malarial infection, a state not comparable with that prevailing among pensioners at home. In reply to Colonel Wilkinson's question as to whether any other laboratory sign than mononucleosis was to be found among malarial pensioners, he could say that no other unquestionable laboratory diagnosis existed than the finding of malarial parasites or pigment, as his tables showed. If an increase of large mononuclears was found on the edge of the film it was important to search thoroughly for parasites. He could give Dr. Christopherson no particulars as to the influence of other drugs than quinine on the leucocyte count, but quinine had a leucocytolytic action in causing leucopenia, though leaving the large mononuclears unaffected.

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Pruritus ani, he said, was a peculiar condition in that it had only one symptom—namely, itching. It had no established pathology, and we were still in the dark as to its cause or the best method of treating it. It was by no means the trivial complaint that its name would imply. The irritation was often so intense as to drive the patient to the verge of madness. The thickening of the skin, the rugæ and eczema, fissures, and other abnormal conditions of the skin around the anal orifice frequently associated with pruritus ani were secondary results of scratching, and beyond the fact that they tended to accentuate the itching and interfere with treatment had no causal relationship to it.

Certain definite types of pruritus ani were to be distinguished: (1) those due to some general condition, such as glycosuria, &c.; (2) those due to some parasite, such as worms, pediculi, &c.; (3) pruritus obviously secondary to some lesion of the anal region, such as fissure, prolapsed pile, &c.; (4) pruritus of old standing where no local lesion can be discovered; (5) paroxysmal pruritus. A local cause for the itching was present in a great majority of cases, and the first essential was to make a thorough search for this cause. Where a definite cause for the pruritus was discovered it was generally one which produced moisture of the parts, more particularly of a septic character, such as fissure or fistula, a polypus of the rectum, or a prolapsed pile. In the case of itching of recent origin removal of the cause was followed by prompt and permanent relief. The difficult cases were those in which no local cause could be discovered, and more particularly the paroxysmal cases, where it was unusual to find any local lesion. With a history dating back for more than two years removal of any local lesion present seldom stopped the itching. It seemed reasonable to conclude that under the circumstances definite changes took place in the skin or in the nerve-endings in the skin. He believed these changes to be of the nature of a fibrosis in the deeper layers involving more especially the end-plates in the dermis and caused by the constant scratching and rubbing. In fact, in these old-standing and severe cases of pruritus an actual disease of the nerve-endings in the skin existed, as was first realised by the late Sir Charles Ball. In 1912 Dr. Dwight Murray put forward the theory that pruritus ani was due to a chronic streptococcic infection of the skin of the anal region. He pointed out that careful investigation by bacteriological methods had proved the presence of *Strept. fæcalis* infection in the vast majority of cases. Mr. Lockhart-Mummery considered that the truth of this theory was now established. In support of it was the fact that a septic lesion was the common starting-point of pruritus. We also know that chronic septic foci of the skin in other parts of the body are frequently accompanied by intense irritation. It is possible that the disease of the nerve-endings in these old-standing cases of pruritus ani is due to this infection rather than to any immediate result of the scratching. Investigation was necessary, but it was difficult to obtain portions of skin for histological purposes, and histological investigation of nerve-endings was itself difficult.

General treatment, such as dieting, non-smoking, total abstinence, &c., Mr. Lockhart-Mummery did not believe in. We ought to try to cure the condition and not to make the patient a slave to his anal region. Rigid attention to local cleanliness and dryness was very important. Lotions and powders were better than ointments. Any local cause, such as fissure, ulcer, pile, hypertrophied papilla, &c., should be removed, and it was often advisable to investigate the anal region under an anæsthetic. Dr. Dwight Murray had suggested the use of a vaccine, but it did not seem reasonable to him, Mr. Lockhart-Mummery said, to treat a septic infection of the skin by vaccine. Antiseptics, such as alcoholic solution of iodine, might be used, either painted on or applied by ionisation. Zinc ionisation or the application of nitrate of silver 30–60 g. to the ounce had given good results. X rays applied to the skin through suitable screens had cured about 20 per cent. of his bad cases. Two or three applications were usually sufficient. It was unwise to persist if marked improvement did not follow two applications.

Operative treatment remained for the cases not remedied by other means. No operation which did not destroy the diseased nerve end-plates in the dermis would remedy old-standing cases. Twenty years ago such cases were treated by excision of the anal skin or the drastic application of the actual cautery. The results were bad owing to the scarring. No such drastic measures were necessary. Sir Charles Ball described an operation for the division of the cutaneous nerves passing to the skin in the anal region. Mr. Lockhart-Mummery had performed it at St. Mark's Hospital since 1905 with excellent results. Other surgeons had condemned it. It was essential that the whole of the irritable area of skin should be rendered completely anæsthetic. The day after the operation the patient should be quite unable to feel the prick of a needle anywhere within the flaps or at the anal orifice. It was easy to miss some of the nerves, but unless they were all divided success could not be expected. In raising the flaps the skin should be undercut well above the level of the internal sphincter. This operation gave immediate relief and left no disability. Normal sensation returned completely within six weeks, generally within four. In the vast majority of cases the cure was permanent. Mr. Lockhart-Mummery had performed this operation in 59 cases; there was a slight recurrence of itching in 7 cases. Four of these were easily cured by simple application, and in 3 cases the operation was repeated with complete success. There was no serious complication, and no patient was kept in hospital or in a nursing home for more than six weeks, the average time being under three weeks. In all these cases normal sensation was restored, and there was no disability.

Discussion.

Dr. ARTHUR WHITFIELD said that, in his experience, pruritus ani was frequently caused by the oxyuris, the presence of which was seldom suspected, and he instanced the case of a lady who consulted him. He suggested thymol, and the patient had one X ray treatment. The pruritus remained quiescent for two years, when the patient again consulted him for the same condition, the thymol treatment not having been carried out. The first dose of 30 gr. of thymol, which was now administered, expelled large numbers of thread worms. Dr. Whitfield agreed with what Mr. Lockhart-Mummery had said with regard to local applications. Grease should be avoided, but if used it should be thin and not sticky. He practically never used X rays. In his experience the first dose cured, but there was a relapse after a few weeks, which was cured by a second dose. The cure was not permanent and the time came when it was no longer safe to give further applications and the condition remained unrelieved. When there was an obvious cause which could be removed one dose of X rays produced a cure, but X rays should be avoided if possible.

Mr. J. M. H. McLEOD said that pruritus ani was only a symptom. He had known the condition to have been caused by congestion of the liver resulting from the taking of coffee, red wines, &c., the pruritus coming on about half an hour after the ingestion of the article of diet or condiment which was at fault and lasting one to two hours. Many cases were due to cutaneous lesions. He instanced a case in which it was due to a patch of psoriasis around the anus, the other patches being trivial. He had also seen a couple of cases due to ringworm. He thought that the itching produced a thickening of the epidermis, which pressed upon nerve-endings and caused spasm and pain, a vicious circle being thus formed. Quite a number of his cases had done well with X rays. He had also used radium but was not very pleased with it.

Sir CHARTERS SYMONDS insisted upon the need for cleanliness and dryness. The application of wool would prevent friction; he preferred salicylic wool. He advocated the use of organic silver preparations, such as protargol or argyrol, in 10 per cent. to 20 per cent. solutions. They were non-greasy and should be put on after the part had been cleansed with lysol and dried thoroughly.

Mr. N. S. FINZI said that where the cause had been removed or no definite cause could be found the theory of infection of the skin was very feasible. In such cases local treatment—e.g., X rays—was a sound proceeding. The condition was always relieved by X rays to begin with, but in a large proportion of the cases the symptoms recurred. The results with radium were more permanent, he thought, than with X rays. If the irritation involved a wide area he preferred radium. He gave full doses of X rays at intervals of three weeks, and one or two doses after the irritation had disappeared. He gave radium at intervals of six weeks, and one treatment after the irritation had gone. High frequency sometimes produced a remarkable effect.

Sir CHARLES GORDON WATSON said that certain cases were medical rather than surgical. Such were those which occurred in neuropathic individuals or patients with an hereditary tendency—functional cases. He instanced the condition occurring in father and son. Surgical cases could be divided into two classes: (1) those in which there was a real cause at the anus, and (2) those in which there was *no marked disease*. Cure was doubtful when dermatitis was well established. While the skin remained pliable the condition did respond to ionisation. In 1909 he had treated 28 cases with zinc ionisation which was followed by much relief after the first treatment. Many patients had had 5, 6, or 7 applications. When the condition was paroxysmal some cases were functional and some, he thought, were due to hypertrophied anal papillæ. Out of 86 of his cases of pruritus ani at St. Mark's Hospital, 53 had visible papillæ. In order to determine the proportion of cases in which the papillæ were visible normally, a colleague at St. Mark's had examined a series of patients who attended the hospital, and 12 out of 50 had visible papillæ. In these cases of hypertrophied papillæ cure could be brought about by cauterisation of the papillæ.

Mr. ASLETT BALDWIN said that there was one condition which he had found in a number of cases. Examination should always be made by the sigmoidoscope for a catarrhal state of the bowel. This he treats by zinc ionisation, filling the bowel with a solution of zinc sulphate. He also uses zinc ionisation locally. He had found the local application of hazeline cream useful, and also painting with tinct. benzoini co.

Dr. I. FELDMAN agreed with the previous speaker with regard to catarrh of the bowel, and spoke of a patient who complained of continual oozing from the bowel. With regard to heredity, he told of a case in which the patient's father had also suffered from pruritus ani, and his grandmother had had pruritus vulvæ. Dr. Feldman insisted upon the need for keeping the bowels well opened.

Mr. FRANK COPE spoke of the paroxysmal nature of the complaint, in which it resembled asthma. In an American paper cases had been reported which had been subjected to skin tests and reacted to pork and potato, and the taking of or abstention from pork or potato brought on or alleviated the condition.

The PRESIDENT differentiated between pruritus due to a local condition affecting the peri-anal region and that which was *part of another disease*. A particular cause was dampness of the anal region due to hyperactivity of the skin in that region. He thought that hypertrophied anal papillæ were present in the majority of cases of pruritus ani. Their most productive cause was rectal constipation, where there was a collection of fæcal material where it should not exist. In the anal papillæ was a large profusion of nerve terminals, *in which was situated a special rectal sense to guard* against the involuntary discharge of fæces. Rectal constipation produced a muscular spasm, so that the rectum was not completely emptied. The treatment he advocated was to keep the anal region dry and to ensure the emptying of the rectum at night, which could be done by introducing half a pint of water at a temperature of 70° to 80° F. He was sure that 80 per cent. of the cases could be cured by dryness, cleanliness, relieving constipation, and removing any obvious cause. Another 10 per cent. might require other treatment, such as zinc ionisation (which was extremely good) or X rays. The remaining 10 per cent. were patients with neurotic tendencies, who would defeat all efforts and remain permanently to remind us that there was a limit to medicine and surgery.

Mr. LOCKHART-MUMMERY briefly replied.

SOCIETY OF SUPERINTENDENTS OF TUBERCULOSIS INSTITUTIONS.

A SPECIAL meeting of this society was held at 122, *Harley-street, on April 11th, when the* reports, previously circulated, of several special committees were further considered.

Report No. 4 (Diet in Tuberculosis Institutions): certain points were discussed. On the question of a special diet for hæmoptysis cases Dr. MARCUS PATERSON said he saw no necessity for altering the ordinary diet, and quoted Dr. Leonard Hill as writing that he knew of no evidence showing *that lowering the diet lowers* the blood pressure.—Dr. F. R. WALTERS agreed, and stated he would diminish fluids only.—There was a marked difference of opinion upon the place of milk in the diet. Most agreed it was only necessary in the case of patients markedly under-nourished. Likewise on the quantity of meat a lively discussion ensued. Drs. J. WATT and W. C. FOWLER thought 10 oz. of meat a day "as purchased from the butcher" ample; but Drs. PATERSON, T. G. PUGH, A. C. TA'BOIS, and P. W. EDWARDS disagreed and suggested it would be a better method of deciding the amount to take "cooked meat."—After further discussion the report was referred back to the subcommittee to come up again on May 30th.

Report No. 5 (Residential Treatment of Advanced Cases of Tuberculosis) dealt with all cases unsuitable for sanatoriums and cases likely to die within one month, including the "acute early" case. Dr. NIVEN ROBERTSON thought the inclusion of the "acute early" case bad for the moral of these cases, even if good for the more truly advanced case and for the nurses.—Dr. PATERSON said that this was overcome by the provision of small wards.—Considerable discussion ensued on the exclusion of the case likely to die within one month. Dr. PATERSON said the committee had in mind, not cases transferred from another institution, but cases sent direct from their own homes.—Drs. WATT, S. V. PEARSON, and EDWARDS thought that even such cases should be admitted both in the interests of the community and of the comfort of the patient and his friends.—There was almost unanimous opposition to small local homes; but opinion was divided about making use of certain wards in infectious hospitals, for though medical supervision might be arranged, yet the skilled nursing would be absent.—*The report was referred back.*

Report No. 6 (Classification) revealed unanimity of opinion, except for minor points. The impossibility of any classification owing to the great factor of the character of the patient was pointed out. Dr. H. A. ELLIS thought that rectal temperatures or 15 minutes in the mouth were impossible for a dispensary, and that a more general, even "slacker," classification was needed for dispensaries, with a more accurate one for sanatoriums.—It was pointed out that hilus disease was not taken into account, nor yet X ray findings. To clear up a few small points the report was referred back to the joint committee with the tuberculosis group of the Society of Medical Officers of Health and the Tuberculosis Society, which is considering classification.

The next meeting was fixed for 4 P.M. *on May 30th.*

SOCIETY OF MEDICAL OFFICERS OF MATERNITY AND CHILD WELFARE CENTRES.

A MEETING of this society was held on April 15th, Dr. H. C. CAMERON, the President, in the chair.

Dr. MARION COCKERELL read a paper on

Infant Feeding after the Ninth Month.

She emphasised the fact that babies appeared to thrive under astonishingly different diets, especially when given a plentiful supply of fresh air. Overcrowding was bad not only in itself but also because regular feeding was difficult to maintain in tenement houses and flats, where the crying child had to be pacified at night at any cost. In reviewing recent advances in our knowledge of dieting children Dr. Cockerell said that vitamin research had not given rise to any remarkable changes, since butter and cod-liver oil had always been recommended, but had warned us against the dangers of over-cooking. The importance of selecting specially digestible food for young children appeared to have been over-rated. Vegetarians fed children on salads without ill-effects; and whereas in London plums off a barrow often appeared to upset children, an indefinite quantity of plums picked direct from the tree was not, in her experience, harmful. Dr. Cockerell spoke of the importance of prophylaxis against dental caries, and quoted Dr. J. Sim Wallace's views on the need of supplying such a diet as would promote mastication, even in the very young, because of the mechanical cleansing effect of a flow of saliva and of its ptyalin content. Dr. Cockerell, after pointing out that it was unscientific to assume that the infants actually get what the doctor advises, gave details of the diet recommended by her. From the ninth to the eighteenth month she advised milk, fresh or dried, and crusts spread with butter or dripping. She saw no reason why the child should have barley jelly, or any other carbohydrate beyond what it was able to extract from biting and tearing at crusts, which it appeared to be able to masticate quite well without teeth. Madame Montessori apparently gave slops only till the children reached 5 years on the plea that the masticatory powers were still undeveloped, and it would be interesting to find out the condition of the teeth of children thus fed.

Dr. Cockerell allowed eggs at 12 months, fish at 18 months; three meals a day only, and nothing but water between meals. Milk pudding should be made stodgy, so as to require mastication, and baked suet puddings were better than boiled. A terminal apple or orange was advisable for cleansing purposes—and if these were economically impossible she advised mothers to give lettuce or other salads, or even cheese or nuts, provided the child was a good masticator. Most children were given too much sugar. Dr. Cockerell deplored the habit of giving sweets between meals, and recommended that foods should not be made sweeter than sweet fruits. During the war men missed sugar more than children did, as their palates had become used to it.

Discussion.

Dr. HAROLD WALLER asked what quantity of milk daily was recommended by Dr. Cockerell. An obsession as to the need of large quantities of milk appeared to swamp infant welfare centres. Milk was an ideal food for the sick child, but an enormous amount of rules had swept over from the sick-room to the centre without being questioned on the way. In Dr. Waller's opinion not more than half a pint of milk a day was advisable if the child was to thrive. An arbitrary period of nine months as a fixed point for a change of diet was not wise or practical, as the period at which a child reaches a certain stage of growth is variable. On questioning the parents of fine, healthy babies he had ascertained that parents usually discovered how best to feed them by the method of trial and error till they found what the child could take, and sometimes the baby throve excellently on a most varied diet below the age of 9 months. He himself was not at all afraid of feeding a massive child of 5 months on eggs and suet. Dr. Waller had arrived at these conclusions by choosing specially fine healthy babies and then finding out what they were fed on. Among the poor in his district cow's milk played no part in the feeding of infants, who were often gloriously healthy, and inasmuch as they lived in cellars and had but little fresh air, their well-being could only be attributed to their diet, which often resembled that of their parents. During the war the Government expressed horror that no milk was available for the poor. But the poor did not use it and there was no reason why they should. Bread fried in fat, dripping, and suet puddings supplied all the fat necessary.

Dr. ERIC PRITCHARD said that children were usually correctly fed up to 9 months, and rules were then cast aside. In his opinion the error in most diets from this age was the enormous excess of nitrogenous food offered. He gathered that Dr. Cockerell was not enamoured of "balance" in food, but he regarded this as essential. At nine months nothing happened to call for a great change except that growth was less rapid and the child moved about more—thus less nitrogenous and more carbohydrate food should be offered, but the reverse was the usual practice. As to teeth, much the most important criterion was the appearance of the teeth when erupted. Dr. Pritchard found it difficult to believe that well-formed teeth could be damaged by the presence of acids in the mouth. Dr. Wallace assumed that acid in the mouth was sufficient to cause caries, but this acid was neutralised, and the only question was whether there were sufficient alkaline reserves available for this purpose. This again depended on whether the child had passed through a modified rickety condition or not. As to milk puddings, why should they not be made into biscuits? Incidentally Dr. Pritchard had never understood why there was such a strong feeling against pastry for babies. It was composed of carbohydrates and fat, as was a milk pudding. A milk pudding in biscuit form provided excellent food and needed mastication; if given carbohydrates in the form of slops the child acquired a reflex to swallow this type of food without mastication. As to milk, Dr. Pritchard had calculated that at 9 months a pint and a quarter of milk contained all the nitrogenous food required. More led to intoxication, and should not be given. He felt sure that the milk question had been overdone.

Dr. R. C. JEWESBURY advocated the type of hard crusts recommended by Dr. Truby King, consisting of slices of bread baked in a slow oven until brick-hard. The child was given these at six months; they were not allowed to get sodden, nor was the child allowed to swallow pieces. Later on starch was introduced in the form of barley jelly. This was given because it was easily prepared, was digestible, and could be carefully graduated, the amount starting with a teaspoonful morning and evening, gradually increased. After the ninth month the milk mixture was gradually strengthened, but whole milk was not given till the eighteenth month. After the tenth month other forms of starch were given. Dr. Jewesbury inquired as to Dr. Cockerell's system of graduating the supply of carbohydrate. An objection to excessive milk feeding was its constipating effect.

The PRESIDENT suggested that all articles of diet need not require mastication any more than all need contain vitamins. A child should not be fed only on hard food; soft food need not be abandoned entirely. He did not agree with the theories propounded by Dr. Wallace. In the mouths of children with well-shaped teeth no trace of food could be seen ten minutes after soft pultaceous food had been consumed; if crevices were present, of course, bits of food were still visible. Dr. Cameron added that the important factor must surely be in the formation of the enamel organ, and in that good development of the mouth and jaw which was dependent on correct breathing habits. The adenoid facies was produced in quite tiny infants by nasal obstruction. The importance of correct diet lay not so much in its mechanical effect emphasised by Dr. Wallace as in its suitability in building up resistance to infection. As regards milk, this food proved a convenient vehicle for giving the child fat in a palatable form. As to the vitamin question, Dr. Cameron could not believe rickets was due to lack of a vitamin; in the experimental evidence offered half the quantity of the fat given would anyhow have had to be administered to the puppies.

Dr. MARGARET ALDEN said that one advantage of milk was that the child got water that way; it was difficult to persuade mothers to give water by itself. She asked whether bacon fat could properly be recommended, inasmuch as lard had a low vitamin content.

Dr. FLORA SHEPHERD suggested that a balanced diet was important, but it was immaterial whether the child got it from milk, eggs, or in other form.

In reply, Dr. COCKERELL said that the amount of milk recommended to babies after the age of 9 months varied with the amount of crusts consumed. The maximum quantity ordered was 1½ pints, and after the age of a year not more than 1 pint was advised. As to the composition of the dietary, after 9 months she had not tried to make it approximate to that of the mother's milk. The amount of carbohydrate was left to the child's own appetite. It was not likely to overfeed if it had to work for its food.

SOCIÉTÉ DE THÉRAPEUTIQUE DE PARIS.

AT a recent meeting of this society MM. A. MARIE and FOURCADE read a paper on

Opotherapy and the Menopause,

in which they remarked that every alienist knew how dangerous the menopause was in neuropathic subjects, as well as in women with renal or hepatic insufficiency. Obsessions, phobias, melancholia, acute hallucinatory confusion, and more or less systematised persecutional insanity were frequently observed in the period preceding, accompanying, or following the menopause. MM. Marie and Fourcade were convinced that the suppression of the menstrual flow was not the only cause of these symptoms, but assigned the chief rôle to a deficiency of the endocrine glands, especially of the thyro-ovarian secretion, as maintained by Hutinel. They had therefore made a systematic use of opotherapy in all the mental disorders of the menopause. After a preliminary period devoted to a disintoxication of the system, in cases where a slight hepato-renal insufficiency was present, opotherapy was instituted, consisting in all cases of thyroid and ovarian extract or extracts of other endocrine glands in the presence of symptoms indicating their insufficiency. The histories of eight cases were recorded, in six of which considerable improvement occurred, and in two no result was obtained from this treatment.

Permanganate of Silver in the Treatment of Urinary Diseases.

Mr. P. GALLOIS in his paper drew attention to the greater efficacy of permanganate of silver as compared with the potash salt in the treatment of urinary disease. The doses used were 0·05 g., or 0·10 g. per litre for gonorrhœa or cystitis. The only drawback of permanganate of silver was that it was slightly more caustic than permanganate of potash. The pain, however, caused by it was not very persistent, and lasted only a few minutes.

In a paper entitled

Can the Diabetic Patient be Allowed to Grow Thin?

Mr. P. RATHERY answers the question as follows. Loss of flesh in diabetes may be allowed, provided the patient is stout and a large eater, and the loss of flesh is confined within certain limits. He may also be allowed to lose flesh *temporarily* as the result of a relative or absolute starvation regimen. With these exceptions a diabetic patient should not be allowed to grow thin. Loss of flesh due to dietetic errors can easily be corrected. Lastly, the loss of flesh may be pathological, indicating either a more or less latent tuberculosis or some serious disturbance in the carbohydrate metabolism.

Patent Foods and the Question of Vitamins.

MM. ÉMILE PERROT and RAOUL LECOQ, in a paper on this subject, described their observations on white rats which had been fed on a diet entirely composed of patent foods. The changes in weight, retardation of growth, and other disturbances showed that, with rare exceptions, these so-called "complete foods" were entirely inadequate.

The Serbian Hydromineral Station of Vrinci.

Mr. TCHÉDA MICHAÏLOVITCH, of Belgrade, in his paper stated that Vrinci was the best known thermal station in Serbia and the neighbouring countries. It was first discovered in 1834 and gradually developed, until in 1912 it was visited by 14,000 patients. It possessed at present two springs, one hot and the other tepid, with bicarbonate of soda as the principal ingredient. The Vrinci waters were indicated generally in all affections of the mucous membranes, but the great majority of the patients were suffering from gastro-intestinal or pulmonary disease.

The Use of Manganese in Debility.

MM. Camescasse and Bisot drew attention to the excellent results obtained by administration of binoxide of manganese in doses of 0·03 to 0·07 g. daily in children whose growth was retarded, as well as in chlorosis in girls and hæmophilia in boys. The treatment lasted three months, the drug being given for 12 days at a time.

The Treatment of Tachycardiac Neuroses by Hydrotherapy.

Mr. R. DUBOIS recorded three cases, two of which presented Continuous Tachycardia and one Paroxysmal Tachycardia, which were much improved by hydrotherapy. The method employed was as follows: During the first three days a tepid douche of a temperature 98·6° F. was given for one minute. The following three days the douche was followed by a cold affusion at 53·6° F. for 10 seconds. After the seventh day the cold douches were given for 25 seconds. Examination of the patient's pulse before and after the douche showed that there was often a difference of 30 or 40 beats. The sedative action of the cold douche which was temporary at first gradually became persistent, and the tachycardia disappeared. At the same time there was a slight fall in the blood pressure, which was always somewhat raised in these patients.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.

A MEETING of this association was held on April 12th at the Elizabeth Garrett Anderson Hospital. In the absence of Mrs. FLEMMING, the President, the chair was taken by Lady BARRETT.

Dr. JANE WALKER read a paper on

Tuberculosis in Children of School Age,

basing her observations chiefly on her experience at the East Anglian Children's Sanatorium. She pointed out that the importance of the question of tuberculosis in children had become recognised, largely as a sequel to the establishment of a school medical service. Most people agreed that tuberculosis is usually acquired in childhood, though its exact prevalence is still quite unknown, the percentage of incidence given by different competent authorities varying from 2 in 300 to 15 per cent. The disease in children was usually insidious in onset, though very rarely the onset might be sudden, with hæmoptysis or pleurisy. Dr. Walker's statistics showed that out of 800 children treated at the East Anglian Sanatorium 1·5 per cent. gave a history of hæmoptysis at onset, 20 per cent. a history of cough, and a small number dated the illness from an attack of whooping-cough, still fewer from measles. The duration of symptoms before treatment was sought varied from five years to one. Differential diagnosis had to be made between tubercle, rheumatism, and chronic gastro-intestinal catarrh. Rheumatic cases did not respond to treatment, while cases with intestinal disturbance are proved able to digest fats only with difficulty. Statistics taken at King Edward VII. Sanatorium showed that the fact that a child came from a home where there was definite tuberculous disease did not apparently make its prospects worse. Infection by contact appeared to be a far more important factor than infection due to hereditary predisposition, but it was often difficult to find the source of infection. The presence of T.B. in the sputum was of vital significance; where they occurred in children the seriousness of the case was enormously increased. From 1914 to 1919 at the East Anglian Sanatorium, 62 per cent. of the 807 children had T.B. in the sputum, and of these 56·4 per cent. died. Results of treatment in cases where T.B. did not occur in sputum were very good. 85 per cent. were sent home really well, and only quite a small percentage of these needed further treatment. As for diagnosis in early stages, this was very difficult by physical examination of the chest alone. Dr. Walker pointed out the importance of training the medical profession in the recognition of early signs of the disease, and suggested that a linking of hospitals and tuberculosis dispensaries would be of much value to this end.—A discussion followed, in which Dr. Rose Jordan, Dr. C. A. King, Mrs. Hogarth, Dr. Flora Shepherd, Dr. Mary Gordon, and Dr. A. Parsons, joined.

Reviews and Notices of Books.

DIABETES.

1. *Le Diabète Sucré. Etudes Cliniques, Physiologiques et Thérapeutiques.* By Professor MARCEL LABBÉ. Paris: Masson et Cie. 1920. Pp. 376. Fr.20.
2. *Diabetes.* A Handbook for Physicians and their Patients. By PHILIP HOROWITZ, M.D. New York: Paul B. Hoeber. 1920. $2.

1. This book is mainly composed of clinical lectures and papers which have been published in various French journals. With one exception they all appeared before 1915, and as our knowledge of diabetes has increased considerably since that time it is inevitable that some of them should be out of date. The method of publishing collected papers in book form suffers from the drawback that it involves much repetition. No less than three chapters are devoted to the treatment of coma by alkalies. The author divides cases of diabetes into two classes, those without and those with loss of weight. He describes the symptoms of both these types as illustrated by cases and their treatment. Treatment consisted in reduction of carbohydrates, but the need of a high protein diet is emphasised for the cases with loss of weight. Treatment by starvation is described as a possibility, but is not recommended except for fat patients. Allen's work is barely mentioned and the author has no appreciation of its value. While the early diagnosis of coma is considered at some length, no allusion is made to the importance of estimating the percentage of carbon dioxide in the alveolar air. Coma was treated with massive doses of alkalies, but starvation was not employed to avert its onset. The book contains some articles which are of special interest. Chapter XIII. consists of a clinical lecture on bronzed diabetes, and gives a good account of its pathology. Chapter XVI. is an interesting record of a patient who developed glycosuria about 20 years after the onset of the symptoms of acromegaly.

2. Dr. Philip Horowitz's book is designed to bring about intelligent coöperation between the doctor and the patient. It is not intended to supplant the doctor, but to teach the patient a little about the disease and a great deal about diets. The treatment advocated is the modern one of Allen and Joslin, an adequate account of which is given. Accounts of cases are given, and as the book is intended for patients the mild ones are fully described, while the severer ones are barely touched on. Instruction about diet is very full, but the recipes lose a little of their value for English readers, as the patent preparations are all American. A good table of the protein, fat, sugar, and calorie contents of foods is provided. The patient is urged to test his own urine. Benedict's reagent is recommended for sugar and the ferric chloride test for aceto-acetic acid, but the common error is made of saying that the nitro-prusside reagent is a test for acetone, whereas it is a much better test for aceto-acetic acid.

TRIAL OF THURTELL AND HUNT.

Edited by ERIC R. WATSON, LL.B., of the Inner Temple, Barrister-at-law. Notable Trials Series. London and Edinburgh: William Hodge and Co., Ltd. 1921. Pp. 217. *10s. 6d.*

THE murder of William Weare by John Thurtell near Elstree on Oct. 24th, 1823, ranks as a classic, because after having excited a prodigious amount of public interest as a blood-curdling crime it found its way into literature. Carlyle[1] and George Eliot both refer to the attribution of respectability to a man who kept a gig, apparently put in the mouth of a witness by the *Quarterly Review*, as Mr. Watson finds no authority for it in the reported evidence; Borrow and Pierce Egan were familiar with the murderer's career; Lytton, in "Pelham," drew inspiration from this crime. It was, however, nothing more than a brutal act of butchery, committed for the joint objects of revenge and gain, and the crime was promptly brought home to its perpetrator owing to his own recklessness and stupidity. He could have, and in fact did, kill his victim single-handed, but he took two fellow ruffians, Hunt and Probert, into his confidence, of whom the latter (hanged in the following year for a horse-theft) was called as King's evidence, and the former was tried with Thurtell, convicted as accessory, and transported. He too had hoped to be made a witness, and he did all he could to save his own neck and hang his principal by showing where the body had been hidden. The murder of Weare, a person deserving no particular sympathy, is justifiably included in the "Notable Trials Series" on account of the features above mentioned, not on account of any legal, scientific, or romantic interest attaching to it, or any display of astuteness by the authorities in its detection. Mr. Eric Watson, who has edited the story of the trial, has been at considerable pains to render the volume for which he is responsible authoritative, and, in the interests of strict accuracy, the editor of the Dictionary of National Biography might take advantage of his research if ever the volume containing the name of Thurtell comes up for revision. Mr. Watson is not, however, always to be congratulated upon his style, which has a tendency towards the conventions of Victorian journalism. For example, when he wishes to record that the Thurtells kept a public-house, he tells us that "the brothers decided to tempt fortune in the *métier* of Boniface."

The medical evidence at the trial was of the simple character to be expected.

> "*His throat they cut from ear to ear*
> His brains they punched in.
> His name was Mr. William Weare,
> Wot lived in Lyon's Inn."

That is Mr. Watson's version of the well-known ballad, and the first two lines quoted indicate roughly the injuries deposed to by Mr. Thomas Ward, surgeon, of Watford. He bore out Probert's report of the murderer's own account of how he had fired his pocket pistol without effect, had cut his victim's throat, aiming at the jugular vein, and then "jammed the pistol into his head," fracturing his skull by driving the muzzle into it with repeated blows. It is satisfactory, however, to note that Mr. Justice Park, in summing up, said that Mr. Ward had given his evidence "in a manner highly creditable to him as a professional man and a gentleman."

The maps included by Mr. Watson will enable any good walker or curious motorist from London to visit the scene of the murder. He will not find Probert's cottage, any more than he will find Lyon's Inn in the Strand between Holywell-street and Wych-street, for the cottage, we believe, was pulled down about thirty years ago. He may, however, be able to trace the garden where the body was at first hidden in a pond, and he should be able to identify with tolerable exactness the spot where Weare was killed. In doing so he will tread in the footsteps of Sir Walter Scott, who made the same pilgrimage nearly a hundred years ago.

MONOGRAPH ON INDUSTRIAL CHEMISTRY.

Plantation Rubber and the Testing of Rubber. By G. STAFFORD WHITBY, Ph.D. London: Longmans, Green, and Co. 1920. Pp. 559. 28s.

THE development of the automobile is largely responsible for the enormous expansion which the rubber industry has undergone during the last ten years. The world's output of raw rubber was, in 1917, more than three and a half times that of 1910, this increased production having been absorbed chiefly by the United States. Whereas rubber used to be obtained from inaccessible forests, it is now for the most part derived from the plantations, where its preparation can be carried out under proper technical control, and new and far-reaching possibilities are thus opened up for the industry.

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[1] Carlyle: Miscellanies, vol. ii., p. 144. According to Carlyle's note the witness was speaking of Weare, but Probert also owned a gig, and Thurtell hired one for the purpose of the murder.

In Part I. of this volume Dr. Whitly describes the preparation of plantation rubber from the tree stage to the finished product. The subjects are dealt with in a clear and fairly detailed manner and with numerous references to the scientific and technical literature. This portion of the work should be read by those who are financially interested in rubber. Part II. is concerned with investigations relating to the physical properties of rubber, such as the modulus of elasticity, the technique of tensile and of vulcanisation tests, viscosity determinations, the relation of the thermal, optical, and electrical to the mechanical behaviour of rubber, and so forth.

The work is well written and freely illustrated, and may be recommended confidently to those who are associated in any way with this great and increasingly important industry.

MANUAL OF NURSING PROCEDURE.

By AMY E. POPE. London and New York: G. F. Putnam's Sons. 1921. Pp. 596. 18s. 6d.

As announced in the preface of this useful book, it has been prepared especially to facilitate teaching by demonstration of such practical nursing as is usually included in the first year of instruction, and it can be highly recommended to ward sisters and sister tutors. It should be a valuable aid in the correlation of theory and practice since the author has included with each demonstration its physiological basis where knowledge of this is essential to the intelligent carrying out of prescribed treatment. To appreciate the psychology of nursing is as important to the student as acquiring a vast knowledge of physiological facts and nursing procedure, and the author has realised this in a valuable chapter on some of "The Routine Procedures Incidental to the Comfort and Care of Patients." The instructions given in this chapter embody the very essence of good nursing, founded on a sympathetic understanding of the mind of the patient, and the formation of good nursing "habits."

Although the book can be highly recommended to instructors and nurses alike, we may remark that the addition of more illustrations would have increased its value, and at the same time obviated the need of verbal explanations not always very clear.

AMERICAN YEAR-BOOK OF ANÆSTHESIA AND ANALGESIA (1917–18).

Edited by F. H. MCMECHAN, A.M., M.D. New York: Surgical Publishing Company. Pp. 483.

THIS annual publication has suffered delay owing to the war, but a great part of its contents owe their value to the same cause. A large number of contributions describe the practice of anæsthetics at military hospitals near the line and at the base, and enumerate the lessons taught to the anæsthetist by military surgery. Several of these papers have already appeared in English journals. Of the other articles, some deal with circulatory disturbances under anæsthesia, with pharmacology and physiology of general anæsthetics, with blood changes, and with special methods of anæsthesia. W. E. Muns contributes a paper on the effects of ether anæsthesia and visceral trauma as shown by vasomotor and blood-pressure changes. The experiments show how, by two different routes, the one being continued stimulation and the other prolonged depression, the end-result is the same—functional incapacity—whether brought about by excessive trauma or by anæsthetic over-dose. A paper on blood-pressure guides during operations shows how the sphygmomanometer may indicate the beginning of shock before this can be discerned by alteration in the pulse-rate, and also how asphyxial changes may be signalled by blood-pressure alteration before they are obvious to the naked eye. The readings were taken at least every five minutes. Pre-operative blood-pressure tests have been used by G. W. Roots to formulate a rule for operative risks. Similarly, McKesson states a rule for measuring the severity of shock during operation. J. O. Pollak discusses pulse pressure as the pre-operative index of cardiac strength. A paper on Warmed and Unwarmed Ether Vapour contains the statement that there is no satisfactory theoretical or experimental evidence that anæsthetic vapours are made less toxic by being warmed. The volume is a valuable one, but not quite the equal of its predecessor.

OUR SOCIAL HERITAGE.

By GRAHAM WALLAS. London: George Allen and Unwin, Ltd. 1921. Pp. 292. 12s. 6d.

THE human race owes its present existence to nature and nurture, the latter consisting of two parts, one acquired by each individual for himself, the other consisting of knowledge, expedients, and habits handed down from one generation to another by the social process of teaching and learning. It is the latter which forms the subject of Professor Wallas's entertaining book. From the social heritage in work and thought the author passes on through group and national coöperation to a consideration of professionalism and liberty, and, finally, after envisaging world coöperation, to our present conceptions of constitutional monarchy, science, and the church. His views on the medical profession betray no close acquaintance with the subject.

Professor Wallas thinks very meanly of the ability of nature and the individual part of nurture to fit the race for existence. Were every human being now alive to lose all the knowledge and habits acquired from preceding generations, while retaining unchanged his own powers of invention, memory, and habituation, nine-tenths of the inhabitants of London would, he says, be dead in a month, and 99 per cent. of the remainder within six months. They would have no language to express their thoughts, and no thoughts but vague reverie.

> "They would wander about, led by the inarticulate cries of a few naturally dominant individuals, drowning themselves, as thirst came on, in hundreds at the riverside landing places, looting those shops where the smell of decaying food attracted them, and perhaps at the end stumbling on the expedient of cannibalism."

It will be seen from this quotation that Professor Wallas is an advanced disciple of Weismann, and also, as we suggested above, that his book is very entertaining. This applies equally whether he is writing of public school education, of the Mesopotamian inquiry, or of sacramental emotion. And whether the reader agrees with his conclusions or not he cannot escape from the cogency of the author's arguments, by which he will be led gently on from step to step until he may need to call to his aid some hereditary prejudice in order not to have his whole aspect of the external world turned inside out. But here Professor Wallas offers no help, for he does not admit the existence of hereditary prejudice.

A PRACTITIONER'S VADE-MECUM.

Therapeutische Technik für die ärztliche Praxis. Ein Handbuch für Ärzte und Studierende. Fifth edition. By many Authors. Edited by Dr. JULIUS SCHWALBE. Leipzig: Georg Thieme. 1921. Pp. 1120. Price (out of Germany), M.230 sewn, M.260 bound.

THIS is the fifth edition of a mélange of technical detail, collected and arranged by Professor Schwalbe, the versatile editor of the *Deutsche Medizinische Wochenschrift*. The book first appeared in 1907 with the laudable aim of affording the practitioner the opportunity of mastering therapeutic technique, so as to avoid constant reference to specialist help. And the editor's aim has evidently been in large measure successful both in view of the demand for new editions and of translations into Italian, Russian, Spanish, and Magyar. The collaborating authors without exception occupy university chairs in the subjects of which they write, and all branches of medicine are covered except obstetrics, the technique of which the editor considered was sufficiently described in the ordinary text-book. Nothing is left to the imagination or omitted because it is obvious. On the first page, which opens the section of the preparation and use of drugs, is an illustration of a caustic applicator in three parts; in the second section on immuno-therapy is shown the method of giving an intramuscular injection, and all the brands of serum on the market are enumerated;

in the third section on dietetic therapy detailed diet sheets are given for diabetes and oxaluria; section four on hydrotherapy contains numberless photographs and diagrams of baths, douches, and packs; and so on throughout the book. The result is a completeness in trivialities that rather obscures the solid worth of new and exact technique in many specialties. The book is without parallel in any other tongue. H. A. Hare's "Modern Treatment" and A. S. Morrow's "Diagnostic and Therapeutic Technic" are the nearest approach to such a book in the English language. It may also deserve attention from the British or American student as affording a ready method of becoming familiar with German medical terms.

FROM CLOUD TO SUNSHINE: ALGIERS AND ALGERIA.

Tenth edition. By ALFRED S. GUBB, M.D. Paris, M.R.C.S. Eng., D.P.H. London: Baillière, Tindall, and Cox. 1921. Pp. 109. *3s. 6d.*

Dr. Gubb has already published several books, in French and English, on various aspects of Algeria. The volume under review, which is called the tenth edition, but is in many respects a new work, deals with the country as a winter health resort; the new edition is profusely illustrated, and the climate and topography receive careful attention with reference to numerous diseases. Concerning chronic affections of the respiratory tract, we read that physicians of remote antiquity, Celsus (25 A.D.) among them, were accustomed to send their chest patients to North Africa; and Sir Hermann Weber is quoted to the effect that early chronic cases of phthisis benefit by a winter season in Algiers if high altitudes are not well borne by them, and if Egypt and the Riviera are too dry. Freedom from sudden changes of temperature renders the country very suitable for asthmatic persons. Dr. Gubb passes on to mention the climatic advantages for those suffering from kidney and heart diseases, circulatory disturbances, arterio-sclerosis, rheumatism, neuritis, gout, and debility. The therapeutic aspect of Algeria does not, however, occupy the entire book; interspersed with pages on prevailing winds and mineral springs are interesting details concerning the customs and appearance of the inhabitants of the country and the life of the French and native quarters of the city of Algiers, together with notes on the many places of historical and artistic interest which may attract the traveller. Means of transport, hotel accommodation, and useful hints as to selection of a house for temporary or permanent residence, all find a place in an attractive little volume.

JOURNALS.

Journal of Physiology. Edited by J. N. LANGLEY, Sc.D., LL.D., F.R.S. Vol. LIV., Nos. 5 and 6. 1921. Cambridge University Press. Pp. 319-414. *9s.*—The Metabolism of the Salivary Glands. I. The Relation of the Chorda Tympani to the Nitrogen Metabolism of the Submaxillary Gland, by G. V. Anrep. In 1851 Ludwig found that in protracted secretion the submaxillary gland is gradually exhausted and that in consequence the percentage of organic solids secreted in the saliva diminishes as the secretion goes on. Heidenhain in 1868 showed that in the dog the mucin in the saliva arose from a clear substance in the cells, that during secretion the gland lost weight and that the percentage of solids in it is decreased. Dr. Anrep's experiments were directed to the problem of nitrogen metabolism in the secretory process. Having established by the comparative estimation of the nitrogen content and weight of the submaxillary glands of the dog that the two glands show complete concordancy, the determinations justified the assumption that the submaxillary glands on both sides contain practically the same amount of nitrogen. The effect of chorda stimulation on the total nitrogen metabolism of the gland was first determined, then the secretion of mucin nitrogen and non-mucin nitrogen, and subsequently the relation of mucin nitrogen and non-mucin nitrogen to the nitrogen output and intake. Dr. Anrep confirms the old statement that during secretion produced by stimulation of the chorda tympani the output of nitrogen by this gland is greater than the loss by the gland. The excess of the nitrogen output over the loss by the gland increases with increase of output. The output of mucin nitrogen, which, as is known, decreases during secretion, ceases altogether after a time, and is equal to the loss of nitrogen by the gland. The output of the non-mucin nitrogen continues after the output of the mucin nitrogen has ceased, proceeding at the same level throughout the secretion, and is equal to the excess of output over the loss. Its mean percentage in the chorda saliva is 0·018 per cent. The results show that within the limits of experimental error the mucin of the saliva comes entirely from the mucin or mucinogen pre-stored in the gland, that the non-mucin nitrogen is derived from the body fluid, and that no formation of mucin or increase of nitrogenous cell substance takes place during chorda stimulation.

The Temperature Coefficient of the Velocity of a Nervous Impulse, by A. V. Hill. The phenomena of a nervous impulse have been compared with those of a chemical system, such as a train of gunpowder, and Keith Lucas has shown that the velocity of a nervous impulse is increased 1·79 times by a rise of temperature of 10° C. It has been argued that this is a sign of the chemical nature of the changes underlying the propagated disturbance in a nerve. Professor Hill points out that the nervous impulse consists of two separate things: the change at a given point and the transmission of that change to a neighbouring point. At present, however, we are ignorant of the relative importance of the two phases. The temperature coefficient found by Keith Lucas for the velocity of propagation is higher than that of most physical changes. We cannot conclude, however, that the reactions underlying the nervous impulse are chemical in nature, but only that a chemical change interposes *somewhere* in process, occupying a large part of the time of propagation, which may be an important or a relatively unimportant link in the chain of actions constituting the propagated disturbance.

Studies on Muscular Contraction. II. The Relation Between the Maximal Work and the Tension Developed in a Muscle Twitch, and the Effects of Temperature and Extension, by Yasukazu Doi. At a constant temperature the maximal work done by a muscle excited by a single shock has a maximum value with a moderate initial extension of the muscle. Before this optimum extension is reached the absolute maximum work increases, and beyond this optimum it decreases with increasing extension. The absolute maximum work done in a twitch at the same extension of a single muscle is greater at a lower temperature than at a higher. The optimum extension is shorter at a lower temperature than at a higher.

Variations in Alveolar Carbon Dioxide Pressure in Relation to Meals, by E. C. Dodds. All the samples were collected and analysed by the Haldane methods from three healthy men and from a man from whom the greater part of the stomach had been removed. In normal persons the alveolar carbon dioxide pressure showed the following changes after a meal: (1) a rise of from 2 to 6 mm. within the first half or three-quarters of an hour; (2) a subsequent fall of about the same amount (2-6 mm.) below the original level; (3) a return to this level. In the man operated on the rise after a meal was very small in amount (0·4-0·8 mm.), while the subsequent changes were similar to those seen in a normal person. To Dr. Dodds it seems probable that the rise is associated with the secretion of gastric juice, and the subsequent fall with the later processes of digestion.

On the Supposed Identity of the Water-soluble Vitamin B and Secretin, by G. V. Anrep and J. C. Drummond. In 1919 Voegtlin and Myers put out the theory that the antineuritic vitamin and secretin are possibly one and the same substance, basing their view on certain observations. Dr. Anrep and Dr. Drummond find that this suggestion is not supported by experimental evidence—e.g., extracts prepared from yeast which show marked growth-promoting and antineuritic properties have no specific action on pancreatic secretion, differing in this respect from secretin. The pancreas of a cat showing typical symptoms induced by a diet deficient in the vitamin B responds in a normal manner to secretin. Secretin can be extracted from the mucous membrane of the intestines of cats, showing the so-called polyneuritic condition to a very marked degree.

The Action of Ions upon the Frog's Heart, by I. de Burgh Daly and A. J. Clark. The authors' experiments were directed to analyse the effect upon the mechanical and electrical responses of the frog's heart of changes in the concentration of the kations, which are normally present in Ringer's fluid. The effects produced by the various changes of ionic content are obviously of very great complexity. Alterations of the concentrations of the ions, if sufficiently extensive, impair all the functions of all parts of the heart, but a moderate degree of change affects the different regions of the heart to an unequal extent, and also acts with different intensity upon the different functions of the ventricle. Alterations of the potassium content produce a greater impairment of the conduction of the electrical variation, both from auricle to ventricle and within the ventricle than any other ionic change studied. Reduction of the calcium content has little effect upon the conduction of the electrical variation. Potassium and calcium are true antagonists as regards their effect upon the muscular response, but they act as antagonists only to a very limited extent as regards their action on the conduction of the electrical variation. Lack of sodium shows a striking resemblance to the effect of strophanthin. Lack of potassium or sodium and excess of calcium all produce increase of systolic tone in the heart and produce rather similar variations in the electric response; increased alkalinity, which produces increased systolic tone, produces different effects upon the electrical response.

The Immediate Action of Volatile Substances, by W. E. Dixon and Fred Ransom. The object of this paper is the demonstration that the immediate physiological effects produced by certain volatile substances are most readily explained by their physical properties. Two types of experiment were performed: (*a*) on the bronchioles and (*b*) perfusion of isolated organs. The bronchiolar experiments were made on pithed cats, artificial respiration being performed and the blood pressure recorded from the left carotid artery and the condition of the bronchioles gauged by measuring the volume of the middle lobe of the right lung. A great many irritant substances, when inspired in very small quantities, cause broncho-constriction—e.g., ammonia gas, chlorine and bromine vapour; the principal feature of this action is the long latent period, generally 15 to 30 seconds. Chloroform, volatile and possessing little irritant properties and relatively non-poisonous, causes an immediate sudden constriction of the bronchioles lasting 10 to 12 seconds. The first action of alcohol, chloroform, ether, amyl nitrite, petroleum ether, and many other volatile substances administered by inhalation, is to cause broncho-constriction lasting about 30 seconds. The same substances injected into the perfusing fluids of surviving organs of the cat and dog, artificially perfused, cause vaso-constriction lasting about 30 seconds. Professor Dixon and Professor Ransom state their reasons for believing that this action is due to physical processes.

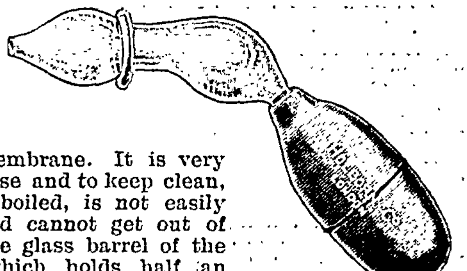
Studies in the Regeneration of Denervated Mammalian Muscle. IV. Effects of Massage and Electrical Treatment in Secondary Sutures, by F. A. Hartman and W. E. Blatz. The tibial nerves in rabbits at the primary operation were severed under aseptic conditions, the cut ends being separated by various procedures in order to check regeneration of the proximal end until the desired time—varying from 1 to 7 months. The denervated legs were carefully protected. When desired the two ends of the nerves were freshened and brought together by suture. The power of the gastrocnemii groups of the two sides was tested by galvanic stimulation immediately after denervation, and at frequent intervals until the conclusion of the experiment. The gastrocnemius group of the right side was treated almost daily by either a slow surging galvanic current or by massage. Of 125 rabbits started in this research, 60·8 per cent. possessed stronger muscles on the right side (gastrocnemius group), the remainder being stronger on the left. Neither massage nor electrical treatment appeared to benefit the denervated muscle.

On the Fibrillation of the Heart, by S. de Boer. If a bloodless heart of a frog is taken, a single electrical stimulus is capable of causing fibrillation of the ventricle. A bad metabolic condition of the heart favours fibrillation. Essential factors in fibrillation are decrease in the rate of conduction and in the duration of the refractory period, so that a circulating excitation can be set up. A single stimulus, in order to produce fibrillation in the bloodless heart, must be applied directly after the refractory period. At this time the excitability of the muscle is slight, and a slowly-travelling contraction with a brief refractory period is produced, so that when the contraction completes its circuit the muscle is again excitable and the contraction can spread again and again round the heart. The stimulus, if applied later, gives rise to a complete coördinated extra-systole. Dr. de Boer concludes, from the deflections recorded in the electrogram and suspension curves of heart peristalsis after poisoning with digitalis and of fibrillation of short duration, that in fibrillation the excitation wave passes round the heart in a series of stages, each being marked by a deflection, and that the *local* circulating excitation assumed by the observers Mines and Garrey does not exist. According to Dr. de Boer's theory fibrillation of the ventricle consists of a linking together of fractionated ventricular systoles.

On Recurring Extra-Systoles and their Relation to Fibrillation, by S. de Boer. When a stimulus is applied to the ventricle of a bloodless frog's heart, a short time after the end of the refractory period, a series of extra-systoles may occur. But when the same stimulus is applied at a longer interval after the end of the refractory period to a heart capable of giving a series of extra-systoles, one extra-systole only is produced. It appears, therefore, that the phenomenon of recurring extra-systoles (Häufung d. Syst.) only occurs when the heart has not recovered its metabolic state. In this state the excitation wave is conducted much more slowly, the refractory period is shorter, and the excitation is able to pass round and round the ventricle—i.e., a circulating contraction is set up. Conduction through the muscle is slowed both in recurring extra-systoles and in fibrillation; the difference between the conditions being that in the former conduction takes place evenly, and in the latter it takes place in stages. The intimate connexion of the two phenomena is shown by the fact that each may pass into the other.

New Inventions.

IMPROVED STERILISABLE URETHRAL SYRINGE.

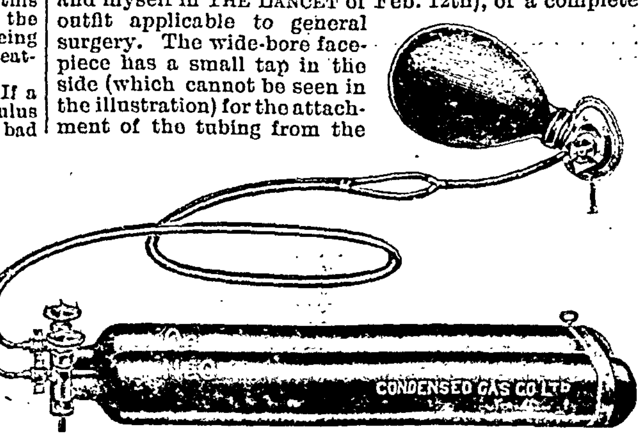


THE illustration shows a syringe shaped to plug the meatus efficiently without causing pain or injury to an inflamed mucous membrane. It is very simple to use and to keep clean, it can be boiled, is not easily broken, and cannot get out of order. The glass barrel of the syringe, which holds half an ounce, can be filled without drawing any fluid into the rubber bulb. The syringe is made by the Holborn Surgical Instrument Company, of Thavies Inn, London, E.C. 1.

FREDERICK H. PICKIN, M.R.C.S., L.R.C.P. Lond.
Westminster, S.W.

CONTINUOUS GAS AND OXYGEN APPARATUS.

THE special features about this apparatus, which has been in use for more than two years are (1) its simplicity (it consists of no more than the essentials), (2) the re-designing of each important part with a view to efficiency, and (3) the formation in conjunction with the warm ether "bomb" (described by Dr. S. R. Wilson and myself in THE LANCET of Feb. 12th), of a complete outfit applicable to general surgery. The wide-bore face-piece has a small tap in the side (which cannot be seen in the illustration) for the attachment of the tubing from the "bomb." The oxygen cylinder valve is the outcome of considerable experiment, differing entirely from other makes. A clip for the ends of the cylinders keeps them rigidly locked together and there are no high-pressure connexions. The design of the stand is for a horizontal position of the cylinders, which are controlled by foot-keys, the gases being admitted in puffs, as desired. An upright stand with hand-control can, however, be supplied. The former method leaves both hands free and is quite satisfactory.



Full particulars can be obtained from the makers, the Condensed Gas Co., Ltd., 59 and 63, Grosvenor-street, All Saints, Manchester.

K. B. PINSON, M.B., CH.B. Birm., M.R.C.S.

THE LANCET.

LONDON: SATURDAY, APRIL 23, 1921.

The Position of the Voluntary Hospitals.

THE plight of the voluntary hospitals remains precarious. In recording last week the proceedings at the annual meeting of King Edward's Hospital Fund for London we said enough to show that, especially in the metropolis, great anxiety remains as to the maintenance and conduct of these institutions. There would be no need of pointing this out if it had not been that the whole position appears to be lighter, and there is risk that the public as well as the medical profession should think all danger to be past. The precarious situation of these hospitals was revealed at meeting after meeting and in report after report a few months ago, and then we all knew the serious situation which had to be met. The circumstances leading to the situation have not been modified in any important way, prices have not dropped much, service is not more economical, accident rates have not changed, and only in the incidence of sickness has there been some improvement. All the opportunities for bankruptcy of the hospitals remain, and as long as this is so, it is inevitable that the needs of the institutions should again force themselves upon our attention. What, of course, has happened is that two very large capital sums have been distributed in relief of emergency—namely, £250,000 from the Red Cross and £200,000 by King Edward's Hospital Fund for London—and we have all been sharing in the temporary feeling of ease. This is a state of mind which has to be altered.

We doubt whether the public quite realise that these enormous grants were of an emergency nature and that they were made from capital funds, which means that their repetition cannot be expected. Their receipt by the hospitals enabled the institutions to gain breathing time, and it is obvious that the further strenuous efforts expected must be put into action. In the report of the General Council of King Edward's Hospital Fund for London the special features of the metropolitan hospitals are noted, and the summaries of receipts and distribution present the following outstanding features. The annual subscriptions and donations to the Fund, including £16,000 from the League of Mercy, amounted to £50,000. The London Schools Hospital Fund £10,000, the King George's Fund for Sailors £4000, have to be added, as well as £130,000 from investments and legacies. The Samuel Lewis estate brought £18,000. The total general receipts amounted to £215,800, the discrepancy being due to our not taking account of the small figures in the different items. To this sum is to be added the large sum received from the surplus funds of the British Red Cross Society and Order of St. John of Jerusalem, making, with the interest accrued thereon, over £255,000, and bringing the receipts of the Fund up to the grand total of £471,000. This is a magnificent recognition of the critical nature of the position. There have been distributed £700,000 accounted for in this way; ordinary distribution, £200,000; distribution of Red Cross funds, £250,000; and an emergency distribution of a further £250,000. That is to say that the Fund distributed £230,000 more than it received, and has incurred a capital loss equivalent to an annual income of £16,000. The way in which that money was distributed was set out in detail in THE LANCET on Dec. 25th last, and the only comment it is necessary to make is that the awards were made with scrupulous care and that the needs which were met were of a most urgent character. The last paragraph of the Report may be quoted. "All who believe in the voluntary system must make a special effort to support the hospitals during the present crisis, and to ensure that voluntary contributions form at least a substantial part of their income in the future. The Fund has helped to meet the first need by the emergency distribution of £250,000. If liberally supported by the public it can help greatly with the second, especially in the case of hospitals which are most in need." The Council in their Report acknowledge the debt to the press for the assistance rendered by publicity; the need for this support remains as urgent as ever.

An Interim Report has now been presented to the authorities of King Edward's Hospital Fund by the King's Fund Policy Committee, a committee appointed to work out the details of the policy to be recommended for the preservation of the voluntary system of hospital management and control. The Report is of a highly practical character. The reference of this Committee was a report from the Executive Committee, passing 13 resolutions dealing with the plans to be pursued for the preservation of the voluntary system of hospital management and control. It was required of them to work out the details of their advice, and to recommend the approved measures to the Government, to Lord CAVE'S Committee, and others directly concerned, including the public. Lord CAVE'S Committee, it will be remembered, has already reported that it is desirable in the public interest to maintain the voluntary system of hospital management. The advice of the Interim Committee may be summarised as follows. The Committee finds that the voluntary system must be supplemented, at any rate temporarily, by other sources of revenue, to be derived, first, from payment in some form or other for specific work, and, secondly from public funds. Payment for specific work includes money from public authorities, from individual patients, and from insurance, voluntary and compulsory. With regard to the first, we must look for payments ensured under the National Insurance Act. With regard to the second, a movement to obtain certain payments in certain circumstances from individual patients has been spreading all over the country. No such system was in existence until less than a year ago, but already promising returns have been obtained. With regard to the third, a comprehensive scheme associated with the name of DR. GORDON DILL has been put into operation in Sussex and a committee of the British Medical Association has recommended its adoption with modifications by the hospitals of London.

We have attempted to make a coherent story from the records of much complicated investigation and the moral of that story, already indicated, may be repeated. The voluntary system of hospital support is worthy of every effort for its preservation. While the various Committees whose work has been mentioned have been directing their energies mainly to the metropolis, that work has a direct bearing upon the future of all the voluntary hospitals of the country.

A Solution for the Holiday Huddle.

"*It is easy enough to account for the absurd position that most people's holidays are packed into the same period of opportunity (which is generally the month of August or thereabouts), but it is not easy to see why such a silly arrangement is allowed to continue.*"

WE repeat the opening sentences of an editorial article in THE LANCET a decade ago, as they are just as applicable now as they were then. The English summer still spreads impartially over the months of June, July, and September; often, indeed, May is as merry for the holiday-maker as any of the more orthodox months, and October, in spite of its shortening days, is a kind of Indian summer. And yet, as in 1910, the seaside and holiday season generally is compressed into a month in which accommodation is expensive, hard to get, and crowded, railway companies are more than ever at their wits' end to cope with the sudden demand upon them, and altogether the discomforts and inconveniences are so great that many stay at home in despair, and from a medical point of view there is much to be said for that course. The innocent cause of this prodigious ill is the school child, and its inevitability has never been seriously questioned in any responsible educational organ, though its medical side has been set out for years. A striking article on "No Fixed Holidays" which appeared in the Education Supplement of the *Times* on April 7th breaks the silence in lay journals.

The question of running elementary schools continuously is no new one, and has from time to time been discussed by the London County Council, but on every occasion has failed to gain support, possibly for political reasons and the great convenience of school holidays falling during the recess. And to most of us, whether responsible for the family or the school, the suggestion at first sight raises visions of hopeless disorganisation in the familiar routine of school work, term time, and vacation. Indeed, the initial opposition might be so overwhelming as to veto the proposal entirely. Yet on further and more serious consideration there are undoubted advantages attaching to it. Every business concern and even educational offices are run on continuous lines without any hitch in the machine, holidays being arranged in rotation in order of seniority. Such a system applied to schools, whether elementary or secondary, would necessitate careful planning and arrangement for both teachers and pupils, but it should not prove an impossibility with due coöperation of all concerned and under the control of local educational authorities. It should be possible to arrange without dislocation of school life for the absence of teachers and pupils at regular periods spread over a space of several months, leaving parents some liberty to fix their children's holiday at the same time as their own. The provision of a rota might enable teachers to take each other's duties in turn during the allotted holiday months, with the added advantage of a change of work for a time, when, for instance, the second in charge fills the head's place. Disturbance to class work by the withdrawal of children at various periods ought not seriously to interfere with the continuity of their studies; coming back invigorated by the holiday's change the average pupil should have little difficulty in making good lost ground. Only a rigidly mechanical conception of education can think or speak of the loss as irremediable. Pupils in a class differ too widely among themselves for the absentee to upset the whole system. There are, of course, many children in the elementary schools whose holidays are spent in the streets, the various playgrounds and parks, without prospect of any other change. For these a longer choice in summer might make it possible to arrange for school journeys or camps for periods spread over the several months under the voluntary charge of assistant teachers or other helpers.

The question of the influence of the continuous school system on the course of epidemic and infectious diseases among school children is one, nevertheless, which would need careful consideration. At public schools the beginning of the term is always an anxious time, and day boys constitute a complicating factor in the boarding-school system. The objection would not apply in the same way to elementary schools or to day schools in general. A good deal, on the other hand, is to be said of the strain on all teachers inevitably attaching to the heavy work in the schools at the close and commencement of each term, which the continuous system would do away with. The new continuation classes, if they are to survive, must necessarily run continuously, as those attending them being in employment have no fixed holidays. Is it too much to hope that the suggestion will receive serious consideration upon its merits? Some body similar to the Industrial Research Board might be asked to report upon its actual balance-sheet in work and efficiency.

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The Question of a Trade-Union in Medicine.

IT may be remembered that last autumn in certain mining districts there was a definite movement among medical men to cease work unless their clients paid higher fees. The whole question of a strike among doctors was freely discussed at the time in the lay papers, and while no representative gathering of medical men expressed any opinion on the subject, it was dealt with in a certain number of resolutions. At those medical meetings where the question of a medical strike was debated the conclusion come to in almost every case was, if we remember rightly, that a strike of doctors was unthinkable. It was pointed out on each occasion that even if medical men desired to adopt union tactics to obtain their dues, and even if hard situations, as they arose, could be remedied in such a way, they did not possess a union. And none of those who seemed to regret the fact were able to outline the constitution of a trade-union for medical men which should alike have the powers of the well-known combinations and be able to exercise those powers concomitantly with the discharge by its members of their professional duties.

The story of the past fortnight makes the subject of a medical strike interesting. At a recent dinner held by a branch of the Medico-Political Union, which is an association of medical men contemplating the transformation of medical organisation into a trade-union, Dr. E. H. STANCOMB, a prominent member of the Union, said: "It is the miners' turn to-day, but it may be the doctors' turn to-morrow." He summarised the position taken up by the Medico-Political Union when called on to defend the institution of a medical strike in circumstances where professional protest has remained vain, assuming that this plight had arrived in respect of certain panel regulations. He contended that a medical strike would be against the Government in respect of the terms and conditions of service, but that no sick person would suffer, and that the strength of the strike would lie in the fact that there could be no blacklegs, as no person could, on the strength of a few weeks of intensive culture, possibly take the place of a professionally trained medical man. Two points arise from this presentation of the case for the establishment of a medical trade-union, and in the consideration of these it is not necessary to make any allusion to ideals of conduct. Ideals of conduct must show their influence personally and are thus removed from the sphere of any occupational organisation. First, a solidarity of opinion among medical men is assumed which no one believes would ever occur. Granted that a strike of medical men could not be broken by blacklegs from without, it is practically certain that it would be broken immediately from within. There could be no need for any Government, resisting a medical strike, to hastily call in the services of unqualified medical men. Within any form of medical union that is conceivable there would be immediate dissentients from the policy of withholding medical service; and, still excluding ideals of conduct from our thoughts, one reason for this is that medicine is not a homogeneous service in which common conditions prevail with all workers. Secondly, in what manner could any medical strike be directed against the Government unless it was primarily directed against the sick and suffering? A middle stage of the operations in a medical strike appears to be omitted from discussion in the arguments of those who desire to see a medical trade-union arrive. It is in this stage that the full force of public opinion would be ranged against the medical profession.

That the medical profession, unable to put the necessary pressure upon a Government, could reduce the public to such a position of need that the voice of a medical trade-union would become paramount, is a sequence of events which we do not believe could ever occur. It is for that reason that we have been unable to support the views of those who are attempting to transform the medical profession into a trade-union, and it is needless to look for others. The extreme weapon of a trade-union is a strike. No medical union that we can imagine would be able to use that weapon with the efficiency that comes from common agreement.

ENTRANCE BOARD REGULATIONS FOR SCOTTISH UNIVERSITIES.—New regulations governing entrance to the Scottish Universities were recently issued by the Entrance Board. The object of the new regulations is to unify the requirements hitherto insisted on for admission to graduation courses in the different faculties, and for this purpose to accept certain group certificates of the Scottish Education Department. The certificate must attest proficiency in four subjects, one being English, in which, as in two of the other three, the higher-grade standard must be reached. The marked departures from the present system are: (1) Neither Latin nor Greek is to be a compulsory subject; (2) mathematics is no longer to be a compulsory subject; (3) art, music, economics, &c., are now recognised as alternative subjects. At its meeting on March 28th the University Court of Aberdeen, having received communications on the subject from the Senatus, including reports from the faculties and from the General Council through its Business Committee, resolved to dissent from the regulations. At a meeting of the University of St. Andrews General Council it was agreed to join with the Aberdeen and Edinburgh University Courts in dissenting from the new regulations. The Courts' objection appeared to be that it is proposed to institute a common test for admission to all faculties, and this was considered to be impracticable.

Annotations.

"Ne quid nimis."

A SMALL BASTARDY BILL.

THE Bastardy Bill to be introduced by Captain G. E. W. Bowyer in the House of Commons on April 29th embodies what remained of Mr. Neville Chamberlain's "Children of Unmarried Parents" Bill after the latter emerged from Committee stage. It proposes to appoint the clerk to the justices (or, in London, the chief clerk of a metropolitan police court) as collecting officer under the Affiliation Orders Act of 1914. For some time past it has been difficult to induce any worthy person to undertake this duty, the importance of which will be much enhanced by the much larger payment which, if the Bill becomes law, may be levied on the putative father. It is further proposed that any illegitimate child whose father and mother shall have subsequently intermarried shall thereby, and as from the date of such marriage, be deemed for all purposes legitimate. The National Council for the Unmarried Mother and her Child, which is promoting the Bill, believes that although it does not go very far—care has been taken to ensure a measure of general agreement—lives will be saved thereby and the existence of the unfortunate child who is born out of wedlock deprived of some of its terrors. As such it will command the cordial support of the medical profession.

THE TRAINING OF THE HOSPITAL ALMONER.

IT is encouraging to find from the report of the Hospital Almoners' Council for the year ended 1920 that in the midst of much that is disappointing in voluntary hospital work nowadays, the Council has succeeded in overcoming many of the difficulties encountered during the war. The Council has a high ideal of its functions, and has set a standard of training which is no light one for the student. Candidates are expected to have had a liberal education, as far as possible up to the university standard, before embarking on the course of training; they should also be women with a wide outlook, broad sympathies, and a genuine interest in the social problems of the day, for, as the report points out, the work of an almoner necessarily implies very considerable interference in the lives of others, and success will depend largely on the spirit of sympathy and comradeship with which the work is carried out. The almoner's departments of the voluntary hospitals must share in the challenge of the modern situation. A considerable part of this challenge is to be found in the new attitude of Labour towards social amelioration, and the "charity" of Dickens's day belongs to a sentimental past. But the most important part of the challenge for the moment is the financial question. Hospitals are seeking to augment their incomes by means of payments from patients, and this policy will be reflected in the increased importance of the almoner. In some cases the payments take the form of a fixed sum paid for each attendance in the out-patient department or for each week's residence in the wards, the latter often estimated by the hospital as the amount to which the family exchequer is lightened by the absence of one of its members in hospital; in others the payments are assessed on a voluntary basis according to the patient's means. In either case, but perhaps more in the latter than in the former, added responsibility and need for tact and sympathetic insight are required of the almoner, who knows the social conditions of the patients in her district. Furthermore, everybody concerned with the treatment of patients in our voluntary hospitals is extremely anxious that money difficulties alone shall not prevent patients who are acutely ill from getting immediate attention, irrespective of their financial position. If rules and regulations as to payments have to be set aside—and it is the hospital's pride that they possess less of that much abused commodity known as red tape than almost any other British institution—the almoner alone knows the facts on which such decisions have to be made. And when we add to these questions the difficulties which occur daily with regard to ex-Service men and pensions, tuberculous persons and sanatorium benefit, lying-in women and maternity benefit, we are not surprised that a high standard of training is required of the almoner. We are also not altogether astonished that in some hospitals, at any rate, the new situation has proved almost unsurmountable. There is a real danger that the almoner's department may become a registration department where card indexes and account books are accurately kept and the human element is allowed to die out. If the mere registration of patients' payments and pension or grants to the hospitals are allowed to fill the major portion of the almoner's time we must not be surprised if we fail to get the right type of woman for the work.

The supply of trained almoners has hitherto barely kept pace with the demand. The Hospital Almoners' Council course of training extends over a period of two years, during which time the candidate is earning no salary. In addition there is a fee of 40 guineas for the course. This expenditure compares favourably with the cost of training for other professions followed by women, but it is probably one of the reasons why the supply of candidates has been limited in the past. The curriculum of the Council is divided into three parts: (1) three months' whole-time work in an office of the Charity Organisation Society; (2) nine months' (three terms) study under the Ratan Tata Foundation of Social Science and Administration of the University of London, including lectures on social subjects, elementary hygiene, and physiology; (3) 12 months' training in the almoners' department of a hospital training centre. As the Ratan Tata Foundation courses begin at Michaelmas, and as the three months' training with the Charity Organisation Society must precede this, it is necessary for the student to begin her training not later than midsummer.

Arrangements have now been made with some of the provincial universities (Glasgow, Leeds, Liverpool, and Durham) whereby students can take courses of study in these universities equivalent to those of the Ratan Tata Foundation in London. We should like to see this privilege extended not only to other universities but to some of the other branches of study. A practical insight into social conditions in a South Wales mining village or a Lancashire cotton town would widen a student's outlook immeasurably. Perhaps the time may come also when it may be possible for some students, at any rate, to study social conditions in industrial centres abroad.

In conclusion, we should like to hazard the hope that financial assistance, in some such form as a bursary or scholarship, may be forthcoming for training for this valuable new weapon in the armoury of medical sociology. It will be a thousand pities if promising students are lost to this work through lack of means.

LIPOMA OF THE SUCKING-PAD.

ACCORDING to Dr. Angus L. Cameron,[1] Teaching Fellow in Surgery of the University of Michigan Medical School, the corpus adiposum buccæ or sucking-pad was first described by Gedani in 1725, though Heister is usually credited for the first description in his *Compendium Anatomicum* published in 1732. The sucking-pad is a circumscribed mass of adipose tissue which lies in the cheek, partially wedged between the masseter and buccinator muscles and covered externally by the superficial fascia of the face and the zygomatic muscle, and connected posteriorly by a stalk with a much larger mass of fat which is known as the corpus adiposum malæ. Scammon, who examined the bodies of 42 individuals whose ages ranged from 20 to 60, found the sucking-pad well developed in 34, and in two well developed on one side and practically absent on the other. No relation was observed between the size of the sucking-pad and the age of the individual, nor was its size apparently affected by extreme emaciation. Dr. Cameron has collected 15 cases of tumour of the corpus adiposum buccæ from the literature published since 1848, exclusive of a personal case. Only three of the 15 cases were congenital, the ages of the remaining cases ranging from 10 to 62 years. Six of the patients were males, seven females, and in two the sex was not given. The right side of the face was involved in nine cases, the left in three, and in three the side was not stated. The size of the tumour varied between that of a large chestnut and that of a man's fist. Dr. Cameron's own case occurred in a boy, aged 14, who had had a facial tumour as long as he could remember, though it had only begun to increase in size for the last two years. It was soft, bilobulated, painless, and freely movable under the skin. A distinct sense of fluctuation was observed on external palpation, but the tumour was found to be solid on palpation from the oral cavity. A diagnosis of lipoma of the corpus adiposum buccæ was made and confirmed by operation, when a tumour weighing 36 g. was removed by a small incision in the mucous membrane. It shelled out easily except for the stalk connecting it with the corpus adiposum malæ, which had to be severed.

LIFE AFTER DEATH.

Sir Arthur Conan Doyle gave three lectures at the Queen's Hall, London, recently on "Death and the Hereafter," in which he demonstrated different aspects of spiritualism, giving the results obtained by psychical research. In his first lecture he described the investigations of Professor Crawfurd, of Belfast, who has written a book on ectoplasm or psychoplasm—the substance which, it is suggested, emanates from some mediums, and he quoted Thomas Vaughan, the seventeenth century alchemist and poet, in support of the recent observations on the building up of spirit forms. Vaughan, who appears to have derived inspiration from Cornelius Agrippa, described "the first visible receptacle wherein the spiritual things are consecrated, ... a viscous mass impregnated with all powers celestial and terrestrial; ...... it may be seen with the eyes and felt with the hands; ...... it alters every moment; ...... it is almost animal; it is the mother of all things; ...... it is a thick water which is dry and wets not the hands, a most delicate substance, and tender; ...... the least violence destroys it, even the vibration of light." Such a substance seems to be what we are asked to believe can be materialised and dematerialised by mediums.

Sir Arthur Conan Doyle's attitude towards his audience, as befitting a medical man, was not pontifical or dogmatic; it was that of an investigator who felt bound to pass on information which he had obtained and to relate what he had actually experienced. The experiments conducted with a medium called Eva in association with Madame Bisson, and recorded by Dr. Schrenck Notzing,[1] were described, and the lecturer told how he had actually seen and touched the mysterious substance emanating from mediums. In the second lecture stress was laid on the religious argument with spiritualism, and the lecturer deplored the fact that the Church had rebuffed investigators, instead of working with them as allies, to prove the existence of a life after death, and to confute materialists. He showed that the Fathers of the Church recorded fully spiritual phenomena, in the days when each church was ordered to have three discreet women, one with the gift of healing and two with spiritual gifts, quoting St. Augustine, Origen, Tertullian, and Jerome as describing occurrences similar to those found in the publications of the Society for Pyschical Research. Further, he claimed that St. Paul's list of spiritual gifts (I. Corinthians, xii., 8–10) is an exact description of the powers of mediums, clairvoyants, and clairaudients. He added that in his view there were no such things as miracles, but that everything is done by law, our failure to understand being due to conflict between old knowledge and knowledge later acquired.

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[1] Journal of the American Medical Association, March 19th, 1921.

[1] THE LANCET, April 16th, p. 809.

The third evening was taken up with a display of spirit photographs. Certain of these showed mediums with masses of viscous-looking ectoplasm issuing from their bodies, and these masses, the lecturer stated, could not be detached without doing harm to the medium, as at the end of the trance it was reintegrated into their bodies. But he said that a small portion had been taken from the medium Eva and sent to analysts, who had decided that it had all the constituents of the human body. Certain obvious reflections in this connexion will have occurred to Sir Arthur Conan Doyle; he must know that before members of his own profession will pay heed to such "evidence" of life after death they will require proof that every step in this analysis has been undertaken with precautions against fraud and error.

ERYTHRŒDEMA.

IN 1914 Dr. H. Swift, of Adelaide, described at the Australasian Medical Congress a peculiar group of symptoms characterised by redness and swelling of the hands and feet, which he had observed in children. He termed it "erythœdema," but did not regard the word as satisfactory as the swelling did not pit on pressure. Comment was subsequently made upon these cases in our columns.[1] In the *Medical Journal of Australia* of Feb. 19th last Dr. A. J. Wood has published an important paper on the subject. He states that he has frequently seen such cases in Melbourne during the last 30 years, and that before his time Dr. W. Snowball, of the Children's Hospital, recognised the complaint, and spoke of it as "raw beef hands and feet." In Sydney the condition has also long been identified and spoken of by Mr. C. B. Clubbe and others as "the pink disease." Dr. Wood has now notes of 40 cases. Of the ætiology and pathology nothing is known. The majority of Dr. Wood's patients were between the ages of 8 and 18 months, but children at the breast as young as 3½ months and children as old as 3½ years have been attacked. The symptoms when well developed are most characteristic. The child is brought with the head bent down, generally into its mother's chest, or frowning with half-closed eyes, as though it dreaded the light. Usually it is whining and fretful. Some patients are restless, scratching at the feet or pulling at the hair and ears. If placed on the floor they bend forward so that the head almost touches the feet. They do not smile, and resent any attempt to amuse them. In some cases the red swollen appearance of the hands is an early and pathognomonic symptom. The children are worn out from want of sleep, and in distress from intolerable irritation of the skin of the body, hands, and feet. In young infants the earliest symptoms are fretfulness, insomnia, and disinclination for breast or bottle. After a week or two they may perspire freely, and a profuse irritable sweat rash appears. A little later (two or three weeks), or as late as four or five months after the onset of the fretfulness, the redness of the hands and feet appears. Muscular wasting is an early symptom. Stomatitis is common, and photophobia is very frequent. The itching leads to scratching, which may cause breaches of the skin, to be followed by ulceration. The redness of the hands and feet is accompanied by icy coldness to touch, and small vesicles may form. Loss of finger- and toe-nails is not rare. The axillary and inguinal glands may be enlarged. The rectal temperature is generally about 100° F., but is higher when complications, such as broncho-pneumonia, occur. Loss of weight takes place, though the food seems to be well digested. The urine is scanty. The first evidence of improvement is return of sleep and gain in weight. The prognosis is good, but the duration varies from three months to a year. Five deaths have occurred in 91 cases, but in only one could it be shown that death was not due to the complication of broncho-pneumonia. The treatment consists in sending the child to the country and leaving it as long as possible in the open air. For the sweating and irritability of the skin great relief is afforded by rubbing the whole body at least twice a day with methylated spirit and dusting with zinc and starch powder. For underwear a loose silk garment is preferable. For the irritable fingers and toes painting daily with tincture of iodine is satisfactory. If this seems too strong an application it may be diluted with an equal part of methylated spirit. Drugs do not seem to be of much use. For the insomnia trional, chloral, bromide, and opium have been given. Liq. opii sed. has been employed without relief. Sleeping in the open air in the country has succeeded when every form of hypnotic has been pushed in the city without effect. When methylated spirit or iodine has failed to relieve the itching it may be necessary to apply cardboard splints to the arms to prevent deep scratching.

NON-TUBERCULOUS APICAL DISEASE.

Dr. G. Liebermeister,[1] of Düren, reports having recently seen 15 cases following influenza in which the clinical appearances closely resembled tuberculosis of the apex. No tubercle bacilli, however, were found in the sputum, Pirquet's reaction was negative, and no reaction followed injections of 0·1 to 10 mg. of tuberculin. In 7 of the cases, indeed, the doses were increased to 200 mg. old tuberculin and 2000 mg. of bacillary emulsion without any reaction. He therefore considers that a tuberculous ætiology could be excluded with a fair degree of certainty. Fourteen of the cases recovered, although in some of the patients the apical signs were very persistent and it was many weeks before they finally disappeared. In the one fatal case severe hæmoptysis occurred, but no tubercle bacilli were found in the sputum in spite of repeated careful examinations, and the diagnosis of influenzal broncho-pneumonia was confirmed by the autopsy, at which no evidence of tuberculosis could be discovered. Dr. Liebermeister concludes by saying that it is most important at the present time, when influenza is so prevalent, to make an exact ætiological diagnosis in cases of apical disease of the lung, so that tuberculosis should be recognised and treated as early as possible and so that, on the other hand, the diagnosis of tuberculosis should not be made in the non-tuberculous.

HOME AMBULANCE SERVICE.

AMONG the problems calling for anxious consideration during a period of national emergency are those that concern the maintenance of hospital supplies, the provision of means to secure the transport of the sick to hospital from outlying areas, and the demands that may arise for the removal of the injured in any disturbances that may take place. Existing circumstances have afforded proof of the value of the Home Ambulance Service—one of the peace activities of the Joint Council of the Order of St. John and the British Red Cross Society. Under this scheme there are approximately 300 ambulance stations established in the country under the administration of county directors. Although these motor ambulances are exempt from the payment of licence duty on condition that they are used solely for the transport of the sick, it was felt that under the recent conditions the scope of their work must be extended if necessity arose. Thus, after consultation with the Ministry of Transport, instructions were issued to county directors that if they were called upon for the purpose of helping to maintain the essential supplies of the hospitals and convalescent homes in the country, the fullest possible use might be made of them for that purpose so long as the Ministry of Transport's special permission lasted. A day or two later, when military plans for safeguarding public interests developed, it became evident that an organisation having ambulances distributed throughout the country would be of invaluable service should disturbances occur, and, at the request of the War Office, county directors were further instructed that arrangements should be made so that, by coördination of the work of the ambulance stations, every possible assistance should be given to the authorities in dealing with casualties, while at the same time a minimum of dislocation should be caused to the hospital services and the normal work for the sick. It is even more necessary, of course, to maintain the independence of the Red Cross at times of civil disturbances than during war with a foreign State, and this was recognised by the military authorities, who issued orders that the ambulances should remain entirely under the control of the county directors and should not be driven by enlisted men. Similar arrangements proved entirely satisfactory during the Luton riots in July, 1919, when a large number of casualties were picked up by the Home Service Ambulance.

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[1] THE LANCET, 1918, i., 611.

[1] Deutsche medizinische Wochenschrift, March 10th, 1921.

The normal work of the Service continues to give evidence of its value as a unit of the forces fighting disease, the latest report showing that 46,294 cases have been carried in the ambulances since the establishment of the Service less than two years ago.

CREEPING ERUPTION.

ACCORDING to Dr. Joseph Victor Klauder and Dr. Sigmund S. Greenbaum,[1] of Philadelphia, who report a case in a girl aged 6 years, creeping eruption, or larva migrans, which was first described by Lee in 1874, is a relatively rare disease in the United States, where only 18 cases have been recorded. The disease is commonest in Russia, and is also prevalent in the Shetland Islands and in Norway, as well as among Arabian children, whose mothers are said by Lee to burn the part affected with a hot wire. The eruption is due to a larva which is generally regarded by entomologists as the *Gastrophilus hæmorrhoidalis* of the horse. This organism measures from 1 to 1·5 mm. in width, possesses ten segments, and has hooklets which are more prominent at the cephalic end. Two suckers are present at the head end and two club like processes at the tail end. There are two tubes in the interior of the organism. The disease is most frequent in children. The parts most commonly affected are the hands or lower parts of the forearms, the feet, and lower parts of the legs. In exceptional cases the face, buttocks, genitalia, and trunk are involved. The characteristic lesion is a burrow, which is a raised erythematous linear lesion, serpiginous, and at times circinate in outline. The lesion is most distinct at the extending portion, and tends to disappear at the older and traversed part. Sometimes the burrow is composed of linear vesicles. On diascopy the larva is seen as a black speck at the advancing end of the burrow, whose rate of progress varies from a fraction of an inch to seven inches in the 24 hours. In most of the recorded cases only a single burrow was found, but in the present writers' case there were five separate and disconnected burrows. The duration of the disease is variable; not uncommonly it lasts for some months. Unless secondary infection occurs, there is little local reaction to the presence of the parasite. Histological examination shows that the burrow is present in the upper part of the epidermis between the stratum corneum and the rete Malpighii. The eruption is readily amenable to treatment by local applications of nitric acid, phenol, tincture of iodine, chloroform, and 2 per cent. salicylic acid in collodion.

BELGIAN METHODS OF ANÆSTHESIA.

TWO new methods, or rather two modifications, in recognised methods of anæsthesia are reported from Belgium,[2] where they have been put to a preliminary test. The first is a method of general narcosis, using a mixture of equal volumes of chloroform and ether plus half a volume of ethyl chloride. One and a quarter hours before the administration of this mixture a subcutaneous injection is given containing dionin and heroin, 0·005 g. of each; morphine, 0·01 g.; hyoscine hydrobrom., 0·0001 g. The dose is larger in muscular or alcoholic subjects. It is claimed that anæsthesia so induced is free from anxiety both to patient and operator. The amount of chloroform necessary is so small that there is no danger of syncope or delayed poisoning. The hyoscine removes "the harmful brake resulting from stimulation of the vagus." The pulse remains strong and regular throughout the whole anæsthesia. The patient breathes deeply and the colour is good. Heroin lowers the excitability of the lung surface, increases the ventilation without increasing the respiration-rate, and diminishes the "chloroform appetite." The dionin and morphine relieve the patient of anxiety and aid in establishing gradually the state of narcosis. The method was devised by Dr. Le Clerc-Dandvy. It is used only at ages over 17 years. Dr. Albert Govaerts, of Brussels, gives a list of 14 operations in which this method was used. Anæsthesia lasted from 45 minutes to 1½ hours. The amount of chloroform required varied from 3·5 to 11 c.cm. In one case, however—an operation for nephrectomy on an alcoholic subject lasting 1 hour—50 c.cm. of the mixture, and therefore 20 c.cm. of chloroform, were necessary.

The second method consists in the substitution of 4 per cent. scurocaïne for stovaine in spinal anæsthesia. The technique is also modified. Dr. G. Spehl, the originator of this modification, uses a 10 c.cm. syringe. The injection is made in the first or second lumbar space. A small quantity, not more than 4–6 c.cm., of cerebro-spinal fluid is allowed to escape, the syringe containing 4–12 cg. of scurocaïne is adjusted, and the piston withdrawn to the 10 c.cm. mark. After an interval one-half of the resulting mixture is injected and the other half after a second interval. The head of the patient is kept flexed on the chest and is raised throughout. After the injection the patient lies on the back with head well raised and the table is tilted from the feet at 10° to the horizontal. Anæsthesia is complete in 10 minutes. When the injection is made in the first lumbar interspace anæsthesia extends up to the clavicles. Twenty-eight observations have given encouraging results, headache and vomiting occurring in five cases only. More complete data are promised for later publication.

FAMILIAL VARIATION IN RESISTANCE TO INFECTION.

AN extensive experiment on the effects of in-breeding of guinea-pigs has been in progress at the U.S. Bureau of Animal Industry at Washington since 1906. A number of pure in-bred families have been developed by persistent brother-sister matings, which show permanent differences in respect of colour-pattern, polydactyly, infant mortality, and weight. Dr. S. Wright, of Washington, and Dr. P. A. Lewis, of the Henry Phipps Institute in Philadelphia, give[1] a most interesting account of experiments which they have made on the resistance of these families to inoculated tuberculosis. The difference may be very marked. Thus, with intra-peritoneal inoculation all of family 32 were dead at the end of 25 days, when 60 per cent. of family 35 still survived; with subcutaneous dosing the whole of the animals from family 32 had perished in 47 days and only 30 per cent. of those from family 35. In crosses with other resistant families the most resistant family transmitted its resistance by either sex to the offspring of either sex, and the progeny were superior in resistance to the most resistant family itself. Resistance to this form of infection appears to be independent of other elements of vigour, such as weight, rate of growth, or size of litter. Apart from their inherent interest, these observations seem to be important from two more general points of view. In the first place, they furnish most favourable material on which to resume once more the hunt for the factors—anatomical, chemical, or what not—on which resistance depends. Dr. Lewis is inquiring into the relation between resistance to tubercle and resistance to other infections, into any discoverable differences in the constitutions and economics of the two sets of animals, their phagocytic and antibody mechanics, and his results will be awaited with much interest. In the second place, the observations emphasise the care and circumspection with which experiments must be interpreted by forcing on our notice a factor which has hardly been suspected before. A race of guinea-pigs which have the audacity to have no end-piece to their complement has lately been revealed, and it is evident that if quantitative inoculation experiments are to reach their highest accuracy they must be made on a genetically homogeneous population. Evident, too, that along these lines one may look for reconciliation between divergent sets of observations. Perhaps in future our experimental animals will have to be as guaranteed as our dyes and chemicals.

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[1] Archives of Dermatology and Syphilology, April, Part I., 1921.

[2] Le Scalpel, 1921, pp. 291, 253, and 277.

[1] American Naturalist, vol. lv., 1921, p. 20.

THE DIET OF THE WEANLING.

THE neglect of the general practitioner to make himself familiar with the principles of feeding advocated at infant welfare centres has been freely criticised in certain circles. But are there as yet any well-recognised principles, excepting the desirability of breast feeding till the ninth month, on which there is general agreement? And if there are not, is not the general practitioner justified in depending upon his own experience, rather than upon pronouncements which themselves are in question? The report of a meeting of the Society of Medical Officers of Maternity and Infant Welfare Centres in our present issue shows that there is little unanimity on the subject of the proper feeding of infants between 9 months and 5 years of age. The assumption that the bulk of the food supplied to babies should be cow's milk, of which large quantities should be consumed, appears on the evidence submitted to be founded on slender enough basis, though milk certainly seems a useful and palatable vehicle for fats and for water. The mother familiar to us all, who gives her baby just "a snack of what we eats ourselves," used to be held up to execration, and, indeed, in most middle-class circles would still be accounted blameworthy. But, according to one expert, the mother who, on being asked why she gave her infant a chop, said that it was because "he won't eat pork," was selecting the most suitable food by the most rational experimental method—that of trial and error. To select apparently healthy children, to ascertain as a matter of interest what they habitually eat and recommend those in charge to carry on, may be a reasonable method, but it does not lead us much further. Dr. Harold Waller admits that sick and weakly children cannot be brought back to health by the varied diet that may be suitable to maintain the robust child in vigorous development, and the question remains whether the healthy child flourishes in spite or because of its food. The diet recommended by Dr. J. Sim Wallace as prophylactic against carious teeth appears to have been welcomed by many medical officers, possibly because to follow definite rules is always some satisfaction when facing a difficult problem. But the view that good teeth depend on general conditions, on resistance to infection, and on proper development of the mouth and jaw promoted by nasal breathing, appears more convincing to us than does the mechanical cleansing theory. In the nursery, manners and habits other than dietetic are formed, and a child who is allowed to chew but not to swallow crusts, or one who is encouraged to discard and eject, to bite and tear and worry food will have much to unlearn if he or she is ever to be a pleasant table companion. Moreover, those who focus their attention on dental caries appear to think only in terms of masticatory power, whereas good digestive habits have also to be acquired. The question of bulk is important in connexion with constipation, and the strength of the digestive juices in the young child remains to be ascertained and considered. The chronic epigastric malaise, for which no organic basis can be found, from which so many overworked members of our own and other professions suffer, may be traceable to dietetic indiscretions in early youth.

We know well that it is only the uninformed who are positive and that wheresoever a party of experts is gathered together there also is dissension. But we hope that this Society in the future may be in a position, as the result of its pooled experience, to tell us with some measure of authority what may be considered a dietetic indiscretion in an infant.

"THE FIGHT AGAINST DISEASE."

UNDER this broad title appears the first number of a journal which is to replace the reports hitherto issued quarterly by the Research Defence Society to its members. It will be published six times a year by Macmillans, will cost only *6d.*, and will be placed on the tables of the chief public libraries. The design of the Society appears to be the provision of accredited abstracts and reviews of recent research work in a form intelligible to the lay public, a function corresponding to that subserved by the Medical Research Council to the profession. Since nearly all modern developments in medicine have an experimental basis, the alteration will involve but little change in the character of the publications issued by the society, which will now, however, be made available to a much larger circle of readers. At present the public greedily consumes whatever diet—sometimes unnecessarily meagre, too often indigestible and excessively spiced—it is offered on medical subjects; a periodical giving reliable and simple accounts of recent advances should have success, though it cannot be sure of it. Though the days of sharp fighting for the rights of experimental work are practically over, medical research has other enemies besides the fanatics who would shackle it by force, and in the times of national penury ahead may have to be protected from starvation. The first number of the new journal reviews recent work on protection against tuberculosis and on Malta fever, and comments on the hospital stalls at the Efficiency Exhibition, outlining a constructive scheme for a permanent health exhibition under the auspices of the Ministry of Health. Annotated extracts from lectures recently delivered by Sir Charters Symonds[1] and Professor F. Hobday[2] show the beneficial potentialities of the comparative study of medicine and surgery not only for man but for animals. In the short obituary notices of Lord Moulton and Sir Felix Semon, which complete the number, the following words, spoken by Lord Moulton in 1907, show that the new journal is a natural development of the policy which has been maintained by the Society since its inception:—

> "The advance of science takes the workers in science more and more beyond the ken of the ordinary public, and their work grows to be a little understood and much misunderstood; and I have felt that the need would come for interpreters between those who are carrying on scientific research and the public in order to explain and justify their work."

The need for interpreters is no less great to-day.

UNDER the auspices of the Institute of Pathology and Research at St. Mary's Hospital a course of lectures on Pathological Research in its Relation to Medicine will be given in the lecture-room of the Bacteriological Department in the coming session at 4.30 P.M. on Thursdays. Among those taking part in the course are Sir James Mackenzie, F.R.S., Professor W. Bulloch, F.R.S., Professor Georges Dreyer, F.R.S., Dr. Leonard Hill, F.R.S., Dr. H. H. Dale, F.R.S., and Dr. J. A. Murray. The principal of the institute, Sir Almroth Wright, F.R.S., will give the introductory lecture on April 28th, taking as his subject *Acidosis and Acidæmia, with Special Reference to Scurvy and Shock.* The lectures will be open to all members of the profession and to students.

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[1] THE LANCET, Feb. 19th, 1921, p. 359.

[2] Ibid., April 2nd, 1921, p. 726.

MEDICINE IN SOVIET RUSSIA.

BY BORIS SOKOLOV,

PROFESSOR OF PROTOZOOLOGY AT THE UNIVERSITY OF PETROGRAD.

[Professor Boris Sokolov was engaged before 1914 in experimental work—notably cultures in vitro of cancer and sarcoma—in collaboration with Professor Metchnikov. During the war he served on the Russo-German front, and in 1917-18 was a member of the Central Committee of the Russian Red Cross and a Deputy to the Constituent Assembly; later he held a post in the Ministry of Education for North Russia. Arrested by the Communist Government for political reasons, he was for some time employed as doctor in the Boutirka Prison, Moscow; upon his release he was enabled to keep in touch with medical and scientific work under the Communist régime. Dr. Sokolov is the author of several medical and political works.]

Soviet Medical Organisation.

Before the Soviet organisation came into being there existed in Russia a series of social and semi-social relief institutions—Red Cross, Blue Cross, provincial councils, and city organisations—working more or less independently. The Soviet system is based upon rigid centralisation, and all existing groups have been placed under the control of the Department of Public Sanitation and Hygiene; the entire medical organisation of the country is now in the hands of the State, and the development of bureaucracy has resulted in slackness of administration. The committees which in 1918 were responsible for hospitals and clinics have ceased to exist, having been replaced by commissaries, who act as inspectors and are all members of the Communist party. These commissaries are often chosen from the junior medical staffs, being appointed by political chiefs who know little of their qualifications; their power is absolute, and frequent conflicts with the hospital doctors resulted at first, although the situation is now becoming rather easier. The head of the Department of Sanitation and Hygiene is Dr. Semasko, a cultured and humane member of the Communist party, who lived for many years in Paris; his assistant, Dr. Salonev, is not so acceptable to members of the medical profession.

Condition of Medical Science in Soviet Russia.

It is exceedingly difficult to gain a clear impression of Russian medical science during the past few years, mainly owing to the almost complete extinction of medical journals. The *Russian Doctor* and others have ceased to appear, owing to paper shortage and various technical difficulties; publications relating to the work of private institutions, and those dealing with experimental medicine, bacteriology, &c., have suffered particularly. Since 1919 one State periodical, *Scientific Medicine*, has been edited by a literary and scientific group at Petrograd, and six smaller publications have struggled on for two years. Economic conditions generally, shortage of heat for laboratories, lack of animals for experimental purposes, &c., have paralysed scientific activity; the Institute of Experimental Science in Petrograd has completely ceased to function, and those laboratories which are still open can only carry on a minimum of work. Among the latter is that of Professor Pavlov, who in 1920 published an article dealing with the physiology of the large hemisphere. The Institute of Experimental Medicine is still working, but many bacteriological laboratories have been closed. Clinics which in 1918 were noted for research work are now only able to deal with the sick; the only sphere in which research has still been possible is that of epidemic diseases. Typhus exanthematicus has been carefully studied, especially by Professor Ilatogorov at the Medical Institute, Petrograd; by Professor Marzenevsky at the State Institute of Sanitation, Moscow; and by Professor Pletnov at Moscow. The fact that all joint meetings of medical and bacteriological societies have recently devoted their time to the study of typhus sufficiently indicates the present importance of the problem in Russia. Among reports presented at conferences in 1920 the following were of particular interest:—Professor Zarassevitch, "The Present Position of Epidemics"; Dr. Nikitine, "Peculiarities in the Course of Infectious Diseases"; Professor Lionbarsky, "Immunity and Insufficient Nourishment"; Professor Pletnoff, "Pathogeny of Typhus"; Dr. Koutune, "Coagulation of Blood in Typhus"; Dr. Vorobiev, "Viscosity of Blood in Typhus"; Professor Levanov, "Blood Changes in Typhus."

Experimental Research into Typhus.

The following are details of laboratory researches into the questions of typhus and other epidemic diseases. These researches were based on vaccination with blood serum; in this connexion I would mention an article[1] by Professor Liotropov. This method of vaccination was used simultaneously by Professor Ilatogorov and Dr. Svachetzev in Petrograd, and Drs. Marzenevsky and Rosenthal at Moscow. Typhus patients' blood defibrinated and citrated was used as vaccine matter (18 c.cm. blood + 2 c.cm. citrate of soda at 2 per cent.). At Moscow Rosenthal's experiments are done in the same way. Marzenevsky used blood serum of typhus patients. The blood mixture used was rendered harmless by heating at 58° C., danger of infection at the time of vaccination being thus removed. In order to give to this vaccine a homogeneous character blood serum from several patients was employed. Professor Ilatogorov's experiments were usually tried on his medical staff; he proved that infection occurred in less than 0·24 per cent. of those vaccinated. Professor Ilatogorov's principal conclusions gathered from his work on preventive vaccine for use against typhus are the following:—

(1) The blood of typhus patients can be used after from 5 to 10 days as an antigen. (2) Patient's blood rendered inactive and defibrinated is harmless when used for injections. (3) Susceptibility to the disease is apparent in one vaccinated person to every five unvaccinated. (4) Vaccination done three times gives the same result as a single vaccination. (5) The initial dose must not be inferior to 5 c.cm. of defibrinated blood. (6) The vaccine matter must be polyvalent.

Conclusions from Professor Ilatogorov's reports on vaccinotherapy in typhus are as follows:—

(1) The blood of typhus patients can be used after from five to ten days of illness as a curative vaccine matter; (2) in vaccinotherapy a quantity of 1–3 c.cm. of defibrinated and warmed blood is used in hypodermic injections, and is repeated from two to three times every 48 hours; (3) the results of vaccinotherapy are generally of a negative kind; (4) the serum of convalescent typhus patients (from 2–12 days after the fall of temperature) can be used as a curative mean; (5) in serotherapy the polyvalent serum is injected subcutaneously in quantities of from 15 to 30 c.cm.; (6) serotherapy gives most encouraging results.

Professor Marzenevsky uses for his experiments blood serum (taken from typhus patients), mixes it with an equal quantity of physiological serum which has been sterilised and heated at 58–60° C. during one hour. He made four injections of this mixture of 1, 2, 3, and 4 c.cm. respectively, making a total of 10 c.cm. of pure serum. These experiments were mostly carried out in the Botkine Hospital at Petrograd; and after experiments with antityphus serum according to Nicolle's method the doctors of that hospital came to the following conclusions, which were reported by N. A. Sokolov:—

> "The effect of vaccine matter upon the organism following this method gives unimportant results. Drs. Radzevitch and P. Triodine, in their work 'On the Serotherapeutics of Typhus,' are of opinion that curative vaccine matter obtained from horses gives no local reaction when injected with doses of 25–125 c.cm., and at the same time diminishes the coagulation period."

A report of special interest to epidemiologists is Dr. Schutzer's "Preventive Vaccine Matter for Use against Typhus by Means of Cultivation of the Proteus Bacillus," of which the principal conclusions are:—

(1) The proteus bacillus exists as a constant agent in typhus; (2) The vaccine matter of a killed cultivation of *Bacillus proteus* containing 250 millions of bacteria per c.cm. in a dose of 0·5 c.cm. creates a violent reaction in the organism.

Still more interesting is the work of Dr. I. Sokolov, because it has a certain practical value in the differential diagnosis of typhus by means of "hypostatic hyperæmia."[2] This writer has come to these conclusions:—

> (1) The skin in typhus reacts against venous stagnation; (2) this skin reaction is especially characteristic of exenthematic typhus; (3) in order to produce this "hypostatic hyperæmia" a tourniquet must be applied around the shoulders; (4) the skin in this illness reacts in forming petechiæ from 12 to 24 hours before the appearance of the rose rash.

Other Research Work.

Among other work on epidemics should be mentioned Professor Gamalé's "Volatile Vaccine Matter."[3] Compared with the other volatile vaccine matter of cholera, distillation of alkaline solution of cholera vibrios produces immunity about the second or third day instead of about the fourteenth. Besides, although not colloidal, these vaccines can be absorbed by the intestine. Gamalé concludes thus:—

> The volatile vaccines produce a real immunity. They are not homogeneous, but their action shows that successful vaccination can take place without either agglutination, precipitation, or formation of bacteriolysins.

Amongst works bearing on conditions under Soviet government those which deal with starvation must not be omitted.

Researches in this direction were mostly done (in the laboratory set apart for the physiology of nutrition in the State Institute of Sanitation at Moscow) by Professor Chaternikov and his assistants, but the interest of the results is more physiological than medical. Some of the work done, however, has a purely medical interest—e.g., Professor v. Dolganov's observations on detachment of the retina as a result of starvation.[4] He has traced the causation of this detachment by observation of a great number of cases.

Looking over the work done during 1919–20 with reference to tuberculosis and surgery, it must be admitted neither of these questions was much studied. The conditions under which medical men have lived have prevented them from undertaking researches of no direct practical value. Clinics and laboratories which are needed by the Government are given a big subsidy, but others are left with no means at their disposal; this is, perhaps, the explanation of the specialised nature of work done during the past two years.

Relations Between the Government and the Medical Profession.

The members of the medical profession are the only "intellectuals" whose work has not been interrupted by the communist revolution. They have maintained a neutral attitude in political matters, although anticommunist as a body; hence Dr. Semasko's principal advisers are Professors Zarrasevitch, Diatropov, and Koltzov, all of whom are well-known constitutional democrats—that is, members of a liberal party which was treated with particular severity by the communist government. Doctors in general feel themselves bound to maintain as far as possible the health of the immense population, of which the majority cannot be held responsible for the revolution or its consequences. Twenty-five per cent. of the profession have left Soviet Russia—57 of them are now living at Capri as refugees—but those who remain continue their work with energy and devotion. Professor Koltzov was recently imprisoned for six months for participating in a counter-revolutionary movement; Professor Pavlov was refused permission to leave the country, and an attempt to attach him to the communist party by means of an increased food ration failed; whilst a general expression of opposition to the Soviet power was made by the Medical Conference held at Moscow during August and September, 1920—after which Dr. Semasko, who was present, threatened drastic measures of control. But on the whole, and except for the lack of medical materials and foodstuffs, the medical organisation is up to date and nearly as good as that in force before the war—mainly because the responsible posts in medical affairs are still in the same hands. The communist doctors are very few in number, and most of them more or less inexperienced.

Position and Life of Medical Men.

The peculiar conditions of life under the Soviet administration, the continuous civil war, and the wide spread of epidemics, have made the position of medical men very difficult; their political neutrality resulted in many being shot by the Reds, and many others by the Whites. Numerous members of the medical profession are still imprisoned by the Soviets; but after three years of civil war Whites as well as Reds began to appreciate their work and respect their neutrality. Finally, when a doctor was taken prisoner by either side he was immediately required to serve in a professional capacity. The profession has suffered more from epidemics than from persecution or civil war. From Nov. 1st, 1917, till August 1st, 1920, cases of typhus alone were as follows: doctors, 520, with 95 deaths; assistants, 272, with 63 deaths; nurses, 3520, with 927 deaths. During the same period of time 47 per cent. of Petrograd doctors have died; and it would be difficult to find a single doctor or nurse who has not suffered from two or three attacks of continued fever of some form or other. In the spring of 1920 a general improvement of health was noted; Professor Tchistovitch expressed the opinion that by that time the entire population was practically immune. In six months the percentage of persons suffering from some epidemic disease decreased from about 30 per cent. to 10 and even 7 per cent.

Turning to the consideration of economic conditions: when the Soviet power was first established, the greatest strictness was observed in the matter of equalisation of wages, so that early in 1918 experienced doctors were earning little more than their assistants; the result of this state of affairs was that a large number of medical men gave up practice and attempted to earn a living outside their profession. Later, however, they were recruited by the Government and given better rates of payment; those in charge of epidemic diseases were allowed extra food rations, but in spite of all measures taken, the salaries of doctors and trained nurses are still insufficient. Assistant doctors are paid according to category 21, which allows them about 4000 roubles a month; trained nurses receive 2000 roubles; the insignificance of these sums will be apparent when it is realised that a pound of butter costs 5000 roubles. Only by attending private clients and by undertaking lay employment can the Russian doctor manage to live; the "bourgeois" client of pre-revolutionary days can no longer afford the services of a physician, and in many cases doctors treat "professional" clients free of charge. The new class of paying patients is drawn from the communist bureaucracy and the successful speculators. Professor Ov, the celebrated Petrograd gynæcologist, asked 100,000 roubles for a small operation performed upon the wife of Linoviev, a leading communist; and this sum is not at all extraordinary. The Government, fearing that private practice renders medical men too independent, introduced in September, 1920, a regulation whereby the number of private patients is limited; and no doctor may write more than 50 prescriptions for private clients per month. The use of prescription books with numbered pages has been made compulsory, and the measure has naturally caused a great deal of dissatisfaction amongst practitioners.

Condition of Hospitals and Clinics.

During my stay in Soviet Russia I visited a number of hospitals and clinics with the intention of discovering whether the condition of these institutions had altered for better or worse; in many hospitals improvements are to be seen, particularly as regards disinfection and sanitation. The constant presence of epidemic diseases has, of course, brought to light new methods of isolation in city hospitals. On the other hand, slack discipline is noticeable amongst the staffs of the civil hospitals. Patients are not uncommonly ill-treated, and delirious cases have even been beaten; and as the doctors have not full control little can be done to stop these abuses.

In August, 1920, I was very painfully impressed by the state of chaos in which I found the Central Infirmary at Moscow. There the rules concerning isolation were very badly kept, and diagnoses were so superficially made that cases of typhoid and cases of tuberculosis, for example, were to be found in the same ward. At that time I did not notice any great shortage of medicines or surgical apparatus in the large towns, but the provincial "zemstvo" hospitals were being closed for lack of staff and materials. The hospitals in Petrograd and Moscow still had quinine, aspirin, and anæsthetics, but judging from a talk I had with Dr. Semasko, and by figures which I saw, the reserves were then coming to an end. In August only a few kilogrammes of chloroform were left in Petrograd, and all morphia had already been used up. A salvarsan preparation was being sold, but was of bad quality. Surgical instruments were also running short. Figures given by the Department of Health and Sanitation showed that on May 1st, 1920, the allotment of beds was roughly as follows: epidemic cases—civil 250,000, military 250,000; other cases, 500,000.

Statistics of infectious diseases.—The statistics given are incomplete, for it is impossible to obtain accurate returns from the provinces, but the estimated number of cases of epidemic disease in Soviet Russia during the past three years stands at the appalling figure of 31,789,230. The average mortality was from 5 to 7 per cent. of that number. The diseases most in evidence were typhus exanthematicus, typhus recurrens, typhoid, cholera, influenza, and dysentery. Cholera broke out in the spring of 1918, there being 35,619 cases during the year; Petrograd, and then the Volga region, suffered most heavily, the mortality in the latter district rising to 60 per cent. The autumn of 1919 was marked by a recrudescence of cholera, but still more deaths were caused by typhus. It is impossible to give figures for the whole of Soviet Russia, as owing to shortage of personnel records were not kept in many provincial hospitals; but the recorded figures showed that typhus began in the summer of 1918, there being 4519 cases in October of that year, 7933 in November, and on July 1st, 1919, the figure stood at 1,299,202 (Siberia not included). From 400,000 to 420,000 persons died of the disease during 1918-20. In some places it was impossible to bury the dead except in communal graves, with no coffins or burial ceremonies; at Saratov a "week of the dead" was appointed, and the entire population had to take part in burying the bodies.

Influenza also broke out in 1918, there being 700,000 cases during the year, with a mortality-rate of 15 per cent. The later incidence of the disease was not so serious. At the same time typhus recurrens spread through large tracts of Central Russia, but in this connexion figures are not available. In the summer and autumn of 1920 epidemics seemed quieter, but there is no reason to suppose they will not break out again; the exhaustion of the populace and unhygienic conditions contribute to the likelihood of their doing so. The living conditions in the towns are particularly bad; overcrowding, and neglect of the most elementary rules of hygiene, are there associated with grave defects in water-supply and drainage.

The Government has brought out a series of posters, urging the population to fight lice as energetically as they have fought the middle classes. "Burn them, kill them, cover them with petrol, iron them!" is the wording of these posters.[*] Petrograd has in every epidemic suffered more than any other part of the country. Up till August, 1920, the total of cases of influenza and typhus taken together was 202,173.

Diseases in Soviet Russia.

A Russian medical man has humorously said that it is not true that Bolshevik rule brought nothing but evil to Russia, for a certain number of people who once suffered from obesity and chronic catarrhs are cured, and even feeling younger. It is an undoubted fact that many diseases have entirely disappeared as a result of the change brought about by the abolition of idleness. A Petrograd physician told me that of 300 of his patients only 9 suffered from dilatation of the heart caused by obesity; 5 of these were well-known communists and the other 4 profiteers. A new illness has, however, appeared in Petrograd as a result of the eating of badly-cooked wheat. Its symptoms are frequent pains in the right side of the abdomen, general weakness, dizziness, nausea, and distaste for food. Tuberculosis is spreading widely in the towns as a result of the entire lack of fats, and in Petrograd a tremendous increase of lung troubles has taken place. The infirmary at Moscow contained 12 per cent. of tuberculous cases in 1917, and now contains 37 per cent., the general condition of the country especially favouring infection of all kinds.

Bad food has brought about general exhaustion and various forms of anæmia, especially in the towns; the general ill-health is very striking to anyone newly arriving in Russia. Professor Ov has stated that 30 per cent. of women and girls are no longer menstruating because of anæmia and under-nourishment. A very large increase of miscarriages naturally results from present conditions; an assistant at the Gynæcological Institute at Petrograd told me that women are terrified at the thought of bearing a child, knowing perfectly well that if born alive it will in all probability shortly die.

The Government has abolished open prostitution and regulated brothels, but this evil has merely assumed a different character; there are now more prostitutes than before, although Petrograd doctors do not report any increase in venereal diseases.

Patients admitted to hospitals show, on the whole, more carelessness concerning their health, as they realise the difficulty of obtaining proper treatment.

Condition of Children in Soviet Russia.

The gravest effect of recent Russian history is apparent in the younger generation; such, at least, is the view of the "League for the Protection of Children," which is headed by Professor Zarassevitch. Parents are overworked and unable to bring up their children properly; the lack of control is having the most serious results; the actual destruction wrought by the revolution is nothing to the appalling moral degeneracy and criminality among children which now stands out as the foremost evil of modern Russia. At one hospital, where the number of children suffering from venereal disease used never to be higher than 15 per cent., 60 per cent. are now affected as compared with 40 per cent. of adults. Moreover, the children born during the past two or three years in Petrograd and Moscow are weak and ailing on account of under-nourishment. A newborn baby frequently weighs no more than 6 lb., the normal weight being 8 lb. The new generation is being overcome by eczema, anæmia, and rickets, and every doctor in private practice numbers more children than adults amongst his patients.

Those in authority have at least realised the seriousness of the position, and children's hospitals and sanatoriums have been instituted, some by the Government, others by "intellectuals" acting with Government approval. Many of the measures taken have, however, already come too late. The Government consider the time has come for the nationalisation of children; it remains to be seen whether they will dare to put such a measure into operation.

Conclusion.

In this short account of the medical situation in Soviet Russia I have had one aim only, to bring to light, as impartially as possible, the actual state of affairs; the attempt has naturally been painful and the degree of objectivity attained is, perhaps, only relative.

References.—1. Liotropov: Journal of Public Sanitation Committee, Nos. 1 and 2. 2 I. Sokolov: Scientific Medicine, Petrograd, 1920. 3. Gamalé: Journal of Public Sanitation Committee, 1918, No. 1. Scientific Medicine, 1920, No. 5. 4. V. Dolganov: Scientific Medicine, 1920, No. 6. Amongst other medical works the following may be mentioned: Dr. Trchernomskoi: *Treatment of Tuberculosis by Ultra-violet Rays.* Dr. V. Valker: Spanish Grippe. L. Yakobsen: Application of Neo-salvarsan in Syphilis. V. P. Protopopov: *Menstruation Troubles in the Psychoses.* Prof. Ossifov: Heredity and Psychic Illness. Prof. Kouzneskov: Clinical Study of Spanish Grippe.

NURSING AND MIDWIFERY EXHIBITION AND CONFERENCE.—The eleventh annual conference will be held in the Royal Horticultural Hall, Vincent-square, London, S.W., from May 17th to 20th. Suggestions as to subjects or speakers may be sent to Miss J. Prior, Assistant Secretary, 22, Great Portland-street, London, W.1.

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[*] Examples of Bolshevik anti-cholera and anti-smallpox posters were reproduced in THE LANCET, 1920, ii., pp. 619, 620, in the course of a series of articles on "Public Health in Soviet Russia," by Dr. L. Haden Guest. [The articles appeared on pp. 518, 566, 617, and 661 of vol. ii., 1920.]

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

The Position of Poor-law Medical Officers.

THE position of Poor-law medical officers in certain parts of the country becomes every day more difficult. In unions in which the guardians have repudiated the authority of the Local Government Board the Government grants, from which a portion of the Poor-law salaries was paid, have been withheld. At the same time the Local Government Board still claims the right to dismiss medical officers or to mulct them in costs by process of mandamus if they fail to send the usual returns to the Board. On the other hand, the guardians have the power of withholding a medical officer's salary should he, in disobedience to their orders, send returns to the Local Government Board. The medical officers whose only desire is to continue to do their professional work without interference, find they cannot hope to serve two masters, and are actually performing their usual duties without receiving any salary. Last week a new factor further complicated the position. Several local authorities received a circular letter, purporting to come from the Local Government Department of Dail Earann, containing the following warning:—

> "Where a local authority has by resolution declared allegiance to Dail Earann and has severed all relations with the English Local Government Board, instructing its officials to cease communication with that institution, any such communication, written or verbal, direct or indirect, with that institution or any of its officials, or any person acting on behalf of any of its officials, will be deemed a treasonable practice and dealt with accordingly."

I do not pretend to interpret the threat in the closing words of this warning, but to a man living in a country district in Ireland it is not to be taken lightly. Last week the Council of the Irish Medical Association drew the attention of the Local Government Board to the danger to which they were exposing Poor-law medical officers for the performance of what is, under present conditions, a mere formality.

April 17th.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Statistics of the University Term.

THE following are instructive items from the prospectus for the coming summer term (April 15th to July 15th). Four hundred and seventy-two classes will be held for ordinary students and post-graduates, as against 448 held last summer term. The number of men engaged in this work is 24 ordinary professors, 135 extraordinary professors, and 157 assistants. These figures differ only slightly from those of the last winter term. Two members of the Senate of the Medical Faculty, the professor of medical chemistry and the director of the first clinic for obstetrics and gynæcology, have not yet been appointed. The published figures show that the number of ordinary medical students is declining somewhat; the present total is 4282, as against 4529 a year ago; female students number 578, as against 600 last year. It is believed that later figures will show a further drop because of the increased fees payable by foreign students in compliance with the demand made by the Rockefeller Foundation,[1] to which I have already alluded.

American Food Supplies for Students and Scientists.

The American Relief Committee, which has fought starvation by supplying a free daily meal to about 200,000 children in Austria alone, has now extended the scope of its work to include assistance of the so-called "mensæ." These institutes provide a midday dinner for university students in Vienna, but for many months this meal has been very scanty owing to lack of funds. The Relief Committee has now made arrangements to supply sufficient food for an additional daily meal of the food value of 1000 calories. It will consist of rice, cocoa, butter or fat, sugar, flour, beans, and peas; all students will be entitled to apply for it, with no distinction of race, creed, or stage of study. The professors and lecturers have also a special mensa of their own, where they obtain a good meal at a nominal cost—hardly enough to cover part of the rent. It is intended to compare the weights of the students before beginning the additional meals, and after partaking of them for periods of 4, 8, and 12 weeks.

Twenty-fifth Anniversary of the Discovery of the Rontgen Rays.

On March 18th the Medical Society of Vienna held a solemn meeting in honour of the twenty-fifth anniversary of Professor Rontgen's great discovery. A paper was read by Professor Lecher, the famous physicist, on "Physical Aspects of Rontgen's Discovery," in which he explained the use of X rays in ascertaining the number and inner construction of elements and their atoms. He mentioned the splendid work of the English scientist Moseley, who fell when very young in action at the Dardanelles.

A Peculiar Psychical Condition After Gas Poisoning.

At a recent meeting of the Medical Society of Vienna, Dr. Geistmann showed a patient in a peculiar condition produced by illuminative-gas poisoning. The condition was characterised by a complete loss of apperception, differentiation, and recognition of objects and occurrences of the outer world—a loss of the functions of thinking, reasoning, and judging, in short, of the higher psychical spheres altogether. The patient's behaviour permits of the assumption that the cortex cerebri, the centre of psychical activity, had completely ceased to function. He displayed an extreme degree of dementia; the very earliest reflex phenomena—echolalia and echopraxis, as seen in infants—were demonstrable in him. When any object was brought near his face he moved his lips as if to eat it, showing suppressive reflexes from the cortex to be entirely absent. He repeated mechanically, without understanding it, any word or sentence spoken to him, and every movement or gesture made before his eyes was at once imitated. His motorial condition reminded one of the primitive forms of movement seen in the lowest animals, although he had retained normal function of the bowels, kidneys, and vascular system. The case seems to be unique, and will be further reported upon later.

Reform of the Public Health Service.

The ever-increasing scope of preventive medicine necessitates a reform of the Vienna health service. A special committee has been appointed to draw up the outlines of the proposed reform. The following principles have been agreed upon, and will be recommended to the municipal authorities. All matters pertaining to public health will be centralised in the "Stadtphysicat," controlled by the ober-stadtphysicus (chief M.O.H.); the central office will contain several departments, each with two or more subdivisions, to deal with separate problems such as the following: general direction of sanitation of the city; standardisation of tariffs and schedules in employments; preparation of standard forms for health reports and statistics, milk distribution, and additional fat and sugar rations for diseased persons; control of municipal institutes of health; and instruction of the public health service. The hospitals, and hygiene, bacteriological, and chemical institutes are to be controlled by a special department. Public welfare work, child welfare, care of the tuberculous and the crippled (including war cripples) is to be centralised in another department, which will also deal with inspection of markets and of the sale of medicines. Coöperation with the State Board of Health, which deals with the corresponding work throughout the rest of the country, is, of course, expected, and it is hoped that the reorganisation of this important side of local government will result in permanent benefit both to the ratepayers and to the municipality.

April 14th.

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[1] Vide THE LANCET, April 9th, p. 769.

The Services.

INDIAN MEDICAL SERVICE.

THE rates of pay and pension have been improved and *additional pensions granted for administrative officers* of the Indian Medical Service. A communiqué from the India Office says that the reforms will date from Jan. 1st, 1920, showing that the representations of the last 12 months have received a sympathetic hearing.

The position of the Indian Medical Service is well known to all our readers, and the difficulties need not be repeated here. Two Committees, one presided over by Sir Verney Lovett and one presided over by Lord Esher, have sent in valuable reports dealing with the anomalies of the Service, and recognising the political complications which have been introduced. The Service has for many years declined in popularity with the medical profession, and the recent constitutional changes in India have had a further depressing effect. *There has been a steadily increasing difficulty in* obtaining recruits of the right stamp, but the communiqué from the India Office may be taken as a step towards reform.

The terms upon which officers can enter the Service were set out in full in the last Students' Number of THE LANCET, and have since been repeated in our advertisement columns. They show a great improvement upon previous conditions, and ought to prove attractive.

ROYAL AIR FORCE NURSING SERVICE.

REGULATIONS regarding conditions of service in the Royal Air Force Nursing Service, which was established by Royal Warrant on Jan. 27th, 1921, have been issued. The Service consists of a matron-in-chief, matrons, senior sisters, sisters, and staff nurses. Candidates are required to join as staff nurses, and appointments, which are subject to a satisfactory probationary period of six months, are given to approved persons of British parentage, over 25 and under 35 years of age, who possess a certificate of training for at least three years at a large civil hospital in the United Kingdom.

Salaries.—The salaries of the various grades are as follows:—

Staff nurses: £60 per annum, rising by annual increments of £2 10*s.* to £65.

Sisters: £75 per annum, rising by annual increments of £5 to £85.

Senior sisters: £85 per annum, rising by annual increments of £10 to £95.

Matrons: £115 per annum, rising by annual increments of £10 to £185.

In addition, charge pay, not exceeding £45 per annum, is granted to matrons according to the magnitude of their charges, and a weekly allowance of 24*s.* 6*d.* to all members in lieu of board and washing. Furnished quarters, fuel, light, and attendance are normally provided, but where this is not the case an allowance in lieu is granted. An initial grant of £20 is made towards the cost of purchase of the prescribed uniform which members are required always to wear when on duty and when attending official or public entertainments, and an upkeep allowance of £5 for the second year and £10 for the third and subsequent years.

Retired pay.—Members of the Royal Air Force Nursing Service may retire at the age of 50 or after 20 years' service, and retirement is compulsory at the age of 55. Retired pay, based on service and rank, is issued up to the following maximum rates, which are subject to revision in five years' time:—Matrons, £170; sisters, £75; staff nurses, £55. Members employed in the Royal Air Force Temporary Nursing Service and previously employed in the Navy or Army Nursing Service may count the period of such service towards retired pay. A nurse with less than ten years' service will not be eligible for retired pay, but provision is made for the issue, under certain conditions, of retired pay and gratuities in the event of such service being terminated owing to disablement, sickness, or unfitness.

Full particulars of the Service and forms of application for appointment may be obtained from the Matron-in-Chief, Air Ministry, Kingsway, London, W.C. 2.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lieut. W. L. Coullie to be Surgeon Lieutenant-Commander.

Surg. Cmdrs. A. C. W. Newport, S. Roach, and G. D. Bateman to *Pembroke*, additional, temporary. Surg. Lieut.-Cmdrs. H. St. C. Colson and G. A. S. Hamilton to *Pembroke*, additional, temporary. Surg.-Lieuts. H. L. Pridham to *Pembroke*, additional, temporary; C. N. Ratcliffe to *[illegible]*, and A. G. Taylor to *Sandhurst*.

ROYAL ARMY MEDICAL CORPS.

Major W. E. C. Lunn relinquishes the acting rank of Lieutenant-Colonel.

Temp. Capt. C. H. Evans relinquishes his commission and retains the rank of Captain.

TERRITORIAL FORCE.

Major W. A. Thompson to be Lieutenant-Colonel and command 3rd Northumberland Field Ambulance.

Capt. G. C. E. Simpson to be Lieutenant-Colonel and command 2nd West Lancs Field Ambulance.

Capts. A. D. Kennedy, L. T. Whelan, L. A. Mackenzie, J. Turtle, S. J. Fielding, H. W. Symons, and J. Taylor to be Majors.

Major T. P. Cole (late R.A.M.C.) to be Captain, and relinquishes the rank of Major.

Major (acting Lieut.-Col.) L. C. V. Hardwicke relinquishes the acting rank of Lieutenant-Colonel on ceasing to be specially employed.

Capt. C. G. Teall (late R.A.M.C.) to be Lieutenant and relinquishes the rank of Captain.

Capts. A. W. A. Davies, W. H. Kerr (late R.A.M.C., S.R.), and H. V. Walsh (late R.A.M.C.) to be Captains.

Capt. L. T. Challenor vacates the appointment of D.A.D.M.S., 48th (South Midland) Division.

R. E. Pleasance (late Surg. Sub-Lieut., R.N.V.R.) to be Lieutenant.

Officers relinquishing their commissions: Major (Bt. Lieut.-Col.) B. M. H. Rogers and Major W. R. N. Smithard (granted the rank of Lieutenant-Colonel), Majors L. T. Whelan and J. Owen (retain the rank of Major), and Capt. W. E. Kingdon (retains the rank of Captain).

TERRITORIAL FORCE RESERVE.

Major G. F. Whyte, from General List, to be Lieutenant-Colonel.

ROYAL AIR FORCE.

Capt. G. W. J. Bousfield is transferred to the unemployed list.

INDIAN MEDICAL SERVICE.

Captains to be Majors: B. Gale, J. H. Horne, H. H. King, R. E. Flowerdew, J. G. B. Shand, A. J. Lee, C. H. Smith (Bt. Major), T. J. C. Evans, A. C. Anderson, D. G. Cooper, W. L. Forsyth, and G. T. Burke.

Lieut.-Col. R. Steen and Major M. J. Quirke retire from the Service.

The following relinquish their temporary commissions:—Temp. Captains: Amar Singh Dogra, Bantwal Shankar Rau, and Bankim Chandra Banerjee. And are granted the rank of Captain: Sant Singh Duggal, Ramakrishna Venkata Rajam, and Ram Chandra Bose.

URBAN VITAL STATISTICS.

(Week ended April 16th, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18½ million persons, the annual rate of mortality, which had been 13·0, 13·0, and 12·5 in the three preceding weeks, was again 12·5 per 1000. In London, with a population of 4½ million persons, the death-rate was 12·4, or 1·0 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 3·4 in Ealing, 5·9 in Walthamstow, and 6·5 in Dudley, to 18·3 in Bath, 20·3 in Merthyr Tydfil, and 23·8 in Eastbourne. The principal epidemic diseases caused 241 deaths, which corresponded to an annual rate of 0·7 per 1000, and comprised 62 from diphtheria, 59 from infantile diarrhœa, 58 from whooping-cough, 50 from measles, 9 from scarlet fever, and 3 from enteric fever. Measles caused a death-rate of 1·0 in Sunderland, 1·6 in Newcastle-on-Tyne, and 2·9 in West Bromwich. The deaths from influenza, which had been 122, 130, and 97 in the three preceding weeks, rose to 111, and included 49 in London *and 5 each in Brighton and Liverpool. There were 3345 cases* of scarlet fever and 2543 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 3453 and 2626 respectively at the end of the previous week. During the week ended April 9th 6 cases of encephalitis lethargica were notified in the County of London, and comprised 2 in Hampstead, and 1 each in Chelsea, Hackney, Islington, and Stepney. The causes of 26 of the 4436 deaths in the 96 towns were uncertified, of which 10 were registered in Birmingham, and 2 each in London, Gillingham, Liverpool, and Warrington.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 15·3, 15·5, and 15·1 in the three preceding weeks, fell to 14·6 per 1000. The 328 deaths in Glasgow corresponded to an annual rate of 15·5 per 1000, and included 32 from whooping-cough, 6 from infantile diarrhœa, 5 each from scarlet fever and diphtheria, and 1 from measles. The 123 deaths in Edinburgh were equal to a rate of 14·4 per 1000, and included 10 from measles, 3 from whooping-cough, and 1 each from scarlet fever and diphtheria.

Irish Towns.—The 130 deaths in Dublin corresponded to an annual rate of 16·0, or 3·0 per 1000 below that recorded in the previous week, and included 4 from infantile diarrhœa, and 1 each from enteric fever, whooping-cough, and diphtheria. The 130 deaths in Belfast were equal to a rate of 16·1 per 1000, and included 7 from whooping-cough, 3 from infantile diarrhœa, and 1 from measles.

Correspondence.

"Audi alteram partem."

THE ULTIMATE SUFFERERS.

To the Editor of THE LANCET.

SIR,—The present crisis is hitting the mothers and babies very hard. At some of the centres I attend there is already a very marked difference in the appearance of both. It would be easy to pick out from about 30 mothers at one centre those whose husbands are out of work. When I returned after a holiday I was shocked to see so many thin grey faces and so many flabby babies.

The doctor orders glaxo, virol, or cod-liver oil, but few can afford to take it. There is no fuss made and no cadging; it depends entirely on the sharpness of my lookout whether they go off without their glaxo, &c., or whether I can catch them and make my price fit as nearly as possible to their needs. This last, of course, depends on the generosity of those who send special subscriptions for this purpose. My experience now is, as always, that the mothers rise to the occasion, making the very best of a very bad situation. I overheard one mother of a large family say, "Oh, yes, they gave me a beautiful tonic at the hospital, but I'm afraid to take it, it makes me so hungry."

I have this morning waited for 1½ hours in a queue for my coal permit. There were about 100 women there, most of them with babies, and it was bitterly cold. There were the usual fun and chaff, but I cannot help feeling that under it all the women's courage is nearly at breaking point. It has gone on so long; during the war they stuck to it, counting the weeks till peace came, and now it seems to have no end. A few are bitter, most are deadly patient. I say deadly, because that is what it really is.

I am, Sir, yours faithfully,

April 18th, 1921. TRAVELLER.

THE COLONIAL MEDICAL SERVICE AS A CAREER.

To the Editor of THE LANCET.

SIR,—In Sir James Kingston Fowler's address to the students of the Middlesex Hospital on the advantages of the Colonial Medical Service, published under this title in your issue of April 9th, in his remarks on the Kenya Colony, he referred aspirants for service in that colony who desired further information to three very admirable and charmingly written books by three eminent medical men recording their impressions. The scope of these three books, and the attitude of their writers, is very sufficiently indicated by their titles. Sir John Bland-Sutton's is one which could well be in the library of every East African medical officer for the accurate and interesting information with which it is packed. The other two are more evanescent in character. In a young colony which is struggling very hard to evolve itself, the changing conditions which take place from six months to six months are simply unbelievable except to those who have experienced them. It seems, therefore, somewhat of a pity that the official propagandist of the Colonial Office can do no better than refer to books published some 10–11 years ago. As to what we are now asked to believe, I quote the following from Sir Frederick Treves's book, p. 103:—"The country is healthy. There are no mosquitoes, and no malaria. There is no prevailing disease"—an amazing statement, which, at the time the book was published, occasioned no little comment in our small medical world. The hold certain endemic diseases had on the country was well known to us at the time; while the potentialities of others—which subsequent years' experience have proved—were always before us.

The Colonial Office and the local Administrations of the different colonies are yearly in receipt of annual medical reports, special reports, and investigations on every occurrence affecting the health of the community; of which nothing more is heard. Without claiming an unassailable accuracy for the facts and figures supplied, it seems to me that the time has now come when the Colonial Office might well consider the propriety of collating all these reports for the last five years by a competent editor, under the heading of each colony. If such a handbook was published every five years—the Germans did it for their East African possession—it would be invaluable as a permanent book of reference, as a record of the health progress of the colony; and, finally, it would go far towards determining the relative position to be assigned to each colony for climate and health.

I am, Sir, yours faithfully,

A. D. MILNE,

Late P.M.O., Kenya Colony.

Addison-road, Kensington, April 16th, 1921.

DELAYED REPORTS.

To the Editor of THE LANCET.

SIR,—THE LANCET has always taken such great pains to ensure accuracy in its editorial columns, and statements contained in them are therefore looked upon as absolutely reliable, that I must ask you to allow me to point out a very important exception. In the issue of April 16th, p. 819, you say that the medical officer of health for the county of Gloucester deplores the failure of subordinate health officers punctually to submit their sectional reports. A medical officer of health of a district is not a subordinate health officer and is not so described by the medical officer of health for Gloucestershire. He does not even make a report either to the county council or to the county medical officer of health. He reports to the district council which he serves and is required to send a copy of that report to the county council.

No one deplores the delay in issuing their reports more than the medical officers of health of districts. But what is the reason for the delay? In the case of whole-time officers it is the fact that, with one or two exceptions, the whole of the clerical work of his appointment has to be undertaken by the medical officer of health himself. Unlike the medical officer of health of a large town or of a county, he has not even an office provided for him, much less a staff of secretaries, clerks, and office-boys. He has to keep his own records and make his own returns. His correspondence must be written with his own hand, and he himself must keep a registry and file away documents. I have before me the annual report of one of these medical officers of health covering 120 printed pages foolscap and another 130 pages royal octavo, each with many tables. The mechanical labour of writing these pages for the printer, even by an expert clerk, would take many days. But it has to be done by the medical officer of health at odd moments which he can spare from his routine work. For years the medical officers of health concerned have been clamouring for the removal of this disability, and if the Ministry of Health, who also "deplore" the delay in the issue of the reports, and county medical officers of health instead of deploring would take the obvious steps to effect a remedy some good might accrue.

I do not like a *tu quoque* retort, but the temptation in this instance is too great to be resisted. Dr. Martin's report to the Gloucestershire Education Committee as school medical officer consists of 18 pages (including the title-page and index) and 12 tables, demy octavo. This report is dated May 28th, 1920, and I do not suppose Dr. Martin does much actual clerical work.

I am, Sir, yours faithfully,

Hereford, April 16th, 1921. HERBERT JONES.

⁂ The question, as so often, is one of terminology. Dr. Herbert Jones is right, but are we wrong? It is true that the district medical officer does not report direct to the county medical officer, but he has to forward to the county council a copy of the report made to his own authority. To this extent, surely, the county officer is suzerain to the district officer.—ED. L.

CONGENITAL SYPHILIS.

To the Editor of THE LANCET.

SIR,—The discussion recently held by the Royal Society of Medicine upon the subject of Congenital Syphilis has brought before us the marked differences of opinion with reference to the incidence of the disease and the need for further research and investigation, both in the laboratory and at the clinic. Many of us, and especially those who are engaged in children's work, have been much concerned to know the amount of mortality and morbidity due to congenital lues amongst the child population. While, on the other hand, there are those of us who believe that syphilis is a considerable cause of abortion, miscarriage, still-birth, and death within a few weeks of birth; and while we also recognise that syphilis manifests itself only too frequently during the early months and years of life, yet the evidence presented to us by the examination and care of large numbers of sick infants and children does not appear to support the suspicion that any considerable amount of mortality or ill-health is due to this cause. On the other hand, there are others actively engaged in the same kind of work—especially, I think, lady doctors—and equally imbued with the importance of arriving at the truth, who think differently, in that they are convinced that quite a considerable amount of mortality and morbidity throughout infancy and early childhood is due to congenital syphilis. One was therefore relieved to see from the Report of the Proceedings that the majority of the speakers did not support the views of those who believe that congenital syphilis is an important and frequent cause of mortality and morbidity during later infancy and childhood. While all of us realise the importance of free and open discussion, without at the same time committing ourselves at this stage to anything in the way of a definite opinion, yet many have viewed with concern the suggestions put forth in the medical journals that diseases and conditions, up to the present not considered to have a syphilitic basis, are after all due to the evil results of the disease. We are open to persuasion and proof. We meet with much persuasion, but the proof in the form of sound reliable scientific evidence appears to be small.

The Wassermann test in the hands of some workers appears to be sweeping into the net all kinds and conditions of disease. The results of the test in the hands of different pathologists are, however, so contradictory that one would challenge at once the advisability of allowing the test to stand as a deciding factor at the present state of our knowledge. All I think will agree that in the presence of active infection the test may be of the greatest value. During the secondary stage of adult syphilis its value is unquestionable, but in the early and late stages its value as a deciding factor is almost nil. As a test for congenital syphilis we have it on good authority that it may be negative in the early weeks, during the active manifestations of the disease it is positive in the large majority of cases, while in the later stages of the infection in childhood its value as a deciding factor again very considerably diminishes. Herein lies a difficulty. The fact that some of us believe that congenital syphilis is a comparatively infrequent disorder, but are at the same time willing to acknowledge that the test in the early and late stages is frequently negative places us in considerable difficulty when we endeavour to combat the suggestion that many disorders and defects considered in the past to have no relationship to syphilis are, after all, due to the disease, although not necessarily an active manifestation of it. We have from time to time been urged to seriously consider the proposition that mental deficiency, epilepsy, spastic paraplegia, pluriglandular insufficiency, nephritis, and, indeed, most of the disorders of infancy and childhood which possess an unknown ætiology may be due to syphilis. I have been asked to believe that "beading" of the ribs during the early months, bossing of the head, craniotabes, thickened skull, a posterior fontanelle which refuses to close by the sixth week, a fontanelle which closes too quickly, ridging of the sutures, enlargement of the liver, anæmia, hydrocephalus, congenital heart disease, and any conceivable thing that I am unable sufficiently to explain, are due to congenital syphilis. When I say that the blood is negative, that there are none of the usual manifestations of the disease present, and that the family history is clear, I am told that a negative Wassermann between the age of two weeks and two years is nothing to go upon, that the absence of the usual manifestations is quite common, and that the family history is rarely reliable because so much is forgotten or kept back by parents who are always out to fog the doctor. Naturally, I am a little nonplussed. I am asked whether I have tried a provocative dose of salvarsan, and when I answer that three gentlemen in America tried the intravenous injections of salvarsan upon non-syphilitic patients with a previously negative Wassermann reaction and obtained a positive reaction in more than 50 per cent. of the cases, the answer is received that surely if this is so I should try it on children and be convinced.

One decides to keep an open mind, and, taking mental deficiency as a test case, I try to find out its relationship to syphilis. I have a feeling that quite likely syphilis may have had something to do with it, and am impressed by the statements of Sir Frederick Mott as given before the Royal Commission on the Care and Control of the Feeble-minded (Vol. I., p. 453), but I also find that the Wassermann reaction used as a test by different workers in connexion with mental defect has given results which vary between 1·5 per cent. and 60 per cent. positives.[1] In the series showing the highest percentages cases are included where the parents or other members of the family have been found positive. The clinical examination of some 70 odd cases of mental deficiency under my care at the Meanwood Park Colony does not support the belief that many of these cases have suffered in the past with the disease. Except in two or three possible examples, the usual signs of lues tarda are not found. I note, however, that the family history of the patients provides many examples of mental instability in the parents.

Taking epilepsy in more detail, the blood test was performed on some 120 cases attending my epileptic clinic at the Leeds Public Dispensary, and 25 per cent. of the cases are returned as positive. Examination of the positives shows that several of the strongly positives are frankly syphilitic, with the general make-up of cerebral syphilis or congenital general paralysis. Some of the positives are described as "slightly positive," and experience with medical out-patients and at a venereal clinic has profoundly shaken my faith in the "slightly positive" result. Excluding the obviously syphilitic type of case amongst the epileptics, and excluding these very questionable "slightly positive" cases I am left with a positive percentage of 16. I find also that a 7·4 percentage was found amongst 418 adult epileptics.[2] I am then reminded of the fact that Dr. Paul Fildes reported to the Royal Commission[3] that approximately 8 per cent. of 1002 out-patients attending the London Hospital were found positive, no patient being included who came to the hospital for reasons connected with syphilis. To complete the picture I take careful note of the parents' and grandparents' reproductive histories. Excluding all those cases that have given positive results I find that in the immediate families 154 infants were lost out of 597, a proportion of 1 in 3·8. In considering the infant loss in the families of the grandparents I take the family on the paternal or maternal side that shows the greater infant loss, arguing that if the disease has been passed down it will most likely have been so from the side showing the greater death-rate. In this way it is found that 274 infants were lost out of 663, a proportion of 1 in 2·4. One was therefore hopeful that evidence had been found suggesting that epilepsy may possibly be a third generation manifestation. Before jumping to conclusions I decide to examine the family histories of controls—patients not suffering with epilepsy or syphilis from the clinical standpoint. Fifty-six controls show a loss of 73 infants amongst 336 brothers and sisters, a proportion of 1 in 4·6, and a consideration of the families of the grandparents and again taking the heavier mortality side, I find that 128 were lost out of 324, a proportion of 1 in 2·5.

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[1] Mental Defective Children, Shuttleworth and Potts, p. 95.

[2] Final Report, Royal Commission, Venereal Disease, p. 17.

[3] Final Report, Appendix XII., p. 139.

Dissatisfied and unconvinced, I turn again to the infant, and especially to the infant suffering from convulsions, "consumption of the bowels," marasmus, hydrocephalus, or mental defect—the type of child that died in the family of the grandparents—and I examine it both from the point of view of the blood and for any history or manifestation of active syphilis, and my results, with few exceptions, are consistently negative. As one amongst others who is merely desirous of arriving at the truth, I welcome any expression of opinion or investigation which will help to elucidate the difficulty, but I am reminded of the fact that many years ago the profession began to make themselves believe that large numbers of children were suffering from scurvy, which had at that time begun to be talked about and investigated, and therefore I am alarmed lest we should allow ourselves to exaggerate unduly the importance of syphilis as a cause of the diseases and defects of present-day infants and children.

I would, therefore, earnestly put forward a plea that we should refuse to accept any figures or statistics that are not supported by weighty clinical and pathological evidence. If congenital syphilis is really more prevalent than most authorities have dreamt of in the past it is clearly of first importance that it should be proved so, and that we should act accordingly. If, however, we are taking a too pessimistic and exaggerated view of the situation let us carefully avoid the danger of misleading the public into the same exaggerated belief.

I am, Sir, yours faithfully,

Leeds, April 14th, 1921. C. WILFRED VINING, M.D.

THE FIGURES OF VENEREAL DISEASE.

To the Editor of THE LANCET.

SIR,—In THE LANCET of April 2nd I drew attention to a statement made by Lord Knutsford in the House of Lords that "at the London Hospital alone they had 23,000 new cases of V.D. last year." He added that the figures of V.D. in this country were almost too great to be believed, in which opinion I fully concurred; in fact, I should be inclined to omit the word "*almost*."

In your issue of last week Lord Knutsford corrects his original statement, says that he misread his brief, and that the increase of 23,000 was at the London hospitals, not at the London Hospital. Here, again, there appears to be some inaccuracy in Lord Knutsford's figures, for the total number of *new* cases in attendance at the V.D. clinics at the London hospitals was in 1919 28,265 and in 1920 31,046, which shows an increase of 2781 for last year. Of these new cases 5118 were diagnosed as not suffering from V.D. in 1919 and 6592 in 1920, so that if these cases are deducted the total increase last year amounted to 1307.

It is to be hoped that later some information will be given as to what the figure 23,000 was really meant to allude. My own impression is that owing to the "very energetic propaganda" *carried out by the N.C.C.V.D.* the incidence of these diseases is now declining, in confirmation of which opinion I may state that at the London Lock Hospital there has been a falling off in the first quarter of this year of 569 new patients and 994 attendances in comparison with the corresponding quarter in 1920.—I am, Sir, yours faithfully,

J. ERNEST LANE.

Queen Anne-street, W., April 18th, 1921.

To the Editor of THE LANCET.

SIR,—In the *Daily Telegraph* of March 17th last Lord Knutsford is reported as having said, in a speech which he had made on the previous day in the House of Lords, that there were at the London Hospital 23,000 new cases of venereal disease last year. In THE LANCET of April 16th Lord Knutsford admits that he has made a mistake, and that the figure of 23,000 refers to the London hospitals and not to the single institution of the London Hospital.

The figure of 23,000 having been corrected, may I venture to draw your attention to the term "new cases"? All those who have any dealings with hospital "new cases" know that such a description may bring into account cases of the following nature:—

1. Cases which, having attended the previous year, are *still under treatment* the following year—i.e., cases which, having attended (*e.g.*, in 1919), are still being *treated in* 1920.

2. Cases which, having previously attended one institution, now attend at another, and are possibly drifting on to yet another.

Further, in my experience, cases are sent up to the various clinics concerned in the treatment of venereal disease, which are not venereal. I venture to state that if the term "new cases" includes cases coming under the above descriptions the figures of incidence of venereal disease may be reduced below even the 23,000 at the London hospitals.

I am, Sir, yours faithfully,

RALPH THOMPSON.

Queen Anne-street, W., April 18th, 1921.

HERPES OR CHICKEN-POX?

To the Editor of THE LANCET.

SIR,—As the relationship between herpes zoster and chicken-pox is at present attracting some attention the following case may be of interest.

E. L., male, aged 31 years, complained of pain in the left buttock and extending down to the knee. It was dull and constant in character, and was becoming worse since its onset two days previously. There were no physical signs, and the patient was given salicylate of soda. Two days later he noticed a rash on the buttock. The pain in the leg was less, but it still felt sore. However, the patient felt ill and giddy, and was sweating. He also noticed a few spots in his mouth and on his chest. The next day there were more spots on his chest and some on his face.

When he was seen again, the rash extending in a scimitar-like form over the middle third of the buttock proved to be herpes zoster, while the generalised rash was chicken-pox.—I am, Sir, yours faithfully,

W. G. VERNIQUET, B.Ch., M.R.C.S.

Kingsbridge, Devon, April 13th, 1921.

THE ÆTIOLOGY OF SUBPHRENIC ABSCESS.

To the Editor of THE LANCET.

SIR,—In his clinical lecture on Subphrenic Abscess, published in THE LANCET of March 19th, Mr. C. H. Fagge speaks of the limitation of the disease being due to "a former localising peritonitis." This statement may be frequently true, but when engaged in pathological work the formation of a subphrenic abscess used to appear to me to be a remarkable illustration of the wonderful power of the great omentum to form adhesions, while the peritoneum covering the viscera may not be able to react to irritation in any other way than to produce pus.

In the case of a perforating gastric ulcer on the anterior surface of the stomach near the lesser curvature, if the escape of the contents should not be too rapid, inflammation spreads slowly over the surface of the stomach until the great omentum attached to the lower border of the viscus is reached. Adhesions are there formed between the omentum and the abdominal wall, arresting the downward spread of the inflammation. The spread to the right is prevented by adhesion of the omentum to the lower border of the falciform ligament, while adhesions in the neighbourhood of the spleen prevent leakage in that direction. A closed cavity is rapidly formed, bounded by the portions of the abdominal wall and diaphragm in front and above, with the left lobe of the liver and the anterior surface of the stomach below. The peritoneum covering these surfaces, instead of forming adhesions, secretes pus, and the abscess is formed.

In the case of a subphrenic abscess following appendicitis again it is the great omentum which limits the disease. The inflammation travels upwards on the outer side of the ascending colon, and its course is watched and directed by the great omentum, which gives rise to adhesions between the ascending colon and the abdominal wall. Eventually the inflammation reaches the liver. It may there form an abscess below the liver, limited in its spread to the right by adhesions of the great omentum to the lower border of the falciform ligament, but although pus may first collect below the liver, the inflammation generally spreads above also, and a subphrenic abscess to the right of the falciform ligament makes its appearance.

I am, Sir, yours faithfully,

Norwich, April 14th, 1921. THEODORE FISHER.

LIGHT AS A REMEDIAL AGENT.

To the Editor of THE LANCET.

SIR,—Your remarks, under this title, associated with my name, in the issue of March 19th, p. 603, have caused me considerable pain and annoyance. They have been copied in many daily and weekly newspapers, and unfair and foolish comments have been made. I have received many letters upon the subject, mostly abusive. I am not astonished at the lay press taking the matter up, for you have done your best to make me appear ridiculous.

Your opening remark is incomprehensible, what you mean by "gracious to say it" I fail to understand. You then say that I had the courage to denounce sunlight as a "harmful agent in the human economy." Your source of information is a typescript which I sent to you last October, which you had in your possession when you accused me of denouncing sunlight. My denunciation reads as follows:—

> "Sunlight is the most powerful agent under which we survive. If it were completely withdrawn vitality would cease; its varying quantity reaching the earth has an exact relation to the earth's vitality. In parts of the earth whose sunshine is *regular and abundant great fertility*, human and vegetable, prevails, and where it is less regular and less abundant relative sterility prevails. Where it is seasonal, as in the temperate climes, fertility is coincident with its greatest amount. The gradual increase in the amount of sunlight in the springtime is coincident with rutting in animals and germination of the seeds in the earth. Delay in its reception retards both conditions, and early reception forwards both.
>
> Animals and plants are conscious of its over-exhibition, and only those which possess some protective power are able to survive. Animals which by their volition remove their bodies from its excessive influence, or which possess some protective skin *reflex acting automatically*, are able to use its power to their advantage, whilst stationary life defective in power of changing its transparency withers and dies."

I contend that this is common knowledge and that to make such a statement requires no courage, nor is it a denunciation. Had I quoted the classical example of the survivors of the Sicilian expedition as you suggest I should have displayed my ignorance of anatomy and of the physics of the higher frequencies of the solar radiations. You say:—

> "Dr. Holt regards sunshine as a cause not only of sunstroke, but of anæmia, chorea, and poliomyelitis, and standing in special relation to such epidemic diseases as typhoid, measles, and scarlatina."

The term sunshine as applied to my argument is a lax one, and is not once used by me in the argument. It occurs when I say "whose sunshine is regular and abundant." With regard to sunstroke, anæmia, and typhoid, there is no evidence in the typescript supplied to you that I regard sunshine as their cause. Sunstroke and typhoid appear (along with 20 other names) on a printed paper supplied to each of the attending members as "Conditions suggested as having an intimate relation to excesses of sunlight." Anæmia does not appear in the list.

The remark which appears in the typescript concerning chorea is as follows:—

> "Chorea is a disease occurring frequently in young children, especially in the spring (Osler says that relapses occur in the spring, and I think the same is mentioned in most text-books), at the time when the chemical frequencies re abundant."

Referring to poliomyelitis I say:—

> "I hope you will see that the view running through this paper is that nervous disorders *may* be due to electrical action of the solar radiation upon the electrons of the central nervous system conveyed through the terminal nerves and it is in *this way that I* suggest poliomyelitis arises."

My regarding measles and scarlatina as having a special relation to sunshine is based upon the following:—

> "Measles and scarlatina present a curious problem. They are largely summer diseases, known to be infectious, yet *in both these illnesses* the whole of the skin, including the face and hands, becomes suddenly opaque to the chemical frequencies of light. This is worthy of study."

You misquote me, "admitted during the daytime," I referred to *severe* accident cases *conveyed in an open ambulance*. Your reference to the tuberculosis cases is neither fair nor exact. I say that—

> "Our cases demand a *scientific hygiene adapted to* each individual. ...... Patients have lost superficial fat, the skin has become thinner, the blood anæmic, and the condition is one highly susceptible to the chemical energies of the sun. Therefore the sun must be applied to them with the highest degree of refinement; they react to it quickly; a proper dose is beneficial, an overdose fatal. ...... The Daylight Saving Act when it *first* came into operation caused nearly all my dispensary patients to lose from one-thirtieth to one-fortieth of their body weight during the first three weeks. Many recovered after the first month, but it was fatal to a few."

Your sense of humour is *peculiar when you find* delightfulness in my manner in making the following observations:—

> "The proof that a fair skin transmits the visible frequencies is shown in the transillumination of the face and the comparative transparency of the hands on bright summer days. Dirty hands are not so transparent as clean hands. This may be the explanation why young children dislike being washed. Mothers say that their children are never so happy as when they are dirty. Direct sunlight does give pain to certain skins, and even indirect sunlight gives considerable pain to the dermis when denuded of its epidermis. My own experience in dressing extensive burns taught me this fact very early, compelling me to postpone dressings until evening and then only by candlelight."

"The malignant rays of the sunlight" does not appear in the typescript. The expression is one I do not precisely understand; I suspect it is intended to be sarcastic. If it is sarcastic it shows a lack of sympathy with young children.

The principal *object of my paper is to call attention* to the possible misuse of sunlight for young children and for patients who are more or less at our mercy, and had I not seen such misuse, entailing considerable suffering, I *should not have taken* the trouble to compile a paper on the subject. It is a common experience to see babies exposed to a brilliant sun whilst the attendant, who has an older and better developed skin, shades herself with a broad-brimmed hat or a parasol. Patients frequently cover their heads with the bedclothes and some hide themselves under the beds to escape the sunlight. Surely an appeal to save such suffering is unworthy of ridicule.

In your criticisms you fail to note what I consider to be my strong points—viz., the occurrence of epidemic diarrhœa and nervous disorders in young *children at* the time when their pigmentary protection is most deficient, and their powers of seeking the shade are non-existent. Finally, I may remark that it is inconsistent with ordinary intelligence *to consider that* the most powerful agency under which we survive is harmless under all conditions, and equally beneficial to everyone irrespective of integumentary power of *reception or protection*.

I am, Sir, yours faithfully,

R. CRAWSHAW HOLT, M.D. Durh., M.R.C.P. Lond.

Didsbury, Lancs., April 11th, 1921.

*** We are happy that our readers should learn Dr. Holt's views in his own words. If we do not wholly agree with those views we may none the less express regret at the personal annoyance which the criticisms have brought on him.—ED. L.

Obituary.

HENRY BARNES. O.B.E., LL.D. McGILL, M.D., F.R.S. EDIN.

Dr. Henry Barnes, whose death at Carlisle on April 12th we briefly recorded last week, held a long record of distinguished service for his profession and in public life. Born in 1842 near Wigton in Cumberland, graduating with honours at Edinburgh University in 1864, he settled in Carlisle in 1866, holding his first public appointment as physician to the Carlisle Dispensary. In 1873 he was appointed honorary physician to the Cumberland Infirmary, where he became chairman of committee and finally a president, devoting to this institution the energies of a long life. His organising ability was freely expended in collecting funds for the extension and improvement of the building, in which his professional and social gifts, freely bestowed, made him beloved and respected. During the war Dr. Barnes acted as honorary secretary and treasurer to the Cumberland Branch of the British Red Cross Society, showing himself a discerning administrator. His public spirit found scope in his work as county magistrate from 1889 on, becoming chairman of the Cumberland Ward Justices from 1904. He was no mean antiquarian and archæologist; his contributions to scientific literature comprised papers on Roman Medicine and Practitioners, Roman Medical Inscriptions in Britain, and Hadrian's Wall. As President of the British Medical Association in 1896 he gave a notable address on the Medical History of Carlisle. His retirement from practice did not curtail his efforts for the public good, and he will long be remembered in Carlisle as one who served his fellows. Dr. Barnes married in 1873 Emily Mary, daughter of Thomas Barnes of Bolton, and is survived by his widow, a son, and a daughter.

PETER THOMAS DUNCAN, M.D., B.S. LOND.

Dr. Duncan, of Croydon, whose sudden death on Wednesday, April 6th, was recorded in the last number of THE LANCET, was one of the best all-round practitioners of his day. As a student at University College Hospital he distinguished himself highly among strong competitors; the London University honours lists of that time reveal a contest of stalwarts, and Duncan's name occurs again and again among them. In 1874 he graduated M.B. with honours, and on the same occasion took the gold medal at the B.S. examination. He qualified again for the gold medal when taking his M.D. two years later. He was appointed physician's assistant at University College Hospital, and later was elected to a Fellowship of the College. After a short period of general practice elsewhere, Duncan joined Dr. H. J. Whitling at Croydon in a partnership, of which he afterwards became the head, and he was chiefly responsible for an organisation among a group of practitioners which allowed free scope to their several specialist experience. Duncan himself became physician to the Croydon General Hospital. He was secretary of the East Surrey District of the British Medical Association from 1885 to 1893, and in 1897 was President of its South-Eastern branch. In and around Croydon he held the regard and confidence alike of his fellow practitioners and of the public. His diagnosis, especially in cases of cardiac, circulatory, or pulmonary disease was very sound, and in the difficult problems of prognosis he was surprisingly accurate.

An intimate friend and colleague writes thus of Dr. Duncan: "Much of his success as a leader of a group of men was due to his practical business qualities, knowledge of human nature, and shrewd foresight. It might have been said of him: 'He read much. He was a great observer, and he looked quite through the deeds of men.' Had Duncan chosen the law for his profession he might have made a first-class judge, for he had a singularly judicial unbiased mind. He obtained loyalty from his colleagues of an unvarying kind, due to his personal charm securely based on sincerity, freedom from affectation, and from professional jealousy. The degree of conscientious care that he bestowed upon his patient was a reflex of a high standard in work cherished to the end of life."

Dr. Duncan leaves a widow, a son, and three daughters to mourn their sudden loss, and a very large circle of patients and friends will miss him sorely. His brother, Dr. William Duncan, gynæcologist to the Middlesex Hospital, predeceased him.

PETER TYTLER, M.D. ABERD.

Dr. Peter Tytler, whose death occurred, at the age of 72, on April 9th at his residence in Withington, was for over 40 years a familiar figure more especially in the Ancoats district of Manchester. Brought up at Tyd-Mar in Aberdeenshire, he was the last male member of a family that had lived there for three centuries. Proceeding to the University of Aberdeen, he took the degrees of M.B. and C.M. in 1872 with highest honours and the M.D. in 1875. After graduating he acted as resident medical assistant at the Royal Asylum, Aberdeen. He came to Manchester in 1876, and by energy and assiduous attention to his patients acquired a substantial practice. After a time he was appointed an honorary surgeon at Ancoats Hospital, a position which he held until ill-health compelled him to resign in 1916, when he elected to reside in Withington. A tall and striking personality, his figure was well known, and his many good and unobtrusive deeds were highly appreciated by the community in which he spent his active existence. In spite of the physical impairment of his health which led to his retirement, Dr. Tytler retained his bright and cheery disposition and remained mentally very active.

FREDERICK J. BURMAN, M.R.C.S., L.R.C.P. EDIN.

THE tragic death of Dr. F. J. Burman removes a very well-known figure from the South Yorkshire district. Whilst cycling to visit a patient on Friday afternoon he was accidentally knocked down by a motor-car and died from the effects a few hours later. Born at Wath-on-Dearne, he succeeded to the practice which his father and grandfather had held before him. He had seen his native place change from a quiet, picturesque country town to a busy industrial centre at the heart of the South Yorks coal-fields, and his interests had extended to everything which could promote its welfare. In addition to a large general practice, in partnership with Dr. T. Crowley, he was medical officer of health for the district, and had charge of the Fever Hospital. He was also an active member of the staff of the Mexborough Montague Hospital, where, indeed, he passed away after his accident. He was particularly interested in ambulance work and was known over a wide area as an authority on the subject. His help as a judge in prize competitions was largely sought, and he had arranged to occupy this position in the annual competitions amongst the South Yorkshire Colliery teams which were held the day after his untimely death. Kind-hearted, unselfish, and modest, he was a practitioner of the best type, and his loss will be deeply felt over a wide area.

ALFRED ERNEST WILLIAM RAMSBOTTOM, F.R.C.S.I., M.D. DURH.

THE Hon. A. E. W. Ramsbottom, late Administrator of the Orange Free State, died in London, where he was doing special post-graduate work, on April 16th, as the result of heart failure after a severe operation. Born at Grahamstown in 1860, he was educated first at Bloemfontein and then at Dublin where, after a brilliant career as a medical student, he qualified in 1882, becoming F.R.C.S.I. in 1896. He obtained the M.D. Durh. in 1902. On returning to South Africa he practised first at Fauresmith and afterwards at Bloemfontein. During the South African war Dr. Ramsbottom was appointed chief medical officer to the Free State Forces, and in 1907 accepted the Treasurer's portfolio in the Cabinet of the Orange River Colony. On the formation of the Union he was appointed First Administrator of the Orange Free State, a post which he held till 1915, when he returned to private practice at Heilbron. For a time he presided over the South African Medical Association.

Parliamentary Intelligence.

HOUSE OF COMMONS.

Wednesday, April 13th.

Public Health (Tuberculosis) Bill.

On the motion for the second reading of the Public Health (Tuberculosis) Bill,

Sir A. Mond (Minister of Health) explained that the measure was introduced to provide for commitments resulting from the passing of the National Health Insurance Act, 1920. The effect of the Bill was to take away from the Insurance Committees the responsibility of providing institutional treatment for tuberculosis in the case of insured persons as from April 30th, 1921, the date when the sanatorium benefit ceased. The Bill was therefore extremely urgent if the machinery by which people had enjoyed sanatorium benefit was not to come to a standstill. It was provided by the Bill that the county and county borough councils should take on the work of dealing with tuberculous persons both insured and non-insured. Of the 145 county and county borough councils in England and Wales, 124 had already made such arrangements, and the Bill imposed no fresh obligations on those councils. Of the remaining 21 councils, all but one had made some provision for the treatment of tuberculosis, but in two or three cases the provision only extended to dispensaries, and in others the arrangements of the councils for treatment in sanatoriums or hospitals did not make full provision for insured persons. The great bulk of the county and county borough councils had agreed with the Ministry of Health to make full arrangements, and so far as they were concerned the Bill was really an agreed Bill. He understood that the councils that had not yet fallen into line were practically ready to do so if they understood that the obligations were statutory ones; but in the event of any local authorities failing to carry out their duties under the Bill, power was given to the Minister to make the necessary arrangements and charge the authority with the cost. He wished to make it clear that he had no objection if it was thought desirable to insert an amendment in Committee making it quite certain that the arrangement that had been made by the Welsh National Memorial Association with the various county councils and local authorities in Wales would be safeguarded.

Mr. Ormsby-Gore welcomed the Bill, which, although it was not much more than a skeleton, proceeded in his view on the right lines. Everything in a matter of this kind depended on the whole-hearted coöperation of the local authorities, without which all efforts to improve public health in this country were doomed to failure. The campaign against tuberculosis required strategy as well as tactics, and a complete strategetic policy was the most urgent necessity at the present moment. One of the lacunæ was this: tuberculosis was notifiable since 1912, *but it was notifiable to the district medical officer*, who passed on his information confidentially to the county medical officer. This seemed to be a mistake, and if they were going to follow through the life-history and the treatment of the disease they must get over that administrative difficulty. After-care *needed far more attention than it* received at present. Also they had to consider the children, the food, and general hygienic conditions of the country.

Mr. R. Richardson welcomed the Bill on behalf of the Labour Party, but considered that matters should not be left so much to the local authorities in what was a national question, to be dealt with at the expense of the State. He recognised the difficulty of diagnosing the disease in its early stages, but he hoped the medical profession would make such an advance that that difficulty would be overcome. The greatest omission in the Bill was the question of after-treatment. Provision should be made for adequate nursing, pure food, pure milk, and everything that was necessary for the care of patients. It ought to be an instruction to every local authority that it should have an after-care committee. Every local authority ought to provide an open-air school for children suffering from the disease.

Dr. Nathan Raw pointed out the loss to the country in man power and money from a preventable disease. If, he said, Clause 3 were made mandatory rather than permissive in respect to the coöption of members of Insurance Committees, they would get the benefit of the services of those who were specially trained. A well-equipped sanatorium was the best method of treating the great mass of the people, but unless all the expense and trouble were to be wasted, local authorities should have the power to appoint an after-care committee, which should be a statutory one, to look after the patient and see that he was enabled to carry on in some degree the treatment he had received in the sanatorium. Something must be done to enable the worker who had been crippled with tuberculosis to earn a living, and the isolation of advanced cases must be seriously taken in hand.

A National Disease: Systematic Organisation Required.

Captain Elliot said that in Scotland tuberculosis was killing about 800 people a week. It was estimated that in the United States of America in the year 1903 tuberculosis cost the country £66,000,000. That was only the direct cost; as to the indirect cost, it was utterly impossible to get any sort of estimate. They were all agreed that the disease was one which they must treat; it was a national disease and ought to be treated by some systematic scheme of organisation. The principle of dividing the country into areas and making one authority in each area responsible for dealing with the disease had proved effective in dealing with other forms of disease, and they had every reason to hope that it would be equally effective in dealing with tuberculosis. They had the consolation of knowing that the work so far carried out had been effective. The number of deaths in 1914 was 50,000. In 1915 housing conditions were not noticeably worse, food was better, and employment was good, while prices had not reached the terrifically high point to which they soared later. But the deaths in that year increased by 4000. In 1916 they remained at the same total of 54,000; in 1917 they reached 55,000, and in 1918, the influenza year, they went up to 58,000. In 1919 they fell to 46,000, and in 1920 there was a further fall to 42,000. A certain amount of that decrease was undoubtedly due to the remedial measures introduced by the then Minister of Health, but a large amount of it was due to good trade in the country, and he was sure that every medical man would join with him in warning the House against the almost inevitable disturbance in our vital statistics which the present industrial crises would bring in their path. Housing was not noticeably better in 1920 than in 1918. Our vital statistics were very much better than those of any other country in Europe just now, and better almost than those of any other country in the world. He had been able to get some figures for other countries. In 1919 our death-rate was 125·8, and in 1920 it was 112·8. In Prague, where the conditions were fairly comparable with those in this country, the death-rate was 386, as compared with our 112·8. In Warsaw it was 591; in Vienna, 490; and in Cracow, 616. These were the figures for the disturbed areas to bring home what we might fear if similar disturbed conditions began to prevail in this country. A very terrible state of things might easily arise, for we had no special immunity against disease in this country. He thought the scheme of the Ministry of Health was the best way of dealing with this matter. They had got child mortality down from 110 to 80 to-day. It was said that was simply to do with the care of mothers and had nothing to do with clinics. He had discussed the matter with a medical officer of health for a borough not far from London, where the death-rate of children attending the clinic was 40, whereas the death-rate of children not attending the clinic was 77. This showed, at any rate, that the careful mother found the clinic an advantage, and the same general principles applied to tuberculosis would be of the greatest benefit in bringing down the death-rate from that disease. We had a splendid chance just now. Influenza had swept out a large number of people who would probably have become acute cases of tuberculosis. We had now a much better chance than we had ever had before of reducing the disease to practically negligible proportions in this country. Sailors, of all people, were most liable to phthisis owing to the small amount of air space they had in ships—about 45 feet. as compared with about 400 cubic feet for the tramp in the common lodging-house—and this would have to be treated as an international problem. With regard to the general treatment of after-care, the experience of the *Ministry of Labour would be of the* utmost value to them in the long run. They needed a sort of disabled man's roll, some sort of national scheme for a certain proportion of places in industries being reserved for the casualties of industry. He invited the coöperation of the Labour Party in some scheme of that sort. *He also begged them not to* adopt, as they had sometimes done in the past, a stand-offish attitude towards the voluntary dispensary system, and particularly in London. He suggested that there should be some sort of clearing-house system before men were definitely marked off for sanatorium treatment. Full advantage of modern methods of diagnosis should be taken. The clearing-house system would enable the whole medical science to be concentrated on a particular case, and then it could be determined definitely, after some residence in hospital—perhaps three or six weeks—whether a person needed to start the treatment. It seemed incredible that the Royal Hospital for Diseases of the Chest, with 100 years of history behind it, was at this moment in danger of being pulled down, and had come to an arrangement by which an equal number of beds would be erected in conjunction with a large general voluntary hospital. He would ask the London members if it was not possible for them to enter into some arrangement by which the organisation of this hospital could not be made available for clearing-house work under the new London County Council schemes which would be necessary, or which they had already set up with the approval of the Ministry of Health. The great Sanitary Acts of this country had brought down the death-rate to 13·5, far below the death-rate of other countries. Work done on the fabric of the State, the people, was work done on the foundation-stone of the building of Empire, and was in the long run far more important to the Empire than any amount of flags which might be hoisted, although they might appear a great deal more imposing at the time.

Major Molson thought the importance of this Bill far outweighed any question of economy at the present time, but he would not like the enthusiasts to persuade them to go in for too great expense and then arouse opposition. As a medical man he wished to say that early treatment of tuberculosis was essentially the important thing. Plenty of accommodation was important, but there was no need for very elaborate buildings, where only a few patients could be taken in and where there would be a long waiting list. The medical profession felt rather bitter that the pledges given when the National Insurance Act was passed had not been fulfilled. He urged the Minister not to bring in many conditions or regulations, but to work with the local authorities and to get their free-hearted and hearty coöperation.

Mr. Johnstone, speaking as a member of the local authority which had been treating tuberculosis, agreed with the general approval that had been given to the Bill, but regretted that it had been considered necessary to remove the sanatorium benefit from the Insurance Committees. The one hopeful feature in the treatment of tuberculosis to-day was the work colony, the pioneers of which in this country were Dr. Marcus Paterson, of the Brompton Hospital, Frimley, and Dr. Varrier-Jones, of the Papworth Tuberculosis Colony, Cambridge.

Major Farquharson said, as he read the Bill, something like £400,000 would be available. Sanatorium treatment at present was nothing more or less than an experiment. Almost everything about medicine was experimental. The spending of large sums on institutional treatment was not either wise or justified by the results of the past. It was only one of the whole gamut of methods of treatment—one little stage which often came in, unfortunately, when treatment of any kind was more or less useless. One fault he had to find with institutional treatment was that it produced a certain degree of what he might call passivity on the part of the patient himself. The After-Care Association encouraged that passivity when often all that was wanted was to rouse the patient to the knowledge that he was his own keeper, that his health was in his own care, that by simple attention to hygienic rules he could not only give himself a higher, better, and stronger life, but he could cease to be a burden on his fellow men.

Mr. Myers welcomed the Bill, but expressed regret that it made no provision for preventive operations and no adequate provision for after-care treatment. He attributed the ineffectiveness of insurance committees to the appropriation by the medical profession of 6*d*. out of the 1*s*. 3*d*. that was available for all domiciliary treatment.

Sir A. Mond, replying to the points raised in the debate, said where doctors disagreed it was difficult for laymen to be dogmatic. They had been told that sanatorium treatment was a failure and also that it was most valuable; to an unprejudiced mind both statements were true. It had not achieved everything that was expected, yet he did not think anyone would say that it had not achieved beneficent results.

The Bill was read a second time.

Revised Scale of Fees for Admiralty Surgeons.

Captain Elliot asked the Secretary to the Admiralty whether he was now able to give an answer as to the revised scale of fees for Admiralty surgeons.—Mr. Amery replied: The revised scales of fees have now been promulgated in a Fleet Order, with the exception of those for medical examinations, which are still under discussion. I am sending the honourable and gallant Member a copy of the Order in question.

Hong-Kong Naval Hospital.

Commander Bellairs asked the Secretary to the Admiralty what was the maximum number of patients that could be accommodated at the Hong-Kong Royal Naval Hospital; what were the maximum and minimum numbers accommodated in 1920; and how many convalescents were sent from there to the Yokohama Royal Naval Hospital in 1920.—Mr. Amery replied: The maximum number of patients that can be accommodated in the Royal Naval Hospital, Hong-Kong, is 134. The maximum and minimum numbers accommodated in 1920 were 99 and 52 respectively. Eleven convalescents were sent from Hong-Kong Naval Hospital to Yokohama Naval Hospital in 1920. The latter was not reopened until June 16th, 1920, which is after the usual time of year for transferring convalescents thither from Hong-Kong.

Encephalitis Lethargica.

Mr. Gilbert asked the Minister of Health the number of cases of this disease which had been reported to his department in this country during the past 12 months; how many cases had proved fatal; and would he state what special steps his department had taken to deal with this epidemic.—Sir A. Mond replied: 1572 cases of encephalitis lethargica, to which disease my honourable friend no doubt refers, have been reported in England and Wales between April 1st, 1920, and March 31st, 1921. The deaths from this disease during the same period, so far as is known at present, amount to 495. The disease was made compulsorily notifiable on Jan. 1st, 1919, and since then special reports have been received from medical officers of health in practically all the cases which have been notified, while special inquiries have been made and advice has been given by medical officers of the Ministry in suitable cases. Simultaneously the pathology of the disease is being studied in association with the Medical Research Council.—Mr. Sexton: May I ask if the Minister of Health's department is itself quite free from this disease? (Laughter.)

Islington Medical Officer's Superannuation.

Lieutenant-Colonel Fremantle asked the Minister of Health if he was aware that the Islington Borough Council proposed to superannuate their medical officer of health after 39 years' efficient and energetic service (10 years under the Corporation of Sunderland and 29 years at Islington) at a rate which was not fixed on any definite scale, and was far below that usually granted to executive officers; and seeing that the Superannuation (Metropolis) Act, 1866, provided for the payment of superannuation at the rate of one-sixtieth of salary for every year of service, that the Act is intended to apply without discrimination between the employees of local authorities, that the Islington Borough Council have adopted this Act in superannuating their roadmen, scavengers, and other labourers, and that the medical officer of health has requested the protection of the Minister of Health against the non-application of the scale in his case, would he say what steps he proposed to take in the matter.—Sir A. Mond replied: I am making inquires as to this case, and will inform my honourable and gallant friend of the result.

Dental Legislation.

Mr. Raffan asked the Minister of Health whether it was still the intention of the Government to introduce a measure, during the present session of Parliament, for the purpose of carrying out the recommendations of the departmental committee on the Dentists Act, 1878.—Sir A. Mond replied: I am afraid that owing to the congestion of the Government legislative programme, legislation on this subject will not be practicable during the present session.—Mr. Raffan: Is my right honourable friend aware that his predecessor promised that legislation should be introduced if there was any general agreement on the subject; and if we are able to assure the right honourable gentleman that there is a general agreement and that little time will be occupied, will he reconsider the matter?—Sir A. Mond: I had no intention to introduce a Bill this session, and of course the programme of legislation is very much upset already, and I am also informed that there is very little chance of there being any agreement. Of course I shall be glad to look into the matter again, but I do not know how any Member or group of Members can assure me that there is going to be agreement, and I am sure the House does not want an autumn session.—Mr. Raffan: Will the right honourable gentleman be prepared to receive representations on the matter from Members of Parliament?—Sir A. Mond: I shall be very pleased.

THURSDAY, APRIL 14TH.

Public Health (Tuberculosis) Expenses.

The House went into Committee of Supply on the money resolution of the Public Health (Tuberculosis) Bill, Sir E. Cornwall in the chair.—The resolution was agreed to.

Ministry of Health Draft Order.

On the motion "That the Ministry of Health (Factories and Workshops, Transfer of Powers) Draft Order, presented the 28th February, 1921, be approved," Lieutenant-Colonel Fremantle said the Draft Order went to the root of the formation of the Ministry of Health. The formation of that Ministry was heralded with great words as regarded the prospects of the custody of the health of the nation, and to it were referred certain powers, while certain other powers were reserved that might be added afterwards. Thirdly, there was a general power of taking over other powers that might conduce to the national health. It was a very serious and sound criticism of the Ministry of Health in its original constitution and conception that the whole question of health in the factories, as administered by the Home Office, should have been excluded from the functions of the Ministry. However, they had some very small contribution in the right direction in this Order, which transferred to the Ministry of Health certain powers and duties of certain sections of the Factories and Workshops Act, 1901—namely, Section 61 (Employment of Women After Childbirth), Sections 97 to 100 (Provisions Relating to Bakehouses), Section 109 (Making of Wearing Apparel where there is Scarlet Fever or Small-pox), and Section 110 (Prohibition of Home Work where there is Infectious Disease). He hoped this might be the prelude to the natural transference to the Ministry of Health of the whole general conception and survey of health matters in factories and workshops.—The motion was agreed to.

Public Health Officers (No. 2) Bill.

This Bill was read a second time.

Medical Equipment of the Auxiliary Division.

Lieutenant-Colonel WALTER GUINNESS asked the Chief Secretary to the Lord Lieutenant of Ireland if he could say whether the Auxiliary Division had the same quota of the Royal Army Medical Service attached to them as would be provided in the case of a corresponding number of troops employed in active military operations; and whether they had special ambulance cars allotted to them for the conveyance of wounded men.—Mr. HENRY (Attorney General for Ireland) replied: The Auxiliary Division is not provided with its own special medical transports. Ambulances and other necessaries of medical equipment are borrowed from the regular forces as and when required, and this arrangement has been found to answer satisfactorily.—Lieutenant-Colonel GUINNESS: Has the attention of the right honourable gentleman been drawn to the terrible sufferings of many of the auxiliaries who have been wounded in the Longford Camp; will he make further inquiries and consult the Director of the Royal Army Medical Service in Ireland as to what steps have been taken to prevent a recurrence of these terrible occurrences to men suffering from grievous wounds who have been left lying in the open without proper attention?—Mr. HENRY: I will certainly bring this matter to the attention of the authorities.—Earl WINTERTON: In the case of the Longford Camp, there is a gross scandal in connexion with the wounded servants of the Crown who have been left lying about for 24 hours open to being mutilated by Sinn Feiners because no proper provision was made for them and because it was not the duty of the Army authorities to convey them to the hospital.—Mr. HENRY: The matter is receiving the attention of the authorities.

Medical Benefit Statistics.

Sir CROYDON MARKS asked the Minister of Health the total number of persons receiving medical benefit; the amount paid to them the first week in March, 1921, and the corresponding week in 1920; and the total number of persons in sanatoriums or institutions for the treatment of tuberculosis for the first week in March, 1921, and the corresponding week in 1920.—Sir A. MOND replied: The number of persons in England and Wales entitled to medical benefit is approximately 12,750,000. I regret that no figures are available of the number of insured persons actually receiving (*a*) medical treatment, and (*b*) cash benefits in particular weeks. The total number of insured persons in England and Wales who were receiving treatment for tuberculosis in sanatoriums or other institutions was 8922 on March 1st, 1921, and 8754 on March 1st, 1920. The actual number of non-insured persons receiving such treatment on those dates is not available, but the total number of beds available for non-insured and insured persons in approved institutions for the treatment of tuberculosis was 17,894 on March 1st, 1921, and 16,432 on March 1st, 1920.

Pay of the R.A.M.C. Officers in India.

Lieutenant-Colonel WALTER GUINNESS asked the Secretary for India whether the increases of pay of certain specified services serving in India promised in Indian Army Order No. 558, of October, 1919, and sanctioned to date from July 1st, 1919, had in the case of the Royal Army Medical Corps, taken effect only from Jan. 1st, 1920, instead of from the earlier date as in the case of all other corps; and what was the reason for this distinction between officers who were serving under identical conditions.—Mr. MONTAGU replied: The pay of Royal Army Medical Corps officers in India was increased in March, 1920, with effect from July 1st, 1919. Consequent upon an increase of pay granted to Indian Medical Service officers, with effect from Jan. 1st, 1920, a further increase has recently been granted to Royal Army Medical Corps officers, with effect from the same date.

MONDAY, APRIL 18TH.

Summer Time and Children's Health.

Mr. ROBERT YOUNG asked the President of the Board of Education whether any consideration had been given to the effect on the health of young children as the result of the operation of the Daylight Saving Act; whether the earlier hours of attendance at school and the consequently prolonged day reducing their hours of sleep had had any injurious effect; and, if so, what steps he proposed to take in the matter.—Mr. FISHER replied: I cannot add anything to the summary contained in Paragraphs 32 to 36 of the Report of the Summer Time Committee, 1917 [Cd. 8487]. I will, however, ask the local education authorities to make arrangements for observing the effect of the Summer Time Act on the health of the school children in their areas this year. But, as the honourable Member is aware, the matter is primarily one of parental supervision.

Medical News.

UNIVERSITY OF CAMBRIDGE.—Professor Frederick Gowland Hopkins, F.R.S., Fellow and Prelector in Biochemistry at Trinity College, has been elected to the newly established Sir William Dunn Professorship of Biochemistry.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The Quarterly Council was held on April 14th, with Sir Anthony Bowlby in the chair.—The President opened the envelope bearing the winning motto of the dissertation adjudged by the Jacksonian Prize Committee, and announced the winner of the prize to be Mr. Harold Burrows, F.R.C.S., of Southsea.—It was resolved that the subject for the prize for the year 1921 should be "The Effects Produced by Radium upon Living Tissues, with Special Relation to its Use in the Treatment of Malignant Disease."—A report was read from the Walker Prize Committee, dated Feb. 28th, 1921, and in pursuance of this report it was resolved that the Walker Prize for the period 1916-1920 be not awarded.—A report was read from the John Tomes Prize Committee, dated March 9th, 1921, and in pursuance of the recommendation contained in the report it was resolved that the prize for 1918-1920 be awarded to Dr. James Sim Wallace, L.D.S.—The President opened the envelope containing the motto of the essay adjudged by the Cartwright Prize Committee to be the winning essay, and announced that the winner of the medal and honorarium of £85 was Mr. W. Kelsey Fry, M.R.C.S., L.D.S.—It was resolved that the subject for the Cartwright Prize for 1921-1925 should be "Variations in the Form of the Jaws, with Special Reference to their Ætiology and their Relation to the Occlusion of the Dental Arches."—A report, dated April 7th, was read from the Examiners in Anatomy under the Conjoint Board regarding the Begley studentship, and it was resolved that in pursuance of this report Mr. Kenneth Owen Parsons, of Guy's Hospital, be appointed Begley student for the ensuing three years.—The Council, under Section 5 of the Charter of the 15th Victoria, balloted for the election to the Fellowship of the following Members of 20 years' standing: Professor Charles Scott Sherrington, P.R.S., and Sir S. Squire Sprigge.—The Council elected Mr. Raymond Johnson as the Representative of the College on the Senate of the University of London for the period from May 10th next to the second Tuesday in May, 1925, in the vacancy by the retirement of Sir Charters J. Symonds.—The secretary reported that at the last four Final Examinations for the Fellowship 243 candidates were admitted under the ordinary conditions, and that of these 156, or 64·2 per cent., failed, and that under the special war conditions 104 candidates were admitted, of whom 71, or 68 per cent., failed.—The President reported that he, Mr. H. J. Waring, Mr. R. Johnson, and Sir Cuthbert Wallace attended before the Voluntary Hospital Committee at the offices of the Ministry of Health on March 16th last and gave evidence on behalf of the College in support of the retention of the voluntary system as of great importance in the interests of the sick and of medical education.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH. ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The following candidates have passed the Triple Qualification Examination:—

THIRD EXAMINATION.

Robert W. P. Hall, James S. Allan, James A. McE. S. Evers, James M. McLintock, Henry G. F. Cubitt, Ernest Levine, Patel S. H. Masters, Alexander W. Buchan, and John M. Cockburn.

Pathology.—Helen J. Hamilton, John J. Mann, James M. Crombie and George A. P. McConey.

Materia Medica.—George F. Maher, Andrew A. Dewar, Percy A. M. Jayewardene, Bruce F. Home, Annie F. Perry, and Robert P. Anderson.

FINAL EXAMINATION.

Helen Worthington, Daniel R. Cilliers, Norman M. D. Fox, Don James H. Ferdinando, John Murray, Ardishir Jahangirji Vakil, Arnold A. Hamilton, Alan B. Taylor, Reginald E. Hopton, James I. Coventry, Ronald G. Clouston, Peter F. Fairley, Samuel Denis de Vos, Bakhtawar Singh Jain, Francis Xavier H. Hayes, John J. L. McDonald, Frederic L. A. Gace, Gilbert H. Thomas, and Krishna Abaji Deodhar.

Medicine.—Abdus Shakur, James L. Lloyd-Jones, Vincent H. L. Anthonisz, William B. Stott, William Campbell, Ram Nath Nanda, and Aflatum Yacub Khan.

Surgery.—James S. A. Rogers, Otho P. Fox, William B. Stott, and Ram Nath Nanda.

Midwifery.—Abdus Shakur, James L. Lloyd-Jones, John R. Williams, Otho P. Fox, James Pedris, Elliot P. Dewar, and Aflatum Yacub Khan.

Medical Jurisprudence.—Enid A. Williams, Thomas T. Hoskins, George H. Dobbin, Mohamed Shafia Hassen, Philip G. Bainbridge, Duncan R. Nicol, James L. Lloyd-Jones, and Rachel Caplan.

LONDON SCHOOL OF TROPICAL MEDICINE.—Sir Leonard Rogers, C.I.E., F.R.S., has been appointed extra physician for clinical research, a position which has been specially created for him; he will lecture upon subjects, such as leprosy, to which he has paid special attention.—Lieutenant-Colonel W. W. Clemesha, C.I.E. (I.M.S. retired), has been appointed lecturer on hygiene in the tropics in succession to Professor W. J. Simpson, who has recently retired. Colonel Clemesha is well known for his work upon the water-supplies of India. He has held the post of Sanitary Commissioner to the Government of India, and latterly acted as Director of Medical Services, East African Force. He is therefore well qualified to speak authoritatively upon the most recent developments of sanitary science in the tropics.

The following candidates passed the examination held at the termination of the sixty-fifth session (January-April, 1921):—

*C. T. Maitland (Duncan medal), *H. E. S. Richards, *A. Crawford, *Miss M. M. Ross, *R. G. Simpson, *J. O. Beven, *W. M. Howells, J. M. Wallace, J. Segal, O. M. Banhawy, D. N. Gore, P. Parthasarathy, M. Morrison, L. M. Sen, B. K. Ray, J. C. Rowan, H. Smith, Miss A. Shaw, D. S. Scott, R. A. W. Procter, Miss A. M. Mackay, J. C. Coetzee, K. A. Gandhi, C. L. Sahni, N. S. Kotwall, F. X. Costello, K. C. Cheng, S. Miller, P. N. Button, Miss M. Jervis, A. R. McLean, Miss L. J. Murphy, A. R. Jennings, and Miss M. J. Ahern.

* With distinction.

ROYAL MEDICAL BENEVOLENT FUND.—The annual meeting was held at 11, Chandos-street, London, W., on April 5th, with Sir Thomas Barlow, the President, in the chair. The annual report was received and adopted. It was stated that the average amount of the grants at present distributed is quite inadequate and should be considerably increased. All friends of the Fund were urged to make the wants of the Funds more widely known to their medical brethren, and to obtain new subscribers. The total amount received in donations and subscriptions was £3395 4*s.* 7*d.*, compared with £2865 3*s.* 10*d.* in the preceding year, an increase of £530 0*s.* 9*d.* The total distributed in grants during the year, including Christmas gifts made to the more urgent cases, was £2836 13*s.* 1*d.*, of which £246 9*s.* was provided from the Dinner Fund account. In the annuity department the amount this year available was £4021 1*s.* 10*d.* against £3897 9*s.* 5*d.* the previous year, an increase of £123 12*s.* 5*d.* The annuitants, who must be over 60 years of age, amount in number to 178, and in December last it was agreed to increase the amount of 38 of the pensions from £20 to £26. Grants to the amount of £5926 17*s.* 6*d.* have been made in connexion with the War Emergency Fund, and invaluable assistance has been rendered to a large number of medical men who had held commissions and found themselves on their return to practice unable to carry on without such help. The committee have already agreed to bear the cost of the education of 25 boys and girls at public schools, and they would welcome applications for such purpose on behalf of any who are eligible for help from the Fund. At present three boys are being educated at Epsom College, and the names of three more have already been entered, while the fees of 19 other children are being paid at various schools. The total amount received for the Fund amounts to £34,818 and the amount expended to £18,920. The following officers were re-elected for the ensuing year: Sir Thomas Barlow, President; Sir Charters Symonds, treasurer; and Dr. Newton Pitt, hon. secretary.

At the meeting of the committee held on April 12th 29 cases were considered, and £397 voted to 26 applicants. The following is a summary of some of the cases relieved:—

Widow, aged 67, of M.D. Dub. who practised in London and died in 1918. Applicant was left entirely without means. She has five grown-up children, but none of them are able to help her. Since the death of her husband she has paid rent, 15*s.* per week, by selling her furniture. Two sisters, now dead, used to clothe and help to support her. Voted £12 in 12 instalments.—Widow, aged 87, of L.F.P.S. Glasg. who practised in Holloway, and died in February, 1921. Applicant's husband was granted £30 in six instalments from the Fund. Applicant is now left with only the Old Age Pension, and her rent is 7*s.* per week. Voted £26 in 12 instalments.—Widow, aged 61, of M.R.C.S. Eng. who practised in Manchester, and died in 1915. Applicant asks help from the Fund owing to the recent loss of her eldest daughter through consumption, who was her chief support. Her only income is derived from letting rooms. Son only receives 9*s.* per week as an engineer's apprentice and has still another 18 months to serve. The second daughter is not working at the present time. Voted £10.—Daughter, aged 47, of M.R.C.S. Eng. who practised at Woodford and died in 1913. Applicant and sister live together; both of them are delicate and unable to work. The mother, aged 80, was an annuitant of the Fund. Since the father's death friends have collected sums of money to keep mother and sisters. This case was strongly reccommended. Voted £10 in two instalments.—Daughter, aged 54, of M.R.C.S. Eng. who practised at Redcar and died in 1873. Applicant is a trained nurse, but owing to ill-health and an operation in November last is now incapacitated. She is now dependent upon her sister, who has to earn her living as a dressmaker. Applicant is entirely without means. Voted £18 in two instalments.—M.R.C.S. Eng., aged 54, single, who practised in Liverpool and West Africa. His health was entirely undermined through living abroad, and he is quite unable to follow his profession. A brother-in-law allows him £24 per annum, and he earns about 12*s.* per week as a temporary postman. Applicant pays a portion of the rent, which is £7 16*s.* Relieved eight times, £70. Last time £10 in March, 1920. Voted £10 in two instalments.—Daughter, aged 59, of M.R.C.S. Eng. who practised at Newport (Mon.) and died in 1892. Applicant worked for 19 years as a church worker in Wales, but owing to partial blindness and internal trouble has had to give it up. The Royal United Kingdom Beneficent Association allows her £25 per annum. She also receives a little help from the Guild and a grant from the Fund for the last ten years Relieved ten times, £135; last time £18 in April, 1920. Voted £18 in 12 instalments.

Subscriptions may be sent to the honorary treasurer, Sir Charters J. Symonds, K.B.E., at 11, Chandos-street, Cavendish-square, London, W.1.

DONATIONS AND BEQUESTS.—By will the late Miss Mary Wainwright, of Croxteth-road, Liverpool, bequeathed £1200 to the Northern Hospital, Liverpool, in memory of her father, one of the founders.

THE annual dinner of the Indian Medical Service will be held at the Trocadero on Wednesday, June 15th, Major-General Sir R. Havelock Charles, G.C.V.O., in the chair. Tickets and all particulars may be obtained from the joint hon. secretary, Colonel J. J. Pratt, I.M.S. (ret.), 63, Addison-road, Kensington, W.14.

CHADWICK PUBLIC LECTURES.—Three lectures on Fevers in England: their Prevention and Control, with Special Reference to the Effects of Public Health Acts (1848-1918), will be given by Dr. William Hunter in the lecture-room of the Medical Society of London, 11, Chandos-street, on Thursdays, May 5th, 12th, and 19th, at 5.15 P.M. Admission is free.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL.—At the opening of the summer session of the Central London Throat and Ear Hospital, Gray's Inn-road, on Wednesday, May 4th, at 4 P.M., Mr. Arthur Cheatle will give a lantern demonstration on "The Cellular Development in the Temporal Bone."

TUBERCULOSIS SOCIETY OF GREAT BRITAIN AND IRELAND.—A clinical meeting of the society will be held at the Margaret-street Hospital, Margaret-street, Oxford-street, London, on Monday, April 25th, at 7.15 P.M. Cases will be shown by Dr. L. S. T. Burrell and Mr. P. Franklin, and Mr. Franklin will read a paper on Tuberculous Laryngitis, with demonstration of cases.

FEDERATION OF MEDICAL AND ALLIED SOCIETIES.—The Medical Council of this Federation at their next meeting propose to consider again pressing for a public inquiry into the conditions under which medical benefit is provided for insured persons. They will do this with special regard to supplementing the resources of the panel practitioner by providing hospital and laboratory facilities that would enable him to give efficient treatment.

HERITAGE CRAFT SCHOOLS, CHAILEY.—A festival dinner in support of these schools was held at the Savoy Hotel on April 13th, Dame Margaret Lloyd George presiding. The medical guests included Sir Robert Jones, Mr. E. Hurry Fenwick, Dr. S. Russell Wells, Sir D'Arcy Power, Dr. Graham Little, Dr. C. W. Kimmins, and Dr. William Brown. It was stated that most of the children in the schools were suffering from surgical tuberculosis. Sir Jesse and Lady Boot had presented an operating theatre, now under construction, and further arrangements for surgical and operative work were still needed. Contributions should be sent to Miss A. C. Rennie, hon. treasurer; further information can be obtained from the founder and hon. secretary, Mrs. C. W. Kimmins, the Heritage Craft Schools, Chailey, Sussex.

NEW COMMISSIONER OF PRISONS.—Dr. Sidney Reginald Dyer, Medical Inspector of Prisons, Home Office, has been appointed Commissioner of Prisons (England and Wales). Dr. Dyer was formerly medical officer of H.M. Prisons, Stafford, Wandsworth, and Brixton, and was called to the Bar at the Middle Temple in 1896.

LITERARY INTELLIGENCE.—Nippon-no-Ikai-Sha, publishers, of Tokyo, announce the appearance this month of a new medical monthly in English, entitled the *Nippon-no-Ikai*, or the *Japan Medical World*. It will contain original articles, notes on current Japanese medical literature, archives of medical societies, and medical news. The annual subscription is $6.00; single copies, $0.50, post free. Dr. S. Tsuchiya will direct the publication.

ON the resignation of Dr. Edward Walford from the appointments of medical officer of health for the city and port of Cardiff and school medical officer, he has been granted a pension or retiring allowance of £500 per annum under the superannuation clauses of the Cardiff Corporation Act, 1920. Dr. Walford had held these posts since January, 1888, his predecessor, Dr. H. J. Paine, having held office from 1847 until 1888. Thus Cardiff has had but two medical officers of health for the city in three-quarters of a century.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ALLAN, J., M.D., B.Ch.Edin., D.P.H., has been appointed Oculist to the Royal West of England Institution for the Deaf and Dumb.

PUNCH, A. L., M.B.Lond., M.R.C.P., Physician (in charge of out-patients), Great Northern Central Hospital, Holloway.

RICHARDSON, S. R., M.D.Dub., Assistant Medical Officer of Health for Ealing.

RUTHERFORD, MARGARET E., Assistant Medical Officer of Health to the Southend Corporation.

WALSHE, F. M. R., M.D.Lond., F.R.C.P.Lond., Assistant Physician to Out-patients to the National Hospital for the Paralysed and Epileptic, Queen-square, W.C.

WATT, J., L.R.C.P. & S.Edin. L.F.P.S.Glasg., Certifying Surgeon under the Factory and Workshop Acts for Portree.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Dispensary and Vaccine Institution.—Hon. M.O.

Bethlem.—Two Res. H.P.'s. £25 per quarter.

Birmingham General Hospital.—Three H.S.'s. £100. Also H.S. to Special Departments. £125.

Bootle Borough Hospital.—Third H.S. £120.

Bramshott, Hants, King George's Sanatorium for Sailors.—Med. Supt. £600.

Bridgwater Hospital.—H.S. £165.

Brighton, Royal Sussex County Hospital.—H.P. £160.

Buxton, Derbyshire, Devonshire Hospital.—H.P. £250.

Cambridge, Addenbrooke's Hospital.—H.S. £130.

Canning Town Women's Settlement Hospital, Balaam-street, Plaistow, E.—Female Hon. Asst. P. and Hon. Asst. S.

Charing Cross Hospital, Agar-street, W.C.—P. in Charge Department of Radiology and Electro-therapeutics.

Chester Royal Infirmary.—Hon. S. Hon. Asst. P. Also Asst. H.S. £175.

Colchester, Essex County Hospital.—H.S. £200.

Essex County Council.—Asst. County M.O. £600.

Evelina Hospital for Children, Southwark, S.E.—Hon. Dent. S. Also H.P. and H.S. £150.

Falkirk and District Infirmary.—Res. M.O. £200.

Gloucester County Asylum.—Locum Tenens. 7 gs. weekly.

Holloway Sanatorium, Virginia Water, Surrey.—Jun. Asst. M.O. £400.

Hong-Kong, Port Health Officer.—Sec. Health O. £600.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S.'s. £50.

Hove, Carr-Burton Memorial Hospital, Sackville-road.—Res. M.O. £250.

Huddersfield Royal Infirmary.—Two Jun. H.S.'s. £200.

Isle of Wight County Hospital, Ryde.—Hon. Path.

Johannesburg, University College.—Sen. Lecturer in Physiology. £516

Kent Education Committee.—Female Sch. Med. Inspector. £600.

Liverpool Maternity Hospital and Ladies Charity.—Two Hon. Asst. S.'s.

London Temperance Hospital, Hampstead-road, N.W.—Hon. Asst. P.

Manchester County Asylum, Prestwich.—Asst. M.O. £572 18s.

Manchester, Crossley Sanatorium, Delamere Forest, Cheshire.—Asst. M.O. £350.

Manchester, Withington Institution and Hospital, Nell-lane, West Didsbury.—Asst. M.O. £350.

Metropolitan Hospital, Kingsland-road, E.—Cas. O. and Res. Anæsth. £120

Middlesbrough, North Riding Infirmary.—Jun. H.S. and Sen. H.S. £150 and £200 respectively.

Miller General Hospital for South-East London, Greenwich-road. S.E.—M.O. for X Ray Dept. £75. Res. Cas. O. and H.P. £150.

National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—M.O. in charge of Electro-Therapeutic Dept. £100.

Newark Hospital and Dispensary.—Res. H.S.

Newport, Mon., Royal Gwent Hospital.—H.S. £200.

Oldham Royal Infirmary.—Three H.S.'s. £250 and £200 respectively.

Oxford City.—Asst. M.O.H. and Sch. M.O. £500.

Oxford, Warneford Hospital for Mental Diseases.—Asst. M.O. £375.

Preston and County of Lancaster Royal Infirmary.—H.S. £180.

Preston, Lancs, County Asylum, Whittingham.—Asst. M.O. £572 18s.

Prison Medical Service.—M.O.'s. £300.

Queen Mary's Hospital for the East End, Stratford, E.—H.P. and H.S.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Two Cas. H.S.'s. £100. Also Asst. P.

Rhondda Urban District Council.—Asst. M.O.H. and School M.O. £600.

Rotherham Hospital.—Sen. H.S. £250. Also Jun. H.S. £150.

Royal Ear Hospital.—Anæsth. and H.S.

Royal Eye Hospital, St. George's Circus, S.E.—Jun. H.S. £70.

St. Helens Borough.—M.O.H. £900.

Salford Royal Hospital.—H.S.'s £150. Cas. H.S. £150.

Sheffield, Jessop Hospital for Women.—Registrar. £250.

Sheffield Royal Infirmary.—H.S.'s, H.P.'s, Aural H.S., Asst. M.O., and Asst. Cas. O. £150 each.

Shoreditch Hospital, 201, Hoxton-street.—Third Res. Asst. M.O. £325.

South London Hospital for Women, South Side, Clapham Common, S.W.—Female Asst. S. Also Clin. Assts.

Staffordshire General Infirmary, Stafford.—H.P. £200.

Swansea Hospital.—Locum H.S. £200.

Ventnor, Isle of Wight, Royal National Hospital for Consumption.—Asst. Res. M.O. £300.

West Bromwich and District Hospital.—Res. Asst. H.S. £200.

York County Hospital.—H.S. £200.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Lyneham.

Births, Marriages, and Deaths.

BIRTHS.

WIRGMAN.—On April 16th, at Victoria-grove, W., the wife of C. Wynn Wirgman, M.D., F.R.C.S., of a son.

MARRIAGES.

CAIRN—SARKIES.—On the 13th April, at Paddington, Myles Denton Cairn, M.D., B.Sc.Lond., of Hove, Sussex, to Mavis, younger daughter of Mr. J. Sarkies, late I.C.S., and Mrs. Sarkies.

GRAHAM—BONNER.—On April 6th, at All Saints' Parish Church, Battersea Park, Norman Bell Graham, M.C., M.B., D.P.M., of Belfast, to Fannie Joan, third daughter of the late G. T. Bonner, Esq., and Mrs. Bonner, of Derby.

HENDERSON—ADIE.—On April 9th, at Voe, Shetland, John Robertson Henderson, C.I.E., M.B., C.M., to Eliza Beatrice, daughter of the late Mr. W. J. Adie, of Voe, and Mrs. Adie, Voe House.

DEATHS.

BARNES.—On April 12th, at Portland-square, Carlisle, Henry Barnes, O.B.E., M.D., LL.D., aged 78 years.

BLENKARNE.—On April 10th, William L'Heureux Blenkarne, M.R.C.S., L.S.A., of Ladbroke Lodge, Windsor-road, Worthing, aged 74 years.

MEEK.—On April 17th, at Cynlas, King's-road, Colwyn Bay, William Ombler Meek, M.B., C.M. Edin., in his 78th year.

THELWALL.—On April 17th, at Presteigne, Radnorshire, Llewellyn Thelwall, L.R.C.S., L.R.C.P., aged 66 years.

WRIGHT.—On April 2nd, suddenly, Joseph Farrall Wright, M.R.C.S., L.R.C.P., of 46, Derby-street, Bolton.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, April 25th.

SPECIAL GENERAL MEETING OF FELLOWS: at 5 P.M.

MEETINGS OF SECTIONS.

Monday, April 25th.

SECTION OF ODONTOLOGY: at 8 P.M.
Paper: Mr. G. G. Campion and Mr. John Millard: Some Notes on the Growth of the Face.

Tuesday, April 26th.

SECTION OF MEDICINE.
CLINICAL MEETING at St. Bartholomew's Hospital. Tea at 4 P.M.
Cases: The following will be shown by—
Dr. George Graham: Treatment of Diabetes.
Dr. A. E. Gow: *Intravenous Protein Therapy.*
Dr. Drysdale: Splenectomy in Acholuric Jaundice.
Dr. F. R. Fraser: Digitalis Treatment by the Rapid Method.
Other cases will be shown by Members of the Hospital Staff

Thursday, April 28th.

SECTION OF UROLOGY.
At 3.30 P.M., at St. Bartholomew's Hospital:
Operations will be performed by Mr. W. Girling Ball.
At 8.30 P.M., at 1, Wimpole-street, W.:
Paper:
Mr. R. Thompson: The Treatment of Epispadias and of Extroversion of the Bladder, with Some Remarks relating to their Origin and Anatomy.
Specimens will be shown by 8.15 P.M.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.
MONDAY, April 25th.—8 P.M., Cantor Lecture (III.):—Dr. S. J. Lewis: Recent Applications of the Spectroscope and the Spectrophotometer to Science and Industry.

TUBERCULOSIS SOCIETY OF GREAT BRITAIN AND IRELAND, at Margaret-street Hospital, Margaret-street, Oxford-street, W.
MONDAY, April 25th.—7.15 P.M., *Clinical Meeting. Cases will be* shown by Dr. L. Burrell and Mr. P. Franklin. Paper:—Mr. Franklin: Tuberculosis Laryngitis, with Demonstration of Cases.

ILLUMINATING ENGINEERING SOCIETY, at the Royal Society of Arts, *John-street, Adelphi, W.C.*
TUESDAY, April 26th.—8 P.M., Discussion on Ship-lighting, in Relation to Comfort, Safety, and Efficiency, to be opened by Mr. W. J. Jones.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.
Museum Demonstrations in the Theatre of the College for Advanced Students and Medical Practitioners:—
MONDAY, April 25th.—5 P.M., Prof. Shattock: Osteoma.
FRIDAY.—5 P.M., Prof. Keith: Peritoneal Adhesions and Intestinal Stasis.

WEST LONDON POST-GRADUATE COLLEGE, *West London* Hospital, Hammersmith, W.
MONDAY, April 25th.—2 P.M., Dr. S. Pinchin: Medical Out-patients. Dr. Simson: Diseases of Women. Dr. Morton: *X Ray Department.* 2.30 P.M., Mr. Baldwin: *Visit to Surgical* Wards.
TUESDAY.—10 A.M., Dr. McDougal: Electrical Department. 2 P.M., Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. Mr. T. *Gray: Surgical Out-patients.* 2.30 P.M., Mr. Addison: Visit to Surgical Wards.
WEDNESDAY.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 2 P.M., Mr. D. Armour: Visit to Surgical Wards. Mr. Sinclair: *Surgical Out-patients.* Mr. Gibb: Eye Department.
THURSDAY.—2 P.M., Mr. Baldwin: Orthopædic Department. Mr. B. Harman: Eye Department. Mr. D. Armour: Operations. 2.30 P.M., Dr. A. Saunders: Visit to Medical Wards.
FRIDAY.—10 A.M., Mr. D. Buxton: Dental Department. 2 P.M., Dr. Burnford: Medical Out-patients. Dr. Pernet: Skin Department. 2.30 P.M., Dr. Pritchard: Visit to Surgical Wards.
SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 2 P.M., Dr. Owen: *Medical Out-patients.*
Daily:—10 A.M. Ward Visits. 2 P.M., In-patient, Out-patient Clinics and Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Special Intensive Course.
Daily:—10.30 A.M. and 11.45 A.M., Demonstration on *Clinical* and Laboratory Methods. 2 P.M. and 3 P.M., Groups of Illustrative Cases. 4.30 P.M., Clinical Lectures (free to medical practitioners). Lecture I.:—Monday, April 25th, Sir William Hale-White: Pleurisy. *Full Syllabus printed in Bulletin* of Fellowship of Medicine.

LONDON LOCK HOSPITAL, Harrow-road, W.
Special Course of Instruction in Venereal Disease.
MONDAY, April 25th.—2.30 P.M., Mr. Thomson: *Mode of Preparing Detoxicated Vaccines for the Treatment of* Gonorrhœa.—5 P.M., Mr. Gibbs: Complications in the Treatment of Syphilis.
TUESDAY.—2.30 P.M., Mr. McDonagh: *Symptoms and Treatment* of Metallic Intoxication. 5 P.M., Mr. Juler: Syphilitic Diseases of the Fundus, Orbit, and Ocular Muscles.
WEDNESDAY.—4.30 P.M., Mr. Joly: Treatment of Chronic Gonorrhœa in the Male.
FRIDAY.—2.30 P.M., the Pathologist: Practical Demonstration of Tests Used in Syphilis. 4 P.M., Mr. Abraham: Late Sequelæ of Gonorrhœa in the Female.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.
THURSDAY, April 28th.—6 P.M., Chesterfield Lecture:—Dr. W. K. Sibley: Lupus Vulgaris and Erythematosus.

INSTITUTE OF PATHOLOGY AND RESEARCH, St. Mary's Hospital, in the Lecture-room of the Bacteriological Department.
A Course of Lectures on Pathological *Research in its Relation to* Medicine, open to all Members of the Profession and Students.
THURSDAY, April 28th.—4.30 P.M., Introductory Lecture:—Sir Almroth E. Wright: Acidosis and Acidæmia, with special reference to Scurvy and Shock.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.
TUESDAY, April 26th.—3 P.M., Lecture II.:—Prof. A. Keith: Darwin's Theory of Man's Origin (in the Light of Present *Day Evidence).*

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
TUESDAY, April 26th.—4.30 P.M., Lecture:—Mr. J. G. Clegg: Iritis and Cyclitis.

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.
Special Course of Lectures in Gynæcology.
WEDNESDAY, April 27th.—11 A.M., *Demonstration Operation.*
THURSDAY.—4.30 P.M., Lecture III.:—Dr. A. C. Magian: Uterine Infections.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. R. E. Apperly, Lond.; Dr. F. M. Allen, Morriston, New *Jersey; Mr. A. Altivant, Lond.;* Air Ministry, Dept. of Civil Aviation, Lond.; Messrs. Allen and Hanburys, Lond.; Messrs. George Allen and Unwin, Lond.

B.—Mr. W. V. Ball, Lond.; Prof. A. E. *Boycott, Radlett;* Mr. J. Barker, Rotherham; Mr. T. G. D. Bonar, Lond.; Mr. L. L. Burton, Dargaville, New Zealand; *Brooklyn Cardiological* Society, Sec. of; Dr. C. W. Barr, Philadelphia; Miss R. M. Barclay, Edinburgh; Mr. L. E. *Barrington-Ward, Lond.; Dr.* R. St. J. Brooks, Lond.; Brighton and Sussex Medico-Chirurgical Society, Sub-Librarian *of;* Mrs. C. *Brereton,* Lond.

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D.—Dr. S. R. Dyer, Lond.; *The Draper and Drapery Times,* Lond., Editor of; Dr. I. J. Davies, Cardiff; *Dr. M.* Davidson, Lond.

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I.—Institute of Hygiene, Lond., Sec. of; Illuminating Engineering Society, *Lond.;* Institute of Physics, Lond.

J.—Dr. H. Jones, Hereford; *Japan Medical World,* Tokyo.

K.—*Dr. C. H.* Kellaway, Oxford; King's College, Lond., Dept. of Theology; Dr. J. R. Kay-Mouat, Clifton; King Edward's Hospital Fund for London.

L.—Mr. D. M. Lindsay, Glasgow; *Dr. J. D. Leigh,* Sunderland; *Dr. B. M. Ladell, Birmingham;* Mr. N. C. Lake, Lond.; Mr. J. E. Lane, Lond.; Dr. H. A. Ledlard, *Carlisle;* London School of Tropical Medicine, Sec. of; London Hospital Medical College, Sec. of; Dr. O. Langmead, *Lond.*

M.—Dr. P. Manson-Bahr, Lond.; Dr. A. D. Milne, Lond.; Medico-Legal Society, Lond.; Massage *and Medical Gymnastics,* Chartered Society of, Lond.; Dr. J. A. Murray, Lond.; Dr. J. W. McLeod, Leeds; Mr. T. H. Morse, *Deal;* Medical Supply Association, Lond., Manager of; Manchester French Hospital.

N.—National Council for the Unmarried Mother and Child, Lond.; National Housing and Town *Planning* Council, *Lond.;* National Baby Week Council, Lond.; National Association for the Prevention of Infant *Mortality,* Lond.; *Lord* Northampton, Lond.

P.—Panel Committee for the County of London, Sec. of; Mr. F. C. *Pybus,* Newcastle-on-Tyne; Dr. A. D. Pithie, Southsea; Dr. J. H. Pelo, Prague

R.—Royal Institution of Great Britain, Lond.; Royal Society, Lond.; Rontgen Society, Lond.; Dr. H. M. Rainsford, Lond.; *Dr. W. C. Rivers, Worsboro'* Dale; Royal Medical Benevolent Fund, Lond.; Royal Society of Medicine, Lond., Librarian of.

S.—*Dr. H.* Spence, *Lond.; Prof.* E. Spearman, Lond.; Messrs. C. J. Sawyer, Lond.; Prof. W. Stirling, Manchester; *School Health News,* New York; Shantung Christian University School of Medicine, Lond., Sec. of; Dr. K. Sibley, Lond.; *Society for the* Propagation of the Gospel in Foreign Parts, Lond., Sec. of; Messrs. Sharland and Co., *Lond.;* Savoy Hotel, Lond., Directors of; Mr. J. Spofforth, Lond.; Dr. H. Stanley-Jones, Netley.

T.—*Dr. R. Thompson,* Lond.; Dr. J. J. Thomson, Middleton-in-Wharfedale.

U.—Under-Secretary *of State for India,* Lond.; Universal Exhibitions, Lond., Organising Sec. *of;* University of Glasgow, *Librarian of.*

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Y.—Dr. J. Young, Lond.

Notes, Short Comments, and Answers to Correspondents.

CONGENITAL WORD-BLINDNESS.[1]

BY J. E. WALLACE WALLIN, PH.D.,
DIRECTOR, ST. LOUIS PSYCHO-EDUCATIONAL CLINIC AND SPECIAL SCHOOLS.

IN articles and books on the intelligence of mentally subnormal school children congenital word-blindness has been largely overlooked as a specific defect or as a possible factor in the pedagogical retardation of the pupils, in spite of the fact that the condition has been recognised as a nosological entity for over 40 years. The concept has remained scarcely more than an abstraction, interesting as a theory but of little practical moment, to those who have studied pedagogically retarded children by measurement of intelligence by the Binet-Simon scale or group intelligence tests. Yet analysis of individual cases shows conclusively that some children fail to advance in school chiefly because, owing to the presence of some degree of word-blindness, they are partially or totally unable to learn to read. They are thus seriously handicapped in all school work requiring mastery of printed pages; and many word-blind children, normal or merely backward in intelligence, have been diagnosed as feeble-minded and assigned to special classes for mental defectives. Illustrative cases in point have already been cited,[2] and many more could easily be added from the writer's experience. In this paper I propose to quote from an analysis made of some of the data gathered in 95 consecutive cases from St. Louis examinees whose reading disability has been attributed to visual aphasia or dyslexia.

Definition of Word-blindness.

But to explain what is meant by word-blindness—the name given by Kussmaul, who first recognised the condition in 1877,[3] does not refer to the inability to see printed or written characters, but to the inability to understand or interpret them. It is a form of asymboly which affects the imaging, remembering, and interpretation, but not the perception, of printed symbols. Word-blindness is only an instance of "mind-blindness" or "psychical blindness." In the latter condition all visual imagery is obliterated, so that no visual images or memories of any kind can be interpreted. Word-blindness may affect only letters or Arabic numerals, or certain groups of letters or figures, or certain syllables, or whole words or certain groups of words, or certain languages, but not others, or musical notes (note blindness or sensory amusia), or there may be various combinations of these symptoms; it is always accompanied by agraphia,[4] and possibly by auditory aphasia (inability to understand spoken language, attributed to a lesion in the first temporo-sphenoidal gyrus).[5] Intermittent cases have been recorded.

Lesions Connected with Word-blindness.

In the case of acquired word-blindness focal lesions have been discovered in the secondary visual area, in the angular gyrus and in the supra-marginal gyrus, in the left parietal lobe of right-handed persons. If these areas are seriously affected there is complete word-blindness. It is also believed that acquired word-blindness may result from destruction of the fibres leading from both sides of the centre of visual perception[6] (the "primary visual centre" in the posterior part of the occipital lobe) to the angular gyrus. It is assumed that lesions of congenital or hereditary origin, or lesions due to birth trauma or to injuries in early life, or an arrest of development which affect the same cerebral areas, will account for congenital word-blindness; this fact was first recognised by W. Pringle Morgan. The congenitally word-blind child cannot learn to read, or learns to read only with the greatest difficulty. A considerable difference has also been observed in the character and severity of these cases, which has led to the supposition that the more severe degrees are due to lesions or imperfections in the angular gyrus, and the lighter degrees to partial interruptions in the connecting fibres between the primary (perception) and secondary (memory) visual centres.

I shall apply the name visual aphasia to the more severe degrees and the name dyslexia[7] to the lighter degrees, employing word-blindness as the generic term.

Diagnosis.

There is no pathognomonic symptomatology of word-blindness. A differential diagnosis cannot be safely arrived at until visual defects, auditory defects, idiocy, imbecility, and possibly other as yet unrecognised conditions have been ruled out, and until the child has been given every reasonable opportunity to learn to read script and print, and has tried to do so, under the guidance of a skilled teacher. If such a child is able to name designated objects or pictures of objects, and to spell the names orally (especially short words), but is unable to pick out or recognise the corresponding names when shown in print or script, word-blindness is presumably present.

Average Age, Intelligence, &c.

The average chronological age of this group of word-blind children was 11·07, the average intelligence age 8·85 (based on the 1911 scale for 31 cases and the Stanford scale for 64), the average intelligence retardation 2·2 years, and the average intelligence quotient 80·3.

The average number of years spent in school at the time of the examination was 4·4 (counting ten months to the year), based on 88 pupils whose attendance records were available. The average grade in which the pupils were reported as doing "successful work" was 1·9, based on the available records of 44 pupils. Unfortunately, the grade in which the pupils were able to do successful work in the different branches was reported only in a limited number of cases. In reading the average successful grade was 1·8 (for 14 pupils), in spelling 2·4 (for 8 pupils), and in arithmetic 2·9 (for the same pupils as reported in reading). Reading, according to the school record, was their poorest subject. This is also shown by the reading test given in the clinic. The average time taken to read the Binet selection (54 words) and the average number of memory units reproduced for the word-blind subject, all the subjects examined in the Pittsburgh and St. Louis clinics up to August, 1917 (which we shall refer to as the subnormal group), and the epileptic children examined in New Jersey years ago,[8] who classified in the intelligence ages as indicated, are given in the following table:—

A.—Time in Seconds to Read Binet Selection. *B.—Number of Memories.*

—	Intelligence ages—								Intelligence ages—			
	VIII.		IX.		X.		XI.					
	No*	Sec.	No*	Sec.	No*	Sec.	No*	Sec.	VIII.	IX.	X.	XI.
Subnormal†	94	107·9	115	72·7	154	51·9	89	30·0	5·4	7·6	8·2	9·6
Epileptics...	11	145·1	9	85·7	22	65·3	9	31·4	3·5	4·7	6·8	6·1
Word-blind	5	162·8	5	141·2	6	130·6	2	87·0	7·0	7·8	7·1	14·0

* Number of subjects included. † The word-blind cases examined during the same period were not eliminated from this group.

It should be explained that only those subjects are included who were able to read the entire selection through, and many of them secured considerable aid from the experimenter on difficult words. All of the word-blind cases (and many of the epileptics) made numerous mistakes and were helped considerably. Even thus only 18 dyslexia cases got through the selection. Data were compiled from the dyslexia pupils who read part of the selection with aid, and the dyslexia and visual aphasia pupils who attempted to read the easiest material used in the first grade first quarter in the St. Louis schools,[9] but these results will not be referred to here. The reading selection used was that given on p. 130 of our Experimental Studies of Mental Defectives, except that the corresponding Stanford passage was used with the word-blind cases examined since September, 1917. The selections are of equal length, and probably about equally difficult.

It will be observed that the time required to read the selection by the word-blind cases is considerably longer in every intelligence age than the time required by the subjects in either of the other two groups. In age 10 it is two and a half times, and in age 11 almost three times as long as the time required by the subnormals. On the other hand, the word-blind subjects, in spite of their slowness in reading, reproduced considerably more memory units than the epileptics in every intelligence age, while they reproduced considerably more than the subnormals in age 11, slightly more in ages 8 and 9, and slightly less in age 10 only. These results are consistent with the theory that word-blindness is due to defective visual word imagery and the interpretation of such imagery and not to defective apprehension or retention of the ideas secured from printed words, provided they can be secured at all.

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[1] Presented, in part, with analyses of cases, before Section L, Education, of the American Association for the Advancement of Science, Dec. 30th, 1919.

[2] The Problems Concerning a Psycho-educational Clinic in a Large Municipality, Mental Hygiene, 1920, 103ff. See also references to the writer's contributions in the bibliography at the end of this article.

[3] William Broadbent had five years previously reported the condition as complicated by speech disturbances.

[4] Difficulty of writing. In the usual form monosyllables can be recognised, but longer words do not resemble the intended words. When letters cannot be formed, which is rare, the subject makes meaningless strokes, sometimes resembling stenographic or runic characters.

[5] Among the thousands of children examined only one was classified as a case of auditory aphasia; the case is described in the last reference at the end of this article. I agree with Kerr that this type of defective word imagery is exceedingly rare.

[6] From the right and left calcarine fissures.

[7] Word-amblyopia has been similarly employed by Claiborne.

[8] We have not included records of adults. See Experimental Studies of Mental Defectives, 1912, pp. 70f and 80f.

[9] Such lines as "I can run," "I am a boy," "I can play ball," "She is my little baby girl."

Absence of Visual and Auditory Defects.

The vast majority of the 85 pupils in this group, who were given a physical examination by the regular school inspectors of hygiene, did not have any significant visual or auditory defects. There were 4 cases of tinnitus and 1 of otitis media. No impairment of auditory acuity was noted. There were 2 cases of myopia, 1 of hypermetropia, 4 of astigmatism, 3 of strabismus, and 4 of conjunctivitis. We are satisfied that the word-blindness cannot be traced to physical defects in the visual or auditory sense organs in the majority, if indeed in any, of the subjects considered in this group. The defect is central. Other incidental abnormalities noted in the group include the following: chorea, 1 boy and 1 girl; infantilism, 1 boy; speech defectiveness, 7 boys and 1 girl; psychopathy, 2 boys; neurotic make-up, 3 boys and 2 girls; and conduct difficulties, 8 boys and 1 girl. It is not believed that these anomalies have any direct connexion with word-blindness.

Incidence of Word-blindness.

The incidence of word-blindness (4·48 per cent.) among the 2116 school cases examined in this series is greater than the combined incidence of epileptics, psychopaths, mongols, and cretins.[10] The large majority were examined primarily because they were thought to be mentally defective, sometimes merely because of an inability to learn to read; some of these cases proved on examination to be intellectually normal or merely slightly retarded, and others were referred primarily because of their difficulty in reading, although they were known to have had good intelligence; but we believe that the majority of pupils of fair or good intelligence who were subject to specific disability in reading were not referred, because of the necessity of restricting examination to those most defective in intelligence. For these reasons we do not venture to estimate the ratio of word-blind cases among all the St. Louis elementary school children. No accurate figures are available from other school systems. C. J. Thomas has estimated that there is one word-blind case for every 2000 boys in the London schools, but Warburg noted 14 word-blind cases among 2000 ordinary pupils in Cologne, and seven among special school children. We are convinced that if the dyslexia cases are included, the incidence of congenital word-blindness is much greater than has been thought to be the case. Of the cases we have studied, the milder form, dyslexia (3·6 per cent. of all examined, or 82·1 per cent. of the word-blind), is about five times as prevalent as the more serious form, visual aphasia (0·7 per cent. of all examined, or 17·8 per cent. of the word-blind).

Sex Incidence.

Word-blindness is apparently to some extent a sex-limited disability. In this group of cases it was about four times as prevalent among the boys as among the girls, the ratio being 5·71 per cent. for the boys and 1·47 per cent. for the girls. The writer believes he has collected the largest group of congenital word-blind cases ever presented in the literature. According to Sydney Stephenson, only 14 cases had been reported by six writers up to 1904. J. Hinshelwood, who has contributed most to our knowledge of the condition, has described a dozen cases in his latest treatise. He met with 31 congenital and acquired cases in 15 years.

The facts are not available on which to frame even a plausible explanation of the sex difference. It is suggested that visual aphasia is more prevalent than auditory aphasia, because the reading and understanding of written words was acquired much later in the history of the race than the hearing and interpretation of spoken words. But this analogical fact will not explain the sex difference found in word-blindness, because, historically, boys have probably been taught reading longer than girls. But speech defects are more frequent among boys than among girls; the difficulty in word-blindness may be traceable to the difficulty of translating a visual word or letter symbol into its appropriate auditory symbol. Although the source of the difficulty has been considered to be a defect in visual word imagery, it is possible that the seat of the trouble may be in the connexions between the centres for images for spoken words and for images for printed words. This may be indicated as an important question for investigation. Whatever the seat of the defect, the result is that the subject finds it difficult to pronounce or read the printed words. In those who cannot read words but who can copy them from the printed page the simplest explanation is to assume that the mechanism for translating the visual symbols into spoken symbols is disturbed, while the mechanism for translating the visual signs into graphic symbols is intact. There are doubtless word-blind subjects in whose case the difficulty of reading is complicated by motor aphasia, or a lesion in Broca's convolution.

Normal Intelligence in the Word-Blind.

As already pointed out, our word-blind cases as a group did not present any significant visual or auditory sense defects. Measured by the Binet "ball and field" design, and immediate memory span tests, it was determined that they were superior to the subnormal group. The tests revealed no peculiar defects in auditory or visual imagery, apart from possible defects in visual word imagery.

It had been held that the aphasias represent merely one of the intellectual disorders involving language (Adolf Meyer), and that they are accompanied by a lowering of the level of general intelligence (Wundt, Pierre Marie). On the other hand, many children subject to word-blindness have been reported to be normal in intelligence and even precocious (Hinshelwood). In practically all of such reported cases, the judgment as to the normality of the child's intelligence was based on his school report or on general impressions of intelligence, and not on standardised tests. In point of fact, our word-blind cases vary from an intelligence quotient of 54 to 104; 12 per cent. were diagnosed as normal or almost normal (retarded) in intelligence, and 85 per cent. as subnormal (the diagnosis being deferred in 2·1 per cent. of the cases). Only 5·2 per cent. were classed as feeble-minded, none of these grading lower than morons or potential morons; almost 36 per cent. were classed as backward and almost 41 per cent. as border-line. The only difference of any consequence between the visual aphasia and dyslexia cases is the greater proportion of normals among the former, which may, of course, be merely an accidental difference in this group.

Although at least 85 per cent. of our cases were subnormal in general intelligence, we are not justified in concluding that the percentage of subnormality would be equally high in an unselected group of word-blind children. Had we selected all the pupils in the schools who were conspicuously deficient in reading it is possible that the ratio of those having normal intelligence might have been higher. At any rate, the statement that there is a lowering of the general intelligence in word-blind cases cannot be sweepingly applied to all cases.

Attempted Differentiation of "Pure" Word-Blindness.

Hinshelwood has drawn a distinction between word-blindness, dyslexia, and alexia. Word-blindness represents a grave degree and dyslexia a slight degree of reading disability, due to a focal lesion in the centres mentioned above in a brain which is normal or undamaged in other areas, while alexia is applied to the condition in mental defectives who are suffering from a generalised brain defect. He holds that the symptoms of word-blindness or dyslexia must be "pure," by which he means that there must be no other accompanying symptoms of brain defects. We find no evidence whatever for any such distinction between word-blindness and dylexia on the one hand and alexia on the other hand. We have discovered no qualitative difference between word-blindness in a moron, in a borderliner, and in a normal. The differences found in word-blindness are, like those of general intelligence, differences in degree and not in kind. Intelligence varies from profound idiocy to genius; there are many grades between these extremes, but no sharp lines of demarcation can be discovered between the grades. Similarly, word-blindness varies continuously from a state of profound visual aphasia to a slight degree of dyslexia. It may eventually be possible to distinguish more groups of this disability than has yet been done, but there will be no gaps between the groups; the nature of the fundamental reading disability will probably be the same whether or not the symptoms are "pure"; the differences will be quantitative and not qualitative. It would, of course, be meaningless to speak of an imbecile as subject to word-blindness, because the highest grade of imbecile merely approaches the bottom of the curve of capacity in reading; but our records clearly show that the highest grades of the feeble-minded (the so-called low-grade morons) are subject to the same kind of reading disability as pupils who are merely backward or normal in intelligence. Like the latter, they do distinctly poorer work in reading (and often in spelling as well) than in many other school subjects.[11] But no qualitative difference has been discovered between the reading disability of the word-blind mental defective and the word-blind backward or normal child.

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[10] See "The Problems Confronting a Psycho-Educational Clinic in a Large Municipality," Mental Hygiene, January, 1920.

[11] For illustrative cases other than those given in this article the writer's references to my contributions in the bibliography

A Neurological Parallel.

On the neurological side parallel differences will probably be found. Different brains will show many degrees of soundness, perfection, or defectiveness involving different areas. Various degrees of fineness in structural organisation probably exist in many areas of the brain in most persons. The existence of multiple imperfections would complicate and aggravate the word-blindness, but it would not produce a different kind of word-blindness. Reading disability is due to word-blindness when there is a defect in the secondary visual centre concerned with the imagery of words or in the connecting fibres between the secondary and primary visual centres, whether or not the symptoms are "pure."

Conclusion.

To conclude with a practical point, word-blind children who are not feeble-minded should be assigned to special reading disability classes, where various methods and devices of teaching reading may be tried. We shall find that some children will be reached by some methods, others by other methods, but when it has been shown that a child *cannot be taught to read by the intensive application of* various methods, teaching should be given orally. In fact, one of the advantages of assigning a word-blind child to a reading disability class is that he may secure from the teacher's lips the instruction which fits his level of intelligence and which he cannot secure through the printed page because of his inability to read. The usual practice is to assign word-blind pupils to ungraded classes or special schools or to place them in the first grade. But in such classes the teachers must ordinarily teach so many subjects that they cannot specialise on reading. Moreover, even if large use is made of the oral method of presentation, the instruction may not meet the child's intellectual needs. The oral instruction in a first grade or in a school for mental defectives would not fit the intellectual level of a word-blind but intellectually normal child of 10. His reading and intellectual needs can only be met in a properly conducted reading-disability class. We have frequently urged the establishment of an experimental class of this type in St. Louis, but the financial difficulties confronting the schools have prevented any action being taken in the matter.

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EUGENICS v. CIVILISATION.

ON April 12th, under the above title, Mr. F. C. S. Schiller, D.Sc., delivered a lecture at the rooms of the Royal Society, on behalf of the Eugenics Society. Eugenics, he said, as a science was a study of the conditions of improvement of the human race; but improvement *meant making better*, and that implied a standard of good. Civilisation, which was an achievement of man and not a congenital quality like, for instance, sex, also implied a standard of good. A baby born of civilised parents had to acquire civilisation: it had to be impressed upon the child by training, and if subsequently the individual liked civilisation it was an acquired taste. The transmission of civilisation in the social order was effected in very complex ways, and were the mechanism of this transmission to be destroyed or seriously damaged civilisation would disappear in one generation, as would probably be the case in Russia. It was often regarded as a fatal objection to eugenics that what would be the best type of man was not known, and therefore could not be produced. Though there was truth in this objection, a knowledge of what was good was equally involved in the notions of progress and of civilisation. The eugenist at least knew enough to deplore the suicidal organisation of our present civilisation, which was arranged so as to eliminate not only the qualities which were good but even those thought to be good, and so was ruining the human race. The reason was that in all civilised societies the birth-rate was relatively high in the lower social strata, and so low in the higher that it had to be recruited from the lower. As social promotion was everywhere the reward of merit—of the qualities a society valued and regarded as good—and as social structure was now less rigid than in the past, merit rose more easily than formerly. This promotion, however, meant inclusion in a class in which the numbers were halved in each generation. This recognition of merit was also biologically its capital punishment, and civilisation was actually extirpating the very qualities it considered valuable. The organisation of society at the present moment must be pronounced apallingly dysgenic, it had become an instrument of deterioration of the human race, and if progress was still being made it was being made in the mechanism by which the world was controlled, which was quite independent of what was good. This dysgenic effect of civilisation was no new thing, though it was now probably proceeding faster than formerly; it explained why aristocracies always died out, why the physical development of the human race had been arrested, and why there was no reason to think that modern races were mentally superior to the ancients. Militarism tended to eliminate itself. All through history the fighting races had fought themselves to extinction and all through history the meek had inherited the earth. There had been going on in every community an internal selection which might profoundly change the ideas and type of the people.

Retrogressive Brain Development in Man.

The bodily development of man had long ago come to a standstill. There had been no improvement in the human type since the beginning of history, nor was there reason to think that man was intrinsically more intelligent. Brain development had apparently been retrogressive for a long time, and it was a mere assumption that we use smaller and more compact brains more efficiently. The only power which man had developed was a resistance to microbic disease. It was a mistake to think that intelligence was not an important factor in savage life. The savage could not afford to be a fool or to breed fools, and in the ordinary affairs of life he was far more capable of fending for himself than those who disparaged him. Nor was he more helpless in the City of London than a bank clerk on a primitive island, or a professor in a jungle. In savage life the fool and idiot could not grow up to leave behind an adult brain. The human stock must at one time have been progressive, or else it would never have developed out of the ape. It was still progressive wherever social conditions conduced to a preferential survival of the better portions of the stock rather than of the worse. This occurred among savages subjected to severe natural selection, so that weaklings could not be preserved. This also occurred among barbarians where the well born were more prolific than the lower classes. It could occur in civilised societies if they recognised the error of their ways and the need of thorough-going eugenic reform. The recognition of the race-deteriorating tendency of civilisation was a new and important fact, but once recognised it could be counteracted by a variety of expedients, which, though difficult, were not impracticable. As for the theoretical difficulty that we did not know precisely what were the good types to be preferred, it was essentially nugatory. In a general way the good could be discriminated from the bad, and by cautious experiments the bad could be further eliminated.

PUBLIC HEALTH OF ST. VINCENT.

THE Registrar-General's estimate of the population on Dec. 31st, 1919, was 53,210. The birth-rate for the year was 24·8, and the death-rate 20·67 per 1000. Illegitimate births were 68·1 per cent. of the total births. The general health continued to be good throughout the year. *Rain fell on 203 days in 1919, the greatest fall* for one day being 3·61 inches on August 23rd.

"THIS CONCERNS *YOU.*"

THIS is the title of a pamphlet by Dr. S. G. Moore, medical officer of health for Huddersfield (London: The St. Catherine Press. Pp. 16. 2*d.*), who states in a sub-title that it was written for the Honourable Nathan Straus, of New York. It is a warning of the "danger which lurks in raw milk," and a plea for the universal adoption of pasteurisation. Detailed directions are given for home pasteurisation, but though the mother of an artificially-fed infant is advised not to pour the milk into another vessel, but to let the child feed from the bottle in which it comes, no illustration is given of a type of nipple which would convert the milk bottles illustrated into suitable feeding bottles. Moreover, the section of advice to mothers is self-contradictory, since in the second paragraph the mother is enjoined to feed the child every three hours during the first month, whereas further down on the same page the appropriate food for the first month is said to be eight 3 oz. bottles a day, one every two and a half hours. However, any effort to bring home to the public the need for pure milk, whether on antiseptic or on aseptic principles, should be commended, and Dr. Moore defines what he means by pasteurisation in the March number of *National Health.*

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A Report
UPON 25 CASES OF
ACTINOMYCOSIS,
WITH ESPECIAL REFERENCE TO VACCINE THERAPY.
A DISCUSSION OF SOME PROBLEMS CONNECTED WITH THE DISEASE.

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IN a previous communication[1] I have described the mycelial and other micro-organisms met with in investigating a series of cases of human actinomycosis, most of which were under treatment at the Inoculation Department, St. Mary's Hospital, during the years 1911–15. A clinical account of several of the cases has already been published by Mr. V. Z. Cope,[2] who originally sent them to the Inoculation Department and afterwards collaborated with Sir Almroth Wright in the direction of their treatment. (Mr. Cope's paper also gives a valuable clinical account of the actinomycotic infections in general.)

In the present communication it is proposed to record what was learned from this series of cases in respect of the diagnosis, the clinical course, and particularly the treatment of the disease; and subsequently to discuss two questions which arise—viz., What is the source of these infections? and What restrictions is it advisable to put upon the use of the term actinomycosis?

Definition.—The cases here dealt with all presented granulomatous lesions from which the so-called "sulphur granules," visible to the naked eye, were forthcoming, and these granules were in every case composed of a feltwork of Gram-staining mycelium. The importance of strictly limiting the use of the terms actinomycosis (and paractinomycosis) to cases of this kind will be discussed later.

Diagnosis.—We have at present no reliable method of detecting an actinomycotic infection in its early stages—i.e., prior to the occurrence of suppuration. The slowly progressive, comparatively painless, and indurated lesion may suggest the diagnosis, but one is at a loss to confirm it by blood examinations, for opsonic estimations will often fail to distinguish between a tuberculous and an actinomycotic infection (the opsonic power to the tubercle bacillus is frequently high in actinomycosis), and agglutination tests with actinomyces, although they will usually give positive results in advanced cases, are apt to be negative in the milder cases. Further observations on this latter point are required.

Of the 25 patients now under review almost all came to the hospital with lesions actually discharging or with an abscess ready to be evacuated. In such circumstances the diagnosis need never be long in doubt. All that is then required is to detect the "sulphur granules" in the pus and to determine their mycelial structure. A little experience of these granules enables one very readily to recognise them, either as the pus is evacuated or lying free on the granulations at the mouth of a sinus.

A word of warning may not be out of place here. Cases of actinomycosis are not infrequently missed, I think, because the surgeon does not himself search for granules in the fresh pus, but simply directs a specimen to be sent to the laboratory. Pending its examination the pus clots and the granules, being caught up in the coagulum, become more difficult to detect. Moreover, the pathologist, often not forewarned that the nature of the case suggests the possibility of actinomycotic infection, does not search for a granule, but takes a loopful of pus at random for film preparations and the inoculation of culture medium. Unless he has the good fortune (a somewhat rare occurrence) to include a commencing colony of actinomyces in such a random sample of pus he is very unlikely to find any filaments of that organism, for these, by reason of their habit of growth in conglomerate masses, do not become disseminated through the pus.

The following simple procedure may be recommended for the detection of granules whenever their presence is in doubt. A few drops of pus are collected in a test-tube half full of water and fitted with a cork. On *vigorously* shaking the tube all the elements of ordinary pus will be emulsified or at least reduced to fine shreds; if, however, actinomycotic granules are present they will not be broken up, and on holding the tube up to a light will be easily detected by virtue of their opacity as cream-coloured spherical bodies of about $\frac{1}{2}$ to 1 mm. diameter, which quickly sink to the bottom of the fluid.

With the finding of granules a provisional diagnosis of actinomycosis can be made. For confirmation of the diagnosis it remains to verify the presumption that these granules are composed of Gram-staining mycelial elements, and, whenever possible, to identify the organism by isolating it in pure culture. For these purposes the granules are transferred as required by means of a capillary pipette to the surface of a microscopic slide. Lightly crushed under a cover-glass and examined unstained with a low power objective, the characteristic "ray" formation of clubs will be seen between an outer shell of massed leucocytes and the inner core of the granule. The "rays" form, in fact, the whole periphery of this core. On crushing further and staining the films obtained by sliding the cover-slip off the slide the core itself is seen to be composed of a tangle of the filaments of actinomyces. These filaments retain Gram's stain, but somewhat irregularly. The further procedures necessary for obtaining cultures—and the characters by which a given organism may be identified with *Actinomyces bovis*—are described in the author's earlier paper.[1]

THE INCIDENCE OF THE DISEASE AND ITS ULTIMATE ISSUE.

There is reason to think that actinomycosis occurs more frequently in this country than is generally supposed. In the cases which end fatally a correct bacteriological diagnosis is often made only when the disease is far advanced, or post-mortem, and it therefore appears probable that a large number of the less severe cases escape recognition altogether—notably those cases in which the infection is situated about the lower jaw, and possibly also, as Mr. Slesinger[3] has suggested, some of those in which the vermiform appendix is affected. In Table I. the patients observed by the author are divided up according to the site of their infection; the incidence in the two sexes is also shown, and the ultimate issue of the disease.

TABLE I.

Site of infection.	No. of cases.	Males.	Females.	Ultimate result.
Face or neck ...	10	7	3	9 recovered completely; 1 died.*
Thorax	8	5	3	7 died; 1 lost sight of.
Abdomen... ...	6	1	5	5 died; 1 recovered.
Dorsum of hand	1	1	—	Recovered completely.
Total	25	14	11	—

* Death was due to cerebral abscess, resulting from direct extension of the disease through the skull.

Table I. confirms the usual experience that (*a*) cervico-facial infections are the most numerous and also the most likely to recover; (*b*) infections of the thorax and abdomen are usually fatal. The latter conclusion should perhaps be stated with some reserve, for the future may show that actinomycotic infections of the vermiform appendix occur much more commonly than has been supposed, and that many such cases are promptly cured by the ordinary operation of appendicectomy. (Slesinger.[4])

Age of the cases.—Seventeen of the 28 cases were young adults, 7 were older subjects (one of them being 70 years of age), and 4 were children between the ages of 10 and 13. I have not known the disease to occur below the age of 9.

Duration of the disease.—The course of these infections was commonly a very slow one. The disease had usually been in progress for several months before the patients came to the hospital for treatment, and although in three or four instances cure was obtained within a few weeks, the larger number of those who recovered were under treatment for a period of months. One case in whom the infection extended widely in the ramus of the mandible was apparently cured after three to four years, but a small focus reappeared in front of the ear and has persisted for a further two years. The fatal cases of thoracic or abdominal infection usually survived from one to two years from the onset of the disease. One abdominal case was terminated abruptly after several weeks in hospital by the development of septic peritonitis.

THE TISSUES AFFECTED BY THE DISEASE.

The outstanding feature of the pathological process in all the cases has been the extension by direct erosion of contiguous tissues—particularly connective tissues. Such extension has usually been accompanied by a deep induration, often quite a "wooden" induration over a considerable area around. Although the opportunity has not occurred to prove it by microscopical examination, one may, I think, surmise that this induration extends far beyond the area actually invaded by the actinomyces, for frequently, when a central abscess cavity has been evacuated, the indurated tissues promptly regained their normal softness. (It may be noted here, in passing, that no one has, so far as I am aware, succeeded in reproducing an actinomycotic lesion which has these two characteristics—progressive erosion of connective tissues and "wooden" induration—in any of the ordinary laboratory animals.)

The process of erosion has not involved the skin except in the immediate neighbourhood of sinus openings. In some cases, however, a considerable area of skin has been undermined by the spread of the disease in the subcutaneous connective tissue. The mucous membranes also seemed to be comparatively immune. It is a remarkable and, as yet, an unexplained fact that in the cervico-facial cases, although the infection presumably occurs from within the mouth or pharynx, the suppurative process almost always develops outwards towards the skin and seldom points in the mouth. None of the ten cervico-facial cases presented any evidence of the disease in the mouth when seen by the author, but three of them gave a history which pointed to its probable commencement in that situation. In one case the tonsil was incised at the first visit to the hospital, in another case a tooth was removed for an alveolar abscess, and in the third "incisions were made both inside and outside the mouth."

The involvement of bone, as judged by ante-mortem observations, has been exceptional rather than usual. Very possibly post-mortem examinations of the fatal thoracic and abdominal cases would have told a different tale. In one case (No. 6 of Mr. Cope's series[2]) the mandible was extensively tunnelled by little canals lined with granulation tissue, and much new bone formation—particularly of the outer lamella—had occurred. The periosteum was involved in a dense, fibrous, almost avascular tumour. This was the only case in which the changes in bone constituted a notable feature. In several other cases bones adjacent to an actinomycotic infection of the soft parts were eroded and sometimes perforated by it in the course of the disease, but in every instance this involvement was apparently limited to a small area. The ribs and sternum, the ileum and the temporal bone were affected in this way.

The remarkable immunity of the lymphatic glands in this disease, which has frequently been noted by other observers, was again evidenced in this series of cases. I do not remember having seen these glands affected in any case during life, and in one abdominal case which was examined post mortem, although the disease had spread widely, the mesenteric glands were quite unaffected.

TREATMENT.

Most of the cases had been treated by potassium iodide and by incisions before coming to the Inoculation Department at St. Mary's Hospital. The iodide had not usually been pushed beyond 30–40 gr. per diem; in one or two instances 60–90 gr. had been given. In these doses the drug had not exercised any appreciable effect upon the disease. Its use was usually discontinued soon after the patients came under observation; in a few instances, however, on the suggestion of the surgeon who was collaborating in the treatment of a patient, the drug was continued and pushed up to 180 gr. or more per diem, but still without effecting any improvement in the patient's condition. It should be acknowledged that the patients so treated were very unfavourable cases.

Upon inquiring into the origin and the general experience of this method of treatment I have failed to find that it has an assured scientific basis, or even a sufficient vindication by results. Introduced empirically by Thomassen[4] in 1885 for actinomycosis of the tongue in cattle, it was later acclaimed by Nocard[5] (1893) as an almost infallible remedy for this condition. When it came to be applied to the treatment of other actinomycotic lesions in cattle the results seem to have been less uniformly good, but I understand that it is still regarded by the veterinarians as a specific remedy.

Investigations undertaken with a view to finding an explanation of its reputed specific action have so far been quite unsuccessful. The organism does not lend itself readily to the demonstration of bactericidal effects, but observations have been made by Harbitz and Grondahl[6] on the growth obtained when potassium iodide was incorporated in various culture media. They concluded that *Actinomyces bovis* was but little affected by the presence of iodide in concentrations of from 0·25 to 2 per cent.

At St. Mary's Hospital we have approached the problem from a different point of view. It occurred to Captain S. R. Douglas that the resolution of syphilitic gummata under treatment with iodide might perhaps depend upon a reduction of the antitryptic power of the blood, and that a similar change might lead to the breaking down and cure of actinomycotic lesions. With this in view my former colleague, Dr. E. Beaton (1911*) made a number of estimations of the antitryptic power of patients' blood before and after administration of iodide. A slight reduction occurred when the drug was given in doses of from 30 to 60 gr. per diem. A much more striking effect on the antitryptic power was observed when iodine dissolved in potassium iodide was added to serum in vitro. One part in 1200 of iodine with 1 in 600 of potassium iodide reduced the antitryptic power by about 65 per cent. when the mixture was incubated for half an hour at 37° C. Half that concentration effected a 20 per cent. reduction. When the same drugs were mixed with trypsin solution in similar concentration its proteolytic power was curtailed to a much smaller degree.

Jobling and Petersen,[7] working with a similar conception in view, but using a different method for the estimation of the antitryptic power, obtained results which confirmed those of Beaton. The blood of patients to whom potassium iodide was being administered, in doses of 110 gr. per diem on the average, showed a very distinct reduction in antitryptic power. These authors consider the question whether, when iodides are administered to syphilitic and tuberculous patients, iodine is set free in any considerable quantity in the necrotic tissues; and they quote the experiments of O. Loeb,[8] which suggest that such is the case. Loeb found that unsoftened lymph glands of syphilitic patients contained 3·3 times, and softened glands 6·2 times as much iodine as the blood of the same patients. In conclusion, Jobling and Petersen express the view that "Iodin neutralises the action of the agents which prevent solution and absorption of necrotic tissue, and at the same time lays bare to the action of the real germicidal agent the infecting organism which previously had been protected by the necrotic tissue." If this view is upheld by further experimental work it might well apply also to the case of actinomycosis and would suggest that good results are to be expected from the administration of iodide in that disease only when necrotic foci require to be broken down. In other circumstances the action of the drug might conceivably be harmful, for *Actinomyces bovis*, like other serosaprophytic microbes, finds a congenial medium in serum whose antitryptic power has been reduced, whereas it is unable to grow in the unaltered serum. It may be noted in this connexion that many observers have reported harmful effects of the use of potassium iodide in tuberculosis.

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* Unpublished researches.

When we turn to the actual results of treatment by potassium iodide we find very conflicting accounts. In 1898 Poncet and Berard[9] analysed the records of 105 cases—25 of them severe, 80 of them less severe and considered as favourable to the treatment. These authors recognise the difficulty of apportioning the credit due to the iodide when its administration is only an adjuvant to surgical measures, which manifestly exercise a great effect upon the disease. Their summing up was as follows: "Dans les deux tiers des cas d'actinomycose cervico-faciale ancienne, infectée et ouverte, le résultat du traitement ioduré a semblé nul. Dans les trois quarts des cas d'actinomycose récente, fermée et peu infectée, la guérison a été obtenue par l'adjonction de l'iodure au traitement chirurgical, dans un quart par le traitement ioduré seul. Ces derniers résultats ne sont pas sensiblément supérieurs a ceux que l'on a observés après le traitement chirurgical seul ou associé au traitement général. *L'iodure de potassium ne saurait donc être condidéré comme le médicament specifique de l'actinomycose.* ...... Dans les formes viscérales profondes, difficilement accessibles au chirurgien, l'iodure n'est susceptible d'entraver l'évolution du parasite que tout à fait a la période de début; mais, à cette période, souvent, le diagnostic reste très hésitant. Plus tard, les infections surajoutées, rendent illusoires l'emploi de l'iodure, qui n'agit rarement, à doses massives et prolongées, et encore faut-il, la plupart du temps, qu'une intervention chirurgicale palliative puisse lui venir en aide."

This judgment has been substantially borne out by later experience. It is now generally recognised that the administration of iodide, even in very large doses, has little or no effect upon the more severe infections; while the multiplication of other remedies—e.g., copper salts, methylene blue, X rays, salvarsan, radium, &c.—which have recently been advocated even for the milder infections, shows that the trend of opinion is increasingly unfavourable to the efficacy of the iodide treatment. I would suggest that the latter, if employed at all, should be limited to cases which present large unsoftened foci, and that it should be discontinued as soon as these have broken down.

Speaking generally, the treatment of the patients while under the author's care was (*a*) by surgical measures, and (*b*) by the inoculation of vaccines. The surgical measures taken were usually confined to incisions for the evacuation of pus and curetting. In connexion with each of these procedures something was learned from our experience. We learned, in the first place, that a single incision will seldom suffice to maintain satisfactory drainage of an actinomycotic focus. It is characteristic of this infection in man that it spreads by direct extension in contiguous tissues—particularly in the connective tissues—and leads to the formation of small abscess cavities here and there along the line of spread. To check the invasion one must be constantly on the watch for fresh areas of induration and softening, and must resort early to incision of these as often as they appear. My experience leads me to conclude that this policy of early and, if necessary, repeated incisions, is of paramount importance in the treatment of the disease. I think one may go so far as to say that in every focus that is satisfactorily drained the infection by actinomyces will be promptly checked, for this organism, although it can propagate in the fluid of an abscess cavity (which has lost much of its antitryptic power) cannot do so in the unaltered lymph.

This being the case, I would suggest that the principles of treatment advocated by Sir Almroth Wright[10] in connexion with wound infections should be employed here, the incisions being followed up by the intermittent application (every 2-3 hours) of hypertonic salt solution (3–5 per cent.) in order to promote a free flow of lymph through, and out of, the infected tissues. This treatment should be discontinued after a few days in order to facilitate healing.

What we learned in connexion with curetting was that this operation should not be performed with a sharp instrument—which opens up uninfected tissues—but with a dry gauze swab. There is in actinomycosis a fairly sharp line of demarcation between the uninfected and the infected tissues, and since the latter, in process of erosion, are very friable, it is usually possible to remove them almost in toto on a swab, leaving the wound with so little infection that it can easily be dealt with by the leucocytes. In one of the later cases of the series here reported an abscess nearly as large as a closed fist was treated in this way after incision and forthwith sewn up. It healed by first intention in a week.

I would therefore emphasise two points in connexion with the surgery of the disease: first, the necessity of maintaining efficient drainage throughout the course of the illness; and secondly, dry curetting by means of a gauze swab. The question, of course, arises as to how far these measures are applicable to abdominal and thoracic cases, when, as is frequently the case, the diagnosis has been made only after the infection has extended considerably beyond the original focus. It seems to the writer that, by the aid of stereoscopic skiagrams taken after the injection under pressure of a bismuth suspension, one might be able in such cases to trace the chief ramifications of the infective process, and thereafter proceed to deal with each of these by curetting and "salt suction" as above described. An extensive operation of this kind would seem to be justifiable in view of the very high mortality attaching to these cases.

TREATMENT BY VACCINES.

Several considerations led us to hope for success in the treatment of these infections by active immunisation. In the first place, actinomycosis is a disease which progresses but slowly, and does not, as a rule, seriously injure the patient's general health for a considerable period; there is, therefore, if the diagnosis is made fairly early, abundant opportunity for a satisfactory response to the inoculations of vaccine. Again, the disease shows a tendency to spontaneous cure, given a satisfactory outflow for collections of pus. This circumstance presumably stands in relation to the fact that the organism is unable to grow in the unaltered blood fluids and is readily ingested by the leucocytes. It is probable, therefore, that even a small response to the inoculation of vaccines would suffice to turn the scale against the progress of the infection.

Up to the present the writer has treated some 23 cases by this method, always in association with simple surgical measures, as outlined above. In all cases a vaccine prepared from strains of *Actinomyces bovis* of human origin was employed, and most of them received in addition other vaccines corresponding to their respective secondary infections. Autogenous actinomyces vaccines were used for 11 cases, most of the remainder being treated by the polyvalent stock vaccine prepared at St. Mary's Hospital and issued by Messrs. Parke, Davis and Co. Standardisation of the vaccines was carried out by making approximate counts of their mycelial fragments after the growths had been broken up by forcible shaking. Since this breaking up, however, is at best very imperfect, there is much to be said in favour of abandoning the method of enumeration by counting and replacing it by the procedure employed for the issue of tuberculin (bacillary emulsion)—viz., grinding an ascertained weight of dried culture. The writer has adopted this latter practice since the war. A considerable growth of the organism was obtained by inoculating a pure culture into one or more Erlenmeyer flasks of glucose broth under oil; when fully grown the supernatant fluid of these flasks was decanted, the deposit of actinomyces was collected, washed, and then dried over sulphuric acid in vacuo, the dry flakes being finally ground in a Hayden mortar and emulsified in saline. That actinomyces vaccines so prepared are capable of acting as satisfactory antigens was demonstrated by the inoculation of rabbits, which responded in every case by a development of agglutinins.

Some Particulars with Regard to the Treatm Vaccines.

An attempt was first made to control t actinomyces vaccine by measurements of opsonic power, using for this purpose a organism which had acquired a largely of growth on artificial media. The phag tions so obtained were not all that c but they afforded a rough indication that the appropriate dose was about 5-10 millions of mycelial fragments. Proceeding on this basis we have generally commenced the treatment with doses of 2 or 2½ million fragments at intervals of five days, and gradually increased the quantity as guided by the progress of the patient. The best results have usually been obtained with doses of from 4-10 million fragments. In a few cases which were not improving on smaller doses the quantity has been considerably increased—in one case to 75 million fragments—but without any apparent advantage.

Reaction.—In several instances the inoculation of vaccine was followed by a rise of temperature, but this did not occur with regularity in any patient. As a rule there was no constitutional disturbance of any kind, the actinomycotic focus showed no increased congestion, and at the site of inoculation there was no appreciable reaction.

Treatment of the associated infections by the appropriate vaccines.—In an earlier report on "The Mycelial and other Micro-organisms Associated with Actinomycosis"[1] the writer has called attention to a small cocco-bacillary microbe which is frequently to be found in great numbers along with actinomyces in the actinomycotic granule. This microbe has been described previously by Klinger[11] under the name *Bacterium actinomycetum comitans.* The significance of its association with the mycelial organism in actinomycosis is far from clear at present (the question is discussed at some length in the paper referred to), but it was hoped that something might be gained by combining inoculations of a vaccine of this bacterium with that of actinomyces. Twelve of the patients were so inoculated, the doses of vaccine varying from 5 to 400 millions of the bacterium. As in the case of actinomyces vaccine, the inoculations of this bacterium did not as a rule give rise to any appreciable reactions. The more common secondary infections, such as those by staphylococci, streptococci, diphtheroid and coliform bacilli, were also combated by the appropriate vaccines.

The Results of Vaccine Treatment.

The inoculated cases comprise: 11 cervico-facial infections, with which may be included 1 of the hand; 6 thoracic infections; 6 abdominal infections. The first group—of 11 cases—included two which were decidedly unfavourable to any treatment. One of these was a girl who had symptoms of intracranial pressure before admission to hospital (ten months from the onset of the disease), and died in a short time with a large temporo-sphenoidal abscess. The second was that of the man previously mentioned, in whom the disease had involved a large part of the mandible. Mr. Cope performed an extensive resection from which the patient made an apparently complete recovery and was able to join the army. Recently, however, the disease recurred in a very small focus in front of the ear, but the patient is again under vaccine treatment and the infection is making no headway.

The remaining nine cases of this group were of lesser degrees of severity, but in most of them the infection had been in progress for several months before they came under treatment. All recovered, and have not, so far as I have been able to ascertain, had any recurrence during the 4-6 years that have elapsed. In the least extensive cases a period of 3-6 weeks sufficed for cure, but in others a much longer time was required and many inoculations. Whenever bone was involved the recovery was very slow.

Of the six thoracic cases none have been saved. In considering this melancholy failure it should be made clear that in all of them the disease had made considerable headway before vaccine treatment was instituted. In one case 10 months had intervened since the symptoms were first noticed, and in the other cases 8, 7, 5, 3, and 3 months respectively. One case was particularly disappointing, but his record is not without grounds for hope.

With regard to the six abdominal cases much the same considerations apply. The five of them who died had been ill for 13, 8, 6, 5, and 5 months respectively before they were transferred to us for treatment. Three of them had already the cachexia and the particularly offensive discharge which are so often associated with this condition when it attacks the abdomen, and which are presumably due to a very severe secondary infection. (So far we have not been able to determine which particular microbe or microbes are responsible for the smell.) In these five cases one cannot say that anything was achieved by treatment. The sixth case was less severe than the others. The infection had been recognised about eight weeks after the original operation by Mr. Cope for appendicular abscess, and although there was irregular fever—sometimes to 102° F.—the cachexia and the offensive discharge never developed. Thanks to a small perforation of the ileum which developed early in the course of the disease we were enabled in this case to secure favourable drainage by means of a counter opening in the buttock. It is difficult to decide how much of the credit for her recovery should be allotted to vaccine treatment, and how much to this efficient drainage. Probably each factor was of importance. (This patient's recovery suggests that it might prove worth while in similar circumstances to secure favourable drainage by trephining the ileum from behind.)

CONCLUSIONS WITH REGARD TO VACCINE TREATMENT.

The opinion I have formed from my experience up to date is as follows: the treatment of actinomycosis by vaccines facilitates recovery when efficient surgical drainage of the affected tissues is secured and maintained; when, however, drainage is unsatisfactory the use of appropriate vaccines will not usually suffice to stay the progress of the infection. In support of the first part of this opinion I am unable to offer any evidence which will carry conviction on paper—it is manifestly difficult when dealing with a condition like cervico-facial actinomycosis, which tends to recover spontaneously if drained, to be certain that cure has been hastened by any indirect therapeutic measures. In three or four of my cases, however, which had hung fire for several weeks or months, improvement took place so promptly and so rapidly after the commencement of inoculations that there seemed to be no doubt as to the efficacy of the treatment, and this opinion found further support from the case of thoracic infection whose story has been told above.

With reference to the failure of vaccine treatment in cases whose lesions are not satisfactorily drained I would suggest that this may be due in a large part to the blood stream having very little access to those lesions by reason of the zone of "wooden" induration which habitually surrounds them.

The patient, a school teacher of 43, was sent to Sir Almroth Wright by Sir John Collie. Two months previously he had been operated on by Mr. J. Sherren at the London Hospital for an extraperitoneal abscess in the left iliac fossa and another abscess over the left shoulder. In spite of treatment by potassium iodide, further lesions had developed on the back of the neck, the shoulder, and the left costal margin, and the man was very ill on admission to St. Mary's. The lesion on the costal margin suggested the probable existence of a pulmonary focus, but definite evidence of this was not obtained at that time. From the first inoculation of vaccine he began to improve rapidly, his fever subsided, and several of the lesions healed. After four months he was permitted to resume his work, which he carried on for some three years, although one or two small lesions were never quite dried up. Sir John Collie[12] wrote enthusiastically of the progress he had made. Unhappily the cure was not so complete as we hoped at that time. Although he was an excellent patient and continued faithfully with the inoculations over a very long period, the pulmonary lesion reasserted itself four and a half years after the onset and he went down hill. Judging from the clinical course of the other thoracic cases, and taking into account his serious condition when he came under treatment, it seems legitimate to suppose that without vaccines this man would have succumbed within 18 months from the commencement of the disease—probably within a year. Why we were able to achieve so much in his case, and finally failed, is not clear. In part it may have been due, as he himself thought, to his becoming very depressed over personal war anxieties.

It will be noticed that my failure to secure good results in most of the thoracic cases contrasts unfavourably with the striking cure reported by Dr. Wynn (1908).[13] Fortunately, Dr. Wynn described in some detail the characters of the streptothrix infecting his case, and on examining his record it becomes clear that he had to deal with quite a different infection from that with which the present writer is here concerned. That being the case, we cannot properly contrast the results of vaccine treatment in the two infections.

The points on which is based the opinion that Dr. Wynn's streptothrix was not *Actinomyces bovis* (Wolff-Israel) are the following:—

(1) The record says: "The pus or sputum, when stained by Gram's method, showed enormous numbers of delicate, thread-like filaments of fairly uniform thickness." In infections by *Actinomyces bovis*, such as the writer's cases, it has been quite exceptional to find mycelial elements free in the pus; they are almost entirely confined to the granules, and, unless one of these is consciously crushed, the threads will not become disseminated in preparing a film of pus or sputum. Occasionally, of course, one may chance to find a microscopic cluster of threads, presumably an embryo "granule."

(2) "Numerous spores were seen, but no clubs." In none of the writer's cases were spores seen, nor in the 13 cases reported by Homer Wright.[14] Clubs were found whenever they were looked for—i.e., in rather more than 75 per cent. of my cases.

(3) In describing its cultural characters Dr. Wynn says of his organism: "It grows readily on ordinary media at 37° C., much less readily at room temperature. It grows under both aerobic and anaerobic conditions, but more freely under the former." Here are three points in which the organism contrasts with *Actinomyces bovis*. The latter does not grow readily on ordinary media; does not grow at all at room temperature; and, although it will occasionally give a very sparse growth under aerobic conditions it is decidedly an anaerobic organism.

(4) Again, Dr. Wynn found that at 37° C. growth appeared after 24 hours on agar. Cultures of *Actinomyces bovis* very seldom appear before three days on agar—more commonly not until 4-6 days.

With regard to gelatin stabs, Dr. Wynn's record says, "Growth slower, but after four days discoid colonies form." *Actinomyces bovis* will not grow at all in solid gelatin.

The three or four cases I have seen of infection by streptothrices other than *Actinomyces bovis* have been of decidedly milder clinical type than those of thoracic and abdominal actinomycosis.

SHOULD AN AUTOGENOUS OR A POLYVALENT STOCK VACCINE OF ACTINOMYCES BE EMPLOYED?

The answer to this question turns chiefly on considerations of the degree of difference found to exist between individual strains of *Actinomyces bovis*. The 21 strains isolated in pure culture by the author have shown a close conformity in respect of their cultural characters, viability, and staining reactions. Their morphology has not been minutely studied, but no gross differences have been observed—apart from a somewhat unequal tendency to assume a bacillary habit of growth in subcultures. On the other hand, it has been suggested by the result of some few agglutination tests that the species *Actinomyces bovis* comprises more than one serological type. The following is a record of one such agglutination test:—

Three rabbits were inoculated with typical strains of *Actinomyces bovis*—viz., "G1," "G4," and "Arthur" respectively. When their sera were tested against emulsions of the three strains the agglutination observed was as shown in Table II. (A, B, C).

In view of these findings—the agreement in respect of general cultural characters and the divergence in regard to serological type—it would seem probable that a stock vaccine would serve as well as an autogenous one if, at any rate, it included representatives of the different types. But this latter condition is not easy of realisation at present, for the determination of types can only be slowly accomplished as a considerable number of strains accumulate for study. For the time being, therefore, I think that an autogenous vaccine should be employed whenever practicable, but, since a period of three to four weeks will often be necessary for its preparation, treatment should always be *commenced* with a polyvalent stock vaccine.

TABLE II.—(A) *Rabbit Inoculated with Emulsion of Strain "G 1."*

Serum.	Dilutions of serum.				
	1 : 50	1 : 100	1 : 200	1 : 400	1 : 800
Strain "G1"	+++	+++	++	+	Trace.
" "Arthur" ...	+	+	0	0	...
" "G4"	++++	++++	+++	++	...

(B) *Rabbit Inoculated with Emulsion of Strain "Arthur."*

Serum.	1 : 50	1 : 100	1 : 200	1 : 400	1 : 800
Strain "Arthur" ...	++++	+	0	0	0
" "G1"	+++	++	0	0	0
" "G4"	++++	+++	++	Trace.	...

(C) *Rabbit Inoculated with Emulsion of Strain "G 4."*

Serum.	1 : 50	1 : 100	1 : 200	1 : 400	1 : 800
Strain "G4"	++++	++++	+++	+++	++
" "G1"	Trace.	0	0	...	...
" "Arthur" ...	0	0	0	0	...

+++, ++, + = Incomplete agglutination, of varying degrees.
++++ = Complete agglutination. 0 = No agglutination.

DISCUSSION.

(1) CONCERNING THE TERM ACTINOMYCOSIS.

There is, unfortunately, a great deal of confusion with regard to the use of this term. In what follows I shall try to show that under it have been included in the past at least four classes of cases. As a consequence our knowledge of these infections has become less, rather than more exact, and progress in the direction of better treatment has been undoubtedly handicapped. The recent application of vaccine therapy to these cases makes it particularly desirable that we should deal, as far as possible, with homogeneous groups of cases, and give to these groups distinguishing names. Lignières and Spitz,[15] recognising the need for a more precise nomenclature, have suggested that it would be well to abandon altogether the old term and substitute for it "actinophytose," adding specific subtitles for the several classes of cases. There is something to be said for this proposal, but more, I think, in favour of retaining the older term, to be used in a definitely restricted sense, and of introducing one or two new terms for the infections which are separated off by those restrictions. We may now consider what restrictions it might be well to put upon the term actinomycosis.

The origin of this term dates back to the discovery of the well-known radiating arrangement of "clubs" round the "sulphur granules" derived from certain granulomatous lesions of cattle and of man. So far as was known at that time such granules were always composed of a feltwork of branching mycelium. It is readily understood, then, that the presence of "granules" came to be regarded as diagnostic and pathognomonic of actinomycosis. When, with the introduction of artificial media, cultures were obtained from some of these infections, several quite distinct organisms were reported by different investigators, the types which attracted most attention being (1) an easily grown, aerobic variety, described by Boström[16] and others; and (2) an anaerobic variety, grown with difficulty, described by Wolff and Israel.[17] In view of these discordant results of the earlier bacteriological work it came to be believed that there was no one infective agent responsible for actinomycosis, but that several more or less allied micro-organisms could produce the disease.

The work of the past 20 years, however, has brought to light two facts which require us to recast the earlier views. It has shown (1) that the production of granules with clubs is not pathognomonic of actinomycosis; the same thing occurs in various conditions which are not mycoses at all but bacillary infections, and sometimes is associated with clinical conditions totally different from those of actinomycosis. (2) That of all the human infections which are productive of "granules" and show the well-known clinical features of actinomycosis, the great majority are due to one and the same mycelial species—viz., that described by Wolff and Israel.[17]

It will be conducive to clearness if we consider these two statements separately. Beginning with the first, the evidence that granules are formed in conditions other than actinomycosis is as follows: Lignières and Spitz[18] have described an infection of cattle which gives rise to granulomatous tissue not unlike those of actinomycosis, but in which the "sulphur granules" (showing typical clubs) are composed entirely of Gram-negative bacilli. They gave the name "actinobacillose" to this condition and that of "*actinobacille*" to the microbe. These authors state that this infection is widely spread in the world. Nocard[19] reported cases in France in 1902, and in 1915 Griffith,[20] examining so-called actinomycotic material (chiefly tongues) derived from cattle killed in England, made the important discovery that no less than 40 out of 44 specimens presented lesions which were apparently due to this bacillus and not to a mycotic infection. So far as I am aware, only one human case has been reported (Ravaut and Pinoy,[12] 1911).

Apart from actinobacillosis it is well known that the injection of tubercle bacilli will, in certain circumstances, give rise to club formation around the masses of bacilli. Further, Lignières and Spitz[15] state that granules with clubs ("massues rayonnées") may occur in animal infections produced by various other microbes—e.g., by the butter bacillus of Rabinowitsch, the bacillus of Cozzolino, the hay bacillus of Möller, &c. Quite recently a very interesting human infection associated with the production of granules has come to my notice through the kindness of Miss Aldrich Blake and Dr. Lepper, by whose permission I am enabled to refer to it. A young woman was admitted to the Elizabeth Garrett Anderson Hospital with a tumour in the left loin which proved to be an abscess connected with a tuberculous kidney. The pus evacuated from this abscess showed a large number of granules, similar in size and naked-eye appearance to those of actinomycosis. Under the microscope, however, no clubs could be seen nor any mycelium—the granules were composed of masses of Gram-negative bacilli, 2·5–5μ in length and about 0·6μ in thickness. An organism corresponding to these bacilli was cultivated aerobically on agar, growth occurring in 24–48 hours in the form of flat, semi-transparent colonies of about 1½ millimetres diameter. It is a facultative anaerobe, does not grow at room temperature, and has not been observed to form spores. It is actively motile, and is not acid-fast. I have been unable to identify this organism, which seems to be quite distinct from the *actinobacille* of Lignières and Spitz.

From the fact that this bacillus had disappeared from the pus within a week of the first drainage operation I conclude that it was probably a saprophytic invader of the abscess cavity.

We may pass now to the statement that the great majority of actinomycotic infections are due to one microbic species—viz., the anaerobic type *Actinomyces bovis*† described by Wolff and Israel.[17] The data relating to that conclusion may conveniently be set out in the form of a table (Table III.) showing the more important of the records of bacteriological investigations made during the past 20 years.

It will be seen from Table III. that in seven different parts of the world one and the same type of mycelial organism—viz., that described by Wolff and Israel (1891)[17]—has played a predominant part in the actinomycotic infections both of man and cattle. (That this was not recognised from the first is, no doubt, largely due to the circumstance that methods of anaerobic cultivation were but little developed and applied when the earliest observations were made.) From a very small minority of cases quite different organisms were cultivated. In two instances at least these were aerobic species, and it seems not improbable that they were present merely as air-borne contaminations. Whether that was the case or not, it is important to note that isolated instances are on record in which it seems clear that an aerobic mycelial organism productive of typical granules in vivo has given rise to suppurative lesions—e.g., Wynn's case referred to above and that of de Nooy[27] recently reported from Java.

It should be particularly noted that the bacteriological findings summarised have reference only to infections which yielded typical "granules" in the discharges. The results would have shown much less uniformity had the several investigations included in their purview all those cases in which Gram-staining mycelium—irrespective of its aggregation into naked-eye granules—was present in the discharges.

TABLE III.

(A) Number of cases from which cultures were obtained and the type of mycelial organism determined.

(B) Number of cases from which *Actinomyces bovis* (Wolff-Israel) was cultivated: It is not claimed that the description given by each investigator for the strains included in this column tallies exactly with that of Wolff and Israel. There is, unfortunately, at present no touchstone by which to decide unequivocally whether a given strain is or is not identical with the type Wolff-Israel. The figures given should, therefore, be taken to mean that each investigator himself regarded so many of his strains as showing a general correspondence with that type.

(C) Number of cases from which an anaerobic mycelial organism quite distinct from *Actinomyces bovis* was cultivated.

(D) Number of cases from which an aerobic mycelial organism was cultivated.

Name of investigator, date of publication, and country in which the cases occurred.	Infections of man.				Infections of cattle.			
	(A)	(B)	(C)	(D)	(A)	(B)	(C)	(D)
Levy[22] (1899), Germany	5	5	0	0	—	—	—	—
Schukevitsch[23] (1903), Russia	—	—	—	—	25	22	—	3
Homer Wright[14] (1905), U.S.A.	13	13	0	0	2	2	0	0
Shiota[24] (1909), Japan	29	28 (*a*)	—	—	—	—	—	—
Harbitz and Grondahl[25] (1911), Norway	20	20	0	0	—	—	—	—
Pinoy[26] (1913), France	3	2 (*b*)	—	—	16	14	—	2
Colebrook[1] (1920), England ...	24	21	2 (*c*)	1 (*d*)	—	—	—	—
Totals	94	89	2	1	43	38	0	5

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With this summary of new knowledge in mind we may come back to deal with the problem of nomenclature. There appear to be four classes of cases which it is desirable to define and to distinguish by different names. They are:—

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WHAT IS THE SOURCE OF INFECTION IN ACTINOMYCOSIS?

The answer to this question is given—either definitely stated or implied—in every surgical and veterinary textbook. But is it true? The "ray fungus," we are told, has its habitat in soil, on grain, straws, and other vegetable matter and is conveyed by these to the tissues of man and animals. This belief is chiefly due to the authority of Boström,[16] who, in 1891, published a report of a laborious investigation on the subject. He observed that cattle grazing in marshy districts frequently developed actinomycosis, and that moulds were met with on the vegetation of such districts, which showed some resemblance to certain mycelial organisms which had occasionally been cultivated from actinomycotic discharges. (For criticism of this latter part of the work see Homer Wright's paper.[14]) Further, on examining the mouths of cattle Boström noticed that particles of vegetable matter were very frequently lodged down between the teeth and gums, and he concluded that these particles probably carried the infection into the tissues. By means of serial sections he succeeded in demonstrating minute fragments of vegetable matter (barley "whiskers") in several instances, and he reports in detail the case of a woman who developed a submaxillary abscess, in the pus of which a similar tiny particle of barley (1 × 0·2 mm.) was detected.

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the well-known *clinical features of actinomycosis*, the great majority are due to one and the same mycelial species—viz., that described by Wolff and Israel.[17]

It will be conducive to clearness if we consider these two statements separately. Beginning with the first, the evidence that granules are formed in conditions other than actinomycosis is as follows: Lignières and Spitz[18] have described an infection of cattle which gives rise to granulomatous tissue not unlike those of actinomycosis, but in which the "sulphur granules" (showing typical clubs) are composed entirely of Gram-negative bacilli. *They gave the name* "*actinobacillose*" to this condition and that of "*actinobacille*" to the microbe. These authors state that this infection is widely spread in the world. Nocard[19] reported cases in France in 1902, and in 1915 Griffith,[20] examining so-called actinomycotic material (chiefly tongues) derived from cattle killed in England, made the important discovery that no less than 40 out of 44 specimens presented lesions which were apparently due to this bacillus and not to a mycotic infection. So far as I am aware, only one human case has been reported (Ravaut and Pinoy,[12] 1911).

Apart from actinobacillosis it is well known that the injection of tubercle bacilli will, in certain circumstances, give rise to club formation around the masses of bacilli. Further, Lignières and Spitz[15] state that granules with clubs ("massues rayonnées") may occur in animal infections produced by various other microbes—e.g., by the butter bacillus of Rabinowitsch, the bacillus of Cozzolino, the hay bacillus of Möller, &c. Quite recently a very interesting human infection associated with the production of granules has come to my notice through the kindness of Miss Aldrich Blake and Dr. Lepper, by whose permission I am enabled to refer to it. A young woman was admitted to the Elizabeth Garrett Anderson Hospital with a tumour in the left loin which proved to be an abscess connected with a tuberculous kidney. The pus evacuated from this abscess showed a large number of granules, similar in size and naked-eye appearance to those of actinomycosis. Under the microscope, however, no clubs could be seen nor any mycelium—the granules were composed of masses of Gram-negative bacilli, 2·5–5μ in length and about 0·6μ in thickness. An organism corresponding to these bacilli was cultivated aerobically on agar, growth occurring in 24–48 hours in the form of flat, semi-transparent colonies of about 1½ millimetres diameter. It is a facultative anaerobe, does not grow at room temperature, and has not been observed to form spores. It is actively motile, and is not acid-fast. I have been unable to identify this organism, which seems to be quite distinct from the *actinobacille* of Lignières and Spitz.

From the fact that this bacillus had disappeared from the pus within a week of the first drainage operation I conclude that it was probably a saprophytic invader of the abscess cavity.

We may pass now to the statement that the great majority of actinomycotic infections are due to one microbic species—viz., the anaerobic type *Actinomyces bovis*[†] described by Wolff and Israel.[17] The data relating to that conclusion may conveniently be set out in the form of a table (Table III.) showing the more important of the records of bacteriological investigations made during the past 20 years.

It will be seen from Table III. that in seven different parts of the world one and the same type of mycelial organism—viz., that described by Wolff and Israel (1891)[17]—has played a predominant part in the actinomycotic infections both of man and cattle. (That this was not recognised from the first is, no doubt, largely due to the circumstance that methods of anaerobic cultivation were but little developed and applied when the earliest observations were made.) From a very small minority of cases quite different organisms were cultivated. In two instances at least these were aerobic species, and it seems not improbable that they were present merely as air-borne contaminations. Whether that was the case or not, it is important to note that isolated instances are on record in which it seems clear that an aerobic mycelial organism productive of typical granules *in vivo* has given rise to suppurative lesions—e.g., Wynn's case referred to above and that of de Nooy[27] recently reported from Java.

It should be particularly noted that the bacteriological findings summarised have reference only to infections which yielded typical "granules" in the discharges. The results would have shown much less uniformity had the several investigations included in their purview all those cases in which Gram-staining mycelium—irrespective of its aggregation into naked-eye granules—was present in the discharges.

TABLE III.

(A) Number of cases from which cultures were obtained and the type of mycelial organism determined.

(B) Number of cases from which *Actinomyces bovis* (Wolff-Israel) was cultivated. It is not claimed that the description given by each investigator for the strains included in this column tallies exactly with that of Wolff and Israel. There is, unfortunately, at present no touchstone by which to decide unequivocally whether a given strain is or is not identical with the type Wolff-Israel. The figures given should, therefore, be taken to mean that each investigator himself regarded so many of his strains as showing a general correspondence with that type.

(C) Number of cases from which an anaerobic mycelial organism quite distinct from *Actinomyces bovis* was cultivated.

(D) Number of cases from which an aerobic mycelial organism was cultivated.

Name of investigator, date of publication, and country in which the cases occurred.	Infections of man.				Infections of cattle.			
	(A)	(B)	(C)	(D)	(A)	(B)	(C)	(D)
Levy[22] (1899), Germany	5	5	0	0	—	—	—	—
Schukevitsch[23] (1903), Russia	—	—	—	—	25	22	—	3
Homer Wright[14] (1905), U.S.A.	13	13	0	0	2	2	0	0
Shiota[24] (1909), Japan	29	28 (*a*)	—	—	—	—	—	—
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THE PRODUCTION OF BACTERICIDINS BY MICRO-ORGANISMS.

BY J. W. McLEOD, O.B.E., M.B., CH.B. GLASG.,
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General Work on Problems of Inhibition.

FROM the time that cultural bacteriological methods were first well established observations have accumulated which suggest that bacteria may inhibit their own growth and may favour or inhibit the growth of other bacteria. At the present time it is a commonplace, familiar from experience to most bacteriologists, that *Pfeiffer's* bacillus appears to grow particularly well in the vicinity of a staphylococcal colony, but that in the body it tends to be very rapidly overrun by the pneumococcus. Amongst more specific observations may be mentioned that of Marmorek,[1] showing that a filtrate of a recent culture of a streptococcus in a fluid medium containing serum, &c., will not grow the streptococcus, although it is a satisfactory medium for other bacteria. Other examples are the observations showing that the products of growths of *Bacillus pyocyaneus* and of other micro-organisms have bactericidal effects on *Bacillus anthracis*.[2] And, further, there is the example of the inhibition of bacterial growth on the surface of agar slopes from which the original growth has been washed off (vaccinated media), to which attention has been drawn by French observers.

It is to C. Eijkman,[3] however, that we owe much the most extensive, ingenious, and convincing work on this subject.

The technique finally adopted by this investigator was the preparation of agar discs, obtained by pouring agar on to thick pieces of paper with multiple perforations. These discs were laid on the surface of plate cultures of various bacteria, and the inhibition of growth was observed when those areas of the upper surfaces of the agar discs which overlay the perforations in the paper were inoculated. Complete inhibition occurred after varying periods of incubation, and Eijkman maintained that if the disc were removed and heated after inhibition had been established the capacity of the surface to grow various bacteria, previously inhibited, was restored. His conclusion was that inhibitory substances had diffused into the agar disc from the culture below, and he strengthened this conclusion with various subsidiary experiments. He proceeded to demonstrate the production of such substances by most of the bacteria which he investigated, and showed that in some cases the inhibition was specific, or nearly so, to the bacterium concerned, whereas in others (e.g., *B. coli*) inhibition was exerted to an equal or greater degree on many other bacteria. He specially emphasised, however, that he was not able to demonstrate these substances in fluid cultures (bouillon).

Eijkman's work was rapidly taken up with great enthusiasm by Conradi and Kurpjuweit,[4] who drew some far-reaching conclusions about the control of the bacterial flora of the bowel by the "autotoxins" of *B. coli*. Their conclusions are possibly correct, but unfortunately they supported them by some faulty experimental work which contributed largely to discrediting both their own results and the much better founded ones of Eijkman.

Papers were published immediately afterwards by Manteufel,[5] Oebius,[6] Passini,[7] and Rolly,[8] which were mainly directed to demonstrate the inaccuracy of Conradi and Kurpjuweit's work, but also to some extent that of Eijkman. The four workers mentioned concluded that the only satisfactorily proved causes of arrest of growth in cultures were exhaustion of the medium and production of thermo-stable inhibitory products.

Rolly, however, made a number of interesting observations on the bacterial flora of the lower portion of a dog's bowel after cutting it across. No matter how many and what bacteria were introduced they were rapidly dominated by *B. coli*, although *B. pyocyaneus*, staphylococci, or *B. proteus* could grow more rapidly than *B. coli* in sterilised bowel content. Although he does not accept Conradi and Kurpjuweit's hypothesis this phenomenon was puzzling to Rolly, especially since *B. coli* did not multiply in the mouth, where sufficient material suitable for its nutrition was constantly present.

Acid Concentration in Arrest of Bacterial Growth.

For some years after this very little attention appears to have been given to this subject, but two separate lines of investigation bearing more or less directly on the inhibition of bacterial growth have recently been followed.

In the first place the arrest of bacterial growth, owing to *accumulation of acid in culture media containing* fermentable carbohydrate, has been extensively studied, especially in America, by Avery and Cullen,[9] Brown,[10] Lord and Nye,[11] and others. *Without going into detail with regard to this* line of investigation it may be said that attention is specially drawn to the importance of acid concentration in terminating the growth of bacteria in cultures. Another point, however, bearing more closely on our subject emerges from the work of Lord and Nye. These investigators point out that at H. ion concentrations half way between the optimum for growth, pH 7·8, and the acid death point, pH 5, there is a marked tendency for pneumococci to undergo autolysis. This effect the authors attribute to an intracellular enzyme, which has its maximum activity about pH 6·5. They are inclined to think that this enzyme may be an important factor in the crisis in pneumonia and in resolution of the fibrinous exudate.

"Bacteriophage," Theory of d'Herelle.

The other line of investigation is that which has centred round what has come to be known as the "phénomène de d'Herelle," although as a matter of fact somewhat similar observations had been published by Twort [12] a short time before. D'Herelle's original observation,[13] published in 1917, was that if one or two drops of the fluid stool from a case of bacillary dysentery due to a Shiga infection were added to 20 c.cm. of bouillon which was incubated overnight and then filtered through a Chamberland filter it was found that even quite small quantities of this filtrate would rapidly, in from 2 to 12 hours, cause complete clearing of a turbid suspension of Shiga bacilli in bouillon or other fluid, subculture showing that clearing had been associated with death of the bacilli. Further, the cleared bacterial suspension or "bacteriolysat" was then found to have the same properties as the original filtrate—i.e., a trace of it added to a fresh emulsion of Shiga bacilli would again cause clearing of the suspension. The phenomenon could be repeated indefinitely. D'Herelle's explanation was that the cause of the clearing was an ultramicroscopic virus which had the peculiar property of living on Shiga bacilli and which he proposed to call a "microbe filtrante bacteriophage." In a series of publications which rapidly followed d'Herelle proceeded to extend his observations, till finally he has reached the conclusions that most bacterial diseases are associated with an intestinal "bacteriophage"; that resistance to the disease is dependent on the activity of the latter, and even that the persistence of the infection, "carrier state," can be ascertained by demonstrating the persistence of the "bacteriophage" in the intestinal contents. D'Herelle has been supported in his conclusions by Wollmann,[14], Bablet,[15] and Salimbeni.[16]

Alternative Theories.

Dumas[17] and Debre and Hagenau,[18] however, bring forward a number of observations on the phenomenon which it is difficult to bring into line with d'Herelle's explanation. Such are that, whatever other bacterium a filtrate attacks, it will always attack emulsions of Shiga bacilli; that a lysed tube will after a long time again become turbid from bacterial growth, and yet if tested on a fresh emulsion it will still show the property of promoting lysis; that filtrates with properties similar to those of d'Herelle can be obtained from bouillon incubated with material from very varied sources (Seine water, *stools of normal individuals, soil, &c.*), such filtrates being active against *B. coli* and *B. Shiga*, but never against the cholera vibrio.

Kabeshima,[19] after working for some time with material obtained from d'Herelle, and demonstrating that the "bacteriolysats" might be capable of therapeutic application, definitely challenges d'Herelle's explanation of the phenomenon, and advances a number of reasons for considering that the bacteriolytic property observed is due to a ferment. His chief arguments are that the active principle resists destruction by heating up to about 75° C., and that it can be precipitated by acetone. He considers that a ferment derived from the bacilli, a "pro-diastase," is brought into play by a special "*ferment d'immunité bacteriolysant*" derived from the bowel of the infected animal. D'Herelle disputes most of Kabeshima's experimental results, but admits that the "bacteriophage" can withstand heating for one hour at 65° C.

Lastly, Bordet and Cuica[20] have made an experimental study of the phenomenon, and have shown that *after* repeated injections of *B. coli* into a guinea-pig's peritoneum the peritoneal exudate withdrawn has exactly the same property of clearing an emulsion of *B. coli* that d'Herelle recognised in his original filtrates for Shiga emulsions. They show further that the *B. coli* which can be cultivated on agar with some difficulty from these lysed emulsions differs from ordinary strains in several respects, and especially in the power to initiate lysis in bouillon cultures of coli. This property is retained even after repeated subculture. Bordet and Cuica reject d'Herelle's explanation and maintain that certain ferments of the body probably derived from the leucocytes impart to the *B. coli* an increased tendency to autolysis, and that this is hereditarily transmitted. They maintain, however, that it is a highly specific property, being exerted only on the same microorganisms.

It is unfortunate that neither d'Herelle nor any of the investigators cited have examined this phenomenon in the light of the older observations of Eijkman. Although the lines of investigation are too diverse to allow of a close comparison, it seems quite likely that all the data accumulated may be explained on the simpler hypothesis of Eijkman—e.g., Dumas's observation that filtrates from cultures of earth, river water, and normal fæces tend to lyse emulsions of *B. coli* and *B. Shiga*, but not cholera, may be very simply explained by the presence of *B. coli* in all three of these materials, Eijkman having demonstrated that *B. coli* cultures diffuse substances destructive of dysentery and coli bacilli, but not of cholera vibrios.

Personal Work.

Our own work on this subject will be most readily discussed in two parts: firstly, a number of observations made by one of us without knowledge of the literature reviewed above; and secondly, observations made with a modification of Eijkman's technique.

Earlier Observations.

These were carried out at intervals from the autumn of 1917 onwards, the first object being to prepare a medium unsuitable for growth of *B. coli* but permitting dysentery bacilli to multiply. It was thought that *B. coli* might differ from dysentery bacilli in the nitrogenous elements required for its nutrition, and that it would therefore be possible to exhaust a medium by growth of *B. coli* without using up all the nitrogenous material suitable for the growth of dysentery bacilli. After a few unsuccessful preliminary experiments had been made with ordinary media, recourse was had to tryptic media. In the course of investigating those it was observed that many intestinal bacteria, pathogenic or not, grow well in a 1/5th dilution of Allen and Hanburys' commercial trypsin (cholera was an exception); but that the filtrates obtained from such cultures after a few days' incubation were unsuitable for the growth of the microorganism originally cultivated. The phenomenon was to a certain extent specific; thus the filtrate of a Shiga culture grew *B. coli* or a Y dysentery strain but not Shiga, whereas the filtrate of a "Y" culture grew *B. coli* and Shiga, but not "Y" dysentery. Unfortunately, with *B. coli* the specificity broke down; when the filtrate failed to grow *B. coli* it would not grow any of the dysentery strains. Any of these filtrates, however, when diluted 1 part in 5 parts water, again became suitable media for the growth of any of the bacteria. There was obviously, therefore, no exhaustion of the medium, but apparently some inhibitory factor was at play. The growing qualities of these filtrates, however, were not improved by boiling (this result is at variance with other observations made by different methods described later). As the investigation had broken down in its main purpose, that of obtaining a medium for facilitating the isolation of the dysentery bacilli from the stools, and as a medium containing an "unknown quantity," such as commercial trypsin, was unsuitable for investigating the exact nature of the inhibitory phenomenon this line of inquiry was dropped. As the suggested production by bacteria of substances inhibitory to their own growth raised the interesting, although remote, possibility of the eventual therapeutic application of such substances, further evidence for their existence was sought in cultures of such bacteria as tend to die off rather rapidly. Streptococci and pneumococci were chosen for further investigation.

The results with streptococci, although favouring the idea that production of inhibitory bodies rather than exhaustion of the medium was responsible for the arrest of growth, were not striking. With pneumococci, however, more definite phenomena were observed. The most important of these was that when repeated subcultures were made on serum agar from serum bouillon cultures of certain strains of pneumococci the culture appeared to die off and revive repeatedly, and that after the first 48 hours the growths on subculture to serum agar often consisted of very small stunted colonies, as if some inhibitory substance had been carried over to the plate from the serum bouillon and was preventing the colonies from reaching their full development. The complete scheme of such an experiment is given in Table I., for four different strains of pneumococcus.

TABLE I.—*Results of Plating from Fluid Culture on to Serum Agar Plates.*

Strains.	Medium.	Period of incubation in days.																			35 days after dilution and reinoculation with Pn. IV.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	30	33	
Pn. A.	Bn.	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−
	Bn. and 10 % h.s.	+	+	40	3	+ (f.)	3	+	9	32	30	30	−	−	−	−	−	−	−	−	−
	Bn. and 25 % h.s.	+	+	+	4	+	2	50	5	+	+	−	−	12	32	20	3	50	−	−	−
Pn. B.	Bn.	−	20	−	−	+ (f.)	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−
	Bn. and 10 % h.s.	−	++	−	4	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−
	Bn. and 25 % h.s.	+	+	5	−	+ (f.)	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−
Pn. C.	Bn.	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−
	Bn. and 10 % h.s.	+	23	−	2	+ (f.c.)	−	+	50	+	−	+ (f.c.)	−	1	+	−	−	−	−	−	Contd.
	Bn. and 25 % h.s.	4	4	30	−	−	−	+	−	−	+	1	35	4	+	15	17	29	−	−	−
	Bn. and 10 % human s.	+	+	30	−	+	40	50 (f. c.)	−	+	−	+	−	1	−	+	31	−	30		
Pn. D.	Bn.	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+
	Bn. and 10 % h.s.	+	3	3	−	60 (f.c.)	−	−	−	−	−	−	−	−	−	−	−	−	−	−	Scanty.
	Do.	+	−	15	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+
	Bn. and 25 % h.s.	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+
	Do.	9	20	3	1	1	−	+ (f. c.)	5	+	60	−	−	−	−	−	−	−	−	−	−

+ = Colonies too numerous to be easily counted. ++ = Profuse growth. − = No growth. Numbers = numbers of colonies developing. Bn. and h.s. = Bouillon and horse serum. + (f.) = Numerous but very small colonies. + (f.c.) = Mixture of very fine unusually large colonies. Contd. = Contaminated.

Strain A was one which usually grew readily in bouillon even when lightly inoculated, and it was least liable to die off. The other three strains rarely grew in bouillon unless heavily inoculated, and not always then. They grew pretty constantly, however, in serum bouillon even when lightly inoculated. The phenomenon of repeated revival is best seen with strain C. The intermittent negative results on subculture presumably mean that the bacterium, although still alive in the culture, is present in such small numbers that no living cocci are taken in a loopful, or only such as are so heavily laden with inhibitory substance that they fail to develop.

Determinations of reaction on various tubes in which growth persisted or had been arrested showed that those in which growth persisted were often more acid than those in which it had ceased. As a rule, the reaction of the medium had altered from pH 7·6–7·8 at the outset to about pH 6·9 (colorimetric determinations by Clark and Lubs's technique[21]). The explanation of the phenomena recorded, either by exhaustion of the medium or by development of excess of acid, is not easy; but the supposition that an unstable bactericidal substance was developed which often disintegrated before the bacteria had been completely killed off would fit the facts.

Observations with a Modification of Eijkman's Technique.

The modification was to substitute for Eijkman's perforated paper agar discs, a plate poured in two layers: a melted tube of agar was inoculated and poured and after it had solidified hot agar (80°-90° C.) was run on to the surface so that a thin layer of sterile agar was superimposed on the deep culture. The inhibition of growth on the upper surface was then observed after varied periods of incubation.

Applying this method of observation to the four strains of pneumococcus already mentioned in Table I. it was found (Table II.) that strain A, although sensitive to inhibition by the other strains, was a weak producer of inhibitory substance.

TABLE II.

Surface inoculation.	Interval in days after subplate inoculation.	Under plate inoculations.			
		Pn. A.	Pn. B.	Pn. C.	Pn. D.
Pn. A.	1	0 *	0	0	0
,,	2	0 *	0	0	0
,,	3	0	0	0	0
,,	4	+ (m.)	10 col.	+ (g.)	0
,,	6	0 *	+ (g.)	+ (m.)	0
Pn. B.	1	+ (v.g.) *	0	0	0
,,	2	+ (g.) *	0	0	0
,,	3	+ (m.) *	0 *	0 *	0
,,	4	+ (g.)	0 *	0 *	0
,,	6	0	0 *	0 *	0
Pn. C.	1	+ (c.) *	0	0 *	+ (g.)
,,	2	+ (v.g.) *	0	+ (g.) *	+ (g.)
,,	3	+ (v.g.) *	0	+ (m.)	0
,,		+ (c.)	+ (c.)	+ (v.g.)	0
,,	6	+ (g.) *	+ (g.)	+ (m.) *	
Pn. D.	1	+ (c.)	0	0 *	+ (v.g.)
,,	2	+ (v.g.) *	0 *	+ (v.g.) *	+ (g.)
,,	3	+ (v.g.) *	0 *	+ (m.) *	0 *
,,	4	+ (c.)	+ (c.)	+ (c.)	0 *
,,	6				0 *

0 = No growth. + (m.) = Moderate growth. + (g.) = Good growth. + (v.g.) = Very good growth. + (c.) = Copious growth.

The figures in the last four columns indicate growth observed on surface 18 hours after inoculations on surface.

* Indicates late appearance of a few colonies—i.e., 3 days after surface inoculation. Col. = Colonies.

Strain B, which most of all tended to die off in culture, was also sensitive to the inhibitory bodies, but in addition produced them actively. Strain C produced a moderate amount of inhibitory substance, but was not particularly sensitive to it. Strain D was not particularly sensitive to the inhibitory substance but tended to produce it powerfully and for a longer period than the other strains. Inhibition appeared to reach its maximum usually about the third day and to decrease on the fourth, owing probably to death or weakening of the deep culture and gradual dissipation of the labile inhibitory substance generated. Although the diffusion of inhibitory substances from the bacteria into the agar could be very reasonably inferred from these experiments direct proof was lacking. It seemed to us that conclusive evidence would be obtained if the inhibitory effect could be demonstrated in medium completely separated from the bacteria and that effect then removed by heating. Such conclusive proof was not brought forward in Eijkman's experiments as we understand them.

It was proposed to cut out a sterile disc of agar from the upper layer of a plate showing inhibition and inoculate one-half untreated and the other after heating. The technical difficulties in this investigation were considerable; serum agar deteriorates as a medium for growing pneumococcus after heating, so this bacterium was unsuitable; with the more coarsely growing bacilli such as *B. coli* cutting out of sterile discs is very difficult unless the second layer of agar is deep, and in that case it is not easy to charge it sufficiently with inhibitory substance. A solution, however, was found in the unexpected discovery that the pneumococcus inhibits not only its own growth but also, and to an even greater degree, that of many of the more coarsely growing bacteria. Thus staphylococcus, *B. coli*, Flexner's dysentery bacillus, and *Streptococcus fæcalis* were all inhibited on the upper surface, when the deep plate was inoculated with pneumococcus, and incubation had proceeded for 24 hours or more. These bacteria were found to be sensitive in varying degrees, staphylococcus most and *Streptococcus fæcalis* least.

The results of inoculation on sterile portions of agar, heated and unheated, cut out from the surface of deep plates of various pneumococcal strains are given in Table III.

TABLE III.

Inoculation of deep plate.	Bacterium inoculated to surface.	Growth on portion of surface layer cut out.	Growth on portion of surface layer liquefied by heat and reset.
Pn. D. 2 days' incubation	Fl.	15 colonies.	++
	St. A.	Nil.	++
	B. coli.	3 colonies.	++
	S.F.	Fine growth.	+
Pn. D. 3 days' incubation	Fl.	Discrete colonies.	++
	St. A.	Nil.	++
	B. coli.	Nil.	++
	S.F.	Fine growth.	+
Pn. B. 6 days' incubation	Fl.	+	+
	St. A.	V. scanty growth.	+
	B. coli.	Nil.	+
	S.F.	Nil.	+
Pn. A. 6 days' incubation	Fl.	+	+
	St. A.	Nil.	+
	B. coli.	+	+
	S.F.	Fine growth.	Fine growth.

Fl. = Flexner. St. A. = *Staphylococcus aureus.*
S.F. = *Streptococcus fæcalis.*
Pn. = Pneumococcus. + = Abundant growth.
++ = Very abundant growth.

In addition to destruction by heat the inhibitory effect for various bacteria produced on a plate surface by deep growths of pneumococcus was often observed to disappear spontaneously about the fifth or sixth day of incubation, or, if the plates were left for some days, at room temperature. The rapidity of death of the cultures of pneumococcus on serum agar varied according to the type of peptone used to prepare the agar, and it was in the media in which the pnemococcus died most rapidly that spontaneous disappearance of inhibitory effect on the surface of the medium was most readily observed.

Observations on Inhibition by Other Bacteria.

In a general way most of Eijkman's observations, which had dealt mainly with the coarsely growing bacteria, were confirmed by the technique described above. Table IV. shows the inhibitions of growth which were observed.

TABLE IV.

Bacterium in underplate examined for inhibitory action.*	Bacteria killed off.	Bacteria moderately or inconstantly inhibited.	Bacteria little affected.
Pneumococcus.†	Sh., Fl., P.B., St., C., T., S.F., Pn.	K.L.B., Mn., S.H.	—
Paratyphoid "B."	Sh., T., St., Fl.	P.B., S.H.	C., S.F.
B. coli.	Sh., Fl.	Y., K.L.B., St., P.B., T., S.F., S.H., C.	Ch.
Dysentery "Y."	Sh., Fl., Y.	—	C.
Dysentery Flexner	Sh., Fl.	Y., S.H.	C., T., P.B., St., S.F.
Dysentery Shiga.	Sh.	Fl., St., T., S.H.	C., P.B., Y., S.F.
Streptococcus fæcalis.	S.F.	S.H., Sh., T., St., Ch.	K.L.B., P.B., C., Fl.
Streptococcus hæmolyticus.	S.H., S.F.	K.L.B., Ch.	T., P.B., C., St., Sh., Fl.
Staphylococcus.	—	St., T., Sh., S.F. K.L.B.	S.H., Fl., P.B., C., Ch.
K. L. B.	K. L. B.	—	S.F., S.H., T., P.B., Ch., C., St.
Cholera.	—	Ch., St.	C., P.B., S.H., S.F., T.

* As only one strain of some of the bacilli were examined, these results will probably be altered to some extent by extended observations. The results refer to observations made after 24-48 hours incubation.

† The deep plate was serum agar in this case; but the results as above, with a hæmolytic streptococcus were not modified when serum agar was substituted for ordinary agar.

Sh. = Shiga. Fl. = Flexner. P.B. = Paratyphoid "B." St. = Staphylococcus. C. = *B. coli.* T. = Typhoid. S.F. = *Streptococcus fæcalis.* Pn. = Pneumococcus. Mn. = Meningococcus. S.H. = *Streptococcus hæmolyticus.* Y. = Dysentery "Y." Ch. = Cholera.

The data are incomplete; they depend for many of the bacteria on a small number of experiments; and the factors involved in inhibition probably differ—e.g., we have some evidence that the heat resistance of the inhibitory substance produced by the pneumococcus is greater than that of the substances responsible for inhibition produced by *B. coli* and Shiga. In a general way, however, the bacteria amongst those examined most capable of inhibiting others appear to be pneumococcus, paratyphoid B, and *B. coli;* those least inhibitory to others to be cholera and staphylococcus; those most specific in their inhibition hæmolytic streptococci, K.L.B., and typhoid; lastly, those least sensitive to the inhibitory influences are *B. coli* and paratyphoid B.

Production of Inhibitory Substances in Fluid Media.

Advance in the study of, or possible utilisation of, the inhibitory substances would both be difficult if, as in Eijkman's experience, they could only be demonstrated in solid media. Working with serum bouillon cultures of pneumococcus, however, this is not the case. In a few experiments which have been made it has not been possible to demonstrate inhibition of the growth of staphylococci, &c., in cultures of pneumococci made in test-tubes; but when the culture is incubated as a thin layer of fluid in the bottom of an Erlenmeyer flask the inhibitory substances appear. Although a relatively heavy inoculation of staphylococcus is made to a 24-hours' culture of pneumococcus which has been incubated as described no staphylococcus can be detected on plating out after further incubation over night, and the filtrate of the culture has the same bactericidal quality. This bactericidal effect was partly removed by heating at 80° C. for 35 minutes and completely removed by heating at 85° C. for the same time.

The inhibitory or bactericidal effect for staphylococcus and other bacteria was demonstrated equally in a culture which had turned acid (pH. 6·8) and in one in which the reaction had remained unchanged (pH. 7·9), and was in both cases removed by heating to 85° C.

Summary and Conclusions.

A considerable amount of general evidence has been brought forward to show that in the course of reproduction many bacteria produce substances inhibitory of their own growth and of that of other bacteria. In the case of the pneumococcus we believe that we have obtained conclusive evidence that such substances are produced and that they are relatively labile bodies destroyed by heat at 80°–85°C. A free supply of oxygen seems to be important for their production, and it seems possible that it is in this fact that we have the explanation of the therapeutic value of oxygen administration in pneumonia. The possible applications of these findings are various. They have considerable theoretical interest, in the sense that a class of substances, perhaps of the nature of enzyme, which has not as yet been seriously investigated, is brought under examination. Further, it may be possible in taking those substances into account to elucidate some pathological and bacteriological problems till now obscure, such as the crisis in pneumonia or the predominance of certain types of bacteria in different parts of the alimentary tract.

Amongst the likely practical applications are a better understanding of the factors dealt with in preserving stock cultures and in obtaining growths of "delicate" bacteria; also the production of media capable of promoting selective bacterial growth—e.g., it may be possible to prepare a medium capable of growing cholera and not *B. coli*, &c. Lastly, it is remotely possible that such substances may have a therapeutic application, since it may be that the pneumococcal product which kills staphylococci and pneumococci and leaves streptococci much less affected may be more lethal to the former than it is to the tissues of the body.

In any case some very interesting lines of investigation are opened out, and it is in the hope that other bacteriologists may be led to take them up that these observations have been published in this immature form.

In conclusion, we wish to thank Professor M. J. Stewart for facilitating the prosecution of investigations in his department; also Dr. A. G. Ritchie and Mr. R. E. Bevan-Brown, M.A., for help with some of the earlier experiments. We are specially indebted to Dr. G. A. Wyon for modifications of technique in the adjustment and determination of reaction in culture media which he has introduced into the department,* as these have greatly contributed to the accuracy of *much of the work recorded in this paper.*

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OBSERVATIONS ON THE
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A GREAT deal has been said and written of late years about the undue mobility of the ascending colon and its consequences, the standard of mobility being derived from the description of the colon given in the text-books on anatomy. I have recently pointed out[1] the fallacy of utilising dead-body dissections as material on which to base conceptions of the living tissues. The shrivelled, fixed structures found in a preserved body have about as much resemblance to the flexible, movable living tissues as an Egyptian mummy has to a man in the full vigour of life. This applies with much point to the ascending colon, for it is described and figured in anatomical books as lying squat on the posterior abdominal muscles and kidney with no suspicion of a mesentery, whereas this sessile state is quite the exception in the living body. I make this statement with confidence after observing the condition of the ascending colon in many hundreds of cases both at operation and in the post-mortem room. It is rare not to be able to lift the colon up into the wound with ease.

What exactly constitutes an abnormal amount of mobility is difficult to decide, though those cases where the colon, and especially the *hepatic flexure*, can be brought out on to the towels can certainly be said to be a less common form of mobility and, therefore, possibly an abnormal type. All degrees of mobility exist, from a complete mesentery to the whole ascending colon and cæcum to a complete fixation throughout the entire length; sometimes the upper end is free and the lower fixed, sometimes just the reverse, and again both ends may be more or less fixed and the centre part mobile, but undoubtedly the commonest type is some considerable degree of mobility throughout, lessening towards the hepatic flexure.

I do not agree with those who hold that it is a matter of prime importance that the ascending colon should be devoid of a mesentery in order that it may raise its load against gravity or that it receives its support normally from its peritoneal attachments. Good tone in the abdominal muscles is, I think, quite an effective support, and these muscles, pressing the liver back against the colon, can bring a considerable steadying effect to bear on the hepatic flexure. Indeed, it seems to me to be a distinct advantage to a muscular organ not to be tethered. Surely if it were so vital that the ascending colon should be fixed in order that it might perform its function properly, nature would have provided a definite point d'appui, as she has done at the splenic flexure in the phreno-colic ligament.

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* In this work Dr. Wyon was able to check colorimetric observations with a Wendts' electro-titration apparatus obtained under a grant made by the Medical Research Council.

[1] Brit. Med. Jour., Jan. 22nd, 1921.

Another point to which I wish to refer is the very frequent presence of a strong peritoneal band attached on the one hand to the colon in the neighbourhood of the external longitudinal muscular band at a point where the cæcum and ascending colon unite, and on the other spreading out into and becoming a part of the parietal peritoneum on the postero-lateral wall of the abdomen at the level of the iliac crest. This band, which I do not find described in any publication, is very commonly present, and becomes tight on moving the colon inwards and downwards. To my mind it suggests that the tendency of the cæcum, when the ascending colon is normally or abnormally loose, is to move not downwards directly, but in the arc of a circle of which the ileo-colic vessels are the radius, and this band is to prevent too free a migration in this direction. That some such restraint is necessary in certain cases seems probable in the presence of an ileal band. This anchors a short segment of the ileum, about 1½ to 2 inches from the cæcum, to the pelvic brim; if now the cæcum should move downwards and inwards across the true pelvis a sharp kink must occur at this point. This might cause a certain amount of delay in the passage of the ileal contents, but there is no evidence of actual obstruction.

Waugh[2] contends that gastric and duodenal ulcers and gall-stones have all a common underlying cause in the dragging effect of the loaded cæcum and ascending colon on the respective organs, and he figures peritoneal lines of stress in support of his contention. I have been unable to verify these observations. I grant that it is easy to produce these lines of stress in the peritoneum if the colon be lifted or pulled out of the abdominal wound, but with the organs remaining in the peritoneal cavity I find it is impossible to exert traction on the stomach and first part of the duodenum or gall-bladder. Occasionally the second part of the duodenum appears to be dragged upon to some extent; however, ulcer is very rare indeed in this part; also, it would appear possible to obtain some dragging effect on the kidney. Moreover, the cæcum does not drag directly downwards as I pointed out above, but tends to pass towards the left, and any drag which might occur would be expended on the peritoneum to the outer side of the colon; this I believe does occur, and is countered by the band to which I have already alluded.

Again, it is very rare to find the cæcum in the true pelvis; it is kept out by coils of small intestine, the rectum, the bladder, and in the female by the uterus and its appendages in addition. The bladder alone must occupy a considerable part of the pelvic cavity during the 24 hours, as it is more often partially filled than empty, and one fails to see how a bulky organ like the cæcum (bulky because it always contains gas and frequently fæcal matter) could frequently obtain entrance to this confined space. There seems to be no opportunity, therefore, for a heavy drag downwards, when the parts are within the abdomen.

It might be said that X rays show an excursion of the hepatic flexure from below the liver to as low as the iliac crest. That is so; but in these cases there is usually a general tendency for all the organs to prolapse to some extent owing to a lack of support from the abdominal muscles, and the movement is forwards as well as downwards. Moreover, X ray appearances are apt to be deceptive sometimes, for I have seen cases which show an apparent prolapse of the hepatic flexure on the screen, and at operation this part of the colon has been quite reasonably fixed. After all, X rays only show the shadow and not the real organ.

These remarks have been made in reference to the ascending colon, but the anatomical inaccuracies as regards fixity apply to the descending colon as well. It is said that it is exceedingly rare to find a mesentery here, whereas I have found it to be 1 to 1½ inches in length almost without exception; the most fixed parts being the splenic flexure and where the descending colon joins the sigmoid.

Relation of Dyspepsia to Mobility of the Colon.

There is no doubt that certain dyspeptics have very mobile proximal colons, but this does not necessarily mean that the dyspepsia is caused by the mobility; for exactly the same symptoms are found with less degrees of mobility, and even with an ascending colon which is fixed. This last type is sometimes represented by a sharp backward bend, just proximal to the hepatic flexure, showing two parallel limbs adherent to one another, and often also with a strong tethering band from the omentum passing across to the lateral abdominal wall. There is nearly always associated with this a full, soggy, loose cæcum, which occasionally may be turned right up in front of the ascending colon, and very frequently there are calcified tuberculous mesenteric glands in the ileo-colic angle, and an ileal band. There is no question of drag in these cases on other abdominal viscera.

It is rare to find evidence of muscular hypertrophy in the ascending colon, cæcum, or small intestine in so-called loose colon cases. If these structures were trying to lift a load against gravity under unusual difficulties, as is held by some, one would expect to find hypertrophy in some degree. The inference is that, for some reason, there is disordered muscular power in this class of dyspeptics—an arrhythmia, so to speak. Keith's observations point to a defect in the structure of the neuro-muscular tissues, which is distributed more profusely in some situations than in others; it is particularly plentiful in the ileo-cæcal sphincter and in the distal half of the colon, and, to a lesser extent, in the ascending colon, especially where it joins the cæcum. He considers there is a definite sphincteric tract here. His view is, that at these parts there is a hypertonicity (possibly a hyperplasia of this Auerbach's tissue), and that the majority of intestinal stasis cases arise from this cause and not from atony. Fibrosis of Auerbach's tissue is a later stage. There must be some agent which starts this hyperplasia, and the detection of this agent is, to my mind, the real problem in these cases, as, indeed, it is in nearly all chronic diseases; for in such hyperplasia followed by fibrosis is the usual sequence of events. At present we know nothing of these early origins; indeed, there is scarcely a single chronic disease of which it can be said that we know it from A to Z with such certainty that there is no conceivable fallacy in any link in the chain. And this is especially true of large intestine disorders, for we do not know with any accuracy even the normal function of this segment of the gut. But we can, at any rate, by observation arrive at an average mobility which will represent within wide limits the normal anatomical state. It seems to me essential that this point should be cleared up in order that treatment may be based on a sure footing.

Operative Methods.

In dealing with dyspeptic cases associated with a mobile proximal colon the two chief operative methods employed are colopexy and colectomy, partial or complete. If it is true that this part of the intestine is normally freely mobile, then it is hardly conceivable that the indigestion is due to this state of affairs, and colopexy can only be the proper treatment in certain cases—namely, where the freedom of movement is so great that it is possible to get some degree of volvulus, and, I believe, in those cases with an ileal band and so movable a cæcum that kinking may occur at this point. If the symptoms are due to changes in the neuro-muscular tissue of the colon and ileo-cæcal region, and progressing to destruction of it by fibrosis, colectomy becomes the rational treatment at this stage. However, both these operations seem to me to be attempts to deal with the ultimate or penultimate results of some condition, which I think physiologists, biochemists, and experimentalists are most likely to discover—a discovery which, I believe, would be attended by revolutionary effects in respect of many more diseases than intestinal stasis.

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[2] British Journal of Surgery, January, 1920.

Whether colopexy or partial colectomy should be performed depends on the post-operative morbidity. The mortality is negligible in either case. I have not had a single death. Unfortunately, the post-operative results are not very satisfactory. The patients may gain weight and feel better, but they have to continue taking aperients as before, and too often continue to have flatulence, capricious appetite, occasional hæmatemesis, are lethargic and far from normal. In other words, the real source of the symptoms does not seem to have been touched. Excellent results do occur, and, I think, more often after colectomy than colopexy, because the former operation being performed for those cases which show a soggy, heavy, opaque-looking cæcum, from which it is clear, however it originated, the patient is now being chronically poisoned, an obvious source of danger is removed. The type of case in which the treatment is not so simple shows no such "cesspool," but a mobile proximal colon, while to all external appearance its structure is normal. In these, I believe, neither colopexy nor colectomy is required, except when the cæcum is so loose that it may become rotated on itself, or when there is an ileal band and the mobility of the cæcum is such as to allow of a kink occurring at this point. I think some cases of so-called appendicular colic are really colicky attacks due to some such partial twisting of the cæcum. Colopexy is preferable to dividing the band, for it has a tendency to reform.

It is interesting to note what happens after complete colectomy. I have only done three cases, and all of them returned to a state of marked constipation. Occasionally an inveterate diarrhœa results, but I think the usual experience is to see a return to constipation. This would seem to indicate that it is not the large intestine which is primarily at fault. Moreover, this is an operation which can only be required (if at all) in the more advanced types of stasis, and these are just the patients who are not the good operative risks which so extensive an operation requires. If surgeons would observe and record the state of mobility of the colon in all their abdominal cases we should soon get at the average condition for the living patient and be independent of the text-books on anatomy, which I hold are incorrect in this instance as in some others. I make a para-umbilical incision in adults in practically every abdominal case, except for gall-stones and pelvic operations, displacing the rectus outwards; this gives a perfect scar, as no nerves are divided, and through it one is able to examine the colon attachments quite easily, and, I might add, determine the state of all the other abdominal viscera.

Summary.

1. The colon has a considerable degree of mobility. 2. There is frequently a band present, which prevents undue movement of the cæcum across the true pelvis. 3. The statement that a mobile proximal colon exerts a drag on the other viscera requires further evidence before it can be accepted. 4. It is not proved that the mobility of the colon accounts for the formation of ulcers, or even for dyspeptic symptoms; the same symptoms occur when the colon is fixed. 5. Colopexy is indicated for certain cases; and the symptoms in such cases may simulate appendicular colic. 6. Colectomy is indicated when the cæcum is obviously acting as a "cesspool" and the results of hemi-colectomy are as good as, and the risks much less than, those of complete colectomy.

SOCIETY OF M.O.H.: NAVAL, MILITARY, AND AIR FORCE HYGIENE GROUP.—A meeting of this group will be held at the Royal Army Medical College, Grosvenor-road, London, S.W., on Friday, May 6th, at 4 P.M. Lieutenant-Colonel P. S. Lelean, C.B., Professor of Hygiene, will give a demonstration of "Sanitary Appliances of Interest to all Health Officers." The demonstration is open to all members of the Society.

AN EXPERIMENTAL INVESTIGATION INTO THE ACTION OF CERTAIN ELECTRICAL TREATMENTS ON THE BLOOD, BLOOD PRESSURE, AND METABOLISM.

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THIS investigation was undertaken to determine the effect, if any, of certain electrical procedures in common use at the Royal Baths, Harrogate, on the blood, blood pressure, and metabolism; the last as evidenced by changes in the urinary output and in the body-weight. The subjects of the experiment were three normal individuals—A, B, and C, of ages 64, 49, and 35 respectively. Each remained on a fixed and weighed diet, which differed somewhat in detail in each case but was constant throughout for each individual. The blood was taken at the same hour each day (12.30 P.M.) and estimation made of the hæmoglobin, red cells, and leucocytes. The blood pressure, systolic and diastolic, was taken by the auditory method before and after each treatment. The urine was collected daily in 24-hour periods, and the following estimations were made: Total quantity in cubic centimetres; total solids in grammes as calculated from Long's coefficient; total acidity expressed in grammes of HCl.; ammonia nitrogen in grammes by Folin's method; total nitrogen in grammes by Kjeldahl's method; total urea in grammes by the hypobromite method; phosphates by the uranium nitrate method, using cochineal as an indicator; and uric acid by the Folin-Schaffer method.[1] The subjects entered upon a preliminary period of fixed diet for six days, during the last three of which, when equilibrium was presumably established, the urine was collected and estimation begun. The following procedures were then investigated.

(1) *The d'Arsonval high-frequency current.*—This has been used largely for some years as a reputed means of reducing high blood tension, chiefly of the nervous type, and also in hyperpiesis and arterio-sclerosis. Auto-condensation is the method usually employed. In the form of bipolar "massage" it is given locally as a counter-irritant in chronic joint affections; as the "effleuve" it is used largely in cases of chronic neuritis, and by general application to the limbs and body as a tonic and stimulating agent. Each subject had daily for *four consecutive days ten minutes' auto-condensation* with a current of 500 milliampères, followed by 20 minutes' bipolar "massage" to the bare skin of the back and limbs with a current of 250 milliampères. After a rest period of three days—

(2) *The diathermic current* was given daily for 20 minutes on three successive days to all three subjects. It is chiefly used locally to joints and other parts to relieve pain—e.g., in neuritis, fibrositis, periostitis; to promote the absorption of chronic inflammatory thickening; and in local conditions of defective circulation, chilblains, erythromelalgia, intermittent claudication, &c. On the first day it was given locally to the gluteal region, a current of 1 to 1·5 amps. being used; on the two subsequent days the current was passed through the body from hand to foot, the maximum amount tolerated being given in order to ascertain if any general effects were produced. After a rest period of two days—

(3) *The Bergonié treatment* was given. This has a reputation in the reduction of obesity and is largely used for that purpose. A current, interrupted at regular intervals, is passed through the body from a

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[1] Blood-pressure records by W. E.; blood counts by W. E. and W. S. K.; uric acid and phosphates by W. B.; other urinary constituents by S. M.

TABLE I.—*Changes in the Urinary Output and Constituents.*

		SUBJECT A.								SUBJECT B.								SUBJECT C.							
Treatment.	Dates (Inclusive).	Average quantity.	Average total solids.	Acidity.	Ammonia nitrogen.	Total nitrogen.	Urea.	Uric acid.	Phosphates.	Average quantity.	Average total solids.	Acidity.	Ammonia nitrogen.	Total nitrogen.	Urea.	Uric acid.	Phosphates.	Average quantity.	Average total solids.	Acidity.	Ammonia nitrogen.	Total nitrogen.	Urea.	Uric acid.	Phosphates.
Nil.	Nov. 28th to Dec. 1st.	1470	66·863	1·489	0·2665	12·362	23·18	0·313	2·235	1344	67·121	1·705	0·2825	11·994	22·95	0·583	2·334	2181	91·098	1·958	0·2755	14·781	31·478	1·296	3·028
d'Arsonval	Dec. 1st to 5th.	1555	61·959	1·550	0·1549	12·453	25·904	0·303	2·284	1182	58·137	1·409	0·1496	11·560	23·711	0·594	2·215	2008	79·434	1·735	0·4114	13·659	35·309	0·789	2·845
Nil.	Dec. 5th to 8th.	1563	71·396	1·445	0·1509	14·653	23·873	0·340	2·051	1307	60·518	1·777	0·0922	12·688	25·710	0·590	2·424	2037	70·357	1·845	0·2818	17·248	31·608	0·457	2·548
Diathermy	Dec. 8th to 11th.	1700	54·912	1·568	0·2521	12·166	25·454	0·400	2·024	1457	63·957	1·818	0·1964	13·369	27·389	0·561	2·294	1940	72·290	1·727	0·3383	15·536	33·160	0·496	2·629
Nil.	Dec. 11th to 13th.	1640	59·864	1·648	0·2434	12·516	25·746	0·337	2·117	1402	57·551	1·834	0·3002	12·438	27·37	0·650	2·152	1971	73·829	1·465	0·2872	14·684	31·803	0·536	2·062
Bergonié	Dec. 13th to 16th.	1571	61·979	1·641	0·2980	13·375	27·561	0·388	2·100	1425	57·136	1·629	0·2375	12·956	27·421	0·587	2·154	2031	75·499	1·818	0·3835	14·494	31·588	0·507	2·507
Bergonié + heat.	Dec. 16th to 19th.	1498	54·352	1·288	0·2414	12·516	25·915	0·397	1·945	1408	63·165 (60·151)*	1·795 (1·743)	0·2051 (0·2213)	13·279 (13·117)	25·856 (26·638)	0·705 (0·646)	2·340 (2·247)	1798	78·455 (76·966)	1·759 (1·788)	0·3268 (0·3551)	13·388 (13·941)	28·795 (30·191)	0·529 (0·518)	2·606 (2·556)
Nil.	Dec. 19th to 21st.	1610	53·612	1·377	0·2221	11·885	19·985	0·308	1·860	1495	58·110	1·943	0·1822	12·043	24·379	0·690	2·451	1672	57·261	1·628	0·2424	11·947	29·242	0·483	2·164

* Figures between parentheses are the average of six days, 13–14 to 18–19.

large electrode placed on the back, to two electrodes bound on the thighs above the knee. Rhythmical contractions are set up of the large masses of muscles in the back, gluteal regions, abdominal walls, and thighs; and the work done is increased by placing weights on the abdomen and thighs. In the original form no heat is employed. A useful modification has been introduced at Harrogate of an electric light bath given simultaneously, whereby free sweating is induced. A needle bath graduated from warm to cool terminates the proceeding. The treatment was taken by each subject for 20 minutes on six successive days. On the first three days the current alone was given; in the last three days the sweating bath was added. The current used was 12 to 20 milliampères with a rhythm of 72 per minute; and the weights applied amounted to 68 lb. The temperature of the light bath was 125° to 130° F., and the subsequent needle douche was begun at 98° and cooled down to 75°.

Summary of Results.

The results are set forth in the tables appended. In order to save space, the averages only are given of the daily figures for the periods before, during, and after each series of treatments. A brief summary is as follows:—

1. *High-frequency Current.*

Pulse-rate.—Uniformly reduced at each sitting in all three subjects; the average reduction varying from four to eight beats per minute. No net reduction in pulse-rate at the end of four days. This effect is not entirely due to the influence of rest. For example, subject B had a period of 40 minutes' rest before each treatment, and though starting each time with a low pulse-rate of 60 a reduction took place on each occasion to 56.

Blood pressure.—A reduction in systolic pressure, up to 20 mm. Hg, occurred after each sitting in two of the three subjects; the diastolic pressure showed little or no change. In the remaining subject (B) the systolic pressure was uniformly low (100–104) and no immediate reduction occurred. All three subjects showed a net fall of from 4 to 15 mm. Hg. in systolic pressure after four days' treatment; and in the cases of A and C a reduction in diastolic pressure of 8 and 10 mm. respectively. In B the diastolic pressure remained unchanged. The average immediate reduction in systolic pressure of all three subjects at all four sittings was 5 to 8 mm., while the diastolic pressure showed no change.

Blood.—In all subjects there was a slight reduction in the amount of hæmoglobin, while the red corpuscles remained practically stationary. Recovery in hæmoglobin value rapidly took place during the ensuing rest period of three days. The number of leucocytes fell in two subjects, A and B, and the fall endured throughout the subsequent rest period. In subject C a slight rise took place, probably owing to the fact that he was out of sorts, suffering from a pronounced cold.

Urine.—The only changes in the urine common to all three subjects were a diminution in total solids of 8 to 12 per cent., and an increase in the output of urea of 3 to 9 per cent. The other constituents showed little change in two of the three cases. In subject C there was a notable fall in the average excretion of uric acid, but as he was definitely abnormal at the time this finding is neglected as aberrant. During the succeeding interval of three days the average leucocyte count remained down in all subjects; the total solids of the urine rose and the output of the total nitrogen rose above its former average level.

The net results, therefore, obtained from the d'Arsonval high-frequency current were a slight but definite reduction in systolic and diastolic blood pressures; a temporary trifling loss of hæmoglobin; a more enduring fall of leucocytes; an increase in output of urea, followed by an increase in the excretion of total nitrogen. The clinical claims made that this form of electrical treatment reduces the blood pressure and stimulates metabolism are substantiated to a moderate extent by these results.

2. *Diathermic Current.*

Pulse-rate.—The average rate showed practically no change.

Blood pressure.—A fall in the average readings of systolic blood pressure occurred in all three subjects, the maximum average fall being 7 mm. Hg. The greatest individual fall after a sitting was 22 mm. Hg. The diastolic pressure in one subject (B) showed an average fall of 5 mm.; in the others no change took place.

Blood.—All subjects showed a slight fall in the average number of red cells, and in two out of the three a marked increase in leucocytes was observed. In the third subject (C) the average of counts showed a slight fall, accounted for by a considerable drop on the last day after a preliminary rise on the first two days.

Urine.—The changes common to all were a marked increase in ammonia nitrogen amounting to 75 per cent. in two cases and 25 per cent. in the subject C. The total nitrogen was diminished in two cases, and practically unchanged in subject B. The urea was definitely increased in all three; the uric acid showed a distinct increase in two cases, and a minute fall in subject B.

During the succeeding interval of two days a fall in the leucocyte count took place, the red cells remaining unchanged. No variations common to all were observed in the urinary output.

TABLE II.—*Averages of Blood Examinations in Subjects A, B, C.*

—	Hæmoglobin %.			Red corpuscles.			Leucocytes.		
	A.	B.	C.	A.	B.	C.	A.	B.	C.
Before (4 days) ...	101·5	101·2	104·8	5,480,000	5,438,000	6,625,000	8,820	11,010	6400
d'Arsonval (4 days)	99·5	101	102·8	5,420,000	5,500,000	6,425,000	7,410	10,912	7225
Interval (3 days)	100·7	100·3	104·3	5,413,000	5,450,000	6,333,000	6,183	8,660	6660
Diathermy (3 days)	100·7	101	104	5,358,000	5,383,000	6,300,000	7,300	10,600	6283
Interval (2 days)	101·5	101	103·5	5,308,000	5,400,000	6,325,000	6,100	10,200	5700
Bergonié (3 days)	102·3	102·7	105·3	5,407,000	5,400,000	6,396,000	7,017	10,730	4983
Bergonié, with heat (3 days) ...	98·7	97·7	100·7	5,288,000	5,375,000	6,343,000	8,917	9,400	5760
Interval (2 days)	101·5	100	102	5,367,000	5,387,000	6,225,000	10,425	10,400	5950

The diathermic current may be said, then, to cause a slight fall in systolic blood pressure, an increase in leucocytes, and an increase in urea and ammonia nitrogen. These changes are very similar to those produced by the d'Arsonval current, which is to be expected, seeing that both procedures are forms of high-frequency currents. The only notable difference is in the behaviour of the leucocytes—diminished by the d'Arsonval, increased by the diathermic current. In view of the local heat-producing effects of the latter this is an interesting fact which tends to substantiate its clinical use in promoting the absorption of local inflammatory products.

3. *Bergonié Treatment: First Three Days without Heat.*

Pulse-rate.—An average fall of three to eight beats in all three subjects.

Blood pressure.—A definite rise in systolic pressure was observed in all three subjects, the maximum individual rise at a sitting being 24 mm. Hg. The average rise after three sittings was 12 mm. Hg in subjects A and C, who had normal pressures. Curiously enough, in subject B, who had a subnormal systolic pressure, the maximum rise was only 4 mm., and the average rise of three sittings worked out at only 1 mm. Hg. The diastolic pressure showed an average rise of 5 mm. in A and C, but no change in subject B.

Blood.—In all three subjects a slight rise in hæmoglobin occurred, the red cell count being practically unaltered. The leucocytes showed no constant change, a slight rise occurring in two subjects (A and B), and a slight fall in subject C.

Urine.—In estimating the effects on the urinary output we have excluded the findings in subject A for the reason that he was able to take very little current and was markedly upset during the treatment. The only effects common to B and C were a diminution in the output of uric acid; the urea and total nitrogen showed no notable change.

Second three days with heat superadded: Pulse-rate.—In all subjects a rise in pulse-rate up to 30 beats per minute took place during the heat and electricity, followed by a fall after the needle bath, but not to the original level before the bath; the pulse in each case remained on the average a few beats quicker.

Blood pressure.—The systolic and diastolic blood pressures fell in each case during the heat, but not to the extent that would be expected had heat been employed alone without the electric current. The current alone without the heat causes, as shown above, a rise in pressure; when both are used simultaneously the lowering effect of the heat overbalances the raising effect of the current, and the net result is a moderate fall, averaging about 7 mm. systolic and 10 mm. diastolic in the three subjects. With heat alone a much greater fall would be expected. After the needle douche a marked rise in both pressures, averaging 12 mm. systolic and 6 mm. diastolic took place in all three subjects. It is noteworthy that subject B, having a subnormal pressure, showed smaller changes in pressure than A and C, but a much wider variation in pulse-rate.

Blood.—The blood changes showed a marked fall in hæmoglobin in all three subjects, ranging from 4 to 5 per cent., a slight diminution in red cells appeared, and a rise in the leucocyte count in two subjects, A and C, and a slight fall in subject B.

Urine.—Neglecting the result from subject A for the reasons given above, the changes common to B and C were an increase in total solids; a slight fall in the ammonia nitrogen; a marked fall in the output of urea; a rise in the uric acid, marked in the case of B, slight in C, and a slight increase in phosphates. Comparing the averages of the six Bergonié days, three without heat and three with heat, with the averages of the preceding rest period, the total solids are up in both subjects, the ammonia nitrogen up in B and down in C; the urea is down in both; and the uric acid slightly down in both, a fall in the first three days being followed by a rise in the second three; while the net result in the output of phosphates is a slight increase. During the subsequent rest period a fall in total solids, ammonia nitrogen, total nitrogen, urea, and uric acid were common to both.

Summing up the effects of the Bergonié treatment, the current without heat causes a slight rise in hæmoglobin value; when heat is added a marked fall takes place. The blood pressure is *markedly* raised by the current alone to an extent which suggests caution in the employment of this form of treatment in subjects of obesity with a high blood pressure. The addition of heat neutralises the rise and converts it into a slight fall, a fact which favours the employment of heat in addition to the current in these cases. Conversely in cases requiring sweating baths, in whom a fall in blood pressure is undesirable, this effect of heat may be prevented by the simultaneous use of the rhythmical current.

Judged by the urine analyses the Bergonié current appears to have a definite effect in increasing metabolic

TABLE III.—*Averages of Blood Pressures in Subjects A, B, C.*

Treatment.	Period at which records were taken.	Pulse-rate.			Blood pressure (mm. Hg).					
					Systolic.			Diastolic.		
		A.	B.	C.	A.	B.	C.	A.	B.	C.
d'Arsonval (4 days) ...	Before.	64	60	82	135	101	137	80	72	75
	After 10 min. auto-condensation	61	60	83	133	102	131	80	72	75
	After 20 min. bipolar massage.	56	56	75	130	103	129	81	71	75
Diathermy (3 days) ...	*Before.*	62	57	82	133	108	133	84	74	78
	After.	60	60	81	127	101	132	84	69	76
Bergonié (3 days) ...	*Before.*	67	60	81	138	109	130	87	74	78
	After.	59	57	75	150	110	142	93	74	85
Bergonié, with heat ..	Before.	58	62	81	145	107	134	81	70	81
	After 20 min.	62	83	88	143	101	122	80	61	59
	After needle bath.	60	66	83	161	105	137	87	66	66

changes, though not to the extent, at any rate in these experiments, that might a priori have been expected.

Weight.—During the whole period of the experiment all three subjects lost weight. Subject A lost 5 lb. 8 oz.; subject B, 1 lb. 10 oz.; C, 2 lb. 8 oz. During the period covered by the Bergonié treatment subject A lost 2 lb., B 8 oz. only, while subject C gained 2 lb. 8 oz. In these experiments, therefore, no constant result was obtained in the anticipated reduction of weight. On a previous occasion, some years ago, subject A had 26 sittings of 40 minutes' duration on consecutive days; no loss of weight resulted from the treatment.

DELAYED MANIFESTATIONS OF SYPHILIS,

INCLUDING THE REPORT OF A CASE OF LUETIC DUODENAL ULCER.

BY HAROLD SPENCE, B.A., M.D.

IT is not easy to determine in what measure the gloomy prognostications which quickly succeeded the enthusiasm following the introduction of salvarsan have been fulfilled. Within the space of a few years not merely the treatment but the diagnosis and study of syphilis were put on quite a different plane by the discovery of the *Spirochæta pallida*, its demonstration in various tissues, and the development of serological methods.

Yet few who were actively engaged in special practice a decade ago are in any doubt that we are witnessing a real increase in recurrent, or latent, syphilis: and a peculiarly disquieting feature is the frequence of recurrence in primary sero-negative cases given short intensive treatment to serological "cure."

Are we justified in regarding serological and actual cure as parallel, in basing an assumption of sterilisation upon the nature of a reaction which at the moment we can only describe as an accidental physico-chemical phenomenon? Does the period before the blood W.R. becomes positive offer with vigorous treatment the prospect of rapid sterilisation?

General adenopathy and the recovery of spirochætes from the inguinal lymph nodes coincidently with the development of a primary sore alone suggest that at this early period an infection can hardly be regarded as a local affair, and as long ago as 1912 Wechselmann[1] reported definite involvement of the central nervous system indicated by pleocytosis and increased solids in the spinal fluid in six patients with primary syphilis, an observation that has been frequently corroborated since. That the incidence of early spinal involvement is by no means low is shown by the figures of Wile and Hasley,[2] who, after excluding those cases showing only an increase of one or two cells over an arbitrary normal of eight, found definite implication in 49 out of 221 consecutive cases of primary and frequently sero-negative syphilis.

The experimental studies of Brown and Pearce,[3] however, carry us a long step forward, indicating that after successful inoculation the *Spirochæta pallida* very quickly gains access to the blood- and lymph-vessels and is widely planted throughout the body. In a considerable series of experiments they found by systematic determination of the presence of spirochætes in the lymph nodes and circulating blood of infected rabbits that the virus was generally distributed within 24 hours after exposure, or long before an initial lesion could be detected. It is not always safe to apply too literally to the human host data the result of animal experimentation, but in this instance clinical experience and laboratory investigation both point to a close similarity in behaviour and to the wide deposition of the virus in man a considerable time before the blood Wassermann becomes positive—a circumstance of obvious importance when deciding adequate treatment.

In reviewing the results and computing the value of more recent methods one is led inevitably to a comparison with the unique experience of the late Sir Jonathan Hutchinson.[4] His routine treatment with mercury and chalk in small dosage over a considerable period is well known, and in an active professional life of over fifty years he secured, as he well says, "a kind of experience (of lues) that falls to the lot of but few." Of late results among his own patients he saw "exceedingly little" and of the more serious affections of the nervous system "nothing." On the contrary: "I have seen many of those who in their early adult vigour I had treated for syphilis, now in honoured grey hairs and apt to boast of their grandchildren." Specific neurotropic disorders present a fascinating study, but in this paper I desire to report some recent cases of no less interest and importance, but involving other tissues.

Some Recent Cases.

Dermotropic reminders by virtue of their situation *sub oculo* and well-defined characteristics are readily recognised, the asymmetry of later manifestations, their frequently orbicular or circinate shape, distinctive colour, tendency to dry scaling or in moist parts to ulceration, the rapidity of their development relatively to lupus vulgaris, and the very typical combination of papules, ulcers, and scars in one group, leaving little possibility of error; but the existence or nature of a visceral condition may become apparent only at a relatively advanced stage or when irreparable mischief has been wrought. Disturbed action of the heart is attributable to many causes, not necessarily organic, and it is usual and eminently proper to go through the list of these before investigating the possibility of a luetic pericarditis. Similarly, there may be a long period of anæmia and ill-health, coupled with periodical attacks of digestive disturbance, before melæna or a frank hæmorrhage leads to a careful review of the history, followed by clinical, serological, and röntgenological investigation, the elective action of antiluetic remedies finally and definitely incriminating syphilis.

CASE A.—The patient, aged 31, complained of frequently recurring colds in the head and a relaxed throat, which prolonged treatment as for sinusitis had failed to relieve. There was a nasal discharge of ropy purulent secretion which stained his handkerchief. Examination confirmed accessory sinusitis, and there was also found a squamous syphilide on the scrotum and a moist lesion near the anus. Syphilis had been acquired in France a few months previously, for which he had received in the primary stage the War Office course. Wassermann test ++. Relief rapidly followed treatment with an arsenical preparation, mercury, and iodide of potassium.

With strange unanimity, and often in perfectly good faith, patients give a negative reply when asked if they have spots anywhere on their bodies, but the habit of examining every patient thoroughly is sometimes rewarded by a valuable clue to the possible ætiology of an obscure complaint. Apart from evidence of congenital taint in the patient or his offspring, or the more obvious sequelæ of the acquired disease, there may be found, *inter alia*, a periosteal node, suggestive anæmia, hypertrophied papillæ or a dry "bald batch" on the tongue, an enlarged testicle, dystrophied nails, or a peculiar bluish tinge often imparted to mucous membranes or to the skin of the scrotum. A point worthy of note and in some way attributable to the newer methods of treatment is the appearance of lesions ordnarily classed as late secondary, tertiary, or parasyphilitic comparatively early in the course of the disease.

Syphilis of the Alimentary Tract.

It is frequently said that syphilis has a predilection for the extremities of the alimentary tube, but in practice nothing is so often missed as syphilis of the rectum, unless it be cancer.

CASE B.—The patient, a young man, acquired syphilis in March, 1919, and received in the primary stage the usual military course. He was told, and believed, he was well, but seems to have subsequently had rather frequent sore-throats and his voice was inclined to be husky. For some weeks he had been receiving medical treatment for hæmorrhoids and at length had been promised operative relief. Examination revealed pruritus, a small internal pile, the presence of pus, and a lesion detected by the examining finger within the anus on the anterior wall. Through the proctoscope was seen a gummatous ulcer in this situation with some more superficial ulceration adjacent. Wassermann test +. Under mixed treatment rapid improvement ensued.

Autopsy findings indicate that syphilis, inherited or acquired, may attack any part of the alimentary system, eliciting the usual small round-cell response and leading eventually to connective-tissue overgrowth, granulomatous changes, or ulceration peculiar to itself or closely simulating malignant or tuberculous conditions. The necropsy figures of Chiari,[5] who found in 243 pathologically demonstrable cases of lues (145 hereditary and 98 acquired) only 2 involving the stomach and intestines, have been widely quoted as showing the infrequency of gastro-intestinal syphilis, criteria accepted as denoting unquestionable syphilis being tertiary ulceration, gummata, and definite scarring. Flexner,[6] reviewing the literature in 1898, was able to collect only 14 authentic gastro-intestinal cases, and alludes to the difficulties in assessing damage attributable to an organism then unknown. Osler and Taylor both thought the incidence of syphilis of the alimentary canal apart from its extremities as low and in their respective works dismiss the subject in 12 and six lines. Serological investigation, the advent of the Rontgen ray, and in a more definite way the microscopical study of appropriately stained tissues and demonstration of the spirochæte therein made possible by the researches of Noguchi, Levaditi and Marie, Hauptmann, Warthin, and others, had amplified our knowledge of the less obvious activities of the specific micro-organism, and syphilis is being incriminated in a rapidly lengthening list of affections of the viscera and serous membranes, and particularly in those of which infiltration and fibrosis with concomitant changes is a feature. More instances of luetic involvement of the gastro-intestinal tract have been reported in the past five or six years than in five-and-twenty previously, embracing cases of single and multiple gummata originating in the submucous tissue, perivisceral inflammation or diffuse infiltrations of the walls, leading to ulceration, alterations of contour or stenoses.

CASE C.—A male patient, now aged 41, accidentally acquired syphilis in September, 1914, secondaries appearing with a positive Wassermann before treatment was commenced. This consisted of salvarsan 0·45 and 0·6 g. intramuscularly, followed by mercury pills for two months, the blood Wassermann then being negative. Symptoms of gastro-intestinal disturbance were first noticed on Dec. 10th, 1917, when on active service, and consisted of chilliness, moderate pyrexia, epigastric discomfort, eructation, but (as on subsequent occasions) without vomiting. Distress describes more accurately than pain the feeling that would come on at first an hour, and as time progressed three hours, after food, felt over a wide area centred at a spot 1 cm. to the right of the ensiform cartilage and in following attacks referred also to the back. Pyrosis, burning, and gnawing sensations were not prominent, sodium bicarbonate in 30 gr. doses gave relief, and during this and subsequent attacks was taken up to 2 or 3 drachms daily.

The first attack lasted four weeks and those that followed varied in length from two to four weeks and were usually precipitated by definite indiscretions in diet or drink, particularly ale in immoderate amount. Succeeding attacks occurred in June and October, 1918, in March and August, 1919, a short one in February, 1920, being followed by that to be now described. In July, 1920, while entertaining friends to dinner, the patient became suddenly ill, weak, and almost collapsed, then recovering somewhat was taken home. Here a second syncopal attack occurred and he subsequently passed per rectum bright blood estimated at a pint, followed by smaller amounts during the night. When seen the patient had recovered from the immediate effects of the loss of blood, although very pale; cautious examination revealed no thickening or palpable abdominal tumour, and pressure did not appear to be particularly painful.

X ray examination of the patient erect following a bismuth meal revealed marked pyloric spasm, exaggerated gastric peristalsis, and an enlarged stomach, its greater curvature sagging 5 cm. below the iliac crests. In the prone position a depression indicating the presence of an ulcer on the inner surface of the proximal part of the duodenum was seen, the remainder of the duodenum being relatively a little enlarged. Examination of the other abdominal and thoracic viscera was negative.

In view of the very definite history supported by the presence of a thin scar at the site of primary infection and a positive blood Wassermann the implication of lues was suspected, and novarsenobillon 0·2, 0·3, 0·45, 0·6, and 0·6 g. at 2, 2, 4, and 5-day intervals administered, followed by mercury and 4 g. of potassium iodide daily.

Result.—In the eight months that have since elapsed there has been no recurrence of bleeding, nor has blood been found in the stools. The patient, against advice, returned to business on the tenth day after the hæmorrhage and has been regularly at work since without symptoms, although he resumed a generous mixed diet after the first month. X ray examination seven weeks after treatment was commenced showed no trace of the ulcer, the spasm about the pylorus having disappeared, and the stomach practically resumed its normal position. His bodyweight, which was 193 lb. in 1914 and 168 lb. in 1917, is now 187 lb., and he has lost his anæmic appearance.

Comment.

A casual survey of available medical and surgical literature on gastro-duodenal ulceration reveals in the former a wide diversity of theories and in the latter a customary omission of any views as to causation. Whether operation is performed or medical measures relied upon a long period of semi-invalidism is entailed with no certainty of outlook. Hyperchlorhydria did duty through several editions of popular text-books both as symptom and cause, but systematic gastric analyses show its presence in less than 60 per cent. of cases, and since it is found in many intra-abdominal organic complaints it is considered by Moynihan[7] to possess in diagnosis the least value of any symptom. Many believe with Bolton that chronic ulcer follows acute, whether due to the corrosive action of altered gastric secretions, to lowered general or regional immunity, or hæmatogenous infective influences from a focal condition elsewhere. It is frequently attributed to interference with the blood-supply of the involved area by membranous bands or through obliteration of the vessels, to conditions accompanying appendiceal disease or chronic intestinal stasis.

Cases of this sort are infrequently referred to the syphilologist, yet gastro-duodenal ulceration of luetic origin is accepted as a pathological entity and may hold as well the explanation of post-operative jejunal ulceration. Statistics as to frequency are so utterly conflicting as to be little helpful. Thus Smithies, reviewing 1760 cases of gastric disorder associated with demonstrable pathology in the stomach and duodenum, found 2 per cent. to be luetic; Engel says 10 per cent. and Lang and Neumann 20 per cent. of all gastric ulcers occur in syphilitics, whilst Castex affirms that syphilis is the exclusive cause of gastro-intestinal ulceration.

Ivy,[8] experimenting with dogs, exposed the entire mucous membrane of the pyloric antrum to the exterior and found that even after 12 months so exposed it remained healthy. Abrasions rapidly healed and ulceration artificially produced healed in 15 to 20 days with little or no scarring, but more slowly when manipulated. Infection with *Streptococcus viridans*, *Staphylococcus aureus*, and *Streptococcus hæmolyticus* superadded to manipulation had no further influence, but with a pathological membrane where normal gastric juice was not being secreted ulcers tended to become chronic. Durante,[9] by cutting and ligating the splanchnic nerves, has reported the production of chronic ulceration.

There is ground for the belief that in association with an exciting cause a suitable soil is necessary for the production of chronic gastro-intestinal ulceration. Physical, chemical, or bacterio-chemical excitation is a recognised factor in the development of later specific morbid processes elsewhere, familiar examples being the incidence of glossitis in the smoker and the gummatous ulceration due to traumatism from an ill-fitting truss; and from the general trend of evidence and our knowledge of the morphology and pathology of syphilis we will not be far astray in assigning to it a more important rôle in the ætiology of gastro-duodenal ulceration.

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Caroline-street, W.C.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF
ACUTE PHLEGMONOUS GASTRITIS.

BY F. W. EURICH, M.D. EDIN.,
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AND
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ACUTE phlegmonous gastritis is a condition sufficiently rare to make the following case worthy of record.

Walter C., aged 50 years, a publican, was seen by one of us (J. P.) in consultation with Dr. E. Newhouse, of Low Moor, on the evening of Feb. 26th, 1921. The history was that he had from time to time attacks of what he called "gastric catarrh." He got up on Feb. 25th feeling seedy, but "made himself clean his bar taps." He was too ill to "wait on" in the late afternoon and went to bed. Vomiting and severe abdominal pain came on in the early hours of the morning and persisted. Dr. Newhouse was called to see him about 8 A.M. on Feb. 26th. He had a good slow pulse, a normal temperature, a non-rigid, non-distended abdomen. The tongue was thickly coated with fur, coloured bright green by the vomited bilious fluid. He had severe pain in the upper abdomen and was vomiting frequently and copiously. A hypodermic injection of morphia was quickly followed by relief from pain and vomiting. Dr. Newhouse saw him again at noon; he had slept and was feeling comfortable. At 5 P.M. he was looking less well and his pulse was quicker, but he was free from vomiting and severe pain. At 8 P.M. the pulse-rate had gone up to 120 and the man looked very ill; one of us (J. P.) was then asked to see him. There was no abdominal rigidity and no localised tenderness, distension, or fever. The question of perforation or of irritant poisoning was discussed and the patient was removed to the Bradford Royal Infirmary. His condition had become desperate when he arrived there and he died about an hour after admission.

Post-mortem examination.—On examining the abdomen nothing was found amiss, save that the stomach wall was injected and that the liver was fatty. No perforation, no peritonitis, and no disease of the bowels. On opening the stomach the most prominent feature was the unusual thickness of its walls, which ranged from ¼–½ in. The whole of the organ, from cardiac orifice to pylorus, was affected; its consistence was doughy, and there was none of the rigidity and contraction so characteristic of leather-bottle stomach. On pulling on the stomach the peritoneum pealed off like epidermis from a blister. The mucosa showed diffuse, bright red areas of injection, irregularly distributed, not limited to any one part of the organ, such as the curvatures, thus differing from the appearances met with in irritant poisoning. And there was this further distinction: that though the mucosa was somewhat thickened it was not thrown into folds; neither rugose nor dry and brittle, but velvety to the touch and succulent. There were no hæmorrhages, abrasions, or ulcers. Not the mucosa only, but the stomach wall throughout was succulent, and on section exuded a milky fluid, which was found on microscopic examination to be thin pus. The appearance was exactly that of the yellow sloughy subcutaneous tissues in an acute cellulitis of the leg. Bacteriological investigation showed the presence in it of large numbers of a short, Gram-positive diplo-streptococcus. Histological examination showed a diffuse but irregular infiltration, with leucocytes of all the coats of the stomach, with degeneration and partial destruction of the glands, the chief cells and accessory cells of the tubules being equally affected. The infection of the stomach appears to have been a diffuse one, for no focus which might have been the starting-point was discovered, nor was any evidence found as to the origin of the infection.

Remarks.

Very few cases of phlegmonous gastritis have been published. In some of these the condition was secondary to typhoid or was part of a general pyæmia. In Kelynack's case it could be traced to septic infection grafted upon an œsophageal stricture. Streptococcal phlegmonous gastritis appears to be extremely rare; among the few recorded cases there are only one or two in which the infiltration affected the whole organ; in some it has been restricted to the cardiac end; in others miliary abscesses have been noted side by side with a more diffuse inflammation and ulceration of the mucosa. Experimental streptococcal infection, whether by oral administration of infected food or by the direct introduction of the germs into the blood stream, has almost invariably produced not a gastritis but a diffuse enteritis —another illustration of the resistance to bacterial infection possessed by the stomach and of the rarity of such cases, unless we join those who believe in the infective origin of gastric ulcers.

The following sentences from Sherren's article in Choyce's Surgery (vol. ii., p. 399) are instructive:—

> "Since the recognition of the disease by P. Borel in 1656 the number of recorded cases is under 100. The condition is more common in men than in women. ...... In 25 per cent. of the cases there is a history of chronic alcoholism. ...... No case of generalised phlegmonous gastritis has recovered. ...... The diagnosis has so far never been made before operation, and when we consider that it has to be made from a perforative lesion of the stomach or duodenum and acute pancreatitis, it is unlikely that it will often be possible. The history of alcoholism, the frequent vomiting, and the profound general disturbance should cause the condition to be suspected."

GANGRENE DUE TO CARBON MONOXIDE POISONING.

BY DR. V. D. THANDAVAROYAN,
RAI BAHADUR; ASSISTANT MEDICAL OFFICER, HIS HIGHNESS THE NIZAM'S GUARANTEED STATE RAILWAYS COMPANY, LTD., SECUNDERABAD, INDIA.

AN article on this subject appeared in THE LANCET of Sept. 27th, 1919. A similar case was under my treatment in the Railway Hospital, Lallaguda, in January, 1920. The history of the case was as follows:—

One of the children of a head constable of the Hyderabad Railway Police was ill. At midnight the father took inside the room a charcoal stove to warm milk for the child. After feeding the child he went to sleep, closing all the doors and windows, and keeping the stove inside. There were six people sleeping in the room—three adults and three children. Two of the adults—i.e., the wife and a servant woman—were the first to get up in the morning. They found themselves weak and giddy, but were able to notice the condition of the other inmates. They found the sick child dead, the other two children semi-conscious, and the head constable unconscious. All were removed to the Railway Hospital. The two children soon recovered completely, but the head constable only regained consciousness 24 hours later.

Areas of hyperæmia appeared, confined entirely to the *left side*. The face, left hand, lower part of chest on left side, and left thigh were thus affected. The hyperæmic areas on the face and chest disappeared after a few days, but raised and anæsthetic areas appeared on the left hand and thigh. Four days later the little finger of the left hand was found to be gangrenous, and the other three fingers and thumb were almost devoid of circulation. At this time the patient was complaining of tingling pains in the toes of the left foot. A fortnight later one half of the little finger, from the middle to the tip, was completely gangrenous, but the other fingers partially recovered.

The gangrene was dry and did not spread, there being a well-marked line of demarcation. The swelling in the hand and thigh improved under treatment. The patient refused amputation.

QUEEN'S UNIVERSITY OF BELFAST.—The Senate of the University has established a new chair of public health, and has appointed Dr. W. J. Wilson as the first professor. Dr. Wilson has held the lectureship in public health in the University for several years, and has discharged his duties in such an efficient manner that his promotion to the new chair was a matter of course. He is distinguished as a teacher in research and as an author. He recently acted as public health officer for Belfast during the illness of the present occupant of that office.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

EXHIBITION OF CLINICAL CASES.

A MEETING of this section was held on April 22nd, Dr. F. S. LANGMEAD, the President, being in the chair.

Dr. F. PARKES WEBER contributed the notes of a case of (?) Lupus Pernio.

Mr. C. MAX PAGE showed a case of

Renal Dwarfism.

There was considerable deformity of the legs, for the correction of which the child had been admitted to hospital. The infantilism attracted attention and suggested the diagnosis, but no albuminuria was found. Estimations of renal efficiency by Dr. H. MacLean revealed, however, that the excretory power of the kidneys was very low, and indicated nephritis of the chronic interstitial form. Radiograms showed the characteristic changes near the epiphyseal lines, which have recently been described and demonstrated before the section by Dr. D. H. Paterson.

The PRESIDENT said that the case emphasised the importance of systematic X ray examination and renal efficiency tests before embarking upon operative treatment in a case in which the suspicion of renal infantilism arose, even though there was an absence of albuminuria. With these precautions the diagnosis would cease to be made after death from operation, as had so often been the case.

Mr. G. S. TROWER showed for Dr. H. THURSFIELD a case of

Scleroderma with Myositis.

The scleroderma was distributed in patches and was especially evident on the upper part of the back and neck. Neighbouring muscles were also infiltrated and their contraction and relaxation were considerably interfered with. Flexion of the legs had resulted and movement was greatly hampered. There was hemiatrophy of the tongue. The general health was not seriously affected, and there had been no fever apart from that associated with an attack of tonsillitis. Dr. Thursfield showed for comparison a girl of 17 in whom the disease was less pronounced and the muscles were not affected. There was, however, atrophy of one side of the tongue in this case also. He regarded scleroderma as a disease not only of the skin, but also of many other structures, and suggested a general toxic or infective cause. In his opinion the cases described by the term "dermatomyositis" fell into the same group as scleroderma.

Dr. PARKES WEBER said that the evidence pointed to the probability of scleroderma being an endocrine affection. He thought that scleroderma and dermatomyositis were distinct.—The PRESIDENT said that the cases added to a group of which many examples had been brought before the section within recent years. All had certain features in common, but there were signs peculiar to each. He did not feel able at present confidently to fuse dermatomyositis with scleroderma; in the former disease the patients were acutely ill, febrile, and often died in a comparatively short time.

Dr. W. J. PEARSON showed a case of

Congenital Heart Disease

in a girl, aged 1 year and 9 months, who had been brought for treatment for "bronchitis." The child was somewhat small and looked delicate and its muscles were flabby. There were neither cyanosis nor clubbing. The liver reached one and a half fingers'-breadth below the costal margin and the spleen was palpable. The maximum cardiac impulse was in the fifth space just outside the nipple line. The area of impulse was large and there was a considerable thrust on the third and second left intercostal spaces with a thrill in the second space. A systolic murmur had its maximum in the pulmonary area and inner end of the second left space, and was also clearly heard at the apex. The second sound in the pulmonary area was accentuated. A skiagram revealed considerable enlargement of the heart, with prolongation upwards to the left of the sternum. The diagnosis suggested was patent ductus arteriosus, with a systolic in place of the more characteristic double (water-wheel) murmur.

The PRESIDENT showed a case of

Congenital Heart Disease without Bruit.

The girl, aged 2 years, had been blue and dyspnœic since birth, and clubbing of the fingers and toes was pronounced. The case was clearly one of congenital heart disease, but no bruit was audible. There was slight increase of cardiac dullness to the right. The diagnosis was regarded as being either pulmonary stenosis with complete or almost complete obstruction or transposition of the great vessels. One of these was usually found post mortem when clubbing and cyanosis was unaccompanied by a murmur.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

Museum Demonstration.

A MEETING of this Society was held on April 15th at the Wellcome Bureau of Scientific Research, Endsleigh-gardens, N.W., with Dr. F. E. FREMANTLE, M.P., the President, in the chair.

A demonstration of the Museum of Tropical Medicine and Hygiene was conducted by Dr. S. H. DAUKES, the curator, who gave an address on the "prophylactic" system which had been adopted in the arrangement of the Museum.

Dr. Daukes said that the Museum was still in an embryonic condition, but that he hoped that those present would see enough to induce them to visit it again when the scheme was nearer completion. It would be freely at the disposal of all who were interested in tropical and preventive medicine, so that it might have a real national value in fulfilment of the aims of the founder, Mr. Henry S. Wellcome. The Museum was devoted to the study of tropical medicine and hygiene, and it was hoped to cover those subjects in such a way as to be of value to the layman as well as to the specialist. There was great need for all who intended to visit tropical countries to have a practical knowledge of how to ward off the dangers incidental to their novel environment.

It had been decided that the Hygiene Section should be the rock upon which the Museum would be founded. This section would occupy the ground floor, and would include town planning, housing conditions, tropical foodstuffs, water-supply, clothing, conservancy, disinfection, ecto-parasites, and disease vectors; there would also be rooms devoted to statistics and research institutes in the tropics. The other floors were given up to a detailed consideration of the various diseases and to certain special branches of work, such as protozoology and entomology. The diseases were grouped ætiologically, not according to the biological position of the causative agent, but according to the mode of transmission. This was essentially a practical arrangement with a special appeal to those engaged in preventive work.

Dr. Daukes observed that the hygienist tended automatically to place communicable diseases in four arbitrary groups: (1) A contact group, which would probably also include certain diseases of inoculation through breach of surface. In this group would be included such diseases as scabies, tinea, syphilis, gonorrhœa, &c. (2) A respiratory group, including diphtheria, measles, influenza, and many other familiar diseases. Many would be included under the term "droplet infections." (3) An intestinal group, chiefly excremental infections, such as dysentery, cholera, typhoid fever, and certain worm diseases. (4) An insect inoculation group, including malaria, sleeping sickness, and many other tropical diseases. Many of these groups were already well represented in the Museum. On the first floor one-half was devoted to the mosquito-borne diseases—malaria, yellow fever, filariasis, and dengue; the other half contained a group of other diseases conveyed by insects, mites, or ticks, including sleeping sickness, relapsing fever, typhus, Rocky Mountain fever, Japanese river fever, plague, and, provisionally, leishmaniasis. On the second floor was the intestinal group, illustrating especially cholera, dysentery, ankylostomiasis, and bilharziasis; next to this the contact group, including many skin diseases and a few diseases, such as leprosy, yaws, and verruga, in which the mode of transmission was not settled. On the top floor was a group of dietetic diseases—scurvy, beri-beri, pellagra, and, provisionally, sprue. The special sections on this floor included protozoology, entomology, animal parasitology, venomous beasts, and helminthology.

The system of grouping presented certain points of interest from a climatic point of view, more especially with regard to the distribution of the various representatives of each group. The tropical specialist was constantly faced by diseases belonging to the insect inoculation group, whilst his colleague in colder climates was very largely occupied with diseases of the respiratory group. The alimentary group was cosmopolitan, but with a special leaning towards the great fly-breeding centres; whilst the contact group was more or less impartial.

Dr. Daukes remarked that the East and West were daily approximating as far as disease was concerned. A world-wide war had reminded them that such diseases as malaria and dysentery were not essentially tropical, and aerial transport seemed to offer special opportunities for altering the distribution of certain diseases. Our ports were constantly in contact with the problem of so-called tropical disease, and the up-to-date hygienist should have a detailed knowledge of the mode of transmission of *all* communicable diseases and not only of those of his own country. A wide general knowledge was the best foundation for success in any special undertaking. Rocky Mountain fever and Japanese river fever apparently had little importance for the European medical man, yet both these diseases were closely linked to typhus—the scourge of Eastern Europe—and the recent work of Wolbach on Rocky Mountain fever and its tick vector might help to solve the difficult question of the relationship of the Rickettsia bodies to typhus. The work of Noguchi on the *Leptospira icteroides* seemed to form a link between yellow fever and the disease spirochætosis icterohæmorrhagica, which caused considerable trouble in our front line in France. This disease could not be neglected in view of the fact that the *L. icterohæmorrhagiæ* is found in a large percentage of our country rats, and, as recently shown by Fullerton, 4 per cent. of London sewer rats. In such circumstances we could not ignore the possibility of conditions arising which might determine an epidemic of this disease. Pellagra was a disease which for a long time was regarded as peculiar to Italy and certain tropical regions. It was now known that indigenous cases might be found in English lunatic asylums and that the disease was by no means uncommon in certain of the temperate regions of the New World. Recent work had shown that it was probably a food deficiency disease, thus establishing relationship with beri-beri and scurvy, two diseases of great importance to our port authorities, Mercantile Marine and Navy.

Dr. Daukes went on to remark that the hygienist devoted his energies to placing barriers between the sick and the healthy—barriers which prevented the infective agent from passing from the one to the other. By such a grouping as he had suggested these barriers were concentrated and mobilised, ready for immediate action. A series of "barrier charts" had recently been brought out by the Bureau which illustrate this system of grouping in considerable detail.

In the past there had been far too great a tendency to divorce preventive from clinical medicine. It was hoped that a museum such as they contemplated would do much to emphasise the essential unity which existed between these two great branches of medical service—a unity which was especially well seen in the tropics, where prevention and cure must ever go hand in hand.

HARVEIAN SOCIETY.

A MEETING of this Society was held on April 14th, Dr. G. DE BEC TURTLE, the President, in the chair.

Mr. DUNCAN FITZWILLIAMS read a paper on

Nævi in Children and their Treatment,

from the consideration of more than 1000 cases which had been under his care.

He dealt with several points in the ætiology of the condition which were not generally recognised, illustrating the different features by numerous diagrams drawn from special cases and also by photographs. He dealt with the treatment of nævi and relative advantages and limitations of treatment by carbon dioxide snow, excision, cautery, and electrolysis. Mr. Fitzwilliams emphasised the advantages of the Paquelin cautery over the electric cautery, and indicated many of the newer special methods of electrolysis. He spoke also of port-wine stains and nævoid marks, discussing their appropriate treatment.

Mr. KENNETH LEES pointed out that the best treatment for nævi of the scalp was excision, otherwise one was apt to get either a patch of baldness or white hair.

Dr. G. A. H. BARTON, referring to the employment of ether as the anæsthetic in such cases, said he had on two occasions seen a burst of flame playing over the patients' mouths. The patients seemed none the worse after this untoward event, possibly because the flame played over a surface which was moist, and therefore did not burn. He considered ether a safe anæsthetic for these operations, apart from those on the head and neck.

Dr. W. J. FRANKISH mentioned a fatal case of hæmorrhage in an old man with a large nævus of the face and tongue. Nothing stopped the oozing, and the patient died after four days.

The PRESIDENT spoke of the correlation of herpes and nævi, and said that nævi did not appear to be congenital.

LIVERPOOL MEDICAL INSTITUTION.

A MEETING of the Pathological Section was held on April 14th, Dr. J. E. GEMMELL, the President, in the chair.

Professor E. E. GLYNN gave a demonstration of

Apparatus for the Mechanical Distribution of the Various Reagents in the Final Wassermann Test.

Professor Glynn stated that one source of error in the Wassermann reaction was inaccurate measurement of the reagents used in the final test. In No. 4 technique of the Medical Research Council 50 Wassermanns necessitated the distribution of 600 ½ c.cm. or ¼ c.cm. doses of various fluids with a pipette or burette—if the drop method was not used. This distribution took a considerable time, and there was often considerable error from fatigue or boredom. He had devised a semi-automatic machine which simultaneously filled 12 Wassermann tubes with ½ c.cm. doses of any reagent; a rack containing 36 tubes was filled in a few seconds. It was impossible to distribute more or less than ½ c.cm. at a time. The error of the machine was tested with distilled water at 15° C. The maximum error was apparently ± 3 per cent., and the average ± 1 per cent.; this was at least half the error obtained with pipettes or burettes when only 12 doses, not 600, were distributed, and more than usual precautions taken in measuring. One reason for the accuracy of the apparatus was the fact that after the expulsion of each dose no drop remained behind on the nozzles. He had also devised a syringe for distributing automatically three ½ c.cm. doses of the diluted serum of the patient. This syringe was accurate and also left no drops. After using a given diluted serum the syringe was washed out twice with saline before taking in the next serum. Salicyl-sulphonic acid, which would detect one part of albumin in 10,000, produced no turbidity with a third washing.

Dr. FRANCIS B. CHAVASSE read a paper on the

Blood Group in Infants and their Mothers.

He stated that a series of experiments upon this subject in the summer of 1919 showed that the blood group is determinable at birth by macroscopic test of the infant blood against stock sera. The incidence of the four blood groups in the newly born was identical with their incidence in adults. The rapid macroscopic test for the blood group gave incidences of the various groups which were identical with the incidences obtained by more complicated methods, and might therefore be regarded as an accurate test (both for adults and infants). The blood group of the infant frequently differed from that of its mother. Twins might differ both from each other and from the mother. The blood group was a characteristic which was Mendelian, at all events in so far as that in its determination each parent has approximately equal influence.

Where by reason of a difference in the blood group a condition which might be termed "maternal threat" to the child arose, the child's blood was invariably agglutinated by the serum of its own mother. But while the agglutinophilic receptors of the infant's corpuscles were thus invariably present at birth and enabled the blood group to be identified, the agglutinins themselves appropriate to the group thus identified were fully developed at birth in about 30 per cent. of cases, so that in cases of "fœtal threat" to the mother the infant's serum agglutinated the blood of the mother (and of the other individuals of the mother's group) in 30 per cent. of such cases only.

There was no obvious relationship between maternal threat and sterility or between fœtal threat and eclampsia and the toxæmias of pregnancy. The fact, however, that agglutination in vitro was invariable in the former case and common in the latter shows that there was no immunity acquired, the protective mechanism in vivo being referable to the fact that dialysis of agglutinins via the placenta was not permitted by the intervening cells, at all events during life.

The incidence of the blood group in women lying-in was identical with the normal adult incidence. There was no relation between the relative blood group of mother and child on the one hand, and the sex of the child on the other. The transfusion of maternal blood into the infant in cases of melæna neonatorum ought not to be performed unless it had been previously demonstrated that both mother and child belonged to the same blood group. If they differed, as they did in one-third of all cases, another donor should be selected.

The apparatus used in these experiments for performing the macroscopic test for the blood group was shown.

MANCHESTER MEDICAL SOCIETY.

A MEETING of this Society was held in the Medical School on April 6th, when Dr. T. A. GOODFELLOW gave his presidential address, entitled

Some Aspects of Preventive Medicine.

After giving a short historical account of the rise and present position of preventive medicine the President referred to the wide field still open for work in this direction, and drew attention to the unsatisfactory position in the country of puerperal mortality, and to the need for increased knowledge in subjects such as infant welfare, health during the "pre-school" period, disorders of the heart and tuberculosis. He emphasised the existing difficulties associated with the supply of pure milk, and briefly discussed some methods of dealing therewith. After pointing out the essential factors in the organisation of modern methods of preventive medicine he urged the establishment of greater facilities for post-graduate study and for research work, emphasising particularly the necessity for a large increase in resident institutional posts. With reference to administrative machinery the President put in a strong plea for the establishment of new local health authorities constituted ad hoc.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this Society, held on April 7th, Dr. WALTER BROADBENT read a paper on

Valvular Disease of the Heart.

He urged the importance of very careful treatment of rheumatism in children with prolonged rest in bed, in order to minimise the damage to the valves. He had used an ice-bag in acute endocarditis with as much benefit as in pericarditis.

Dr. Broadbent continued: Aortic regurgitation was the first valvular disease to be differentiated, Corrigan, in 1832, describing the different physical signs of regurgitation. The presystolic thrill and loud presystolic murmur when there is no mitral stenosis, first described by Austin Flint in 1862, is very common. Thayer found in 74 cases of aortic regurgitation examined post mortem that 33 had had a presystolic murmur during life without any mitral stenosis. When there is aortic stenosis and regurgitation there may be mitral stenosis, but then often there is no presystolic murmur. The diastolic murmur is loudest at the third left costal cartilage, and may be heard there alone. There is usually also an aortic systolic murmur as well, but this only rarely implies any aortic stenosis. Thayer in his 74 post-mortems found only 3 with stenosis and regurgitation. The aortic second sound must be listened for in the carotids. If it is not audible there is much damage to the valves. The amount of regurgitation must be estimated by the degree of collapse of the pulse, and the extent of the dilatation and hypertrophy of the heart. The difference between the systolic and diastolic blood pressures also gives a measure of the amount. The prognosis of syphilitic cases is worse than that of rheumatic, as the coronary arteries are often implicated. Aortic stenosis is rare with regurgitation, but very rare alone. The pulse is small, the heart hypertrophied, there is an aortic systolic murmur, but no second sound in the neck. In regard to treatment, digitalis is to be avoided unless there are symptoms of failure of the mitral valve. For rapidity of the heart Nativelle's digitalin is safer and better than digitalis. Ulcerative endocarditis attacks the aortic valves more often than any other. In subacute cases the onset is very insidious. Weakness, pallor, quickened pulse, slight evening fever may be noted, and enlargement of the spleen, and sometimes clubbing of the fingers. Later minute subcutaneous emboli on the extrêmities may occur; and red cells may be detectible in the urine. In the acute cases there is high hectic fever, and heart murmurs varying from day to day, and frequently cerebral emboli.

Mitral regurgitation should be treated very carefully in children on account of its liability to develop into mitral stenosis. In adults many systolic murmurs are negligible. The cardio-pulmonary murmur, due to movements of air in overlapping lung, and the systolic scratch over the right ventricle marking the position of a white patch of thickened pericardium occasioned by close contact of the heart with the chest wall, caused many men to be rejected as V.D.H. in the war. If in an adult there is a practically normal first sound followed by a systolic murmur, and the apex is not outside the nipple line, there is a little mitral regurgitation, but the man is fit for a full day's work and may live as long as anyone; yet many of these have been converted by the label V.D.H. into cardiac neurasthenics, afraid to do anything, and developing palpitation from sheer nervousness. The work of compensation falls on the right side of the heart; when that begins to give way there is enlargement of the liver and fullness of the jugular veins, so the liver should always be felt. Mitral regurgitation is the most amenable to treatment of all the valvular diseases, and the one that has made the reputation of digitalis.

Mitral stenosis was not differentiated from regurgitation till about 1870 by Gairdner, though in 1827 a Dr. Adams wrote a paper on constriction of the mitral valve. It is much more common in women than in men, the proportion being nearly three to one. Mitral stenosis was divided into three stages indicative of progressive degrees of severity by Sir William Broadbent. The first stage characteristic of moderate stenosis is when there is a presystolic murmur, a short first sound, and a second sound at the apex. In the next stage the second sound at the apex disappears, and the first sound becomes louder and shorter. There is a presystolic murmur, and a short loud first sound only. The aortic second sound has become so weak through the lessened pressure of blood that it cannot be heard as far as the apex. The presystolic murmur often becomes lengthened to fill up the whole diastole and may be divided into two, like a diastolic and presystolic, as the stenosis increases. In the third stage the presystolic murmur disappears, and only the short loud first sound is left with no second sound. There is not strength enough in the heart to maintain a pressure sufficient to cause a murmur in forcing blood through the narrowed mitral orifice. The heart is rapid and often irregular also. As the whole strain of compensation falls on the right ventricle, which is limited in the amount of its hypertrophy by the smallness of the left ventricle, there is early back pressure in the right ventricle and the liver becomes enlarged sooner than in any other form of heart disease.

The following cases were shown:—

Dr. DONALD HALL: A railway guard, aged 45, the subject of Hereditary Optic Atrophy. His only brother, three nephews, and six male cousins were suffering from the same disease.

Dr. WINKELRIED WILLIAMS: Two Cases of Lupus Vulgaris to demonstrate the value of Dr. Adamson's treatment by liq. hydrarg. nitrat. Also a case of Pityriasis Rosea with "herald patch" on left side of thorax.

GLASGOW OBSTETRICAL SOCIETY.

A MEETING of this Society was held in the Faculty Hall on March 16th, Dr. BALFOUR MARSHALL being in the chair, when Dr. ROBERT JARDINE opened the meeting with a dissertation on the

Methods of Altering the Presentation and Positions Before and During Labour.

He said that these operations were most frequently performed in the interests of the child, but were also often applied to facilitate labour and to spare the mother. He advocated examination a few days before labour to determine the position, which was then, as a rule, the same as that assumed during labour, if secondary face cases were excluded. Spontaneous alteration of position was very unusual at that late stage of the pregnancy, although not unknown. A transverse found at such an examination should always be turned by external manipulations into a vertex or breech. In a primipara the external version should always be to a vertex, and this should be practised when a breech is found in a primipara. He had never tried to alter an occipito-posterior position to an occipito-anterior by external manipulations prior to the onset of labour, although this was possible: He made a plea for the more extensive use of abdominal palpation.

In occipito-posterior positions Dr. Jardine did not approve of the rotation of the head by forceps, as he contended that the head was twisted on the neck, while the shoulders were not turned. The treatment he advocated was manual rotation, aided by the external hand pushing the shoulder across, or, if this did not avail, the fingers of the vaginal hand being extended past the head, and, the shoulder having been gripped, rotation accomplished in this way. Rotation completed he felt that it was advisable to apply forceps therewith. Such cases ought not to be allowed to continue too long in labour. If the head was well flexed Milne Murray's straight axis-traction forceps, twice applied, were often satisfactory. In persistent occipito-posterior positions he advised attempt at rotation, trying first to one side then to the other, which failing attempted forceps delivery with the face to the pubis, despite the possibilities of perineal lacerations.

In face presentations it was advisable to leave all mento-anterior positions except in cases where the head was very large, when it was advisable to convert to a vertex, at the same time rotating the occiput anteriorly. In all mento-posterior cases he thought that interference was justified. With a fully dilated os and unruptured membranes it was advisable to flex the head by manipulation per vaginam, and in cases with ruptured membranes manual dilatation of the os and flexion of the head was desirable before the face could become impacted. He advised immediate delivery with forceps after these manœuvres. All these he had found easy to perform except in primary face presentations, in which he considered version the line of treatment to be adopted. Persistent mento-posterior positions could only be delivered as such if the child was very small; attempts could be made to push the head up in these cases and perform flexion, but failing this craniotomy was to be recommended.

The typical parietal presentations of flat pelvis were interesting. The anterior parietal positions he left to mould, and then delivered with axis-traction forceps in Walsher's hanging-leg position. The posterior parietal positions, fortunately the less common, presented a greater difficulty; these could be converted to anterior parietal presentations if got early and before moulding, but were difficult to maintain in the new position. Delivery by forceps immediately on correction, if possible, was the best method of treatment. If the correction could not be maintained he advised version. Transverse presentations with ruptured membranes were treated by, with fully dilated os, performing podalic version; in back anterior cases the lower leg was taken, while in back posterior cases the leg to be taken was the higher one, thus bringing the dorsum anterior for the completion of the delivery. In cases attended by retraction and impaction decapitation was the correct treatment. In cases of breech presentations with extended legs he felt the delay not due to the splint-like action but to the presence of a retraction ring. The hand was to be forced gently past this, a leg swept inwards, and the child delivered by the application of vis a tergo.

Dr. W. D. MACFARLANE gave a communication on

Cæsarean Section as a Method of Treatment in Central Placenta Prævia.

He began with a review of the lines of treatment employed in cases of placenta prævia. Version was the most satisfactory method from the maternal standpoint, but he deplored the attendant fœtal mortality. Cæsarean section had been employed in four of his cases and had been in every way satisfactory. The operation was the usual conservative method, and in each case mother and child were alive and well. This method of treatment had been adopted because in each case the placenta had been situated centrally and because of the expressed desire of the patient's medical attendants for some line of treatment other than the "old ones" with their unsatisfactory results. From his experience of these cases he felt confident that Cæsarean section was the ideal treatment in cases of this type provided the operator was assured that the patient was not infected, that the child was alive, and that the patient's general condition did not contra-indicate abdominal operation. Much of the success of such operations depended on the complete asepsis of the operation, and it was therefore of importance that they should be treated in nursing homes or hospitals with all the advantages of favourable surroundings, just as acute appendicitis and other abdominal emergencies were treated. With these indications and careful technique he felt that Cæsarean section offered the obstetric surgeon a line of treatment which on the counts of both maternal and fœtal mortality would give better results than any of the methods now commonly used.

LONDON DERMATOLOGICAL SOCIETY.

Compulsory Notification for Venereal Disease.

A MEETING was held at St. John's Hospital for Diseases of the Skin on April 19th, Dr. WILLIAM GRIFFITH presiding. A discussion on the Resolution: "That the Society considers some form of compulsory notification for venereal disease cases to be necessary," was opened by Dr. W. KNOWSLEY SIBLEY, who proposed the resolution.

He said that of the three racial poisons, alcohol, tuberculosis, and syphilis, in most countries there is legislation against alcohol and tuberculosis, but there is still room for legislation in regard to syphilis. Syphilis as a contagious disease should be taken seriously. In scarlet fever and diphtheria the infection is of short duration, whereas syphilis, which is not notifiable, may be contagious over a long period. Dr. Sibley spoke of the colonies and foreign countries in which notification of venereal diseases has proved successful, and of the disadvantages of the voluntary clinic system in vogue in this country. He then summarised the report of the Government Royal Commission on the Prevention of Venereal Disease, and of the policy of the two organisations which attempted to achieve this object. Dr. Sibley said that if there were some form of even confidential notification a patient would be told he or she *must* carry out the prescribed medical directions, otherwise he would be liable to serious penalties. The exact method of procedure following upon notification to the medical officer of health would be a subject for consideration when once the principle had been established. If this could be done Dr. Sibley felt that a great step towards both the prevention and eradication of syphilis would be made.

Dr. DENNIS VINRACE, opposing, said that diseases such as scarlet fever and diphtheria were not comparable to syphilis just because of their short duration. The treatment of venereal disease was by far the most important factor to be considered. Prostitutes were the root of the trouble, and until we could get the beds to deal with them effectively, venereal disease was bound to continue. No form of compulsory notification could affect this. Dr. Vinrace dwelt on the importance of education of the future generation, and praised the publications issued by the National Council in this connexion. He spoke also of the difficulty of diagnosis as an argument against notification. If we had compulsory notification, the patient, in his opinion, would not consult a medical man, but would go to a quack or chemist.

Dr. MAURICE G. HANNAY said that Dr. Sibley had not given the results of notification in other countries. He agreed with Dr. Vinrace that the question of diagnosis was sometimes extremely difficult. A case of pityriasis rosea had to his knowledge been diagnosed by four different doctors as syphilis. Then came another important question, how long should we continue treatment in any one case affected with venereal disease? In Dr. E. F. Buzzard's opinion syphilis remains a lifetime. If this is so, it would be a serious thing in the case of compulsory notification.

Dr. J. FORBES said that if a patient knew that he or she had to be notified to the health authorities on account of venereal disease it would only make the case more difficult for the practitioner. The patient would not attend for treatment but would seek another way out.

Dr. CHARLES BANKS said that he would support Dr. Sibley's views if it could be so arranged that the notification of venereal disease should be confidential.

Dr. J. BRINDLEY-JAMES agreed with Dr. Vinrace that no form of compulsory notification should be necessary, provided complete confidence existed between the doctor and patient.

Dr. A. C. REBELLE felt quite sure that compulsory notification of venereal disease would be of no advantage. No compulsory measures existed in India.

The PRESIDENT said that there seemed serious and weighty objections to the compulsory notification of venereal disease. However, the real point was, what would we gain from compulsory notification of venereal disease; would the disease increase or decrease?

Dr. VINRACE and Dr. SIBLEY having summed up, the resolution was put to the meeting and was not carried.

NO. 20 GENERAL HOSPITAL ANNUAL DINNER.—The second annual dinner of officers of this hospital will be held at the Florence Restaurant, Rupert-street, London, W, on Saturday, May 14th, at 7 for 7.30. Officers intending to be present should communicate as soon as possible with Mr. Harold Drinkwater, 7, Cavendish-place, London, W.1.

Reviews and Notices of Books.

DIETETICS OF GASTRO-INTESTINAL DISEASE.

Diätetik der Magen- und Darmkrankheiten. By Professor Dr. I. BOAS. With chapters on Diet before and after Operations on the Stomach and Intestines, by Professor G. KELLING. Leipzig: G. Thieme. 1920. Pp. 216. About 8s.

IN the preface to this volume the author remarks that the dietetics of digestive diseases, owing to the growth of physiological knowledge, now stands upon a basis firm enough to justify a unified description of its method and strategy. The book, in our opinion, justifies the contention. It is, like its fellow volume, behind the times as regards modern methods of diagnosis. Also, the author seems but ill-acquainted with quantitative researches on metabolism since Rübner, and has little or nothing to do with calories. But the young physician of the present day knows, or can easily learn, enough, and something to spare, of such technical aspects. These chapters, cast in lecture form, supply something harder to get—namely, the experience of a lifetime of careful clinical study of diet in diseases of the alimentary canal. We have read the book with pleasure and profit, and commend it. Its diction is easy, direct, and clear. There are few set diets and hardly half a dozen elaborated schemes. In each disease lines are traced which the diet should follow, but the author insists rightly that the actual prescription must be written by the physician, and ought always to show, not what foods must be avoided, but what foods are to be eaten. A formulated diet, from however distinguished a source, is inferior to that prescribed for the individual patient. Many diseases of the stomach and intestine can be cured by diet alone. A sound warning is given, however, against unnecessary dieting. Food restrictions and cures, if prescribed when not needed—for example, in many nervous states—are more dangerous than medicine, of which an overdose gives definite signs. In this respect we surmise that the doctor sometimes gives way too much to the demands of his patients, some of whom clamour as loudly for a diet as others for a vaccine.

In gastritis anacida it is recommended that the pepsin and rennet ferments should always be tested for. If these are absent it is useless to try to stimulate the glands. Hyperacidity is described as not a disease but an over-action, often, though not always, leading to prolonged and periodic disturbances of the alimentary canal. A diet is recommended by Professor Boas which is poor in salt and extractives, rich in vegetable protein, contains much neutral fat of low melting-point, makes little demand upon mastication and leaves the stomach fairly soon. The foods which are said to meet these requirements are milk, eggs, flours, pea-meal, jellies, vegetables, sugars, butter, cream, olive oil, almonds and nuts (powdered), stewed fruits, lemonade, custard, &c. Such food is taken for three months, after which fish and boiled meat is introduced. Piquant foods should be avoided for a long time. It will be noted that sugar and stewed fruits are not excluded from the diet. Professor Boas says that pure sugar is not followed by pain in hyperacidity, although sweet dishes of mixed composition may be. In the treatment of gastric ulcer a graduated fluid diet, based mainly on that of Leube, is preferred. The Lenhartz diet is criticised because rice and minced meat are given too soon and cream and butter not soon enough; also on account of the high price of eggs. The influence of Lenhartz's advocacy of early feeding is nevertheless obvious, for the old plan of weeks of starvation or "nutrient" enemas receives no support. The same dietetic course is required after the surgical treatment of ulcers as after the medical treatment.

Under the heading of gastrocoloptosis a vigorous reply is given to the claims of Rovsing, that operation is desirable. Professor Boas says brilliant results are obtained almost without exception by rest and appropriate food. As an example of the diet the following may be quoted:—

8 A.M.: Fatty chocolate 50 g., in milk; rusk; wheaten bread; butter; 1 egg.

10 A.M.: Milk 100 c.cm. and cream 100 c.cm.; white bread; butter; ham or white cheese.

1.30 P.M.: 150 c.cm. thick light soup with egg in it; vegetables and potatoes; rice pudding; macaroni; meat or fish; compote of fruit; some mealy food; a bottle of malt beer.

4 P.M.: Tea or coffee with milk and cream; rusk; cakes; toast; rolls; butter 30 g.

7 P.M.: Egg food; switched egg, omelette, all prepared with much butter. Fish or cold meat 50 to 100 g.; white cheese with cream; compote of fruit; bottle of beer.

9 to 10 P.M.: Fatty chocolate 50 g.

If there be also habitual constipation the diet is altered by giving olive oil night and morning, coffee at breakfast and tea, with a tablespoonful of milk-sugar, wholemeal bread, fruit at lunch and dinner, with fish or egg, but little or no meat, and cider at the evening meal. Treatment in such cases, if carried out in a sanatorium, is mainly to be looked upon as an education; and a great deal of the doctor's task is to introduce will, order and discipline into the life of the patient. The diet in chronic constipation is founded upon Rübner's tables of the unabsorbed residue of various foods. The use of a modification of the scheme in many severe cases, and in experienced hands, confirms Professor Boas's claim that results usually come in the first days and persist. Full details are given in this interesting section of the book.

The advice upon food in chronic diarrhœa is especially useful. Milk is often ill borne, but sugar-free milk is recommended. The temperature at which it is drunk must not be too hot or too cold. Sugar should be avoided till the stools are normal, and then added only gradually. Jellies, flours, eggs, fish, cream, and butter are good. Next meat and puré of potatoes may be tried. Fermentation dyspepsia should be diagnosed by the excess of starch in the motions, and is usually relieved by leaving that foodstuff out of the diet. In membranous colitis the author strikes a middle way between the "rough" and "bland" diets. He gives olive oil and paraffin, and is adamant about aperients. In acute appendicitis he thinks surgeons do not appreciate the good results of starvation and oil enemas without opium. Operation is recommended directly the acute attack subsides. Since adopting this method he has hardly ever seen perforation or general peritonitis.

The section by Professor Kelling, a Dresden surgeon, on diet before and after operation—short-circuitings, resections, and gall-bladder operations—is carefully thought out. Of particular interest is the discussion on the treatment of indigestion after gastro-enterostomy, different kinds of food being needed according to the cause of discomfort, such as the entrance of bile and pancreatic juice to the stomach or jejunal ulcers. The latter, he is convinced, are brought on by coarse food. He does not think it necessary to operate on all cases of peptic jejunal ulcer, as he has seen healing with careful attention to diet. Fluids are given at first, then plain meat, fish, and bird, with but little salt. Spices or alcohol and tobacco are not allowed.

This little book is valuable both to physicians and surgeons, and will probably have as much success as Professor Boas's well-known larger volume on diseases of the stomach, of which the new (seventh) edition will shortly be reviewed in our columns.

BASAL METABOLIC RATE DETERMINATIONS.

Laboratory Manual of the Technic of Basal Metabolic Rate Determinations. By W. M. BOOTHBY, M.D., and IRENE SANDIFORD, Ph.D. London and Philadelphia: W. B. Saunders Company. 1920. Pp. 117. 24s.

AT a time when the importance of measurements of the basal metabolic rate is beginning to be realised in this country any book which treats fully and simply of the technique employed in these measurements is welcome. Boothby and Sandiford, working at the Mayo Clinic since 1917 on these problems, have elaborated a routine method by means of which they have carried out determinations of the basal metabolic rate in a large number of cases. Essentially their method consists in collecting the expired air of the patient into a gasometer for a given space of time. This air is measured on the gasometer and analysed in duplicate with the Haldane apparatus, from which data, the height and weight of the patient being known, the basal metabolic rate can be calculated. The method of Benedict meets with criticism at their hands, but their objections are of a somewhat theoretical nature, and there are other and more serious practical difficulties in the Benedict apparatus, which are not present in the open circuit type of apparatus, upon which they do not touch. The book deals very fully with the details of technique at every stage of the determination, and is well illustrated. In their section on the description and management of the Haldane apparatus the authors draw freely from Dr. J. S. Haldane's book, "Methods of Air Analysis," but their volume is, in the main, a full and useful description of the method they have worked out and brought to such a high degree of accuracy. It is especially commendable in its insistent demand for accuracy at every stage of the measurements. Clinical calorimetry is a scientific method of precision—to be of any value it must be used scientifically, and must be precise in every detail. This point cannot be emphasised too often. As the authors state in their preface: "This manual has been prepared in the effort to render this valuable diagnostic method available to any well-equipped and scientifically conducted clinical laboratory, and with the hope that the results of indirect calorimetry will not be thrown into general discredit by a neglect of the details requisite for obtaining a true basal metabolic rate." The book is supplied with a number of useful logarithmic and other tables, and contains all the data necessary for the complete calculation of results. An excellent bibliography is given.

INTERNATIONAL LAW.

Le Droit International Public Positif. Par J. DE LOUTER, Professeur de Droit International Public à l'Université d'Utrecht. London: Oxford University Press. Humphrey Milford. 1920. In two volumes. Pp. 1085. £1 2*s.*

Mr. de Louter's work, now printed in French by the Oxford University Press and published under the auspices of the Carnegie Fund, was orignally composed after the Peace Conferences of 1899 and 1907 had been followed by the Declaration of London; it was published in 1910 at The Hague. The production of an edition in French was a proposal made soon afterwards by those responsible for the Carnegie Fund, and re-editing was commenced. The accomplishment of the design was, however, delayed inevitably by the war, and the author, as a neutral onlooker, had the saddening experience of seeing the rules and principles that he was endeavouring to elucidate for the public good constantly ignored, perverted, and trampled upon. To this he alludes only briefly in his preface, for he writes of the law as it existed before 1914, and leaves to others the task of applying it to the events of the years that followed. It may be long before the facts are sufficiently established for this to be done. With regard to one minor branch of Mr. de Louter's subject for example—the treatment of wounded and of prisoners—wide differences of opinion might obtain as to how far and how often the laws of civilised warfare were deliberately or recklessly transgressed. We may congratulate ourselves, however, that mankind now condemns unsparingly indifference shown by enemies towards the wounded of the other side, or by an army towards its own wounded, when we remember how very recent has been the realisation that the wounded even of an enemy have their rights.

Mr. de Louter traces the history of the present attitude of governments and military authorities towards wounded soldiers from the days when they were killed, ill-treated, or abandoned as a matter of course, to the later period when Florence Nightingale and her nurses strove to abate the horrors of the Crimea. It was soon after that that Dunant, a Swiss, published "un Souvenir de Solferino," stimulated sympathy which centred itself at Geneva, and helped to bring about the founding of the Red Cross Society. It was not within the scope of his treatise, or Mr. de Louter might have recorded appreciation of the influence of science and scientific invention in producing results which are not entirely due to the development of humaner instincts in mankind. Medical and surgical science and modern means of transport have rendered possible standards of national and international humanity not dreamt of in the days of Alma and Inkerman, and still unrealisable at the time of the Franco-Prussian War.

Mr. de Louter's treatise is not wholly concerned, of course, with topics relating to war, its prevention, or its prosecution, and the recognition of medical science in the domain of international law in peace is to be traced in his pages, where he refers to the steps recognised as necessary for preventing the spread of disease from one nation to another. The substitution of modern methods of diagnosis and disinfection for long periods of quarantine has done much to prevent international friction, and at the same time has caused satisfactory results to be achieved with greater certainty. Mr. de Louter's easy style, and appreciation of what is essential for the information of his readers, have enabled him to place in their hands a valuable introduction to the study of international law. As a work of reference it would have been rendered more useful by the addition of an index, but it is informing enough to be worthy of the perusal of anyone who desires to acquire knowledge of the subjects dealt with, and to whom the language in which it is written offers no obstacle.

ORGANIC CHEMISTRY.

Laboratory Manual of Organic Chemistry. By H. L. FISHER, Ph.D. London: Chapman and Hall. 1920. Pp. 331. 12*s.* 6*d.*

Dr. Fisher rightly insists that "a book is never a thing by itself; it is always a growth, and many factors and influences from other workers contribute largely in the making of it." The book is the result of many years' laboratory teaching at Columbia University, and the experiments and preparations described are the outcome of that experience. We would recommend its careful perusal to teachers of organic chemistry in this country, for they would gain many valuable suggestions. A strong point is made of inductive reasoning, and the student is directed when and where to record observations. After each experiment a number of questions from the theoretical and practical standpoint are set out. In the latter part of the book organic combustions are dealt with in detail; this section is well worth reading.

Organic Chemistry for Medical, Intermediate Science, and Pharmaceutical Students. By A. KILLEN MACBETH, M.A., D.Sc. London: Longmans, Green and Co. 1920. Pp. 235. 6*s.* 6*d.*

THE subject matter of this book, which is intended for the use of medical and pharmaceutical students, is not dealt with in an exhaustive manner, but is selected in order that the medical student may be able to take full advantage of subsequent courses in biochemistry, whilst the pharmaceutical student will gain a knowledge of the subject sufficient for his future work. The text-book is based on the author's courses of elementary lectures and in these he states that he not infrequently deals with the aromatic compounds after the corresponding aliphatic types have been described. By this system the student can note the similarity of the synthetic methods and can compare and contrast the properties of corresponding compounds of these two main groups as his work proceeds. In the book the orthodox treatment is followed, but the student is referred from the aliphatic to the aromatic type. We notice a few lapses. Dr. Macbeth speaks of diastase as an organism (p. 59), and of maltose as the chief constituent of sugar in malt (p. 161); moreover, this sugar is crystallised from alcohol, and not, as is stated, from water. But, on the whole, the matter is put together concisely and seems fairly free from errors. A useful feature to the student is the series of questions at the end of each chapter.

Laboratory Manual of Organic Chemistry for Medical Students. By MATTHEW STEEL, Ph.D. Second edition. Revised and enlarged. London: Chapman and Hall. 1920. Pp. 284. 9*s.* 6*d.*

THIS manual was originally compiled as a laboratory guide in organic chemistry for the medical students of the Long Island College Hospital, Brooklyn, New York. Recent developments, more particularly in the domain of biological chemistry, necessitate a much broader training in organic chemistry than was formerly required, and the author has endeavoured to meet this requirement without burdening the medical student with a mass of unessential data. The work, as its title implies, is a practical one and does not deal with the theory of the subject; the experiments and preparations are wisely selected, and the working instructions clear and concise. Alternate pages of the volume are left blank, so that the student may record his own observations. The work concludes with an interesting chapter on the colloidal state of matter treated from the experimental standpoint. Dr. Steel is to be congratulated on the production of a useful and well-balanced volume, which, considering the necessarily wide ground it covers, is singularly free from errors.

Text-book of Organic Chemistry. By A. F. HOLLEMAN. Edited by A. T. WALKER, Ph.D., assisted by O. E. MOTT, O.B.E., Ph.D. Fifth English edition, revised. London: Chapman and Hall. 1920. Pp. 642. 18*s.* 6*d.*

THE fact that it has been necessary to bring out five editions of this well-known work in a period of 17 years is evidence of its service in the teaching of organic chemistry. So many of our short text-books of organic chemistry contain far too many isolated facts, and the number of compounds described confuses the beginner. The author has kept the number of unconnected facts within as narrow limits as possible, and has given prominence to the theory underlying the subject. In this edition additional space is allotted to the applications in organic chemistry of the increasingly important physico-chemical methods such as refraction, absorption, and viscosity. The descriptions of a number of technical processes such as the manufacture of alcohol, cane sugar, &c., are included. Dr. Walker and Dr. Mott deserve well for having rendered the original into excellent English. The work is most readable, and though intended primarily for the student it will no doubt be read by many who desire to keep in touch with the advances in modern organic chemistry.

JOURNALS.

Journal of Pathology and Bacteriology, Vol. XXIV., No. 2, pp. 129-240.—The Neural Origin of Certain Sarcomata of the Brain, by J. R. Perdrau (London). Two cases of mixed celled "sarcoma" of the brain are described in which the author finds evidence that they originated in nerve cells and should therefore be classed as neuroblastoma.—P. B. White (Aberdeen) describes and figures an intrathoracic tumour in a honey bee, possibly arising from a nerve, with the structure of a fibroma.—Method of Mounting Flat Pathological and other Specimens in Gelatin, by T. H. G. Shore (London).—The Diagnosis of Syphilis in Malarial Subjects by the Wassermann Reaction, by J. P. Johnson (South Africa). In a series of cases of malarial infection, confirmed microscopically, without clinical signs or history of syphilis, positive Wassermann reactions (original method) were given by 22 per cent., but on retesting after an interval (not clearly described) this was reduced to 7 per cent., which the author finds no difficulty in regarding as cases of latent syphilis. Using Tschernogbouw's, Fleming's, and the Hecht-Fleming technique, the positive results were 6, 27, and 27 per cent. respectively, and 6, 7, and 11 per cent. on retesting. The author holds that a positive reaction should always be confirmed by retesting before a diagnosis of syphilis is made.—On the Preparation of Diphtheria Toxin, by K. G. Dernby and H. David (Stockholm). The best yield is obtained by starting with a reaction of 7·2 to 7·4 and ending with one of 8·0 to 8·3, which should be attained in about eight days.—The Cultivation of the Gonococcus, by C. E. Jenkins (Salford). The optimum temperature is 35°-36° C., and 10 per cent. whole blood agar is a satisfactory medium. The important point is to keep the culture moist by using a medium with a high water content (as little agar as will give a solid medium) and incubating in an atmosphere saturated with water vapour. The same author points out that a very satisfactory decalcifying mixture, preserving histological detail and staining reactions, is HCl 4, glacial acetic acid 3, chloroform 10, water 10, absolute alcohol to 100.—The Mode of Infection of *Schistosomum japonicum*, by Y. Miyagawa and S. Takemoto (Tokyo). By experiments on mice which were cut in serial section and the total number of infecting larvæ enumerated, the authors find that the young worms penetrate the skin into lymphatics and small veins, and then reach the right side of the heart; from here they pass to the lungs, where they may be arrested for a time owing to their large size; thence into the systemic circulation, by which they reach the intestinal wall, penetrate mesenteric veins, and so arrive at their permanent home in the portal veins in the liver.—An Experimental Study of Avian Beri-beri, by G. M. Findlay (Edinburgh). The histological changes in beri-beri in fowls and pigeons are generally similar to those caused by inanition, but they differ in the nuclear degeneration, the chromatolysis in nerve cells, and the retention of lipoid in the adrenal cortex. The content of ox organs in nucleic acid is parallel to their antineuritic efficacy; thus the potencies of liver, brain, heart, and muscle in preventing beri-beri are as 100, 75, 53, 18, and their richness in nucleic acid as 36, 20, 15, and 5. The author suggests that antineuritic vitamin is an essential factor in the synthesis of nucleic acid.—The Production of Coliform Infection in the Urinary Tract of Rabbits, by E. H. Lepper (London). With various organisms of the coli group no evidence of their passage into the urine after intravenous injection could be obtained without signs of kidney damage (proteid, &c., in urine). Complete obstruction of the ureter for as short a period as a quarter of an hour determines a kidney infection.—The Supposed Importance of Vitamins in Promoting Bacterial Growth, by J. W. McLeod and G. A. Wyon (Leeds). The smallest quantity of various substances which would allow the growth of *Staphylococcus aureus* on a simple phosphate agar was determined and compared with the content of the substances in antineuritic vitamin; with a few glaring exceptions the figures are roughly parallel. The authors do not agree that blood promotes bacterial growth on account of its vitamin-content, and point out that amino-acids are favourable chiefly to intestinal bacteria.—A Study of the So-called Parameningococci, by L. Cronstedt (Stockholm). Thirteen strains isolated from the pharynges of contacts of a single case of meningitis fell into several agglutination groups and on further culture changed their reactions. The author doubts the validity of separating a group of parameningococci by agglutination.

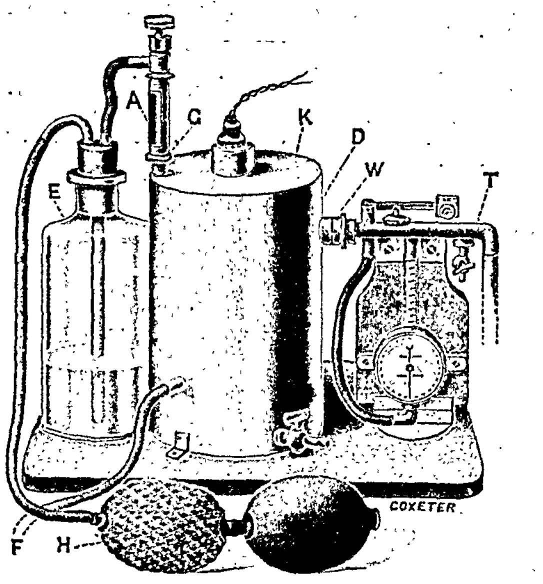
La Médecine (Vol. II., No. 6) for March is given up to diseases of circulation and excretion under the direction of Professor Paul Ribierre. The contributors give good reviews of the present trend of thought and deal with subjects of current interest. The article by P. Ameuille on Acute Nephritis without Nephritis is original in emphasising the view that acute nephritis is not only or at all acute inflammation of the kidneys. The articles by Vaquez on Digitalis, and by Josué on Undeveloped Forms of Cardiac Rheumatism deserve attention. The subjects chosen are highly specialised and dealt with in too cursory a manner to stand by themselves as sources of information.

American Journal of Syphilis. Vol. V., No. 1.—The bulk of the contents of the January number (which by accident has only just reached this country) may be regarded as falling within one of two categories—viz., the specifically technical and scientific, and that which is admittedly clinical. More than half the matter in this issue is devoted to the consideration of subjects which come within the former class. An interesting series of "Studies in the Standardisation of the Wassermann Reaction" include (1) The Influence of Temperature and Duration of Primary Incubation upon the Anticomplimentary Activity of Organ Extracts (Antigens) and Sera; (2) The Influence of Temperature and Duration of Primary Incubation upon the Velocity and Amount of Complement Fixation in Syphilis with Different Organ Extracts (Antigens); (3) A Comparative Study of Methods for Conducting the Primary Incubation for Complement Fixation in Syphilis with the Technic recommended for a Standardised Test. All the foregoing are outside the province of the general practitioner—if he specialises to such an extent his time is overburdened—yet at the same time it is desirable that he should realise the large amount of work which is being carried out in relation to the Wassermann reaction. It is good that he should know of this work, inasmuch as a recognition of its complexities and difficulties may tend to break down the mechanical conception of this reaction, which we fear is still held by many members of the profession, to the exceeding detriment both of their own scientific outlook and their patients' welfare.—Turning to those articles which come within the second category, we regard the paper on the Early Diagnosis of Primary Syphilis, by Dr. C. Guy Lane, as being of great clinical value. It should also inspire its readers with a marked degree of sociological enthusiasm. Many of our readers may be aware that in evidence given before the Royal Commission on Venereal Diseases, 1915, Dr. Douglas White estimated that approximately 10 per cent. of the population in large towns of Great Britain were suffering from syphilis. Dr. Lane informs us that exactly 8 per cent. of the population—i.e., about 8 million persons—in the United States are affected by this disease. This estimate, unlike that of Dr. White's, embraces both the urban and country areas. Such a statement, indeed, affords a sufficient *incentive to the precise and early diagnosis of so devastating* a disorder. We consider that the editors of the journal are acting in the public interest by publishing an article which, with equal lucidity and force, impresses upon practitioners the responsibility which accrues to them in respect to making the earliest diagnosis and initiating the promptest treatment of primary syphilis. Dr. Lane wisely emphasises his statement that "treatment is only as efficient as the follow-up system." We feel that there is an urgent necessity on the part of the practitioner both to assimilate and materialise so pregnant an aphorism. How often is a patient only treated and retained under observation until a negative Wassermann result has been obtained, or until his clinical signs and symptoms have disappeared. We do not suggest that on these findings it is a frequent occurrence for a patient definitely to be told he is cured, but we would emphatically state our belief that the necessity of obtaining re-examination and possibly of further treatment at regular intervals is not sufficiently impressed upon the patients' consciousness. It may be that through lack of knowledge the medical man does not realise the necessity of giving such advice. It may be that a false feeling of sympathy prevents him from hardening his heart and dashing to the ground the hope, which a patient may frequently cherish, that one course of treatment will suffice to cure him. Such a travesty of sympathy is as criminal as it is weak.—Dr. L. J. Owen contributes a suggestive article on Syphilis as an Ætiologic Factor in Nodular Cirrhosis of the Liver. The author reminds us how Adami investigated the evidence bearing upon the production of hepatic cirrhosis by chronic infection, and how he regarded the colon bacillus as being a causal factor in respect to this condition. It is interesting to note to what an increasing extent these once neglected bacilli have been held responsible for the production of morbid conditions. Fox, as the result of some thousands of autopsies on animals, came to the conclusion that alcohol, lead, and syphilis could have no part in bringing about these lesions, and emphasises the importance of infection as a causal factor. The fact that these examinations were carried out on animals other than man robs Fox's conclusions of only a part of their value. Reviewing the work of Dr. Owen it is interesting to note the conclusions he has arrived at as a result of 1200 autopsies performed in the Washington University School of Medicine. From the frequent association of syphilis with Laennec's or nodular hepatic cirrhosis, present in 40 per cent. of 19 cases of nodular cirrhosis, he suggests that the syphilitic virus is a causal factor with regard to the hepatic lesion. He adds that the presence of alcoholism is found to be less than that of syphilis; the incidence of syphilis and alcohol in combination is high, and he suggests that *a combination of the two factors may* produce the disease in question. Thirdly, as regards chronic infective processes—e.g., arthritis and endocarditis, he thinks that, although these have been associated with cirrhosis to such an extent as to justify further investigation, *no definite correlation can yet be established.*—Occupying an intermediate position between the highly technical articles to which we first referred and the two latter clinical ones, there is an attractive and clearly written statement on the subject of Strain in Spirochætes by Dr. Burton Peter Thom. He deduces in a succinct manner some of the data upon which a belief in specific strains of spirochætæ has been advanced. He gives particular attention in this respect to the subject of neuro-syphilis, and concludes that Hutchinson's suggestion as to the possibility of "several variants of syphilis is plausible, but is not capable of proof—at least not yet." He adopts a similar position as to the theory of a life-cycle with regard to *Spirochæta pallida.* Convinced that such a thing as a spirochætal strain does not exist, *he believes that the selective* action of the organism "when introduced into the body is governed entirely by the manner in which the tissues of the host react to the invader."—At the end of the journal there is a full and valuable series of abstracts and book notices, in addition to an index of current literature dealing with syphilis.

New Inventions.

A PORTABLE APPARATUS FOR TRACHEAL INSUFFLATION ANÆSTHESIA.

THE apparatus here illustrated consists of the following parts. (1) Needle valve sight feed (A). This is roughly the size of a 2 c.cm. hypodermic syringe. The lower end is connected by a gas union (G) to a heated air-chamber, and the needle valve to a metal tube passing through a cork to the bottom of the ether bottle (E). The ether reaches the needle valve at a positive pressure maintained by occasional use of the hand bellows (H). In other words, on the principle of a reversed Junker bottle. (2) Heating chamber (D). This part is composed of an outer cylinder (D), 6 inches by 4 inches, and an inner cylinder, 4 inches by 3 inches, the intervening space forming an air-chamber. Air from a Standing's aluminium foot-bellows, or preferably from a compression cylinder, enters the lower end of the air-chamber at (F), passes round the inner cylinder, and leaves the upper end at (W) on its course to the patient along the tube (T). The air-chamber is heated by water, or an electric bulb if available. (3) The safety valve manometer and thermometer are connected with a horizontal tube (T), all mounted as one unit on an upright wooden support. The safety valve is of the simple lever type used on steam engines, and can be easily adjusted in connexion with the manometer to blow off as required. For carrying purposes the gas union screws (G) and (W) are undone, and the safety valve unit and sight feed placed within the heating chamber, which is closed by the lid (K). The apparatus is not claimed to be superior to the more elaborate forms already on the market, but its compactness is a valuable asset in private practice. In hospital practice, where portability is not an essential, and where motor *air pumps are usually available*, a mercurial manometer can be used with advantage in place of the more expensive type illustrated.



The advantages of the apparatus may be summarised as: (1) compactness; (2) abolition of mercury and glass safety valve; (3) portability in an ordinary bag in any position; (4) abolition of the necessity to decant the ether from the bottle to a special container.

The apparatus is made by Messrs Coxeter and Son, 171, Pancras-road, N.W., who have carried out my design in an efficient manner.

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THE LANCET.

LONDON: SATURDAY, APRIL 30, 1921.

The League of Nations and Dangerous Drugs.

THE sequence of events in regard to the enforcement of the Opium Convention of 1912 since the stages described in THE LANCET of May 29th, 1920, and Jan. 15th of this year may be usefully recorded inasmuch as only scattered references to what is going on have found their way into the daily papers. It will be remembered that the first Assembly of the League of Nations, which met at Geneva in December, 1920, resolved that an Advisory Committee should be appointed by the Council of the League with a view to secure the fullest possible coöperation between the various countries concerned and to advise the Council in dealing with any relevant questions which might arise. The Council was further authorised to add to the Committee not more than three persons as assessors, such persons to have "special knowledge of the question" and not to be Governmental representatives. We understand that the Secretary-General of the League accordingly, and under the direction of the Council, invited the following eight countries to appoint one representative apiece on the Advisory Committee—viz., Holland, Great Britain, France, India, Japan, China, Siam, and Portugal. The Council also appointed Sir JOHN JORDAN, Mr. HENRI BRENIER, and Mrs. HAMILTON WRIGHT as the assessors to the Committee. The Committee is charged to submit to the Council by June 1st next a report on "the execution of arrangements with regard to the traffic in opium and other dangerous drugs," which report will be also laid before the next meeting of the Assembly of the League in September.

Meanwhile the draft Home Office Regulations under the Dangerous Drugs Act, 1920, against which were directed so much medical and pharmaceutical criticism, have been the subject of investigation by a Committee appointed with some reluctance by the Home Secretary, and now sitting under the chairmanship of Mr. CHESTER JONES. Any modifications which this Committee may advise in the Draft Regulations are by the terms of reference to have regard "to the main principles on which the Regulations are based and which are essential in the public interest for safeguarding the use of the drugs." The Dangerous Drugs Act, 1920, so far as the United Kingdom is concerned, has given legislative fulfilment to the obligations incurred under the International Opium Convention of 1912, although the essential Regulations to provide administrative effect to this enactment have yet to be promulgated. It will be interesting to learn how many of the 52 countries which are now parties to the Convention have similarly passed the legislation required by its effectuating clauses. The names of the members of the Advisory Committee of the League of Nations have not, we believe, at present been published, and we trust that they may include those having the medical and technical knowledge necessary to enable the Council of the League to avoid some of the difficulties which criticism of the Draft Regulations for the United Kingdom has brought to light here. As regards the assessors and their "special knowledge of the question," we recognise that Sir JOHN JORDAN'S long and honourable diplomatic association with China will be of no little assistance, and that Mr. HENRI BRENIER'S work, both on the Shanghai Commission and the first Hague Conference, was specially valuable; while Mrs. HAMILTON WRIGHT has carried on with indefatigable enthusiasm the labours with which her late husband was identified in restricting the use of dangerous narcotics. Nevertheless, we must express our regret that among the technical assessors to the Committee there is no one specially versed in the medical or scientific aspects of the whole question, for experience has shown that these aspects cannot be disregarded without incurring risks of failure either by way of exclusion or inclusion of important details.

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The Work of the Radium Institute.

THE report by Mr. A. E. HAYWARD PINCH of the work of the Radium Institute during 1920 marks a distinct advance upon any of the reports previously issued. The work carried out has grown in volume since its inception; it was perhaps inevitable that in the early stages lines of treatment largely laid down by the French school were followed. But it casts no reflection upon this school to state that radium-therapy as practised in our country to-day follows the dictates of no single body of opinion. The treatment is being shed of its empiricism, and the exact mode of administering radiation to conditions of disease is a matter for careful consideration and discussion. There is a growing tendency towards collaborative effort, so that different minds may be focused upon any single problem. If the surgeon has something to learn from the radiologist, it is no less true that the radiologist has much to gain from getting a surgical view-point of the disease he is treating, and neither will go in vain to the pathologist for information. The present report is presented in a new form. No cases are described in detail; an attempt has been made to present radium therapy in a manner which will guard the science against the reproach of empiricism. A consideration of principles, a review of data obtained from 80,000 treatments, and free reference to work from other sources, have been combined to formulate general laws and give some indications for departure from routine methods in special instances. A total of 8134 treatments were administered during the year, of which 4598 were given free to necessitous patients. 896 cases were seen for the first time, and were classified as follows: Examined but not treated, 78; recent reports not received, 114; received prophylactic irradiation only, 38; apparently cured, 133; cured, 28; improved, 336; not improved, 74; abandoned treatment, 62; died, 33.
The emanation applicators prepared
tributed to hospitals and medical
during the year numbered 765. An
physics of radium therapy is given;
of all apparatus used in treatment
terms of hydrated radium bromide
radium element content of 53·6
is devoted to a brief description
rays (emitted alike by radium
emanation, in a proportion of

of the reflected and emergent secondary rays, of which the latter necessitate careful elimination on account of their irritating effects upon tissue. Clinical experience has led to definite limitation of the thicknesses of the various metals used for screening; the range lies between 0·01 mm. aluminium and 2·0 mm. lead.

Radium rays impart to living tissues a stimulus varying with the character of the rays and the period and extent of their absorption; pathological cells are more susceptible than normal cells, and different varieties of cells react differently to radiation of given wave-lengths. It has been shown that cells are most susceptible when in a state of active nuclear division. The speed and power of α and β rays are gradually reduced in their passage through matter, and finally disappear, but complete absorption of the hardest γ rays never occurs. The action of radium rays on various tissues and organs of the body has been carefully studied by many observers, and a summary of the more important results is given in the report. Thus the changes induced in an area of skin subjected to irradiation are: (1) epidermal proliferation, followed by desquamation; (2) congestion of the dermis, with destruction of hair follicles and sebaceous glands; (3) fibrosis; and (4) regeneration of hair follicles and sebaceous glands. In the blood a rapid increase of red corpuscles has been noted, persisting for some time and associated with a short leucocytosis, followed by a marked leucopenia. Much valuable knowledge has resulted from analysis of the periodic examination of blood of nurses and laboratory workers carried out at the Institute. In these instances the changes in the blood cells are conditioned by repeated short exposures with γ radiation undergone during work. Leucopenia is invariably present; the effect is slowly established, but steady and cumulative, and a prolonged absence from all contact with radium is necessary to restore the leucocytic count—frequently reduced by 50 per cent.—to normal. All who habitually work with radium should be guarded as far as possible against rays which might impinge upon the thoracic and abdominal cavities. The normal thyroid gland is but little affected by radium rays, although arrest of its secretory function, brought about by frequent and prolonged radiations with resultant fibrosis, has been recorded. With reference to the testes and ovaries, the seminiferous tubes and Graafian follicles are extremely susceptible, and degenerate rapidly under radiation. Sterility has been specially observed in unprotected X ray workers, and hard X rays are analogous to the rays of radium.

For specific treatment of diseases certain fundamental principles are enunciated, and it is laid down that the effect of radium irradiation on the living cell shows three clearly established phases: (1) increase of cell activity, with possible associated proliferation; (2) arrest of cell activity; (3) degeneration and destruction of cells. The transition from stimulation to destruction is simply one of degree; no hard-and-fast line can be drawn between the phases. Details of treatment are then discussed under the headings of malignant and non-malignant diseases; the former comprise the carcinomata, sarcomata, rodent ulcers, and endotheliomata, and the latter include fibro-myomata of the uterus, leucocythæmia, exophthalmic goitre, tuberculosis, nævi, keloids, lupus erythematosus, leucoplakia, and warts, keratomata, and papillomata. Superficial skin lesions—chronic eczema, lichenification, and pruritus—are separately treated. The report necessarily contains some theory, but contentious matters have been avoided as far as possible; the whole has been written in the hope of stimulating further inquiry into the problem of radium therapy. The report of the Research Department, by Dr. J. C. MOTTRAM, is appended. Reference is made therein to the publication of a paper dealing with the blood of workers at the Institute,[1] in which are described three deaths of radium workers—two in England and the third in France. In two cases these deaths were ascribed to aplastic pernicious anæmia; in the other the blood condition was similar, but the case was complicated by signs of infective endocarditis. Anæmia of pernicious type was found in several other workers, and it is concluded that exposure to radium was in these cases the important ætiological factor. The increased protection now afforded is already resulting in a return to normal of the blood of these workers. The report of the chemico-physical laboratory, by Mr. W. L. S. ALTON, F.I.C., is also included; the staff of the laboratory is now engaged in problems relating to improvement of methods of measuring the activity of emanation applicators; the difficulty of finding trained assistants has hindered the work somewhat, but it is hoped to publish results next year. Results already obtained are sufficient evidence of the valuable part which laboratory investigations may play in serving the direct needs of the Institute, as well as the larger claims of the subject of radiology.

Insurance Practice and Research.

THE first National Insurance Act clearly recognised in 1911 the need for research in connexion with any new scheme of health administration, and the sum of 1*d.* per insured person was made available for the purposes of research at the discretion of the Insurance Commissioners. The Medical Research Fund Regulations of 1914 defined more exactly how the very considerable revenue from this 1*d.* rate was to be administered, and the fruitful work of the former Medical Research Committee, now the Medical Research Council with a larger scope, is common knowledge to the informed, whether doctors or sufferers. It is doubtful whether imaginative expenditure has ever justified itself so quickly and admittedly by practical results. But the Insurance Act has more than one pocket, and a cache has been revealed in Sheffield as welcome as it was unexpected. There the panel committee, by strict economy and voluntary labour during the war, was able to save £1000, which was invested in War Loan for any acute emergency which might arise. The fact that the Sheffield committee was financed by a voluntary scheme rendered this possible. When the financial situation came to be reviewed at the beginning of this year it was evident that the voluntary levy could be suspended for at least six months, and that the surplus of £1000 could be disposed of. After taking legal opinion the panel practitioners resolved to transfer the War Stock to the University of Sheffield, with a request that it should be earmarked for the equipment of a field research laboratory in the department of pharmacology.

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[1] Archives of Radiology and Electro-therapy, December, 1920.

This department of the University is organised on novel and sound lines. A whole-time professor of pharmacology has been appointed in the person of Dr. EDWARD MELLANBY, and, in order that the laboratory worker should not be divorced from clinical work, Professor MELLANBY has been also appointed an honorary physician to the Sheffield Royal Infirmary. In so doing the University authorities aimed at breaking down the barrier which now exists between physiological and clinical work, and at compelling the student to think of the patient as a problem in disturbed functions rather than as an item in a heterogeneous catalogue of tabulated symptoms, pigeon-holed under the name of a disease. At the same time the Royal Infirmary Board, thinking that the time had come to obtain for their patients the benefits of expert physiological advice, appointed the University professor of physiology, Dr. J. B. LEATHES, as consultant physiologist to the institution. Further, a joint arrangement with the Royal Hospital and the University has resulted in the appointment, as full-time clinical physiologist to both hospitals, of Dr. C. G. IMRIE, previously deputy professor of biochemistry at Toronto. The department of pharmacology will thus soon be strengthened by the addition of a fully equipped field laboratory for experimental work. Professor MELLANBY will be enabled to continue his work on rickets in relation to fats and vitamins, alongside of which may be recalled Mrs. MELLANBY's striking proof that the problem of dental caries is largely a matter of biochemistry.

There can be no doubt that Sheffield panel practitioners have afforded valuable support to the University of their city in helping along research work which promises to yield fruitful results to therapeutics. Incidentally their generosity cannot fail to create a favourable impression on the part of the general public towards panel practice in the area. A large part of this public consists of insured persons in whose interests the Approved Societies are assumed to act. These societies also have unallotted funds from which contributions might be made to research work. The example of the panel practitioners may prove infectious.

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INTERNATIONAL HEALTH PROBLEMS.

THE International Labour Office of the League of Nations has received a request from the League to appoint a delegate to the Temporary Health Committee of the International Health Organisation of the League. It is hoped that this Committee will meet in Paris early next month, the need for it arising from the fact that certain diplomatic measures have to be concluded before the permanent organisation, as decided by the League Assembly, can be set up. It is considered essential, meanwhile, that there should be no delay in carrying out the duties imposed on the League in connexion with international health problems. The Temporary Health Committee will consist of 12 members: a delegate from each of the States permanently represented on the Council of the League (France, Great Britain, Italy, and Japan); a delegate from the League of Red Cross Societies; a delegate of the International Labour Office; the President of the Bureau International d'Hygiène Publique; and five delegates appointed by the committee of that body. This Temporary Committee will cease to exist when the permanent organisation is actually formed.

As will be seen from the leading article upon the action of the League of Nations in connexion with dangerous drugs, the Council of the League is resolved to treat its international responsibilities in respect of health with every importance.

Annotations.

"Ne quid nimis."

THE BASAL METABOLIC RATE AND ITS CLINICAL POSSIBILITIES.

THERE are not wanting signs that in this country the pathological and clinical problems presented by exophthalmic goitre will provide an increasingly attractive field to workers. This is due partly to a wider acceptance of the importance of the rôle of the ductless glands in the bodily economy, partly to the elaboration and more general adoption of surgical technique in the treatment of this disease, and not a little to the introduction to this country of methods of measuring the basal metabolic rate. Out of the discussion lately held at the Royal Society of Medicine on the treatment of exophthalmic goitre, two salient facts have emerged. Firstly, that we are in need of standards by which we can compare the condition of a patient before and after a certain line of treatment, and as a corollary the respective merits of different methods of treatment and the comparative results of individual workers. But this need is met by basal metabolic measurements, which express in figures the severity of a case of Graves's disease at any one time, just as the degree of fever is charted by means of the clinical thermometer. Moreover, as the course of a fever may be followed upon a temperature chart, so the progress of a case of Graves's disease may be followed upon a curve representing the basal metabolic rate taken from time to time. With the assistance of these exact records we may hope that the vexed question of the choice of treatment, which is as much a matter for controversy now as it was ten years ago, will be put at rest. Secondly, that we must look to early diagnosis for further advances. The discussion in point revolved around the treatment of a late and intractable phase of the disease, and it became clear, before the debate had gone very far, that it was not so much to a development of the means at our disposal for dealing with a case at such a stage, but rather to its diagnosis in the early phases of the malady that we should look for real advance. Here also we may receive from metabolic measurements valuable help in recognising an early case of Graves's disease before gross bodily changes have occurred, and while treatment is still effectual. There is a natural reluctance to replace clinical observation by laboratory methods, and if the records of the pulse-rate or the body weight furnished what we required there would be no place for these measurements. But it is not difficult to demonstrate that the latter are far from constant and reliable guides in treatment and prognosis. By establishing an early diagnosis there is then ground for hope that cases of exophthalmic goitre will come under treatment at such a stage of the disease that treatment will be promptly beneficial in a fashion not common at present, and that in the control of that treatment these measurements will come to play the part that estimations of urinary sugar play in diabetes. The clinical application of heat measurements owes its inception to the work of Benedict, whose work established the accuracy of indirect methods of calorimetry based on estimations of the gaseous exchange. In clinical practice, therefore, these indirect methods are the only ones used. There are two methods of indirect calorimetry, the open-circuit type developed by Boothby and Sandiford at the Mayo Clinic, and employed in a modified form during the past year at St. Mary's Hospital, as described in these columns,[1] and the closed-circuit type used by Benedict and recently available in this country. Boothby and Sandiford, in their book reviewed in the present issue, have put forward certain criticisms of Benedict's apparatus, and there are others that will occur to anyone who has employed both methods. H. G. Earle and J. S. Goodall, in a paper printed in our issue of April 23rd, discuss some of these criticisms. There is need for an impartial survey of the two methods, founded upon a sufficiently prolonged experience of both.

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[1] THE LANCET, Nov. 20th, 1920, C. M. Wilson and Dorothy Wilson, "The Determination of the Basal Metabolic Rate and its Value in Diseases of the Thyroid Gland."

THE HARVARD CANCER COMMISSION.

THE Annual Report of the Cancer Commission of Harvard University, 1919-20, with which is combined the Eighth Annual Report of the Collis P. Hungtington Hospital for Cancer Research, which lies before us, gives rise to some reflections on the progress and course of cancer research in this country and America. The Hospital for Cancer Research was opened just before the war as an adjunct to the Cancer Research Laboratories of Harvard, in which some of the best pioneer work in the experimental study of cancer was carried out. The present report shows to what an extent the hospital service has absorbed the activities of the organisation, which are represented by the care and treatment of 2143 in-patients, and the making of 6105 out-patient visits. The laboratory work (biophysics, Dr. Duane and Dr. Bovie; pathology, Dr. Goodpasture; chemistry, Dr. Lyman) is closely associated with the clinical study and treatment of the hospital material. The Biophysics Laboratory is principally engaged in the problems arising out of the application of radium and X rays to the treatment of cancer, alone or in combination with operation, and Dr. Duane has devised a new X ray tube working at high voltage and giving a radiation eight times as penetrating as the Coolidge tube. The radiation emitted has a wave-length of 0·08 Angstrom unit and suffers an absorption of 16–20 per cent. in passing through the human body. The report, which is formal and business-like, ends with a complete list of 89 papers published from the Harvard Cancer Commission since its beginning in 1900. Roughly, half of these communications deal with the properties of ionising radiations, and since the hospital was opened the papers on other subjects are mainly of clinical rather than pathological interest. Those responsible for cancer investigations in this country will be impressed by the radical manner in which the Harvard investigations have been turned from the purely scientific problems of cancer to the practical work of the care of patients.

THE INTERNECINE VENEREAL CAMPAIGN.

A DISCUSSION reported in our present issue on the desirability of notifying venereal disease showed little unanimity except on its value as applied to ophthalmia neonatorum. In the routine instillation of a silver preparation between the eyelids of a scarcely born child we see the universal acceptance of the principle of prophylaxis, notification, and early treatment—in that order—of one of the venereal diseases. It is logical to argue on purely medical grounds, ethical considerations excluded, that the prophylaxis, notification, and early treatment of any communicable infection is desirable. All this is familiar debating ground, while it remains true that as far as the infant victim is concerned it matters not whether the noxa is gonococcus or streptococcus. Perhaps the infant, like the royal prince who was born in Wales and spoke no English, might afford a basis of reconciliation between two opposing camps. We have received, in common with the lay press, correspondence which has passed between the Society for the Prevention of Venereal Disease and the National Council for Combating Venereal Diseases. The Council had submitted to the Society a memorandum defining its policy. In brief, this policy advocates propaganda to induce chastity and popular instruction in sex hygiene and cleanliness as the surest means of combating venereal diseases. The Council points out that no legal difficulty exists to prevent the purchase by individuals of disinfectants as a protection against these diseases, but deprecates the issue of official instructions which would, in its opinion, lead not only to the appearance of official condonation, but to the assumption that such disinfectants are an official guarantee against disease. Also, that if the instructions were not properly understood, aggravation of incidence of disease and attempts at self-treatment might result. The Council recommends that the existing ablution or disinfecting centres should be continued, but should be regarded definitely as experiments subject to careful and official supervision from which accurate and wide experience may be obtained, so as to afford a trustworthy basis for any decision as to their extension. The Society, on the other hand, points out the futility of drawing the line at a domestic standard of cleanliness, and regards as illogical the recognition of unofficial disinfectants handed out with oral directions as opposed to official disinfectants issued with written instructions. It is a nice point, but the issues in such a complex ethico-medical problem are hardly as simple as the Society would have us believe. It is conceivable, to us at least, that the value of immediate disinfection might vary with the sense, sex, age, or general habits of the person affected.

MELANOGLOSSIA.

A CASE of this somewhat rare condition is reported by Dr. Heyninx, of Brussels.[1] The patient was a man of 77, a confirmed smoker. The black patch was in front of the circumvallate papillæ, the commonest situation in which it is found. It was covered by a thick coat of black filaments half a centimetre in length. Biopsy showed hypertrophy of the villi; epithelium thickened and "mortified." The chorion of the mucosa was infiltrated. The papillæ were elongated by hyperkeratosis. Apparently the *Rhizopus niger* was not found in this case, though Dr. Heyninx mentions that it has been observed by others. He sums up the ætiology of this condition as follows. Predisposition is due, first, to general debility resulting from old age or syphilis, and, secondly, to chronic irritation of the tongue. Glossitis then supervenes, with infiltration of the chorion. Finally, epithelial thickening with hyperkeratosis of the papillary filaments and inflammatory pigmentation. The *Rhizopus niger*, when present, would tend to increase the inflammatory processes. The hairy filaments serve to differentiate true melanoglossia from pigmentation due to Addison's disease or to other causes, such as the inheritance of negro blood.

"BE SURE YOUR SIN WILL FIND YOU OUT."

IN "Notes upon the Preparation of Monographs and Reports for Publication" the Medical Research Council gives advice which, coupled with that contained in Sir Clifford Allbutt's standard work on the subject, should, if perchance it be followed, materially help to prune the often over-luxurious tangle of scientific writings. There are two aspects of this subject which deserve special comment, both referring to sins of omission. Much scientific research leads to blind alleys, the charting of which is often almost as important as that of avenues leading to success. Indeed, an apparently fruitless piece of research, if conducted on scientific lines, may be of far-reaching importance, not only in saving other investigators from vain repetition, but also in yielding information which, viewed from some new angle, may shed a flood of light. In the past, unfortunately, an enormous amount of such temporarily negative spade-work has been ignored; but it is to be hoped that, under the auspices of the Medical Research Council, it will be better utilised, and that the comparatively thankless task of charting blind alleys will not be left as an embarrassing monopoly to a few altruistic workers. When we pass from temporarily negative research to the subject of mistakes and disasters, we are faced with certain elementary psychological problems. Mistakes and disasters are often singularly instructive, but their perpetrators do not always experience an overwhelming desire to benefit mankind by confession. Yet if the publication of such errors is left to others than their authors, a garbled version may be the result, and an incorrect impression given both as to the nature and frequency of the error, and the candour of its author. Within the past few months two professors of medicine on the Continent have been pilloried in medical journals on this score. Both were pecuniarily interested in remedies which they had personally devised. Both published a practically unbroken series of successful results, and it was left to others to collect and publish with unaffected glee the not infrequent cases of failure or serious injury inflicted by these remedies. Had these records of failure been published by the authors of the remedies concerned, their own reputation for candour would not have suffered at all, and the reputation of their remedies would have suffered less. It would, however, be unjust to brand as knaves those who do not publish their mistakes; *populus vult decipi* is a law applicable to others than the grossly illiterate, and the advocate of a remedy whose mental astigmatism allows him to see only an unbroken series of successes may be more fool than knave. With regard, however, to such perennial mistakes as the legacy of a swab in the peritoneal cavity it should be borne in mind that secrecy is the mother of rumour, and that, as the drummer said: "Honesty, I have found, is the better policy, having tried both."

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[1] Le Scalpel, April 2nd, p. 349.

THE BLOOD PRESSURE IN MENSTRUATION.

THE question of the changes in blood pressure before and during menstruation is of no little interest, both theoretical and practical, for it may account for many symptoms; yet it is strange that in most of the text-books there is very little to be found of an authoritative nature bearing on this, and in several works on blood pressure it seems to be ignored. One of the few references to the matter is in Dr. Blair Bell's "Principles of Gynæcology"; another mention of the subject is contained in J. Novak's "Monograph." A brief note by C. D. Mosher, published in the Johns Hopkins Hospital Bulletin, 1901, may also be mentioned. We understand that Professor Winifred Cullis, D.Sc., has conducted some investigations on the question at the London School of Medicine for Women, but the work has not yet been published. In another column of this issue of THE LANCET will be found a query on the subject, and it would be interesting to our correspondent and to many of our readers to have some definite account of the blood pressure changes in connexion with menstruation.

BACTERICIDINS.

THE interesting paper in our present issue by Dr. J. W. McLeod and Mr. P. Govenlock on the production of bactericidins by micro-organisms raises a number of questions which cannot fail to influence the study of immunity. The subject is one which has hitherto aroused remarkably little attention in English bacteriological literature. We are familiar with the fact that one species of bacterium may outstrip its fellows in growth on artificial media owing to the chemical composition of the medium, the temperature of incubation, and other circumstances. This is met with daily in the cultivation of throat swabs and in the isolation of acid-fast bacteria from a mixed flow, to name two instances at random. But the bactericidal effect which one organism may have upon another—even on another variety of its own species—excites little comment. And conversely we are almost equally ignorant on the question of symbiosis. By means of an ingenious modification of Eijkman's agar disc method Dr. McLeod and Mr. Govenlock have studied the bactericidal substances elaborated by the pneumococcus and a number of other species. The results are in several instances very striking. The pneumococcus, for instance, appears to have a definite inhibitory effect not only on organisms of other groups but also on other varieties of pneumococcus. It is also interesting to note that ubiquitous organisms such as the staphylococcus and the colon bacillus show less inhibitory powers. The inhibitive substances appear to be "relatively labile bodies destroyed by heat at 80°–85° C." and need a free supply of oxygen for their production. From the immunological aspect of the question we are tempted immediately to ask if these bactericidal substances are related to the bacteriolytic substances produced by certain tissue fluids, blood serum, and phagocytes. On the practical side of clinical pathology a large number of issues are raised. Not the least interesting, in addition to the questions suggested by the authors, is the presence or absence of these bactericidal substances in the group of obligate aerobes such as the tubercle bacillus on the one hand and obligate anaerobes such as the tetanus bacillus and its allies on the other. As the authors point out, some very interesting lines of investigation are opened out, and we trust that a stimulus has been given to research in a field which has hitherto been more or less of a "dark continent."

THE CAUTERISATION OF PLEURAL ADHESIONS.

WHEN, at the International Medical Congress in London in 1913, Professor H. C. Jacobaeus gave an account of his preliminary attempts to convert a partial, artificial pneumothorax into one that was complete by the division of pleural adhesions with the thermo-cautery, he roused some interest and much sceptical criticism. Those who were present at his lecture may remember how unconvinced several of his hearers were; his method was regarded rather as a clever and daring freak than as an operation calculated to prove of general utility in lung collapse therapy. Subsequent events appear to have belied this early judgment, and in his most recent publication[1] Jacobaeus is able to show that this operation has already been performed in about 100 cases, with brilliantly successful results in several, and without a single operative death from hæmorrhage, air embolism, or other cause. His own cases number 40, and in 30 he succeeded in collapsing the lung by the severance of adhesions. In four of these 30 cases the operation provoked a tuberculous empyema from which only one of the four patients recovered. In the remaining 26 cases the conversion of a partial to a large pneumothorax proved of great benefit owing to the improved immobilisation of the lung. A reference to Professor C. Saugman's[2] recent paper on pneumothorax treatment of pulmonary tuberculosis will show how greatly the benefits of this treatment depend on the completeness of the immobilisation achieved, and his comparison of complete with incomplete cases of pneumothorax may be taken as the measure of the value of Jacobaeus's operation. In about 50 per cent. of his cases the cauterisation gave rise to a pleural effusion. This was, in many cases, simply due to thermal irritation, and it disappeared in a week or two without causing any permanent ill-effects. Far more serious were the four cases of pleural effusion which subsequently turned into chronic tuberculous empyema. This, then, would seem to be the gravest complication which the operator need anticipate, and it alone was the cause of the post-operative mortality of 8 per cent. to which Professor Jacobaeus confesses. Only in one case did he see a hæmorrhage amounting to as much as 100 to 200 c.cm., and he suggests that this complication can be largely avoided by not heating the cautery to more than a dull red glow. Other complications such as surgical emphysema did not threaten life, and complications such as septic infection of the pleural cavity by injury to the lung did not occur once, although spread of mixed infection from a cavity in the lung to the pleural cavity has been dreaded as a sequel to this operation. Thus, the most serious objection to this treatment seems to be the possibility of a tuberculous empyema, and Professor Jacobaeus admits that there is little prospect of eliminating this risk altogether by improvements in the technique of his operation. An account of the technique was given in 1919 by Dr. W. Holmboe.[3]

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[1] Acta Chirurgica Scandinavica, 1921, vol. liii., fasc. 4.

[2] THE LANCET, 1920, ii., 635.

[3] Tubercle, 1919, vol. i., No. 1.

KERATOSIS DIFFUSA FŒTALIS.

UNDER the name of keratosis diffusa fœtalis, sometimes known as ichthyosis congenita, Dr. Julius H. Hess and Dr. Oscar T. Schultz,[1] of Chicago, who report an illustrative case, describe a congenital anomaly of the skin of unknown ætiology, characterised by diffuse, usually general, hyperkeratosis and qualitatively abnormal cornification of the skin, with decreased exfoliation of the epidermis. This combination of processes causes the formation of thick, horny scales, with intervening deep fissures, the skin resembling a horny cuirass. Secondarily it results in arrest of development and in deformities of the external ears, eyes, nose, and lips. The course of the disease depends primarily on the intensity of the skin changes, according to which the cases have been classified by Riecke into the three groups of keratosis diffusa fœtalis, keratosis diffusa fœtalis mitior, and keratosis diffusa fœtalis tarda. In the first group the abnormality is so extreme at birth that the infant does not survive more than a few days. In the second group the condition, though present at birth, is not developed in such an extreme degree. In the third group the skin anomalies are only slightly developed at birth, or the infants may be born without any visible changes in the skin or of the face. It is only after days, weeks, or months that the symptoms reach the degree present in the second group. The essential pathological changes in keratosis diffusa fœtalis are a marked increase in the horny layer of the epidermis and abnormal keratinisation of the epithelial cell structures. The hyperkeratosis, which becomes the predominant element in the morbid process, is believed to be the result of a preceding stage of hypertrophy and hyperplasia of the skin. In the case now under review the thyroid was undifferentiated and morphologically non-functioning, but the writers maintain that thyroid deficiency cannot be regarded as an essential factor in keratosis diffusa fœtalis unless it occurs more frequently or more uniformly than the literature indicates.

ATMOSPHERIC CONDITIONS AND EFFICIENCY.

ATTENTION was recently drawn in these columns[2] to an interesting report of the Industrial Fatigue Research Board based upon the use of Dr. Leonard Hill's instrument, the kata-thermometer, in boot factories in this country. Another report,[3] emanating from South Africa, indicates that this instrument is also being used in other countries. The research reported upon by Dr. A. J. Orenstein and Dr. H. J. Ireland, working in the Rand gold mines, is the first effort known to us to estimate scientifically the effect of atmospheric conditions upon output and fatigue; for although Dr. Hill has insisted upon the importance of ventilation in relation to bodily activity, he has relied principally upon the increased strain thrown upon the circulation in secreting sweat in order to dissipate heat as the indication of reduced capacity for work. The article under review opens with an excellent summary of physical fatigue and methods of estimating it, and of the work done by Haldane on respiration and Hill on ventilation. The authors devised two forms of ergometer: one was constructed to simulate closely hand-drilling, the type of work which causes the greatest amount of fatigue in gold-mining. In this apparatus blows of a hammer are communicated to a metal disc and, through its deflection, to a column of water which actuates a piston; the movements of the piston are recorded on a revolving drum. The second ergometer was essentially a band-brake dynamometer driven like a winch. Every revolution made by the operator represented so much work done for a certain net pull on the brake pulley. The observer had only to note and take periodical readings of a revolution counter. Two native "boys," one a finely developed Xosa, aged 40, and the other a sturdy Basuto, aged 35, were employed to work these instruments first on the surface and then in various places in the underground workings; meanwhile, atmospheric conditions were observed by using the kata-thermometer, wet and dry, and taking ordinary wet- and dry-bulb temperatures. Observations were also made on the "boys" as to loss of weight, and skin and mouth temperatures. Conditions underground were observed as found, and also after stirring up the air where oppressive, by a fan introduced for the purpose. Many difficulties were experienced, as must always be the case when experimenting under industrial conditions. After due allowance made for these, the writers consider a definite relation to be established between working efficiency and the dry cooling power of the air. If efficiency is placed at 100, with a cooling power measured by the dry kata-thermometer of 6, it falls to only 50 when the cooling power falls to 1. The value of air movement alone was shown by use of the fan placed so as to blow a current of air over the "boys"; in one case an increase of 46 per cent. of output, and in another of 32 per cent. was obtained. The relation between cooling power and output having been determined in this way, observations were made throughout a representative section of a mine. The cooling powers, estimated working efficiency, the number of men, and equivalent number at full efficiency were then ascertained, and the important conclusion arrived at that 21 per cent. of output was being lost through inadequate cooling power. "This loss is loss of output and does not include the losses due to the increased morbidity which must surely follow on the excessive strain and fatigue associated with work in oppressive atmospheres; such losses would be hospital charges and cost of replacing sick men." We have here an instance of the importance to the economics of industry of studying the economics of humanity. Which costs most? The loss of 21 per cent. of output with its attendant increase of morbidity, or the cost of increasing the cooling power of air in the mines?

A laboratory worker reading this report may find much to criticise from the point of view of strict scientific control of observations; he may object on principle to the value of ergometers to measure output as being under the entire control of the operators; he may point to the influence of practice effect, and stress the difficulty of controlling the doings of the subjects outside working hours. Such things, however, must always be encountered under industrial conditions, and Dr. Orenstein and Dr. Ireland are fully alive to their importance. They are to be congratulated on having carried out a difficult and important research, and on having obtained definite and practical results. We hope that this work will be carried further, and that some of the more usual methods of measuring output rather than using ergometers may be employed for estimating efficiency in this country when trade revives. Some of the repetition work, so frequently referred to, should lend itself to hourly and daily computation, and so provide conditions for observation.

SYPHILIS OF THE INTESTINE.

Dr. Udo J. Wile, professor of dermatology and syphilology of the University of Michigan, to whose paper on syphilis of the pancreas we recently drew attention,[1] has added to his studies on visceral syphilis an article on Syphilis of the Intestine.[2] He remarks that though with the exception of syphilis of the rectum intestinal syphilis is rarely met with clinically, the condition is well recognised pathologically both in syphilis of the newborn and in the acquired disease. A study of the literature shows that by far the largest number of cases of intestinal syphilis occur in the small intestine, the jejunum being more frequently involved than any other part. Syphilitic involvement of the cæcum has

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[1] American Journal of Diseases of Children, April, 1921.
[2] THE LANCET, April 9th, 1921, p. 763.
[3] Orenstein, A. J., C.M.G., M.D., and Ireland, H. J., M.B.E., B.Sc.: A Contribution to the Study of the Influence of Mine Atmospheric Conditions on Fatigue, Journal of the South African Institution of Engineers, vol. xix., No. 8, March, 1921.

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[1] THE LANCET, March 26th, 1921, p. 659.
[2] Archives of Dermatology and Syphilis, April, Part 1, 1921.

been described by Vantini, syphilis of the appendix by Trinkler, and syphilitic ulcers in the descending colon by Borchard, Rotter, and Kummel. Syphilis of the descending and transverse colon was found by Gross. The changes usually occur late in the disease, and are therefore manifestations of the tertiary period. A secondary catarrhal enteritis, however, sometimes occurs, associated with the exanthem of the secondary period; it differs from simple catarrhal enteritis in not yielding to ordinary measures, but disappearing promptly on antisyphilitic treatment. In cases in which an autopsy has been performed, when the patients have died with early syphilis, discrete patches of erythema and swelling of the lymphoid follicles have been found in the intestinal mucosa. In view of the frequent involvement of the spleen, liver, and heart at an early stage, it is not surprising that the mucous membrane of the intestine should be similarly affected. The symptoms do not differ from those of acute enteritis due to any other cause. The cases usually run a mild course, being readily amenable to treatment, and even without treatment tend to disappear spontaneously. Late syphilitic enteritis, though occasionally recognised during life, is more frequently found post mortem or at operation. The symptoms depend on the situation and type of the lesion, and therefore present the clinical picture of ulcer, abdominal tumour, stenosis, or intestinal obstruction. When there are numerous ulcers, particularly in the jejunum, the condition is identical with that of tuberculosis. There may be more or less fever, there is diarrhœa with occasional periods of constipation, and as partial healing occurs cicatrisation takes place with symptoms of partial obstruction. When the lesion is situated near the ileo-cæcal valve or appendix the symptoms may simulate appendicular colic. The relatively uncommon condition of amyloid disease of the intestine due to late syphilis is never recognised until the autopsy, the symptoms being those of chronic ulceration, enteritis, or of amyloid disease due to inveterate syphilis, with no symptoms referable to the gastro-intestinal tract. Owing to the failure of diagnosis and the possibility of complications, such as intestinal obstruction and perforation, the course of the disease is usually fatal, but cases may drag on for years with vague intestinal complaints.

THE EARLY STAGES OF THE HORSE-FLY.

IN a monograph of 204 pages, with numerous excellent plates, Dr. Werner Marchand[1] gives a comprehensive history of the early stages of tabanids. Isolated facts about these flies, occurring in scattered articles and in various languages, have been here collected and reviewed, and presented in an accessible and convenient form. The limitation and repression of the activities of this fly, which plays a considerable part in transmitting disease to horses and cattle, can be effected only with the help of exact knowledge as to its life-history and habits. Two interesting facts emerge which may bear on the steps taken to stamp out these flies. One is that probably the majority of tabanids have only one brood a year; the other is that the larva grows very slowly after hatching and often takes six months or more to become fully grown; moreover, it then remains buried in mud or sand for a time (the so-called resting period). Another piece of information that may help us to control the number of the flies has been elicited. Masses of eggs are deposited usually on plants or sticks at the edge of ponds, streams, and lakes, and even on stones above the water, but seldom on dry ground. From these vantage points the larvæ drop into the water or on to the ground, according to the egg-laying habit of the species, and it is before they reach this stage that our best chance of destroying them would seem to lie.

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[1] The Early Stages of Tabanidæ (Horse-flies). By Werner Marchand, Ph.D. The Rockefeller Institute for Medical Research. 1920.

APPENDICITIS IN THE SAC OF A FEMORAL HERNIA.

THE appendix is very rarely found in the sac of a femoral hernia. Keen states in his book on Surgery that he has operated on 140 cases of femoral hernia and not found the appendix in 1, while in 1874 cases of inguinal hernia he found the appendix in 36. Dr. A. D. Hoidale has just reported[1] the case of a woman, aged 60 years, the mother of several children, who consulted him in 1916 for a right femoral hernia which caused no discomfort and disappeared on lying down. She declined operation. On August 26th, 1919, he was called to her. On the 23rd she went to bed as usual, but next morning noticed pain in the right leg on trying to rise and found that the hernia had not disappeared as usual during the night. She stayed in bed and on the 25th nausea began. On examination the temperature was 100° F., the pulse 130, weak and irregular, and the face flushed. The swelling in the groin was about the size of a hen's egg, tense, and tended to redness. There had been stools each day, which became progressively smaller. On the 27th she was removed to hospital, and the swelling became redder. On the 28th an incision was made under local anæsthesia. Pus gushed out and a necrotic mass, so adherent that its structure could not be differentiated, was found. What looked like the appendix, but was thought to be more probably Fallopian tube, was seen. On pulling on the mass, what appeared to be discoloured bowel was seen at the base. The case being desperate, it was decided to open the abdomen in the middle line. In the femoral opening was found a large mass of omentum, the appendix, and a small portion of cæcum. All except the cæcum were necrotic. After cleansing, the whole was pulled back into the abdomen and out through the abdominal incision. At this stage it became necessary to give a little ether. The necrotic sac, omentum, and appendix were removed and drains were put in through the femoral opening and at the bottom of the abdominal incision. Except for some fat-necrosis in a small portion of the abdominal incision and a parotid abscess, recovery was uneventful. Evidently appendicitis in the sac had led to abscess. The adjacent cæcum had begun to take on a necrotic aspect, but not sufficient to warrant the additional risk of resection.

THE Croonian lecture to the Royal Society will be delivered on Thursday, May 5th, at 4.30 P.M., by Dr. Henry Head, F.R.S., the subject being Release of Function in the Nervous System.

A KNIGHTHOOD has been conferred on Dr. James Craig, King's Professor of Practical Medicine, School of Physic, Trinity College, Dublin, Physician to Sir Patrick Dun's Hospital, and Past President of the Royal College of Physicians of Ireland.

THE death occurred on April 23rd after prolonged illness of Mr. Henry Edward Juler, consulting surgeon to the Royal Westminster Ophthalmic Hospital, and consulting ophthalmic surgeon to St. Mary's Hospital, who was for long a leader of ophthalmological thought and practice in this country.

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[1] Journal of the American Medical Association, April 2nd, 1921.

FARADAY SOCIETY.—A general discussion on Physico-chemical Problems Relating to the Soil will be held during the afternoon and evening of May 31st, in the rooms of the Chemical Society, Burlington House, London, W., Sir A. Daniel Hall, F.R.S., in the chair. The discussion will be opened by Dr. E. J. Russell, F.R.S., director of the Rothamsted Experimental Station, who will give a general survey of the subject. A series of papers dealing with soil moisture, organic constituents, adsorption and colloidal phenomena will then be put forward as a basis for discussion. Further particulars of the meeting may be obtained from the secretary of the Faraday Society, 10, Essex-street, London, W.C. 2.

EXAMINATION OF WOUNDED PENSIONERS:

SOME PRACTICAL SUGGESTIONS.[1]

BY A. E. CHISHOLM, F.R.C.S. EDIN.,
SURGICAL SPECIALIST, MINISTRY OF PENSIONS, DUNDEE.

IN the examination of pensioners who have sustained wounds the smallest and most obvious points have often considerable importance in forming a proper conclusion as to the just assessment of a disability. The primary condition can often be pictured and contrasted with present deformity and functional disturbance; severe wounds sometimes have a much better result than was hoped for, and vice versa. For example, a man with a large scar over his scapula, involving considerable loss of muscle and bone, may yet retain a degree of function only justifying a comparatively low assessment. On the other hand, a through-and-through rifle or machine-gun bullet wound, healing rapidly, may be the cause of severe and perhaps permanent injury by severing an important nerve.

It is a good plan to deal with each kind of structure in turn—scar, muscle, bone, &c.—and then to pass on to function. The amount of gross injury does not so much matter, within limits, as the extent of interference with function. Facial disfigurement naturally falls into a category by itself. A few points will now be discussed in the above manner.

Scars.

The points usually noted about scars are: (1) Extent; (2) healed or unhealed; (3) strength of scar; (4) adherence (*a*) to subjacent soft structures, (*b*) to bone; (5) form—e.g., puckered; (6) tenderness.

In some scars there may be a thin and recently healed part which breaks down periodically. If the present state of healing has only lasted for a few weeks, the condition should not be considered as stationary; there is the possibility of a retained foreign body or of a sequestrum being the cause of the intermittent sinus formation. A scar adherent to bone is not always unsatisfactory. With a moderately good blood-supply to the scar and firm healing for several months there is no reason to anticipate a breaking down unless there is injury by direct violence, in which case a scar adherent to bone, being less resilient, is more liable to break down than a scar adherent only to soft tissues.

In order to test if a scar is adherent or not to muscle the man should be instructed to contract the underlying muscle voluntarily. The dragging due to adherence may be missed if only passive movements are employed. Adherence to muscle is usually more crippling than adherence to bone. Good judgment is required with regard to tenderness. There is probably a little malingering on this score; apparently excessive signs of pain on pressure may be circumvented by the recognised ruse of directing the man's attention to another part and pressing on that part, while all the time a careful and *increasing* pressure is being applied to the painful scar. The extent of the scar, if not tacked down, is not generally of much consequence unless facial disfigurement is involved.

Atrophy.—Limbs must be measured circumferentially at the same level and with complete relaxation of the muscles concerned. A true measurement, to express atrophy, should as a rule not be taken over the site of the scar, especially if there has been loss of tissue, but over the most fleshy part of the limb, as muscles generally receive their nerve-supply not very far distal to their origins. The thigh should be measured in the upper half; the forearm should be measured 1½ to 2 inches below the bend of the elbow. For practical purposes the thighs and calves may be considered relatively equal, but the same does not apply in the case of the upper limbs. In a right-handed man the right arm is naturally better developed than the left. The proper way to record arm measurements is as follows:—

Right upper arm ...	10½ in.	Right forearm	9¾ in.
Left " " ...	10 in.	Left "	9½ in.

Right-handed or left-handed (as the case may be).

Testing Muscular Movements.

In testing the function of muscles the limb must be in a proper position to give the muscle a fair chance to do its work; but sometimes the action of one muscle group may be simulated by that of another muscle group, as the following example will show.

Imagine that the metacarpo-phalangeal joints of one hand cannot be actively extended by thirty degrees. There may have been a musculo-spiral nerve injury that had recovered, but the extensor muscles have not fully recovered their tone and have become stretched. The fingers can, however, be extended passively. Now ask the man to flex his wrist, and at once the digits will be fully extended. The reason is obvious; the flexion of the wrist has increased the distance between the origin and insertion of the extensors, and thus the elongated muscles have, for the time being, become taut, resulting in the extension of the digits. Nevertheless, extension is impaired; the apparent voluntary extension is a mere camouflage.

Fibrosis amongst muscle fibres.—Those whose privilege it has been to deal with wounds in their early stages, as in the casualty clearing stations, are well aware that in a muscle wound, even apart from loss of tissue and destruction, the divided ends of the muscle fibres tend to separate widely, and the gap has to be filled in by fibrous tissue. Even if the wound has not been deep the fibrous tissue formation may be considerable, and the contractile power of a given muscle may be seriously and permanently impaired. Such cases should often be assessed more highly than outward appearances seem to indicate. If the muscle is tacked down to bone the interference with function may be very great. In the instance of fractured femur with considerable muscular injury the scar tissue of the quadriceps may have become so firmly fixed to the femur at the site of fracture that the knee is practically ankylosed, although the joint itself is entirely free from any morbid condition.

Bones.

A case of ununited fracture is not often met with at a pension board, but one is occasionally seen in the upper limb. In the humerus the disability is a serious one, but in ununited fracture of the ulna or radius the uninjured bone may largely compensate for the lack of continuity of the other. If both bones of the forearm are ununited the condition is bad indeed. If operative treatment has definitely failed, and an expert has advised against a further attempt, it may be possible to supply a fixing apparatus to act as a sort of exo-skeleton. It is, however, more common to find a bone firmly united in *poor or bad alignment*; *in the forearm* this condition may interfere with rotatory movements—a supinated forearm which cannot be pronated is functionally much more impaired than a pronated forearm which cannot be supinated.

Good alignment in the lower limb is of importance for weight-bearing. An angled femur, concave outwards, may throw great stress on the internal lateral ligament of the knee-joint; angled with the concavity inwards it may require elevation of the pelvis on the affected side in order to bring the foot vertically below the hip-joint, or the man may have to walk with an awkward and ungainly gait with the affected limb abducted at the hip. If the pelvis be raised an *apparent shortening will result, although there may be* neither loss of bone nor overlapping of fragments. A raised boot may then be required. It may here be remarked that raised boots have often been supplied too high.

Many mistakes are made in measuring the length of the lower limbs. The anterior superior iliac spines should be accurately located and marked—not always an easy matter if there is much subcutaneous fat present. With the man lying on his back the anterior superior spines should be on the same transverse level—i.e., the pelvis should not be tilted. The limbs must be in a similar position very slightly abducted, just beyond the parallel, and equally so. Any difference in the lengths measured from the anterior superior iliac spine to the tip of the internal malleolus *will indicate the true shortening.*

In an ankylosed hip with adduction instruct the patient to lie on his back with his lower limbs in the same relative position to each other as if he were standing, or else have him standing up. Then measure from the umbilicus to the internal malleoli. Apparent shortening is caused by tilting of the pelvis. In fracture of the leg below the knee a convenient method is to let the man lie on his back with his hips and knees flexed and with the heels resting on the couch, and to measure from the upper border of the internal tuberosity of the tibia to the tip of the internal malleolus. Shortening of the upper arm, unless very pronounced, need not of itself demand extra assessment.

Joints.

Ankylosis.—Statutory assessment is laid down for ankylosis of joints, but it must be remembered that this applies to fixation in the most advantageous positions.

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[1] Being the substance of a paper read before the Ministry of Pensions Medical Club, Dundee, on Feb. 19th, 1921.

(1) A shoulder-joint should be ankylosed in the abducted position to upwards of 80° with a little forward inclination of the humerus and slight internal rotation at the shoulder-joint. The scapula is thus given free movement and the arm can be brought to the side, the lower angle of the scapula rotating inwards. This is greatly aided by gravity. But if ankylosis has taken place with the arm at the side and the scapula in its normal vertical position function will be greatly impaired, as it will be found impossible to abduct the arm through more than a very few degrees.

(2) The best position for ankylosis of the elbow depends a good deal on the man's work. For most purposes it is probably best to have the forearm flexed at rather less than a right angle with the upper arm. If rotatory movements are also lost the best position for the forearm is in fairly complete pronation. A forearm fixed in supination, especially with an ankylosed elbow, is in a very bad functional state.

(3) The wrist is best ankylosed either straight or slightly dorsiflexed. A flexed wrist means a hand with a somewhat weakened grip.

(4) The hip is best ankylosed in slight abduction with full or almost full extension. Walking can then be performed by a swinging movement of the pelvis.

(5) The knee should be ankylosed in full or almost full extension. There is sure to be considerable atrophy of the thigh on the affected side, but the calf will not be atrophied unless from some other cause, and may even be increased in circumference because of the extra work put upon it.

(6) The ankle should be ankylosed at right angles. It is obvious that a fixed ankle-joint, with the foot pointing even a little downwards, is a cause of considerably greater inconvenience than one in which the rectangular position is maintained. The disability is accentuated if a hallux rigidus is also present on the same foot.

A flail joint is almost always a cause of greater disability than an ankylosed joint. This applies to the upper limb. In a lower limb amputation may be the only possible form of treatment, but instances of this condition are not often seen at pension boards.

Movements.—The examiner should, of course, know the normal limits of movement of the various joints. For example, pronation of the forearm is a movement which is not quite so complete as is often imagined; probably it is frequently tested for in the wrong way, and rotation at the shoulder takes place and deceives the examiner. The movements of the two limbs should be compared; the elbows should be firmly applied to the flanks and flexed at a right angle, and the man should be directed to pronate both forearms slowly and fully; then rotation at the shoulder will not take place. If a man does not seem to be able to pronate at all, or only a very little, direct him to bring the palm of his hand to the back of his neck. He requires semi-pronation to achieve this movement, and it may be found that in this way he can do more than he thought he could.

If two distal phalanges are missing from a finger the remaining phalanx may appear, quite wrongly, to have a limited range of flexion. The gap left seems to deceive somewhat. Normally the proximal phalanges can be flexed almost, or quite, to a right angle with the metacarpals. Whether phalanges are lost or not, the movements at the four inner metacarpo-phalangeal joints should be tested together and not separately. If tested separately a limitation of flexion may be described which does not really exist. The estimation of grip by percentage is a very difficult proposition, and is very often guessed at quite wide of the mark.

In examining for joint movements of the lower limbs the trousers and pants should not be left on. In testing for flexion of the hip in the dorsal position the sound hip must be fully extended and the sound thigh kept in firm apposition with the couch, otherwise the limitation of flexion, if any, may be considerably underestimated on account of the pelvis tilting forward, the lumbar spine becoming less concave backwards. Examiners frequently describe grating in the knee-joints when there is nothing pathological about them. A certain amount of friction between the patella and the condyles of the femur is quite normal.

Sensibility.—In testing for anæsthesia the general distribution of the main cutaneous nerves must be borne in mind. Not unusually the examiner merely asks the man if he feels a touch in certain places; this is not sufficient, for a man may feel a touch less acutely than he ought to do. The corresponding parts on the two sides must be tested in a similar way.

The Question of Treatment.

Treatment should not be pressed on a man if the relief gained must of necessity be small or the result doubtful, especially if the man's economic position will cause him difficulty. If the case will certainly be improved by treatment the man should be advised to have it; if there is no hurry from the point of view of ultimate result it is often well to recommend postponement (to suit the man's economic convenience) provided that treatment is not too long delayed. Large pensions naturally cannot be paid to men who may be cured or improved.

A good working rule is as follows. If in doubt recommend the man for expert advice, with a view to treatment if deemed advisable. In cases of ankylosis of joints in bad position operation for rectification and re-ankylosis, or even formation of a false joint, must be considered. With a flail joint, and if operation has already been decided against on expert advice, the supply of a suitable apparatus must be thought of. Where a nerve has been divided or destroyed and if nerve suture has failed, a sufficient time having elapsed to test its possibilities, tendon transplantation may still be feasible, or even arthrodesis might be indicated. Other examples might be added.

It is not necessary to go into very elaborate detail with the cases. A fair estimate of functional disability and curability is all that is required. The ideal is to take a wide general view of the case, to know what to look for, and to do the examination in a systematic and deliberate way.

No pretence is here made of giving anything like a full account of the examination of wounded pensioners; this paper is merely a collection of a few conclusions arrived at during fairly wide experience of pension board work; but in spite of the elementary nature of the points discussed, or because of it, I think they may be found useful on application.

TUBERCULOSIS.

Position of Sanatorium Superintendents under the Ministry of Health.

IN a memorandum dated March 31st the Ministry of Health has drawn attention to the special arrangements to be made on and after May 1st for the provision of treatment in residential institutions for tuberculous ex-Service men in England. Sanatorium benefit ceasing to be included under the National Insurance Acts after May 1st, it has proved necessary to set out in detail the arrangements made with the local health authorities taking over the care of tuberculous ex-Service men. It may serve a useful purpose at once to focus attention on one aspect of these arrangements as they affect superintendents of sanatoriums. Under paragraph 11 the following passage occurs:—

> "It will also rest with the tuberculosis officer, subject to the considerations set out in paragraph 17 of this memorandum, to determine the length of treatment to be afforded to each case admitted to a residential institution. In reviewing from time to time the cases receiving residential treatment the tuberculosis officer should have before him, in each case, periodical reports on the patient's condition and progress from the medical superintendent of the institution in which the case is being treated."

According to paragraph 17—

> "The Minister of Health reserves the right to call for the reconsideration of cases by the tuberculosis officer, and for this purpose to ask for special medical reports from him on particular cases, where necessary, and he may afterwards terminate liability for the cost of treatment of any case after a certain date."

It appears from these instructions that a tuberculosis officer may overrule a medical superintendent in the conduct of a case under the latter's care. The decision as to the duration of treatment being put into the hands of the tuberculosis officer, it follows that he may also, to a certain extent, dictate the nature of the treatment given in an institution, for time is an essential factor in the choice of treatment. A medical superintendent may consider a course of specific treatment for six months or more indicated in a given case, but knowing that such a course may be arbitrarily interrupted at any time, he may attempt nothing more than palliative tinkering. On the other hand, the tuberculosis officer may continue to keep in a sanatorium patients whom the medical superintendent may have found to be unsuited for this treatment; both superintendent and patient may agree on this [illegible] yet their wishes may be disregarded by the tuberculosis officer. Even with free hands, a sanatorium medical officer is apt to find his work monotonous and to slip by imperceptible stages from the status of a keen clinician to that of an administrative hack. Robbed of stimulants to initiative and the sense of responsibility conferred by freedom to prescribe only what he considers the best treatment, he is bound to feel aggrieved, and if this arrangement is perpetuated, the sanatorium service will not attract the best type. Yet the successful management of a sanatorium requires many and exceptional qualities, and if this service comes to attract only second-rate men whose chief qualification is docility, then sanatorium treatment will suffer. In Canada this difficulty has recently been thrashed out, and since the inspection of 26 sanatoriums by a board of tuberculosis consultants, the chain of responsibility in such institutions has been reorganised, so that the medical superintendent shall be in complete charge, and shall be the sole channel of communication with the governing board, whether it be civilian or departmental. There are, of course, other sides to this question which bristles with administrative difficulties, but we have dwelt solely on the point of view of the medical superintendent, because it has not, apparently, been sufficiently studied in the drafting of this memorandum, and because the person who must ultimately suffer most from any arrangement, which fetters the medical superintendent unnecessarily, is the patient himself.

Conditions Mistaken for Pulmonary Tuberculosis.

As a result of a study of 1700 consecutive cases admitted to his sanatorium Dr. B. Stivelman, of the Montefiore Sanatorium, New York,[1] indulges in rather uncomplimentary reflections on the diagnostic skill of specialists as well as of general practitioners. It appears that though no patient could be admitted unless the diagnosis of a general practitioner was confirmed by at least one specialist, 176, or 10·4 per cent. of the total, were found to be non-tuberculous. In the past it has sometimes been the privilege of the specialist to lay the blame for faulty diagnoses at the door of the general practitioner, and it is with ill-concealed glee that the sanatorium physician shows up the frequent mistakes of the consulting physician. The matter is, however, rather one of opportunity than of superior skill: the consultant sees a patient only once or twice, whereas the sanatorium physician has unrivalled opportunities for weighing at his leisure the evidence for and against the diagnosis of tuberculosis. Dr. Stivelman finds that chronic bronchitis and emphysema is the condition most commonly mistaken for tuberculosis of the lungs. Other common simulants are mitral disease, neurasthenia, and non-specific diseases of the upper respiratory tract. With regard to this latter class, he indulges in a digressive thrust at the "...... many feverish reports about the great frequency of conjugal phthisis. ......" It seems that in as many as 15 cases acute affections of the upper respiratory tract were diagnosed as tuberculous because the consorts of these patients happened to be tuberculous. "In the light of cold study it would seem that conjugal tuberculosis is accidental."

Sanatorium Benefit in Birmingham.

In a Report of a special subcommittee appointed by the Birmingham Insurance Committee to inquire into sanatorium treatment, some fairly encouraging figures are published showing the results achieved in Birmingham by sanatorium and other treatment. Of 1314 insured persons recommended for sanatorium benefit in 1914, between 40 and 50 per cent. had died within six years, and of 493 survivors traced, 357, or 72·4 per cent., had worked steadily since 1914. While these results are better than those obtained in areas where the problem has been dealt with half-heartedly, they leave room for improvement. Incidentally the fact is mentioned that a large proportion of these cases received an intensive course of tuberculin treatment, one indirect advantage of which was the stimulus it gave the patient to keep in touch with his medical adviser before and after residence in a sanatorium. The facts given in this Report are a useful antidote to the atrabilious analyses of sanatorium treatment published elsewhere, but its recommendations are still more helpful, because they show how, with economy of effort, good results may be bettered. In a recent letter to the *American Review of Tuberculosis*, Professor Fishberg stated that none of the sanatoriums in New York State was filled. There are signs that this may shortly be the case in the United Kingdom, and when this happens, and our sanatoriums are no longer choked by advanced cases shouldering each other out and robbing the early case of a chance to attain to permanent cure by prolonged treatment, sanatorium treatment will be a step nearer to the ideal. Towards this consummation the Report points by advocating the provision of hospital as distinct from sanatorium beds. The former should provide for cases of tuberculosis complicated by other diseases, such as diabetes, which unfit the patient for the general routine of sanatorium life. Such hospital beds would afford a brief respite for workers whose careers of useful part-time work are punctuated at irregular intervals by short periods of impaired health. Though beyond the possibility of permanent cure, these patients need but a few weeks' rest to restore them to part-time working capacity, and this may be prolonged for many years. The Report emphasises the value of prevention, and suggests that "It would be wiser and more practicable to remove infants born into the infected homes of poor consumptives and bring them up for a few years in healthy surroundings than to remove the consumptive parent from the home for the whole period of his infectiousness." This growing movement in favour of preventing tuberculosis in childhood, instead of patching up the patient in adult life, is one of the most hopeful signs discernible at the present time, but in the van of this movement there are, unfortunately, enthusiasts like Dr. Harald Sundelius[2] who, in saving children from their infected parents, would give a Herod-like touch to the proceedings.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Radium for Paris Hospitals.

AT a recent meeting of the Conseil Municipal de Paris it was decided to buy 2 g. of radium for the benefit of a new radium institute under the supervision of the Administration of the Assistance Publique, and a sum of Fr.2,500,000 has been granted for the purchase. The radium will be delivered to the town authorities by the Curie Institute, and the capital acquired from the sale will enable scientists working at this institute to carry out further researches on radium. Mr. P. Mourier, Directeur Général de l'Administration de l'Assistance Publique, has officially expressed a vote of thanks to those responsible for the decision of a grant through which many hospital patients will have the benefit of radium therapy.

Dangers of Radium and X Rays.

At a recent meeting of the French Academy of Medicine Mr. H. Bordier, of Lyons, made an important statement concerning the dangers of radium to those who manipulate it, dangers which, in his opinion, may be greater still than those resulting from exposure to X rays. He pointed out that the ill-effects of radium are revealed by the occurrence of pernicious anæmia resulting from the action of the radium emanations upon the marrow of the bones, this being proved by the pathological findings in rats which have been exposed to radium emanations. In the course of his statement Mr. Bordier mentioned the cases of the nurse and two laboratory assistants reported by J. C. Mottram. In his conclusion he expressed the wish that such harmful effects due to radium emanations should be investigated by the Académie de Médecine. Finally, a special committee has been appointed to study the ill-effects of radium and to suggest preventive measures to save life. The members of the committee are: MM. A. Béclère, A. Siredey, H. Hartmann, P. Delbet, and A. Broca. In the course of the debate Mr. T. Tuffier pointed out that in America it has been recorded that the nurses whose duty it is to clean radium apparatus eventually show signs of atrophy of the ovaries when they are kept too long on this work. This effect on genital glands is slow and insidious but permanent. On account of so injurious an effect upon the genital glands, a frequent shift system has been adopted in American institutions for those members of the staff who manipulate apparatus holding radium.

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[1] American Review of Tuberculosis, January, 1921.

[2] Tubercle, April, p. 321.

Mr. Adolphe Leray died recently from the effects of X rays. He had been in charge of the X rays department of the Hôpital Saint-Antoine in Paris for 25 years. During the war he radiographed many thousand wounded soldiers, never considering the dangers of constant exposure to the X rays. He was awarded the Legion of Honour for his great devotion. Since the war he had been appointed professor in radiology to the École des Infirmières at the Hospice de la Salpêtrière in Paris. This is the third death due to the effects of X rays which has to be recorded amongst Paris radiographers in the course of the last few months. In a previous letter comments were made upon the death of Mr. Charles Infroit, who died from complications due to dermatitis caused by exposure to X rays.

New Considerations on Cancer.

Mr. H. Reynès, of Marseilles, has recently communicated to the French Academy of Medicine the case of a patient suffering from carcinoma of the breast which was considered inoperable. After removal of both ovaries the tumour, which was ulcerated, healed up and became smaller; by that time there was a marked improvement in the general condition of the patient. Mr. Reynès is of opinion that the malignant growth process has subsided. Considering the well-known action of the ovarian secretion on the development of the mammary glands, Mr. Reynès suggests that a greatly increased ovarian secretion may favour the abnormal growth of the cells in the mammary glands.

National Health Insurance Bill.

Mr. Daniel Vincent, Minister of Labour, has submitted to the Chambre des Députés the text of a Health Insurance Bill and that of an Old-age Pension Bill. These Bills were partly prepared by the present Minister's predecessor, and their introduction was foreshadowed at the last opening of the French Parliament by Mr. Millerand, as already announced. The suggestion of a health insurance scheme has been opposed by the principal Syndicates of Medical Practitioners. Under the proposed scheme, contribution towards the insurance funds would be compulsory for any employee, man or woman, whose annual salary is Fr.10,000 or under. The insurance would be optional for employees working on farms or cultivating the land. Those working entirely on their own or who work assisted by only one employee could also benefit by the Health Insurance Act should they desire, providing that their income does not exceed Fr.10,000. The insured are to be classified in several groups according to salary in this way:—1st group: less than Fr.1200. 2nd group: Fr.1200 to Fr.2400. 3rd group: Fr.2400 to Fr.4000. 4th group: Fr.4000 to Fr.6000. 5th group: Fr.6000 to Fr.8000. 6th group: Fr.8000 to Fr.10,000. Both the employee and employer would have to contribute towards the insurance, the contribution being 5 per cent. of the average salary in each group. In case of illness or accident the insured person would have the right to receive, free of charge, medical attendance, drugs, apparatus, and so forth, but surgical operations could only be performed gratuitously in State hospitals. If disabled, should incapacity have reduced ability to work to the amount of 60 per cent. or more, it is proposed that during the first six months the benefactor would receive a daily allowance of Fr.1.50 in the first group, Fr.3 in the second, Fr.5.25 in the third, Fr.8.25 in the fourth, Fr.11.50 in the fifth, and Fr.15 in the sixth. If work cannot be resumed after six months, monthly allowances are to be given of Fr.45, Fr.75, Fr.110, Fr.140, Fr.195, Fr.250 in the respective groups. Should invalidity last over five years it is proposed to give an annual pension of Fr.500, Fr.900, Fr.1275, Fr.1650, Fr.2325, Fr.3000 in the respective groups. Owing to the attitude of the organisations of general practitioners it seems doubtful whether the panel system will be adopted; a system of remuneration similar to that arrived at in the case of medical attendance to pensioners, described in a previous letter, may be adopted.

April 20th.

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

Public Health.

THE Commonwealth Government has instituted a department of public health, to be placed under the direction of a special Minister, with Dr. J. L. Cumpston as medical director. Federal quarantine will be absorbed by the new department, which will also establish research laboratories in various parts of the Commonwealth. The precise scope of the work to be undertaken by this new organisation is left indefinite, but under the wording of its establishment it is capable of very wide expansion. It is difficult to see what progress can be made so long as each State maintains an entirely independent health service; whenever widespread epidemic disease has hitherto occurred there have been confusion and dispute between differing authorities, or practically complete inaction owing to each authority regarding the matter as one for its neighbour. When State quarantine has been necessary the difficulty has been overcome by making State officials temporary Federal authorities, but this harmonious solution could not be indefinitely utilised.

Melbourne University.

Sir Henry Carr Maudsley, who was appointed lecturer on medicine some ten years ago on the retirement of the late Dr. J. Jamieson, has resigned his appointment as from August 31st next, and the resignation has been accepted with regret by the council. Sir Henry Maudsley retired from the active teaching staff of the Melbourne Hospital last year, and was appointed honorary consulting physician. The scope of the lectureship will be somewhat altered in future; no attempt will be made to cover the whole field of medicine, and those subjects not touched on will be notified to the deans of the teaching hospitals, who may arrange to have them dealt with by their respective clinical lecturers. There is at present no chair of medicine in the Melbourne University, but it is hoped that such an appointment may be made possible in the near future.

Small-pox.

No further cases of small-pox have been reported from New Zealand, and no case has occurred in Australia, although chicken-pox has been prevalent. The s.s. *Kanowna* arrived from Japan, having had on board a case of small-pox which was landed at Hong-Kong. On arrival she had two suspicious cases, which proved not to be small-pox, and after the necessary quarantine she has been released.

Alleged Negligence.

A coroner's inquiry was begun in Sydney in connexion with the death of a boy who had met with an accident and had been under treatment in the Sydney Hospital for 19 days. Death resulted from sepsis following on the application of the "gimlet" extension to an injury of the lower limb. The parents of the boy allege that there was neglect and unskilful treatment on the part of the surgical staff in charge of the patient. After the evidence of the boy's father and mother had been taken the matter was adjourned for further investigation.

March 15th.

Public Health.

SCHOOL MEDICAL SERVICE.

Cambridge.

AT Cambridge the average number of children on the roll in 1919 was 8493, and of these 1246 were medically inspected at the routine examinations, in addition to 156 special cases. Dr. Andrew Laird, the school medical officer, contributes some interesting particulars as to the general physique of the school children in the year under consideration, as compared with their condition before the war, and is of opinion that, on the whole, "the condition of the youngest children up to 7 or 8 years compares favourably with the pre-war records of these conditions, while the older children appear, on the whole, to compare quite unfavourably with children of the same ages in 1913–14." He suggests that this can scarcely be a question of feeding, which would have probably affected all equally, and believes that "daylight saving" has had an injurious effect, together with relaxation of parental control, and the attractions of the picture theatre. Among boys the average weights in 1919 were less than those of the children of corresponding age in 1913 in each year from 6 to 13 inclusive, except at 7 years; so also were the heights, except at 7 and 13 years; among girls the weights were lower in 1919 at every age from 3 to 14, except at 12 and 13; and the heights at every age except 3 and 13. Apart from this measuring and weighing, the opinion of the medical inspector, Dr. Mabel Gurney, as to the child's physical condition, judged by actual inspection, was that among boys 23·7 per cent. and among girls 16·5 per cent. were below the average in 1919, as compared with 16·7 and 13·8 per cent. respectively in 1913. This is a matter of great importance when considered in regard to the country as a whole, for, so far as data are available up to the present, and speaking generally, the nutrition of the children does not appear to have been injuriously affected during the war period. Cleanliness showed some falling off; not at the routine medical inspections, where not a single child was found to be verminous or dirty, but at the nurses' visits, where 26·7 per cent. of the children examined were found to have nits or pediculi. Organic heart disease was diagnosed in 19 children, but treatment was considered necessary in only 1 case, the remaining 18 continuing to attend school "under observation." Not a single case of pulmonary tuberculosis was definitely diagnosed, and six children only were "suspected" to be so suffering, of whom one only was recommended for treatment. The treatment of defective teeth is very fully dealt with by Mr. W. H. Jones, the borough dentist. 6602 children were examined, of whom 51·9 per cent. were treated; the gradual diminution in refusals of treatment is a satisfactory feature. It is pointed out that if there were no refusals there would be no children with unsaveable permanent teeth; parents who have refused in previous years often bring their children for treatment when the permanent teeth have become unsaveable and are tender and aching. It is to be hoped that the object-lesson will benefit the younger children of these parents and that they will perceive that toothache is not a necessary evil, and that unsightly teeth may be a sign of parental ignorance and neglect. Mr. Jones considers that re-examination is necessary at intervals not longer than 12 months. "Schemes involving treatment without re-examination largely represent a waste of time, skill, and capital outlay," says Mr. Jones. The principle of "a stitch in time" is certainly applicable in an especial degree to the care of the teeth; and this is well shown in the tables accompanying Mr. Jones's report.

Northamptonshire.

In Northamptonshire the number of children examined at the routine inspections in 1919 amounted to 7338; this is exclusive of the urban district of Kettering, where elementary education is administered separately. Nutrition was either normal or excellent in 94·10 per cent., and in only six cases was it considered to be "bad." This may be regarded as most satisfactory. The percentage of children with four or more decayed teeth was, however, 31·82. Until the date of this report no systematic dental treatment had been provided for school children. This defect has now been remedied. Tuberculosis of the lungs was either found or suspected in 1·03 per cent., and non-pulmonary tubercle in an additional 0·28 per cent. These ratios are high, and it is noted by Mr. J. L. Holland, secretary to the Education Committee, that in the larger urban areas, where boot and shoe making is the chief industry, tuberculous infection is above the average, and "shows itself in the large number of children kept away for long periods on medical advice on account of pre-tubercular conditions—debility, anæmia, and threatened lung disease." In Wellingborough there are about 70 such cases, and it has been decided to erect an open-air school for 150 children on the outskirts of the town, so that they may obtain their education as far as possible under ideal conditions. Organic heart disease was diagnosed in 157 children (2·14 per cent.), but only 9 were recommended for treatment, the remainder being considered fit to attend school "under observation"; it is not stated whether it is the medical officer or the teacher who has the responsibility for determining the fitness for school life of these 104 children with valvular disease. Vision testing was only carried out among the group of "leavers." The sight was found to be normal, $\frac{6}{6}$ for each eye, in 75·76 per cent.; this is very satisfactory, for in London the corresponding ratio was 43·3 per cent. Dr. C. E. Paget, medical officer of health for the county, who presents this report, states that approval has been obtained for the appointment of a school dentist, and that it is hoped that early in the current financial year a practicable scheme will be evolved for the provision of school nursing, with the coöperation of the County Association.

Nuneaton.

The results of school medical inspection at Nuneaton during 1919 are reported on by Dr. A. Middleton Hewat, who took over the duties of medical officer of health and school medical officer from Oct. 1st, previous to which date the work had been carried out by Dr. G. A. Wolfendale and Dr. Gray Maitland. The number of children examined in the code groups was 1247. The first point noticed is a very unsatisfactory condition as regards vaccination, only 43·3 per cent. of those inspected being protected against small-pox. In London small-pox just obtained a footing in 1918, but Dr. W. H. Hamer reported that the offer of vaccination was, as a rule, gladly accepted by the parents, and no cases of conscientious objection were met with. If the general population could actually realise that prevention is better than cure there would be no difficulty, but at Nuneaton the antivaccinationists are confirmed in their views. Dr. Hewat draws attention to the unsatisfactory condition as regards cleanliness in some of the schools in the town, especially among girls; in two schools the percentages found verminous—i.e., vermin or nits in the head present—were 64·4 (infant girls) and 62·7 (girls) respectively; two prosecutions were undertaken and both were successful. Goitre was found in 18 children (1·4 per cent.); this disease is stated to be fairly prevalent in the town, but most cases are very slight, and cause no inconvenience. (It may be noted in this connexion that in the neighbouring county of Derby, where goitre used to be so prevalent as to be known as "Derbyshire neck," the disease is not even mentioned in the school medical officer's report for 1919). The condition of the children's teeth was by no means satisfactory; 19·1 per cent. are stated to have had "more than four"—which probably means "four or more"—decayed teeth; but of the 239 children included in this category only 16 were referred for treatment. Arrangements have been made to remedy this state of affairs. Only six children in the code groups (1247) were found with suspicious pulmonary tuberculosis, and only five with organic heart disease.

Stirling.

During the year 1919–20 Dr. T. Adam reports that 11,802 children underwent routine medical inspection. The attendance of parents was poor, only 9·5 per cent. being present. Out of 1047 children who had defective vision glasses were prescribed by the school oculist for 399; 87 were taken to a private oculist, 96 had treatment other than glasses, and 238 were awaiting treatment. These cases involved 1513 nurses' visits. Other defects, in number 1556, involved 1643 nurses' visits. With the exception of the entrants, the children in Stirling are both heavier and taller than the Glasgow children. The 13-year-old age group is about half a year under the normal standard both in height and weight. The figures for nutrition show only 3 per cent. of the children below the average. One child had very bad nutrition, while 56 per cent. were above the average. The county has now one full-time and one part-time dentist, accounting for a considerable increase in the amount of cases treated.

Glasgow.

This report is the first issued by the education authority of Glasgow since the reorganisation. Dr. E. T. Roberts deals with the steps taken to cope with the outbreak of small-pox in the schools in the early part of 1920. On receiving notice from the medical officer of health that two children, who had the day before been attending school, had contracted small-pox he at once decided to stop the ordinary medical work in the schools and set the staff to vaccinating those children whose parents gave consent. Accordingly, 14,781 school children were vaccinated, including 6856 revaccinations of children over ten years of age. During the year not one school was shut on account of infectious disease. The number of routine inspections made was 38,047 and 63 per cent. of the parents attended the examinations. An interesting survey of heights and weights for each age is given. Each age-group is, roughly, one year behind the anthropometric standard both in height and weight. Signs of slight rickets were found in 1·8 per cent. of the children. Under "marked rickets" are classified 1·8 per cent. with "knock-knee," 2·4 per cent. with bow legs, 1·3 per cent. with curved tibia, 0·5 per cent. with pigeon breast. Non-rachitic deformities were found in 0·2 per cent. of children examined. Medical treatment is undertaken at six principal clinics and subsidiary clinics have been installed in 12 schools. Dr. Roberts pronounces this last arrangement unsatisfactory.

Torquay.

The opening of an up-to-date open-air school at Homelands was the conspicuous feature of the year. This school, consisting of an admistrative block, a rest hut, and two open-air class-rooms, has accommodation for 60 children suffering mainly from general debility, many of them with a tuberculous tendency. Dr. T. Dunlop reports that the difference in the children's physique and mentality after a short attendance is remarkable; they lose their listlessness and apathy altogether, and there is an appreciable change in their mental state. The children arrive at the school at 9 o'clock and have three good meals a day. The provision of orthopædic treatment and advice is a problem to be tackled. At present the only way of dealing with these children is to send them to London or to one of the large provincial hospitals. The expense involved is great, and many of the parents are unable to afford even a fraction of the cost. An attempt has been made to get a decision from the Board of Education as to the authority's power to pay the whole or part of the cost. The Board's reply that the circumstances of each case must be submitted to them with an estimate of probable expenditure is not calculated to accelerate matters. 1317 children underwent routine examination and 36 per cent. of parents were present. Dental defects excluded, one child in four was found to be defective, and one in six was referred for treatment. 2·3 per cent. were suffering from malnutrition, 51·9 per cent. had dental decay, 6·8 per cent. having more than five teeth defective. Nine cases of tuberculosis were discovered, two of these being of the pulmonary variety.

VITAL STATISTICS OF ENGLAND AND WALES.

Birth-rate, Death-rate, and Infant Mortality during the First Quarter of 1921.

THE provisional figures of births registered during the first quarter of 1921 show a decline of over 61,000 from the record of the corresponding period of last year. Compared with the first quarter of 1914, however, the drop in numbers is under 8000. Excluding the war years, the births are the fewest recorded in the first quarter of any year since 1872. The provisional rate per 1000 living is, with the exception of the war years 1916–19, the lowest ever recorded for any first quarter.

The deaths registered also show a decline in numbers from the very low record of 1920, and are, indeed, the smallest in number registered in the first quarter of any year since 1868. The provisional rate is the lowest ever recorded for any first quarter.

The natural increase by excess of births over deaths was over 80,000 as compared with 133,000 in the March quarter of 1920, and 73,000 in 1914.

The infant mortality was 101 per 1000 births.

URBAN VITAL STATISTICS.

(Week ended April 23rd, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18½ million persons; the annual rate of mortality, which had been 13·0, 12·5, and 12·5 in the three preceding weeks, was again 12·5 per 1000. In London, with a population of 4½ million persons, the death-rate was 12·6, or 0·2 per 1000 above that recorded in the previous week, while among the remaining towns the rates ranged from 5·0 in Wimbledon, 6·1 in Oxford, and 6·4 in Southampton, to 18·3 in Wakefield, 18·5 in Grimsby, and 20·7 in Warrington. The principal epidemic diseases caused 235 deaths, which corresponded to an annual rate of 0·7 per 1000, and comprised 68 from infantile diarrhœa, 61 from diphtheria, 50 from whooping-cough, 40 from measles, 15 from scarlet fever, and 1 from enteric fever. Whooping-cough caused a death-rate of 1·1 in Oldham, 1·5 in St. Helens, and 1·7 in Wigan. There were 3307 cases of scarlet fever and 2564 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 3345 and 2543 respectively at the end of the previous week. During the week ended April 16th 3 cases of encephalitis lethargica were notified in the County of London, and comprised 2 in Southwark and 1 in Fulham. The causes of 31 of the 4441 deaths in the 96 towns were uncertified, of which 6 were registered in Birmingham, and 3 each in Stoke-on-Trent, Liverpool, and South Shields.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 15·5, 15·1, and 14·6 in the three preceding weeks, was again 14·6 per 1000. The 327 deaths in Glasgow corresponded to an annual rate of 15·5 per 1000, and included 27 from whooping-cough, 6 from infantile diarrhœa, 3 from diphtheria, and 1 each from measles and scarlet fever. The 138 deaths in Edinburgh were equal to a rate of 16·1 per 1000, and included 5 from measles, 2 from whooping-cough, and 1 from scarlet fever.

Irish Towns.—The 149 deaths in Dublin corresponded to an annual rate of 18·4, or 2·4 per 1000 above that recorded in the previous week, and included 6 from infantile diarrhœa. The 144 deaths in Belfast were equal to a rate of 17·9 per 1000, and included 8 from whooping-cough, 6 from infantile diarrhœa, 2 each from measles, scarlet fever, and diphtheria, and 1 from enteric fever.

VITAL STATISTICS OF LONDON
DURING MARCH, 1921.

IN the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the ten diseases notified in the table was equal to an annual rate of 9·6 per 1000 of the population, estimated at 4,531,971 persons in the middle of 1920; in the three preceding months the rates had been

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING MARCH, 1921.

(*Specially compiled for* THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1920.	Notified Cases of Infectious Disease.												Deaths from Principal Infectious Diseases.									Deaths from all causes.	Death-rate per 1000 living.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	4,531,971	—	2409	1520	—	17	—	33	180	14	1	4174	9·6	—	13	30	103	49	5	94	294	0·7	5889	13·6
West Districts:																								
Paddington	149,673	—	54	47	—	2	—	4	8	—	—	115	8·0	—	—	—	2	2	—	10	14	1·0	202	14·1
Kensington	164,177	—	69	42	—	1	—	—	4	—	—	116	7·4	—	—	—	4	6	—	11	21	1·3	261	16·6
Hammersmith ...	136,200	—	122	32	—	—	—	—	3	—	—	157	12·0	—	—	1	3	1	—	4	9	0·7	172	13·2
Fulham	158,621	—	94	59	—	—	—	3	13	1	—	170	11·2	—	—	3	7	1	—	4	15	1·0	205	13·5
Chelsea	62,987	—	16	10	—	—	—	1	3	—	—	30	5·0	—	—	—	—	—	—	—	—	—	89	14·7
City of Westminst'r	132,615	—	32	34	—	—	—	—	7	—	—	73	5·7	—	—	1	3	2	—	1	7	0·6	179	14·0
North Districts:																								
St. Marylebone ...	101,856	—	35	29	—	—	—	1	1	—	—	66	6·8	—	—	2	2	1	—	3	8	0·8	134	13·7
Hampstead	91,519	—	25	41	—	2	—	—	1	—	—	69	7·9	—	1	—	3	—	—	—	4	0·5	109	12·4
St. Pancras	228,178	—	102	64	—	—	—	—	10	1	—	177	8·1	—	—	—	3	8	—	4	15	0·7	303	13·8
Islington	335,907	—	142	198	—	—	—	2	4	1	—	347	10·8	—	4	—	12	7	—	7	30	0·9	497	15·4
Stoke Newington...	52,984	—	21	23	—	—	—	—	—	—	—	44	8·7	—	—	—	3	1	—	—	4	0·8	64	12·6
Hackney	225,372	—	133	94	—	1	—	2	15	—	—	245	11·3	—	2	—	4	—	—	1	7	0·3	282	13·0
Central Districts:																								
Holborn	39,676	—	11	20	—	1	—	—	2	—	—	34	8·9	—	—	—	—	—	—	—	—	—	63	16·6
Finsbury...	78,291	—	36	42	—	3	—	1	4	2	—	88	11·7	—	—	—	2	2	—	2	6	0·8	125	16·7
City of London ...	14,447	—	2	5	—	—	—	—	—	—	—	7	5·1	—	—	—	—	—	—	—	—	—	15	10·8
East Districts:																								
Shoreditch	102,044	—	63	43	—	—	—	2	7	2	—	117	12·0	—	1	—	4	5	—	2	12	1·2	124	12·7
Bethnal Green ...	114,471	—	94	56	—	1	—	—	5	—	—	156	14·2	—	1	2	5	2	1	7	18	1·6	156	14·2
Stepney	241,770	—	182	65	—	2	—	1	10	1	—	261	11·3	—	2	4	4	—	1	5	16	0·7	300	12·9
Poplar	159,766	—	116	55	—	1	—	2	6	—	—	180	11·7	—	1	—	3	1	—	4	9	0·6	213	13·9
South Districts:																								
Southwark	187,142	—	110	33	—	—	—	1	12	—	—	156	8·7	—	—	2	4	1	—	4	11	0·6	284	15·8
Bermondsey	129,189	—	93	48	—	—	—	—	3	—	—	144	11·6	—	—	1	9	—	1	2	13	1·0	144	11·6
Lambeth...	293,572	—	120	44	—	—	—	4	14	1	—	183	6·5	—	—	2	1	—	—	1	4	0·1	403	14·3
Battersea	165,664	—	66	48	—	—	—	—	6	—	—	120	7·6	—	—	—	5	2	—	4	11	0·7	234	14·7
Wandsworth... ...	346,990	—	182	121	—	2	—	3	13	—	1	322	9·7	—	—	3	8	—	1	3	15	0·5	370	11·1
Camberwell	284,712	—	165	75	—	—	—	2	10	1	—	253	9·3	—	1	3	4	2	1	6	17	0·6	341	12·5
Deptford...	115,636	—	60	38	—	—	—	—	2	2	—	102	9·2	—	—	2	2	—	—	—	4	0·4	118	10·6
Greenwich	102,408	—	63	44	—	—	—	1	5	1	—	114	11·6	—	—	3	—	2	—	1	6	0·6	151	15·4
Lewisham	174,438	—	85	60	—	—	—	—	5	—	—	150	9·0	—	—	1	4	—	—	3	8	0·5	199	11·9
Woolwich	141,666	—	116	50	—	1	—	3	7	1	—	178	13·1	—	—	—	2	3	—	5	10	0·7	152	11·2

* Including membranous croup.

11·9, 10·4, and 10·0 per 1000. Among the metropolitan boroughs the lowest rates from these diseases were recorded in Kensington, Chelsea, the City of Westminster, St. Marylebone, the City of London, and Lambeth; and the highest in Hammersmith, Finsbury, Shoreditch, Bethnal Green, Poplar, and Woolwich. The prevalence of scarlet fever was about equal to that in the preceding month; this disease was proportionally most prevalent in Hammersmith, Bethnal Green, Stepney, Poplar, Bermondsey, and Woolwich. The Metropolitan Asylums Hospitals contained 3487 scarlet fever patients at the end of the month, against 4729, 4112, and 3799 at the end of the three preceding months; the weekly admissions averaged 469, against 590, 489, and 464 in the three preceding months. Diphtheria was somewhat less prevalent—about 10 per cent.—than in the preceding month; the greatest proportional prevalence of this disease was recorded in Hampstead, Islington, Stoke Newington, Holborn, Finsbury, Bethnal Green, and Greenwich. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 2615, 2648, and 2766 at the end of the three preceding months, numbered 2652 at the end of March; the weekly admissions averaged 290, against 316, 319, and 333 in the three preceding months. The prevalence of enteric fever was about equal to that in the preceding month; of the 17 cases notified during the five weeks ended April 2nd, 3 belonged to Finsbury, and 2 each to Paddington, Hampstead, Stepney, and Wandsworth. There were 10 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 15, 11, and 9 at the end of the three preceding months; the weekly admissions averaged 3, against 2, 3, and 2 in the three preceding months. Erysipelas was proportionally most prevalent in Paddington, Fulham, the City of Westminster, Hackney, Shoreditch, and Southwark. The 33 cases of puerperal fever included 4 in Paddington, 4 in Lambeth, 3 in Fulham, 3 in Wandsworth, and 3 in Woolwich. The 14 cases of cerebro-spinal meningitis included 2 in Finsbury, 2 in Shoreditch, and 2 in Deptford; while the case of poliomyelitis belonged to Wandsworth.

The mortality statistics in the table relate to the deaths of civilians actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the five weeks ended April 2nd the deaths of 5889 London residents were registered, equal to an annual rate of 13·6 per 1000; in the three preceding months the rates had been 14·2, 12·5, and 14·0 per 1000. The death-rates ranged from 10·6 in Deptford, 10·8 in the City of London, 11·1 in Wandsworth, 11·2 in Woolwich, 11·6 in Bermondsey, and 11·9 in Lewisham, to 15·4 in Islington and in Greenwich, 15·8 in Southwark, 16·6 in Kensington and in Holborn, and 16·7 in Finsbury. The 5889 deaths from all causes included 294 deaths which were referred to the principal infectious diseases; of these, 13 resulted from measles, 30 from scarlet fever, 103 from diphtheria, 49 from whooping-cough, 5 from enteric fever, and 94 from diarrhœa and enteritis under 2 years of age. No death from any of these diseases was recorded in Chelsea, Holborn, or the City of London. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Hackney, Lambeth, and Deptford, and the highest in Paddington, Kensington, Fulham, Shoreditch, Bethnal Green, and Bermondsey. The 13 deaths from measles were only one-seventeenth of the average number in the corresponding period of the five preceding years; of these 4 belonged to Islington, 2 to Hackney, and 2 to Stepney. The 30 fatal cases of scarlet fever exceeded the average by 15; of these 4 belonged to Stepney and 3 to each of the boroughs of Fulham, Wandsworth, Camberwell, and Greenwich. The 103 deaths from diphtheria were 16 in excess of the average; the greatest proportional mortality from this disease occurred in Fulham, Hampstead, Islington, Stoke Newington, Shoreditch, Bethnal Green, and Bermondsey. The 49 fatal cases of whooping-cough were less than a third of the average number; of these, 8 belonged to St. Pancras, 7 to Islington, 6 to Kensington, 5 to Shoreditch, and 3 to Woolwich. Five deaths from enteric fever were registered during the month, against an average of 6; these deaths belonged respectively to the boroughs of Bethnal Green, Stepney, Bermondsey, Wandsworth, and Camberwell. The 94 fatal cases of diarrhœa were 22 in excess of the average number; the greatest proportional mortality from this disease occurred in Paddington, Kensington, Hammersmith, St. Marylebone, Bethnal Green, and Woolwich. In conclusion, it may be stated that the aggregate mortality in London during March from these principal infectious diseases was 48 per cent. below the average in the corresponding period of the five preceding years.

Correspondence.

"Audi alteram partem."

THE QUESTION OF A TRADE-UNION IN MEDICINE.

To the Editor of THE LANCET.

SIR,—Your leading article of April 23rd on the trade-union as a factor in medical politics does scant justice to some thousands of medical men who have agreed to combine in this form of organisation. It also conveys a direct challenge to them to give reasons for the faith that is in them. This would be easy were it not that one must appeal to an audience very largely uninformed as to the nature of a trade-union, and consequently prone to believe that strikes and commotions are of its very essence, the truth being that if strikes were rendered illegal to-morrow trade-unions would remain. You are no doubt aware that if two or three persons agree together on any course of action (not necessarily a strike) whereby some other person might find his business interfered with, that other person can proceed against them for conspiracy in restraint of trade. It is not necessary that the conspiracy should be in any way aimed against him or his business, or that the "conspirators" should be in his employ. The particular case prior to the Trade Union Acts was commonly that of a body of workmen agreeing together to ask for an increase of pay. It was not even necessary that they should threaten to stop work. So long as their request could be argued to operate in restraint of trade (as any demand for extra wages might well do) the conspiracy existed, and remedy could be had against them under the Common Law. Nor were the courts for many hundreds of years at all apt to exhibit any particular sympathy with the workmen. In these circumstances the State eventually interfered and legalised combinations of masters or workmen which had for their objects the improvement of the economic condition of either party. The State has never legalised combinations in restraint of trade which had other—e.g., political—objects. There can be no doubt in the minds of reasonable men that the State did right in this matter and that the first Trade Union Act was fully justified and was followed by an amelioration of the lot of the working classes which had long been overdue.

A later Trade Union Act did nothing to alter the nature of trade-unions, but it did legalise "peaceful picketing." That this was a mistake may well be argued, and I should certainly not be concerned to oppose this view. The fact remains that except by registration under the Trade Union Acts immunity cannot be obtained for any concerted attempt to raise wages. So long as the medical profession remained almost entirely individualistic there was no need of combinations to raise wages and the B.M.A. was naturally registered under the comparatively unrestricted form of a limited company rather than under that of a trade-union. At this time and for long afterwards the position of the B.M.A. was unchallenged. But times changed. A great part of the profession became State servants in whole or in part. The B.M.A. began to press for standard rates of wages and its right to do so was challenged, notably at Coventry. The result was profoundly disquieting. Large damages were given against the Association and the "warning notice," which was an essential part of the armament of the Association, had to be very much altered. It still remains, no longer a weapon but rather a weak spot in the armour of the profession. Fortunately the direct point of conspiracy in restraint of trade was not raised by the Coventry case or the result might have been far more damaging. There remained no doubt in the minds of those who had studied the subject that the activities of the Association and thereby of the profession were, and must be, seriously hampered by this difficulty about actions which might be held to be in restraint of trade. The Association considered that the best way out would be a trust fund able to operate in close touch with the Association but legally distinct from it. This fund has not had any very great measure of success, probably from doubts as to whether it was legally distinct. Certain members of the Association, on the other hand, thought that it would be better to register a separate body under the Trade Union Acts. It was hoped that the Association would coöperate with this body as far as it legally might. This hope was in vain and the Association embarked on a course of calculated hostility, its secretary freely making such remarks as that those who joined a trade-union had more money than sense. One may perhaps venture the further hope that the logic of events will eventually force an entente, not, however, of the nature of that subsisting between Jonah and the whale.

Your leading article affects to consider it impossible that medical men could ever contemplate a refusal of service because this would mean a refusal of treatment. May I cite a case which should, I think, convince you. There recently arose a vacancy in the post of medical officer to the Post Office in Gravesend. The terms offered not being satisfactory, the local practitioners intimated to the authorities that they had agreed together not to apply until the terms were altered. Very soon satisfactory terms were offered. This was a combined refusal of service, but it did not involve any refusal to treat the sick, and it may be doubted whether the sick were ever aware of it. Similarly, the whole body of insurance practitioners might refuse to comply with some particular regulation—e.g., the keeping of record cards. This would be refusal of service, but the sick would still be treated. It seems to have escaped your notice that there have been a great number of local refusals of service of recent years. A strike against one's patients is not thinkable in the present state of affairs, and one may hope that it never will be in this country. Yet our Austrian colleagues—not less humane than ourselves—were forced even to that extremity by the treatment to which they were subjected under the regime of Bela Kun. Necessity is the mother of more than invention, amongst other things of strikes and lock-outs. At present the necessity has not arisen, and there has been no general strike of medical men. But medical men as a whole are not particularly docile or easy to fool, nor do they lack a class consciousness. In all of which one may legitimately see possibilities of combined action on a scale undreamt of now so soon as the pressure of bureaucracy becomes sufficiently intolerable and not before. Action and reaction are equal and opposite. It is idle to suppose that the sphere of medical politics is exempt from general laws, or that the profession are so untutored that they cannot arrange an adequate reaction without ill-treating the sick.

It is not doubted by anyone that the editors of the *British Medical Journal* and of *The Lancet* are primarily actuated by a desire for the welfare of the profession and the progress of medical science. If they would but study that part of our industrial history which has witnessed the demand for and the growth of trade-unions, they might credit medical trade-unionists with motives not less worthy than their own and with at least as much knowledge of the possibilities of the bodies to which they belong. Tilting at windmills does no great harm to the mill, but it leads to involuntary antics which do little credit to the profession as a whole. And prejudice makes a poor weapon.

I am, Sir, yours faithfully,
GORDON WARD.

Sevenoaks, April 24th, 1921.

To the Editor of THE LANCET.

SIR,—It was a happy thought to turn the attention of your readers to the question of a trade-union in medicine. If the history of the last 60 years has taught us anything, it is that contract work engenders trade-unionism. You very rightly say that medicine is not a homogeneous service in which common conditions exist for all workers. In this statement you give the reason why the older Association has failed, and cannot but fail to conserve the interests of those who labour under a contract system. The "Medico-Political Union" is the outcome of this system. You ask in what manner could any medical strike be directed against the Government unless it was primarily directed against the sick and suffering. Is this a serious question? When we had some years ago the Battle of the Clubs, in which THE LANCET played so large a part, did the question of penalising the sick and suffering ever arise? When advertisements asking for sweated medical labour were refused insertion in the medical press did the managers lay themselves open to the charge of inhumanity? Has any medical trade-unionist ever suggested a strike against the sick and suffering?

Is that language accurate which describes a strike against the Ministry of Health as a strike against the Government? Do you wish to imply that medical trade-unionists are potential anarchists? When the profession in 1911 refused service under the proffered capitation fee of 4*s.* was it suggested that we struck against the Government? Week after week the medical press gives examples, not only of the dishonesty, but of the stupidity and impracticability of the regulations, but does one strike against the Government if one plainly says so? Our quarrel is not with the sick and suffering, but rather on their behalf. These regulations are framed by men who have no knowledge of panel work or of local conditions. Once start rules and regulations and you begin a vicious circle. Officials and regulations multiply until the sick and suffering can receive only a small part of the practitioner's attention. I am, Sir, yours faithfully,

Exeter, April 24th, 1921. J. PEREIRA GRAY.

GENERALIA ON THE LOUSE PROBLEM ON THE WESTERN FRONT.

To the Editor of THE LANCET.

SIR,—Mr. A. D. Peacock's article under this heading, which appeared in your issue of March 26th, calls for comment in several particulars. As I was Sanitary Officer to the Second Army, in which Mr. Peacock also served, I trust I may be allowed to bring the following remarks to notice. Mr. Peacock's article is very properly termed "generalia," and sketching, as it does, so many points, does not admit of a completely "laid-out" reply. He treats of certain facts and offers divers opinions and criticisms.

With regard to his facts as to the proportion of men infested with lice, I can speak only of front line troops, and I would like him to know that the army medical authorities always exercised a much simpler and more direct method of ascertaining the amount of infestation than he appears to have employed. This was by making direct inquiry from regimental medical officers and from officers in charge of medical units receiving sick and wounded men the amount and degree of prevailing infestation. I can think of no better method.

As to the means at our disposal for disinfestation in the field, the list furnished by Mr. Peacock on p. 637 under the heading "Comparison of Types of Disinfestor" presents a picture which is *not only* incomplete and historically inaccurate, it is so much out of perspective as to be distorted. Under the heading "Apparatus" he mentions six types in all, three of these being "steam" and the remainder "hot-air." In general, the list of apparatus mentioned fails altogether to give the relative capacities and use of each type named, likewise the length of use and date of introduction of each type is omitted. The uninitiated, I fear, might fail to gather from Mr. Peacock's list the important fact that in so far as the Second Army was concerned—from the date of its formation in 1914 until its departure for Italy in November, 1917—none of the hot-air types of disinfestor was in use. From inquiry I have made as to the period between December, 1917, and the signing of the armistice in 1918, but few experimental types of hot-air disinfestors had been erected on the Western front. Certainly, in 1919, I saw none in Italy, and none in North Russia on the Murmansk front, where our troops came in close contact with cases of typhus and small-pox amongst the civil population.

Experimental work on disinfestation carried out under laboratory conditions may be highly successful, given certain desiderata, and this applies to hot-air as to other types of disinfestor. It would be interesting to hear from Mr. Peacock how he overcame certain objections to hot-air disinfestation formulated by him in a report he furnished to the Second Army medical authorities. In that report Mr. Peacock stated that in his opinion, as the result of experimental work carried out in the Second Army, the objections to the use of hot-air disinfestation were as follows: (1) Danger from fire; (2) the impracticability of raising the temperature of the walls and floor of the disinfestation chamber to the required degree; (3) the method failed when dealing with wet and muddy garments; (4) the low penetrating power of hot air.

Mr. Peacock's picture is incomplete because of the lack of reference to the use of the Clayton apparatus in which SO_2, admixed with a small percentage of SO_3, is generated as the disinfesting agent, the gases being made to circulate continuously in the disinfestation chamber as required, while the percentage of gases is under the control of the operator. One of these machines was provided for the use of each corps from the middle of 1915 onwards, and, in addition, there were fixed installations at other centres. No history of disinfestation is complete without mention of these machines, which, in addition to their prolonged use on the Western front—as, indeed, they were on all other fronts—are officially approved by the French Government. The British War Office also considered these machines of sufficient importance to warrant their inclusion in the D.G.M.S. Circular actually referred to by Mr. Peacock, and, in addition, some 10 pages are devoted to them in the official publication "Notes for Sanitary Officers of the British Expeditionary Force in France." In my opinion no type of disinfestor approaches the efficiency of the Clayton machine in dealing with verminous dwellings and their contents in situ. (In order that there may be no misconception, allow me to say that I have no interest in the Clayton apparatus whatever beyond its utility.)

My experience of the working of all types of disinfestor in the field was that when they failed to act the fault lay rather with the operator. The one outstanding exception was at the Laiterie, Poperinghe, where the construction of the steam chambers was at fault. Alterations on the lines laid down by Mr. W. A. Muirhead, chief sanitary inspector at headquarters, were carried out, and the installation became sufficiently successful as to serve as a model for other centres. Further, the local corps requirements were adequately met.

With regard to the opinions and criticisms offered by Mr. Peacock, these, collectively, give the impression that the medical officers on the Western front neither realised nor appreciated the importance of combating lousiness amongst the troops. Mr. Peacock states: "The discomfort of lousiness, its effect on men's sleep and rest, and the resulting depression of their physical fitness were never considered poignant reasons for disinfestation, while the more apparent effect of skin diseases, directly and indirectly traceable to lice (as well as the scabies mite), did not make sufficient appeal," and yet further on he writes the following: "The arrangements for the bathing of troops and the disinfestation and laundering of their underclothing in the front areas, though not adequate, were generally most creditable, but there still remained the great problem of the disinfestation of the outer clothing."

Mr. Peacock rather laments the fact that, despite all, his teachings and advice to officers in charge of combatant troops and to others, as the sequel showed, was merely giving "counsels of perfection." Is this not rather a confession of failure on the part of Mr. Peacock who had been given a free hand to conduct the necessary propaganda both at organised schools of instruction and elsewhere? Personally, I think Mr. Peacock has seriously under-estimated both the result and value of his labours in the direction of disinfestation. I think he will agree with the latter view when he learns that, despite the ever-increasing concentration of troops, there was little increase in lousiness. I would like him to realise the plain fact that in November, 1917, the Second Army had a ration strength of over 800,000 men, and was concentrated on a sinuous front having a diagonal measurement from north to south of only about 12½ miles! We have all appreciated Mr. Peacock's research work and efforts to combat lousiness in the field, and hope he is continuing his studies as a peace problem—for even as there are lousy soldiers, so are there lousy families and lousy households, which some of us consider as the "fons et origo" of the trouble.

Lastly, I respectfully suggest to Mr. Peacock, when next he feels inclined to indulge in melancholy mood and, peradventure, publishes further "Generalia" based on his individual views on the shortcomings of army authorities in the field, to bear in mind the significance of certain utterances made by another lay worker, Mr. Dan Jenkins, secretary of the Public Health Committee of the Labour Party, at a sectional meeting of the British Medical Association held last summer at Cambridge, who then stated: "The Labour Party desires for the working man and his family, at home, the same standard of medical organisation, skill, and care as was shown for the British armies in France. The Army Medical Service and the Royal Army Medical Corps have shown the way."

I am, Sir, yours faithfully,
M. COPLANS.

The Jenner Institute Laboratory, Church-road,
Battersea, S.W., April 20th, 1921.

SKIN REACTIONS IN TOXIC IDIOPATHIES.

To the Editor of THE LANCET.

SIR,—A number of colleagues, both laboratory and clinical, have been asking recently how one prepares the testing substance for skin reactions in diagnosis of asthma, eczema, urticaria, food idiosyncrasies, and so on. This shows that no one has been explicit enough in describing methods, and also that there is a demand for such information. I will give here without going into details some simple practical directions.

The test substances (which I should like to call "idiopathophanes"—meaning that which demonstrates an idiopathy) may be prepared in a number of ways as follows:—

1. *The crude substance direct* can generally be employed without any preparation; for example, any of the flours (such as barley or wheat), or white of egg, or the hairs of an animal (for an animal asthmatic), or even such things as uncooked meat or vegetables. There are three disadvantages: The substance may give too strong a reaction, as, for example, grass pollen for diagnosis of hay fever; secondly, the substance may contain a strong acid in certain (e.g., fruit juices), which may react of its own accord quite apart from the proteid contained; thirdly, it is not very convenient to keep all the year round in the consulting-room a supply of, for example, pork or onions or strawberries.

2. *Desiccated preparations* are sometimes convenient; for example, desiccated white of egg or a desiccated serum will keep indefinitely, and may be conveniently stored in small bottles.

3. *The proteids may be extracted.* The literature on the subject is full of demands that these proteids should be chemically pure, and then usually goes on to describe a method which could not possibly produce pure preparations. In practice I find that alcoholic precipitates from a watery solution work well, but are frequently difficult to collect and keep.

4. *Test paper preparations* can be made from the precipitates of No. 3 by filtering the 10 per cent. of water and 90 per cent. of alcohol containing the precipitate through filter paper over a vacuum. These impregnated filter papers can be kept dry in envelopes arranged on a card index system. Undoubtedly this is the handiest method of storage, and is the one I employ in general. These idiopathophanes keep well; I am now using some I made over two years ago.

5. *Graduated dilutions* of a watery extract must be employed if patients react too powerfully to the undiluted substance. This is so with hay-fever people, for application of the dry pollen of grasses may produce not only a local reaction but also violent constitutional disturbances, asthma, œdema, swelling up of the glottis, &c. Suitable dilutions of the watery extract (1 part of pollen in 200 water, down to 1 part of pollen in 200,000 of water) have been put on the market for testing purposes by Messrs. Parke, Davis, and Co. for many years. Such graduated dilutions must, of course, be used if any quantitative estimate of the sensitiveness is to be made.

6. *Autolysed cultures of bacteria* (e.g., from cases of bronchial asthma), after sterilising by filtration, can either be used directly or precipitated by alcohol and used as in No. 4.

The skin reactions are made by rubbing some preparation of the suspected material on to a scratched surface of skin. These scratches may be made anywhere, but the forearm, or just above the knee, are convenient sites. Reactions are judged from urticaria at the site of the scratches and from surrounding erythema. With a new patient a control scratching with only water placed on it should always be made; and with a new test substance a control scratching should always be made on a normal man—e.g., the practitioner.

I am, Sir, yours faithfully,

Devonshire-place, W., April 20th, 1921. J. FREEMAN.

CONGENITAL WORD-BLINDNESS.

To the Editor of THE LANCET.

SIR,—In your issue of April 23rd you give on p. 890 a paper by Dr. Wallace Wallin on this subject which is of great interest. I wish he had paid more attention to the question of inheritance, which was first dealt with by Mr. Sydney Stephenson, for to my mind this line of investigation will lead to a better understanding of the disease. A striking thing about Dr. Wallin's paper is the close similarity between his figures of incidence and those of colour-blindness, and also the fact that the sex-incidence is the same. This similarity of incidence would suggest strongly that it is hereditary, and it would be informing to follow cases to see if the method of transmission in word-blindness follows the same course as that of colour-blindness. There is one significant thing which I have noticed in two cases of partial word-blindness, and it is that both subjects were above normal at figures.

I am, Sir, yours faithfully,

Rugby, April 24th, 1921. ARTHUR WOOD.

THE DIET OF THE WEANLING.

To the Editor of THE LANCET.

SIR,—The annotation in your last issue on the diet of the weanling will be of great service if it stimulates interest and inquiry into the special difficulties at this period of life. You rightly point out the lack of sound principles by which the prescription of food can be regulated. Until these principles are outlined and agreed upon the diet will continue to be directed by rules which too often express the idiosyncrasies of the physician or obediently conform to some tradition or school and escape critical examination for that reason. The infant at this age shows again and again how much its survival owes to the versatility of its digestion. Nevertheless there must be rules, could we but find them, which might spare the strain under which even this versatility so often breaks down. As you quoted a suggestion of mine that the young child may not be so dependent on cow's milk for its health and physical development as is commonly thought to be the case, I should be glad if you would allow me to explain a little more fully what the suggestion implied. For it is, I believe, quite closely concerned with one of the principles of dietetics whose existence it is so important to get defined.

It is a common recommendation by doctors that during the second year of life a child requires from a pint and a half to two pints of milk daily. Inasmuch as it is practically impossible for a yearling to assimilate more nourishment than two pints of milk afford, this order implies that milk-feeding is still *the* essential feature of diet at this age. It is impossible also to escape the implication that the cow is really performing the function of foster-mother, and is continuing to the eighteenth or twenty-fourth month the task which the mother is usually told she should abandon about the ninth month. It is no good doctors saying they do not mean this or anything like it when they recommend a diet chiefly of milk. The denial merely means they have never thought about what they are ordering. To say cow's milk is a convenient way of giving water to a child is about as rational as to say whisky is a convenient vehicle for prescribing soda-water. Until Mr. Ford has realised his ingenious idea of providing a mechanical cow, milk remains what it always has been—the food of the young mammal from birth until the age when it can digest the diet of the adult. That cow's milk forms an ingenious addition to our sources of fat and protein is an aspect of its utility quite separate from the point at issue. The question here is to decide when does the normal infant reach the stage at which milk-feeding stops? Has the human mother so far lost the power of lactation that she can only perform half her task, and that the cow must finish it for her? Or has something befallen our babies that nowadays, after their mothers have done all that can be done in the way of breast-nursing, they need an extra 12 or 15 months' milk diet before they reach digestive independence? To many these questions may sound merely a quibble. It can be argued that milk is a valuable food, easy to procure and convenient to give. On the other hand, we must recollect that, whereas an adult can frequently select or modify his diet as his inclinations prompt, a yearling has virtually no choice in the matter. He has, at any rate, to fight for a pathetically long time before his dislikes are admitted to have a physiological foundaton.

There are many reasons for supposing the child's development undergoes changes which correspond very accurately with the adoption of a solid in place of a fluid diet. The appearance of teeth, the slowed and altered character of growth, coincide with a marked change in habits. The previously placid creature, mainly content to sleep and feed, becomes an energetic acrobat who takes an immense amount of physical exercise. There is, further, the interesting fact, often attributed to obstinacy or original sin, that about this age he stoutly refuses to be fed entirely on milk, and shows an almost unconquerable preference for solid food. Another piece of evidence, which your annotator considers unprofitable, but which I still think may carry conviction, is to be found in the very perfect physique of large numbers of children to be seen playing in the streets of this city, who have been reared on the primitive plan I have suggested may be the normal. They have in many cases been nursed entirely at the breast for six or seven months. After that small amounts of solid food were allowed, and a steady substitution by their parents' meals for the breast milk has gone on up to the age of about 15 months. From that age milk, except in the preparation of food, ceased to be included in their diet; water was their drink. The parents, if patiently questioned, will reveal this manner of rearing their children, but with considerable misgiving if the questioner be a doctor, nurse, or official of any sort. For they have learned that their plan runs directly counter to medical approval, though they retain a shrewd feeling that their results justify their method. It may surely be well worth our while to inquire whether these parents have preserved many hints on diet, handed down by precept and word of mouth, which contain physiological and biological truth of great value. Obviously the method just outlined is open to abuse. But one fact has impressed me about its application—children who have developed well in their first months are very easily fed by this method, and the process of weaning is achieved very smoothly.

To suggest that this is approximately the normal method is not to deny the value of cow's milk for many infants—dirty a food as it unfortunately still is in this country. It can, with proper precautions as to cleanliness and modification, very conveniently replace the mother's milk during the later months. But the amount given I believe need seldom exceed 10 or 15 oz. per diem for the normal child, and requires to be steadily diminished if the full ration of solid food is allowed. In cases of delicacy or illness the value in much larger amounts is often, of course, unquestionable long after the age at which it would normally have been given up. But it must be a common experience to see children—and this is a final piece of evidence which I believe your annotator will accept—whose development is thwarted and disordered simply by virtue of having been fed excessively on cow's milk. Once admit the rationality of these children's dislike for their diet, allow them to satisfy their thirst with water and share their parents' food, and their nutrition tends to swing back towards the normal at a rate which is often surprising. Provided—and it is a most important proviso—that their parents choose food of a suitable kind and prepare it in a suitable manner. Exactly what food and what amount should be given is, of course, another aspect of the subject altogether, full of its own difficulties. But my contention is that we have been greatly handicapped in our search for a suitable diet by the unnatural incubus which pints of cow's milk place on infantile digestion.

I am, Sir, yours faithfully,
HAROLD WALLER.

Cheyne Gardens, Chelsea, S.W., April 25th, 1921.

To the Editor of THE LANCET.

SIR,—Your annotation on the Diet of the Weanling seems a very fair summary of the position of our present knowledge of the subject. May I refer to some points in it? "Proper development of mouth and jaw" and "nasal breathing" are surely promoted by good use of all the muscles of mastication. Further, that the mechanical and chemical nature of the food is a very important factor in dental caries is certainly accepted by Sir Frank Colyer in his chapter on the subject in the last edition of Dental Pathology.

As to habits acquired in the nursery—though the infant in first attacking his crust swallows most in a finely divided form—he necessarily has to reject a few large pieces which come off in his mouth. This is to be encouraged rather than that he should learn to bolt it and is a necessary and unsightly stage in the process of his education. The stage does not last long we find. Personally, from an æsthetic point of view, I prefer to sit at table with a child of, say, 2 years old, who crunches a piece of hard toast with appetite rather than with one who passively and absent-mindedly allows a nurse to poke slop food into his open mouth. The first child is learning self-reliance, is a pleasanter table companion, and almost invariably has a better digestion than the one who passively allows the nurse or mother to feed him and to substitute other fluids for his salivary secretion.

I am, Sir, yours faithfully,
MARION COCKERELL,
Medical Officer, Argyle-square Infant Welfare.
Letchworth, April 26th, 1921.

SEPARATION OF BACTERIA BY ALKALI SOLUBILITY.

To the Editor of THE LANCET.

SIR,—In reference to the articles by Dr. David Thomson on the Biochemistry of Germs, in your issues of April 16th and 23rd, I think it might interest him to know that various bacteria are not only soluble in different strengths of alkali, but can be separated in a living state by this means. The technique, which has been elaborated by Mr. W. J. Matthews, the assistant at the pathological department of the Bristol Royal Infirmary, for the rapid separation of organisms in the preparation of vaccines is, without entering into minutiæ, as follows:—

> All Gram-negative organisms may be removed by decinormal NaOH. The treatment of the deposit of bacteria left after centrifuging with normal NaOH will kill all the commonly found Gram-positive saprophytes and leave streptococci and staphylococci alive. These can be separated by still stronger alkali, the staphylococci being the more resistant.
>
> By employing different strengths of alkali combined with subsequent growth in selective media rapid separations of bacteria can be effected and pure cultures obtained within 24 hours. Acids can be similarly employed, but are not as useful.

These devices were suggested by the preparation of detoxicated vaccines as described by Dr. Thomson, and have saved much time and trouble during the last year. Dr. Thomson believes the bacterial proteins to be similar to animal proteins. My observations lead me to believe that they differ much from both animal and vegetable proteins; for example, the alkaline solutions scarcely yield a biuret reaction.

I am, Sir, yours faithfully,
Clifton, Bristol, April 26th, 1921. J. R. KAY-MOUAT.

JERUSALEM UNIVERSITY LIBRARY.

To the Editor of THE LANCET.

SIR,—At the Third Annual Conference of the Inter-University Jewish Federation, held at Oriel College, Oxford, on August 3rd, 1920, it was unanimously resolved, in response to a request of the Zionist Organisation, to render every possible assistance to all efforts on behalf of the Hebrew University at Jerusalem. The most urgent need at the present juncture is an immediate and abundant supply of books for the Jerusalem University Library. We can conceive no cause more precious and commendable than the full development and firm consolidation of the intellectual and spiritual resources of the Jewish National Home. To this end books are the first requisite. In a scarcity of books the mind of a people is denied free expansion and healthy growth. To Jews with their love of learning the want of books is most distressing. In Palestine, unfortunately, there is a real book famine, and even with help from all over the world it will need a great effort to build up the present University library of about 40,000 volumes into an up-to-date library worthy of the Jewish University.

Serious works dealing with all branches of knowledge, standard works of fiction in any language, and more especially books which will be of use to university students are needed. Books on Hebraica, Judaica, and Semitica, mathematics, physics, chemistry, microbiology, and medical research are, however, the most urgently called for, as the first departments of the University that are to be opened will deal in research in these subjects. Books on law, economics, history, and philosophy will also be much appreciated. Sets of scientific journals, transactions of learned societies, official reports, and other publications and works and pamphlets of permanent value are especially required; good text-books of established repute will also be useful.

Considering that this is an important step towards a spiritual revival of Palestine and that our credit as an enlightened people is at stake, we appeal to your readers to send all the books they can spare as a free-will offering to those who will treasure them in Palestine. A single book will be welcome; but it is hoped that donors will send as many as they can. Gifts of books may be sent either direct to "The University Library, Jerusalem," or to the hon. secretary, Mr. D. B. Stanhill, B.Sc., F.I.C., 75, Great Russell-street, London, W.C. 1, who will, if necessary, arrange for the collection of the books. An artistically designed book-plate, the generous work of Mrs. L. Pilichowski (Lena Pillico) will permanently record the names of the donors.

We are, Sir, yours faithfully,
S. ALEXANDER, Chairman.
ISRAEL M. SIEFF, Treasurer.
D. B. STANHILL, Hon. Secretary.
April 21st, 1921. HARRY DAGUT, Chairman, I.U.J.F.

VENEREAL INFECTION IN RHINE ARMY.

To the Editor of THE LANCET.

SIR,—With further reference to my letters[1] giving the American rate for January–October, 1920, as 142 per 1000 per annum, and for November 1920–April, 1921, as 114 per 1000 per annum, I now learn that the American rate has been still further reduced, the latest available figures being as follows:—

	Per 1000 p.a.
Week ending April 1st	76·26
,, ,, ,, 8th	79·74

We are still without any better figures for the British Forces on the Rhine than those quoted recently in Parliament—viz., 168 per 1000 per annum—more than twice the present American rate.

As the question of issuing directions with medicaments is now under official consideration in England I quote the following from a recent American Army report:—

"The use of ointment or cream as a protective and lubricant before intercourse has been insisted upon by us for some time. *The printed directions which are securely pasted to the container in which all individual prophylactics are issued are specific on this point.* It is without doubt a preventive measure of great value. The principle has been made use of by mechanics in the preliminary preparation of their hands with soap before work. The soap fills the pores of the skin, thus preventing grease and dirt from penetrating, while subsequent cleansing is greatly facilitated. Our chief difficulty lies in getting men to use prophylaxis (either personal or at stations), and this in spite of the fact that all men who acquire venereal disease without having taken prophylaxis at stations are brought before courts martial."

This also was the chief difficulty with the Anzacs, but we overcame it very largely (1) by personal appeals for cleanliness for the sake of the women and children at home; and (2) by recommending disinfection with absolute confidence, and attributing failures not to the medicaments but to careless application—the individual responsibility of the man who incurred the risk of disease.

I am, Sir, yours faithfully,
ETTIE A. ROUT,
April 26th, 1921. Late Hon. Sec., N.Z. Volunteer Sisters.

HYPNO-NARCOSIS.

To the Editor of THE LANCET.

SIR,—In your interesting leading article in THE LANCET of April 16th on Professor Friedländer's hypno-narcosis, you mention James Esdaile's work on surgical operations under mesmerism. I would ask you to permit me to make a few additional remarks with reference to the latter. Esdaile was a surgeon in the Indian Medical Service; he followed Thomas Wise[1] (another surgeon in that Service) as civil surgeon of Hooghly (near Calcutta) in 1839. He commenced operating under mesmerism on April 4th, 1845, at Hooghly, and in eight months he carried out 73 operations on patients, some of them being major operations, such as removal of scrotal tumours (one of which weighed 80 lb.), excision of the breast, amputations, &c. On receiving the record of these Government ordered a committee to report on further experiments carried out by Esdaile in the Calcutta Native Hospital. Of the first ten patients experimented on three could not be mesmerised; the other seven were mesmerised and operated on successfully, in four painlessly, in three the complete absence of pain was considered doubtful. The committee's report being favourable, the Government sanctioned the opening of a mesmeric hospital in Calcutta in November, 1846, for one year. Into this hospital all kinds of surgical cases were admitted for operation under mesmerism. It was closed in January, 1848. The public of Calcutta appealed to Government to keep the institution going; the reply given was that this could be done by voluntary subscription. It was reopened under Esdaile on Sept. 1st, 1848, but only for another year. Shortly after this Esdaile was appointed as superintendent of a large dispensary in Calcutta, and continued to practise mesmerism in it until June, 1851. I am indebted to Lieutenant-Colonel D. G. Crawford's delightful "History of the Indian Medical Service" for some of these facts.

The introduction of chloroform in 1847 by Sir James Simpson naturally militated against the widespread use of mesmerism to produce unconsciousness in operations. If Esdaile had worked a century earlier, or the discovery of general anæsthesia had been delayed for a few generations he, like Sir James Simpson, would have been enrolled among the immortals.

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[1] THE LANCET, March 26th (p. 666) and April 16th (p. 825).

[1] Wise was the author of one of the best accounts we possess of Ayurvedic treatment, entitled Commentary on the Hindu System of Medicine, Calcutta, 1845.

Regarding Esdaile's work the late Mr. F. W. H. Myers[2] says:—

> "His success was absolutely unique; it was certainly (setting aside supernormal phenomena) the most extraordinary performance in mesmeric history. Had not his achievements been matters of official record the apparent impossibility of repeating them would probably by this time have been held to have disproved them altogether."

A further reference[3] to Esdaile's work states that he performed "upwards of 300 capital operations of every description, and many of them of the most terrible nature, without inflicting pain on the patients, and in every instance the insensibility was produced in this fashion."

The phenomena of hypnotism have long been known to almost all Oriental nations. The fakirs of India, the musicians of Persia, the priesthood of Egypt and Greece, the seers of Rome, the monastic recluses of the Middle Ages, and the ecstatics of the seventeenth and early eighteenth centuries, exhibited many symptoms attributed by religious enthusiasts to supernatural agencies, but explicable by what is now known of hypnotism. The Jogins, who appear to hibernate at will; the Dandins, who become cataleptoid by 12,000 repetitions of the sacred word "Om," might be instances of auto-hypnotism. Hue and Hedwald tell us of hypnosis in Buddhist monasteries and convents in Thibet, and Sperling speaks of the postures of dervishes at Constantinople as due to auto-hypnotism. Many strange stories are related of Indian fakirs; if the incidents described are not jugglers' tricks, they are possibly connected with self-induced hypnosis.

I am, Sir, yours faithfully,
P. HEHIR,
Major-General, I.M.S. (ret.).
April 16th, 1921.

ANTITYPHUS VACCINATION.

To the Editor of THE LANCET.

SIR,—I think it is of importance to correct an inexactitude in the article by my friends Dr. J. M. Mitchell and Dr. G. P. N. Richardson, dealing with the preparation of antityphus vaccine, in THE LANCET of April 9th (p. 742). I acquainted them with details of the preparation of vaccine which I used at the time when I was testing the result of the addition of carbolic acid: this addition was rejected, as *it produced, even in very small quantities* (*0'25 per cent.*) *secondary coagulation of blood* during inactivation. The addition of carbolic acid *after* inactivation was considered dangerous. The conditions under which the work was done were very unfavourable. There was no available laboratory: all instruments and apparatus were improvised from kitchen jars, wine bottles, &c., as it was impossible to obtain proper materials in Russia. The blood was inactivated in stoppered bottles completely immersed in water; superfluous opening for addition of any preservative was considered dangerous under the existing conditions of preparation. Moreover, in about 500 cases where injections were given during the epidemic of November and December, 1919, mentioned in the article, I observed no complication.

I am, Sir, yours faithfully,
Dr. I. N. ASHESHOV,
i/c of Government Bacteriological Laboratory,
Dubrovnik (Rugusa), Yugoslavia.
April 17th, 1921.

THE ANTENATAL CLINIC AND PLACENTA PRÆVIA.

To the Editor of THE LANCET.

SIR,—It will be distinctly advantageous when the antenatal clinic is advised and carried out by the medical profession as a routine practice in the case of every woman during the last month of pregnancy. By this means the following would be known beforehand:—

(1) Whether a natural labour may be expected.
(2) If all organs are working properly.
(3) Whether the pelvic measurements are normal.
(4) Whether labour is obstructed, and by what.
(5) The position of child and probable presentation.
(6) The site of the placenta.

If the placental souffle can be easily heard when the stethoscope is placed on the abdomen over the fundus uteri, all anxiety on this subject may cease, but if not heard the cervix must be investigated, when a thickened feeling will confirm the suspicion of the presence of the placenta. For the purpose of further investigating a solid wooden instrument has been made, consisting of a smaller end which is passed up to the os uteri, while to the larger end which projects a binaural stethoscope can be applied. Thus, through a good conductor is conveyed the sound of placental circulation, and if present, the diagnosis of placenta prævia may be considered certain and Cæsarean section called for.

I am, Sir, yours faithfully,
Deal, April 15th, 1921. THOMAS H. MORSE, F.R.C.S.

UNIVERSITY OF BIRMINGHAM: LECTURESHIP IN PSYCHOTHERAPY.

To the Editor of THE LANCET.

SIR,—May I correct an error that has crept into the announcement of the lectureship in Psychotherapy at Birmingham University in your advertisement columns of April 16th? I am there wrongly described as lecturer in *Psychotherapy* at King's College, whereas my position is the more humble one of lecturer in *Psychology*. The announcement has naturally given rise to some misapprehension. I am, Sir, yours faithfully,
Harley-street, W. April 17th, 1921. J. A. HADFIELD.

*** We make the correction gladly, adding that the wording of the advertisement was precisely as received from the University of Birmingham.—ED. L.

THE INFLUENCE OF AERATION ON THE ANTISCORBUTIC FACTOR.

To the Editor of THE LANCET.

SIR,—I have just noted the article by Dr. S. S. Zilva which you published in your issue of March 5th on this subject. I have thought that your readers might be interested in the fact that this is a confirmation of work which I reported before the meeting of the British Medical Association last summer, and of which the following is a short account. You will see that Dr. Zilva's work confirms mine.—I am, Sir, yours faithfully,
ALFRED F. HESS.
West 86th-street, New York, April 2nd, 1921.

[*Enclosure.*]

THE DESTRUCTIVE EFFECT OF OXIDATION ON ANTISCORBUTIC VITAMIN.[1]

BY ALFRED F. HESS AND LESTER J. UNGER.

[*From the Department of Pathology, College of Physicians and Surgeons, New York City.*]

As stated elsewhere (Hess, A. F.: Brit Med. Jour., 1920, ii., 147), the antiscorbutic vitamin is destroyed by oxidation. Such was found to be the case when 4 c.cm. of a normal solution of hydrogen peroxide were added to a litre of raw milk, which was then placed in the incubator overnight. Bacteria did not develop in the incubator under these conditions. When 80 c.cm. per capita of this milk was fed to guinea-pigs, in addition to oats, they all developed scurvy in about three to four weeks, a result similar to feeding experiments with milk which had been autoclaved for one hour at 120° C. The addition of orange juice to the dietary served either to protect or to cure animals on this dietary.

Orange juice subjected to oxygen for a short period was likewise found to have lost some of its potency. Previously we had found that milk or tomato juice which had been shaken had lost some of this vitamin. Probably this deleterious action is partly due to the effect of oxidation. The harmful effect of "ageing" may also be interpreted in this way.

As foodstuffs undergo oxidative processes frequently in the course of various manipulations, no doubt this factor plays an important rôle. This action probably explains the differences in the antiscorbutic potency of foodstuffs which have been treated in apparently similar ways, for example, of milk which has been heated in open pans or in hermetically sealed bottles.

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[2] Human Personality, and its Survival of Bodily Death, i., p. 150, quoted by D. G. Crawford in History of the Ind. Med. Service, ii., p. 150. [3] Medical Press, vol. cxlvii., Oct. 3rd, 1853, p. 336.

[1] Reprinted from the Proceedings of the Society for Experimental Biology and Medicine, 1921, xviii., p. 143.

The Services.

INDIAN MEDICAL SERVICE: CIVIL EMPLOYMENT PAY.

THE following communiqué has been received from the India Office:—

1. With effect from Jan. 1st, 1920, the new scales of pay for officers of the Indian Medical Service in civil employment are as follows:—

(a) The rates of pay for officers of the Indian Medical Service in civil employment, who hold one of the following appointments, are as specified below:—

Director-General, Indian Medical Service, Rs.3500.
Surgeons-General, Rs.3000.
Inspectors-General of Civil Hospitals, Rs.2750.
Sanitary Commissioner with the Government of India, Rs.2500, rising by annual increments of Rs.100 to Rs.3000.
Inspectors-General of Prisons, Rs.2300, rising by annual increments of Rs.50 to Rs.2500.
Sanitary Commissioners, Bengal, Bihar and Orissa, United Provinces, Punjab, Madras, Burma, Bombay and Central Provinces, Rs.2100, rising by annual increments of Rs.60 to Rs.2400.
Sanitary Commissioner, Assam, Rs.1950, rising by annual increments of Rs.50 to Rs.2300.
Principal, Medical College, Calcutta, Rs.2350.
Superintendent, Campbell Medical School, Calcutta, Rs.2350 for a Lieutenant-Colonel and Rs.1950 for a Major.
Senior Medical Officer, Port Blair, Rs.1950.
Surgeon Superintendent, Presidency General Hospital, Calcutta, Rs.2350.
Surgeon Superintendent, St. George's Hospital, Bombay, Rs. 2350.
Superintendent, General Hospital, Rangoon, Rs.2150.

(b) The rates of pay of officers of the Indian Medical Service in civil employment, who do not hold any of the appointments specified in the other clauses of this paragraph, are shown in the following statement:—

Rank and Service.	Pay.	Overseas pay.	Total pay.
	Rupees per month.		
Lieutenant	500	150	650
Captain—			
(i.) During the first 3 years' service as Captain	650	150	800
(ii.) With more than 3 and less than 6 years' service as Captain	750	200	950
(iii.) With more than 6 years' service as Captain	850	200	1050
Major—			
(i.) During the first 3 years' service as Major	950	250	1200
(ii.) With more than 3 and less than 6 years' service as Major	1100	250	1350
(iii.) With more than 6 years' service as Major	1250	250	1500
Lieutenant-Colonel—			
(i.) Until completion of 23 years total service	1500	250	1750
(ii.) During the 24th and 25th years' of service	1600	250	1850
(iii.) After completion of 25 years' total service	1700	250	1950
(iv.) When selected for increased pay ...	1850	250	2100

(c) The rates of pay in columns (3) and (5) of the statement in clause (b) are increased by Rs.250 a month for all officers of the Indian Medical Service who hold one of the following appointments: (1) Professorial appointments, Bengal, Punjab, United Provinces, Madras, and Bombay; (2) Principal, Lahore Medical College; (3) Principal, Lucknow Medical College; (4) Surgeon to Gokuldas Tejpal Hospital, Bombay; (5) Imperial Serologist; (6) appointments in the Bacteriological Department; (7) Chemical Examiners; (8) Deputy Sanitary Commissioners; (9) Port Health Officers at Bombay, Calcutta, Rangoon, and Aden; (10) Health Officers, Simla, Imperial Delhi, and Delhi Municipality; (11) Plague Medical Officers; (12) Deputy Director-General, Indian Medical Service; (13) Assistant Directors-General, Indian Medical Service (Sanitary), and (Stores); (14) Surgeon to His Excellency the Viceroy; (15) Police Surgeon, Rangoon; (16) Superintendents, Central Lunatic Asylums; (17) Superintendent, X Ray Institute; (18) Superintendent, Royal Botanical Gardens, Calcutta.

(d) The rates of pay in columns (3) and (5) of the statement in clause (b) are increased by Rs.200 a month for all officers of the Indian Medical Service who hold one of the following appointments: (1) First and Second Resident Surgeons, Presidency General Hospital, Calcutta; (2) Resident Surgeon, St. George's Hospital, Bombay; (3) Surgeons to Their Excellencies the Governors of Bombay, Madras, and Bengal.

(e) For Superintendents of 1st class Central Jails and the Second Medical Officer, Port Blair, the rates of pay in columns (3) and (5) of the statement in clause (b) are increased by Rs.150 a month.

(f) For personal assistants to Surgeons-General the rates of pay in columns (3) and (5) of the statement in clause (b) are increased by Rs.100 a month.

(g) For Superintendents, 2nd class Central Jails, the rates of pay in columns (3) and (5) of the statement in clause (b) are increased by Rs.50 a month.

(h) In addition to the above rates of pay officers of the Indian Medical Service who hold one of the following appointments draw in addition the duty allowances mentioned: (1) Officers of the Bacteriological Department who are directors of 1st class Central and Provincial Laboratories, Rs.200 a month. (2) Officers of the Bacteriological Department who are Directors of Pasteur Institutes, Rs.100 a month. (3) Deputy Director-General, Indian Medical Service, Rs.400 a month, subject to a maximum of Rs.2500 a month for the total pay and duty allowance combined. (4) Assistant Directors-General, Indian Medical Service (Sanitary) and (Stores), Rs. 250 a month, subject to a maximum of Rs.2500 a month for the total pay and duty allowance combined.

Note.—The appointment of Additional Assistant Director-General, Indian Medical Service, will, for the present, continue to grade for the purposes of pay as a Deputy Assistant Director, Medical Services, Army Headquarters.

2. The rates of overseas pay specified in Para. 1, clause (b), apply only to the officers of the Indian Medical Service in civil employment who fall under Para. 1, clauses (b) to (h). This overseas pay will be drawn by all such officers who were in permanent service on Dec. 1st, 1918, and by all such British officers who have joined or may join the service after that date. Such Indian officers who have joined or may join the permanent service after Dec. 1st, 1918, will not be allowed to draw this overseas pay, unless they are already drawing pay at a higher rate than is admissible without overseas pay, in which case they will continue to enjoy the benefit of that higher rate for so long as they would otherwise have done; but they will not receive any further increment until it is due to them under the scales now sanctioned.

3. Exchange compensation allowance is withdrawn with effect from Jan. 1st, 1920.

4. In bringing officers at present in service on to the revised rates of pay, Articles 156 to 158 of the Civil Service Regulations will not apply. A personal allowance is, however, sanctioned for all existing incumbents of offices, who are drawing a salary greater than that admissible under the scales now sanctioned so as to bring their emoluments up to the amount now enjoyed. These personal allowances will be absorbed as increments are earned.

5. Subject to the provision in para. 4, the initial pay of the scales now sanctioned in the case of an officer who holds an appointment on a time-scale of pay specified in para. 1, clause (a), will be regulated according to the number of years he has held the appointment permanently, and the broken period of a year of service which such an officer has put in before Jan. 1st, 1920, will remain at his credit for the next increment.

Note.—The rates of pay in para. 1, clause (b) apply to all appointments held by officers of the Indian Medical Service in civil employ which are not specified in the remaining clauses of that paragraph. These include, amongst others, the following appointments: Civil Surgeons; Agency Surgeons; Presidency Surgeons, 1st and 2nd Districts, Bombay; Police Surgeon, Calcutta; Senior Surgeon and ex-officio Sanitary Commissioner, Mysore Darbar; Medical Officer, Kathiawar Political Agency; Ophthalmic Surgeon, General Hospital, Rangoon; Medical Officer, Seistan; Director, Medical Department, Bikanir; Medical Officer, Mewar Bhil Corps, Kherwara; Superintendent of Mahableshwar; Superintendent of Matheran; Resident Surgeon, Medical College, Calcutta; Resident Physician, Medical College, Calcutta; Resident Surgeon, Eden Hospital, Calcutta; Resident Medical Officer, General Hospital, Madras; and Assistant Superintendent, Government Maternity Hospital, Madras.

ROYAL NAVAL MEDICAL SERVICE.

Surgeon Rear-Admiral C. S. Woodwright, placed on Retired List at own request.

The following appointments have been made: Surg. Cmdrs. H. Huskinson, W. S. H. Sequeira, S. F. Dudley, and S. Roach, to *President*, additional, for three months' hospital course; and H. W. B. Shewell to *Revenge*, as Squadron Medical Officer; Surg.-Lieut. Cmdr. M. S. Moore to the *President*, additional, for three months' hospital course.

ARMY MEDICAL SERVICE.

Col. S. A. Archer is placed on retired pay on account of ill-health contracted on active service.

ROYAL ARMY MEDICAL CORPS.

Major J. Mackenzie to be temporary Lieutenant-Colonel whilst specially employed.

Capt. R. Ellis retires, receiving a gratuity, and is granted the rank of Major.

Temp. Capt. M. Bates relinquishes the acting rank of Major.

Capt. C. B. Hogg is placed on the half-pay list on account of ill-health.

Temporary Captains relinquishing their commissions and retaining the rank of Captain: W. B. Wilson, B. A. Cheadle, W. L. Young, R. S. Dollard, J. G. M. Sloane, and W. F. Gardener.

Lieut. (temp. Capt.) M. F. D. Graham resigns his commission and is granted the rank of Captain.

SPECIAL RESERVE OF OFFICERS.

The undermentioned Captains relinquish their commissions and retain the rank of Captain: H. Smith and G. Day.

DEFENCE FORCE.

To be temporary Major: J. A. Clark. To be temporary Captains: E. Coplans, T. P. Cole, C. H. Carlton, G. F. Hardy, and A. M. Johnson. To be temporary Lieutenants: O. G. Misquith, C. S Atkin, and P. Lloyd-Williams.

West Riding Field Ambulance (D.F.):—To be temporary Lieutenant-Colonels: J. Mackinnon, F. Whalley, and W. Lister.

TERRITORIAL FORCE.

Lieut.-Col. A. H. Vernon to command the 3rd S. Casualty Clearing Station.

Capt. (Bt. Major) A. Walker to be Major.

Major M. White, R.A.M.C., to be Adjutant of the R.A.M.C. School of Instruction, Welsh Division (T.F.).

Major J. Ward vacates the appointment of D.A.D.M.S. 44th (Home Counties) Division.

Capts. D. S. Sutherland and E. L. Rowse to be Majors.

Capts. A. E. Chisholm (late R.A.M.C.) and J. McKay (late R.A.M.C., S.R.) to be Captains.

Capts. B. G. Goodwin and E. G. Anderson resign their commissions and retain the rank of Captain.

1st London (C. of L.) General Hospital: Major (Bt. Lieut.-Col.) W. McA. Eccles is restored to the establishment.

1st London (C. of L.) Sanitary Company: Capt. H. Holroyd resigns his commission and retains the rank of Captain.

2nd London Sanitary Company: Capt. R. O. Sibley resigns his commission and is granted the rank of Major.

ROYAL AIR FORCE.

R. J. Monahan and J. Craig are granted temporary commissions as Flight Lieutenants.

Obituary.

ALEXANDER WYNTER BLYTH, M.R.C.S. ENG., L.S.A., F.C.S., F.I.C.,

BARRISTER-AT-LAW; PUBLIC ANALYST FOR MARYLEBONE.

THE death on March 30th, in his seventy-seventh year, of Mr. Wynter Blyth has removed a medical man of wide scientific attainment. Born in 1845 at Woolwich, where his father was in practice, Wynter Blyth was educated at King's College, London, of which he later became an associate, qualifying in 1870. He studied law at Lincoln's Inn, being called to the Bar in 1889. Starting in general practice in Devon, he was soon drawn to the preventive side of medicine, first becoming medical officer of health for the North Devon Combined District, and analyst for the county, and then for over 25 years medical officer of health to the Metropolitan Borough of Marylebone, to which body at the time of his death he was still public analyst. Wynter Blyth's literary work met the needs of a large circle of readers. His Dictionary of Hygiene and Public Health, frankly based upon the model set by Tardieu, became a standard work of reference in sanitary science, and helped to bring about much-needed measures of reform. Other large books followed: Foods, their Composition and Analysis; Poisons, their Effects and Detection; Diet in Relation to Health and Work; and a Manual of Public Health. In 1893 he issued his Lectures on Sanitary Law, founded upon a course delivered at the old College of State Medicine, where he was professor of hygiene, and the sound advice to medical officers contained in it enabled many of them to secure more effective hygienic administration in their districts. A friend and colleague writes of him:—

Wynter Blyth was well known among the fellows and members of the Royal Sanitary Institute, to which he had given long and devoted service. He was twice chairman of its Council and for 35 years a member of its board of examiners, on which his cheery manner did much to enliven the arduous duties. About 12 years ago he resigned his position as M.O.H. for Marylebone and confined his energies to analytical work. His ability in this direction soon considerably increased his practice, and he enjoyed in the later years of his life the perfect freedom of thought and action which is not always possible with a municipal officer. Always a hard worker, he recognised the value of recreation, and in recent years he pursued a hobby of farming, on a small scale, at Kintbury, which his technical knowledge helped to make a success. He was a keen automobilist and chess-player. A scientist himself of no mean calibre, he was extremely modest of his own attainments, and remained a student to the end.

With these qualities and attainments Wynter Blyth was called upon to make many public engagements. He presided over the Society of Medical Officers of Health, and he was a Fellow of the Société Française d'Hygiène and of the Italian Society of Hygiene at Milan. His death occurred suddenly while he was at work in his laboratory.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Public Health (Tuberculosis) Bill.

THE Public Health (Tuberculosis) Bill was considered by Standing Committee B of the House of Commons on April 21st, Sir WATSON RUTHERFORD in the chair.

On Clause 1, which makes further provision with respect to arrangements for treatment, Mr. GRUNDY moved an amendment to secure a review of all existing schemes. His object, he said, was to provide that schemes which might be inadequate might be brought up to the standard of efficiency necessary for dealing with tuberculosis.—Sir A. MOND (Minister of Health) resisted the amendment. It was impossible, he said, to accept in Committee an amendment which changed entirely the character of an agreed Bill, and which, instead of putting matters forward, made what was now much clearer rather more obscure.—Major FARQUHARSON said he could not help feeling admiration for the enthusiasm which certain honourable Members displayed towards what they described as the inadequacy of tuberculous treatment, but when that sentiment was placed *vis-à-vis* to the best scientific opinion, and the results of sanatorium treatment so far, he suggested that they should calm their enthusiasm for extensive and expensive schemes of treatment until the experimental stage of these treatment methods had been passed. Scientific opinion at the present time had great doubts as to the effect of sanatorium treatment in doing anything more than palliating for a short time the unfortunate position of the tuberculous person. Only the other day a magnificent book was published written by one of America's greatest physicians, who had made tuberculosis a special study. The sum and substance of the conclusions of this very distinguished American scientist was that a tuberculous free population in this country would be absolutely unequipped for existence. In other words, if they took a group of 20 or 25 children and reared them until they were of adult age under conditions which precluded the possibility of tuberculous infection, and the time came when they would have to go out into the world free of the restrictions which had kept them tuberculous free, they would inevitably succumb, one after the other, to the infection, which would be so extreme that it would sweep them away in a state of tuberculosis in no time. Therefore he asked the Committee not to seek to impose standards of adequacy upon local authorities, but to accept the position as it was now. The more he read up-to-date science, and the older he became, the more he was thrown back on the wisdom of our grandmothers and grandfathers. The average grandmother knew that a child was to have measles, scarlet fever, and all the rest of the zymotic diseases, and very properly and very scientifically she exposed her children to those diseases, because the occurrence of that disease gave them immunity. Precisely the same thing happened in regard to tuberculosis. It was part of Nature's freely given immunity to the population of this country that the small doses of tuberculous infection that we did get acted as a protection against a more severe attack, and gave us in a measure the physical equipment to stand what Mr. Mantalini described as the "demnition climate" of this country. We could not expect, and in fact it would not be wise economically, scientifically, or in any other way, for our people to seek to become tuberculous free. The Committee would do well not to alter the Bill, which was a really good equipment for the purpose in view.—Captain ELLIOT said he would vote in favour of the Bill as it stood, because, although he did not agree with some of the speeches that had been made, he thought the essential thing was to get the coöperation of the local authorities. It would cause the greatest injury to public health if it came to be supposed that a policy was being dictatorially settled at Whitehall and forced upon a reluctant set of local authorities.—On a division the amendment was rejected by 23 votes to 10.

Sir R. THOMAS moved an amendment, the purpose of which was to acknowledge in the Bill the King Edward VII. Welsh National Memorial Association, which is the approved authority in Wales at the present time.—Sir A. MOND accepted the amendment which was agreed to.

Sir H. NIELD moved an amendment under which a council shall not be deemed in default as a result of the withdrawal of or diminution in the rate of the Exchequer contributions. It would be a monstrous thing to have the whole expense transferred to the councils. It had been known in other Departments—he excluded any reference to the present Ministry of Health—that work had been done on the basis of a contribution from the Exchequer, and as time went on they had managed very skilfully to withdraw their own contribution, and to leave the unfortunate ratepayer to bear the whole burden of the work which the Government had induced.—Sir A. MOND said that although he felt that this amendment was of an ultra precautionary nature, in order to allay any anxiety he would accept it.—The amendment was agreed to.

On Clause 3, which gives power to councils to act through committees, Mr. T. THOMSON moved an amendment to make obligatory the coöption of persons specially qualified. He hoped that the Minister would see his way to redeem the pledge given by his predecessor that the members of Insurance Committees should be specially nominated and coöpted on to the local authority.—Major FARQUHARSON said he had every respect for the members of these committees, but after all they had merely a pen-and-ink experience of the administration of tuberculosis. Instead of the legislature seeking to strike at the autonomy of the local authorities it ought really to strengthen them. The local authority that had a certain measure of confidence reposed in it to use its own discretion in these matters was one from which they would get far more effective work than if they imposed all sorts of trumpery conditions.—The amendment was negatived.

Mr. TYSON WILSON moved a new clause providing for after-care of tuberculous patients by councils.—Sir A. MOND said that although he could not bind himself to accept the exact wording of the clause he would agree to the principle.—The new clause was agreed to.

Dr. NATHAN RAW moved a new clause providing that the Seamen's National Insurance Society should be deemed to have the same status, powers, and duties as any council of any county or county borough. He said seamen arriving at any port in this country were no longer able to receive sanatorium benefits under the Insurance Act. He wished to ask the Minister if he would consider the question of setting up some central committee which would be able to deal with all seamen at any port of entry in this country and allow them to receive sanatorium benefit.—Sir KINGSLEY WOOD said this society had done very excellent work on behalf of the seamen. But only half of the seamen of the country belonged to the society, and, of course, the other half under the Insurance Act got their benefits one way or another through the Insurance Committees. The Minister recognised the considerable difficulty these men had in obtaining benefit, and he would confer with Dr. Raw and others interested to see if anything could be done. The Minister would do all he could in connexion with this excellent society.—The CHAIRMAN said the clause was out of order and he could not put it to the Committee. He had allowed a few remarks upon it in order to elicit some statement from the Government on the matter.

The Committee stage of the Bill was completed and the measure as amended was ordered to be reported to the House.

HOUSE OF COMMONS.

WEDNESDAY, APRIL 20TH.

Bonus to Tuberculous Ex-Service Men.

Mr. MYERS asked the Minister of Pensions whether local war pensions committees had, for many months past, been asking for a ruling with regard to the payment of bonus to ex-Service men suffering from tuberculosis admitted as attributable to or aggravated by service who had completed a course of training arranged by local insurance committees; and whether he would state the reason why these men were deprived of benefits enjoyed by all other ex-Service trainees.—Mr. ALFRED DAVIES asked the Minister of Health whether he was aware that ex-Service men suffering from tuberculosis accepted as attributable to or aggravated by service, who underwent a recognised course of training arranged by the local insurance committees, were unable to obtain payment of the bonus paid on termination of courses of training arranged by the Ministry of Labour, or, in the case of concurrent training and treatment, by the Ministry of Pensions; whether he could explain why these men should be thus penalised; and whether he would take steps to ensure that these trainees should enjoy the same benefits as other disabled ex-Service men.—Mr. IAN MACPHERSON (Minister of Pensions) replied: The training bonus is payable in cases where a disabled man, who is obliged in consequence of his disability to change his pre-war occupation, has satisfactorily completed a course of training which is certified by representatives of the trade as adequate to equip him for his new occupation. It is the practice of my Department and of the Ministry of Labour to secure trade approval both of the course of training and of the individual trainee in order to provide the man with the best chance of securing regular and permanent employment in the new trade he has selected. So far as men suffering from tuberculosis have received training of this character in any class of institution the bonus has been paid. Difficulty has, I understand, been experienced by the Ministry of Health with regard to the provision of courses of instructions in technical trades, and in such trades the training at present given is, for the most part, of an elementary kind and cannot be regarded as regular vocational training. I am, however, in communication with the Ministry of Health on the matter.

Anatomical Study in Great Britain.

Sir HARRY BRITTAIN asked the Minister of Health whether he was aware that there was the greatest difficulty with regard to the proper prosecution of anatomical study in this country, and that, in consequence, a large number of British medical students were forced to prosecute or complete their studies in foreign hospitals or universities; whether this difficulty was mainly due to the inadequate supply of dead bodies for anatomical purposes; and whether he would consider appointing a Select Committee to inquire into the matter.—Sir A. MOND replied: Although it is the case that owing to the difficulty in obtaining subjects British students have occasionally gone abroad to seek facilities for the study of anatomy in foreign schools; this state of affairs has now been remedied by the action taken by my predecessor. There is still a shortage in the case of certain provincial medical schools, but this is being remedied.

Shell-shock and Tropical Climates.

Sir WALTER DE FRECE asked the Minister of Pensions whether he was aware that many ex-officers and men who went out to the tropical parts of the British Empire to seek their livelihood were being sent home or were returning home suffering from the effects of shell-shock which apparently manifested itself seriously in hot climates; whether many of these men were now seriously embarrassed financially; and whether he would give instructions that all such cases were to be dealt with as expeditiously and sympathetically as possible.—Mr. MACPHERSON replied: I am not aware of the circumstances referred to in the first part of the question, but special consideration is given to all cases in which there is urgency in order that there may be no delay in providing whatever benefits are admissible under the Royal Warrant. If my honourable friend has any particular case in mind I shall be glad to investigate it.

Medical Examinations for the Navy.

Sir THOMAS BRAMSDON asked the Secretary to the Admiralty whether, in view of the stringent medical examination applied to new entries in peace time, which should make attributability more pronounced in the case of death or invaliding, some form of independent appeal board would be instituted to deal with any post-war cases in dispute, observing, for instance, that pneumonia might be clearly due to the service on which the man was employed, but that there was no machinery for recording or giving due consideration to the circumstances attending each case, nor for bringing them to the notice of the medical officers concerned whose duty it was to decide this important matter at present.—Mr. AMERY (Parliamentary Secretary to the Admiralty) replied: As my predecessor informed the honourable Member in reply to his question of March 21st, it is not considered that any form of independent appeal board is necessary. I cannot agree with the statements in the latter part of the honourable Member's question. From the time a man enters the Royal Navy to the time he leaves it a careful record is kept of his medical history, and before any man is invalided for injury or disease all the details of such injury or disease are fully known to the board of survey, who definitely give their opinion as to attributability on special forms provided for the purpose. Such a disease as pneumonia might well in exceptional cases be definitely given as attributable to service. The surveying officers are medical men intimately acquainted by personal experience with the conditions of life at sea, and the Admiralty consider that no more efficient machinery could be devised for deciding the question of attributability. The same considerations apply to the death of a man or officer.

Rules under Nurses Registration Acts.

Mr. FREDERICK HALL asked the Minister of Health whether he was aware that, though Acts to provide for the registration of nurses received the Royal Assent on Dec. 23rd, 1919, the English Act had, so far, not been carried into effect, and that efforts were being made departmentally to coerce the General Nursing Council of England and Wales to agree to provisions incorporated in the rules framed under the Scottish Act, of which that council did not approve; whether such provisions, if adopted, would have the effect of reducing its authority in certain important directions to that of a recording body under the Scottish Board of Health, without power of discrimination; and whether he would inquire into this matter with a view to satisfactory regulations being brought into force without further delay.—Sir A. MOND replied: The honourable Member is under a misapprehension. The General Nursing Council submitted a rule purporting to give them a discretion to refuse to admit to their register nurses already on the Scottish and Irish registers. I am advised on the highest authority that this is ultra vires, and I am bound to ask the Council to amend the rule in question so as to bring it into conformity with the Act. Subject to the submission of an amended rule to give effect to the reciprocity provisions of Sections 6 (3) of the Act, I am prepared to sanction at once the rules for the admission of existing nurses. I cannot accept the suggestion contained in the latter part of the question, but in any case I have no power to sanction a rule in the form desired by the Council.

Mr. Hollomby's Pension Appeal.

Mr. RONALD MCNEILL asked the Attorney-General if he would explain the reason for the decision of the appeal tribunal of the Ministry of Pensions in the case of Mr. E. G. Hollomby in which it was decided that two medical boards were wrong in stating that the disability of the pensioner was due to his military service; and what medical authority was responsible for the advice on which the decision was based.—Sir G. HEWART replied: I am informed that the decision of the Pensions Appeal Tribunal deputed to hear and decide this appeal was based upon the whole of the evidence put forward, both oral and documentary. Each tribunal is composed of three members, a legal member as chairman, a doctor as medical member, and an ex-Service man or non-commissioned officer as Service member. The decision of a tribunal is by a majority of votes. In the case under notice the decision was unanimous.

THURSDAY, APRIL 21ST.

New Government Light Metal Limb.

Major COHEN asked the Minister of Pensions if he would state the price of the new Government light metal limb, both as supplied by Messrs. Vickers and also when completely fitted with bucket, &c.—Mr. IAN MACPHERSON replied: It would not be expedient at this stage to publish details of the contracts placed with the limbmakers in connexion with the new light metal limb. I may, however, inform my honourable and gallant friend that for the first issue of 500 the total cost per limb will not exceed £30. These limbs are, of course, provided free to the pensioner.

House of Lords Pension Appeals.

Mr. ALFRED T. DAVIES asked the Minister of Pensions whether he was aware that there were some thousands of cases of ex-Service men waiting to be heard before the House of Lords Appeal Court, of which only about 40 cases per week were now being dealt with; and whether, if it was not possible under existing regulations to set up additional courts of three justices of the peace in various centres to deal with the urgent need for speedy decisions in these cases, he would consider an amendment of the existing law so as to deal with this urgent matter in the interests of ex-Service men during the present session.—Sir G. HEWART (Attorney-General) replied: I have been asked to reply. I am informed that there are at the present time about 8,500 appeals waiting to be dealt with by the Pensions Appeal Tribunals established by the War Pensions (Administrative Provisions) Act, 1919. The 12 tribunals now sitting deal with over 600 appeals per week. Of the cases listed, some have to be adjourned often owing to the failure of appellants to appear in response to the notices of hearing. Steps are being taken to ensure as far as possible that there shall be no unreasonable delay, and to this end additional tribunals are being set up.

Sir THOMAS BRAMSDON asked the Minister of Pensions what would be the total pension on demobilisation at the end of four and a half years' war service of an able seaman, called up, who had previously been invalided with tuberculosis after ten years' service; how much of this pension would be in respect of his war service; and what pension an able seaman with only one year's service, and invalided during the war with tuberculosis, would receive on discharge; and would he take steps to rectify any inequality that might exist in dealing with these cases.—Mr. MACPHERSON replied: The general position regarding men invalided and pensioned before the war who were called up for service was indicated in the reply given to the honourable Member on March 17th. The pension of a seaman, reassessed on demobilisation, would not ordinarily be increased in respect of a total of less than 15 years' service, unless during his mobilised service he had been advanced to leading rate or had earned additional good conduct badge. As regards the seaman invalided during the war, if the disability was attributable to or aggravated by service, he would receive a pension in accordance with the degree of disablement so long as the disablement or aggravation persisted, but when this was no longer the case, compensation would cease. The pensioner called up has, however, in any case a permanent pension. I may add that the question of specially increasing pre-war life disability pensions in the cases of men who served again in the Great War is under consideration, and it is hoped that it may be possible to make an announcement at an early date.

Supply of Meals to Children in Mining Areas.

Mr. FORREST asked the President of the Board of Education how many educational authorities were now supplying meals to the children in the mining areas; and what was the aggregate number of children thus aided.—Mr. FISHER replied: The returns which I have received from local education authorities as to the action taken by them under the Education (Provision of Meals) Acts do not enable me to distinguish between those portions of the authorities' areas which are mining districts and the remaining portions. However, during the week ended April 9th, 1921, the latest week for which complete returns have been received, meals were being provided by 35 local education authorities in whose areas mining is one of the predominant industries; the number of children fed was, approximately, 12,000. From the returns for the week ended April 16th, which are not yet complete, it is clear that there was a substantial increase in the number of children being fed.

Medical Equipment in Irish Auxiliary Force.

Mr. HENRY (Attorney-General for Ireland), replying to Captain REDMOND, said that he was satisfied that the arrangements at present in operation were sufficient to ensure the maintenance of the highest standard of discipline in the Auxiliary Forces in Ireland.—Lieutenant-Colonel GUINNESS: Apart from the question of discipline, would it not be an advantage to this gallant force to be directly under the Commander-in-Chief, as at present no one seems to be in a position adequately to arrange for their medical necessities or administrative needs?—Mr. HENRY: There are many difficulties in the way of bringing a force of this kind under military control. In the martial law areas they are under military control.—Lieutenant-Colonel GUINNESS: Is the right honourable and learned gentlemen aware that they have no medical staff of any kind, and that when men get wounded they have to undergo great and unnecessary suffering in consequence?—Mr. HENRY: The military medical system is at their disposal and I have promised to have the matter dealt with.—Captain ELLIOT: Will the right honourable gentleman remember that during the war every force, however small, had to have a medical equipment, even small infantry units; and can he say how it is that these units under active service conditions take the field without any medical equipment whatever?—No answer was given.—Sir J. D. REES: Will the right honourable gentleman arrange to use some of the redundant doctors in the Health Department for this service?—No answer was given.

Local Authorities (Disqualification Removal) Bill.

Mr. ORMSBY-GORE presented the Local Authorities (Disqualification Removal) Bill, a measure to relieve members of local authorities from disqualification for office by reason of the receipt of medical or surgical relief in cases of sudden or urgent necessity. The Bill was read a first time.

MONDAY, APRIL 25TH.

Public Health (Tuberculosis) Bill.

The Public Health (Tuberculosis) Bill, as amended in the Standing Committee, was considered on report, when Major HENDERSON moved a new clause in similar terms to that moved by Dr. Nathan Raw in Committee, delegating certain powers to the Seamen's National Insurance Society. He moved it to find out whether the Government were prepared to meet him in any way.—Captain ELLIOT seconded the clause. He agreed that perhaps as it stood the clause would not commend itself either to the House or to the Minister in charge of the Bill.

They were intending, in conference with the officials of the Ministry, to work out a new clause which might be more suitable, and they had arrived at one which they thought had met the opinion of the Minister. But there had not been time to get the new clause on the order paper for that debate. He hoped that the Minister would give a pledge that in the House of Lords he would, if possible, incorporate a clause of this character in the Bill.—Sir A. MOND, Minister of Health, said he was quite ready to undertake that the agreed clause should be inserted when the Bill reached the House of Lords in order to meet a very long-felt want.—Major HENDERSON said that in view of what Sir A. Mond had said he would withdraw the clause.—The report stage was concluded, and the Bill was read a third time.

TUESDAY, APRIL 26TH.

Training of Men Disabled in Former Wars.

Mr. WILLIAM GRAHAM asked the Minister of Labour whether his attention had been called to the fact that men disabled in former wars, and particularly in the Boer War, had within recent years found it impossible to continue in their usual callings on account of ill-health or partial breakdown arising from their disablement; and whether, in view of the fact that the number of such men was comparatively small and that they had suffered great hardship, he would take steps to secure for such cases as were suitable the training for another trade or occupation which was accorded to men disabled in the late war and under conditions similar to those which governed that training.—Sir MONTAGU BARLOW (Parliamentary Secretary to the Ministry of Labour) replied: I am informed that one or two applications of this sort have been received. We have no power to provide training for such men and in view of the difficulty of providing training for the substantial number of men disabled in the late war who yet remain to be trained, I regret I do not see my way to accepting my honourable friend's suggestion.

Killarney Motor Ambulance Commandeered.

Mr. ACLAND asked the Secretary for War whether the troops at Killarney still needed a motor ambulance; and, if so, whether one would be provided by the War Office, so that the ambulance commandeered some months ago from the local health authority might be restored, as its absence was causing suffering to sick and infirm people.—Sir L. WORTHINGTON-EVANS replied: I am informed that the military authorities took possession of the ambulance in question, as it had not been used for any lawful purpose for a long time and no permit for it had been applied for. It was last used for the unlawful conveyance of rebels to Killorglin Fair, where it was damaged. It is not proposed to hand it back to the local authorities.

British Seafarers and Venereal Disease.

Mr. SIMM asked the Minister of Health if he was aware that British seafarers still suffered under disabilities unshared by their fellow-countrymen or by foreign seamen in being penalised if they sought treatment for venereal disease, and that the British representatives at the meeting of the health section of the League of Nations were advocating international facilities for the free treatment of seafarers; and, if the Government would consider the desirability of amending the Merchant Shipping Act, 1906, Section 34, Subsection (1), as desired by all interests concerned.—Sir ALFRED MOND replied: I apprehend that the honourable Member is referring to the treatment of British seamen in foreign ports. I am aware that the same facilities as are provided in British ports for the treatment of seamen suffering from venereal disease are not available in many foreign ports. This matter is under consideration by the Committee of the Office International d'Hygiène Publique, and will in all probability be dealt with by the International Health Organisation which is now being established under the League of Nations. I will consult with my right honourable friend the President of the Board of Trade in regard to the last part of the question.

PEOPLE'S LEAGUE OF HEALTH.—Sir George Newman received a deputation on April 20th of representatives of the medical members of the People's League of Health. The deputation was introduced by Sir Bruce Bruce-Porter, and included Lieut.-Colonel F. E. Fremantle, M.P., Sir G. Sims Woodhead, Dr. A. Latham, Sir Harry Baldwin, and Professor Edgar Collis. Miss Olga Nethersole, hon. organiser, was also present. The deputation discussed with Sir George Newman the past and future work of the People's League of Health. Sir George Newman concurred in the views of the deputation as to the great importance of public education in hygiene, and said that he would be glad to coöperate at any time with the medical representatives of the League in providing them with information as to the work of the Ministry.

Medical News.

UNIVERSITY OF MANCHESTER.—The following appointments have been made by the Council: Mr. A. G. Lobley, Reader in Electro-Chemistry; Mr. E. D. Telford, Lecturer in Practical Surgery; Dr. John Sutcliffe, Clinical Lecturer in Mental Diseases; Dr. David Orr, Lecturer in Mental Diseases.

UNIVERSITY OF GLASGOW.—The following degrees were conferred on April 26th:—

Doctor of Medicine.—John C. Young.

Bachelors of Medicine and Bachelors of Surgery.—Annie M. Alexander, Marjorie M. Anderson, Adam Barr, Rosa Bass, Elizabeth M. V. H. B. Bird, Elizabeth E. Brown, Murdoch Brown, Ellen B. Cowan, Douglas R. F. Davidson, Peter A. Faichney, Elizabeth J. Findlay, Colin M. Forbes, Agnes M. Gibson, Francis D. Gillespie, Mary A. Grant, Brunnhilde M. Grieve, William M. Hamilton, George Harvey, Nora G. Henry, Marion P. Hogg, Tom O. Howie (with commendation), Peter Hutchison, Thomas H. Irvine, Walter Jope, John Leishman (with commendation), William L. Kennedy, William M. Kennedy, Jane S. Knight, Alexander L. M'Adam, Moira E. N. MacAlpine, James Macdonald, James Macfarlane, William M. MacFarlane, Samuel W. M'Ghee, Donald L. MacIntyre, Kenneth Mackenzie, Donald M. Macmillan, Joseph C. M'Naught, Laura M. D. Mill, Alexander M'Callum Millar, John M'L. Mitchell, Neil M'Eachran Montgomery, George W. Murray, John S. M'Laren Ord, David Reid, James Reid, Andrew M. Robertson, Ian C. Robertson, Kenneth M. Rodger, Kathleen E. H. Rutherford, John Y. Scott, Henry E. Seiler, John Shanks, Jack Shulman, Alexander W. Sinclair, Louis Sivo, Elizabeth H. M. Slimmon, Christina S. Stoddart, William R. P. Templeton, George Tudhope, Richard J. Watson, Lilian J. Taylor White, Robert H. Williamson, George S. Wilson, Peter A. Wilson, and Elizabeth Young.

UNIVERSITY OF LONDON.—A course of eight advanced lectures in Physiology will be given in the Physiological Laboratory, St. Bartholomew's Hospital, at 4.30 P.M., on Tuesdays, beginning on May 3rd, when Professor W. D. Halliburton, F.R.S., will lecture on Cerebrospinal Fluid. Subsequent lectures will be delivered by Professor M. S. Pembrey on the Secretion of Milk (May 10th); Dr. J. Barcroft, F.R.S., on Alpinism (May 17th); Professor W. M. Bayliss, F.R.S., on the Reaction of the Blood (May 24th); Professor J. B. Leathes, F.R.S., on Tyrosine (May 31st); Professor E. H. Starling, F.R.S., on the Heart in Exercise (June 7th); Dr. H. H. Dale, F.R.S., on Anaphylaxis (June 14th); Dr. Leonard Hill, F.R.S., on the Capillary Circulation (June 21st).—A course of eight lectures on Reception of Sensory Stimuli will be given by Professor H. E. Roaf in the Physiology Theatre, London Hospital Medical College, at 4.30 P.M. on Thursdays, beginning on May 12th. Attendance at these courses is recognised in connexion with the B.Sc. (Honours) Degree in Physiology. The lectures are addressed to advanced students of the University and to others interested in the subject. Admission is free, without ticket.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—At a meeting of the President, Vice-President, and Council it was unanimously resolved to confer the Honorary Fellowship of the College upon the following American surgeons: W. J. Mayo and C. H. Mayo, Mayo Clinic, Rochester, U.S.A.; Geo. E. Brewer, New York; Geo. W. Crile, Cleveland, Ohio; Richard H. Harte, Philadelphia; W. W. Keen, Philadelphia; John M. T. Finney, Baltimore; A. J. Ochsner, Chicago. It is hoped that the ceremony will take place in the early autumn.

ULSTER EYE, EAR, AND THROAT HOSPITAL, BELFAST.—The annual meeting of this institution was held on April 22nd, Alderman Davison, High Sheriff of Belfast, presiding. The annual report showed that the patients were drawn from all the Ulster counties, the in-patients numbering 531. The total number of operations was 642. The attendances of new and old patients numbered 6966. Various improvements in the internal arrangements of the hospital have been effected and others are in contemplation. The financial statement is highly satisfactory. There has been a substantial increase in subscriptions and the hospital has paid its way. Regret is expressed at the death of Mr. John Atkinson, who as hon. treasurer gave many years of devoted service to the institution. A part-time paid secretary has been appointed. Dr. W. M. Killen, the senior surgeon to the hospital, mentioned that the negotiations between the hospital and the Belfast Ophthalmic Hospital for the amalgamation of the two hospitals has not yet borne fruit, but he hoped that such an amalgamation would come in the future. A cordial vote of thanks to the chairman was passed on the motion of the Dean of the

The date of the postponed Census has now been fixed for Sunday, June 19th.

Sir Arthur Newsholme arrived on April 25th at Liverpool on board the s.s. *Carmania* after completion of his engagement at Johns Hopkins University.

Great Northern Central Hospital. — The second half-yearly house-to-house collection organised by the hospital commences on Monday next, May 2nd, and continues during the week.

National Hospital for the Paralysed and Epileptic.—The board of management has decided to appoint a separate officer in charge of the electro-therapeutic department. The work has hitherto been carried out by the registrar.

Hospital for Sick Children, Great Ormond-street.—The annual meeting of the Court of Governors will be held on Tuesday, May 3rd, at 4 p.m., the Prince of Wales, President of the Hospital, in the chair.

The next course of lectures by the Gresham Professor of Physic will be delivered by Sir Robert Armstrong-Jones on May 2nd, 3rd, 4th, and 6th at 6 o'clock each day. The subject will be Our Drinks—Water, Milk, Wines, Ales, and Spirits. The lectures are free to the public and are held at Gresham College, Basinghall-street, E.C.

Royal Institution of Great Britain.—On Tuesday, May 3rd, at 3 p.m., Professor Arthur Keith, will give his third lecture on Darwin's Theory of Man's Origin (in the Light of Present Day Evidence). On Thursday, May 5th, at 3 o'clock, Dr. C. S. Myers delivers the first of two lectures at the Royal Institution on Psychological Studies: (1) The Localisation of Sound, and (2) the Appreciation of Music. On Saturday, May 7th, Professor E. C. C. Baly begins a course of two lectures on Chemical Reaction. The Friday evening discourse on May 6th will be delivered by Sir Robert Robertson on War Developments of Explosives, and on May 13th by Dr. W. Bateson on the Determination of Sex.

Donations and Bequests.—The Vice-Chancellor of the Lancashire Chancery Court has approved of a scheme for the application of the interest for charitable purposes of a sum of £40,000 left by the late Mr. J. T. Blair, a Manchester merchant, who died in 1917. The testator directed that the income of the fund be devoted to the assistance of hospitals, infirmaries, rest-houses, and for individual necessitous poor, especially distressed gentlefolks who had fallen on evil times, and other benevolent objects, including the Manchester and Salford Street Children's Mission.

New Principal of Livingstone College.—Dr. Loftus E. Wigram has resigned his post as principal of the College on grounds of health. During the war he carried on a military auxiliary hospital in the College buildings, for which he was twice mentioned in despatches. The committee have appointed as his successor Dr. Tom Jays, who has served since October, 1919, as Vice-Principal. Dr. Jays, formerly a missionary of the Church Missionary Society, has had good experience in many tropical countries, especially in West Africa. As travelling secretary of the Student Volunteer Missionary Union he has visited the chief universities and colleges of Great Britain and of the United States. By his appointment the continuity of the work of the College will be maintained. It is hoped still to retain the services of Dr. Wigram as a lecturer.

Royal West Sussex Hospital.—The annual report of this hospital states that the income during 1920 showed an increase over that of 1919 of £1859 17*s.* 7*d.*; the expenditure exceeded the income by £949 9*s.* 7*d.*, and this has prompted the governors to appoint a special subcommittee to consider the whole question of paying patients. The governors have already been suggesting to in-patients this means of raising income, and the result has been very satisfactory, so far £1156 having been raised in this way. A promising start has also been made with a scheme by which all employed men and women in the district served by the hospital are subscribing a small sum weekly. In 1920 the in-patients reached the record number of 1008, against 858 in 1919, while there were 1111 out-patients; 495 patients receiving X ray treatment and 868 operations under anæsthesia were performed. The year also marked the completion of the various improvements undertaken with the gift of £2000 from the British Red Cross Society. At the annual meeting of the governors on April 19th general approval was expressed towards the paying patients' scheme; and the necessary authority was given the vernors to sell out investments, or transfer from the iness account, a sum sufficient to pay off the deficit of

Memorial to the late Dr. T. A. Johnston.—A memorial tablet to the late Dr. Thomas Arnold Johnston, assistant physician and pathologist to the Leicester Royal Infirmary, commemorating his work at the infirmary, was unveiled on April 20th by Dr. N. C. Ridley.

Condemned Foodstuffs.—The Manchester Port Sanitary Authority during the past month condemned 394 tons of foodstuffs, including 225 tons of rabbits, on the ground that they were unfit for human consumption.

Provision of Meals Act.—The Lancashire Education Committee has decided to put the Provision of Meals Act into force in 15 townships, which embrace a large mining community.

Rontgen Society.—A provincial meeting of this Society will be held in Manchester on May 6th and 7th. On May 6th, at 4.30 p.m., short papers and demonstrations will be given by J. R. Clarke, M.Sc., on the Measurement of High Voltages; by Mr. E. C. McKinnon, on Storage Batteries in Science and Commerce, with exhibits of typical units for high and low voltage batteries; by Professor A. V. Hill, F.R.S., on the Psycho-Galvanic Reflex, the Hot Wire Sphygmograph; by Professor W. L. Bragg, F.R.S., on Models of Crystal Structure, X Ray Bulbs designed to give Monochromatic Radiation, the X Ray Spectrometer; and by Dr. A. E. Barclay, on Viewing-box for 300 Reductions, Potter-Bucky Diagram, Pirie Photometer. At 7.30 p.m. Professor Bragg will speak on the Structure of Metals as Analysed by X Rays, and the Director of Radiological Research, Royal Arsenal, Woolwich, on Radiological Research as applied to the Examination of Metals. On Saturday, May 7th, visits will be paid to the following works: (1) Metropolitan Electrical Co., Ltd. (Westinghouse); (2) Chloride Electrical Works (Storage Batteries); (3) Glover's Cable Works, Trafford Park; (4) Hans Reynolds Chain Works; (5) Ford's Motor Works, Trafford Park; (6) Radium Institute, Manchester; (7) X Ray and Electrical Departments, Royal Infirmary, Manchester. Further particulars can be had from Dr. R. W. A. Salmond, 51, Welbeck-street, London, W. 1.

Dinner to Mr. R. A. Bickersteth, of Liverpool. On the occasion of his resignation from the position of senior surgeon to the Liverpool Royal Infirmary Mr. Bickersteth was entertained to dinner in the Adelphi Hotel by more than 60 of his colleagues and friends on April 20th. The chair was taken by Mr. H. Wade Deacon, who was supported by the Vice-Chancellor of the University (Professor J. G. Adami), the pro-Chancellor (Mr. Rathbone), Dr. Richard Caton, Mr. F. T. Paul, Mr. Holford Harrison, and Mr. Harold Bickersteth. Apologies for absence were sent by the President of the Royal Society (Professor C. S. Sherrington), Sir Robert Jones, Professor G. R. Murray (Manchester), Professor H. Briggs, and others. After dinner the toast of "The Guest" was submitted by Dr. Caton. He paid a warm tribute to the many distinctions won by members of the Bickersteth family in surgery, in the church, and in law, and proceeded to speak in terms of high praise of the guest as a man of culture, a loyal and warm friend, and a distinguished surgeon. The toast was supported by Mr. F. T. Paul and Mr. Frank Jeans as old colleagues of Mr. Bickersteth, and by Mr. K. W. Monsarrat, Mr. G. P. Newbolt, and Mr. D. Douglas-Crawford, as representatives of the other Liverpool hospitals, and was drunk with musical honours. Mr. Bickersteth replied in feeling terms.

It is a matter of historic interest that three generations of the Bickersteth family have been on the staff of the Royal Infirmary, and the resignation of Mr. Bickersteth breaks a link that has lasted for more than a hundred years.

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Medical Diary.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.
Thursday, May 5th.—4.30 P.M., Croonian Lecture:—Dr. H. Head: The Release of Function in the Nervous System.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, May 2nd.

SECTION OF TROPICAL DISEASES AND PARASITOLOGY: at 8.30 P.M.
Papers: Dr. A. F. MacCallan: The Ankylostomiasis Campaign in Egypt, 1913-1915.
Sir Leonard Rogers: The Mortality and Prognosis of Cholera treated by the Author's Hypertonic Saline Method, based on 2000 Cases.

Tuesday, May 3rd.

SECTION OF SURGERY: SUBSECTION OF ORTHOPÆDICS: at 5.30 P.M. (Cases at 5 P.M.)
Cases: Cases of Special Interest or demonstrating Special Methods of Bone Grafting will be shown by Mr. E. W. Hey Groves, Mr. O. L. Addison, and others.
Ordinary cases of successful bone grafting will not be shown.

Thursday, May 5th.

SECTION OF OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.
Annual General Meeting—Election of Officers and Council for 1921-1922. (Names already circulated.)
Short Communication: Mr. Henry Curtis: Angioma of the Vagina Spontaneously Evacuated.
Specimen: Dr. Russell Andrews: Carcinoma originating in an Adenomyoma of the Uterus.
Discussion: On "The Causes and Treatment of Sterility," to be opened by Dr. A. E. Giles.

Friday, May 6th.

SECTION OF LARYNGOLOGY: at 4.45 P.M. (Cases at 4 P.M.)
Annual General Meeting—Election of Officers and Council for 1921-1922. (Names already circulated.)
Cases will be shown by—
Mr. Layton, Dr. A. J. Hutchison, Dr. Kelson, and others.

SOCIETY OF MEDICAL OFFICERS OF HEALTH (NAVAL, MILITARY, AND AIR FORCE HYGIENE GROUP), at the Royal Army Medical College, Grosvenor-road, S.W.
Friday, May 6th.—4 P.M., Demonstration:—Lieut.-Col. P. S. Lelean: Sanitary Appliances of Interest to all Health Officers.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.
Museum Demonstrations in the Theatre of the College for Advanced Students and Medical Practitioners:—
Monday, May 2nd.—5 P.M., Prof. Shattock: Atrophy.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
Monday, May 2nd.—2 P.M., Dr. S. Pinchin: Medical Out-patients. Dr. Simson: *Diseases of Women.* 2.30 P.M., Dr. A. Saunders: Visit to Medical Wards. Mr. Baldwin: Visit to Surgical Wards.
Tuesday.—10 A.M., Mr. Steadman: Dental Department. 2 P.M., Dr. Burnford: Medical Out-patients. Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Mr. Addison: Visit to Surgical Wards.
Wednesday.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 2 P.M., Mr. D. Armour: Visit to Surgical Wards. Mr. Sinclair: Surgical Out-patients. Mr. Gibb: Eye Department.
Thursday.—2 P.M., Mr. B. Harman: Eye Department. Mr. MacDonald: Surgical Out-patients. Mr. Baldwin: *Orthopædic Department.* Mr. D. Armour: *Operations.*
Friday.—10 A.M., Dr. Robinson: *Gynæcological Operations* and Visit to Wards. Dr. McDougal: Electrical Department. 2 P.M., Mr. T. Gray: Surgical Out-patients. Dr. Morton: X Ray Department. Dr. Pernet: Skin Department. 2.30 P.M., Dr. Pritchard: Visit to Medical Wards.
Saturday.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 2 P.M., Dr. Owen: Medical Out-patients.
Daily:—10 A.M. Ward Visits. 2 P.M., In-patient, Out-patient Clinics and Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Special Intensive Course.
Daily:—10.30 A.M. and 11.45 A.M., Demonstration on Clinical and Laboratory Methods. 2 P.M. and 3 P.M., Groups of Illustrative Cases. 4.30 P.M., Clinical Lectures (free to medical practitioners). Full Syllabus printed in Bulletin of Fellowship of Medicine.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, W.C. 1.

MEDICAL SCHOOL.

Monday, May 2nd.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Lecture:—Dr. Saunders: Subacute Combined Degeneration of the Spinal Cord.
Tuesday, May 3rd.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Dr. James Taylor: Myasthenia Gravis.
Thursday, May 5th.—2 P.M., Out-patient Clinic: Dr. Farquhar Buzzard. 3.30 P.M., Dr. Tooth: Lecture Room. Demonstration of Cases.
Friday, May 6th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M. Lecture:—*Dr. Collier: Hemiplegia.*
Fee for Post-Graduate Course £7 7s. C. M. Hinds Howell, *Dean.*

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.
Post-Graduate Course on Infant and Child Welfare.
A Course of Twelve Practical Demonstrations on the Management and Feeding of Infants and Young Children by Dr. E. Pritchard to Qualified Practitioners.
Tuesday, May 3rd.—10.30 A.M., Demonstration IX., The Tuberculous Mother and Her Child.
Thursday.—3 P.M., Demonstration X., The Syphilitic Mother and Her Child.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON), Turner-street, Mile End, E.
Courses of Lectures:—
Monday, May 2nd.—5 P.M., Dr. W. M. Feldman: Ante-natal and Post-Natal Child Physiology.
A Course of Fourteen Lectures on Pyscho-Neuroses will be given by Dr. M. Culpin in the Clinical Theatre of the Hospital. Open to Students of the Hospital and to Members of the Profession.
Tuesday.—5.15 P.M., Lecture I.:—Instinct and Emotion.
Friday.—5.15 P.M., Lecture II.:—*Dissociation.*

ST. BARTHOLOMEW'S HOSPITAL (UNIVERSITY OF LONDON), West Smithfield, E.C.
A Course of Eight Advanced Lectures in Physiology, to be given in the Physiological Laboratory, to Students of the University and others interested in the subject.
Tuesday, May 3rd.—4.30 P.M., Lecture I.:—Prof. W. D. Halliburton: Cerebro-spinal Fluid.

INSTITUTE OF PATHOLOGY AND RESEARCH, St. Mary's Hospital, in the Lecture-room of the Bacteriological Department.
A Course of Lectures on Pathological Research in its Relation to Medicine, open to all Members of the Profession and Students.
Thursday, May 5th.—4.30 P.M., Dr. Leonard Hill: Capillary Blood Pressure and Œdema.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.
Tuesday, May 3rd.—3 P.M., Lecture III.:—Prof. A. Keith: Darwin's Theory of Man's Origin (in the Light of Present Day Evidence).
Thursday.—3 P.M., Lecture:—Dr. C. S. Myers: Pyschological Studies—(1) *The Localisation of Sound.*

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
Tuesday, May 3rd.—4.30 P.M., *Lecture:—Dr. W. Dyson:* Tuberculosis of the Skin.

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.
Special Course of Lectures in Gynæcology.
Wednesday, May 4th.—11 A.M., Demonstration Operations.
Thursday.—4.30 P.M., *Lecture IV.:—Dr. A. C. Magian:* Uterine Tumours.

Appointments.

Berry, W. A., M.D. Lond., has been appointed Medical Officer of Health for the City of Bloemfontein, South Africa.

Knight, A. E., M.D., B.S. R.U.I., *to* combined post of Regional Director and Commissioner of Medical Services in the Ulster Region of the Pensions Ministry.

Telford, E. D., F.R.C.S. Eng., Lecturer in Practical Surgery, University of Manchester.

Yellowlees, H., M.D., F.R.F.P.S. Glasg., Medical Superintendent of The Retreat, York. (From March, 1922.)

Certifying Surgeons under the Factory and Workshop Acts: Kirkpatrick, W., M.D. Dub. (Sherborne), Rogerson, C. J., M.R.C.S., L.R.C.P. Lond. (Canterbury), Henry, J. R., M.B., Ch.B. Belf. (Ballyward).

National Hospital for the Paralysed and Epileptic, Queen-square, W.C.: Tooth, H., M.D. Cantab., F.R.C.P., Consulting Physician; Wyllie, W. G., M.B., Ch.B. Edin., and Martin, J. P., House Physicians.

Vacancies.

For further information refer to the advertisement columns.

Abergavenny, Monmouthshire Asylum.—Jun. Asst. M.O. £400.
Acton Urban District Council Education Committee.—Aural Surg. £2 2s. per session for Aural Inspection and £2 12s. 6d. per session for Operations.
Bethlem Royal Hospital, Lambeth-road, S.E.—Jun. Asst. P. £350.
Birmingham General Hospital.—Three H.S.'s. £100. Also H.S. to Special Departments. £125.
Bramshott, Hants, King George's Sanatorium for Sailors.—Med. Supt. £600.
Bristol Royal Infirmary.—Clin. Path. £250.
Bristol University.—Demonstrator of Path. £200.
Cambridge, Addenbrooke's Hospital.—H.S. £130.
Cardiff, King Edward VII. Hospital.—Ophth. H.S. £200.
Cardiff, University College of South Wales and Monmouthshire, Welsh National School of Medicine.—Prof. of Med. and Prof. of Surg. £1500 each.
Caterham Mental Hospital, Caterham, Surrey.—Sec. Asst. M.O. £579.
Charing Cross Hospital, Agar-street, W.C.—P. in Charge Department of Radiology and Electro-therapeutics.
Chester Royal Infirmary.—Asst. H.S. £175.
Colchester, Essex County Hospital.—H.S. £200.
Cornwall Education Committee.—Temp. Asst. Sch. M.O. £500.
Dreadnought Hospital, Greenwich.—Surg.
Holloway Sanatorium, Virginia Water, Surrey.—Jun. Asst. M.O £400.
Hong-Kong, Port Health Officer.—Sec. Health O. £600.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S.'s. £50. Also Radiographer.

Huddersfield Royal Infirmary.—Two Jun. H.S.'s. £230.
Inverness District Asylum.—Asst. M.O. £300.
Isleworth, West Middlesex Hospital.—Asst. Med. Supt. £300.
Johannesburg, Univ. College.—Sen. Lecturer in Physiology. £516.
Leicester, Victoria Park Orthopædic Hospital.—Jun. M.O. £350.
Liverpool.—Asst. Port M.O. £700.
Liverpool, Bootle Borough Hospital, Derby-road.—Hon. S.
London Temperance Hospital, Hampstead-road, N.W.—Hon. Asst. P.
Manchester County Asylum, Prestwich.—Asst. M.O. £572 18s. Also Locum Tenens. £8 8s. per week.
Middleton-in-Wharfedale Sanatorium, Ilkley.—Asst. Res. M.O. £325.
Miller General Hospital for South-East London, Greenwich-road, S.E.—M.O. for X Ray Dept. £75. Res. Cas. O. £150.
Mount Vernon Hospital for Tuberculosis and Diseases of the Lungs and Heart, 7, Fitzroy-square, W.—Asst. Res. M.O. £200.
National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—M.O. in charge of Electro-Therapeutic Dept. £100. Also Res. M.O. £200.
Newark Hospital and Dispensary.—Res. H.S.
Newport, Mon., Royal Gwent Hospital.—H.S.'s. £200.
Oldham Royal Infirmary.—Three H.S.'s. £250 and £200 respectively.
Oswestry, Shropshire Orthopædic Hospital.—H.S. £250.
Oxford City.—Asst. M.O.H. and Sch. M.O. £500.
Peamount Sanatorium, Hazelhatch, Co. Dublin.—Res. Med. Supt. £600-£700.
Portsmouth Royal Hospital.—H.S. £150.
Preston and County of Lancaster Royal Infirmary.—H.S. £180.
Queen Mary's Hospital for East End, Stratford, E.—H.P. and H.S.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. P.
Rhondda Urban District Council.—Asst. M.O.H. and School M.O. £500.
Rotherham Hospital.—Jun. H.S. £150.
Royal Ear Hospital.—Anæsth. and H.S.
Royal Free Hospital, Gray's Inn-road, W.C.—Sen. Res. M.O. £200. H.S. £50. Obstet. H.S. £50.
St. Helens Borough.—M.O.H. £900.
Salford Royal Hospital.—H.S.'s £150. Cas. H.S. £150. Also Anæsth. £50.
Sheffield, Jessop Hospital for Women.—Asst. H.S. £100.
South London Hospital for Women, South Side, Clapham Common, S.W.—Female Asst. S. Also Clin. Assts.
South Mimms, Barnet, Clare Hall Sanatorium and Hospital.—Asst. M.O. £350.
Staffordshire General Infirmary, Stafford.—H.P. £200.
Taunton and Somerset Hospital.—Sen. H.S. £200.
Ventnor, Isle of Wight, Royal National Hospital for Consumption.—Asst. Res. M.O. £300.
West Bromwich and District Hospital.—Res. Asst. H.S. £200.
Whipps Cross Hospital, Whipps Cross-road, Leytonstone, E.—Fifth Asst. M.O. £350.
Wigan Education Committee.—Female Asst. Sch. M.O. £500.
Winchester, Royal Hampshire County Hospital.—Sec. Res. M.O. £150.
Windsor, King Edward VII. Hospital.—H.S. £200.
Worcester County and City Mental Hospital, Powick.—Sen. Asst. M.O. £450. Also Jun. Asst. M.O. £350.

Births, Marriages, and Deaths.

BIRTHS.

KELLY.—On April 25th, at Malta, to Honor, wife of Major W. D. C. Kelly, R.A.M.C., D.S.O.—a son.

MARSHALL.—On April 18th, at St. Mary Abbotts-terrace, Kensington, the wife of Geoffrey Marshall, M.D., M.R.C.P., of a son.

MARSHALL.—On April 19th, at Dartmouth-place, Blackheath Hill, the wife of R. P. Marshall, M.R.C.S., L.R.C.P., of a daughter.

WHARRY.—On April 17th, at Chester-terrace, Regent's Park, London, the wife of H. M. Wharry, M.R.C.S., of a daughter.

MARRIAGES.

ATKINSON—HAMERTON.—On April 20th, at Hampstead, Arthur E. Atkinson (Major, late R.A.M.C.), to Mrs. G. A. Hamerton, of Belsize-park-gardens, N.W.

COX—HARRIS.—On April 25th, at Cholmeley Hall, Highgate, Hedley Chave Cox, M.B., B.S., M.R.C.S., to Frances Maude Mary, younger daughter of Mr. and Mrs. Harris, of Whetstone.

FISHER—HAYTHORNTHWAITE.—On April 20th, at All Saints Church, King's Langley, Reginald Fisher, M.B., B.C., to Grace, younger daughter of the Rev. and Mrs. T. P. Haythornthwaite, of King's Langley.

WEBER—UNGER-LAISSLE.—On March 17th, Dr. Frederick Parkes Weber to Hedwig Unger-Laissle, M.D.

DEATHS.

BURTON-BROWN.—On April 21st, at 114, Tonbridge-road, Maidstone, Gerald Burton Burton-Brown, M.D., retired, R.N., youngest son of the late T. E. Burton-Brown, M.D., C.I.E.

COOKSON.—On April 22nd, at Pendower, Cheltenham, Surgeon-Major Henry Cookson, F.R.C.S., late Indian Medical Service, aged 88.

GREAVES.—On April 24th, at Friar-gate, Derby, Charles Augustus Greaves, M.B., LL.B., aged 79.

HAWKINS.—On April 21st, at the Military Hospital, Belfast, Captain Wilfred F. Hawkins, R.A.M.C., aged 29 years.

JULER.—On April 23rd, at Alexandra Court, Queen's Gate, Henry Edward Juler, F.R.C.S.

LAURIE.—On April 22nd, at the Red Bungalow, Wadebridge, Cornwall, Cæsar Robert Laurie, Lieutenant-Colonel, R.A.M.C. (T.F.), M.R.C.S., L.R.C.P., L.S.A., aged 64.

MANN.—On April 25th, at Elendery, Rhos-on-Sea, William Slingsby [illegible]nn, M.R.C.S., formerly of Edgbaston, in his 85th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.

BOOKS, ETC., RECEIVED.

CHURCHILL, J. and A., London.
Materia Medica. By J. Burnet, M.D. Pp. 80. 4s. 6d.
Transactions of the Ophthalmological Society of the United *Kingdom. Vol. XL. Session 1920. Pp. 626. 30s.*

OXFORD UNIVERSITY PRESS, London, New York, Toronto, Melbourne, and Bombay.
Prices and Price Control in Great Britain and the United States During the World War. By Prof. S. Litman. Pp. 331.

MALOINE, A., ET FILS, Paris.
Précis de Thérapeutique Médicale Oto-Rhino-Laryngologique. Par le Dr. G. de Parrel. Préface du Dr. Pierre Sébileau. Pp. 670. Fr.28.
Traité de Pathologie Médicale et de Thérapeutique Appliquée. Publié sous la direction de Émile Sergent, L. Ribadeau-Dumas, and L. Babonneix. Tome XXX., Thérapeutique. Tome II., Bactériothérapie; Vaccinothérapie; Sérothérapie. Formulaire de thérapeutique—Notions de pharmacologie. Par P. Pruvost, Carrion. Pp. 526. Fr.28.

THIEME, G., Leipzig.
Therapeutische Technik für die Ärztliche Praxis. Von Dr. J. Schwalbe. Pp. 1117. M.230.

URBAN AND SCHWARZENBURG, Berlin and Vienna.
Die Chirurgie der Peripheren Nervenverletzungen mit besonderer Berücksichtigung der Kriegs-Nervenverletzungen. Von Dr. W. Lehmann. Mit einen Geleitwort von Prof. Dr. R. Stich. Pp. 270. M.81.

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O.—Dr. R. A. O'Brien, Lond.; Mr. H. V. Ogden, Milwaukee.

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Y.—Dr. A. S. Yahuda, Lond.

Communications relating to the editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.

Notes, Short Comments, and Answers to Correspondents.

QUALITY OF PROTEIN IN NUTRITION.[1]

BY R. H. A. PLIMMER, D.Sc.

OF the three main groups of compounds composing our normal diet, protein is the only one which shows any marked variation. *The carbohydrates and fats are converted* during digestion into a few simple compounds, such as grape sugar, glycerine, and fatty acids. Protein is also converted during digestion into simple compounds, but their number and variety is large, and different amounts of them arise from *the different* proteins. We can thus speak of quality of protein, but not of quality of carbohydrate and fat.

Our usual classification of proteins already indicates their differences, but the variety is *really far greater*. We need only refer to their chemical analysis. Fischer and Kossel and their pupils have shown that proteins on hydrolysis break down into some 18 or 20 amino-acids. These numerous products can be arranged for convenience into eight groups:—

1. *Simple Mono-amino-acids.*

Glycine,
$CH_2(NH_2).COOH.$
Alanine,
$CH_3.CH(NH_2).COOH.$
Valine,
$(CH_3)_2:CH.CH(NH_2).COOH.$
Leucine,
$(CH_3)_2:CH.CH_2.CH(NH_2).COOH.$
Isoleucine,
$(CH_3)(C_2H_5):CH.CH(NH_2).COOH.$

2. *Mono-amino Dibasic Acids.*

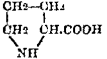
Aspartic acid,
$HOOC.CH_2.CH(NH_2).COOH.$
Glutamic acid,
$HOOC.CH_2.CH_2.CH(NH_2).COOH.$

3. *Hydroxy-amino-acids.*

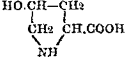
Serine,
$CH_2OH.CH(NH_2).COOH.$
Hydroxyglutamic acid,
$HOOC.CH_2.CHOH.CH(NH_2).COOH.$

4. *Heterocyclic Acids.*

Proline,



Hydroxyproline,

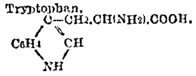


5. *Mono-amino-acids with Aromatic Nucleus.*

Phenylalanine,
$C_6H_5.CH_2.CH(NH_2).COOH.$
Tyrosine,
$HO.C_6H_4.CH_2.CH(NH_2).COOH.$

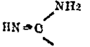
6. *Mono-amino-acid with Indole Nucleus.*

Tryptophan,

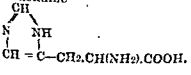


7. *Hexone Bases, or Di-amino-acids.*

Lysine,
$H_2N.CH_2.CH_2.CH_2.CH_2.CH(NH_2).COOH.$
Arginine,



Histidine



8. *Thio-amino-acid.*

Cystine,
$HOOC.CH(NH_2).CH_2S-SCH_2.CH(NH_2).COOH.$

Chemical Analysis of the Proteins.

The chemical analysis of the proteins shows that the various proteins yield different amounts of the amino-acids. Some of the data are shown in Table I. The chief peculiarity is pointed out by using italic figures. *In general,* the albumin group of proteins contains all the amino-acids, except glycine, in various proportions. The globulin group is similar, but contains glycine and has in addition a higher amount of glutamic acid, especially those globulins of vegetable origin. The phosphoproteins resemble the albumins, with no striking preponderance of any single amino-acid. The gliadin group of cereal proteins is peculiar in its high content of glutamic acid and proline. The members of the scleroprotein group (horn, hair, gelatin) are heterogeneous; and here we may note that *silk fibroin* is composed mainly of three mono-amino-acids and is the very antithesis of sturin (the protein of fish sperm), which is made up of the three hexone bases, with no or very little mono-amino-acids. Gelatin lacks cystine, tyrosine, and tryptophan. Hair is richest in cystine. These are simply some of the most obvious differences. Proteins thus differ markedly in quality.

Our analytical data are far from complete: *in no case do* the totals of the amino-acids add up to 100. The incompleteness is chiefly due to the great difficulty of separating and estimating the individual amino-acids. *There may be still* some unknown amino-acids in small quantities: hydroxyglutamic acid has been discovered recently by Dakin by a *new extraction method*, which may yet lead to further results; once again it has proved that every new process in connexion with the chemistry of the proteins has given a valuable result. Rather too much stress has been laid upon the analytical figures. The methods hardly give exactness as far as the decimal figure, and it would have been better if the data had been returned to the nearest whole number. *Many workers still give their data to two places of decimals,* so that an entirely wrong impression is given of the accuracy of the method. Fischer pointed out that his method was not quantitative, but others have neglected this important statement.

The figures for the hexone bases are more accurate; it is still not sufficient to express results *to two decimal places.* Kossel considers that *the hexone bases form a special* nucleus on account of their presence in all proteins. We might value a protein by its content of hexone bases, but it is not sufficient because their total only tells us about a *third or less of the whole molecule. Tryptophan, discovered* by Hopkins and Cole, is perhaps the most important unit in the protein molecule. It is not estimated except by direct isolation, a method which is laborious and requires considerable skill. Its amount is not known except in casein and a few other proteins. By its distinctive colour reaction with glyoxylic and sulphuric acids, it can readily be proved *to be a constituent of most proteins. The amount of* cystine in proteins is only known in a few cases, but its amount can be gauged by the sulphur content of the protein. It is the one unit known which contains sulphur, but there are indications that there is another sulphur-containing unit.

The differences in proteins are not confined to such *quantitative data; they are still more involved. Fischer's* synthetical work with the amino-acids has proved that they are combined together in a polypeptide form—i.e., the amino group of one amino-acid is combined with the carboxyl group of another, the amino group of this acid being united with the carboxyl group of still another. We therefore consider a protein molecule to be a chain of amino-acids, thus:

$$HN.CH.CO-NH.CH(CH_3).CO-HN.CH(C_4H_7).CO-HN.CH(C_6H_5).CO,$$

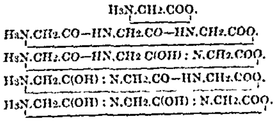
This method of combination allows theoretically of endless variation. If we take three amino-acids we can arrange them in six different ways—

glycyl-alanyl-tyrosine alanyl-glycyl-tyrosine tyrosyl-glycyl-alanine
glycyl-tyrosyl-alanine alanyl-tyrosyl-glycine tyrosyl-alanyl-glycine

With 18 or 20 amino-acids the number of arrangements is almost infinite. Differences in arrangement may be the cause of differences in proteins. Two proteins may, perhaps, have exactly similar amounts of amino-acids and yet be different. The interchange of one amino-acid would express a difference. We may imagine the proteins of the blood or milk of different species to differ in the arrangements of the units. The one may have the arrangement such as a-b-c-d-e-f, the other d-a-b-f-e-c.

Another important difference may be in the so-called tautomerism of the amino-acids and polypeptides. With the same arrangement of the amino-acids we may have several formulæ representing the polypeptide structure:—

$$H_2N.CH_2.COOH.$$
$$H_2N.CH_2.CO-HN.CH_2.CO-HN.CH_2.COOH.$$
$$H_2N.CH_2.CO-HN.CH_2.C(OH):N.CH_2.COOH.$$
$$H_2N.CH_2.C(OH):N.CH_2.CO-HN.CH_2.COOH.$$
$$H_2N.CH_2.C(OH):N.CH_2.C(OH):N.CH_2.COOH.$$



$$H_3\underbracket{N.CH_2.COO}.$$
$$H_3\underbracket{N.CH_2.CO-HN.CH_2.CO-HN.CH_2.COO}.$$
$$H_3\underbracket{N.CH_2.CO-HN.CH_2C(OH):N.CH_2.COO}.$$
$$H_3\underbracket{N.CH_2.C(OH):N.CH_2.CO-HN.CH_2.COO}.$$
$$H_3\underbracket{N.CH_2.C(OH):N.CH_2.C(OH):N.CH_2.COO}.$$

Certain of the properties of the polypeptides can be explained on this basis.

Digestion and Assimilation of Protein.

Fischer's and Kossel's work has revolutionised our conception of protein nutrition. We no longer think, like Liebig and later investigators, that the protein of the food becomes directly the protein of the body, for it has been demonstrated by the physiologists that the protein of the food undergoes hydrolysis during digestion to amino-acids, that the amino-acids circulate in the blood, and that the tissues receive amino-acids from which they build up their protein. Proteins must be regarded as a mixture of amino-acids.

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[1] Being an abstract of a lecture delivered to the Royal Institution on April 8th, 1921.

We can look upon a protein as we look upon the contents of a box of assorted biscuits, arranged in rows and in layers of various kinds. Each biscuit should be connected to its neighbour so that we have a continuous chain. The general appearance of the contents of two boxes is different: in one box we may find sugary biscuits on the top, in another plain ones.

In the process of digestion the protein is acted upon by acid in the stomach with the formation of metaprotein. No great chemical change occurs, but we can imagine that the change consists in a tautomeric rearrangement in preparation for the action of the pepsin. Pepsin hydrolyses the protein at certain junctions, forming proteoses and peptones. Their formation can be compared to the separation of the layers of the biscuits. Pancreatic and the further digestion which follow in the intestine separate the individual amino-acids or biscuits entirely. The separate parts circulate to the tissues; the tissues select the ones they require and form another arrangement of the units, or simply replace those which have been used in their metabolism. Digestion and metabolism are a sort of reshuffling of the units. In the absence of any particular unit the tissue can no longer rebuild its substance, and consequently suffers. The old example of the inadequacy of gelatin is now explained. The tissues require tryptophan, tyrosine, and cystine; gelatin cannot provide them.

TABLE I.

—	Ox-muscle protein.	Casein.	Lact-albumin.	Gelatin.	Wheat gliadin.	Wheat glutenin.	Maize zein.	Maize glutenin.	Edestin.	Sturin.
Glycine	2·1	0	0	*19·3*	0	0·9	0	0·3	3·8	
Alanine	3·7	1·5	2·5	3·0	2·0	4·7	9·8		3·6	
Valine	0·8	7·2	0·9		3·4	0·2	1·9		+	
Leucine	11·7	9·4	*19·4*	6·8	6·6	6·0	*19·6*	6·2	*20·9*	
Phenylalanine	3·2	3·2	2·4	1·0	2·4	2·0	6·6		3·1	
Tyrosine	2·2	4·5	0·9	*0*	1·2	4·3	3·6	3·8	2·1	
Serine		0·5		0·4	0·2	0·7	1·0		0·3	
Cystine		?		*0*	0·5	0·02			0·3	
Proline	5·8	6·7	4·0	*10·4*	*13·2*	4·2	9·0	5·0	4·1	
Hydroxyproline		0·3		6·4					2·0	
Aspartic Acid	4·5	1·4	1·0	1·[illegible]	0·6	0·9	1·7	0·7	4·5	
Glutamic Acid	15·5	15·6	10·1	1·8	*43·7*	*23·4*	*26·2*	12·7	*18·7*	
Tryptophan	+	1·5		*0*	1·0	+	*0*	+	+	
Arginine...	7·5	3·8	3·2	9·3	3·2	4·7	1·6	7·1	*14·4*	58·2
Lysine	7·6	6·0	*9·2*	5·0	0·2	1·9	*0*	3·0	1·7	12·0
Histidine	1·8	2·5	2·1	0·4	0·6	1·8	0·8	3·0	2·4	12·9
Ammonia	1·1	1·6	1·3	0·4	5·2	4·0	3·6	2·1		
Total	67·5	66·5	57·0	65·4	83·0	59·72	85·4	45·7	81·9	83·1

In nutrition there are essentially two problems to study—the formation of new tissue, as in the growth of young animals, and the maintenance of tissue, which undergoes so-called wear and tear, in adult animals. In the latter case we have ultimately to ascertain if every unit of the molecule breaks down, or certain selected units only. If these are in the middle of a chain it would follow that the whole molecule would undergo metabolism and not units at the ends alone. The problem resolves itself into ascertaining the function of each amino-acid.

Experiments on Animals.

Since the practical difficulties of feeding animals with a mixture of pure amino-acids are far too great, advantage may be taken of feeding incomplete proteins and adding to them the missing unit or units. Wilcock and Hopkins made the first experiment of this kind in 1906. They selected zein as protein and fed it to mice, in one set alone, in another set with the addition of 2 per cent. of its amount of tryptophan. Young mice on zein alone immediately began to lose weight and generally died in 16 days; decline in weight also occurred in the other set, but with the added tryptophan death did not occur till the thirtieth day. Adult mice lived 27 days without tryptophan, 49 days with tryptophan. Tryptophan had thus an appreciable effect on the survival period of the animals. Zein is incomplete in [illegible] of other units, and death was probably on this [illegible]nt. The experiment was repeated in 1916 by Ackroyd [illegible]opkins under different but better conditions. The [illegible]ls were first given a mixture of amino-acids from casein (i.e., without tryptophan, which is destroyed in hydrolysis by acid) to which tryptophan was added; on the twelfth day the tryptophan was omitted, and included once more on the thirty-fifth day. There was growth during the first period, decline in weight during the second period, followed by growth on inclusion once more of the tryptophan.

Similar experiments have been made by Osborne and Mendel in America. They used gliadin of wheat as protein. This protein is a complete one, but it contains very little of certain amino-acids, especially lysine. Adult rats were maintained for quite long periods—as long as 500 days—but young rats capable of growth, though maintained for long periods, failed to grow. We may here notice that though the growth of the animal may be suppressed and it reaches maturity in age, the capacity to grow is not lost. Osborne and Mendel illustrated this by a photograph of a rat which had failed to grow for 273 days, but resumed growth on being given a suitable diet. The small amount of lysine in gliadin led the authors to regard this unit as essential for growth. In a later experiment they added lysine at intervals; growth occurred with the lysine, but not without it. The effect of lysine on growth was again demonstrated by Buckner, Nollau, and Kastle in the case of chickens living under the natural conditions of a poultry-farm. The birds were fed upon grain mixtures of high and low lysine content. As their photographs showed, more rapid growth took place on the mixture of high lysine content.

The element sulphur is present in proteins in the form of cystine, though, as before mentioned, another sulphur-containing unit is possibly present. Little or no cystine in a protein has also an effect upon the growth of rats. This has been most clearly demonstrated in the case of the protein, phaseolin, of the navy bean. There was slow growth with this protein, but normal growth if the protein were supplemented with 2 per cent. of its amount of cystine. Casein is deficient in cystine. Less casein is required in a diet for producing normal growth if extra cystine be included. 15 per cent. casein was required by itself, but only 9 per cent. if cystine were added. The amino-acids containing aromatic nuclei are probably essential units of the protein; but it is difficult to carry out a decisive experiment, since all proteins contain phenylalanine, though they may lack tyrosine. There is plenty of evidence that phenylalanine can be transformed in the body by oxidation; both tyrosine and phenylalanine yield homogentisic acid in cases of alkaptonuria. Totani has shown that the almost complete removal of tyrosine from the mixture of units yielded by casein made no difference to the growth of rats. There was evidently enough phenylalanine for all purposes.

The two hexone bases—arginine and histidine—as shown by Ackroyd and Hopkins, are inter-related in nutrition. Absence of both causes loss of weight; absence of either alone lessens the rate of growth. These two workers further showed that these amino-acids are connected with the production of the purine ring in the animal body—i.e., with the production of uric acid.

The function of the whole group of mono-amino-acids has yet to be determined. Are they all necessary? Of glycine we can say that it is not essential as it is the only amino-acid which the animal can synthesise. These results remind us of the well-known experiments on the need by plants of all the inorganic elements. Sir Daniel Hall, in his book on Fertilisers and Manures, gave a striking picture of barley grains grown on a full food and foods lacking one constituent. We may thus correlate the amino-acid content of proteins for growth of animals with the set of inorganic elements needed for the growth of plants.

Relative Value of Proteins in Food.

The relative value of various proteins in nutrition has been studied by Osborne and Mendel. In their experience lactalbumin is superior to casein and casein to edestin. They found that 50 per cent. more casein and 90 per cent. more edestin were required to produce the same gain in weight; in other terms, a food containing 9 per cent. lactalbumin was equal to one with 12 per cent. casein and 15 per cent. edestin.

Suitable mixtures of proteins have also been tested, and attempts are being made to find out the most suitable addenda for making the proteins of cereals more adequate for the growth of animals—that is, adding what we may call "good" protein to "bad" protein to make the latter efficient as food. Leaf and seed proteins are good as a mixture. Economically, it may be better to use an expensive protein as food for animals and produce rapid growth than to feed for longer periods on poor proteins and get slower growth. A simple calculation brings out the problem to be solved. We may wish to build up the casein of milk with 16 per cent. of glutamic acid, and we are provided with wheat gliadin with over 40 per cent. of this unit. There is waste of glutamic acid. Gliadin further contains 0·2 per cent. of lysine, whilst casein contains 6 per cent. To produce this amount we require 30 times as much gliadin, and consequently the waste of glutamic is further increased. Cannibalism is the most economical method of protein nutrition, as the amino-acids of the food are in the exact proportion required by the tissues. The nearest parallel to this is the nursing of the young animal by its mother. The child actually gets the proteins of the mammary glands.

Quality of Proteins and Causation of Pellagra.

Recent work shows that quality of protein is most probably the primary cause of pellagra, although there are some indications that general insufficiency of protein, together with improper salt supply, are contributory factors. Pellagra is a peculiar disease characterised by severe disturbance of the whole digestive tract, by skin lesions, usually bilaterally symmetrical and often mistaken at first for sunburn or chapping of the hands, face, and neck, and other exposed areas. The nervous system is also affected. There is no definite record of pellagra in Europe before maize was introduced into Spain by Columbus. From Spain the disease spread to France, Lombardy, and eastwards, wherever maize was extensively used for food in the poorer agricultural districts. The relation of maize to the disease puzzled the medical profession for nearly 200 years, as the disease occurred where maize was not used; and in some districts maize was used, but there was no pellagra. Roussel in 1866 showed that it could be cured by good food, and Lorentz (1914) and Willets (1915) successfully treated advanced cases with a generous diet. Goldberger also cured and prevented the seasonal appearance of pellagra in lunatic asylums and orphanages by increasing the quantity of meat and milk; previously the diet had been deficient in this respect. Goldberger, by the offer of a free pardon from the Governor of Mississippi, was enabled to obtain 11 convicts as volunteers for a feeding experiment to determine if pellagra could be produced by an unbalanced diet in healthy white men. The "pellagra squad," as they were called, were fed on white wheat flour, various maize preparations, polished rice, sugar, sweet potatoes, pork fat, cabbage, and turnip tops. The food had an energy value of 2950 calories and was amply sufficient in this respect. After the second month on this diet the men complained of weakness, headache, abdominal pain, and other minor discomforts. After five months six developed a rash, which was pronounced by experts to be identical with that seen in pellagra. During the last four weeks all the prisoners had shown marked loss of weight and were much out of health. Pellagra would probably have developed in the remainder, but the experiment had to be abandoned owing to the refusal of the men to continue. A control was carried out at the same time; their diet contained some meat, eggs, and butter-milk; there was not a single case of pellagra and no progressive loss of body-weight.

These and other facts clearly point to the diet as the controlling factor in the cause and prevention of the disease. The determining factor seems to be the quality of the protein. Good evidence on this point has been furnished by Wilson of Cairo. In 1916 pellagra broke out in a camp for Armenian refugees at Port Said. Wilson showed that the diet at first supplied was inadequate both in energy supply (2200 calories) and in protein supply; 92 per cent. of the protein was of vegetable origin, three-quarters from wheat and one-quarter from maize. By determining the least daily amount of a protein required to keep a man from loss of body protein Thomas was able to assign a series of values to proteins representing their biological efficiency. The comparative values according to the quantity required to maintain a man without loss of nitrogen and body-weight were:—

Ox meat...	104	Casein	70	Peas	56
Cow's milk	100	Rice	83	Wheat-flour ...	40
Fish...	95	Potato	79	Maize meal... ...	30

The biological value of meat is therefore three times that of maize. Wilson calculated that the diet as given to the refugees was equal to 22 g. of casein. On improvement to a casein equivalent of 41 g. no more cases of pellagra occurred.

Chick and Hume (1920) succeeded in producing in three monkeys symptoms very like those of human pellagra. The diet was very carefully selected, and was deficient only in respect that it contained no animal protein. One monkey refused the food after a short time; he lost weight and showed signs of incipient pellagra. The second monkey also lost weight, but the loss was lessened by adding tryptophan; but other amino-acids lacking in maize had no appreciable effect. This monkey had signs of pellagra and was cured by giving a normal diet. The third monkey had its loss of weight arrested by including tryptophan and hexone bases; it showed some of the characteristic symptoms of pellagra, such as the symmetrical bilateral rash. It appears thus that pellagra is caused by a continuous shortage in the supply of certain amino-acids in the food.

A diet containing animal protein in small quantities will supply the needful amino-acids; a large supply of vegetable protein may not contain the needful amino-acids.

PRUSSIC ACID AS INSECTICIDE.

DISINFECTION nowadays, and the prevention of diseases thereby, is so largely concerned with the destruction of insects—carriers of plague, typhus, and remittent fever—that we are glad to hear from Mr. Laporte,[1] the bacteriologist to the French army at Mayence, how surely and inexpensively those insects may be killed by hydrocyanic acid. The method was, he tells us, first used in America to destroy the insect parasites of fruit trees; each tree being enclosed in a tent, hydrocyanic acid was evolved within, and next morning the pests would be dead. Hydrocyanic acid is produced by the action of cyanide of sodium on dilute sulphuric acid. It is a 1 per cent. atmosphere that is aimed at; the gas is light and diffuses itself rapidly, so every door and window must be closed and all cracks as usual covered up with pasted paper. To produce a 1 per cent. atmosphere in a room of 3500 cubic feet there must be a large tub containing 1¾ gallons of water, best at a temperature of 50° F., into which are poured 12 lb. of sulphuric acid, sp. gr. 1·7, and beside it is laid 6 lb. of sodic cyanide wrapped up in thick paper. When the process is to be set going, the operator, carrying a machine to give him oxygen, drops the parcel into the dilute sulphuric acid, and then flies for the door, which is closed after him and sealed from outside, and is not opened for 18–24 hours, when the windows, too, are opened, and the gas is quickly blown out. Cellars require to be cleared out with a fan-draught. Then 10 oz. of slaked lime are put in the tub, and the neutralised poisonous liquid is poured into a pit in the ground, dug previously. After hydrocyanic acid gas disinfection in some places larvæ, pupæ, and imagines may be swept up in quantities. This disinfection is thought to be particularly effective in dealing with parasites of plants, or with weevils and beetles in flour-mills, with lice (insect and eggs both killed in two hours), fleas, bed-bugs, moths (that eat clothes), mosquitoes, rats, and mice. Foodstuffs cannot be left in the area, for they absorb and retain the gas unequally, but flour can be dealt with, and nothing else is damaged. One very useful application enabled 2000 men to be deloused daily at Metz—300 men in each of seven groups whose clothing occupied the disinfector for precisely 2¼ hours. There is no fear of damage to boots, furs, textile materials, or metals, the cost of materials is small, the personnel required is few but highly trained. The German Government refuses to allow private persons to use this disinfection, but a company exists to carry it out, a company which seems to be one with the Government and has practically a monopoly. This method of disinfection was employed by Germany in the war for killing rats and insects in submarines and small merchant ships.

Four or five years ago Surgeon R. H. Creel, of the U.S. Public Health Service, in discussing quarantine methods, went fully into the employment of hydrocyanic acid for disinfection.[2] He gave the duration of exposure necessary to kill mosquitoes, fleas, bed-bugs, rats, cockroaches, and lice, and grimly recorded the death of one stowaway.

THE BUFF BOOK AGAIN.

THE second edition of this "classified commercial telephone directory for London," recently issued "with the authority and coöperation of H.M. Postmaster-General," has a guaranteed minimum circulation of 150,000 copies. This issue contains medical names under the following headings:—

Class.	Number of names.	Class.	Number of names.
Cardiologist	1	Physicians (consulting) ...	3
Laryngologist, aurist, and rhinologist...	1	Surgeons	10
Physicians and surgeons ...	72	Surgeons (consulting) ...	1

There may be other solo groups which we have failed to find. No heading of General practitioners is given. Fifteen dental surgeons appear and six dentists, all of whose names appear on the Dental Register. Names of other dental practitioners are given under the heading Dentistry. A number of dental surgeons have paid extra for large type, and two medical specialists have apparently done so. The publisher has, however, made an attempt to bring the Directory within the ethical standard laid down by the General Medical Council (see THE LANCET, March 19th, p. 608) by inserting the following prefatory notice:—

> In order to increase the utility of "the Buff Book" the Proprietors have decided to include, under any one heading, in small type, *free of charge*, the names of all Traders who will fill up and return the Order Form which will be found at the end of the Book.

This seems to entitle any doctor who is content to describe himself as a trader to appear in the classified directory gratis under one heading, and removes any advantage to be gained from the payment of a guinea. Should the General Medical Council consider this free from objection it wou be simple to transfer en bloc the names of telephone subscribers in the London section of the Medical Directory. In passing it may be remarked that the convenience of insertion in the Buff Book to subscribers now on the Langham Exchange is mitigated by the fact that their numbers appear wrongly in the Buff Book, whereas they appear correctly in the new issue of the official Telephone Directory.

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[1] Archives de Médecine et de Pharmacie Militaires, lxxii., 12.

[2] THE LANCET, Dec. 2nd, 1916, p. 950.

LYSOL AS A GARGLE.

To the Editor of THE LANCET.

SIR,—Our attention has been drawn to the report of an inquest held by the Fulham coroner upon a woman who was held to have died as a result of using a solution of lysol as a gargle. So far as our records show, no fatality has yet been recorded caused by swallowing lysol in diluted form. It has been proved that lysol is only one-eighth as poisonous as carbolic, but it does not follow that toxic results may follow the size of the dose. In the case above mentioned the quantity swallowed is not indicated; we should surmise it was not very large and apparently it was diluted. Recovery has been reported in two cases where the quantity taken exceeded three ounces undiluted.

The following extract from a letter received just recently may be of interest to your readers: "I have recently undergone a rather serious operation for cancer of the breast, and since then have been taking about 14 drops of lysol in a small tumbler of lukewarm water; this I have done for twice a day for about a month."

We are, Sir, yours faithfully,

April 25th, 1921. LYSOL, LIMITED.

THE BLOOD PRESSURE IN MENSTRUATION.

To the Editor of THE LANCET.

SIR,—I should be greatly obliged if you or one of your correspondents could direct me where to find some full information as to the changes in the blood pressure in women during menstruation. I seem to have heard that the pressure rises during a week or so preceding the commencement of menstruation, that as soon as the flow begins the pressure commences to fall, and that at the end of the three or four days during which it lasts the pressure is below the ordinary blood pressure of the woman. If these statements are true, estimations of the blood pressure in women lose much of their value unless the relation of the observation to the catamenia is known.

I am, Sir, yours faithfully,

April 19th, 1921. F.R.C.S.

BURGLARIES IN FLATS.

PARAGRAPHS in the newspapers stated recently that a flat in London, the residence of a medical practitioner, had been entered at night and robbed by burglars who were said to have forced open the front door. No further particulars have been given and there is no mention of the thieves having been caught, but as a certain number of members of the medical profession live now in flats and many of them are absent, at their consulting rooms, during the day, it may not be out of place to indicate the conditions which render flats easy to enter by night or day by any thief who takes the risk of being intercepted by the hall porter. In the first place, by day flats are often left empty, either because no servants are kept or because they are allowed to go out when their employers also are absent. Flats are also left empty when their occupants go away for a holiday, the fact of a porter living on the premises being considered to be a sufficient protection. That they are thus left unprotected may become known to thieves by the collusion of servants and in various other ways, or a man who has sufficient audacity and thinks that the coast is probably clear walks boldly upstairs, ready to deliver an imaginary message, and knocks and rings until he is sure that there is no occupant to interfere with him. Having got so far he is fairly safe, but only if he can enter without making enough noise to disturb the dwellers above or below, and without doing enough damage to attract immediate attention if any one should pass the door. He also has, of course, to take his chance of some inmate of the flat coming home. Probably, however, as has been suggested, the thief ascertains the habits of his victim (male or female) and of the servants, if any, before he commences his enterprise. The principal point in his favour, however, lies in the ease with which a large number of flats can be entered, owing to the unsubstantial nature of their front doors. These in a great number of cases have upper panels of glass and not of plate glass, but of small panes of coloured glass joined together by "leading." Everyone can see how quickly one or o such panes can be taken out without any great skill the part of the house-breaker, and how easily he can pass his hand through, turn the handle, and enter. He ake practically no noise in doing this, so that it is not impossible for him to do it safely at night with someone actually at home at the time; and he can replace the glass so that his interference is not likely to be noticed during his visit. There is, at least, one precaution open to the flat-dweller, and one not often taken owing to the prejudice against carrying the rather large latch-key required. Anyone who lives in a flat will do well to consider the advisability of seeing that his front door is fitted with a strong lock capable of being "double locked" from outside or inside. The same applies to many small houses. By double locking is meant the extra turn of the key which renders the handle impossible to turn until the key has been used again to release it. When the lock is good, forcing open with a "jemmy" or making a hole in a panel large enough to admit a man's body will make so much noise and render the breaking-in so conspicuous that neither is likely to be attempted.

THE EFFECT OF THE COAL CRISIS ON ATMOSPHERE.

Mr. W. Thomson, chairman of Manchester and Salford Sanitary Association, by means of a special recording instrument, has studied the atmospheric impurities during the coal crisis, and compared his results with those obtained when domestic fires and works' chimmeys are in full blast. The difference is most striking. Under normal conditions—i.e., no coal strike—the particulate mechanical impurities are most abundant on Monday and Tuesday, and smallest in amount on Sundays, when factories and city offices are inactive. Under present conditions everyone is struck by the obvious improvement of the atmosphere, of the visibility, and the increased supply of the sun's rays—a striking confirmation, if such be needed—of the maleficent effects of a smoky atmosphere.

THE INSCRIPTION ON GUY'S HOSPITAL WAR MEMORIAL.

IN the editorial and correspondence columns of *Guy's Hospital Gazette* recently the question of a suitable incription for the arch which is being erected as a war memorial has been freely discussed. The final decision of the War Memorial Committee is that on the outside of the arch should be the words, "Erected by the friends of 110 Guy's men who gave their lives in the Great War," and on the inside the inscription:—

"To the honour of those who came through,
To the memory of those who died.
1914-1919."

In addition, over each panel bearing the names of those who died, should be the words, "In Memoriam."

Objection has been taken in certain quarters to these words on the grounds that those who came through alive merely did their duty, and that sacrifice only should be memorialised. But it should not be forgotten that some medical students—for example, those who broke away in the middle of their studies to be naval surgeon-probationers —sacrificed not only time but the effects of practice and settlement, regarded as important by our modern psychologists, to such an extent as to affect their whole future careers. Others sacrificed limbs, others mental stability. It is a question of degree rather than of kind.

PUBLIC HEALTH OF MAURITIUS.

ACCORDING to a report prepared by Mr. L. Kœnig, Assistant Colonial Secretary, the birth-rate in 1919 was 35·2 and the death-rate 64·9 per 1000. The population on Dec. 31st of the same year was estimated at 364,493. The abnormal mortality was attributable to a violent outbreak of influenza which prevailed in the island in the months of May, June, and July; it is believed that the deaths from this epidemic numbered more than 11,000. The mortality was especially high in Port Louis and was chiefly due to the poverty and decreased power of resistance of the people. Malaria continues to take a large toll of human life and a still larger toll of health and capacity. Increased attention is being devoted to measures of prevention and no expense is being spared. Phthisis and other forms of tuberculosis appear to be on the increase. In the public general hospitals there are altogether 975 beds. During 1919 25,073 patients were treated, and the deaths in hospitals numbered 1905. Attendance was given in the public dispensaries to 78,546 patients. In the St. Lazare Leper Asylum there were 67 inmates on Dec. 31st, 1918, and 14 were admitted during 1919; 2 patients absconded, 8 were discharged, and 19 died. Mauritius has a warm climate, but is seldom too hot for comfort. The temperature even during the warm season is never excessive, and during the winter months from May to September the climate in the elevated plateau is often bracing and generally delightfully cool.

The Goulstonian Lectures

ON

GLYCÆMIA AND GLYCOSURIA.

Delivered before the Royal College of Physicians of London on March 1st, 1921,

BY GEORGE GRAHAM, M.A., M.D. CANTAB., F.R.C.P. LOND.,

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LECTURE I.

I WISH, first of all, to express my thanks to the Royal College of Physicians for the great honour which it has done me in selecting me to be Goulstonian lecturer for this year. Secondly, I wish to commemorate the name of Theodore Goulston, a Fellow of this College, who in 1632 bequeathed some property in Essex in order to found this lectureship. The first lecture was given in 1639, and, except for a few breaks owing to wars and other causes, it has been given annually since that time. When Dr. Goulston died in 1632 the study of diabetes was still in its infancy, as Thomas Willis was then only a boy of 12, and it was not until 1674 that he observed that the urine of diabetic patients had a sweet taste. Willis was not the Goulstonian lecturer, and, as far as I can ascertain, diabetes has only been the subject of these lectures on three occasions—by Dr. F. W. Pavy in 1863, by Dr. W. C. Bosanquet in 1905, and by Dr. E. P. Poulton in 1918.

Although it is only three years since my friend and co-worker on other subjects, Dr. Poulton, was Goulstonian lecturer, I do not feel that I owe you any apology for talking about diabetes again, as Dr. Poulton was chiefly concerned with the questions of acidosis and ketosis, while I shall approach the subject by considering the fate of the sugar which is present in the blood. In the second lecture I shall speak of the different types of diabetes, and in the third describe the principles on which the modern treatment is based.

THE FATE OF THE SUGAR PRESENT IN THE BLOOD.

The presence of sugar in the blood was demonstrated by Claude Bernard, and the amount of sugar which is normally present in the blood has been estimated by many observers and by many methods. Pavy's statement,[1] that for animals, dogs, &c., the usual amount varied from "0·06 to 0·10 g. or a little more" has been substantiated by recent workers using much simpler methods. The figure given for the amount which is usually present in the healthy fasting adult is 0·08 to 0·12 g. per cent.

One great question which concerned Pavy[2] was why this sugar was not excreted in the urine. He showed that as a matter of fact sugar was excreted in the urine of all healthy adults in very small amounts. He estimated that it was present in a concentration of less than 0·03 per cent. Such an amount is not sufficient to give a positive result with Fehling's solution or with Benedict's solution, as the latter only gives a positive result in a concentration of 0·08 per cent. Recently Benedict and Osterberg[3] have found that sugar is always present in the urine in small amounts up to 0·01 per cent. In two cases which were very carefully investigated the total amounts excreted were 1 g. and 0·5 g. per day. Pavy sought to explain the absence of sugar in the urine in appreciable amounts by supposing that the sugar was carried by the leucocytes. Others have supposed that the sugar was present in a colloidal combination and not as a crystalloid.

In 1903 Michaelis and Rona[4] found that the sugar could be diffused away from the cells and that the sugar must be in a state of solution. This was confirmed in 1914 by Abel, Rowntree, and Turner,[5] who showed that if the blood was allowed to circulate through a celloidin tube inserted into the general circulation of the animal the sugar diffused out from the blood into the fluid surrounding the celloidin tube. The sugar is therefore present in the blood as a crystalloid.

Until 1903 it was accepted that sugar was present in the plasma and not in the corpuscles, but in that year Michaelis and Rona,[6] working on dogs, found that the sugar was shared in unequal and inconstant amounts between the corpuscles and plasma. They repeated and extended their observations, which were confirmed by all other workers on this subject except Lyttgens and Sandgren[7] and Bang.[8] Bang and his pupils were unable to prepare an osazone from the corpuscles and challenged Michaelis and Rona to prepare one. It was also very extraordinary that in some animals—the dog, cat, and man—the sugar was apparently shared between the corpuscles and plasma, while in the rabbit it was all in the plasma.

In 1919 Falta and Richter Quittner[9] re-investigated the question and found that if they prevented coagulation of the blood by the addition of hirudin all the sugar was present in the plasma. If, however, other methods preventing coagulation were used—e.g., the addition of potassium oxalate or sodium citrate—or if the blood was defibrinated, the sugar was shared between the corpuscles and plasma. Falta found that this was true of the blood of all the usual laboratory animals. Confirmation of this work is forthcoming in the independent work of Brinkman and V. Davis,[10][11] which was published almost simultaneously. Brinkman was working on frog's blood, and with the use of hirudin he found that the sugar was always present in the plasma. When he extended his work to human blood he was not so successful as the hirudin he was using did not completely prevent the onset of coagulation. If any strands of fibrin were present the corpuscles contained sugar. However, by chilling the blood and bubbling an indifferent gas through the blood he was able to prevent any coagulation taking place and to demonstrate that all the sugar was present in the plasma.

The Hæmatocrit Method.

These observations are of great importance in the estimation of the sugar in the blood. The amount of sugar is always given in grammes per 100 c.cm. or per 100 g. of blood. But if the sugar is only present in the plasma this mode of presentation may be very misleading, as Falta points out, unless a simultaneous estimation is made of the respective volumes of plasma and corpuscles by the hæmatocrit method. This observation may affect the accuracy of determinations which are made from the blood obtained by pricking the finger when any squeezing is necessary to obtain the blood. It can be overcome by (1) warming the hand in hot water beforehand; (2) always pricking the finger deeply; and (3) correcting the result by doing a hæmatocrit determination. Unfortunately hirudin is unobtainable at present, and potassium oxalate must therefore be used instead in making the hæmatocrit determinations. A correction of 1–2 per cent. must be made, as the potassium oxalate gives too low a reading for the volume of the cells.

I have recently compared the blood from the vein with that obtained from the finger with the help of Dr. A. E. Gow. The figures for the red cells lay within the limits of experimental error, those for the hæmatocrit were identical, the figures for the blood sugar lay within the limits of experimental error. There is, therefore, no appreciable error in collecting blood from the finger. A more serious source of error may be variations in the volume of cells and plasma. Eppstein[12] found that the volume of plasma and corpuscles was not a constant one as it varied after a meal. He always made a hæmatocrit determination in order to correct for this variation. Recently Dreyer, Bazett, and Pierce[13] have shown that the proportion of plasma and corpuscles varies in a surprising way and makes it still more necessary to check the results with a hæmatocrit determination. The diurnal variations may be as much as 30 per cent., and a 10 per cent. change is quite common. The changes did not seem to bear any relation to meals.

The Nature of the Filter.

The mechanism by which the sugar is prevented from being excreted by the kidney still remains unexplained. According to Cushny's view of kidney functions, the sugar is passively filtered off from the blood together with the other constituents of the urine, and is reabsorbed lower down in the kidney tubules. On this hypothesis a great deal of work has to be done by the kidney in reabsorbing these substances, and as in some cases of diabetes, of which I shall speak later, the level of the blood sugar may rise to 0.30 g. per cent. without any sugar being excreted in the urine, the kidney must do a great deal of extra work.

Hamburger and Brinkman[14] have done some suggestive work on this point. They found that when they perfused the frog's kidney with ordinary Ringer's solution containing glucose all the sugar was excreted in the urine. By varying the potassium and calcium in the solution the excretion of the sugar ceased to be a quantitative one. By making the H.-ion concentration of the perfusing fluid correspond with that of frog's blood they found that the kidney did not allow any sugar to pass even if the concentration was over 0·10 per cent. The addition of lactose to the perfusing fluid was always followed by the excretion of lactose in the urine, although no glucose was excreted. These experiments at present lack confirmation, and the possibilities of error have not been exhaustively excluded, but they do offer an explanation of the different levels of the leak-point for sugar in human beings, to which I shall refer later.

Pavy[15] and all other workers on this subject up to 1911 believed that there was no increase of sugar in the blood after a heavy carbohydrate meal. It was believed that the liver was the organ which prevented the sugar from increasing in the general circulation. Pavy thought that if the liver failed to do its duty and allowed an increase of sugar in the blood, the sugar would instantly be excreted in the urine.

In 1911 Baudouin[16] examined his patients one hour after a meal and found that there was a slight increase in the amount of sugar. Frank,[17] Reicher and Stern[18] confirmed and slightly extended his observation. A. Th. B. Jacobsen[19] in 1913 pointed out that the rise in the blood sugar occurred much earlier than one hour, and might be present within five minutes of a dose of sugar. It usually reached its maximum 15–30 minutes after the sugar, and in 7 cases was back at its original level after 60 minutes. In 7 cases the fasting value was not reached until two to three hours afterwards. In 7 cases sugar was excreted, but the greatest amount excreted was 1·38 g. These observations have been confirmed by Bang and many others, including myself.

Variations in Individual Response to a Dose of Sugar.

The response of each individual to a dose of sugar is probably slightly different, and varies from time to time according to his state of health. I[20] have made six experiments on myself at different times, immediately before and after a holiday, and the variations are somewhat remarkable. All the estimations of the blood sugar were made by Bang's[21] method, which with slight modifications in technique I have found very satisfactory when the difficulties over the impurities of the chemicals have been surmounted. The difference between the blood curves (Figs. 1 and 2) is very striking, and makes it much easier to understand why a diabetic passes sugar when he is upset by quite trivial ailments or troubles.

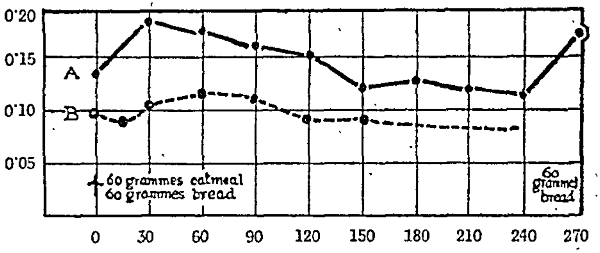
In considering the changes which take place in the percentage amount of sugar in the blood the total amount of sugar should also be considered. The volume of the blood is about $\frac{1}{13}$th of the total weight of the body, according to the recent work of Keith, Rowntree and Geraghty.[22] In the case of a man who weighs 65 kilos, or 10 st. 3 lb., the volume of the blood will be 5000 g. Since the average percentage amount of sugar in the blood is about 0·10 g. per 100 g. blood the total sugar circulating in the blood is 5 g. An increase in the blood sugar from 0·10 g. to 0·20 g. would mean that an extra 5 g. was circulating in the blood. A diabetic with a blood sugar of 0·40 g. present would have an extra 15 g. of sugar in the blood. The amount of sugar which can be stored in the blood is therefore very small, and this emphasises the delicacy of the mechanism by which sugar is absorbed into the body.

The increase in the blood sugar after each meal, which contains a fair amount of carbohydrate, shows that the liver does not prevent sugar from entering the peripheral circulation, and it is of interest to consider how much sugar the hepatic veins may contain. The blood in the portal vein after a meal is rich in sugar, but in its passage through the liver it is diluted with the blood from the hepatic artery. The blood leaves the liver by the hepatic veins, which join the erior vena cava at once. The liver blood is there uted at once with the blood from the lower limbs. A ther dilution takes place almost immediately after-nls as the blood mixes in the heart with the blood the superior vena cava. It is clear that the blood in the hepatic veins must contain more sugar than the diluted blood in the peripheral circulation, but it is not possible to say how much more, as measurements of the vessels after death are difficult to do, and no account is taken of the velocity of the blood flow.

The Destination of Blood Sugar.

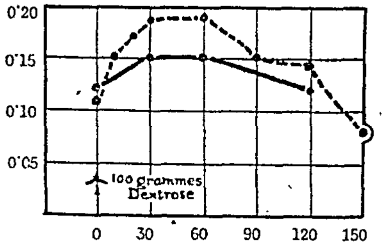
The fact that the increase in the blood sugar takes place after each carbohydrate meal which is eaten arouses interest as to the destination of this sugar. None of the sugar is excreted in the urine so long as the amount of sugar does not rise above the "leak point" for the individual, and after circulating in the blood for a variable length of time the sugar disappears from the circulation. Some of the sugar is burnt at once as the respiratory quotient rises immediately after a carbohydrate meal and remains about 1·0 for some time, and then gradually falls. The rise and fall in the blood sugar is usually over in about one hour even if 100 g. is taken at one time. If all the sugar which disappears from the circulation in the hour were burnt in that time it would mean that 400 calories had been used in one hour from carbohydrates alone. As the subject of these experiments is usually a laboratory worker, and as he sits fairly still during that period it is hardly possible that all this amount of sugar could be burnt up. Moreover, Johanson[23] has shown that the increase in the output of carbon dioxide which occurs after a dose of sugar persists for a period of five to seven hours. Hence some of the sugar must be stored elsewhere in the body—i.e., in the liver, muscles, or elsewhere.

In each of the charts the figures at the left side indicate grammes of sugar in 100 g. blood.



The figures at the foot of the chart represent minutes after meal.

FIG. 1 shows the effect of a carbohydrate meal consisting of 60 g. porridge, 60 g. bread, 150 c.cm. milk, on my blood (A) before and (B) after a holiday. Before the holiday the fasting value was 0·13 g. per cent., and 30 minutes later the sugar had increased to 0·18 per cent. The amount of sugar gradually decreased and reached 0·12 2½ hours later. After the holiday the fasting value was 0·095 g., and the rise in the blood sugar which took place ½ hour after the meal was small, and reached its maximum 0·11 g. after 1 hour. In this case the rise was 0·015, whereas before the holiday it was 0·05 g.



In Charts 2, 3, and 4 the figures at the foot represent minutes after injection of sugar.

FIG. 2 shows the effect of a dose of 100 g. of glucose six weeks and one week before another holiday. Six weeks before the holiday (continuous line) the rise in the blood sugar was 0·03 g. in 1 hour. One week before the holiday (dotted line) it was 0·07. On neither occasion when I was taking the holiday was I suffering, so far as I know, from any illness, although on each occasion I had been working long hours in the laboratories and wards.

The amount of glycogen which is stored in these places may be considerable. Thus Schöndorf[24] estimated the amount of glycogen in the muscles and liver of seven dogs. In three dogs the muscles contained more sugar than the liver; in two dogs the muscles and liver contained about the same amount of sugar; in two dogs the muscles contained less glycogen than the liver.

As the muscles contain so much glycogen it is possible that the "extra" sugar which is seen in the blood after a carbohydrate meal is on its way to the muscles. De Fillipi[25] has investigated the effect of shutting out the liver from the portal circulation by means of an Eck's fistula. He found that there was a small decrease in the tolerance for dextrose, but a larger decrease in the tolerance for lævulose.

Tolerance to Different Sugars.

Jacobsen[26] repeated these experiments on three dogs, making careful determinations of the tolerance for dextrose, lævulose, and saccharose before and after the operation.

	Before operation.	After operation.
Tolerance for—		
Dextrose ...	115 g.	80 g.
Saccharose	170 ,,	15 ,,
Lævulose ...	90 ,,	9 ,,

The decrease in the tolerance for dextrose is therefore small as compared with the decrease for lævulose.

Effect on the Liver.

De Fillipi did not make any pathological report on the state of the liver, but Jacobsen stated the liver in his dogs appeared small, hard, and tough; on microscopical section there was atrophy of the centre of the lobule and fatty degeneration. The effect of removing the liver from the portal blood flow, although it does diminish the tolerance for sugar, does not upset the metabolism as much as might be expected. Both De Fillipi and Jacobsen suggest that the muscles can assimilate the dextrose but that they cannot store the lævulose.

De Fillipi determined the amount of glycogen which was present in the liver and muscles of the Eck's fistula dogs. The figures show that the liver of the Eck's fistula dogs contain very little glycogen and resemble those for the liver of Pflüger's dog which had fasted for 28 days. The muscle contained a good deal of glycogen, and the amounts corresponded with those found in the muscles of dogs which had been well fed.

The tolerance for dextrose has been tested in diseases in which the liver has been grossly diseased, as in cirrhosis of the liver. Strauss[27] found that 90 per cent. of patients with diseases of the liver, such as cirrhosis, excrete lævulose after a dose of 100 g. of lævulose. Only 10 per cent. of healthy people excreted lævulose. The amounts of lævulose excreted are always small, usually about 1 per cent. of the dose. In acute phosphorus poisoning about 85 per cent. of the cases showed a diminished tolerance after a dose of 100 g. of sugar; the amount of dextrose excreted varied from 22 g. to mere traces.

The experiments in which the liver has been cut out of the portal circulation, and those in which the liver is seriously damaged in disease, show that the muscles play an important part in the storage of glycogen, and it is possible that the "extra sugar" in the blood after a carbohydrate meal is on its way to the muscles.

The effect of lævulose on the blood sugar in man was observed by Bergmark,[28] who found that practically no rise occurred after doses of 50 g.

This has been repeated by McLean and de Wessolow,[29] who gave similar doses. A dose of 50 g. caused a rise from 0·10 to 0·11, which is almost within the limits of experimental error. I had observed the effect of a still larger dose of lævulose, 100 g., as I have done most of my experiments on myself with that dose of dextrose. (Fig. 3.) The initial figure for the blood sugar was 0·095, and 30 minutes after the lævulose it had risen to 0·15; at the end of one hour it was still 0·145 g., at the end of two hours 0·115 g., at the end of three hours 0·125 g. At this point 100 g. of dextrose was taken; at the end of 15 minutes the sugar had risen to 0·15, at the end of 30 minutes to 0·195 g. During the first 40 minutes after the lævulose 0·15 g. of a reducing substance was excreted in the urine. This substance was lævorotatory and was probably lævulose. In the next 2 hours and 40 minutes 0·07 g. of a similar lævorotatory substance was excreted in the urine. In the hour after the dextrose no reducing substance was excreted in the urine. Using a dose of 100 g. of lævulose the rise in the blood sugar was 0.055 g. compared with the rise of 0·01 observed by Bergmark after 50 g., and is only a little smaller than the rise after the dextrose of 0·075 g. The significant point is that the lævulose was excreted, although the blood sugar was never above 0·15 g., whereas the dextrose caused a rise to 0·195 without causing any excretion of dextrose. On another occasion 100 g. of lævulose caused a similar rise and the reducing substance gave Seliwanow's test for lævulose.

Woodyat, Sansun, and Wilder[30] have also made experiments which show the difference between lævulose and dextrose.

By means of an ingenious apparatus they have injected sugar solutions continuously into veins. They were able to inject dextrose at the rate of 0·8 to 0·9 g. per kg. per hour into dogs and men without causing any glycosuria. In the case of a man of 65 kg. 52 g. of dextrose could be injected each hour. For lævulose the figures are much lower as only 0·15 g. per kg. per hour or 9·7 g. for a man of 65 kg. could be injected without causing glycosuria. The difference between the dextrose and lævulose is therefore very great, and coupled with the other work suggest that the lævulose is normally dealt with in the liver, but that if there is any appreciable escape into the peripheral blood some sugar is excreted by the kidneys. On this hypothesis lævulose occupies the position that dextrose held in the mind of Pavy.

Pavy[31] pointed out that the blood in the peripheral circulation contained very little more sugar after hydrolysis with sulphuric acid, whereas the blood in the portal vein showed a considerable increase. He considered that the liver prevented the entrance of this hydrolysable sugar into the peripheral blood. Cammidge[32] has recently confirmed these observations and he believes that this substance is similar to a dextrin.

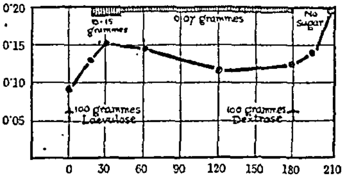


FIG. 3.—Showing the effect of 100 g. of lævulose on the level of the blood sugar, compared with the effect of 100 g. dextrose.

The especial functions of the liver seem to be: (1) preventing the hydrolysable sugar from entering the general circulation; (2) storing up the lævulose.

Ivan Bang[33] has made many experiments to try and discover the fate of the extra sugar which is seen in the blood after a carbohydrate meal. He fed rabbits with sugar and also injected sugar intravenously. The rabbits were killed half to two hours afterwards and the total amount of sugar and glycogen which was present in the body was determined. In these experiments, in which the sugar was given through a stomach tube, the total amount of sugar or glycogen found in the liver, blood, and lymph varied from 6·2 per cent., 22·9 per cent., 28·7 per cent. of the sugar which had been absorbed. After intravenous injections of sugar Bang found that although the animal was killed at once the amount of sugar in the liver immediately after the injection was only 8–12 per cent. of the injected sugar. The blood contained 7·5–11 per cent. of the injected sugar and the muscles only 5 per cent. Although Bang examined the whole body he was unable to recover more than 48–75 per cent. of the sugar which had been injected. In the experiment in which 75 per cent. was recovered, 30 per cent. of the sugar was still in the blood.

The Liver Not the Chief Storehouse for Sugar.

These experiments confirm the other experiments which I have quoted and show that the liver is not the chief storehouse for sugar in the body. The complete disappearance of 25–50 per cent. of the sugar which has been injected is most remarkable and suggests that the sugar has been converted into another compound which escapes detection.

This work has been repeated by Kleiner,[34] who found that he could not recover the sugar injected. He also injected dead animals and found that the sugar disappeared from the blood in the same way as it does in live animals. In dead animals, however, the sugar was present in the body fluids and muscles and could be recovered. In living animals he found some evidence that a condensation of the sugar took place in the muscles. The work of Cohnheim[35] on the effect of muscle juice on sugar in the presence of pancreatic juice bears on this point. He showed that if suitably prepared muscle juice was allowed to act on sugar under strictly aseptic precautions a small amount of sugar disappeared. The addition of pancreatic extract in suitabl amounts increased the effect of the muscle juice, but of pancreatic extract prevented the action. The p extract did not act like a ferment as it was not d by heating and could also be extracted with alcohol. results were contradicted by Claus and Emden, Cohnheim repeated his experiments with many precautions and obtained a similar result. These experiments have been confirmed by de Witt[37] and others, but they are especially supported by Hall's[38] work. He found that the best results were obtained when the alcoholic extract of the pancreas was used, and that 25 per cent. of the sugar might disappear. The mixture of muscle juice and pancreas extract could only act on dextrose, and could not attack arabinose, lævulose, or lactose. Levene and Meyer[39] confirmed Hall's results, and showed that the sugar which had disappeared could be recovered by boiling the mixture with hydrochloric acid for an hour. This experiment showed that the sugar had not been used but stored away. They were also able to isolate a biosazone from the mixture. Their work is good evidence that a condensation product had been formed by the interaction of the muscle juice and pancreatic extract. Cohnheim's substance must therefore be accepted as an important agent in the storage of sugar in the muscle. This work suggests that the sugar which Bang[33] was unable to recover after the injection of sugar into animals has been stored as a condensation product in the muscle.

The problem has also been investigated by perfusing the living heart muscle with solutions containing sugar. The work is difficult, as the experiments may be invalidated by the amount of glycogen which the heart muscle contains and by bacterial action, &c.

Owing to some of these causes the earlier work is unreliable, but Cruikshank and Paterson[40] were able to show that the heart of a healthy dog burnt sugar at the rate of 1·87 mg. per kg. of heart muscle, whereas the heart of the diabetic dog burnt sugar at the rate of 0·9 mg. per kg.

Starling and Lovatt Evans[41] found that the respiratory quotient of the diabetic heart was 0·71 instead of 0·85 for the healthy heart, showing that there was a depression or abolition of the power of the diabetic muscle to use carbohydrate. They found that an acid extract of the pancreas very occasionally enabled the diabetic heart to use more sugar and sent up the respiratory quotient. More recently Clark[42] has repeated this work, using special precautions to prevent the destruction of sugar by bacterial action in the perfusing fluid. He found that on perfusing the healthy heart very little sugar disappeared in the first two hours, but that in the third and fourth hours a considerable amount of sugar disappeared. If, however, the pancreas was brought into the circulation the sugar began to disappear at once. The sugar could not be recovered by heating with hydrochloric acid, as in Levine and Meyer's work. Perfusion through the pancreas did not seem to alter the sugar in any way, and it is suggested that the perfusing fluid picked up something from the pancreas which enabled the muscle to use the sugar. Since the perfusing fluid lost its power after boiling or standing it seems probable that the active substance is a ferment.

Hedon[43] made some important observations on the diabetic animal. If large amounts of healthy blood are given to a diabetic dog there is a decrease of the sugar output and a fall in the level of the blood sugar, but the effects were very transient. The effect of connecting the pancreas of a healthy dog with the peripheral circulation of the diabetic dog was next investigated, but did not cause more effect than the transfusion of blood had done. If, however, the healthy pancreas was connected with the portal circulation the results were very striking, as the glycosuria disappeared and the blood sugar decreased. These effects persisted for a little while after the transfusion had ceased. This observation suggests that the pancreatic hormone can only act if it has passed through the liver, and it is of interest to remember that all the opposing group of glands discharge into the peripheral circulation.

The Relations of Liver and Pancreas.

Cammidge[44] has recently made some experiments which bear on the relations of the liver and pancreas. He estimated the amylolytic ferment in the blood—the increase in the reducing power of the blood—after hydrolysis, which he called the "difference value" and the blood sugar. *The effect of a carbohydrate meal* was observed on all these substances in patients with diseases of the pancreas and in dogs which had had varying amounts of the pancreas removed.

In patients with disease of the pancreas and in dogs in whom two-thirds or less of the pancreas had been removed there is a great increase in the "difference value" and of the amylolytic ferment of the blood of the fasting patient or dog. The carbohydrate meal causes a great fall in the "difference value," but an increase in the amylolytic ferment and in the blood sugar. This lasts for some ours and then the "difference value" rises again and the hers fall. If the whole of the pancreas is removed the ifference value" is low, but the amylolytic ferment and d sugar are higher than ever.

These experiments show that the amylolytic ferment is not secreted by the pancreas, as it was present in the greatest amount when the pancreas was completely removed. It is, therefore, suggested by Cammidge that the amylolytic ferment is formed in the liver and that its production is under the control of the pancreas. A diminution in the pancreatic function allows either an increase in the production or perhaps an escape of the amylolytic ferment into the blood. This part of the work agrees therefore with Hedon's observation on the necessity of the perfusing blood passing through the liver.

The significance of the "difference value" is much more difficult to appraise. It is present in the fasting blood in the largest amount when the pancreas is slightly damaged and in smallest amount when the pancreas is intact or absent. It decreases with the increase in the amylolytic ferment and increases with the fall of the amylolytic ferment, and is therefore in some way dependent on the activity of this ferment.

The work of Dakin and Dudley[45] on glyoxalase is also very important. They found that the liver, muscles, and blood of all animals contain a thermo-labile ferment called glyoxalase which is capable of converting methyl glyoxal into lactic acid. The pancreas, however, contained a ferment which could inhibit the action of the glyoxalase. This antiglyoxalase is water-soluble and thermo-labile, is present in pancreatic extracts and also in the pancreatic juice. The blood of muscles of diabetics, however, had less glyoxalase than usual.

If this work of Cohnheim, Clark, Dakin, and Dudley is correct the problem is an extremely complicated one. We know at present three substances which seem to play an important part. Cohnheim's substance, which is thermo-stabile, soluble in alcohol, and inhibited by trypsin, is apparently necessary for the storage of sugar in the muscles. Dakin and Dudley's substance, which is thermo-labile, water-soluble, unaffected by trypsin, is apparently necessary to prevent the conversion of the muscle sugar into lactic acid. Clark's substance, which is thermo-labile, water-soluble (and in diabetic animals must pass through the liver as well) is necessary to enable the muscles to burn the sugar. The three substances are here shown in tabular form:—

COHNHEIM'S SUBSTANCE.	DAKIN AND DUDLEY'S ANTI-GLYOXALASE.	CLARK'S SUBSTANCE.
Thermo-stabile. Soluble in alcohol. Inhibited by trypsin. Necessary for storage of sugar in muscles.	Thermo-labile. Soluble in water. Unaffected by trypsin. Necessary to prevent conversion of muscle sugar into lactic acid.	Thermo-labile. Water soluble. Necessary to enable the muscles to burn sugar.

The evidence which I shall bring forward in my next lecture from the consideration of the effect of a small dose of sugar on mild cases of diabetes suggests that the diabetic is unable to store the sugar readily, and that it circulates in the blood for a much longer period than usual. This effect may perhaps be ascribed to the absence of Cohnheim's substance in adequate amounts. (Fig. 4.) The fact that the respiratory quotient in diabetes is low shows that the body is not burning sugar, and this may be ascribed to the absence of

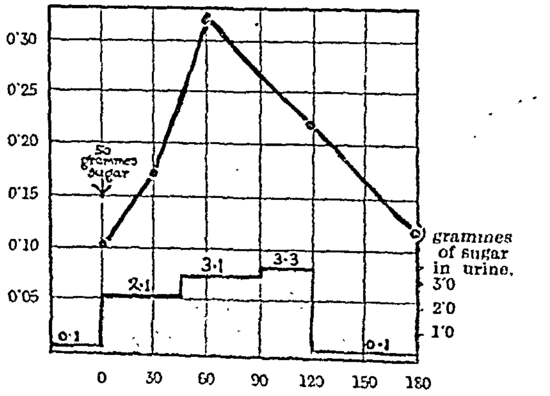


FIG. 4.—Showing the effect of 50 g. sugar on the level of the blood sugar and the sugar excreted per hour.

Clark's substance in adequate amounts. The persistence of hyperglycæmia in severe diabetes, in spite of starvation, may perhaps be due to absence of Dakin's substance.

THE MECHANISM REGULATING THE AMOUNT OF SUGAR IN THE BLOOD.

The mechanism by which the amount of sugar in the blood is regulated must next be briefly considered. The sugar in the blood seems to remain at a fairly constant amount, except when it is raised after a meal or when it is decreased after the effect of the meal has passed off. The decrease is sometimes quite marked, but after one or more hours the level of the blood sugar returns to its original level or a little lower. The mechanism by which this is achieved is a complicated one, as there are four ductless glands—the suprarenal, the thyroid, the pituitary, and the pancreas—which exert an influence on it. The suprarenal, thyroid, and pituitary all seem to belong to one group, as an increase in their activity causes a rise in the blood sugar and perhaps glycosuria. A decrease in their activities may cause an increase in the sugar tolerance. The pancreas must be placed in the opposing group, as a decrease of its functions causes a diminution of the sugar tolerance.

The methods by which these glands produce their action are still difficult to understand, but considerable information has accumulated.

The mode of action of the suprarenal gland is especially interesting. The injection of adrenalin causes an increase in the blood sugar and may therefore cause glycosuria if the level of the blood sugar rises above the leak point. Further confirmation is obtained from observations on patients as anxiety may cause a temporary glycosuria—e.g., the strain of an examination (Cannon); the anxiety of either playing or looking on at a football match (McLeod[48]). Moreover, I have found the fasting value for the blood sugar raised to 0·16 or 0·18 g. per cent. on two occasions when I have tested the sugar and tolerance of patients with diabetes innocens. On repeating the test the fasting value has always been within the normal limits. If it be accepted that adrenalin plays a part in regulating the amount of sugar in the blood the method by which the necessary amount of adrenalin is settled is not known. The adrenalin is believed to act by converting the glycogen of the liver into sugar, as most sugar is excreted when the liver contains most glycogen. But if the liver contains little glycogen the adrenalin causes an increase in the amount of glycogen in the liver. The adrenalin is excreted in the general circulation and reaches the liver by the hepatic artery as well as by the portal vein, and it is possible that it also mobilises the sugar in the muscles and brings that to the liver.

The old work of Kulz[47] bears on this point. He made some observations on the time at which the liver of rabbits contained the maximum amount of sugar. He found that 4 hours after a dose of 21 g. of glucose the liver contained very little sugar, but that it began to accumulate in the liver after 10 hours, reached its maximum after 16 hours, and was nearly all gone after the 24th hour. The adrenalin may therefore be the active agent which helps to keep the sugar content of the blood constant, but the method by which the amount of adrenalin required is determined is not yet clear. The suprarenals are under the control of the splanchnic nerves, and stimulation of these nerves causes an increase in the output of adrenalin and a rise in the blood sugar. Further, it is through the splanchnic nerves that the impulses pass from the fourth ventricle. The excretion of sugar which Claude Bernard produced by puncturing the floor of the fourth ventricle can be abolished by cutting the splanchnic nerves or by removing the suprarenal glands. At this stage the question seemed relatively simple, but later it was found that after division of all the nerves of the hepatic plexus stimulation of the splanchnic nerves did not produce any hyperglycæmia.[48] Also stimulation of the hepatic plexus could produce hyperglycæmia by itself, but not if the suprarenals had been removed.

There are therefore two factors at work: (1) presence of adrenalin; (2) an intact hepatic plexus. It seems possible that the need for the sugar reacts in some way on a centre in the brain and that the impulses pass to the suprarenals via the splanchnic nerves, and this produces more adrenalin and hence more sugar in the blood.

The evidence for the influence of the thyroid is less complete. In exophthalmic goitre the sugar tolerance may be much reduced and sugar may be excreted. The opposite is the case in myxœdema, as the sugar tolerance is much increased. Treatment with thyroid extract lowers the sugar tolerance and may cause glycosuria even in healthy people if a large enough dose be taken.

The pituitary is still less understood. Glycosuria may occur in the early stages of acromegaly, but whether this is due to a secretion from the anterior lobe or is due to pressure on the floor of the fourth ventricle is not clear. After destruction of the posterior lobe, on the other hand, the carbohydrate tolerance is much increased. Feeding with posterior lobe will reduce the sugar tolerance.

How the work of regulating the blood sugar is shared between the three glands is at present quite unknown. The pancreas is the only gland in the opposing group as far as we know. The effects of an excess of pancreatic excretion are unknown. The defects of the pancreas are, however, well known. Since the day of von Mering and Minkowski a great deal of work has been done on the effects of removal of the pancreas, notably by Starling and Allen. Allen has shown that if one-eighth to one-ninth of the whole gland is left intact the diabetes will be of a mild type, but if less than one-ninth is left the disease is of a severe type. These observations show that the pancreas supplies a secretion which is essential for the metabolism of sugar. I have already described the evidence of its mode of action.

This completes my review of the physiological aspects of diabetes mellitus. The whole subject of diabetes bristles with difficulties, as I have tried to show throughout this lecture. The more we advance our knowledge the more complicated the problem becomes, and the more there is to learn.

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A SIMPLE
QUANTITATIVE SERUM-REACTION FOR THE DIAGNOSIS OF SYPHILIS
AND THE EXPRESSION OF RESULTS IN STANDARD UNITS.[1]

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QUALITATIVE AND QUANTITATIVE TESTS.

EVER since the application of the Bordet and Gengou phenomenon of complement fixation to the diagnosis of syphilis by Wassermann, Neisser, and Bruck in 1906, this reaction, generally known as the Wassermann reaction, has been our most valuable aid in the diagnosis of syphilis. During these years the technique has undergone a series of modifications with the object of enhancing the specificity and the delicacy of the reaction. The result has been that in the Wassermann reaction we now possess a practical and reliable qualitative test for the diagnosis of syphilis. If the reaction fulfils the conditions laid down by Wassermann (total absence of hæmolysis), it is for all practical purposes specific, save, perhaps, in the acute stages of malaria, in pellagra, and in yaws. On the other hand, an incomplete or negative reaction by no means excludes syphilitic infection.

The disadvantages of the method are briefly as follows:—

1. The rather complicated technique, with its many pitfalls, requires very considerable skill and experience in the handling of the various more or less unstable reagents. That this does not interfere, for all *practical purposes*, with the qualitative value of the test in the hands of highly skilled and experienced pathologists is clearly brought out by the experiments of McIntosh, Harrison, and Browning,[2] who tested 104 serums independently and arrived at nearly identical results.

2. The reaction cannot be properly standardised owing to the number of variants in it—complement and red cells varying from day to day, amboceptor and antigen varying from month to month. For this reason any attempt to determine from one time to another the titre of the serum in any given case is bound to be only approximately accurate. That this is so was clearly proved by the careful quantitative determinations of Thomsen,[3] who compared the same serums, kept under ideal conditions, at intervals of a few days. These serums did not give the same results on three different occasions.

3. Because titration is only approximately accurate and also involves very considerable labour the routine usually adopted is to use one fixed quantity of serum (0·1 c.cm) for the test, and to express the results in terms of +, ++, +++, and ++++, with a view of indicating the strength of the so-called *Wassermann substance*. The result of this procedure is that the reaction remains ++++ until near the borderline. Thus if the serum is strong the Wassermann reaction gives no indication of how the case is progressing unless and until the reaction approaches the borderline, where it may *disappear altogether*, or perhaps fluctuate between positive and negative, according to the delicacy of the reaction on the particular occasion. If the serum is weak the reaction may become negative and remain negative, or again, as before, fluctuate between positive and negative over a prolonged period.

It may be said that these fluctuations, frequently observed, are due to actual changes in the strength of the serum, but as similar fluctuations also occur when the same serum is tested on different occasions, it is, in our opinion, probable that these fluctuations are largely due to variations in the sensitiveness of the Wassermann reaction—and are not true changes in the strength of the serum. The procedure adopted by some workers of using two different amounts of complement with the fixed amount of syphilitic serum gives little or no help in this respect.

For the reasons here given the physician may receive very little guidance from the Wassermann reaction as to the result of treatment, and will often find it difficult to correlate his clinical observations with the result of the reaction.

Attempts to Dispense with the Hæmolytic System.

Owing to the complicated technique of the Wassermann reaction attempts have been made from time to time to devise a simpler reaction by doing away with the hæmolytic system. The first test of this type was the Hermann and Perutz flocculation reaction. In this the property of syphilitic serum to flocculate a suspension in saline of sodium glycocholate and cholesterin was made use of. Most observers seemed to agree that it was less delicate than the Wassermann reaction, and also gave a considerable number of false positive results. Of subsequent flocculation reactions the Sachs-Georgi is the one that has yielded diagnostic results that compare most favourably with those given by the Wassermann reaction. As a test fluid Sachs and Georgi made use of a saline suspension of a mixture of alcoholic heart extract and cholesterin. To 0·5 c.cm. of this test-fluid they added 1·0 c.cm. of serum diluted 1/10, incubated for two hours at 37° C., left the tubes at room temperature for another 20 hours, and read the results. Most observers in Germany seem to agree that this reaction gives almost as reliable results as the Wassermann reaction as carried out in Germany. On the other hand, opinions so far expressed in this country seem less favourable.

We have for years tried to standardise the Wassermann reaction and to devise a unit system for expressing its results, but in vain. An analysis of the results obtained by the flocculation test of Sachs and Georgi indicated the possibility of evolving a simple quantitative test that could be standardised. With this in view it was obvious that the use of an unstable heart extract such as that of Sachs and Georgi would defeat our aims, but fortunately Bordet and Ruelens[4] have recently shown that it is possible to prepare (for the Wassermann reaction) a heart-extract antigen that is stable and at the same time very sensitive.

To us the ideals to be aimed at in a diagnostic reaction of this kind are: (1) that the technique should be simple and accurate; (2) that it should be possible to reproduce the same experimental conditions from time to time, and that there should only be one variant —i.e., the substance to be estimated; (3) that it should be possible to determine the amount of this substance and express it in standard units per c.cm., no matter whether absolute quantities or relative proportions are made use of in the test; (4) that the standard unit should be easy to maintain and check.

TECHNIQUE.

The technique which we have evolved with these requirements in view will now be described in detail.

A. *Reagents and Apparatus Required.*

Outline.—(1) Two standardised saline suspensions of different concentrations made from a mixture of alcoholic heart extract and cholesterin; (2) serum to be tested; (3) normal saline solution for making the suspension and diluting the serum; (4) agglutination tubes, dwarf test-tubes, and stands; (5) graduated pipettes, measuring cylinder, and dropping pipette; (6) an apparatus for delivering drops of saline at a constant rate; (7) two water-baths; (8) an artificial light arrangement for reading the tubes against a dark background; (9) a six-magnification hand lens.

Detail.—1. The following solutions are necessary for making the two heart-cholesterin saline suspensions:—

(*a*) The alcoholic heart extract is prepared according to the method of Bordet and Ruelens[4]: 100·0 *g.* calf's heart muscle, freed from fat, is cut up finely, mixed with 125·0 c.cm. ordinary alcohol (94–96 per cent.) and left at room temperature in a glass-stoppered bottle for five days, shaking occasionally. The alcohol is then filtered off. The residue is dried in the incubator at 37° C. for 24 hours, 200·0 c.cm. of pure acetone is added, and the mixture kept in a glass-stoppered bottle in an incubator at 20° C. for seven days.

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[1] Report to the Medical Research Council.

[2] Medical Research Council, Special Report Series No. 21, "The Diagnostic Value of the Wassermann Test."

[3] Thomsen Olaf: Die quantitative Ausführung der Wassermann-Reaktion, Zeitschrift f. Immun. und Exper. Therap., 1910, 7.

[4] J. Bordet et G. Ruelens: "L'Antigène Syphilitique de l'Institut Pasteur, Bruxelles," Comptes Rendus de la Société de Biologie, T. lxxxii., Feb. 2nd, 1919.

The acetone is then filtered off, and the residue is again treated in a similar manner with 100·0 c.cm. acetone at 20° C. for one day. The acetone is again filtered off, the residue is dried in the incubator at 20° C. for two hours, and 200·0 c.cm. ordinary alcohol (94–96 per cent.) added. This mixture is put in a glass-stoppered bottle in the incubator at 20° C. for 10 days, and then filtered through filter paper. The filtrate thus prepared, limpid and golden yellow in colour, is now ready for use. It contains the acetone-insoluble alcohol-soluble substances of the heart muscle. Kept in the dark at ordinary room temperature in a tightly stoppered glass bottle, it will remain limpid and keep unchanged for a very long period.

(*b*) The alcoholic solution of cholesterin is prepared by dissolving 1·0 g. of pure cholesterin (preferably Kahlbaum's) in 100·0 c.cm. absolute alcohol. It should be kept under the same conditions as the heart extract.

(*c*) The sterile normal saline solution is prepared by dissolving 9·0 g. of pure sodium chloride in a litre of freshly distilled water and immediately sterilising in the autoclave.

The two heart cholesterin saline suspensions are prepared from these solutions (*a*, *b*, *c*) in the following manner:—

Measure 5·0 c.cm. of the heart extract (*a*) and 0·25 c.cm. of the cholesterin solution (*b*) into a clean dry tube and mix. Measure out 1·0 c.cm. of this mixture into a clean dry 100·0 c.cm. measuring cylinder, taking care that the point of the pipette is placed on the bottom of the cylinder before letting the fluid run out. Sterile normal saline (*c*) is now allowed to drop at a constant rate from a constant height directly on to the fluid at the bottom of the measuring cylinder without touching the sides of the cylinder as it drops. The saline should drop at a rate which will deliver 34·0 c.cm. in 4 min. 30 sec. The saline should drop a distance of 36·0 cm. on to the fluid.

Two suspensions of different concentrations are prepared:—

α suspension—1·0 c.cm. of the heart cholesterin mixture, into which 10·7 c.cm. of saline are dropped.

β suspension—1·0 c.cm. of the heart cholesterin mixture, into which 34·0 c.cm. of saline are dropped.

The resulting suspensions are mixed by gently inverting the cylinder. They should *not* be shaken.

α suspension is naturally more opaque than β suspension. The easiest way to measure the saline is to allow the saline to drop into the cylinder for 1 min. 25 sec. in the case of α suspension and for 4 min. 30 sec. in the case of β suspension (at the rate indicated above).

A convenient and readily made dropping apparatus for delivering the saline at this rate is described below.

Unfortunately, all attempts to make permanent standard saline suspensions that will keep indefinitely have so far met with no success, and therefore the suspensions must be freshly prepared immediately before use. Such suspensions, if made exactly according to the above directions, with the same heart extract and cholesterin, are identical from day to day in opacity, size of suspended particles, and sensitiveness, and thus permit of standardisation.

2. To obtain serums that will give reliable results it is essential that the blood should be withdrawn with due aseptic precautions and the serum kept free from infection. To carry out a full test 4–5 c.cm. of blood should be drawn. For routine purposes we have found that the most satisfactory technique to secure sterility and an ample supply of serum is as follows:—

To place the blood directly into a 6 c.cm. centrifuge tube lined with sterile saline agar (as described by A. D. Gardner[5]) and closed with a sterile indiarubber stopper. The serum is transferred by a sterile Pasteur pipette into a dry, sterile, dwarf tube plugged with cotton-wool. If the clot does not contract satisfactorily—a rare occurrence—the tube should be centrifugalised. If the syringe or needle for withdrawing the blood is kept in alcohol, the alcohol should be removed with ether and the syringe or needle dried before use, as we have found that alcohol particularly, and also ether to a less extent, is highly detrimental to this reaction, and even more so to the Wassermann reaction. The presence of even a marked amount of dissolved hæmoglobin in the serum does not interfere with the reaction so long as the serum is fairly clear. A moderate degree of turbidity of the serum, if it is not caused by infection, does not interfere with the reaction. Before testing, the serum must be heated to 53°–54° C. for 90 minutes in a water-bath.

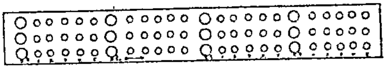
3. The sterile saline solution for dilution of serums is made up in the manner already described above.

4. The agglutination tubes[6] employed are identical with those used for the agglutination of standard cultures. The inside diameter of these tubes is 5·5–6·2 mm., the outside diameter is 6·6–7·3 mm., the length is 5·8 mm., the lower end is conical, and the upper end flanged to facilitate filling.

Dwarf test tubes measuring 7 cm. × 1 cm. should be used; all tubes should be cleaned in acid and thoroughly rinsed with distilled water to remove all traces of acid. The tubes are allowed to drain and are then dry sterilised without plugging.

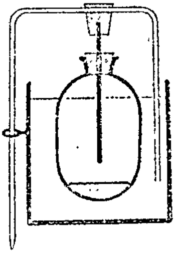
Agglutination stands. Where only a small number of serums are to be tested the agglutination stands used in the standard agglutination technique can be employed. If larger number of serums are tested it is more convenient to use a stand with three rows of holes, each row holding four holes for dwarf test tubes and 20 holes for agglutination tubes, as shown in Fig. 1.[7]

FIG. 1.



5. Two pipettes are required, a 5·0 c.cm. pipette graduated in tenths of a c.cm., and a 1·0 c.cm. pipette graduated in hundreths of a c.cm., together with a 100·0 c.cm. measuring cylinder graduated in c.cm., a dropping pipette as used in the standard agglutination technique (total length 19 cm., length of capillary portion 2·8 cm., outside diameter of the body of pipette 5·0–5·4 mm., outside diameter of capillary portion 2·36–2·41 mm., bore 0·5 mm.).

FIG. 2.



6. The simple apparatus for delivering drops of saline at a constant rate, which is here illustrated (Fig. 2), was devised for this purpose by Mr. H. F. Pierce, a co-worker in the laboratory.

The principle of the apparatus is a floating syphon. The syphon is carried on a glass bulb, counter-weighted with mercury, and floating in a cylindrical glass vessel containing the saline solution. The height of the syphon above the floating bulb is adjustable by means of a glass rod in order to be able to vary the head of fluid, and therefore the rate of dropping. The chief dimensions of the apparatus are as follows:—

Cylindrical glass vessel: height 12 cm., diameter 9 cm.

Glass float: height 10 cm., diameter 6·5 cm.

Glass syphon tube: outside diameter 6 mm., drawn out at the delivery end into a short capillary; outside diameter 2 mm.

The saline solution is poured into the cylindrical vessel, the syphon placed in position, and the flow started by suction. The height of the syphon tube determines the head of fluid and therefore the rate of delivery. Once fixed it will deliver the saline solution at a constant rate, provided the float is never allowed to touch the bottom of the cylindrical vessel. The delivery end of the syphon is held in position by a loop of wire, through which it glides as the level of the fluid falls. The apparatus, being all glass, is easy to clean.

7. Two properly regulated water-baths, one to be kept at 37° C., the other between 53° and 54° C.

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[5] Gardner, A. D.: A Device for Insuring Spontaneous Separation of Blood-clot from the Walls of the Containing Vessel, THE LANCET, 1917, ii., 51.

[6] Agglutination tubes and dropping pipettes can be obtained from Messrs. Baird and Tatlock, Hatton Garden, London, E.C., or from Messrs. R. B. Turner and Co., Eagle-street, Southampton-row, London, W.C.

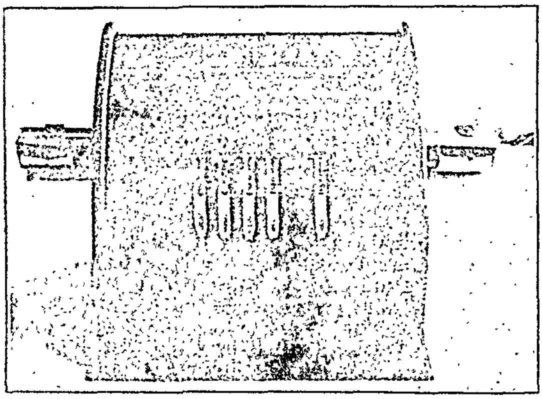
[7] These stands can be obtained from The Oxford Scientific Instrument Co., Wheatsheaf-yard, High-street, Oxford.

8. An artificial light arrangement for reading the tubes is essential.

The artificial light should be used in a darkened room. The simplest arrangement is an adjustable table-lamp fitted with an ordinary plain conical shade, covered on the outside with dull black paper. The end of the electric bulb should not project appreciably beyond the edge of the shade. For use the lamp should be tilted to such a degree that the observer does not look into the light. The tubes to be read are held against the edge of the shade, the lower end tilted towards the observer, and the meniscus of the fluid in the tube should be slightly above the edge of the shade. It is desirable to place a dull-black cardboard on the table and another resting against the further edge of the lamp-shade. A frosted bulb of 30 c.p. is used.

Where the observer has had no previous experience, and it is desirable to compare the different degrees of flocculation in the tubes to be read, an apparatus[8] for illuminating a number of tubes held in a fixed position is convenient. (Fig. 3.) It consists of a small box with a sloping front, lined inside with black velvet, and containing a long frosted electric window-light. The latter illuminates a slit in the front of the box and the tubes are placed in front of the slit. The tubes are placed in such a manner that the meniscus of the fluid is slightly above the upper edge of the slit. Again, the observer should be so placed that he cannot look into the light, which is placed just behind the upper edge of the slit.

FIG. 3.



9. A 6-magnification hand lens, which should be of reputable make and give a good depth of focus.

B. *Method of Setting Up the Test.*

Place nine of the agglutination tubes in the stand together with one dilution tube—i.e., a dwarf test tube.

TABLE I.

No. of tube.	Drops of saline solution.	Drops of serum 1-x.	Drops of suspension.	Total dilution in which serum acts.
1	0	20 1/1	6 (α suspension)	1/1·25
2	0	10 ..	15 (β suspension)	1/2·5
3	5	5 ..	15 ..	1/5·2
4	8	2 ..	15 ..	1/13·1
5	9	1 ..	15 ..	1/25·4
6	0	10 1/20	15 ..	1/46
7	5	5 ..	15 ..	1/92
8	8	2 ..	15 ..	1/232
9	9	1 ..	15 ..	1/462

It is convenient also to place the dwarf test tube containing the serum in the hole arranged for it in the stand. With the proper dropping pipette *held vertically* measure out into the nine agglutination tubes the following number of drops of saline solution, serum, and standard suspensions. (Table I.) The total dilutions given in the table are calculated by taking into account the relative volumes of the drops in the case of serum, saline, and suspension. To make up the 1/20 dilution of serum add 19 drops of saline solution to the dilution tube (when adding the saline solution to the agglutination tubes) and one drop of pure serum to the dilution tube (when adding the pure serum to the agglutination tubes). Thus a 1/20 serum dilution is obtained.

A control tube containing 20 drops of saline solution and 6 drops of α suspension, and another containing 10 drops of saline solution and 15 drops of β suspension, should always be made up and placed in the stand. It is important to note that one and the same pipette must be used throughout the whole operation.

At each stage of the procedure the pipette should be carefully washed out with distilled water and either dried out with successive quantities of acetone or dried out with successive quantities of absolute alcohol followed by successive quantities of ether. The use of an ordinary suction pump will greatly accelerate the washing and drying of the pipette. When the reagents have been added to the tubes, shake each tube thoroughly in order from right to left—i.e., beginning with the tube containing the highest serum dilution, place the stand in a water-bath at 37° C. (not in dry air) and leave it for seven hours. It is very important to arrange the level of the water in the bath so that not more than the lower half to two-thirds of the column of fluid in the tubes are immersed. Flocculation is greatly accelerated by this arrangement, and sharper readings are obtained. In the case of unknown serums, or of syphilitic serums previously found to give a weak reaction, and in the case of cerebro-spinal fluids it is sufficient to put up the first five tubes. If the limit of flocculation is not reached within the five tubes, the 1/20 dilution must be carried out. With very rare exceptions the flocculation will stop within this range of tubes. If not, a further dilution of 1/400 should be made.

Should a more precise determination of the limits of flocculation be required it can be obtained by using a stand of 12 tubes with a series of quantities given in the table contained in the Directions for Preparation and Standardisation of Agglutinable Cultures.[9] The tubes are examined after the seven hours' incubation in the water-bath at 37° C., followed by 5–10 minutes' standing at room temperature. The inconvenience caused by a seven-hour incubation can be overcome by adding the serum and saline solution to the tubes, leaving them overnight in the ice-box, adding the freshly made-up standard suspension in the morning, and incubating for seven hours.

C. *Reading of Results.*

The tubes are read in the manner already indicated under heading A. 8. The principal terms employed in describing the different degrees of flocculation met with are: total (t), standard (S), trace (tr), and nil (0).

Total flocculation (t) indicates a condition where the fluid in the tube has become nearly clear, with the bulk of the large flocculi settled down at the foot of the tube. This degree of flocculation is rarely seen.

Standard flocculation (S) is the degree of flocculation that can readily be seen with the naked eye. The fine flocculi are evenly distributed, of uniform size, and definitely separated from one another. The fluid accordingly shows some degree of clarification.

Trace (tr) is the term applied to a very fine flocculation, not visible with certainty to the naked eye by most persons, while readily visible with the 6-magnification lens.

Nil (0) indicates that no flocculation is recognisable by means of the 6-magnification lens, and should therefore be identical with the control tube.

Naturally, there are degrees of flocculation which fall in between total, standard, trace, and nil. For these the following terms are used: *Total minus* (t–), where there is marked clarification of the fluid; the flocculi are large, well separated, and some have settled down at the foot of the tubes. This degree of flocculation is as common as total flocculation is rare. On each side of standard flocculation we find *standard plus* (s+) and *standard minus* (s–). In the former the flocculi are larger than those seen in standard flocculation; they are uniformly distributed, and clarification is more marked: in the latter is seen a finer flocculation than standard and a correspondingly less marked clarification. Similarly, we recognise a *trace plus* (tr +) and a *trace minus* (tr –), the former representing something more than trace but less than standard minus (s −), being on the limit of naked-eye visibility for most persons, while, of course, easily detected with the 6-magnification lens. The latter, trace minus (tr −), is a very fine degree of flocculation that can only be detected by means of the 6-magnification lens. Finally, on occasions it may be difficult, even by means of the 6-magnification lens, to decide with certainty whether flocculation is definitely absent, the term *query trace* (tr ?) is then applied. Any tube showing less than trace should for safety be compared with the control tube showing no flocculation.

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[8] The apparatus can be obtained from the Oxford Scientific Instrument Co., Wheatsheaf Yard, High-street, Oxford.

[9] Issued on behalf of the Medical Research Council by the Standards Laboratory, Department of Pathology, University of Oxford.

To secure uniformity in readings by various observers tubes exhibiting two degrees of flocculation—viz., standard and trace—and a control tube without flocculation have been prepared and made permanent by means of formalised gelatin. A permanent tube exhibiting total or total minus flocculation is not necessary, as this reading is obvious from the description.

D. *Expression of Results in Standard Units.*

All readings should be expressed in terms of standard flocculation units. The number of standard flocculation units in a serum is arrived at in the following manner:—

The amount of serum which, when made up to 1·0 c.cm. volume with normal saline solution, causes standard flocculation on being mixed with 1·5 c.cm. of a particular β suspension and maintained at 37° C. at seven hours, is assumed to contain four (4) units.[10] On this basis the strength of a serum—whether measured by absolute quantities or relative quantities as indicated here—can be expressed in terms of standard units per c.cm. All that is *required is to multiply the dilution in which standard* flocculation occurs by a factor representing the sensitiveness of the particular suspension used. This factor will hereafter be called the "suspension factor."

Example.—If a serum acting in a total dilution of 1/46 (tube 6) causes standard flocculation, then 46 (total dilution) × 1·6 (suspension factor) = 73·6 units. Therefore this particular serum contains 73·6 units per c.cm. For these standard units we propose to adopt the term Σ *units* (Sigma units), and shall refer to them in future as such.

As heart extracts prepared at different times and places may vary, it is essential to compare the relative sensitiveness of their suspensions with the original one, as otherwise a uniform standard for different workers could not be maintained. It is obvious that the more sensitive a particular suspension is the smaller will its suspension factor become, and vice versa. When such a comparison is carried out a long series of tubes, with a very gradual increase of dilution, should be used, as in the case of the standardisation of agglutinable cultures. Owing to the great increase in dilution of the syphilitic serum in successive tubes, it will commonly happen that no tube in the series exhibits standard flocculation. Nevertheless, results of sufficient accuracy for ordinary purposes can be calculated by means of an interpolation table (Table II.) constructed for this purpose.

TABLE II.

t− = 2·00
s+ = 1·35
S = 1·00
s− = 0·86
tr+ = 0·68
tr = 0·58
tr− = 0·50
tr? = 0·37
0 = 0·25

The readings from s + to tr are in general the readings giving the most accurate results. The table is used as follows:—

Supposing no tube in the series shows S flocculation, and tube 6 shows s + flocculation and tube 7 tr + flocculation, then the number of units in tube 6 = 46 (total dilution) × 1·35 (interpolation figure) × 1·6 (suspension factor) = 99·4 Σ units, and the number of units in tube 7 = 92 (total dilution) × 0·68 (interpolation figure) × 1·6 (suspension factor) = 100 Σ units. The average is 99·75 Σ units, or 1·0 c.cm. of the serum contains *practically 100 Σ units.*

On the other hand, one may find quite considerable discrepancies between two readings, as in the following case, where tube 3 gives s − and tube 4 tr − flocculation. The number of units in tube 3 = 5·2 (total dilution) × 0·86 (interpolation figure) × 1·6 (suspension factor) = 7·2 Σ units, while the number of units in tube 4 = 13·1 (total dilution) × 0·5 (interpolation figure) × 1·6 (suspension factor) = 10·4 Σ units. The average is 8·8 Σ units, or 1·0 c.cm. of the serum contains approximately 9 Σ units.

The subsequent table, Table III. (total dilution × interpolation figure), is computed with the aim of minimising the labour in calculating the unit-content per c.cm. It must be clearly understood that the figure given in this table must always be multiplied by the suspension factor for the given heart extract to arrive at the number of standard units.

TABLE III.

Degree of flocculation	Number of tube.								
	1	2	3	4	5	6	7	8	9
t−	2·5	5·0	10·4	26·2	52·8	92·0	184·0	464·0	924·0
s+	1·7	3·4	7·0	17·7	35·7	62·0	124·0	313·0	623·0
S	1·25	2·5	5·2	13·1	26·4	46·0	92·0	232·0	462·0
s−	1·1	2·1	4·5	11·3	21·8	40·0	79·0	200·0	398·0
tr+	0·9	1·7	3·5	8·9	18·0	31·0	63·0	158·0	314·0
tr	0·75	1·4	3·0	7·6	15·3	27·0	53·0	135·0	268·0
tr−	0·6	1·2	2·6	6·5	13·2	23·0	46·0	116·0	231·0
tr?	0·4	0·9	1·9	4·8	9·8	17·0	34·0	86·0	171·0
	—	0·6	1·3	3·3	6·6	12·0	23·0	58·0	115·0

In the calculation of the unit-content of a given serum it must be borne in mind that *inhibition zones* are a very frequent occurrence in this reaction. By inhibition zones we mean the phenomenon, exhibited by certain serums, of showing in high concentrations a *distinctly weaker flocculation* than when more dilute. This phenomenon is in no way peculiar to this reaction, but is frequently encountered in other serum reactions—viz., agglutination, bacteriolysis, hæmolysis. The inhibition zone frequently extends from tube 1 (total *dilution 1/1·25) as far* as tube 5 (total dilution 1/26·4), but not often further than that. It is on the whole most marked in cases of secondary syphilis, though occasionally present in other serums showing a high titre. In weak serums, fortunately, it is in general much less pronounced, *thus not interfering* with the diagnostic value of the reaction. The treatment of the serum before testing has a very marked influence on this phenomenon. An unheated serum or a serum heated to 53°–54° C. for a short time (5–10 minutes) will usually show a much more *pronounced zone* of inhibition than the same serum heated to 53°–54° C. for 60–90 minutes. In fact, if the serum is unheated or heated for only a short time the reaction may be almost entirely masked by the inhibition, while the same serum properly heated will give a sharp and clear reaction. For the above reasons it is essential to examine at least the first five tubes before pronouncing a serum negative.

In using Table III. for calculating the unit strength of a serum the inhibition zone should be entirely ignored and the unit calculated *only from* those tubes showing a definite fall in degree of flocculation with progressive dilution of the serum, as otherwise the strength of the serum would be underestimated. To illustrate this a serum recently tested gave the following readings: tube 1 (1/1·25), tr?; tube 2 (1/2·5), tr?; tube 3 (1/5·2), tr?; tube 4 (1/13·1), tr +; tube 5 (1/26·4), S; tube 6 (1/46), tr −; tube 7 (1/92), 0. This serum contains 40 Σ units per c.cm.

E. *Certain Precautions to be Observed.*

1. If a serum obviously infected gives a negative reaction the reaction may be accepted as valid, as in our experience we have never found a positive serum which has become infected give a negative reaction. On the other hand, all positive reactions in infected serums must be discarded and new specimens examined. For we have found that a positive serum may show twice the number of units as the result of infection, and occasionally a negative serum may give a positive reaction.

2. No preservatives, such as phenol, formalin, &c., should be added to any of the reagents, as experiments have shown that they either interfere with the re

or cause false positive reactions.

3. All tubes must be scrupulously cleaned

tilled water after soaking in acid in order to fr from all traces of the latter, as acid produces a flocculation in the serum-suspension mixture.

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[10] It is to avoid the expression of positive results in fractions of a single unit that four units are taken instead of one unit as the basis of this unit system.

4. The temptation to increase the delicacy of the reaction by incubating for 18–24 hours must be resisted. This prolonged incubation encourages bacterial growth, which in many cases causes false flocculation. This prolonged incubation, as a matter of fact, does not make the reaction more delicate than incubation for seven hours in a water-bath, where the water-level is properly adjusted (see under heading B).

F. *Interpretation of Results.*

1. *Cases with no definite history of syphilis.*—Serums containing less than one unit are considered to give a negative reaction. Serums containing four or more units are considered to give a positive reaction. Serums containing from one to four units should not be definitely accepted as positive until the test is repeated and confirmed, owing to the fact that infection of the serum may have been overlooked at the time of setting up the test. False positive results are very rare, but the responsibility of declaring a non-syphilitic case to be positive is so great that we have adopted this precaution to minimise the danger of making such a mistake, without at the same time lowering the diagnostic value of a weak reaction. Further experience may lead to the raising or lowering of these limits.

2. *Cases with a definite history of syphilis.*—Serums containing less than one unit are considered to give a negative reaction. Serums containing more than one unit are considered to give a positive reaction.

3. *Cerebro-spinal fluids.*—These fluids, if containing less than one unit, are considered to give a negative reaction. Cerebro-spinal fluids containing more than one unit are considered to give a positive reaction. Infection in cerebro-spinal fluids is so rare, and so easily seen when present, that the danger of making a mistake does not exist.

In general we have found that untreated cases in the secondary stage, untreated tertiary cases with gummata, and untreated cases of congenital syphilis show a high unit-content in the serum—i.e., from 50 up to even a 1000 or more Σ units. While, on the other hand, untreated early primary cases, or treated late primary, secondary, and tertiary cases show a low unit-content in the serum, or are negative. Cerebro-spinal fluids show a comparatively low unit-content as compared with serums.

RESULTS.

By the method described above in detail we have examined 1077 serums and cerebro-spinal fluids from definite cases of syphilis, from cases of suspected syphilis, and from patients suffering from various other diseases, including a large number of cases of tuberculosis with tubercle bacilli present in the sputum, as well as a number of known healthy normal persons. The results are tabulated in Table IV. All the serums and cerebro-spinal fluids referred to have been tested by the Wassermann reaction either by ourselves or in the pathological departments of Sheffield University, Guy's Hospital, King's College Hospital, Brompton Hospital, and the Radcliffe Infirmary, Oxford, by means of one or other of the accepted methods described in the special report on the Wassermann reaction issued by the Medical Research Council.

As one of our aims has been to compare the results obtained by the reaction here described with those of the Wassermann reaction, the table has been arranged with this object. In order to secure as clean-cut a comparison as possible we have eliminated doubtful reactions in the Wassermann reaction by calling ++++, +++, ++ positive, and +, ±, and − negative. In our own reaction, which we propose to call the Σ reaction (Sigma reaction), we have drawn the line between positive and negative reactions as described under heading F. To secure unbiased results it is important, as in all tests of this kind, that the observer should be ignorant of the origin of the serum. Therefore all readings have been made by one of us, observing these conditions.

From Table IV. it is seen that out of the 1077 cases 63·6 per cent. gave a negative reaction by both methods; out of 386 cases with definite evidence of syphilis the Wassermann reaction gave a positive result in 327 cases, while the Σ reaction gave a positive result in 381 cases. Thus the Σ reaction gave positive results in 18 per cent. more cases than the Wassermann reaction in this series of tests. It only failed in 5 cases to reveal the presence of syphilis, while the Wassermann reaction failed in 59 cases. In 5 cases with no history or definite evidence of syphilis the Wassermann gave a ++ reaction in 4 cases, and the Σ reaction gave a reading of 2·4 Σ units in one case (negative Σ reaction on repetition). Among the cases examined were 58 cases of tuberculosis with tubercle bacilli present in the sputum. Of these 52 gave a negative Σ reaction and also a negative Wassermann reaction, while 6 gave a positive Σ reaction, and also a ++++ Wassermann reaction. Two cases of scarlet fever were negative by both methods. Eighty-two cerebro-spinal fluids were examined.

TABLE IV.

No. of cases.	History of Cases.	Wa. R.	Σ R.
686	These include normal cases, cases suffering from other diseases, treated cases of syphilis which no longer give a positive reaction, and one case of very early primary syphilis.	−	−
322	These include cases where there was a definite history or clinical evidence of syphilis, and a few where the diagnosis was based on a ++++ Wassermann reaction.	+	+
59	Cases where there was a definite history or clinical evidence of syphilis.	−	+
5		+	−
4	Cases where there was no definite history or clinical evidence of syphilis.	+	−
1		−	+

It has been our experience that in the case of cerebro-spinal fluids the Wassermann reaction is as delicate as the Σ reaction. This, no doubt, because more cerebro-spinal fluid than serum is employed in the Wassermann reaction. In the case of serum, however, the Wassermann reaction has proved less sensitive. This is readily explained by the fact that relatively larger quantities of serum can be used in the Σ reaction without danger of obtaining false positive reactions. Accordingly, a treated case of syphilis will sometimes continue to give a positive Σ reaction after the Wassermann reaction has become negative. But, of course, a negative Σ reaction does not necessarily indicate cure.

Up to the present moment we have not had many opportunities of following the Σ unit-content in the serum of cases under treatment, but the following table (Table V.) will illustrate some of these. These cases all show a gradual decrease in their Σ unit-content during treatment, corresponding with improvement clinically. It would, however, be premature to generalise from only a few cases as to a definite correlation between clinical improvement and fall in Σ units. Only observations on a great number of cases can settle this point.

TABLE V.

Case 1.		Case 2.		Case 3.*		Case 4.	
Date.	Sigma unit.	Date.	Sigma unit.	Date.	Sigma unit.	Date.	Sigma unit.
8/12/20	5·4	1/2/21	117·0	23/12/20	9·4	4/12/20	269·0
16/12/20	4·3	12/2/21	48·0	28/12/20	3·8	7/12/20	242·0
23/12/20	3·2	19/2/21	40·0	19/1/21	4·0	21/1/21	61·0
31/12/20	2·2	4/3/21	24·0	23/1/21	3·0	21/2/21	19·2
8/1/21	2·9						
23/1/21	1·4						

With the exception of Case 1, these gave ++++ Wassermann reactions throughout.

* Cerebro-spinal fluid.

Where in the same case the result of the Wassermann reaction has fluctuated between positive and negative, such fluctuations have so far not been observed in the case of the Σ reaction.

Remarks on the Flocculation Reaction of Sachs and Georgi and Subsequent Workers.

In our opinion the reasons why the Sachs-Georgi reaction, with its subsequent modifications, has not come into general favour in this and other countries are:—

1. The fixed quantity of serum—viz., 0·1 c.cm. acting in a total dilution of 1/15—does not give the maximum number of positive reactions, because the quantity of serum used is insufficient. If the quantity of serum is increased to overcome this disadvantage a certain number of strong serums will give a negative reaction, owing to the inhibition zone phenomenon. Obviously the logical method of improving the technique should have been to set up a series of tubes with falling quantities of serum and constant quantities of suspension, though this procedure seems not to have been adopted.

2. In order to enhance the delicacy of the reaction Sachs and other workers increased the time of incubation from 2 hours at 37° C. to 18-24 hours at 37° C. This modification certainly increased the delicacy of the reaction, but unfortunately gave a certain number of false positive reactions. These were, in our opinion, almost certainly due to bacterial growth encouraged by prolonged incubation, and leading to false flocculation.

3. The technique does not lend itself to standardisation because (a) the heart extract is unstable, and (b) the method of making the suspension from the heart extract is not automatic, and so the suspension will vary, as regards opacity and size of suspended particles, with different workers.

Some Theoretical Aspects of the Σ Reaction.

Having found that the Wassermann reaction and the Σ reaction gave, in most cases, closely identical diagnostic results, it became of interest to try to ascertain whether the active substance in both was the same or different. It is well known that a syphilitic serum before heating usually gives a much stronger Wassermann reaction than the same serum after heating to 56° C., and that the longer the serum is heated the less active it becomes. It was therefore important to ascertain whether heating produced the same weakening of syphilitic serum when tested by the Σ reaction. A strong syphilitic serum unheated, and heated at 54° C. for 5 min., 10 min., 20 min., 30 min., 60 min., 120 min., 240 min., was tested quantitatively by both reactions. In the Wassermann reaction the active substance apparently lost half its strength when heated for 30 min., and three-quarters of its strength when heated for 240 min., whereas heating produced no change in the strength of the active substance as measured by the Σ reaction save in the higher concentrations, where the inhibition zone was definitely diminished by the more prolonged heating.

The following seems to us a simple interpretation of the connexion between these divergent results:—

1. That in the case of the Wassermann reaction two substances act simultaneously, the one a thermostable substance ("x" substance) present only in syphilitic serums and the other a thermolabile substance ("y" substance) present in normal serums to a greater or lesser degree.

2. That also in the case of the Σ reaction these two substances take part in the reaction, the "x" substance causing the flocculation and the "y" substance causing the inhibition zone in the higher concentrations, but not influencing the end-titre of the serum.

3. That as the Wassermann reaction is in reality a negative reaction (i.e., prevention or reduction of hæmolysis) it is natural that an inhibitory substance in the serum should enhance the reaction by aiding in the inhibition of hæmolysis. It is then easy to see why, when a syphilitic serum is heated and the thermolabile inhibitory "y" substance is weakened, the Wassermann reaction is reduced in strength, while the Σ reaction, being a positive reaction and depending on the thermostable "x" substance alone, is not reduced in strength by heating. This explanation is also in agreement with the observation that the serums from persons suffering from certain diseases other than syphilis may give a positive Wassermann reaction when unheated ("y" substance present), but a negative reaction after heating ("y" substance reduced or destroyed).

A further support to this view was obtained by the examination of four serums supplied by Dr. W. d'Este Emery. We tested these serums, and found them all to contain 6·4 Σ units. Subsequently we learned from Dr. Emery that he had divided one serum into four parts, and heated the first part at 55° C. for 10 min., the second for 20 min., the third for 30 min., and the fourth for 40 min. He had then tested them quantitatively by the Wassermann reaction, and found their respective strengths to be 14·6, 8·1, 8, and 4·2 of his units.[11]

In testing a large number of syphilitic serums we have found a certain number of cases where the Wassermann reaction was strongly positive, while the Σ reaction gave comparatively few units, and on the other hand, cases where the Wassermann reaction was only weakly positive or negative, and the Σ reaction gave a comparatively large number of units. This discrepancy in results is, in our opinion, due to the varying amount of "y" substance in different syphilitic serums. A still further support of this contention is that most of the serums that give a positive Σ reaction and a negative Wassermann reaction show no inhibition zone in the Σ reaction.

Conclusions.

1. The reaction for the diagnosis of syphilis described here has yielded in our hands diagnostic results that compare more than favourably with the Wassermann reaction as carried out in this country.

2. The results obtained are quantitative as well as qualitative.

3. The reaction can be standardised, and the results can therefore be expressed in standard units, thus allowing direct comparison of the results obtained by various workers.

4. It is, therefore, possible to follow accurately the changes in the unit-content of the serum in a case of syphilis under treatment, and in this way to ascertain whether clinical improvement is regularly accompanied by a fall and an exacerbation by a rise in the unit-content of the serum.

5. This important point once settled, it will be possible to compare accurately the relative merits of different methods of treatment.

Our best thanks are due to Professor J. S. C. Douglas, Sheffield University; to Dr. E. F. Skinner, Royal Hospital, Sheffield; to Mr. D. Green, Royal Infirmary, Sheffield; to Mr. W. W. King, Jessop Hospital for Women, Sheffield; to Dr. C. P. Symonds and Dr. R. Hearn, Guy's Hospital; to Dr. W. d'Este Emery, King's College Hospital; to Dr. A. C. Inman, Brompton Hospital; to Dr. T. E. Osmond and Dr. H. K. Hamilton, St. Thomas's Hospital; and to Dr. A. G. Gibson, Radcliffe Infirmary, Oxford, all of whom have helped us with material, clinical and pathological reports. Our special thanks are due to Miss Jörgenson, Dr. F. G. Hobson, and to Dr. P. H. Jones, all of the Department of Pathology, University of Oxford, for the great assistance they have rendered us in this work.

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[11] Incidentally we may mention that these serums had been kept for two years in glass phials at room temperature. Dr. Emery carried out the quantitative Wassermann reaction, referred to above, two years ago.

BRITISH SPA FEDERATION.—A notice has been issued on behalf of the Federation—comprising the Spas of Bath, Buxton, Cheltenham, Droitwich, Harrogate, Llandrindod Wells, Leamington, Woodhall, and New Zealand—which emphatically contradicts all statements giving the impression that these spas are closing on account of lack of fuel. There is no truth in such statements; the fuel-supply arrangements at all the spas named are such as to enable them to carry on for some time to come. The opposite impression is widespread, as proved by the numerous letters and telegrams now arriving at the spas, but there is no fear of any such disastrous position.

A REPORT ON THE FIRST YEAR'S WORK OF A CLINIC FOR SYPHILITIC CHILDREN.*

BY REGINALD C. JEWESBURY, M.A., M.D. OXON., F.R.C.P. LOND.,

PHYSICIAN IN CHARGE OF THE CHILDREN'S DEPARTMENT AT ST. THOMAS'S HOSPITAL, LONDON.

RATHER more than a year ago it was decided to form a special clinic in the Children's Department of St. Thomas's Hospital for children suffering from syphilitic infection. One morning a week has been set aside for this clinic, which draws its cases from the rest of the children's department and other special departments, including that for venereal disease, under the direction of Colonel L. W. Harrison, D.S.O.

I wish to confine my remarks to the findings of this clinic. During the first 12 months a total of 145 children were seen whose mothers were known to be syphilitic. Of these, 9 mothers became infected after the births of their children, hence the disease in these children was acquired. Of the remaining 136 mothers, infected *before* the birth of the child, 47 had treatment before or during pregnancy. In 89 cases the mothers had received no treatment previous to the birth of the child.

Incidence.

First with regard to the incidence of the disease in families as it affects the children born of syphilitic parents; in about 50 per cent. of the cases the disease was most marked in the earlier pregnancies, and appeared to become gradually attenuated, apparently healthy children coming at the end of the family (Regular type). But in just as many cases children apparently free from infection cropped up irregularly in the midst of definitely syphilitic children and miscarriages (Irregular type).

Examples of Regular Type of Family.

A. (i.)

1, 2, 3. Healthy children.
Infection—
4, 5. Premature child, lived one day.
6. „ „ stillborn.
7, 8. Stillborn. 9. Miscarriage.
10, 11. Apparently healthy children. W.R. negative.

A. (ii.)

1. Died at 18 months. "Fits."
2. Miscarriage at 4½ months.
3, 4. „ „ 6 weeks.
5. } Twins. { D, syphilitic child; Wassermann positive.
6. } Twins. { M, apparently healthy; „ negative.

In this case the syphilitic twin showed obvious clinical signs of disease, whilst the other one was free from all such signs, and the Wassermann reaction was repeatedly negative up to 6 years of age.

Examples of the Irregular Type of Family.

B. (i.)

1. Seven-months' child; died at 3 days.
2. Eight „ „ „ 7 „
3, 4. Stillborn.
5. Now living, aged 19 years; healthy.
6. „ „ „ 17 „ „
7. Stillborn. 8. Died at 7 days.
9. Stillborn; macerated fœtus. 10, 11. Miscarriage.
12. Now living, aged 9 years; W.R. +; interstitial keratitis.
13, 14. Miscarriage. 15. Twins, stillborn. 16. Miscarriage.

B. (ii.)

1. Died at 9 months.
Then six miscarriages.
8. Died at 3½ years ("heart disease").
9. Now living; W.R. +++.
10. Died at 2 years.
11. „ „ 11 weeks ("bronchitis").
12. „ „ 2½ years ("wasting").
13. Now living, aged 4 years; apparently healthy; W.R. negative.
14. Died at 14 months (blind).
15. Now living, aged 1 year; W.R. +++.
Mother, W.R. ++++.
Treatment begun since birth of last child.

Signs in the Child.

(1) A few children of syphilitic mothers who had received no treatment were quite free from any signs, and have given negative Wassermann reactions even up to the age of 10 to 14 years.

(2) Many children showed the usual signs seen in typical congenital syphilis, in whom rash and snuffles appeared two to eight weeks after birth.

(3) In a certain number of children seen, in whom there was no history of previous symptoms, symptoms developed late, after the fifth or sixth year—i.e., "lues tarda." This group amounted to 10 per cent. of all cases examined.

In these children lesions of the following structures were present: bones—periostitis; joints—synovitis; eyes—interstitial keratitis; brain—particularly affecting mental condition; ears—deafness; and teeth.

Cases Illustrative of Late Changes.

CASE 1.—E. F., boy, aged 12 years. Family history: two stillborn children previous to birth of this child. The latter healthy at birth; full time; no rash or snuffles; apparently normal child up to 5 years. First changes were mental, lack of concentration, loss of memory, &c. Boy much undersized; no definite physical stigmata. Skin, teeth, and bones—no signs. Eyes: pupils sluggish to light, equal. No keratitis; fundi *normal*. Viscera: spleen and liver not enlarged; reflexes normal; no ataxy. W.R. of blood and cerebro-spinal fluid ++.

CASE 2.—J. R., boy, aged 11½ years. Family history as follows: (1) Died soon after birth; (2) stillborn; (3) died at birth; (4) stillborn; (5) the patient, W.R. ++++; (6) living, W.R. +++; (7) living, W.R. +++; (8) living, W.R. –. No definite notes of mother's treatment; said to have had some treatment five years before birth of this child. Child full time, no signs during infancy. "Meningitis" at 2 years, very ill for two months, good recovery, well up to 9 years, then complained of frequent headaches, became dull and stupid. At 10 years became clumsy and began to lose use of limbs. Sight good. Not deaf. A big, well-developed boy, coarse features, high palate, very dull. Slight glandular enlargement. No other signs. Fundi *normal*. *Reflexes normal*. W.R. *reduced* after seven injections N.A.B. and mercury by mouth.

Wassermann Reaction as a Means of Diagnosis.

This has been found to be a very valuable and reliable test. In the case of syphilitic infants, the reaction is often negative during the first few months of life and later becomes positive. In cases where the test is negative at first it has been repeated every six months until the child is 2 years old. The reactions have been carried out in the Pathological Department under the direction of Professor L. S. Dudgeon.

Effect on Child in Untreated Syphilitic Mother.

Seventy-seven families investigated; total number of pregnancies, 322. Of these 97 (30·2 per cent.) resulted in miscarriage or stillbirth, 73 (22·8 per cent.) resulted in death in infancy or early childhood, and 152 (47·0 per cent.) were still alive at time of investigation. Mortality of children born alive = 32·4 per cent.

Effect on Child when the Mother was Treated Before or During Pregnancy.

Number of cases investigated, 43. Treatment varied from three courses of N.A.B. and mercury down to a few doses of mercury as late as the ninth month of pregnancy. Number of cases treated effectively before or during the early stages of pregnancy, 39. Total number of pregnancies, 53. Of these, 1 resulted in miscarriage, 6 in death in infancy, 46 in living children. There were therefore 87 per cent. of living children at time of examination. Actual mortality of this series of children was 11·5 against 32·4 of the former series. It was found that where the treatment of the mother was not begun until the seventh month or later of pregnancy that the child usually showed well-marked evidence of syphilis, but in the majority of mothers who had received treatment not later than the fifth month of pregnancy the children were born apparently healthy and gave negative Wassermann reactions.

CASE 1.—Mother treated two N.A.B. injections at eighth month and Hg by mouth. Child showed syphilitic lesions at 3 months.

CASE 2.—Mother treated six N.A.B. injections at seventh and eighth months and Hg by mouth. Child syphilitic and W.R. + – at 4 months.

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* A summary of this work formed a contribution to the recent discussion on congenital syphilis held by the Children's Section of the Royal Society of Medicine.

CASE 3.—Mother treated sixth, seventh, and eighth month with seven N.A.B. injections and Hg injections. Child healthy and W.R. negative up to 10 months.

CASE 4.—Mother, who had had four miscarriages and four children dying early in infancy with strongly positive W.R., was treated fourth to eighth month with five N.A.B. injections and Hg by mouth. Child born healthy; under observation for one year and nine months, remaining healthy, and W.R. negative.

Effect of Treatment on the Child.

Method.—In most cases novarsenobillon was given intramuscularly into the buttock. Dose 0·015 g. per kilo of body weight, with gradually increasing doses, at intervals of one week, for six injections. In some cases a second course has been given at an interval of about three months. Simultaneously, mercury in the form of hydrarg. cum cret. in ½–1 gr. doses by the mouth t.d.s., this being kept up regularly. In a few severe cases mercurial inunction has been ordered. In the majority of cases the N.A.B. injections have caused no kind of ill-result. A few cases were followed by pain for some time after, and induration at the site of injection. No case has been followed by suppuration. In a few cases a slight general reaction was set up, with headache, drowsiness, and vomiting, usually not lasting longer than 12 hours. In the older children the N.A.B. has been given intravenously.

Taking blood from child for Wassermann reactions.—(1) From vein of scalp or arm or internal jugular vein depending on age; (2) from heel into capillary tube; (3) from longitudinal sinus through anterior fontanelle. (This method only in a few cases.)

Effect of Treatment on Wassermann Reaction in the Child.

In 30 cases receiving full course of N.A.B. and Hg and kept under observation the W.R. has been changed from "positive" to "negative." In some a strongly positive reaction has been reduced. In some the reaction has not been affected after a course of six injections of N.A.B. and Hg. The cases benefiting least by treatment with regard to the Wassermann reaction and physical signs are those of the late manifestations affecting children from 5 to 10 years, and especially those cases in whom the central nervous system is involved.

Effect of Treatment on Clinical Signs of Disease in the Child.

Early signs quickly cleared up, especially rashes and condylomata. Rhinitis less easily cured. Usually rapid improvement in general condition, with steady gain in weight. Liver and spleen reduced in size.

Late cases.—No case of disease of the central nervous system affected. Interstitial keratitis; some definite improvement of vision in several cases. Periostitis definitely improved.

The number of cases is rather small so far, but I hope this analysis of them will be considered worthy of recording. I am indebted to several kind assistants in this work, but particularly to Dr. J. C. Spence, who has kept very careful notes of every case seen and has also helped with the clinical work.

SIMILARITY OF EFFECTS PRODUCED BY ABSENCE OF VITAMINS

AND BY EXPOSURE TO X RAYS AND RADIUM.

BY W. CRAMER, D.Sc. EDIN., PH.D. BERL., M.R.C.S.,
A. H. DREW, D.Sc. LOND.,
AND
J. C. MOTTRAM, M.B. LOND., D.P.H.
(From the Imperial Cancer Research Fund, and from the Radium Institute, London.)

FROM the fact that the absence of vitamins from the diet leads to a gradual decline of the higher animals, and if sufficiently continued is incompatible with maintenance of life in these animals, the important generalisation has been drawn that vitamins are essential for the life of the cell. Histological investigations of the tissues and organs of animals kept on such a diet have so far failed to reveal any lesion sufficiently gross and affecting a vital organ which would account for the decline or the death of the animals. Our own observations on mice and rats kept on a diet completely free from vitamins have, with the one exception presently to be mentioned, given the same result. Even the finer cytoplasmic structure, as expressed in the condition of the mitochrondria, is not altered deeply enough to account for the condition of decline and the death of the animals. Nor does the general condition produced by the absence of vitamins help to an understanding of the manner in which they act. For the general condition of these animals is simply one of inanition, and many of the changes described as occurring in the tissues of animals kept on a vitamin-free diet are similar to, or identical with, those produced by chronic starvation. The hypertrophy of the adrenals may be quoted as an example.[1,3]

It appears to us that this hypertrophy of the adrenals in the absence of vitamins is an argument against the generalisation that vitamins are essential to the life of every cell. They do not appear to be essential to the life of either the cortical or the medullary cells of the gland. Subsidiary assumption would have to be made, for instance, that this organ is distinguished by a large store of vitamins. But such an assumption is negatived by the experimental test,[3] at least as regards the fat-soluble vitamin, and has never been demonstrated for the water-soluble vitamin. In mice and rats kept on a vitamin-free diet very active growth changes, as evidenced by the occurrence of mitoses, have also been observed in the cells of Lieberkühn's follicles, even in the last stages of avitaminosis. Similarly transplanted tumours show active growth in animals kept on a vitamin-free diet and suffering severely as the result of the absence of vitamins.

Vitamins Unnecessary for Life of Individual Cells.

The generalisation that vitamins are necessary for the life of the cell has been extended so as to cover even the lower forms of life, plants, bacteria, yeast cells, &c. The recent work of Lumière[4] has shown that so far as these lower forms of life are concerned this view was based on faulty experimental observations. It is therefore important to realise that what has been experimentally established is the fact that vitamins are essential for the maintenance of life of a highly differentiated animal as a whole, *but not necessarily, or probably, of its individual cells.*

There is, however, one tissue which is specifically and profoundly affected by the absence of vitamins from the diet—namely, the lymphoid tissue. In mice and rats kept on a diet completely free from vitamins there is a great atrophy of the lymphoid tissue, which is obvious even to the naked eye. The spleen is shrunk to a narrow ribbon; the thymus, which even in adult rats and mice remains relatively a large organ filling the upper part of the thorax and covering the base of the heart, becomes so small as to be hardly visible. The Peyer's patches, which are prominent in normal animals, are difficult to identify with the naked eye. Microscopically these organs, especially the spleen, are found to contain very few leucocytes. The ordinary lymph glands may not be macroscopically smaller than normal, but under the microscope are found to be almost bare of lymphocytes. They consist almost entirely of endothelial cells and large empty lymph spaces. The blood picture, as shown by a differential count, shows a reduction in the number of lymphocytes and an increase in the number of polymorphonuclear leucocytes.

Extreme Reduction of Number of Lymphocytes.

As an example of the degree to which the lymphocytes may be affected, the following extreme figures obtained in a mouse and a rat in the final stages of avitam may be given. These animals did not suffer from intercurrent infection. The differential counts figures varying a good deal for different indiv animals, and the examples given represent the ext-

—	Lymphocytes.	Large mononuclears.	Polymorphs.	Mast cells.	Eosinophiles.
	Per cent	Per cent.	Per cent	Per cent.	Per cent.
Avitamin rat No. 130	25	15	57	2	1
Normal rat.	54	7	37·5	1·3	0·2
Avitamin mouse No. 140.	6	23	71	0	0
Normal mouse.	60	21·5	17	1·4	0·1

change so far as the lymphocytes are concerned. The figures for the normal animals are taken from Eyre's Bacteriological Technique (second edition, p. 374), and represent the average of a large number of counts. Our own observations on normal animals agree with these figures within narrow limits.

Similarity with Action of X Rays and Radium.

This condition of the lymphoid tissue is practically identical with that produced by exposure to X rays and radium. These agents, if given in appropriate dosage, not only have the same effect as regards the lymphoid tissue, but they also produce the same general effect on the animals—they lose weight and die in a state of emaciation. Incidentally, it may be recalled that in this condition there are also degenerative changes in the semiferous tubules of the testis similar to those observed in avitaminosis.

Why two such apparently dissimilar causes should produce the same effects is a problem which we propose to investigate further. It is a remarkable fact that the specific atrophy of lymphoid tissue, whether produced by exposure to radiations or resulting from the absence of vitamins from the diet, should be associated with such a profound general effect on the nutrition of the animal. This fact indicates that lymphoid tissue fulfils a more important function in connexion with the nutrition of the animal than is generally recognised, and that the effect produced on the general nutritive condition of the animal by these different agencies may be due to their selective action on the lymphoid tissue. This suggestion finds confirmation in the following facts. It is known[5] that lymphocytes are concerned in the absorption and assimilation of fat, and experimental evidence has been presented[6] to show that the assimilation of protein from the intestinal canal is brought about partly by the agency of leucocytes. In certain marasmic conditions in children not due to interference with the food-supply there is an atrophy of the thymus and of the Peyer's patches, and no other lesion has so far been found to account for the condition.[7] In inanition the spleen is stated to be the organ showing the greatest atrophy.[8] This and an almost complete disappearance of the thymus has also been reported recently[9] as occurring in pigeons both in inanition and in experimental beri-beri. A systematic examination of the lymphoid organs generally in these various conditions does not appear to have been made.

(Continued at foot of next column.)

(Continued from previous column.)

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Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A NOTE ON
ARTIFICIAL RESPIRATION IN THE NEW-BORN.

By W. OSBORNE GREENWOOD, M.D. LEEDS, B.S. LOND.

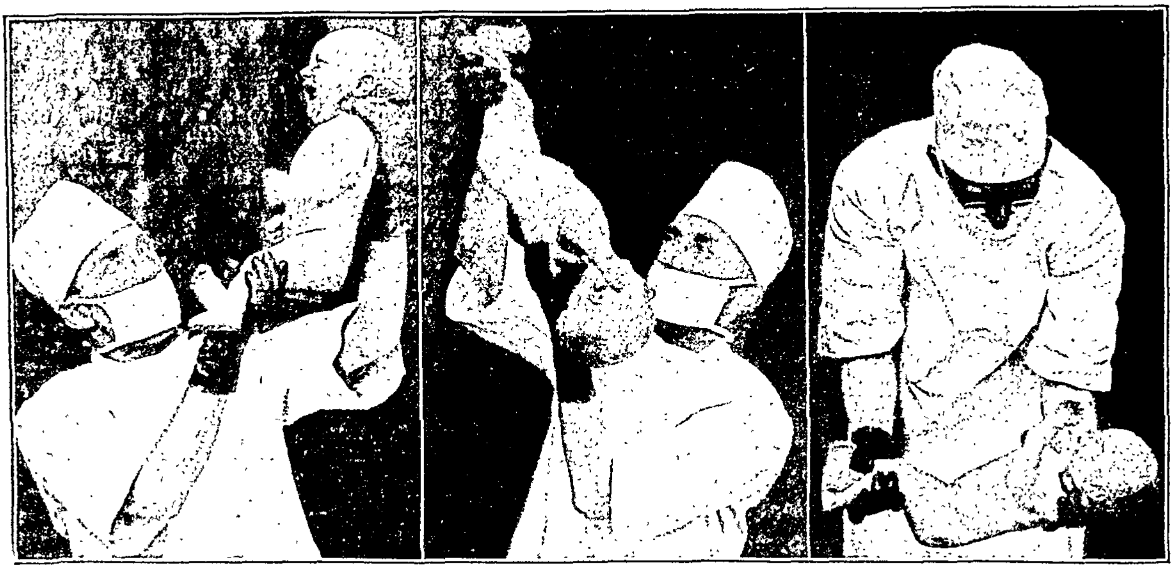
(*From the Acomb Nursing Home, Harrogate.*)

THE method of artificial respiration described below has proved, in my experience, more certain and effective than any of the methods now in vogue. I was led to investigate it by noting that a new-born infant who had inspired liquor amnii and was held head downwards emitted a sigh. This I supposed to be due to the pressure of the abdominal viscera on the diaphragm. As this is equivalent to expiration, I concluded that to hold the child in the reverse position would initiate inspiration.

To use the method the infant should be held in the following way:—

The back of its neck lies on the palmar surface of the operator's left hand, the occiput being supported in the hollow between the thumb and forefinger, so that the thumb and fingers grasp the mastoids. The right hand holds both ankles of the infant firmly from behind, so that the ulnar side is at the calves, the radial side at the ankles. The infant is held nearly vertical, say at an angle of 15°, and is then allowed to move quickly by its own weight downwards, feet first, about 2 feet. The abdominal viscera move down, the diaphragm is depressed and inspiration is at once initiated. The infant is now lifted, feet first, upwards and to the right of the operator and is therefore head downwards

Three Positions of the Infant in the Method of Artificial Respiration described by Dr. Greenwood.



First position, for movement downwards to imitate inspiration.

Second position, for movement downwards to imitate expiration.

Rest position between movements.

at an angle of 15° to the vertical. It is then moved quickly downwards, head first, about 2 feet. The abdominal contents fall against the diaphragm which is now pushed upwards (relatively to the child) and fully arched, and expiration is completed. The series of movements should be repeated some fifteen times a minute and the first attempt will often elicit a sigh if not a more pronounced response. Needless to say, any semblance of violence must be avoided.

As compared with Schultze's method it achieves exactly the same object—i.e., the abdominal viscera are made to arch and flatten the diaphragm alternately and to stimulate the heart as massage would do. Advantages over it are: As the infant is held firmly at each pole he is not so liable to slip; since the range of movement is not as great the cooling of the body surface must be less; it is not as violent; the gentleness of the movements are entirely under the control of the operator. Byrd's method and Marshall Hall's method consist in alternately flexing and extending the infant's body to the full extent: the former actively by holding both poles, then flexing and extending the spine; the latter passively by holding the infant horizontally on the palm of one hand, ventral surface downwards, then on the palm of the other hand, dorsal surface down, the head and lower limbs accomplishing flexion and extension by their own weights. Both methods are excellent for the milder grades of respiratory inhibition, but not as effective as the above for the severer ones.

Harrogate.

A CASE OF

ACETANILIDE POISONING; RECOVERY.

BY HASSAN EL ARCULLI, M.B. LIVERP.,
M.R.C.S., D.P.H.

A GIRL, aged 2 years, was brought to me on Sept. 4th, 1919, by her mother with the history of having ingested about 30 anti-influenza tablets some two hours before. It appeared that while the mother was engaged in some household duty the girl and her brother, aged 3 years, got hold of a box of these tablets. The boy sucked the sugar coating, and what remained was given to the girl, who swallowed it.

On examination the child appeared prostrated and somewhat cyanosed, especially around the mouth. Pulse feeble and irregular, its rate being 120; respirations 20. There was profuse sweating; temperature was 97° F. in the axilla. A provisional diagnosis of poisoning by some coal-tar derivative was made. An emetic of mustard and water was given and a saline purgative administered; these acted well, and the child when seen four hours later appeared less blue. The mother was instructed to keep her near a fire, and liq. strychninæ was given—♏ i. every two hours.

On the 7th the mother said that the girl was very irritable the night before and was inclined to arch her back. She reported that the cyanosis came in spasms; sometimes the colour was quite good, while at other times the face would be blue; the periods of cyanosis varied in duration from a few minutes to an hour. The knee-jerks were +.

Professor R. J. M. Buchanan was called into consultation and he gave a hopeful prognosis.

Acting on his advice the strychnine was temporarily stopped and brandy-and-soda given in its place. A couple of days later the child seemed quite normal between the spasms of cyanosis. When examined during an attack the heart sounds were found to be weak but regular; respiration was also regular. Strychnine was again exhibited, ♏ i. every four hours.

Meanwhile it had been ascertained from the manufacturing chemists that the tablets were made from: acetanilide, gr. i.; quinine sulphas, gr. ss; podophyllin, gr. $\frac{1}{10}$; camphor, gr. $\frac{1}{4}$.

On Sept. 11th bronchitis developed, and a measly rash appeared. The temperature, which had become normal on the day following the taking of the poison, rose to 101° F., and it was a question whether the rash was due to measles or to the effects of the acetanilide. It was, however, thought wiser to err on the safe side, so the child was isolated and she got over the complication in a few days. It was quite seven weeks before the cyanosis and sweating disappeared altogether. At no time was there any sign of methæmoglobinuria.

Apart from the treatment applied, the result may have been due to the presence of the other ingredients in the tablets, or the child may not have swallowed the large number alleged, although on this point the mother is quite firm in her belief.

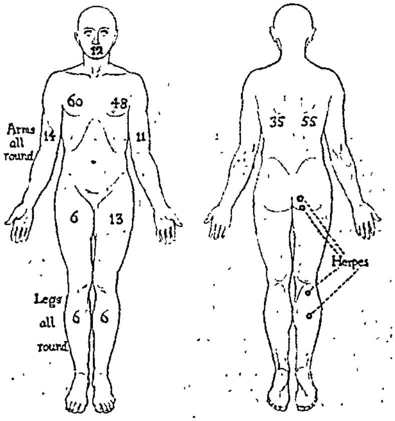
Liverpool.

A CASE OF ABERRANT HERPES.

BY G. DE BEC TURTLE, M.D. DURH., M.R.C.P. LOND.

THE differential diagnosis between varicella and herpes occasionally presents difficulty, and the following case appears of interest in this connexion:—

A gentleman, aged 71, consulted me for pain in the back and a skin eruption which had only been noticed a few hours. On examination there was a well-marked patch of herpes zoster on the right buttock and in addition a few vesicles were distributed over the body generally. There was no constitutional disturbance of any kind. On the following day there were four patches of herpes extending from the right buttock to the ankle, down the back of the thigh and knee. He was also covered with a distinct vesicular eruption very closely resembling that of varicella, several of the vesicles being umbilicated. For the sake of interest the vesicles were counted: they numbered 266 and were distributed as follows: 12 over the face and scalp, 103 on the trunk anteriorly, 90 on the trunk posteriorly, 14 on the right arm, 11 on the left arm, 12 on the right leg, and 19 on the left leg. There was none apparent on any mucous membrane.



The diagnosis rested between an attack of varicella occurring at the same time as the outbreak of herpes zoster in the leg and generalised or aberrant herpes, which I think the condition undoubtedly was. This view was shared by Dr. Graham Little, who saw the case in consultation with me. The condition cleared up quite quickly in a few days, simultaneously with the original patch of herpes zoster. There was no evidence of any case of varicella either before or after in the patient's house.

Cambridge-terrace, Hyde Park, W.

PRESENTATION TO A MEDICAL MAN.—On April 26th a presentation was made by the staff of King Edward's Building of the Post Office to Dr. S. B. Pennington on his transfer from the E.C. District Office to the Western District Office. Dr. Pennington was medical officer for the staff at King Edward's Building for seven years, and during that time earned the esteem of all grades of the manipulative staff for his considerate, sympathetic, and courteous treatment. The presentation consisted of a suit case and a cheque. The medical officers present included Dr. B. G. Connelly, Dr. A. Benson, Dr. H. Palmer, and Dr. H. H. Bashford.

Medical Societies.

BRISTOL MEDICO-CHIRURGICAL SOCIETY.

AT a meeting held on April 13th, with Dr. L. E. V. EVERY-CLAYTON, the President, in the chair, Mr. C. A. JOLL (London) gave an address on the

Surgery of the Thyroid Gland,

based on 432 cases operated on by himself and illustrated by a number of epidiascope pictures.

Discussing the ætiology of various forms of thyroid disease, he objected to the septic theory of the origin of exophthalmic goitre on the ground that there was no evidence to support it. He spoke of various forms of thyroiditis, alluding to the chronic "ligneous" thyroiditis of Riedel, and the possibility of mistaking it for malignant disease. The occasional association of adenomata with thyrotoxic symptoms, and the formation of adenomata within simple parenchymatous goitres, as well as the possibility of malignant changes within the latter, were touched upon. Turning to Graves's disease, Mr. Joll gave it as his opinion that it was to be distinguished from "non-hyperplastic toxic goitre," a distinction of importance in view of the smaller surgical risk of cases in the latter group. He laid stress on the relation between Graves's disease and progressive myocardial degeneration, speaking of the value of electrocardiography in tracing the course of the latter. Operation is, he said, indicated for any simple goitre causing pressure symptoms unless it respond quickly to other forms of treatment; also for simple goitre causing toxic symptoms and other forms of chronic ill-health. He claimed, further, that Graves's disease was curable only by early operation: saying, however, that patients with this disease, who did not wish to undergo operation, should not be pressed to do so, as such patients did not do well. The technique of operation was demonstrated by an admirable series of line drawings, and something was said as to the value of ligation of the superior thyroid artery as an alternative to thyroidectomy in certain cases. Local anæsthesia, Mr. Joll thought, was indicated only in the presence of much stridor or cardiac disease, or where the patient feared a general anæsthetic. On the other hand, general anæsthesia should never be deep, not more than enough to stop involuntary movement. Some of the difficulties and dangers of operation were discussed. Acute post-operative hyperthyroidism was, in the speaker's experience, a rare complication. He claimed that surgical treatment resulted in a cure of Graves's disease in 75 per cent. of the cases operated on. Recurrence of symptoms after operation was due to failure to remove enough of the gland.

The paper was followed by a discussion, in which the PRESIDENT, Mr. E. W. HEY GROVES, Professor F. H. EDGEWORTH, Dr. C. F. COOMBS, Mr. STUART V. STOCK, and Mr. J. LACY FIRTH joined.—In his reply Mr. JOLL said that he had never seen myxœdema follow thyroidectomy for Graves's disease.

NORWICH MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Cases and Specimens.

A CLINICAL meeting of this Society was held at the Norfolk and Norwich Hospital on April 5th, Sir HAMILTON BALLANCE, the President, in the chair.

Dr. S. H. LONG showed a child who had had splenectomy performed for splenic anæmia, with excellent results. He also exhibited the spleen removed.

Dr. F. W. BURTON-FANNING read notes of a case of

Rat-bite Fever,

and demonstrated the points of interest on the patient. He remarked on the rarity of the disease, only 15 cases having been recorded in the British Isles, two of which had been under his care. The fever always followed on the bite of a rat or of an animal, such as a ferret or cat, which had been bitten by a rat. There was an incubation period after the bite, when the wound became re-inflamed and sloughy, but there was no formation of pus. The patient shown was bitten on the thumb, and an unhealthy sloughing wound was seen. Lymphangitis was a conspicuous feature and was followed by a rash which very much resembled a papular secondary syphilitic rash. The disease was caused by a spirochæte, which, however, had not been found on direct examination of the patient's blood, but was discovered when some of his blood had been injected into a white mouse. The fever was of intermittent type. As to treatment, quinine was found to be quite useless, and the only treatment of any value was the intravenous injection of novarsenobillon.

Mr. A. J. BLAXLAND showed the Pedunculated Intra-vesical Middle Lobe of a Prostate causing urinary obstruction, without hypertrophy of the lateral lobes, which he had removed from a man of 56 with complete relief to the symptoms. He also exhibited three specimens of the Pyloric Half of the Stomach, which he had excised for chronic ulceration. In his opinion this operation was more satisfactory than the usual one of excision of the ulcer by itself. It was easier to perform, there was practically no shock at the end of the operation, and the immediate after-results in his cases had been excellent.—The PRESIDENT said that Mr. Blaxland had raised a very important surgical question. He agreed as to the comparative simplicity of this operation, but he considered that for most small ulcers in an accessible position local excision did all that was required.

The PRESIDENT exhibited an Ovarian Tumour, weighing 10 lb., with a twisted pedicle, which he had removed from a woman of 51. A peculiar feature of the case was that he found an extensive thrombosis of the veins in the omentum. In order to deal adequately with this thrombosis it would have been necessary to remove several feet of the small intestine and its mesentery, and he decided not to interfere. No bad symptoms had occurred, and he therefore concluded that after the removal of the large twisted tumour the thrombosed condition of the veins subsided.

Dr. A. BURTON showed a specimen of Tubal Mole from a case of Ectopic Gestation of less than two months' duration.

Dr. A. J. CLEVELAND brought forward a case of Occupation Neurosis in a man, aged 28, who had worked in a boot factory, and developed a condition of pseudo-chorea. The right arm was chiefly affected. When the patient extended the arm to do anything it developed incoördinated movements, and the condition was so severe that the man was quite unable to work. Treatment seemed to have no effect, and in Dr. Cleveland's opinion the prognosis was very bad.

DEVON AND EXETER MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held at the Royal Devon and Exeter Hospital on April 21st, Dr. W. GORDON in the chair.

Dr. F. A. ROPER read a paper on the

Nature and Treatment of Surgical Shock.

He first acknowledged the great help given to all who had specially to deal with this condition during the war by the reports of the Medical Research Committee and Third Army Shock Committee. After differentiating between primary and secondary shock, he went on to describe the blood changes in the latter condition found experimentally in animals by Dale, Laidlaw, Trevan, and Bainbridge, and also found in man. These were due to leakage in the capillary area, and accompanied by fall of blood pressure, cold being a further important factor in producing stagnation. An invariable result of this stagnation, leading to deficient intracellular oxidation, is acidosis. The defect of the adrenalin theory of shock is that shock is often fully developed long before sympathetic adrenalin exhaustion can have occurred. This leads to the consideration of other possible factors, first and foremost the respiratory exchange. The automatic compensating acidosis postulated by the acapnia theory might well be at least a considerable additional factor, in view of the well-known observation that acids dilate peripheral vessels. Cannon's experiment of clamping the aorta and observing the resulting acidosis and shock on removal of the clamp was corroborative and should be remembered in using the tourniquet. There was, lastly, considerable similarity between the reaction of the body towards infection and towards injury by violence. Dr. Roper showed that, as regards treatment, it was important to draw a sharp distinction between hæmorrhage and shock, best distinguished in doubtful cases by the use of the hæmoglobinometer. Dr. Roper advocated the method of "forced fluids" in the treatment of shock, and spoke of the advantages of Bayliss's 6 per cent. gum acacia solution in normal saline in largely obviating leakage from the circulation. No striking results seemed to be obtained by use of alkaline solutions, but the consensus was that these were of benefit in acid-forming toxæmias resembling shock. Blood transfusion was of great value in shock, but results were not so striking as in hæmorrhage. In Dr. Roper's opinion the citrate method was to be preferred. He urged the advantages of nitrous oxide and oxygen anæsthesia in obviating further shock due to fall of blood pressure during or after operation, and envisaged the possibilities of future progress in successful treatment on the lines of keeping up the CO_2 tension in the blood by administering a proportion of CO_2 in the respired atmosphere at least equal to its normal alveolar tension. In judging as to fitness for operation the estimation of the blood pressure was a valuable guide.

Discussion.

The PRESIDENT asked Dr. Roper what opinion he had formed as to the value of pituitrin in these cases and as to the maximum period of time that it was possible to keep the patient under with $N_2O + O$ as the sole anæsthetic.

Mr. A. L. CANDLER discussed the apparently contradictory statements with regard to acidosis, which was stated to be a stimulant to the respiratory centre, and the giving of soda, which also had a beneficial effect in cases of shock. In regard to shock from loss of blood (where the treatment was obviously different from that called for in shock caused by other conditions) Mr. Candler emphasised the importance of the rate of flow rather than the volume of blood lost as the causal factor in the production of shock. He also advocated the cleaning of burns under an anæsthetic as soon as possible and the removal of destroyed tissues, thereby diminishing the liability to subsequent absorption of a large amount of toxin. Shock following the removal of a tourniquet was to him a clear indication of what happened when the patient was not safeguarded from a sudden rush of toxin into the circulation. Mr. Candler had seen no benefit from pituitrin in the treatment of shock, although he recognised its value as a promoter of intestinal activity.

Dr. J. SHIRLEY STEELE-PERKINS advocated gas and oxygen as a general anæsthetic, given a reliable apparatus with an efficient regulator.

Dr. R. V. SOLLY discussed the question of acidosis and its production in chloroform narcosis.

Mr. NORMAN LOCK considered that the condition of shock was far more complicated than a mere acidosis, as soda was of little more use than saline. Given an increased viscosity, as by gelatin injections, the saline does not rush in and out and tension is repaired in the circulation.

Dr. ROPER, in his reply, considered that there was no practical time limit in the giving of N_2O and oxygen as a general anæsthetic. He was not in favour of an anæsthetic such as ether in burns where shock was often present. He also spoke of the reducing effect on the hæmoglobin content of the red blood cell when either chloroform or ether were employed as anæsthetics. Boyle's apparatus had proved very serviceable at the C.C.S. to which he was attached in France. Replying to Mr. Lock, histamine was the acid substance actually causing acidosis.

ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

A MEETING of this Society was held in the Faculty Hall, Glasgow, on April 1st, when Dr. JAMES H. MARTIN made a communication on

A Series of 50 Consecutive Cæsarean Sections without Fatality.

Dr. Martin opened by referring to his technique in this operation, which was a modification of that introduced by Professor Murdoch Cameron. His incisions are made about an inch and a half to the right of the middle line, two-thirds being above the level of the umbilicus. This utilisation of the rectus and its sheath prevents a subsequent hernia. There is the further advantage that as a rule this abdominal incision brings the operator right down on the middle line of the uterus. In making the uterine incision Dr. Martin always uses a metal pessary, oval in shape and slightly concave, as suggested by Professor Cameron. In removing the placenta and membranes he turns the uterus inside out. Thus the uterine arteries are kinked and the loss of blood is infinitesimal. The wall of the cavity of the uterus is now rubbed thoroughly with gauze, which may be termed a curettage. The difficulty in removing the membranes in the region of the os is lessened by sweeping the finger round beyond the internal os while the patient is being prepared for operation.

In suturing the uterine wound the lowest suture is inserted and tied before the uterus is turned inside in, and this seems to lessen the hæmorrhage while the other sutures are being inserted and tied, particularly if the uterine arteries are not well compressed. The sutures are of silk and interrupted. If the patient is not sterilised mattress sutures of catgut are usually inserted along the uterine incision, the peritoneum, and to some degree the superficial muscle, being included in these mattress sutures. The peritoneum and posterior sheath of rectus muscle are sutured together with a fine continuous catgut suture, and five or six silkworm gut sutures are inserted through skin and anterior sheath of the rectus, but not tied. The anterior sheath of the rectus muscle is now sutured with a continuous catgut suture and the skin approximated by another continuous catgut suture. After cleansing the wound and surrounding skin a gauze pad is applied and anchored by tying the five or six silkworm gut sutures referred to above. Gamgee tissue is applied and fixed with 6 in. bandages. After the operation the patient is propped up in the sitting posture before being completely round from the anæsthetic. The advantage of this posture is that the lochia when shed flows through the cervical canal into the vagina and on to the pad, and is not retained in the uterus. Further, micturition and defæcation are not difficult in this position.

Dr. SAMUEL J. CAMERON made a communication on the Surgical Treatment of Uterine Prolapse.

Reviews and Notices of Books.

COLLECTED PAPERS OF THE MAYO CLINIC.

Edited by Mrs. M. H. MELLISH. Vol. XI., 1919. London and Philadelphia: W. B. Saunders Company. 1920. Pp. 1331. £3.

IN reviewing the eleventh annual volume of the collected papers of the Mayo Clinic, Rochester, Minnesota, it is tempting to discuss, instead of the contents of the book, the organisation of the great clinical machine which produced it. The methods of the Clinic are, however, too well known to need further publicity, and the matter in the book covers such an enormous field that to attempt to appraise its value is quite a sufficient task. A volume of miscellaneous papers by numerous contributors can with difficulty avoid the imputation of "scrappiness," but in the present case the number of papers is large enough to permit of their being to some extent grouped under regional headings, so that each division gives a more or less comprehensive view of the lessons that have been learnt during the year.

The first and most important section deals with the surgery of the alimentary canal, and is restricted chiefly to problems connected with the stomach, duodenum, and gall-bladder. The cause of gastric and duodenal ulcers is sought for by means of an anatomical study of the arteries supplying them, and the conclusion is reached that the disposition of the vessels along the lesser curvature and the first inch of the duodenum is such as to favour the occurrence of thrombosis. There is no conclusive evidence that ulcers are in this way "explained," but the demonstration is suggestive. Another paper deals with the estimation of the "operability" of carcinoma of the stomach by means of the X rays, but in view of the difficulty in any early case of making a definite diagnosis of the presence of the disease it is evident that this determination of operability admits only of a limited application. Dr. C. H. Mayo discusses the technique of the surgical treatment of carcinoma of the stomach by gastrectomy, and brings up to date his survey of the work done; his results show a recent increase in the percentage of three-year cures obtained and are so far satisfactory. Another important paper deals with the subject of the diagnosis of gastro-jejunal ulcer following treatment by gastro-enterostomy, and the opinion is expressed that it is usually due to a mishap in the operative technique, thus confirming the conclusions of other surgeons. The most interesting paper of all on the stomach is by Dr. D. C. Balfour, who discusses the treatment of the "bleeding type" of ulcer. He seeks to demonstrate that hæmorrhage commonly occurs after a curative operation has been performed, and believes that the treatment should always include the removal of the ulcer, preferably by excision with the cautery. The remainder of this section deals chiefly with biliary problems, special attention being given to the anatomy and functions of the sphincter of the common bile-duct or papillary muscle of Oddi.

The second section, on the urogenital organs, contains papers on most of the current problems of this region—the dangers of pyelography, the prognosis of renal tuberculosis, the removal of stones from the ureter, and other subjects too numerous to mention. This section also contains, somewhat unaccountably, several papers on the thyroid gland and its functions, and one on the effect of splenectomy on the thymus. It is, at any rate, an indication of the trend of opinion that these organs should be classed as "urogenital." The papers on the thyroid gland include an elaborate investigation of the chemical properties of its active principle, thyroxin, and an important contribution towards the understanding of the clinical value of the "basal metabolic rate" in exophthalmic goitre. With this valuable method of gaining precise knowledge as to the results of operative treatment we dealt in some detail last week (pp. 915 and 921). A smaller section on the blood contains an extremely interesting account of an attempt to determine the length of life enjoyed by transfused corpuscles by means of differential agglutination of mixed corpuscles belonging to more than one blood group. This is one of the most scientifically satisfying of all the papers in the book.

The remaining sections deal with a somewhat heterogeneous collection of subjects, which it is impossible to summarise in a few words. They range from tuberculosis of the spine and epithelioma of the lip (this is an instructive study based on 537 cases), to the surgical treatment of bunions and the best method of sharpening a scalpel. There is matter here for everyone and, if some of the papers are so slight as to have been hardly worth reprinting, many more are really solid contributions to surgical science, and the book as a whole bears eloquent testimony to the activity and to the admirably scientific attitude of the workers in the Mayo Clinic.

MEDICINE AND DISEASE.

Die Konstitutionelle Disposition zu Inneren Krankheiten. Second edition. Von Dr. JULIUS BAUER. Berlin: Julius Springer. 1921. With 63 illustrations. Pp. 650. M.88.

MODERN advances in medical science have altered our conception of ætiology, and causative factors of disease have occupied an increasing share of medical interest. Particularly in those morbid processes that result from specific bacterial infection, the ætiological riddle has seemed to be solved when a microbe, more or less obeying Koch's postulates in relation to the disease, has been isolated. The host's susceptibility and resistance to infection have not indeed been forgotten, as the important mass of work on the subject of immunology bears witness; nevertheless the soil has been somewhat neglected for the seed. In terms of practical medicine it may be said without much exaggeration, that interest has shifted from the patient to his disease, and this tendency has been strengthened by modern discovery in specific therapy; thus treatment has tended to make the same change in direction, and diphtheria, for instance, is treated with serum and the patient with contempt.

In the present volume Dr. Julius Bauer creates a new departure in medicine in presenting an instructive and important systematic treatise on the part played by constitutional states in the pathogenesis of disease, a thesis which he carries to the length of defining a "konstitutionspathologie." The opening chapters deal with the broader aspects of the subject and define the words employed; there is thus introduced an interesting discussion on diathesis, dyscrasia, and inheritance. Infantilism, precocity, senility, and progeria are other matters of interest discussed in these chapters, and the author crystallises his ideas so far as to give illustrations in diagram of the several recognised constitutional types—namely, the respiratory, digestive, muscular, and cerebral constitutions; photographs of patients illustrating these types are also given. It is impossible to describe at all adequately the great mass of information assembled in respect of the constitutional aspects of clinical disorders, diseases, abnormalities, and developmental defects. The rarest curiosities naturally claim a rather disproportionate notice, but some idea of the scope of the work is indicated by the fact that there are more than 4000 references to the literature.

We have no hesitation in recommending this book as a valuable work of reference, both on account of the information it provides and on account of the weight it adds to the constitutional aspect of disease.

The Medical Treatment of Disease. By ROBERT DAWSON RUDOLF, C.B.E., M.D. Edin., F.R.C.P. University of Toronto Press. 1921. Pp. 457.

THIS book, written for students and young practitioners of medicine, is presented in a readable and attractive form. The general arrangement of the subject-matter is good and systematical, so that it is easy to find at once any information required. An author incurs a great responsibility in advising definite forms of treatment to students and young practitioners unless the treatment advocated is well known and well tried. On this account the book is open to some criticism, for it includes reference to treatment that has hardly passed beyond the experimental stage. For instance, auto-serum therapy (intrathecal injection) is mentioned in the treatment of chorea, though the advisability of tonsillectomy is not discussed in either chorea or rheumatic fever; in the treatment of gastric ulcer it would have been better to give the Lenhartz diet in detail than to discuss duodenal feeding at relative length; it is possible that scarlet fever is due to a streptococcal infection, but, if it is, the type of infecting streptococcus has not yet been established, and it is premature to advise students to use vaccines as a prophylactic against this disease. These examples could be multiplied. Dr. Rudolf has made too great sacrifices in the effort to make the book up to date. In the doses of drugs recommended the author shows good judgment. Exception must, however, be taken to the dose of adrenalin chloride advised for hypodermic injection in the treatment of a paroxysm of asthma; 8 to 15 minims is too large an initial dose, since some persons are susceptible to the drug.

A simple book on treatment is sure of a place in the general practitioner's library, and the second edition of this book may fill that place. If it were revised by someone engaged in general practice certain of the more common and difficult aspects of medicine might be expanded and space found in the section on insomnia, for instance, for the sleeplessness that results from acidity, flatulence, or constipation.

PRINCIPLES OF GENERAL PHYSIOLOGY.

Third edition, revised. By WILLIAM MADDOCK BAYLISS, M.A., D.Sc., F.R.S., Professor of General Physiology in University College, London. With 261 illustrations. London: Longmans, Green and Co. 1920. Pp. 862. 28s.

OUR opinion, expressed when this work was first published, that it is "a most interesting, erudite, and comprehensive treatise" is unchanged, and we are glad to offer an equally cordial welcome to its third edition. The number of pages in the present edition only exceeds that in the first by a dozen or so. In the sections rewritten for the second edition (published in 1917)—e.g., activity of muscle, kidney and the visceral system, and transport of carbon dioxide in the blood—no great changes have been found necessary. But a notable addition is a section on the capillary circulation (p. 704 *et seq.*), with regard to which important work has recently been published. Krogh (1919 and 1920) gave experimental evidence that the capillaries can be affected independently of the arterioles, while more complete proof of the independent contractility and dilatation of the capillaries was given by Dale and Richards in 1918, including the observations of Dale and Laidlaw on the effects of the base histamine. In the same section "wound shock and traumatic toxæmia" is dealt with. Wounded men in the late war often showed the signs of great loss of blood, although the actual hæmorrhage may not have been at all severe. Evidence of various kinds pointed to the probability that the injured tissues were producing some toxic substances. Although the toxic products from injured tissue have not been actually identified, they have the same physiological action as histamine—that is, a widespread dilatation of the capillaries leading to a pooling of blood and its withdrawal from the effective circulation, with all the serious results of a failure of blood-supply to vital organs. Experience has shown that the maintenance of a normal blood volume is of the greatest moment. Dilution of the blood up to very wide limits is of comparatively little significance so long as its volume is normal (p. 707).

Professor Bayliss utters a timely observation that in regard to medical education "there is some need to guard against too narrow an interpretation of what is supposed to be of direct application to clinical practice. What is at the present time looked upon as pure abstract or academic science may turn out next week to be of vital importance. Take, for instance, the electrical phenomena of cell activity and their application in the electrocardiograms." Without undervaluing what is done under the direction of another mind, Bayliss points out that the greater number of the fundamental discoveries in physiology were made by men who were able to direct their work in the way suggested by its actual progress.

DIAGNOSIS.

Diagnostische Winke für die tägliche Praxis. Second edition. Von Dr. E. GRAETZER. Berlin: S. Karger. 1920. Pp. 264. M.16.

THE object of this handbook is to give a short description of the atypical forms in which common diseases frequently appear in general practice. It is recognised that disease often fails to don its text-book garb, and thus may escape recognition by those without much clinical experience. The diseases are arranged in alphabetical order and there is a good index. A short account is given of the onset and of the cardinal signs and symptoms of each disease. Then follows a brief description of the various courses it may take, a list of atypical and occasional symptoms, and finally the differential diagnoses. The object is admirable, but the subject is too difficult for compression into so small a compass. The cardinal signs are not always well chosen, and in the case of rheumatic fever, for instance, there is no mention of valvular disease in the typical picture. The only method that a practitioner has of recognising atypical forms of disease is to know the whole of medicine thoroughly, and a book which sets out to describe only the less common forms which disease may take cannot be of much assistance to him.

Lehrbuch der Differentialdiagnose innerer Krankheiten. Second edition. Von Professor Dr. M. MATTHES, Direktor der Medizinischen Universitäts-Klinik in Königsberg. Berlin: Julius Springer. 1921. With 106 plates. Pp. 621. M.68.

THIS book is written for recently qualified practitioners with the object of providing a bird's-eye view of differential diagnosis. The subject is arranged in sections. The first two deal with fevers, and one or more are allotted to diseases of the respiratory, circulatory, alimentary, and renal systems; diseases of the spleen, liver and gall-bladder, blood, joints, and bones are dealt with in separate sections. Apart from the differential diagnosis of meningitis and meningism and of neuralgia the central nervous system is not included, being reserved for a separate volume. The book is written from a strictly clinical standpoint, and the author makes his attitude clear in the statement that a man's clinical experience may be judged by the history he takes of his patients' cases. The several sections are similarly dealt with on the following lines; thus in disease of the alimentary tract the disorders of this system that complicate disease elsewhere are referred to; a discussion of the major symptoms of gastro-intestinal disorders follows; and lastly the differential diagnosis of clinically recognised complaints is dealt with. Methods of clinical investigation are discussed and reviewed, and here the author sometimes passes beyond the limits of ordinary clinical practice, and includes methods that are only possible in the hands of experts in an institution where the necessary facilities are provided. In certain directions purely academic problems are considered at length; for instance, much information on the classification of the several forms of nephritis has been collected, but a want of discriminative criticism mars the value of this part of these sections. German authors are frequently mentioned, but no references are given, and though a few American and English workers are named it is evident that the author is not familiar with their writings.

The value of Professor Matthes's book to those for whom it is actually intended lies in the simultaneous discussion of a subject from the point of view of symptoms, clinical syndromes, and methods of clinical examination; there is a good index guiding the reader quickly to the desired context. But it is likely to prove of most interest to those who are engaged not in the practice alone but also in the teaching of medicine.

NOTES ON MIDWIFERY.

Second edition. By J. M. MUNRO KERR, M.D., and JAMES HENDRY, M.A., B.Sc., M.B. Glasgow: Maclehose, Jackson, and Co. 1920. Illustrated. Pp. 156. 10*s.* 6*d.*

THIS book consists of a synopsis of notes of lectures delivered at Anderson's College Medical School. It is interleaved so that the notes may be amplified and added to by the student. Necessarily short and somewhat compressed, it yet forms a sound basis for the student to ground his reading upon and a ready reminder to the teacher of the main heads of the subject. Dr. Munro Kerr's authority gives the book a considerable value, and we need hardly add that the teaching is thoroughly practical and sound. If used as it is intended, the book should prove of value to the student, both in giving the main outlines of the subject in a clear form and in enabling him to revise and coördinate his knowledge from the point of view of examinations.

THE PRACTICE OF MEDICINE.

Fourteenth Edition. By Professor JAMES M. ANDERS, M.D., Ph.D., LL.D., with the assistance of Dr. JOHN H. MUSSER, Jun., B.S., M.D. London and Philadelphia: W. B. Saunders Company. 1920. Pp. 1284. 45*s.*

NEW editions have followed each other in quick succession since the original publication in 1897 of this text-book, and in bringing out this, the fourteenth edition, Professor Anders has had the assistance of Dr. J. H. Musser. The subject-matter is brought well up to date and contains several entirely new sections; those describing bronchial spirochætosis, trench nephritis, disordered action of the heart, epidemic encephalitis, and botulism deserve mention, while the references to the estimation of basal metabolism in exophthalmic goitre and to splenectomy in pernicious anæmia afford further evidence that recent advances have not been ignored. The article on focal sepsis is suggestive, and new and important points are considered in the sections on pneumonia, pellagra, scurvy, hæmolytic jaundice, Banti's disease, and asthma. The methods of examination of the efficiency of the stomach, intestines, and kidneys are discussed, and in view of the increasing need in accurate diagnosis of these clinico-pathologic aspects of investigation we hope that sufficient advance will have been made to justify a separate description of hepatic and pancreatic function tests in the next edition. With regard to renal function tests reference might have been made to globulinuria in functional proteinuria and to the diastase test. Professor Anders has succeeded in maintaining the position of his work as a first-class standard book of reference in practical medicine, and the reader will find in it the assistance he requires for the detailed study and diagnosis of disease.

MAN'S DESCENT FROM THE GODS.

The Complete Case against Prohibition. By ANTHONY M. LUDOVICI. London: William Heinemann. 1921. Pp. 254. 14s.

THIS is a most amusing book; it contains a good deal of sound sense, and also, we must add, a good deal of nonsense. The author holds that the myth of Prometheus is a tradition of an actual event in the history of the ancestors of the ancient Greeks. These ancestors (who were the gods of the ancient Greeks) were probably the Cro-Magnon race; they were acquainted with fire and its uses, but it was only used under certain restrictions. Prometheus obtained the secret of making fire and demonstrated it to the inferior races—i.e., the men with whom the gods mingled. Hence arose all the appalling consequences due to the cooking of food, and not until Dionysus the Saviour arose with his fermented liquors were these deleterious consequences checked. Prometheus versus Dionysus is thus the theme of the book. Now, putting aside the fancifulness of this thesis, it is perfectly true that cooking certain kinds of food does damage their value, and thrice-cooked food may be worse than once-cooked food. It is also true that liquors prepared from fermented and germinated cereals have an antiscorbutic property—a property which is found in old-fashioned ale and to a less extent in modern beers. But cooking has its virtues, and even Mr. Ludovici agrees that meat should be cooked—that is to say, lightly roasted or grilled; it is cheering to think that the immortal essay on Roast Pig is still to be a watchword for epicures—

> "There is no flavour comparable, I will contend, to that of the crisp, tawny, well-watched, not over-roasted *crackling*, as it is well called—the very teeth are invited to their share of the pleasure at this banquet in overcoming the coy brittle resistance. ...... "

Ale, too; as we read Mr. Ludovici's praise of ale we seem transported to the age of good Bishop Still, who wrote that feeling passage—

> "I cannot eat but little meat
> My stomach is not good,
> But I do think that I can drink
> With any that wears a hood;
> Back and side go bare, go bare,
> Both hand and *foot go cold*,
> But belly, God send thee good ale enough
> Whether it be new or old."

So far we can go with Mr. Ludovici, and we also agree with his strictures upon some of the evils of industrialism, which came to their zenith in the first half of the last century. But his chapter on Eve and Pandora is a mistake. If some women are fools, have no taste, and have a lust for petty power, the same things may be said of some men. If some women mate with undesirable men, so also do some men mate with undesirable women, but to say, in Mr. Ludovici's words, that woman "becomes associated with a decent man only by accident" is silly.

QUAKER ASPECTS OF TRUTH.

By E. VIPONT BROWN, M.D. Lond. London: The Swarthmore Press. Pp. 156. 5s.

THIS book consists of a series of addresses designed to show the superiority of the Quaker system of religion over other systems of Christianity. With the author's contention that all forms of orthodox Christianity have departed from the principles of primitive Christianity, or, at least, do not carry them out, we can agree, but we should say that even the Quakers do not carry out primitive Christianity in its entirety. It is no business of ours to decide for or against Quakerism as opposed to other forms of religion, but we must point out one or two places where Dr. Brown is inaccurate. For instance, in his chapter upon Christianity and War he insists upon saying that "during the first two centuries of our era Christians consistently refused to carry arms." Some Christians undoubtedly did, and that because their religion forbade them to kill. But the chief reason why Christians refused to serve was on account of the impossibility of so doing without recognising, or seeming to recognise, the divinity of the heathen gods. All the same, there were many Christians in the army, as such stories as that of The Thundering Legion, under Marcus Aurelius, circa A.D. 169, and the martyrdom of the Thebæan Legion, at the order of Maximian, A.D. 285, show. We say nothing for the truth or otherwise of the story of the miraculous thunderstorm, or of the martyrdom, but the mere fact of the existence of the legends shows that Christianity in the army was quite common. Again, on p. 60 Dr. Brown is arguing as to the uselessness of creeds, confessions of belief, and so on, and in mentioning other denominations, says of creeds, "When these have been understood and believed and accepted as true, then salvation is assured; the end of religion has been attained." This statement is simply not correct.

JOURNALS.

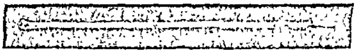
Brain. Vol. XLIII., Part IV.—Left-handedness and Mirror-writing, especially among Defective Children, by Hugh Gordon. A record of tests carried out on children in "special schools" in London and Middlesex. The tests described were found to be those giving the most consistent results. It was found that whereas in the ordinary elementary schools the percentage of left-handedness was 7·3, in the special schools it was 18·2. In those schools defects of speech occur more frequently in left-handed than right-handed children. In the case of twins, when one is left-handed and the other right-handed, the former is frequently backward or even in a "special" school, the latter normal. Among normal children the left-handed are frequently the most efficient and capable; among the mental defectives it is exactly the reverse. The percentage of mirror-writers is much higher in special schools and in them among the left-handed (30 per cent.) than the right-handed (2·2). The percentage of mirror-writers among left-handed children who write with the right hand is found to be: boys, 32 per cent.; girls, 62 per cent. Many other interesting observations on mirror-writing are given, and the author suggests, as the only possible hypothesis at present, that in these children "something has occurred which has interfered with the proper functioning of the dominant hemisphere."—Tonus and the Reflexes, by J. K. A. Wertheim Salomonson. A description of a part of the author's investigations by means of Einthoven's string galvanometer of the nature of muscular contraction. Three groups of contractions can be differentiated: (1) the simple muscle twitch, characterised by its short duration and by its being preceded by a double-phase action current; (2) those characterised by a current of action in the form of a rather irregular alternating current with a frequency of about 50 periods per second—e.g., all voluntary contractions, epileptic convulsions, and all cutaneous reflexes; (3) all kinds of muscular action in which no electric current of action can be detected—all changes in muscle tone occur in this way, as also all spasms of spastic muscles. The method applied to the reflexes shows that these are much more complicated than is generally supposed to be the case. The complication arises from the fact that every simple or tetanic reflex is in itself the cause of a secondary tonic reflex, and most are governed by more than one centre. The simple twitch of the knee-jerk is often succeeded by a tonic contraction, which the author holds is conditioned by a reflex path through the sympathetic and Boeke's fibres. In addition, the varieties of knee-jerk seen in chorea and in Westphal's "pseudo-knee-jerk" can only be explained by assuming the existence of a third cerebral centre. The cutaneous reflexes have two centres, one spinal, the other cerebral. In man the latter is much the more important. The plantar response is fully considered; toe-extension is the primary, protective, spinal reflex; toe-flexion is a late developed, cerebral reflex, needed for standing and walking, which in the adult supplants the former. When the pyramidal tract is affected, not only is the cerebral centre put out of action, with consequent reappearance of the toe-extension (spinal) reflex, but the irritability of the spinal centre governing the secondary tonus reflex is increased which produces ample extension of the toe.—Aphasia: An Historical Review (the Hughlings Jackson Lecture for 1920), by Henry Head. The first serious contribution to our knowledge was furnished by Gall at the beginning of the nineteenth century; he localised six forms of memory in separate "organs" or "centres" in the frontal lobes. In 1861 Broca published the case which was to become classical; he divided central affections of speech into the two groups "aphemia" and "verbal amnesia," and localised the lesion causing the former in the third frontal convolution. In 1864 Hughlings Jackson published his first paper. The basis of his treatment of the subject was that it is the power to form propositions that is affected, and not the memory of words or faculty of language; the higher the propositional value of the task the patient is asked to carry out the less he will be able to respond. The teaching of Jackson remained without fruit, first, owing to the profundity of its thought; and secondly, owing to the rise of a succession of brilliant dogmatists, led by Bastian, who propounded schemes and diagrams which gave apparently simple explanations of the phenomena. Recognition of the fact that it was only by twisting of the clinical findings that a case could be fitted into any particular scheme resulted in the publication in 1906 by Pierre Marie of his "Revision of the Question of Aphasia." He maintains that the aphasia of Broca was a combination of two distinct troubles, anarthria and aphasia, the former being simply inability or difficulty of articulating words without any defect of internal language, the latter corresponding to the "sensory aphasia" of Wernicke, which term should disappear. There followed the great discussion at Paris in June, 1908, which resolved itself mainly into a verbal battle without any real advance. Having closely studied the writings of Jackson, devised a new method of examination, and applied it to a large number of cases, Head propounds a new classification of these "disorders of symbolic thinking and expression," claiming that the observed facts show disturbance of these higher psychological processes and not of particular physiological functions subserving speech. The diagram makers worked on the assumption that we think in words; Jackson and Head maintain that we think in symbols, ranging from simple matching of two sensory patterns to recognition of abstract propositions.—The number closes with a discussion on Aphasia at the Royal Society of Medicine, in which Dr. J. Collier, Sir James Purves Stewart, Dr. Kinnier Wilson, Mr. Herbert Parsons, Dr. Stanley Barnes, and Dr. Head took part.

IN the *Military Surgeon* for March Lieutenant-Colonel E. E. Irons, Medical Corps, U.S. Army, discusses in a long and valuable paper the pneumonia which, in the last four months of 1918, followed influenza in the camps in the United States. There were more than 365,000 cases of influenza, and some 20,000 deaths. The case mortality of this pneumonia varied between 6 and 11 per cent. In one camp of 35,000 men the mortality during seven weeks was 3 per cent. of the total force. Influenza, also the complicating pneumonia, attacked more heavily the recruits and men from country districts. To struggle against the disease, or to attempt to carry on in spite of it, was dangerous. Hence non-commissioned officers and regular army nurses had a high mortality. On the other hand, there was little pneumonia amongst patients already in hospital who were attacked with influenza. The essential pathological condition produced in the lung by influenza was an enormous œdema with little consolidation, and many hæmorrhages due to necrosis of the interalveolar capillaries. No bacillus was at this stage recognised, but influenza lowered resistance and gave opportunity to the infections already in the naso-pharynx to develop, and so set up pneumonia. The microbic character of the pneumonia varied from camp to camp and period to period. Colonel Irons describes the morbid anatomy of the pneumonia, differing as it was due to pneumococcus, streptococcus, Pfeiffer, or staphylococcus. Tuberculosis as a sequel was rare. The best treatment proved to be early rest in bed, good nursing, and the prevention of complicating infection. No routine treatment could be advised. Convalescence was prolonged. Convalescents got double rations, and being still hungry were given bacon and beans additional. They were put through graduated exercises, beginning with a short five-minute walk twice a day, and went on to games and hard work. Care was taken that they were not discharged too soon, for their resistant powers had been severely taxed. A paper by Captain Ivy A. Pelzman discusses the high venereal rate of the U.S. Army in China. Of 100 men, 89 risk infection and 23 get it. Why? Prophylactic treatment in Tientsin is a long way from the centre of the town, and it is therefore proposed that tolerated houses be established on the U.S. Concession. The women would be kept clean, and prophylactic measures would be close at hand for the men, and there would be a lower venereal rate.—There is a most entertaining article, Doctors in Uniform, by Dr. H. W. Dana, of Boston, Massachusetts, giving account of the experiences and training of civil practitioners called up for the war. He tells of the difficulty there was in getting special chances of leave and the excuses that were not accepted. "Grandmothers' funerals did not go," he says. One doctor who arrived with a black umbrella was induced to travel three miles to exchange it with a quartermaster for another in a regulation khaki shade. The drill was beneficial, the discipline was improving, and the post-graduate special courses were wonderful. One candidate for a commission asked to mention intestinal parasites could only mention two—typhoid and paratyphoid. Dr. Dana is certain that no man who went to the Medical Officers' Training Camp left camp without getting vast benefit physically and professionally. Many officers have apparently been writing at Christmas from the United States to Sir John Goodwin, the Director-General of the Army Medical Service, and he has sent them a letter of thanks addressed to Surgeon-General M. W. Ireland, at Washington, recalling how generously their service supported us in 1917, and how much the support and help of those 1000 medical officers and 700 nurses meant to our armies.

New Inventions.

A URETHRAL AND SINUS DRAINAGE BOUGIE.

BEING interested in the treatment of gonorrhœa as practised by the Australian medical officers at Codford Camp I have had made for me a drainage bougie with a view of improving the technique. It is simply a tubular mesh of white silk closed at one end (see figure) through the centre of which runs a thin vegetable fibre. Its length is about 8 inches, the central core being several inches longer and its flexibility allows easy insertion into the urethra or sinus. Its mode of application is painless. The urethra being cleared by urination a sterilised urethroscope tube with the pilot is inserted; the pilot is then withdrawn and the drainage bougie saturated with any desired solution, such as permanganate of potash, protargol, acriflavine, and so forth, is introduced. The urethroscopic tube is now withdrawn leaving the drain in situ. Finally, the central core is pulled out, leaving the drainage-tube in the urethra. The drain gives no discomfort and is well tolerated. The advantage of this form of treatment is that all parts of the mucous lining come into contact with the antiseptic employed and there is no risk, as in syringing, of driving the pus into the posterior urethra, which I believe is a common cause of cystitis, prostatitis, and orchitis. I can conceive no more rational treatment of gonorrhœa than by the employment of this method. I have treated several cases with excellent results, but the number is too small for statistical purposes. I am having a glass endoscopic tube made for introducing the drainage-tube which could be used by the patient. This method might also be employed for the drainage of small sinuses, fistulæ, and for other purposes.



The silk bougies have been made for me by the Aurorascope Co., Ltd., Fulwood House, Fulwood-place, Holborn, W.C.

HENRY DUTCH,
Berkeley-street, W. M.D., M.R.C.S., L.R.C.P.Lond.

A TUBE FOR BLADDER DRAINAGE.

IT has always appeared to me that the methods of bladder drainage commonly employed after cystotomy are a reproach to surgery, and that if the care exercised in the modern theatre was extended to the obtaining of a water-tight and aseptic bladder the results of vesical surgery would be much improved. The usual method of placing a stout tube in the bladder and sewing the incision around it permits the bladder to retract into the pelvis, and invariably allows leakage around the sides of the tube, and contamination of the prevesical space. In some cases the tube presses painfully on the trigone and tenesmus results. In a few, I imagine, the bladder withdraws itself over the end of the tube; in any case prevesical infection is common and ammoniacal decomposition and deposit of phosphates occur in a large proportion of cases.

A French Method.

In search for improved methods I came first on a procedure used by French surgeons. A de Pezzer catheter of large size (say, 32 French) is introduced into the upper angle of the wound and the remainder carefully sewn up so as to allow of no leakage. A purse-string suture is placed around the tube to keep the bladder wall in constant apposition with it. The expanded end of the tube is drawn up so as to sit firmly against the mucous membrane around the margin of the bladder incision. Two fine catgut sutures, one above and one below the tube, hold the bladder up against the rectus muscle. In this way I found that I got a perfectly water-tight joint, not a drop of urine escaping into the wound, and that union per primam was invariable. Yet the method seemed to me to present three grave defects. In the first place, drainage was good enough in uncomplicated cases; yet wherever post-operative bleeding might occur, as for instance after prostatectomy, I could foresee grave risk of a clot obstructing the small eyes of the catheter, and a dangerous clot-retention occurring. In the second place, irrigation could only be performed by means of the tedious and meddlesome method of syphonage, which is intermittent, inefficient, and disturbs the patient, besides alternately distending and collapsing the bladder and so tending to produce leakage. Thirdly, it is the topmost point of the bladder which is drained.

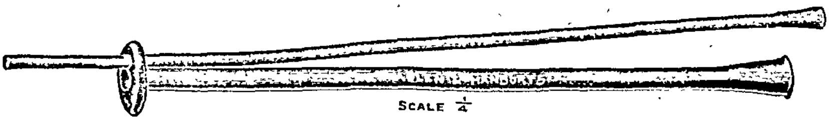


FIG. 1.—The bladder drainage and irrigation tube. Total length 16 inches, diameter nearly ½ inch. The flange appears more solid than it actually is, and its backward curve is better seen in Fig. 2.

Modification of the de Pezzer Method.

To obviate these three faults I have had a tube prepared for me by Messrs. Allen and Hanburys (Fig. 1). It is a de Pezzer catheter, in which the end has been altered into a flange as shown in Fig. 1. This flange is curved slightly backwards towards the tube, so that when drawn up into position in the bladder wound there is a degree of elastic tension which makes a secure joint. The size of the exit provided by this tube is sufficient to preclude any likelihood of a clot obstructing it. Vulcanised against the side of the larger tube is a smaller one, which passes through the flange; when in position, this projects into the bladder base, its external end is connected to a reservoir of lotion, through which constant irrigation of the bladder is effected, the flow leading into the bladder at its lowest point. There is thus a constant flow of fluid through the bladder, and no stagnation can occur in the bladder sump.

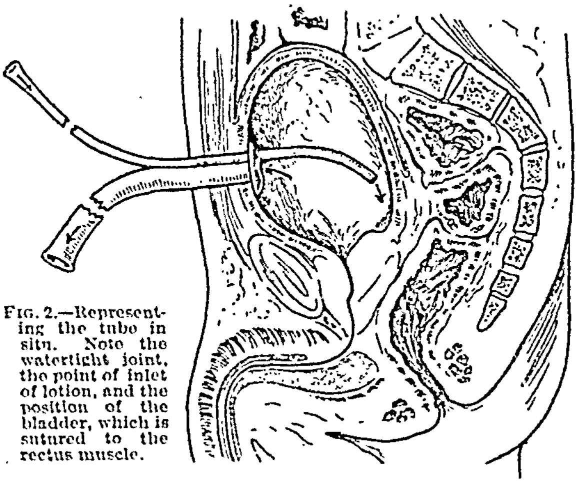


FIG. 2.—Representing the tube in situ. Note the watertight joint, the point of inlet of lotion, and the position of the bladder, which is sutured to the rectus muscle.

Details of Method.

By this method I have been successful in obtaining a perfectly dry wound in practically every case, the first dressing being allowed to remain in position until the tube is removed. I allow the tube to stay in for upwards of a week, considering that it is a valuable asset to have healing well advanced and the prevesical space firmly shut off before taking it out; after that the urine in drained into a Hamilton Irving suprapubic dish. Simple traction serves for the withdrawal of the tube, the intravesical flange crumpling up and passing through the wound without any difficulty. I do not know how long the bladder remains adherent to the abdominal wall, but certainly not for any long period. In all cases I have found that it functions perfectly when the suprapubic wound is healed. I have also proved that the upper wall of the bladder descends properly by observing it as it empties itself through an irrigating cystoscope.

In order to make sure that the bladder is not held in position for too long my stay sutures are of medium or fine ten-day catgut. Another, and perhaps a better, method is to use two sutures of silkworm-gut, which are passed right through the abdominal wall and support the bladder, pretty much in the same way as tension sutures are used to support the sheath of the rectus after a laparotomy; these are removed when the bladder-tube is withdrawn.

The tube should be placed in the upper angle of the bladder wound and should emerge about the middle of the skin incision. If it is placed too near the pubes there is a danger of adhesion occurring between the bladder wall and the os pubis, and formation of a fistula. An excellent reservoir for lotion is a thermos flask fitted with a Souttar's syphon, and suspended above the patient's bed. A flask of two quarts capacity can be obtained. The speed of the flow can be regulated by a cock on the syphon. It is a good plan to run the fluid alternately fast and slow, as when it is running fast it creates a disturbance in the bladder sump and cleanses it efficiently.

As regards the lotion to be used, I think that boric acid (sat. sol.) or oxy-cyanide of mercury (1–6000) is the most generally useful, but medication of the bladder can be applied with ease to suit varying circumstances; for instance, in the case of hæmorrhage, adrenalin or silver nitrate can be used; in the case of pain, phenacetin, novocaine, or stovain. It is generally well to keep the bladder fairly acid, and the addition of some acid sodium phosphate to the lotion can be recommended.

The temperature of the lotion in the thermos must be higher than that at which it is desired it should be when it reaches the bladder, as about 4° to 8° F. will be lost in passing down the tube according to the speed at which it is running. I find that patients experience comfort from this irrigation, especially if the lotion reaches the bladder at about 100° F. and when the flow is fairly quick.

I have treated this subject from the point of view of surgical cleanliness and the avoidance of leakage and of phosphatic deposit in the wound; but there is another aspect of the question which is probably of equal importance, and which I consider does not receive the attention which it deserves. A considerable proportion of cystotomy cases, especially among elderly prostatics, are on the verge of uræmia, which the operation accelerates or precipitates, not infrequently with a fatal issue. It seems to me reasonable to believe that a considerable share is played in this mortality by the absorption of toxic urinary bodies from the prevesical space. It is well known that if urine is injected into healthy rabbits a lethal dose is soon reached. How much more shall a dose prove lethal to a patient whose blood urea has already reached the danger zone, when urine is extravasated into the prevesical space—that excellent absorption area—especially when the effects of the operation are superadded? I hope to return to this subject. In the meantime I refer to it in order to emphasise the importance of a dry cystotomy wound.

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Honorary Surgeon and Surgeon-in-Charge of Genito-Urinary Department, Salford Royal Hospital, &c.

LITERARY INTELLIGENCE.—Messrs. Kegan Paul and Co. announce the decision to enlarge the scope of *The Psychic Research Quarterly* and to transform it into a general review of applied and general psychology under the title of *Psyche*. Education, psycho-analysis, industry, religion, social and personal relationships, psychical research, &c., will come within the scope of the new series, the first number of which will appear on July 15th.

FRENCH SUPPLEMENT TO THE LANCET

Under the Editorial Direction of
Professor CHARLES ACHARD, PROFESSOR OF CLINICAL MEDICINE IN THE UNIVERSITY OF PARIS.
AND
Dr. CHARLES FLANDIN, D.S.O., CHEF DE CLINIQUE A LA FACULTÉ DE PARIS.

METHODS OF HYSTERECTOMY.

BY E. DOUAY,
CHEF DES TRAVAUX, GYNÆCOLOGICAL DEPARTMENT, HÔPITAL BROCA (PROFESSOR J. L. FAURE).

WHEN the surgeon takes up his bistoury to perform abdominal hysterectomy for fibromyoma of the uterus or *salpingo-ovaritis he cannot know beforehand* what procedure he will adopt. If the cervix uteri is so affected that ablation appears to be necessary, he will perform total hysterectomy. The *cervix uteri* can usually be conserved, and its conservation holds more advantages than inconveniences. Subtotal hysterectomy is, in the opinion of J. L. Faure, the routine operation, established by 25 years of gynæcological surgery. Total hysterectomy remains an exceptional operation; in difficult cases it is advantageous first to perform the subtotal operation, and thus, when the *pelvis is largely emptied*, to remove the cervix, thus converting subtotal into total hysterectomy.

Only after the abdomen is opened, when the lesions are apparent, can the surgeon select his operation; his choice must be made in a few seconds of time and is of capital importance. It must be remembered that personal habit is to be considered; such and such a procedure, excellent *under some anatomical conditions*, becomes difficult and impracticable under others.

There are several guiding principles of use in assisting a judicious choice.

1. To discover the uterus amidst the lesions which obstruct the false pelvis, the first task is to separate the intestinal and epiploic adhesions and to disengage the fundus uteri; only when *this preparatory work is* finished can the attack on the utero-adnexal lesions be attacked.

2. To deal with the easier side first, leaving the more septic and more dangerous lesions until last.

3. Removal of the adherent adnexal mass must be done from the inner side and from below. Separation of adhesions at the lateral wall of the pelvis is a difficult and dangerous undertaking if begun from the *external side and carried out from above downwards.* It is made singularly easier if, after having found the inferior pole, of the ovaro-salpingitic mass, the operator works from below upwards.

4. When traction is applied to the uterus, that organ is only held in place by the cervix and its *connexions* with the vagina. *Once the cervix is divided, the uterus may be withdrawn*, and the pelvic cavity thus relieved. In difficult cases it is therefore well to perform section of the cervix as soon as possible during the operation.

To sum up—the surgeon should follow the shortest and least obstructed route to reach and perform section upon the cervix uteri in order to *deal with the lower* pole of the adnexal masses. As this shortest and least obstructed way is not always the same, different procedures are necessary according to circumstances. The whole art of the operator is to know how to adapt his method of attack to the lesions met with, and to employ the procedure most suited to the case in hand.

In easy cases all methods are suitable. H. A. Kelly's operation (Fig. 1), still described as the "American method," is one of those most used; the less affected side is first taken, and *after section of the cervix* the thick utero-adnexal mass is approached at its lower extremity and separated from below upwards. This is the method of choice for double salpingitis with a large unilateral adnexal mass. In fibromas without salpingitis, or with a slight form of salpingitis, Kelly's method is again preferable. As soon as possible after division of the cervix the uterus is drawn aside, leaving space to secure and cut the second uterine artery and easily to separate the adherent adnexa from below upwards.

Amongst operations suitable for easy cases, that of posterior decollation (J. L. Faure's method) (Fig. 2) is *particularly rapid.* In this procedure, the uterus is drawn forward and its posterior surface displayed; the *isthmic portion of the cervix is severed with curved* scissors from behind forwards. The *uterus is then* raised, the uterine arteries are cut, and the finger is inserted through the breach in the broad ligament to separate the corresponding adnexa. When inflamed adnexa are very adherent to the pelvic wall, but leave the edge of the uterus free, it is useful to perform *section of the broad ligament* between the adnexa and the uterus; this is Terrier's method—in such a case the most direct way of approach for division of the cervix. The uterus is first raised, and through the breach thus made the adnexal masses are successively dealt with.

In other cases, the adnexa on one side are found to *have adhesions in every direction,* whilst the other, less voluminous, adhere to the pelvic wall and prevent the use of Kelly's method, but leave between themselves and the uterus *sufficient space to admit of* performance of the first stage of Terrier's operation. (Fig. 3.) The *only available route to the cervix is then employed*; the latter is cut and the adnexa on that side raised, together with the uterus, to which they are adherent. This combined Kelly-Terrier's method of operation is concluded by simple ablation of the remaining adnexa.

Turning now to lesions still more pronounced—adnexal masses *on both sides, adherent to the pelvic wall* and to the uterus, so that it is impossible to pass round or behind them—what is to be done? Faure's method must be followed, and the incision made at the centre of the uterus, the operation of hysterectomy by uterine hemisection. (Fig. 4.) The fundus uteri being recognised and secured by two traction forceps, the uterine *cavity is laid open by an exactly median incision with* scissors, section being prolonged to the isthmus. The first half of the cervix is transversely divided, the uterine artery being secured and *the adnexa separated* according to routine; the other half of the uterus is *then removed in the same way.* For hemisection to be possible, the posterior face of the uterine body must be free or easily liberated. If this face be covered by the adnexal mass and unapproachable—an exceptional state of affairs—anterior decollation still remains to *the operator's hand. (Fig. 5.)*

It is very seldom that the vesico-uterine peritoneal cul-de-sac is not free; when free it permits sight of the isthmic portion of the cervix, which is cut by the scissors from before backwards, division being performed in sight. Division of the *cervix completed*, the way to the base of *the broad ligaments lies open*, and *after section of the uterine arteries* separation of the adnexal masses may be proceeded with.

In certain exceptionally difficult cases, the uterus is fixed in retroversion and retroflexion in the midst of the adherent masses. In order to disengage the organ, *anterior decollation (Fig. 6)* can be employed, and then hemisection (from below upwards) of the cervix already transversely divided towards the fundus uteri. By following round the uterine cavity the operator retains an excellent guide, permitting enlargement of

DIAGRAMS ILLUSTRATING VARIOUS METHODS OF HYSTERECTOMY.

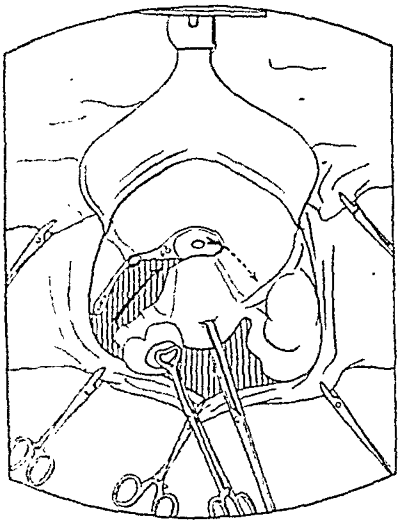


FIG. 1.—H. A. Kelly's method, admitting of approach, from behind and below, the most adherent form of adnexitis, thereby facilitating its decollation.

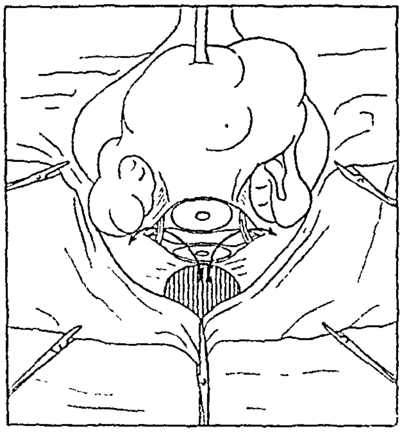


FIG. 2.—J. L. Faure's method of posterior decollation. When the cervix uteri is dissected the uterus can be removed and access gained to the adnexal mass.

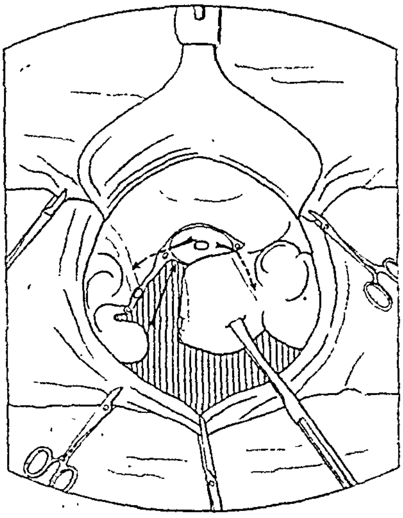


FIG. 3.—Combined Kelly-Terrier method. The cervix is reached through the space between the left adnexa and the uterus. After section it becomes possible to approach from below the right adnexa, presumably very adherent in all directions. The operation is terminated by separate removal of the left adnexa.

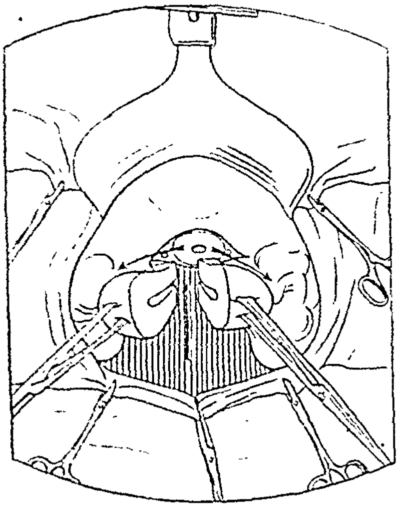


FIG. 4.—J. L. Faure's method of hemisection. As the adnexa completely fill the space between uterus and pelvic wall, median section of the uterus allows the cervix to be reached and dissected in order to approach the adnexa in turn.

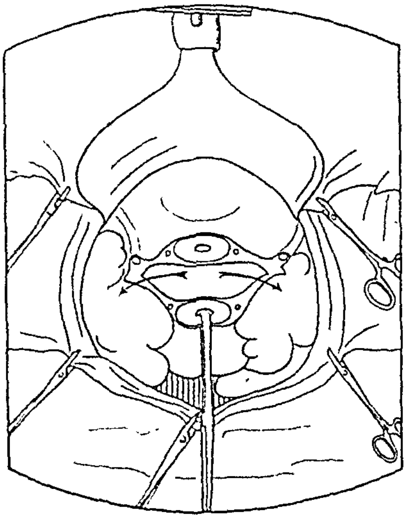


FIG. 5.—J. L. Faure's method of anterior decollation. As the uterus is in retroversion, the fundus being completely masked by adherent adnexal masses, the first section of the cervix permits recognition and compression of the uterine arteries, and then approach to the adnexa from below.

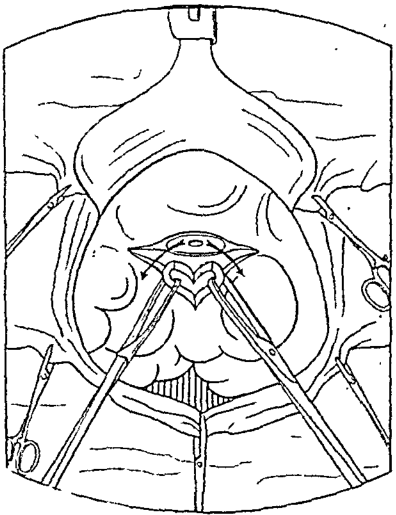


FIG. 6.—J. L. Faure's method of retrograde decollation and hemisection. After section of the cervix the uterus cannot be separated from the pouch of Douglas; hemisection, following the uterine cavity, is without danger and facilitates liberation of uterus and adnexa.

the route of approach without any risk. This method is described as anterior decollation with retrograde hemisection.

Lastly, there is the condition where the positions of lesions are supremely inconvenient for the operator—fibromyoma of the uterus, blocked in the pelvic cavity by a double salpingitis adherent in all directions. In this case, hemisection cannot be performed; anterior decollation is also impossible because the cervix uteri is not approachable *from in front*—between the fibroma and the bladder (crowded against the os pubis) there is not room to use the scissors. Évidement by morcellation must be performed, and as the fibromatous masses are removed, the pelvis will become less congested. The region of the cervix uteri is finally reached, and the operation is concluded as in hysterectomy by hemisection. This method of évidement is that of Professor P. Bégouin of Bordeaux.

SUBTOTAL HYSTERECTOMY:

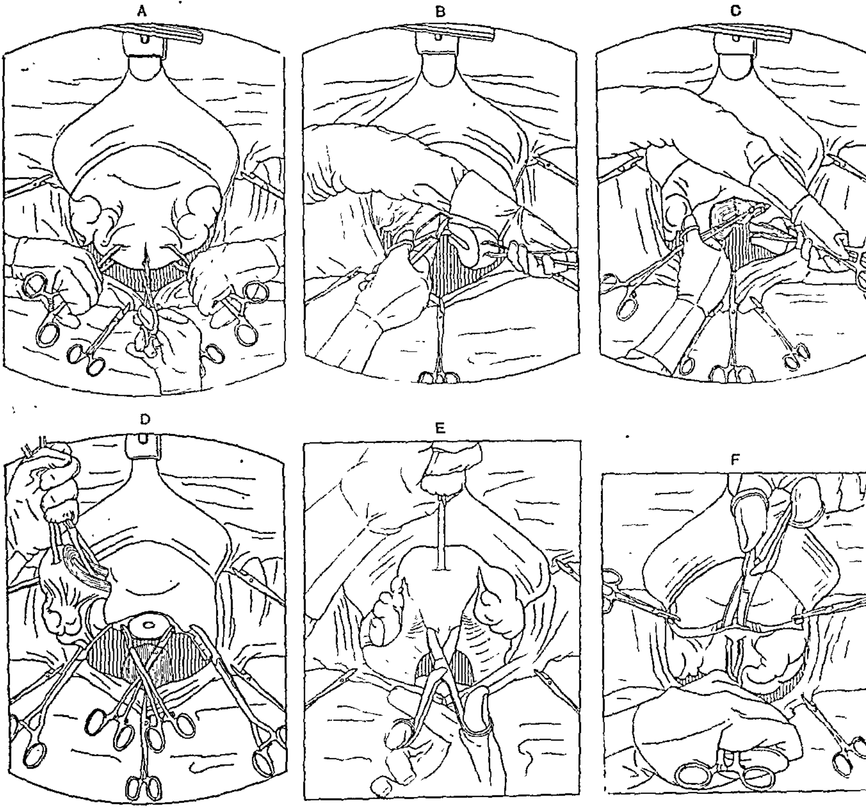
FAURE'S OPERATIONS OF HEMISECTION AND DECOLLATION.

BY E. DOUAY.

1. *Hysterectomy by Hemisection.*

HEMISECTION is the most remarkable of the less common operations of hysterectomy. It was performed for the first time by J. L. Faure in September, 1897, and is now practised throughout the world; there are even surgeons who wish to extend its indication to all cases of hysterectomy for double salpingitis, but it must remain an exceptional procedure, of considerable value in exceptional cases. The operation is indicated chiefly in bilateral salpingitis, with double adhesions to the pelvic wall on one side and to

DIAGRAMS ILLUSTRATING SIX STAGES IN THE OPERATION OF SUBTOTAL HYSTERECTOMY.



the uterus on the other. It is also indicated in certain adnexal tumours which fill the pelvis. Such cases are not rare; in salpingitis, for example, *they are found* in about one case out of every four. According to the statistics of the Hôpital Broca, hemisection has been performed in 24 per cent. of hysterectomies for salpingitis.

The procedure admits of following a method—sure, easy, and without danger—of section of the cervix uteri, ligature of the uterine arteries, and decollation of the adnexa. The uterine cavity is opened with the first cut and serves as a mark by which to continue median section to the isthmus; it is impossible to follow a false route, and division, if performed strictly in the median line, cannot involve any important artery (Fig. A). With regard to the possible disadvantages of opening the uterine cavity, danger of infection *by the uterine mucus is not usually to be feared.* Even in suppurating salpingitis, the uterine mucus is generally healthy and practically aseptic. In every case, however, it is well to thermocauterise the cavity as soon as the *latter is opened, on condition* that this cauterisation is done carefully and without hurry.

To perform hemisection, the necessary and sufficient condition is *to locate the fundus uteri*, which is not always easy amidst the adhesions which form obstructions in the pelvis. Two fixation forceps are *placed symmetrically on the fundus uteri, leaving the* middle of the organ free. The uterine cavity is then opened with scissors, and through the opening the large blade of the thermocautery is introduced several times, as far as the guard will allow *it to penetrate.* Median section is then prolonged to the isthmus.

The easier side—i.e., the side on which the adnexal lesions appear to be less extensive—is selected; *before attacking (transversely, with curved scissors)* one of the two halves of the cervix uteri, it is vitally necessary to grip the isthmus with traction forceps, as shown in Fig. B; this permits *balance from* outside, on the external side, of the hemi-uterus after section of the cervix, and also permits sight of the uterine artery, which must be compressed with *forceps* (Fig. C).

After section of the uterine artery, decollation of the adnexa begins; a finger is placed at the root of the broad ligament to separate the adnexum at its lower pole, *whilst traction applied to the uterus is transmitted* by the adhesions to the adnexal mass. It is sometimes useful to prolong the incision of the vesico-uterine peritoneum as far as the round ligament, as this facilitates separation of the anterior part of the adnexal mass-

The mass once freed, a clamp is fixed upon the utero-ovarian pedicle, division of which completes the first half of the operation. The other and more affected half is then proceeded with; the latter operation is performed more easily, since half of the pelvis is already freed (Fig. D).

2. *Hysterectomy by Decollation.*

J. L. Faure first performed this operation in 1900. In the same year, he gave an account of the technique and explained the different indications for each variety—posterior decollation for easy cases, anterior decollation for very difficult cases.

Posterior decollation.—If posterior decollation were to be reserved for easy cases, and considered as a rapid and dexterous procedure, it is probable that its technique would have fallen into disuse; but there are rare cases in which this method can be of great use beyond all question of technical skill—cases of fibroma of the uterine body with double salpingitis not involving the pouch of Douglas. The uterus and its fibroma are drawn towards the os pubis in order to disengage the posterior sac (Fig. E). Division of the cervix uteri, at the level of the isthmus, is carried out with one movement of powerful curved scissors. Section at this level does not endanger the bladder or the ureters. When the cervix is cut, the fibroma can be drawn away a few centimetres, thus disengaging the superior attachment. The uterine arteries are sometimes so close to the cervix that it is impossible to avoid dividing them at the same time, but it is easy immediately to compress them. Sometimes they lie more externally and remain intact on either side of the divided cervix. They are easily compressed and cut. Sometimes, however, they stretch and tear, and if bleeding they should immediately be secured; at other times, they are prevented from bleeding by having been stretched before tearing; in that case, their ligature can be left till the end of the operation.

Through the breach created by the separation of surfaces on division of the cervix, the finger can easily be introduced and the vesico-uterine peritoneum broken open. It then only remains to raise the adnexa and compress the utero-ovarian pedicle and the round ligament, section of which terminates the operation.

The total duration of this operation (including incision of the abdominal wall), as performed by Professor Faure, does not exceed from three to five minutes.

Anterior decollation.—This operation has not the same indications as posterior decollation, being reserved for very difficult cases, such as double adnexitis with many adhesions in all directions, and filling of Douglas's pouch. The posterior face of the uterus is not free, which hinders hemisection, but the vesico-uterine cul-de-sac is accessible after liberation of the epiploical or intestinal adhesions, if such liberation is necessary.

The cervix, being seen and found with the finger at the bottom of the cul-de-sac, is gripped transversely, at the level of the isthmus, with strong forceps; when thus rigidly fixed it is dissected transversely beneath the point where it is held, as shown in Fig. F. This dissection is made carefully by short cuts from in front backwards; during this procedure the cut edge of the cervical cavity is seen; the cutting is continued until the cervix is completely divided, but is not carried too far backwards for fear of involving the rectum, which, however, is generally separated from the cervix by the adnexal mass filling the pouch of Douglas.

The cervix uteri once dissected, the arteries appear on each side; if they are not seen, it is known where to look for them, this fact being one of the great advantages of the procedure. The ovaries having been cut, the finger may be admitted by the breach thus made in order to separate the posterior surface of the uterus and reach the adnexa by their bases. The operation may then be concluded without difficulty. It is advisable, after division of the cervix, to prolong the incision of the peritoneum on the sides as far as the round ligaments, which are compressed and cut. This procedure admits more readily of access to the adnexal masses.

ENDOWMENT OF MOTHERHOOD IN FRANCE.

(FROM AN OCCASIONAL CORRESPONDENT.)

THOSE Socialist Members of the French Parliament who refuse to follow the somewhat extensive movement in favour of Bolshevism are now specially concerned in schemes which they consider will promote the material welfare of the masses. They are urging extensions of the laws on compulsory insurance against sickness, accidents, old age, and we are even promised something that seems very like the endowment of motherhood. Indeed, child welfare with the population question holds a very large place in the public mind, for it is not only a public health but also a military problem.

No one has more pertinaciously insisted on the population problem than the former anti-nationalist, revolutionist, the creator of *La Guerre Sociale*, Gustave Hervé. He strove hard to persuade nations, but especially the French and the Germans, to meet a declaration of war by a general strike and to throw down their arms. When, however, he found that the Germans, in spite of their talk of internationalism, would fight to a man, Gustave Hervé changed the name of his paper to *La Victoire*, and urged that the first step towards assuring the peace of the world was to give the Germans a good sound thrashing. Having evolved thus far, he soon made the further discovery that, while the population of Germany increased rapidly and that of France remained stationary, Germany ultimately must predominate. Therefore every effort must be made to preserve the life and vitality of the existing population and to encourage its increase. Unfortunately, these efforts to increase the population have not yet met with any success. The first census returns just received show that there has been a decrease in the number of births in 10 out of 12 departments when compared with the census of 1911. Even where there has been an increase this is due to exceptional circumstances—for example, in the Alpes Maritimes, where so many strangers flock to the fashionable winter stations. But it is not only the birth-rate that has decreased; though the population was already almost stationary, the marriage-rate has not increased since the war in anything like the same ratio as in Germany. Thus the German press recently published statistics stating that the number of births in Berlin, which amounted to 40,832 in 1914, fell to 18,178 in 1917, but had risen again to 33,398 in 1920. Even more significant is the fact that the number of marriages had augmented from 38,919 in 1914 to 53,631 in 1920.

It is facts such as these that stimulate the patriotic Socialist to attack the rich dwellers of, for instance, the Champs-Elysées district of Paris, because they have much fewer children than the poor. Also for one child that dies in the Elysées quarter six children die at Ménilmontant. If the children of the poor cannot live it is because they have insufficient air, food, clothes, and warmth. Then l'Abbé Lemire, who represents in Parliament such Socialist tendencies as exist in the Roman Church, proposes the endowment of motherhood. Already the law of July 14th, 1913, grants public relief to numerous families, but the war has rendered necessary a wider measure; so l'Abbé Lemire recently proposed to the Chamber of Deputies that every mother of French nationality, belonging to the working classes, shall be entitled to receive Fr.360 *per annum* for each child under 16 years who is not working and earning wages. This will prevent children working too early, as well as lessening the burdens of parentage. The proposal was accepted by the Chamber. If French money had retained its normal value, this would be the same as if a law had been approved by the House of Commons endowing every workman's child with an income of £14 a year up to the age of 16. What the Senate has to say to the project has still to be seen. The fact, however, that such a measure has been widely approved in the Lower House is in itself a proof of the acute stage reached by the population problem. This is a large measure which should encourage early marriage among the wage-earners.

THE LANCET.

LONDON: SATURDAY, MAY 7, 1921.

Safe Conduct of Labour.

IN no department of our science and art has preventive medicine produced so small a result in recent years as in midwifery. While it is true that there has been in this country, what is not true for most other countries, some diminution in the percentage of deaths from puerperal sepsis, yet there has been hardly any diminution in the number of deaths from the accidents of childbirth. This is the more striking when we remember that nearly all these deaths in childbirth are due to preventable causes; and that the incidence of septic infection is extremely small in lying-in hospitals, while it is but little less in private practice at the present day than it was 20 or 30 years ago. The cause for this remarkable state of things has been pointed out by various writers, and is to be found mainly in the fact that in ordinary general practice the precautions taken against the occurrence of puerperal infection are largely inadequate, and the measures necessary for the prevention of the accidents of childbirth are often neglected. That cases of puerperal septicæmia of autogenous origin occur from time to time is due to conditions present in the patient's own body at confinement; yet in the great majority of cases the infection is introduced from without, in most instances by those attendant upon the patient.

It has been urged with great propriety that every case of labour should be regarded as of the nature of a surgical operation, and that precautions should be taken as if the patient were undergoing surgical procedure. This is the practice in lying-in hospitals, and the good results are to be seen in the almost complete immunity from puerperal infection that patients confined in these institutions enjoy. At the present day, unhappily, the voice of the obstetrician teaching the doctrine of midwifery as a surgical art "is that of one preaching in the wilderness"; and although most would concede the justice of the argument, few are prepared to carry it to its logical conclusion, and to treat their lying-in cases as they do their patients who are to undergo some surgical operation. Certainly surgical cleansing of the vulva is a difficult procedure, and in ordinary conditions the external genitalia swarm with organisms possessing pathogenic properties. We must admit, further, that most cases of infection owe their origin to the introduction of such organisms into the genital tract as a result of the manipulations carried out in conducting the case, and in many instances infection takes place during vaginal examinations. The danger is naturally increased the more frequently vaginal examinations are made. There is a story current of a well-known obstetric teacher who used to tell his students the best thing a young practitioner could do when called to a case of labour was "to leave his midwifery bag at home and to keep his hands in his pockets," and in this dogmatic assertion there is more than a spice of truth. It would be no exaggeration to say that meddlesome midwifery kills as many patients as it saves. It is appalling to remember that in these days over 3000 women die every year in England and Wales as a result of pregnancy and childbirth, and that the great majority of these deaths are due to preventable causes. Besides this, we must remember that the morbidity of childbirth in private practice amounts to something like 15–20 per cent. of all cases, and that many of these women suffer in after-life from various disabilities due to the mild grades of infection comprised under this term. The prevention of septic infection in childbed can be effected in one of two ways: either by the recognition of the principle that childbirth is really analogous to a surgical operation and requires just as much care to avoid infection, or by not practising those manœuvres which are likely to lead to infection—namely, vaginal examinations or unnecessary interference with the normal course of labour.

The acquisition of a right judgment in deciding whether or no to interfere is mainly dependent upon the proper teaching of the student. The avoidance of vaginal examinations is a simpler matter and more readily attained. Abdominal palpation, combined if necessary with rectal examination, will give practically all the information that can be obtained by vaginal examination, and these two methods have the great merit that they entail no risk of infection. Abdominal palpation is the more important of the two, and sufficient information can be obtained by this method of examination for the safe conduct of the great majority of cases of labour. It requires only the necessary perseverance on the part of the student to familiarise himself with the procedure. By abdominal palpation everything can be determined in an ordinary case of labour except the degree of dilatation of the cervical canal and the presence or absence of prolapse of the cord, and the diagnosis of either of these two conditions can readily be made through the rectum. It should be considered gross neglect on the part of a practitioner, who undertakes to attend a woman in her confinement, if he does not carry out a careful examination of the abdomen four to six weeks before full term, combined in a primipara with a careful pelvimetry, and in all cases with the examination of the urine. The proper teaching of ante-partum examination of the patient is just as important, and in many ways more important, than the proper teaching of the conduct of a labour, and has the great value that the instructed practitioner in many cases may foresee and avoid accidents and complications which would otherwise occur. In our view every student should be well grounded in the proper methods of practising abdominal palpation in cases of pregnancy, and we would lay great stress upon the importance of teaching the use of rectal examinations during labour and the avoidance as far as possible of all intra-vaginal manipulations. The increased impetus which has been given lately to the setting up of ante-natal clinics will, we hope, have some influence in this direction, but much remains to be done, as we think that the importance of conducting cases of labour without any vaginal examinations at all, a procedure which in most cases it is quite easy to carry out, is not sufficiently emphasised by teachers of midwifery either to students or to midwives.

Industrial Morbidity.

THE Society of Industrial Engineers, which held its Spring Convention at Milwaukee last week, discussed Industrial Leadership, the note of the discussion being that men and women do not work for wages alone, nor are elaborate welfare organisations, lunch-rooms, and bonus plans per se sufficient to call forth the best that is in them. The genius of such men as WATT and ARKWRIGHT made Great Britain birth-place of that modern industrialism which has transformed civilised life; with us also a hundred years later, owing to the initiative of FARR and SIMON, public health medicine first saw light. But the close application of public health medicine to industrial life waits yet to be effected. When it is, we may hope for the dawn of greater contentment in the industrial world. Already there are signs, even though as yet no larger than a man's hand, appearing across the sea. Other nations before have copied and often improved upon what we have started. Many writers in this country, especially since the comprehensive reports of GREENHOW 70 years ago, have drawn attention to the effect of industry upon health. For the most part appeal in proof has been made to mortality data, often scanty and imperfect; evidence based on morbidity, which provides more plentiful material, is needed, but has not been forthcoming. While we are waiting the United States are moving, and during the last 18 months, in their public health reports,[1] there have appeared no less than eight publications dealing with the subject. A committee reported upon the need for investigation and upon a standard method of classification of sickness; that adopted is based on the International List of Causes of Death. Next the Public Health Service offered to devise standard forms and analyse in its statistical office records submitted. Then followed the analysis of records for 1919 of a manufacturing company employing 6700 workers. In December, 1920, there appeared an analysis of sickness frequency among industrial employees for the first half of that year, based on figures supplied by sick benefit associations which are coöperating with the Public Health Service. Then came a paper dealing with the diseases among steel workers studied by investigating the records during a two-year period ending May 31st, 1920, of a large employees' sick benefit association. In March of this year the analysis of sickness frequency for 1920 is carried forward for a further three months. Only cases of sickness incapacitating from work for seven days or more are included.

The occurrence of epidemics of influenza abnormally swells the total amount of sickness experienced, but, omitting this unusual feature, certain interesting facts emerge. Among the steel workers at the head of the order of frequency were 313 cases of bronchitis, 212 of rheumatism, 164 of pneumonia, 121 of rupture, 98 of gastritis, 95 of appendicitis, and 92 of infected injuries, after which no one cause provided more than 75 cases. The general frequency of sickness, based upon information received from 27 reporting associations, is stated month by month as the number of cases per 1000 persons per year; here again, respiratory diseases (including influenza) lead with 243 cases in February, falling to 10 in July; digestive troubles come second with 24 in January and March, falling to 14 in September, general diseases accounted for 18 in January and 7 in September, and nervous diseases for 8·5 in February and 4 in July and August. "When it is considered," to quote the Public Health Reports, "that cases incapacitating for less than one week are not included, the frequency rates seem surprisingly high. Even in September, the month of lowest incidence in the months under review, the annual case rate was 56 per 1000—in February it was 326. This is true in spite of the fact that the members of a large proportion of the associations are selected workers." The almost entire absence of industrial poisonings as a cause of disability is noted. Clearly they do not bulk largely in the field of industrial medicine. Great differences are reported in the case incidence in different associations. "In February the frequency for Association A was 118 per 1000, while for Association B it was 585 per 1000. In July the rate for Association S was 191 per 1000, while Association R in the same city, and having about the same number of members (approximately 1150 in either association), reported only one case occurring in July, making the rate only 10 cases per 1000 per year." The reason of these wide variations awaits further data and information.

We see here the foundations being laid for the science of industrial medicine, a science which cannot fail to throw light on the influences which reduce vitality. We take the opportunity of calling attention now to a conference of medical men associated with industry which is being called on June 2nd by the Industrial Welfare Society.[2] It is intended at this conference to coördinate the individual efforts made by firms in different parts of the country to deal with their own peculiar medical difficulties. This is work which we recommend to the attention of the reconstructed Industrial Fatigue Research Board; no work is more needed, and in no way can they better prove the wisdom of those who have maintained their activities and widened their scope.

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Pruritus Ani.

Pruritus ani, as a distressing and persistent symptom with a varied and often obscure origin, has always been a stumbling-block to the practitioner and a fruitful source of revenue to the vendor of patent ointments. The recent discussion held by the Subsection of Proctology of the Royal Society of Medicine[3] should help to place the pathology of this nerve-racking complaint on a firmer basis. There was general agreement with Mr. J. P. LOCKHART-MUMMERY, who opened the discussion, that in the great majority of cases the irritation is due to a chronic infective dermatitis, and that lesions of the anal canal producing a chronic discharge are the main factors in causation. Warmth, moisture, and organisms held up in puckered folds of skin, with inadequate attention to cleanliness, seem to be the essential factors in a chronic infection of a cutaneous area richly supplied with nerve-endings, a condition which is kept up and aggravated by persistent scratching. It is a noticeable fact in support of this contention that pruritus is far more common among hospital patients than in the well-to-do.

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[1] Public Health Reports, Government Printing Office, Washington, August 30th, 1918; Oct. 17th, 1919; April 9th, 1920; Sept. 10th, 1920; Nov. 19th, 1920; Dec. 3rd, 1920; Dec. 31st, 1920; March 4th, 1921.

[2] We are asked by the director of this Society, Rev. Robert R. Hyde, to state that he will be glad to hear from any doctors who are definitely and primarily concerned with the medical affairs of industry. The offices of the Industrial Welfare Society are at 51, Palace-street, Westminster, London, S.W. 1.

[3] THE LANCET, April 23rd, p. 859.

Although in the majority of cases some lesion of the anal canal will be found, in others a weak sphincter or slight prolapse of the mucosa will explain the discharge. Sir CHARLES GORDON-WATSON called attention to the frequency with which hypertrophy of the anal papillæ, the sense-organs of the rectum, is met with in cases of pruritus, and mentioned that over a period of 18 months in the out-patient department of St. Mark's Hospital he found hypertrophy of the papillæ, with or without other lesions, in 53 out of 86 cases suffering from pruritus. The significance of these observations was confirmed by the excellent results which followed cauterisation of these papillæ. He pointed out that many cases of supposed functional pruritus, with little or no visible dermatitis, can be cured by cauterisation of the papillæ when these are obviously hypertrophied. And in this view Mr. ERNEST MILES, the President of the Section, concurred, attributing papillary hypertrophy to constipation. Evidently the rôle of Morgagni's papillæ has not received the attention it merits. It may be regretted that no pathologist came forward in this discussion to confirm or confute the work of Dr. DWIGHT MURRAY in America, who has made out a strong case for the *Streptococcus fæcalis* as the important agent in the skin infection, and who advocates vaccine therapy. Vaccine therapy for pruritus has not found much favour in this country; it may not have received an adequate trial. Research in this direction is needed. Treatment directed to the cure of the rectal complaint leads to a speedy cure of the dermatitis in the early stages, when the latter is treated on aseptic lines with special attention to dryness and the use of non-greasy preparations. If the dermatitis is of long standing, and if the skin has lost its elasticity and has become fibrous and friable, the difficulties of effecting a cure become greatly increased, so that resort to ionisation, high-frequency current, X rays and radium, are often necessary. Opinions vary as to the permanent value of X-rays, and a note of warning was sounded at the discussion as to the dangers of an overdose in this region with the appalling condition of skin that may result. Dr. N. S. FINZI was of opinion that, on the whole, radium was of more permanent value than X rays in obstinate cases and he spoke well of high-frequency.

In the last resort surgeons at present favour the operation, devised by the late Sir CHARLES BALL (1851–1916), of dissecting up the perianal skin so as completely to divide all the nerve-endings in this region. In doing so it is important to undercut the lining of the anal canal as well as the perianal skin. The test of an adequate operation is complete anal anæsthesia after operation, with return of sensation within about six weeks. Success without recurrence has been claimed for the great majority of such operations; other surgeons are less confident of permanent cure. It is generally agreed that when pathological lesions of the anal canal, general diseases such as glycosuria, and intestinal parasites, especially the oxyuris, in adults as well as children, have been excluded, there remains a small residue with no definable cause. For the most part these cases occur among neuropaths and must be regarded as neurotic rather than neuritic. As Mr. MILES put it in his concluding remarks, they remain to remind us that there is a limit to medicine and surgery. Future research should be directed towards removing this limitation.

Annotations.

"Ne quid nimis."

THE SEVEREST ANÆMIAS.

THAT changes may occur in the circulating blood of workers with X rays and radium has been recognised for some time, and a case of fatal anæmia in a practitioner of this branch of medicine was recently reported in THE LANCET. Now that the danger is realised there is no doubt that adequate measures will be taken to meet it, for no one would be willing to relinquish so powerful a therapeutic weapon. Further, it is apparent that a fresh means has become available for the experimental study of the obscure conditions grouped together under the name of the severest anæmias. Nowadays the conception of a primary idiopathic pernicious anæmia is no longer held. Certain cases of severe or fatal anæmia are idiopathic in the sense that their ætiology remains unknown, but it is generally recognised that the term *pernicious anæmia* includes a variety of conditions which are alike in that their chief symptoms are diminution in the number of red blood cells, associated with a relative increase in amount of hæmoglobin and a leucopenia. It is still uncertain, however, how this condition is brought about, whether it is due to destruction of the red blood cells, or whether the fault lies in the hæmopoietic organs. The invariable presence of large quantities of iron in the organs of patients dying from pernicious anæmia suggests that an abnormal destruction of erythrocytes is an important factor in the production of the anæmia, but it is not a proof of the presence of a hæmolytic toxin; it may merely mean that unhealthy cells are produced by the bone marrow. The presence of megaloblasts in the blood stream in pernicious anæmia points to a pathological condition of the marrow, for the small normoblasts rather than the large nucleated forms are characteristic of normal regeneration, and the neutrophile leucopenia so commonly seen in this disease is further indication that the hæmopoietic system is at fault. Throughout life the cells of the blood, in common with almost all the other cells of the body, are constantly dying and being replaced, and the hæmopoietic tissues possess such remarkable powers of compensation that a considerable destruction or loss of blood is possible without there being more than a transient anæmia. Nevertheless it is conceivable that a perfectly healthy bone marrow may be unable to cope with the calls made upon it by abnormal, continued blood destruction, with the result that a recognisable anæmia occurs. More commonly, however, the deleterious agent which destroys the cells of the circulating blood acts also upon the marrow, so that there is both abnormal destruction and defective regeneration. An interesting possibility is the failure of the marrow to make any new cells at all, when the erythrocytes would disappear from the circulation at the end of their ten days or so of life, and the resulting anæmia would be sudden and absolute. Such a primary aplastic anæmia is a purely hypothetical condition, but what might be called secondary aplastic anæmias, in which the marrow gradually ceases to respond to the stimulus to make new cells, undoubtedly do occur. In life these cases can be diagnosed with some degree of certainty by the severe and increasing anæmia, with the complete absence of any signs of regeneration in the red cells of the circulating blood and the extreme leucopenia affecting chiefly the granular leucocytes. But an absolute diagnosis can only be made from an examination of the bone marrow when it is found that the hæmoblastic reaction is absent. The shafts of the long bones contain nothing but fat instead of red marrow, as is usual in pernicious anæmia, and the red marrow itself is atrophic. Whether an anæmia is ever aplastic from the beginning remains to be proved. Usually the condition can be regarded as the stage of exhaustion in the course of a particular disease, but the rapidly fatal termination of certain cases certainly suggests a primary lesion in the marrow. It is possible that radium and X rays may act thus, and it may be confidently expected that further research will do much to elucidate this obscure condition. Light may come from unexpected directions, and we commend to the attention of our readers the curious similarity of effect produced by absence of vitamins and by exposure to X rays and radium, which is the subject of an important communication this week in our original columns.

NATURAL HEALTH CENTRES.

THE death of Dr. Theodor Schott, which recently occurred at Frankfurt, removes one who had for 44 years exactly applied a number of physical agents to the treatment of chronic disease of the heart, and in whose lifetime the Nauheim method became well known all over the world. A paper which we published last week contained an exact record by four competent observers at one of our own spas of the experimental basis claimed for certain popular methods of electrical treatment. The move towards precision in the study of physical therapeutics is very welcome. The new impetus given to the study of incipient and chronic disease has naturally directed fresh attention to the great sources of energy and healing in waters and climates. An interesting symposium by French authorities appears in the *Vie Médicale* for April 8th. Attention is there called to the "gamut" of French marine climates, of the Channel, Ocean, and Mediterranean coasts, and to the varied Alpine locations, which are available—but far too little utilised—for the treatment of tuberculosis, both in children and adults. Tuberculous maladies form but one group of many chronic infective and toxic conditions that are amenable to climatic influences. We are also reminded of the numerous natural waters of France, many of them situated in fine, sub-Alpine climates, where arthritic affections and dermatoses, cardio-vascular affections, and disorders of digestion, of metabolism, and of the nerve centres, can be treated by waters and baths in beautiful and stimulating surroundings. Dr. H. Jumon, in a study of La Bourboule, states very truly that all such "cures" are in themselves unavoidably fatiguing and ought to be carried out in an atmosphere of peace and repose. He deplores the tendency for health resorts to become merely centres of excitement for pleasure-seekers. This is a very old tendency, and has in the past spoiled many a famous spa. Pleasant distraction, amusement, music are, of course, wanted by the health-seeker, together with the magic of change in daily surroundings, habits, and thoughts. But these should form only the setting for a definite organised medical specialty. The health resort is a treatment centre for incipient and chronic disease. Its accidental and obvious features as a place of recreation and pleasure should not be allowed to obscure its essential purpose of healing and fortification against disease. Moreover, as we have hinted, there is now a body of exact knowledge drawn from many countries and times, dealing with the effective utilisation of health resorts by invalids. It forms no part of authorised medical teaching, or only in an occasional and sporadic way. Sometimes, in the laudable search for definition, health stations are labelled too precisely, as in France. For example, obesity is referred to Brides-les-Bains and enteritis to Châtel-Guyon. We ought to look a little deeper. Symptomatic maladies arise from many causes, and it would be more useful for the medical man to direct his patients according to underlying constitutional conditions, which respond in a definite manner to different forms of hydrological treatment. This hiatus in the education of the practitioner should be filled by instruction in the general principles upon which incipient systemic disorders are actually amenable to the methods of physical medicine. At present the lack of this knowledge is a fruitful source of unfounded pretensions and empirical practice. As one of our French colleagues observes, doctors are apt to refer their patients to waters and baths with a veiled scepticism, and often in order to get rid of them for a time, or simply to give them pleasure.

Dr. G. Bardet, director of the Laboratory of Hydrology in Paris, points out in the same journal the great opportunity existing at the present time for able young practitioners to specialise in climatic and hydrological medicine. Such a movement has already taken firm hold in Switzerland, Belgium, Holland, Italy, and Germany. The creation of new stations, both in the Alps and along the coasts of France, with adequate medical organisation would be, he thinks, of immense benefit to his country. The young physician, specialising according to the local indications during the summer, could spend the winter to great advantage in study and travel. He estimates that from 500 to 600 such medical men could thus find scope for practice as well as study in medical posts of this kind. Certainly it is hardly open to doubt that a more complete provision of health stations is needed, whether for the tuberculous, for delicate children, for the unfit in all walks of life, or for the overworked and the elderly. In England the coast climates—perhaps even more remarkably than in France—offer a complete range of sedative and tonic influences. Inland we have moors and hills, and what these lose in altitude they gain in the tonic influence of northern latitude. But here again we are driven back to the need for more knowledge and coördination. We are glad to learn that an International Society of Medical Hydrology is to devote itself to throwing light on these problems.

ADVISORY COMMITTEE ON THE WELFARE OF THE BLIND.

IN view of the passing of the Blind Persons Act, 1920, the Minister of Health has reconstituted the Advisory Committee on the Welfare of the Blind, so as to afford representation to the local authorities under the Act and to voluntary agencies for the blind, and the following have been appointed members of the Committee: Right Hon. G. H. Roberts, M.P. (Chairman), Mr. P. M. Evans, LL.D. (Vice-Chairman), Mr. Alderman F. Askew, Mr. A. M. Bernard, Miss Winifred Bramhall, Sir Coles Child, Bart., Mr. H. Davey, Mr. James Graham, Mr. Councillor J. A. Hill, Sir William Hodgson, Mr. T. Holt, Mr. A. L. Lowe, C.B.E., Mr. G. F. Mowatt, Mr. H. J. Munro, Sir Arthur Pearson, Bart., C.B.E., Mrs. Wilton Phipps, Rev. P. S. G. Propert, Mr. R. Richardson, M.P., Mr. W. H. Tate. The Committee will advise the Minister on matters relating to the care and supervision of the blind, including any question that may be specially referred to them by the Minister. Mr. F. M. Chapman, of the Ministry of Health, will act as Secretary.

OXYGEN INSUFFLATION IN MORPHINE POISONING.

Professor Brauer has recently discussed[1] the treatment of morphine poisoning as lately adopted at the Eppendorfer Hospital in all severe cases. In his opinion morphine poisoning proves fatal chiefly on account of the CO_2 intoxication which it induces; if this can be prevented the most dangerous symptoms of morphine poisoning are warded off, and doses of morphine which would otherwise inevitably prove fatal can be tolerated with comparative impunity. In his first case, treated by insufflation of oxygen, this procedure was more or less a counsel of despair, for all the standard methods of treatment had been tried for many hours, and life was slowly ebbing away. Yet, within five minutes of flushing the trachea with oxygen there was a remarkable improvement in the patient's colouring, which had been cyanosed. She soon began to breathe automatically, and it was evident that in a few minutes a change had been effected, converting a hopeless case into one with every prospect of recovery. The insufflation of oxygen was continued for about 12 hours, and though aspiration pneumonia of both lower lobes developed, the patient ultimately recovered. The procedure recommended by Professor Brauer is described in considerable detail. Tracheotomy having been performed, a long, soft rubber catheter, fitting quite loosely in the tracheotomy tube, is attached to an oxygen cylinder. An air filter is interposed as well as a contrivance for keeping the oxygen moist when the insufflation has to be continued for a long time. The supply of oxygen is graduated by bubbling it through an antiseptic solution before the catheter is introduced into the trachea. When the end of the catheter reaches the bifurcation of the trachea or one of the bronchi it provokes coughing, and thus helps to clear the respiratory passages and facilitate respiration. As long as the escape of oxygen is not too rapid the lungs cannot be over-distended, for gases can easily escape between the cather and the loosely fitting tracheotomy tube, as well as by the larynx. An additional advantage of this procedure is the opportunity it affords for the escape of CO_2, which is otherwise apt to collect in the upper respiratory passages. It is interesting to note that Professor Brauer is so doubtful as to the value of atropine in morphine poisoning that he does not prescribe it in severe cases. His attitude towards this remedy is much the same as that voiced by Professor Cushny in the 1905 edition of his "Text-book of Pharmacology," in which he refers to the "long and weary dispute as to the value of atropine."

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[1] Beiträge zur Klinik der Tuberkulose, Bd. xlvi., Hft. 1.

THE TREND OF FOOD PRICES.

THE *Economic Review* for April 22nd prints a table of great value, comparing the retail price of food in many countries during the last seven years, taking the year 1914 as the basis. The month of July has been chosen for the comparison, the figures are the official index numbers taken from the *International Labour Review*, and we reproduce them substantially, omitting a few exceptions and qualifications which hardly affect their comparative value.

Date.	United Kingdom.	Canada.	Australia.	New Zealand.	South Africa.	U.S.A.	Paris.	Belgium.	Amsterdam.	Switzerland.	Rome.	Milan.	Spain.	Denmark.	Norway.	Sweden.	Calcutta.
1914	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1915	132	105	131	112	106	98	122	—	114	119	95	—	106	128	—	124	108
1916	161	114	130	119	114	109	132	—	117	141	111	—	113	146	160	142	110
1917	204	157	126	127	127	143	183	—	146	178	137	—	127	166	214	181	116
1918	210	175	132	139	129	165	206	—	176	222	203	325	151	187	279	268	121
1919	217	186	147	144	139	186	261	—	204	250	206	310	130	212	289	310	155
1920	262	227	194	171	197	215	373	453	210	232	318	445	—	253	319	297	170

Man does not live by bread alone, and in the Dominions personal apparel has long been relatively more costly than at home. But when it comes to the pinch it is the actual cost of essential foodstuffs as purchased that determines economic stress, and the table is instructive in this regard.

STAB WOUND OF BOTH VENTRICLES: RECOVERY.

IN his Bradshaw lecture[1] on the Surgery of the Heart, on Dec. 11th, 1919, Sir Charles Ballance tabulated 152 cases of operations on the pericardium and heart performed for injuries. No wound of both ventricles was mentioned by him, but two cases of double wound of right ventricle and auricle and of right ventricle alone were cited, both fatal. Dr. E. M. Freese has recently reported[2] the following remarkable case of recovery after a stab wound of both ventricles. A coloured man was stabbed at 8 P.M., and brought to hospital at 8.30 unconscious. Respirations were feeble and shallow, and no pulse was perceptible in radial or carotid arteries. The pupils were widely dilated and the skin was bathed in cold perspiration. A spot of blood on the shirt over the heart indicated the site of the wound, which was 1½ in. long, and in the fourth interspace 2 in. to the left of the sternum. Only a small amount of blood had escaped, not enough to account for the state of the patient. The area of cardiac dullness was much increased. The diagnosis of wound of the heart with hæmorrhage into the pericardium seemed evident. There was no hæmoptysis. The chest was painted with tincture of iodine, and under light ether anæsthesia, with the wound as the centre, a U-shaped incision was made with the base outwards. The skin and pectoral muscles were turned back, the fourth and fifth costal cartilages were cut through, and the corresponding ribs carefully separated from the pleura for about three inches, and then divided with bone forceps and turned outwards. This gave a very satisfactory exposure, and the wound in the pericardium, from which there was a small stream of blood, was at once seen. The wound was enlarged upwards and to the right. The lack of even carotid pulse was now explained by the pericardium being packed with clot. When this was scooped out the heart at once began to beat violently, spurting blood on to the anæsthetist. The heart wound was instantly plugged with the tip of the left index finger until a suture was passed and tied. This nearly checked the flow, but it was necessary to use a second suture. Much blood was lost during these manipulations, but the action of the heart was fair and the anæsthetist could feel the pulse. But it was now found that blood was welling up behind the heart. Grasping the heart in the left hand, with index finger hooked round the apex, Dr. Freese raised the organ so as to expose a wound in the posterior wall nearly as large as the one closed in the anterior. Owing to the thickness of the left ventricle the wound was not bleeding so rapidly. It was closed with two sutures. The heart had almost stopped beating and no pulse could be felt. An intravenous injection of saline solution was given, the pericardium was sponged out and closed by continuous suture, the ribs were replaced, and the musculocutaneous flap was sutured in place without drainage. The patient was taken to his room, where he arrived at 9.15; the foot of the bed was elevated, hot-water bottles were placed around him, a hypodermic injection of morphine and atropine was given, and rectal infusion was started. On reaching his room the pulse was 72, but very small. The after-history was satisfactory; at no time was there cause for alarm. Bronchitis developed on the second day and was annoying on account of painful cough, which was controlled with heroin. On the fourth day a loud friction murmur was heard over the heart (pericarditis). This lasted for two weeks, but there was never any sign of fluid sufficient to demand interference. The highest temperature, 102°F., was reached on the third day, with a pulse of 150. At this time the bronchitis was most severe. The temperature rose every afternoon to 100° until the eighteenth day. He was discharged a month after operation. The wound had long since healed, and there were no physical signs. X ray examination showed only some thickening of the pleura, with perhaps a little enlargement of the heart shadow.

SPLENOMEGALY.

IN their review of recent work on diseases of the spleen in the May number of *Medical Science*, Dr. Gordon Ward and Dr. J. D. Rolleston devote several pages to a consideration of various forms of splenomegaly which have been lately described by British, French, German, Italian, and American observers. Not the least interesting of them is the form to which Luccarrelli has given the provisional title of "war splenomegaly," having found it in a considerable number of soldiers without being able to connect it with any present or past disease such as malaria, enteric fever, spirochætosis ictero-hæmorrhagica, or trench fever. Among the various explanations which have been offered to account for the condition are, first, that it is a toxic state of intestinal origin due to the food and character of life at the front, including mental and emotional factors; secondly, that it is an abortive form of trench fever; and, thirdly, that it is due to the presence of the *Spirochæta icterohæmorrhagiæ* or some other organism. This form of splenomegaly is apparently quite distinct from the obscure and rare disease described by Sir John Rose Bradford[1] in his Lumleian lectures on his experiences during the campaign in France and Flanders in 1914–19. The clinical picture in his cases was that of a febrile illness closely resembling enteric fever and lasting several weeks, during which the spleen slowly increased in size to that reached in ordinary splenomedullary leukæmia. The blood examination showed a condition similar to that of splenic anæmia, a diminution of the red cells and a considerable leucopenia. Repeated examination of the blood and stools failed to show any organism of the enteric group, and the Widal reaction was uniformly negative. Another rare form of splenomegaly is that described by Weil, in which the Wassermann reaction was positive though there was no evidence of syphilis, inherited or acquired. Antisyphilitic treatment in these cases had no effect on the splenomegaly or the Wassermann reaction, but caused an aggravation of the general condition. Lastly, reference should be made to the cases reported by Lévy-Franckel of splenomegaly following injections of neosalvarsan for non-syphilitic skin conditions and apparently due to this drug, as all other causes such as syphilis, leukæmia, pseudo-leukæmia, tuberculosis, and cancer could be excluded.

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[1] THE LANCET, 1920, i., 1, 73, 134.

[2] Journal of the American Medical Association, Feb. 19th.

PULMONARY TUBERCULOSIS AND LIFE ASSURANCE.

IN a recently published statistical Bulletin of the Metropolitan Life Insurance Company, U.S.A., we meet with the following startling declaration :—

> "More money was disbursed on account of tuberculosis than for any other disease. Despite the fact that the death-rate for tuberculous diseases in 1920 was the lowest in the history of the company, and was two-fifths below that of 1911, more than six and one-half millions were paid for death claims resulting from tuberculosis."

Tuberculosis in this connexion is practically synonymous with pulmonary tuberculosis. *Every company* has the same experience. In the medico-actuarial mortality investigation compiled by the Association of Life Insurance Medical Directors and the Actuarial Society of America, the following percentages of deaths from pulmonary tuberculosis to total deaths among standard lives are given. Between the ages of 15 and 29, males 22·5 per cent., females 27·2 per cent.; between 30 and 44, males 12·3 per cent., females 13·9 per cent.; from the age of 45 and over, males 4·5 per cent., females 4 per cent. It is clear, therefore, that by *far* the greatest mortality is experienced among the younger lives, and that it is with these that the greatest loss occurs. Many of the claims fall in the earlier years of life insurance, and, as we *pointed* out recently, the majority of early claims are due to pulmonary tuberculosis. That a high mortality from this disease should occur is unavoidable at present, but it is felt that with better education of the medical profession generally in this subject many of the early claims—those, let us say, in the first year of insurance—could be avoided. It cannot be too widely known that certain factors definitely predispose to tuberculosis, if they are not indicative of an actual tuberculous state. They are: a family history of the disease, a tall height with relatively low weight; a *past history of pleurisy*. Young, tall underweights are extremely risky lives from this point of view. The significance of pleurisy is not as widely recognised as it should be; it is not going too far to say that pleurisy, when not due to some known cause such as pneumonia, is, in the majority of cases, definitely tuberculous. Another stumbling-block is that many practitioners are content with such diagnoses as unilateral bronchitis, unexplained and unclassified "anæmia," or "repeated influenzal attacks." Under such subterfuges of ignorance, pulmonary tuberculosis not infrequently masquerades. Putting aside all intricate or subtle methods of detection of early phthisis, there are four cardinal signs and symptoms, the conjunction of any two or three of which is an omen so sinister that the strongest suspicion should be aroused, and examinations of the sputum made for tubercle bacilli, repeated many times if necessary; there are progressive loss of weight, progressive weakness, hæmoptysis (though ever so slight), and evening fever. Simple as these things are, their general recognition would result in earlier diagnosis of this dread disease, a far greater percentage of recoveries, a great saving of the public money now spent on institutions and hospitals, and a sparing of immense losses generally in the financial affairs of the country. The early claim for pulmonary tuberculosis blesses neither him who gives nor he who takes, and is, we fear, often a slur on the skill of our profession.

HOSPITALS AND INCOME-TAX.

LAST November a subcommittee was appointed by King Edward's Hospital Fund for London to consider the question of securing exemption from income-tax on voluntary contributions to hospitals. Sir Walter Trower, Sir Basil Mayhew, Mr. Henry L. Hopkinson, and Mr. John G. Griffiths were the members of this committee, the first-named being elected as its chairman. The report which has just been issued, signed by three members, records the opinion that relief in respect of income-tax paid on subscriptions and donations to hospitals is practicable, and offers a definite form of financial aid to embarrassed hospital finance. They desire that their report should be laid before Lord Cave's Hospital Committee. Sir Walter Trower adds a note regretting that he is unable to accept the principle of exemption from income-tax, which he finds to be inconsistent with the report of the Royal Commission on the Income-tax. Such exemption being equivalent, in his opinion, to a direct grant by the Crown must raise the question of State control.

A FRENCH REVIEW OF SURGICAL PROGRESS.

STIMULATED by Dr. de Lavergne's account[1] of the advances made by medicine in the war, Professor Billet, also a teacher at Val-de-Grâce, has sketched[2] the astonishing improvements that this war has brought to surgery. His review is the more interesting as it is taken from a different viewpoint from that of reviews which have appeared in England, and, indeed, the only British practitioner mentioned is Sir Almroth Wright. The review may be briefly summarised thus. The great lesson taught to surgeons by the war is their personal limitation, and the need of team-work. Working by himself, the most skilful surgeon must fall short of possibilities; he therefore must accept and take guidance from other persons, experts in eyes, ears, X rays, bacteriology, chemistry, medicine, &c., if he is to do the best possible for his patients. So thoroughly has this lesson been learnt in France that the members of the profession are beginning to ask for an organisation and equipment for civil hospitals *similar to that they had found so satisfactory* when they were working in army hospitals during the war. The war began with a great surprise to the profession; it had been thought that gunshot wounds were rather slight and would heal at once. It was bullets that were thought of, it was shells which came. And just as the soldiers were overwhelmed with shell in the first days, so were the surgeons overwhelmed with septic wounds, with tetanus, septicæmia, and gas-gangrene. By the end of October, 1914, preventive inoculation had eliminated tetanus, but septicæmia and gas-gangrene remained. The *dreaded invaders* were the anaerobic bacilli. To defeat them every wound was thoroughly opened up and then irrigated with antiseptics. Results were better, but every wound suppurated and some patients died exhausted; some had to have their limbs, saved with so much trouble, amputated later. Antiseptics became suspected. Some thought they injured the tissues, some that they did not go deep enough. In August, 1915, Carrel with his tubes, Dakin with his solution, seemed to have won a complete victory. But the aseptic surgeons were still unsatisfied, feeling that antiseptics had no right to be resuscitated, and Delore in 1915 and Leribat at Verdun in 1916 told of a simpler, better, treatment for wounds of the knee. Leribat opened up the track, excised the wounded tissues, made the joint clean, washed it out with ether, put in a tiny drain (removed after 48 hours), sewed up the synovial membrane first and then the skin, put on a plaster splint for a fortnight, and discharged his patients thereafter with knees that could bend, his success being largely due to more exact technique, and to smaller, better judged incisions. In November of the same year, 1916, Gaudier extended this principle to the treatment of all wounds, and became the author of the method of "primary suture." But some wounds, already left too long, and so become infected, were unsuitable; to them Carrel's method was applied, and "delayed primary suture" became possible. Thus was ordinary suppuration defeated. There remained gas-gangrene, which proved to be beyond the power of the surgeon alone; he had to call on the laboratory for help. Still, it was not till late in 1916 that, the organisms having been isolated and an effective vaccine prepared, the last problem in the treatment of wounds was solved. Since then great triumphs have been won in repairing deformities, especially by Morestin, by autoplasty, splints or supports, and grafts. And grafts are so various. Before the war Tanton had replaced a lacerated urethra with a graft from a saphena vein; since the war Legueux has had marked success in replacing lost urethræ with arteries, living or dead. Tendons may be grafted even with dead tendon (Nageotte and Sencert), nerves repaired even with dead nerve tissue, though supports for the limbs may still be needed. As for bones, there are the three grafting methods: that of Delagenière, who uses a small superficial shaving off the bone, a graft of periosteum with a little scale of bone below it; that of Albee, who takes a piece of bone from the periosteum to the medullary canal; and that of Nageotte, who uses dead bone; and there are all sorts of combinations of the three. So much for surgical affections. But surgery can help medicine. Carrel-Dakin methods are useful in treating chronic suppurating pleurisy. As for acute pleurisy, some propose to remove it in mass, as they do tumours, and to close the wound at once. Others say drainage is useless. Ombredanne in appendicitis removes the appendix and at once closes the peritoneum; less and less do people drain the pleura with large drainage-tubes; some even talk of immediate closure once the pus is out. Next vaccines. Osteomyelitis, if chronic, yields to Carrel-Dakin, but if acute may be mastered by staphylococcus vaccines (R. Grégoire). The streptococcus is more obstinate, but is at times thus overcome. Such are the surgical advances of the war, and progress continues in peace. Nor yet has all the harvest been gathered.

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[1] THE LANCET, 1920, ii., 535–40.

[1] THE LANCET, April 2nd, p. 712.

[2] Archives de Médecine et de Pharmacie Militaires, lxxiv., No. 2.

THE NEWLY CONSTITUTED CENTRAL MIDWIVES BOARD.

THE Central Midwives Board has now completed its reconstitution under the Act of 1918. The initiative, it may be noted, for a wider representation originated with the Board itself, and there are now five certified midwives with seats on the tribunal. The membership is as follows, the names of new members being asterisked: Sir Francis Champneys, in the chair; Professor Henry Briggs, Lady Mabelle Egerton, *Miss Gladys Le Geyt, and *Miss M. Olive Haydon, appointed by the Ministry of Health; Dr. W. S. A. Griffith, appointed by the Royal College of Surgeons of England; Dr. J. S. Fairbairn, appointed by the Incorporated Midwives Institute; Dr. C. Sangster, appointed by the Society of Apothecaries; *Dr. J. J. Jervis, appointed by the Association of Municipal Corporations; *Dr. R. A. Lyster, appointed by the Society of Medical Officers of Health; Miss Rosalind Paget, appointed by the Queen Victoria's Jubilee Institute for Nurses; Mr. L. H. West, LL.D., appointed by the Association of County Councils; *Miss Pollard and *Miss Elizabeth Pearson, appointed by the Incorporated Midwives' Institute. Dr. Jervis is chief health officer for the city of Leeds, and Dr. Lyster for the county of Hants. Of the midwife representatives, Miss Le Geyt is superintendent of a school for mothers, Miss Haydon has charge of a midwives' training school, Miss Pollard is inspector of midwives for the county of Middlesex, and Miss Pearson has been active in organising midwives' associations in the country. It will be seen that the new constitution has resulted in a widely representative gathering and gives colour to the hope that, without neglecting the necessary but painful work of penal sessions, the Central Midwives Board may turn its attention to constructive work for the building up of a convenient and efficient midwifery service in this country. No one any longer grudges the trained midwife her place as an essential part of any public health service. The more comfort and dignity that can be brought into the midwife's life, the better will be the service offered.

THE RÔLE OF THE NERVOUS SYSTEM IN BODY TEMPERATURE REGULATION.

THE rôle of the nervous system in the regulation of temperature is known to be a very complex one. H. G. Barbour and E. Tolstoi have made experiments on dogs by placing them up to the neck in a bath at 20° C. for half an hour or more, the temperature of the room being 22° C. The water was not sufficiently cold to lower the body temperature, but distinctly aroused the regulation mechanism against cooling. There was a slight gain of 0·1° to 0·8° C. in body temperature; there was an increase of 1 to 2 per cent. in the blood solids. Similar dogs with transection of the cord between the sixth and seventh cervical segment were quite unable to withstand baths of 20° C., exhibiting a rapid fall in body temperature, usually to a dangerous level in 40 minutes. Unlike normal dogs, they failed to exhibit shivering, and all showed an abnormally low blood-solid percentage as the result of the operation. The cold stimulus was unable to evoke more than a very weak response. This inability to reduce the blood volume and thereby diminish the flow through the body surface helps to account for the very rapid loss of body temperature. Dogs made poikilothermal by cervical cord section are deprived of reactions which may be set up between the temperature sense nerve-endings and the circulation. The shifting of water from the blood to the tissues is evidently such a reaction. The authors conclude that the rôle of the nervous system in the reaction against cold is to convey impulses from the temperature sense nerve-endings to heat centres, which in turn, besides shivering and vaso-constriction, incite blood thickening. Hæmo-concentration lessens the water available either for heat dissipation by evaporation or for providing blood bulk sufficient to flood the peripheral vessels. Normal dogs respond regularly to a moderately high environmental bath temperature (40°–41° C.) by hæmo-dilution and to a cold environment (11°–8° C.) by hæmo-concentration. The change usually approximates to 2 per cent. of the total blood-weight, which means 10 per cent. change in the fluid content of the blood. The circulatory factor in regulation against overheating and cooling consists not merely in transferring of blood respectively to or from the body surface, but also in actual shifting of water into or out of the blood-stream. Thus, response to a hot environment is peripheral vaso-dilatation plus hæmo-dilution, while a cold environment evokes vaso-constriction plus hæmo-concentration.

THE ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION.

THE annual meeting of the British Medical Association opens at Newcastle-on-Tyne on Friday, July 15th, when the Representative Body meets at 10 A.M. and continues in session until the following Tuesday, on which day, at 2 P.M., the statutory annual general meeting will be held. Professor David Drummond is announced to give his presidential address at 8 P.M. on the same day, and on Wednesday, Thursday, and Friday, July 20th–22nd, the 17 sections will conduct their discussions, the first group on each of the three days, the second group on two days, and the third on one day only.

Group I.—Medicine: Professor Thomas Beattie.
Surgery: Professor J. Rutherford Morison.
Pathology and Bacteriology: Professor Stuart McDonald.
Preventive Medicine with Industrial Diseases: Sir Thomas Oliver.
Orthopædics and Diseases in Children: Mr. A. H. Tubby.

Group II.—Neurology and Psychiatry (July 20th and 21st): Professor A. W. Mackintosh.
Obstetrics and Gynæcology (July 21st and 22nd): Professor B. P. Ranken Lyle.
Ophthalmology (July 20th and 21st): Professor J. D. Wardale.
Oto-Rhino-Laryngology (July 20th and 21st): Dr. G. William Hill.
Physiology, Pharmacology, Therapeutics, and Dietetics (July 20th and 21st): Dr. H. H. Dale.
Venereal Diseases (July 20th and 21st): Colonel L. W. Harrison.

Group III.—Ambulance and Red Cross (July 20th): Sir James Cantlie.
Dermatology (July 21st): Dr. J. Farquhar Christie.
Medical Sociology (July 22nd): Sir Jenner Verrall.
Proctology (July 20th): Mr. J. P. Lockhart-Mummery.
Radiology and Electro-Therapeutics (July 22nd): Dr. Robert Knox.
Urology (July 22nd): Mr. J. W. Thomson Walker.

On Wednesday, at 8 P.M., Sir Thomas Oliver will give an address on Industrial Diseases, and on Friday, at 7.30 P.M., Professor Arthur Keith will deliver a popular lecture on Evolutionary Wounds. The annual dinner of the Association is fixed for Thursday at 7.30 P.M.

CANCER IN ANIMALS.

AT a recent meeting of the Académie de Médecine Mr. Cadiot read an interesting paper[1] on the distribution of cancer in animals, utilising a number of facts and figures taken from the literature in order to draw conclusions on some of the general problems of cancer. From the fact that carnivorous and herbivorous animals show no great difference in the incidence of cancer, the author deduces that diet does not constitute an important factor in the genesis of cancer. Age, in animals as in man, stands out as the predominating factor. There are, however, interesting differences in the incidence of cancer in so far as it affects the different organs, and these differences also exist between different species of animals. Thus cancer of the penis appears to be particularly frequent in horses, and according to the author occurs most frequently in castrated animals. In oxen the atrophy of the testicles, which takes place after castration by "twisting," presents a predisposing factor for the development of malignant growths, chiefly of a sarcomatous type. The author is, however, on very debatable ground when he tries to prove from the incidence of cancer in animals that chronic irritation is of comparatively little importance. He bases his argument chiefly on the assertions that cancer of the digestive tract of animals is very rare, and that in draught animals cancer of the skin does not develop in those sites where the pressure of the collar and the friction of the harness produce a chronic irritation. A glance at the tables published in the Third Scientific Report of the Imperial Cancer Research Fund entitled, "Malignant New Growths in Domesticated Mammals," shows that cancer of the digestive tract is not as infrequent as Mr. Cadiot believes it to be. And he must surely have forgotten the "horn core" of cattle in India, where a squamous cell carcinoma develops with great frequency at the root of the right horn in cattle employed for draught purposes, the right horn being used to attach the animal to the wagon. But the whole question of the relation of chronic irritation to the causation of cancer has during the last few years been raised from the slough of argument and placed on a secure basis by experiment. The work of Fibiger on the experimental production of cancer of the stomach by feeding with spiroptera, and the experimental production of cancer by prolonged painting with coal tar —first successfully demonstrated by Yamagiwa and Ichikawa, and since confirmed by Fibiger and by Murray and Woglom in this country—represent important advances of our knowledge of the origin of cancer. A grain of experiment, properly conducted, is worth at least an ounce of argument.

THE CASSEL HOSPITAL.

THE Cassel Hospital for Functional Nervous Disorders will shortly be ready for the admission of patients, with Dr. T. A. Ross as medical director; the medical committee includes Miss Aldrich-Blake, Dr. Farquhar Buzzard, Sir Maurice Craig, Lord Dawson, Professor J. S. Haldane, F.R.S., Dr. Henry Head, F.R.S., Dr. A. F. Hurst, and Sir Frederick Treves. Patients eligible for admission are members of the educated classes who are suffering from neuroses not directly traceable to organic disease, who cannot afford treatment in a nursing home. The hospital is situated among beautiful surroundings at Penshurst, Kent, and there will be accommodation for 60 patients, who will be asked to contribute only towards maintenance. In medical circles the want of private hospitals for educated patients unable to meet the expense of nursing homes, most of which are run on a comparatively small scale, has long formed a subject of comment. From time to time schemes for such establishments have been devised, but seldom, we believe, in the end proceeded with. The Cassel Hospital, accordingly, will really meet a long-felt want, and the success which it will doubtless enjoy should provide an impetus to further advance along similar lines. Obviously, sufferers from one or other kind of neurosis form but a part of that large class who hitherto have had only the Hobson's choice of a nursing home which they cannot afford or a general hospital where little or no special provision for private cases is made. Though in some parts of the country nursing homes of a sufficient size almost to justify their description as private hospitals have been springing up to meet the need, with them the expense of running the establishment must always militate against the maintenance of fees at a comparatively moderate level. This aspect of the problem, through the generosity of its founder, would appear to be satisfactorily settled as far as the new Cassel Hospital is concerned. From the standpoint of therapy there are advantages in the segregation of patients whose complaint is of "nerves" in any form, since they will be free from the adverse influence, on the sensitive mind, of contact, direct or indirect, with the mixed medical and surgical cases of general hospitals. On the other hand, too sheltered a life in a secure environment of comfort and beauty brings its own danger in removing the incentive to cope with the adverse conditions of real life. However, once let the proper atmosphere of cure be created in such a private hospital and it is bound to prove worthy of the hopes at present centred in it.

Dr. Sidney Reginald Dyer, Medical Inspector of Prisons, has been appointed one of the Commissioners under the Prison Act.

THE House and Library of the Royal Society of Medicine will be closed from Saturday, May 14th, until Tuesday, May 17th, both days inclusive.

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[1] Bulletin de l'Académie de Médecine, 1921, No. 13, Séance du 22 Mars, 1921, p. 373.

MEDICAL STATISTICS.

I.

IN these days when the expediency of compiling and analysing clinical records is debated, it is fitting to inquire into the past relations between medical and statistical science. Is the application of the numerical method to the subject matter of medicine a trivial and time-wasting ingenuity as some hold, or is it an important stage in the development of our art, as others proclaim? An answer to this question must needs be coloured by individual predilection, but a brief retrospect of medical history will provide certain data of value in reaching a decision. On this account we propose to notice some incidents which have rather tended to pass out of the memories of the present generation, to display the connexion between the progress of medicine and the progress of a department of knowledge which seems at first wholly alien from it.

Historical Retrospect.

The great Hippocrates has received many titles of honour from an admiring posterity, but that of statistician has not been included. Yet the student of his "genuine" works will find therein much which is uncommonly suggestive of a statistical method. We do not refer to the collection of cases upon the strength of which Sir Gilbert Blane attempted to assess the fatality of untreated "fevers," but to the insistence upon a synthesis of individual experiences as the preliminary of any general theory, whether of epidemiology or endemiology. This side of the Hippocratic doctrine was the stock-in-trade of the Empiric sect, who, indeed, according to their impartial critic, Celsus, and their by no means impartial critic, Galen, would believe in nothing unless it were supported by an array of evidence which was statistical in all but name. The works of the Empirics have perished, and Galen set himself to blacken their reputation, with such success that the term became a synonym for quack. No massed clinical records other than those of Hippocrates himself have come down to us.

When Sir Gilbert Blane wished to compare his experience with that of the ancient masters, he could do no better than contrast statistics of his hospital and private practice with the records appended to the third book of Hippocrates's epidemics. The same remark applies to the experience of preventive medicine which must have been acquired through the centuries of Roman civilisation. Sir John Simon[1] and others have pointed out that in the best days of Rome public hygiene and preventive medicine were a care of the legislature, but of the successes and failures of the system we know nothing. The normal death-rate, its relation to urbanisation, the influence of employment, the toll taken by epidemics, these things are matters of conjecture.[2] Of the theoretical basis of ancient medicine we know much, of its practical consequences hardly anything. Nor when we turn to modern times, to the practice of medicine from the Renaissance down to the end of the seventeenth century, is the case much better. The physician of the middle of the seventeeth century had indeed abandoned some superstitions of Chaucer's Doctor of Physik, but he was not perhaps a much more scientific or efficient practitioner. Indeed, so ripe a scholar and merciful a critic as the present Harveian Litrarian has said of a still more recent generation that "the doctors were still engaged in speculating in the quiet of their studies instead of seeking for information in the book of Nature."[3]

The greatest English physician of that age clearly appreciated the defect, and his Medical Observations aim at restoring the ancient Empiric tradition. Sydenham was contemptuous of theory, and had little—too little—respect for the experimental researches of his best contemporaries. He provided medical records, statistics of disease without arithmetic. No doubt he was acquainted with the political arithmeticians of his day, as he was with the experimental philosophers and anatomists, but he did not adopt their method in presenting his facts. It is instructive to compare his direct influence upon the development of medical science with that of a non-medical contemporary.

Vital statistics of a kind had been regularly compiled in London for a century before Sydenham's time, but no real use had been made of them by physicians. Indeed, no physician of Sydenham's time exploited them; the *medical* pioneer was the elder Heberden, who, in the middle of the eighteenth century, financed and otherwise encouraged a compilation of the bills upon which his son at the beginning of the nineteenth century wrote a dissertation, to be mentioned below.

John Graunt: The Father of Medical Statistics.

But there was in the seventeenth century a layman who perceived the importance of medico-statistical records. John Graunt, the London draper whose "Natural and Political Observations upon the Bills of Mortality" first appeared in 1662, was the father of medical statistics as well as of vital statistics in the larger sense. He was not only the first to demonstrate the high rate of mortality in early life and the contrast between urban and rural rates of mortality (facts so commonplace to us that we forget they were ever novelties and in need of proof), but he undertook a criticism of sources which some persons of our own time suppose to be beyond the range of a mere arithmetician. He would not, for instance, accept rickets as a "new disease" of the year 1634 without asking himself whether it might not be that a disease "which had been long before, did then first receive its name?" and surmised that some, but not all, the increase was due to a transfer from another rubric. In truth a comparison of the criticism of his nosological material performed by the seventeenth century draper with that effected by an erudite physician at the beginning of the nineteenth century does no dishonour to the old tradesman.

Dr. William Heberden the younger, in his "Observations on the Increase and Decrease of Different Diseases," remarked that "there is scarcely any fact to be collected from the bills of mortality more worthy the attention of physicians than the gradual decline of dysentery," and attributed the result to greater cleanliness and better ventilation. As Dr. Charles Creighton pointed out,[4] the decline of dysentery needed no such explanation; it was an arithmetical mistake. Heberden supposed that "griping in the guts" was dysentery when it really was infantile diarrhœa; he overlooked the significance of the age distribution and failed to observe the gradual transfer to the rubric convulsions. He did indeed notice the increase of convulsions but accounted for it by a transfer of "chrisomes" and infants, without remarking that this transfer had already been effected before convulsions gave a large quota, and without perceiving that such a transfer could not make so great a change as had occurred.

The vital statistician who connects Graunt with Halley and Halley with other illustrious mathematicians like De Moivre and the Bernoullis, these mathematicians with the technicians Gompertz, Finlaison, Makeham and the actuaries of our own time, will not fail to do reverence to the seventeenth century pioneer. The medical statistician and the medical officer of health should remember that Graunt inspired Derham, that Derham was the original of Süssmilch, and that Süssmilch supplied Malthus with ammunition, the discharge of which did much to create a state of opinion favourable to the establishment of a national system of vital and medical statistics.

But if ultimately Graunt had a worthy disciple in the medical profession, it was not until he had been in his grave more than a century. He died in 1674 and

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[1] English Sanitary Institutions, Chap. 2.

[2] Cf. Southwood Smith's gallant attempt to deduce the average longevity in Rome from a sentence in the Pandects. (The Philosophy of Health. London, 1835, vol. I., p. 132.)

[3] Medicine in England during the Reign of George III., by Arnold Chaplin, M.D., p. 6.

[4] History of Epidemics in Britain, vol. ii., p. 747.

William Farr was born in 1807. The only physicians of the eighteenth century who made sensible additions to statistical knowledge were Dr. Thomas Short and Dr. William Heberden the elder. Of Short Dr. Creighton has remarked, with little charity but not without truth, "That so much statistical or arithmetical zeal and exhaustiveness should go with so total a deficiency of the critical and historical sense, is noteworthy and, perhaps, not unparalleled in modern times."[5] To Heberden we owe the collection of statistics edited by Corbyn Morris[6] in 1759, incorporating some excellent critical remarks and suggestions for improvement of the civic records which did not receive the attention they deserved. No other physicians seem to have perceived that a combination of Graunt's arithmetical system with the descriptive method of Sydenham—in short, to mix figures with brains, as Turner compounded his colours—would advantage medical science and art. What was speculative in Sydenham's plan—and there was a good deal more theorising in it than many suppose—found plenty of imitators. Whether the general art of medicine benefited, the reader of Dr. Chaplin's FitzPatrick lectures may judge. Whether the sanitary administration of the late eighteenth century was a notable improvement upon that of the Stuarts is a question the student of Creighton and Simon can answer with no great confidence.

At the beginning of the nineteenth century we still lacked any clear portrayal of the sanitary circumstances of the population. The prevalence and the fatality of the commonest diseases were still matters of conflicting opinion. Instructed observers could, and did, dispute whether consumption were increasing or decreasing, just as but a few years earlier they differed by 100 per cent. in their estimates of the English population.

II.

Although Sir Gilbert Blane, in his "Select Dissertations," published statistical observations of value, and Dr. Bissett Hawkins actually devoted a course of Goulstonian lectures to the arithmetic of disease before George IV. was dead, Heberden's "Observations" of 1801 are still the only medico-statistical literature before Farr which deserve much notice.

We have previously mentioned one of Heberden's failures; it would be wrong, even in so brief a review, to omit reference to his successes. An instance was his recognition of the constancy of the epidemic curve of plague which led him to make the following pertinent remark:—

> "May not this influence of the seasons on diseases be the real cause of the strange and contradictory accounts we have received concerning the cure of the yellow fever in the West Indies? Accounts which only agree in this, that the most obvious methods of treatment are wrong. It is reasonable to suppose that physicians there would first make trial of the remedies most approved in similar diseases in other places; yet we find they all failed. And why? Because the epidemic was then at its height. But afterwards, all their different modes of practice as universally succeeded. For when the disease began to decline, the mortality of itself became much less, and of those who died, most lingered on for a considerable time beyond their usual period. Which exactly corresponds with what has at all times been reported of the plague, under every variation of medicine, and climate."[7]

Many physicians since 1801 have had cause to realise the truth of this statistically grounded inference; its general appreciation would have diminished the large and growing number of tombstones sacred to the memory of "cures."

"*Mr. Farr: A Gentleman of the Medical Profession.*"

But one swallow does not make a summer, nor the statistical acumen even of a Censor of the College in its most aristocratic days effect a revolution. The real revolutionary was a licentiate of the Society of Apothecaries, a "Mr. Farr, a gentleman of the medical profession," who was appointed Compiler of Abstracts in the General Register Office on July 10th, 1839. Although Mr. Noel Humphreys earned the gratitude of all medical men by his collection of Farr's writings, published in 1885, a really adequate edition of Farr has yet to be produced. We sometimes dream of such an edition; we picture it with an introduction by Farr's worthy successor, Dr. Thomas Stevenson, and with footnotes and appendices by Dr. John Brownlee. But it is an idle dream; governments in England, so the newspapers tell us, often spend money in odd ways, but at least they have never been so eccentric as to waste it on the publication of the collected works of great Englishmen. Farr was a very great Englishman, and the characteristics of his genius were precisely those which, in moments of self-esteem, we like to fancy are typically English. We can make our point clear by contrasting him with two great men who were at their prime when he was young, and both made important contributions to statistical knowledge, Siméon Poisson and George Boole. Poisson wrote a large treatise upon ostensibly the most practical of subjects, the best way to secure just verdicts in courts of law; Boole dealt with the very matter-of-fact problem of numerical approximation. But the most superficial reader of Poisson or of Boole—not that their works are very attractive to a hasty reader—will at once realise that the authors are far more interested in algebra than in the concrete applications of their algebra. Farr has left many pages which, to the aforementioned hasty reader, will offer almost as many algebraical difficulties as even Boole; but in the densest forest of symbols Farr never loses sight of, and never allows his companion to lose sight of, some perfectly definite and concrete end which he proposes to reach.

No branch of medical or vital statistics needs for its cultivation a greater variety of algebraical tools than that concerned with the production of complete life tables; the natural faculty which characterises the born mathematician is not, indeed, essential, but skill in the manipulation of symbols is. To Farr a life table was—

> "An instrument of investigation; it may be called a *biometer*, for it gives the exact measure of the duration of life under given circumstances. Such a table has to be constructed for each district and for each profession, to determine their degrees of salubrity. To multiply these constructions, then, it is necessary to lay down rules, which, while they involve a minimum amount of arithmetical labour, will yield results as correct as can be obtained in the present state of our observations.[8]

This was the spirit of all his work. He faced mathematical difficulties with a courage which nothing could daunt—it takes some courage for a self-taught man to venture upon original research within the province of the oldest of the sciences—when they obstructed his progress towards a practical end. He never attempted to compete with the masters of pure analysis on their own ground. We have been the gainers. The greatest mathematical statisticians of the first half of the nineteenth century were not Englishmen; we have not to our credit any theoretical work of that date which will compare with the researches of Laplace and of Poisson in France or of Gauss in Germany; but of no civilised country can a record of fatal disease be constructed with the precision which appertains to the medico-statistical history of England and Wales since 1840.

The practical advantages to the physician and the sanitarian are enormous. Matters which our great grandparents fiercely debated, topics respecting which only a very shrewd and experienced physician of 1820 could form an opinion, are now within the compass of a junior medical student. If Farr had been born a generation earlier and the General Register Office had been founded in 1807 instead of in 1837, the sanitary history of our manufacturing towns might have been different. If even the lessons he taught year by year had sunk into the minds of all members of our profession, many disappointments would have been spared and perhaps some false apprehensions quieted. The curious reader of old blue-books will find much of interest in the census reports of Lamb's friend Rickman, but Rickman was not a Farr. Rickman, for instance (in 1831), commented upon the apparent unhealthiness of the northern manufacturing districts, but he could not speak with much authority for his basis of facts was no more than an abstract of burial and baptismal registers. These are the words of Farr (from the supplement to the thirty-fifth Annual Report):—

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[5] History of Epidemics in Britain, vol. i., p. 405.

[6] The origin of the work is described in Dr. Hull's edition of the Economic Writings of Sir William Petty, vol. ii., p. 641.

[7] Observations on the Increase and Decrease of Different Diseases, 1801, p. 67.

[8] From a paper contributed to the Proceedings of the Royal Society in 1859. (See Farr's "Vital Statistics," ed. Humphreys, London, 1885, p. 492.)

> "Take for example the group of 51 districts called healthy for the sake of distinction, and here it is found that the annual mortality per cent. of boys under 5 years of age was 4·246, of girls 3·501. Turn to the district of Liverpool; the mortality of boys was 14·475, of girls 13·429. Here it is evident that some pregnant exceptional causes of death are in operation in this second city of England. What are these causes? Do they admit of removal? If they do admit of removal, is this destruction of life to be allowed to go on indefinitely? It is found that of 10,000 children born alive in Liverpool 5396 live five years, a number that in the healthy districts could be provided by 6544 annual births."

The "dear old doctor"—as Mr. Humphreys called him—could round a period in the early Victorian style with the best; the classical quotations in his reports might have tempted William Pitt or Charles Fox to become statisticians; but he could also use very plain English indeed. Statistics with plain English as a propellent are formidable missiles, and those members of our profession who in the last 50 years have effected salutary changes in the second city of England (there is still much to do) owe something to the long-range artillery of the General Register Office.

We could fill many columns with examples, but we must take leave of the greatest of medical statisticians with one observation. Farr's work has on it the seal of all supreme achievements; it is indestructible. It was, of course, a piece of good luck that his three successors, the late Dr. William Ogle, Dr. John Tatham, and Dr. Thomas Stevenson were men having the same ideals and zealous to build higher upon his foundations. The nation, we hope, will always be fortunate enough to secure equally worthy spiritual descendants of the founder. But no weakness of human instruments or credible deteriorations of the system could ever take from the General Register Office the power of "rendering immense service to sanitary science by enabling it to use exact numerical standards in place of the former vague adjectives."[3] So far as records of mortality are concerned, the real reformer is one who treads accurately in the footprints of William Farr.

III.

We have seen what, in the hands of a man of genius, the arithmetical method can contribute to the practical arts of the sanitarian and the clinician. It replaced, in Simon's phrase, "vague adjectives" and indecisive controversies by "exact numerical standards." It not only showed which municipal sheep were black, but measured how much blacker they were than their neighbours. It showed not, perhaps, what diseases (or, if we please, symptom-complexes) were most deadly, but certainly what diseases educated men supposed to be most deadly. Incidentally, it has furnished the high-browed or, if the reader prefers, sagacious epidemiologists who revere Sydenham and his epidemic constitutions with some of their best arguments. But the praise of our fathers which begat us cannot be the last word of science, nor is it the best compliment to our fathers. It is proper to consider what they did not do and whether we should not set about the task.

The Correlation of Morbidity with Mortality.

Farr once remarked that "the mean lifetime of a generation may be the same, and yet the several lifetimes of the individuals of which it is composed may vary infinitely," and spoke of the "entire revolution in the life of the human race" which "would follow if every person born lived the average lifetime of 50 years, or if half the deaths happened in infancy and the other half at the end of 100 years or at any very advanced age." He means that such a statistical average as the expectation of life might arise in an infinite number of ways, each corresponding to a different state of affairs. Still using mortality records as our ultimate data, we can explore many of these possibilities, but so long as we are restricted to death registers we must remain ignorant of much which we desire to know.

We are given that A B died at 31, C D at 32, and E F at 34, all of organic disease of the heart, and the statistician enters three units in the age-group 25–35; but how very different may be the histories of these three individuals. One perhaps, has been a dyspnœic cripple for years and died by inches; another has passed out of existence in a flash with a ruptured aneurysm, and the third—why the third may have been a psychopath. A statistical homogeneity in the matter of dying may conceal a very wide heterogeneity in the matter of living.

> "A king of ability or an able minister" said Bagehot, "sits in an orderly room filled with memorials, and returns, and documents, and memoranda. These are his world; among these, he of necessity lives and moves. Yet how little of the real life of the nation he governs can be represented in an official form! How much of real suffering is there that statistics can never tell! How much of obvious good is there that no memorandum to a minister will ever mention! How much deception is there in what such documents contain!"

This criticism touches any attempt to evaluate the health of a nation wholly in terms of its mortality. Farr, of course, was quite conscious of the weakness, and strove ever and again to overcome it, to correlate morbidity with mortality. But he could not effect a satisfactory correlation, and now, nearly forty years after his death, we are still at a loss.

We may look at this matter from two points of view. In the first place we may inquire into the general efficiency of a population. We may seek to know how many of the days from birth to death were passed in the enjoyment of health. This is the easier and perhaps the more important task. The operations of private or public sickness insurance institutions have, in fact, already rendered available much information. Yet even here there are difficulties; there must be some objective criterion of healthiness, and if this is to be, as it usually must be, capacity to follow an occupation, we are liable to fall into serious mistakes. It does not follow that, because a judge of the High Court keeps his house with a cold and a solicitor does not, judicial duties are more unhealthy than the drawing of briefs. But this aspect of morbidity, although it concerns the medical profession, is not wholly their business, indeed, some actuaries have doubted whether it is their business at all. These actuaries were, no doubt, in error, but considerations of space induce us to pass at once to the other question which is exclusively medical, and to ask whether the arithmetical method applied to other data than recorded deaths can be of any service to the clinician.

Those who remember a charming essay of the late Sir William Osler on an Alabama student will recall his remarks upon Louis, who was addicted to the numerical method. But few have the patience or the opportunities of Louis; one has to consider the conditions of ordinary medical practice. Patients come to us with symptoms, not with diseases; they very often say, "Doctor, I've got a heavy cold on me," very rarely, "I'm afraid I am infected with the *Micrococcus catarrhalis*."

"Colds" from the Statistical Viewpoint.

"Colds" are certainly an object of statistical interest if numerical frequency is an element of statistical interest. Now the "cold" may be a "Ding an sich" or it may be the prelude of a more important "Ding." Perhaps it may be suggested that an enumeration of the "colds" which did and those which did not lead up to something else might be the basis of a statistical inquiry. But the research does not seem a promising one. It might enable the practitioner confronted with a husky panel patient to assert that the chance is 1 in 100 that he will soon have to treat him for phthisis, 3 in 100 that lobar pneumonia will develop, and so on, but this arithmetical information will gratify nobody save a chimera identified by the cartoonist of the *Daily Mirror* with an official of the Ministry of Health. But if one collected statistics of "colds" upon a slightly different plan the results might be more rewarding. Do the "colds" of sedentary workers last longer than those of out-door workers? *Ceteris paribus*, does keeping the house answer better than going out? Is it true that "summer colds" are the most intractable? Is the mode of onset of a common "cold" of any importance in its prognosis as to severity and duration? Is there a secular change of type in the common "cold"? These are all questions not of life and death, but of importance to health and happiness. It is difficult to see how they *can* be answered unless the numerical method brings into this humbler sphere that replacement of "vague adjectives" by "exact numerical standards" of which Simon spoke. The common "cold" has been termed the opprobrium of the profession; perhaps we have held our heads too high and dreamed too many bacteriological dreams, forgetting that the first word must be said before the last can be added.

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[3] Simon: English Sanitary Institution, p. 212.

It will be urged that we all have very decided opinions, grounded on our individual experiences, as to how each of these questions could be answered. So had our predecessors upon the topics of urban and rural mortality, upon the increase or decline of phthisis. But yet, as Simon pointed out, it really did require a Farr and the numerical method to produce anything like unanimity of opinion upon these matters. The Odes of Horace are better reading than the remarks of Cæsar on the Gallic wars, but it is well to read the Gallic wars before tackling Horace. No arithmetical averages, not even with their "probable errors" ground out to the last decimal and flanked with algebra of the most imposing unintelligibility, can be a substitute for the clinical researches of a Sir James Mackenzie; but they may serve as stepping-stones along a path which many have shunned and in which others have stumbled. The plain fact is that much the greater part of the clinical experience gained by each generation dies with its possessors. Much is in truth incommunicable; we profit very little, and can profit very little, from the mistakes of our fathers. But a residuum *is* communicable and has been lost because there has been no common medium of exchange.

A Ministry of Health Scheme.

A few months ago a committee appointed by the Minister of Health projected a scheme by means of which it was intended to make the communicable experience of all available to all. With the question whether the details of this scheme were good, bad, or indifferent we have here no concern. But the manner in which it was criticised, the principles of the opposition to it, revealed, as we think, a strange ignorance of the history of our art and of the means by which it has been improved. The historical importance of such men as Sydenham and Huxham was due to their determination to describe and record objectively the facts of their experience. "He strove," said Haeser, in the most discerning criticism of the English Hippocrates which has been produced, "not to discover mysterious arcana. but by the attentive observation of diseases, especially of the commonest sorts, to discern the nature of changes at the back of them, their being (Wesen), and by means of knowledge thus won to discover how to treat them."[10] But without the stepping-stones, the aids to clear thinking, which arithmetic affords the physician just as it does the statesman, these efforts fail. The medical officer of to-day finds Graunt more intelligible and helpful than most clinicians find Sydenham. Arithmetic, or even algebra, is a bad master, but it is a good servant. When this truth has been realised, the question of medical records will appear in better perspective and the possibility of clinical research, not for the gifted few alone, but for all, will be admitted.

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[10] Geschichte der Medicin, vol. ii., p.

THE HORSLEY MEMORIAL.

THE *organisation formed in November, 1920, to secure* in permanent form the recognition of the life and work of Sir Victor Horsley has now published a third list of subscriptions, promised and received, as follows:—

	£	s.	d.
Mr. L. H. S. Scott	25	0	0
Dr. J. S. Risien Russell	21	0	0
Dr. Janet E. Lane-Claypon, Dr. Foster Kennedy (New York), Dr. Herbert Spencer, Dr. Charles Hamilton, Dr. G. G. Turner, Mr. Percy Flemming, Dr. N. S. Finzi, Sir William T. Lister, Mr. Bilton Pollard, Dr. L. Gordon Hopkins, Dr. J. H. Parsons, F.R.S., Dr. Dennis Embleton ... ... each	5	5	0
Mr. H. J. Spratt, Mr. John Dilloy... ... ... each	5	0	0
Anonymous (per Dr. H. Batty Shaw), Dr. Hyde Marriott, Miss P. Whitaker, Professor T. R. Elliott, F.R.S., Dr. A. M. H. Gray, Dr. T. H. Ionides, Dr. G. E. Waugh, Dr. Amand Routh, Sir John Williams, Dr. R. H. Marten (Adelaide) ... ... each	3	3	0
Professor Winkler (Utrecht)	3	0	0
Dr. E. D. Davis, Dr. Byrom Bramwell, Dr. E. Deanesly, Mr. W. Gifford Nash, Sir E. Sharpey Schafer, Dr. H. C. G. Semon, Dr. A. G. Phear, Sir John Tweedy, Dr. J. H. E. Brock, Dr. A. J. Blaxland, Dr. B. B. Gadgil, Dr. F. G. Penrose ... ... each	2	2	0
Dr. Charles Brook, Professor W. W. Keen (Philadelphia), Dr. A. A. Lendon (Adelaide)... ... ... each	2	0	0
Sir James Barr, Dr. J. J. Powell, Dr. Charles Smith, Dr. E. B. Ffennell, Miss Kirkaldy, Dr. Seymour Taylor, Dr. G. Hall, Dr. W. S. Sheldon, Dr. Howell Rees, Dr. D. Farnell, Dr. E. H. Young, Mr. E. A. Bullmore, Surgeon-Commander C. B. Fairbank, Dr. W. H. Paine, Dr. J. S. H. Roberts, Dr. S. Williams, Dr. O. P. Turner, Dr. C. D. Holdsworth, Dr. P. J. Le Riche, Dr. G. H. Hunter ... ... each	1	1	0
Miss M. Breay, Miss M. K. Longfield... ... ... each	1	0	0
Miss M. Lord	0	5	0
Mrs. Pitt	0	2	0
Dutch Branch of International League against Epilepsy (per Dr. Muskens)	1	0	0
Society for the Prevention of Hydrophobia (per Mr. F. W. Fletcher)	5	5	0

The total acknowledged in previous lists is £606; these lists appeared in THE LANCET, 1921, Jan. 1st, p. 46, and Feb. 19th, p. 407.

Further subscriptions may be paid to either of the hon. treasurers, Sir Frederick Mott, K.B.E., Maudsley Neurological Hospital, Denmark Hill, S.E.5, and Dr. H. H. Tooth, C.B., C.M.G., 34, Harley-street, W.1, or to the hon. secretaries, Sir W. Arbuthnot Lane, Bart., C.B., 21, Cavendish-square, W.1, and Mr. Edward J. Domville, O.B.E., Symondsbury, Bridport.

URBAN VITAL STATISTICS.

(Week ended April 30th, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18½ million persons, the annual rate of mortality, which had been 12·5 in each of the three preceding weeks, was again 12·5 per 1000. In London, with a population of 4½ million persons, the death-rate was 12·1, or 0·5 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 6·4 in Grimsby, 6·5 in Rhondda, and 7·3 in Northampton, to 19·4 in Barnsley, 20·4 in Oldham, and 21·8 in Dewsbury. The principal epidemic diseases caused 204 deaths, which corresponded to an annual rate of 0·6 per 1000, and comprised 60 from infantile diarrhœa, 54 from whooping-cough, 40 from diphtheria, 33 from measles, 14 from scarlet fever, and 3 from enteric fever. Measles caused a death-rate of 1·1 in Newcastle-on-Tyne, 1·2 in Gateshead, and 1·4 in Barrow-in-Furness. There were 3255 cases of scarlet fever, 2453 of diphtheria, and 1 of small-pox under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 3307, 2564, and 0 respectively at the end of the previous week; the case of small-pox was admitted from Holborn. During the week ended April 23rd only 1 case of encephalitis lethargica belonging to Southwark was notified in the County of London. The causes of 27 of the 4460 deaths in the 96 towns were uncertified, of which 6 were registered in Birmingham and 3 in South Shields.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 15·1, 14·6, and 14·6 in the three preceding weeks, rose to 15·0 per 1000. The 321 deaths in Glasgow corresponded to an annual rate of 15·2 per 1000, and included 30 from whooping-cough, 6 from infantile diarrhœa, 2 each from scarlet fever and diphtheria, and 1 from enteric fever. The 123 deaths in Edinburgh were equal to a rate of 14·4 per 1000, and included 3 from diphtheria, 2 from measles, and 1 from infantile diarrhœa.

Correspondence.

"Audi alteram partem."

THE QUESTION OF A TRADE-UNION IN MEDICINE.

To the Editor of THE LANCET.

SIR,—Every right-minded practitioner must agree that a strike among medical men, involving the neglect of patients, is unthinkable. But there is another aspect of the subject which has, perhaps, been overlooked. Doctors are a State-protected body, and, that being so, have they the moral right to use the strike weapon? The police are not allowed to use it, and if the miners were to get their wish—State protection—the right to strike would have *eventually* to be taken from them. Eventually, for no Conservative, Liberal, or Coalition Government would be likely to pass such a measure; but when the Labour Government comes it will probably find itself obliged to do so. Russia has already found the necessity of such legislation. Would it not be a pity to have to wait for a Labour Government to teach us the difference between right and wrong?

I am, Sir, yours faithfully,

Keswick, May 1st, 1921. W. D. ANDERSON.

THE INTERNECINE VENEREAL CAMPAIGN.

To the Editor of THE LANCET.

SIR,—I have studiously abstained from controversy and have for several months past, as letters in my possession prove, been engaged in frank and friendly discussion both with Lord Willoughby de Broke, and other members of his Society, in an endeavour to end the schism that is doing much harm to the warfare against venereal diseases. I feel bound now to point out to the public that two things only hinder the progress of negotiations. First the sending of letters to the press by the same post as that by which they have been sent to me—a discourtesy which has twice taken place and makes frankness impossible; and secondly, and more seriously, the undeviating way in which the *Times* has given publicity to Lord Willoughby de Broke's Society, and suppressed—or most misleadingly summarised—the attitude of the National Council.

An instance of its partiality occurred on the publication of the report of the Bishop of Birmingham's Committee. This was at once described by the *Times* as the case of the Society for the Prevention of Venereal Disease, a parenthetical comment which the most prominent member of that Society admitted to me to be incorrect. An even worse instance has just occurred. The *Times* has quoted at length from a letter sent to me by Lord Willoughby de Broke, and has not quoted—and has never done other than very briefly and misleadingly summarised—the definition of the National Council's policy to which Lord Willoughby de Broke's letter was in reply. It has refused to publish the letter I at once wrote, even though I was drawing attention to action for which Lord Willoughby de Broke has subsequently expressed full and frank regret.

It is time that the public understood the reason; no one can be impartial on a matter he has already prejudged, and the "Medical Correspondent" of the *Times* who comes before the public anonymously as an impartial commentator is a member of Lord Willoughby de Broke's Executive Committee.

In these circumstances, I ask permission to state in your columns what I am refused permission to state in the *Times*—namely, that between the policy of the National Council, as defined at our general meeting on March 22nd, 1921, and that of Lord Willoughby de Broke's Society, there is now admitted to be but one real point of difference; that lies in the inability of the latter to accept the following sentences of our definition of policy:—

"Detailed official instructions as to the use of disinfectants in this connexion will, if issued to the public on sale with the disinfectants, not only have an appearance of official condonation but also lead to the assumption that such disinfectants are an official guarantee to the purchaser against contracting disease; moreover, such instructions, unless followed with scrupulous exactness after definite and personal tuition in their practice, may lead to an aggravation rather than a diminution of the incidence of these diseases."

Nevertheless, these sentences express not merely the truth, but the truth which is daily receiving greater recognition, and I have no doubt whatever, that even in spite of suppression and misrepresentation, truth will continue to prevail. I am even hopeful that Lord Willoughby de Broke, who has been frank and courteous throughout all our conversations, when allowed to speak through his own voice, will find the courage to shake himself free of the influences which are alone keeping the schism open, and so enable it to be harmoniously closed, to the great advantage of the campaign which we both have sincerely at heart.

I am, Sir, yours faithfully,

GORELL,
President, National Council for Combating Venereal Diseases.
May 2nd, 1921.

*** From an implied personality in this letter two reflections may arise. First, it is an assumption that "Our Medical Correspondent" in a lay paper is an individual. Secondly, a "correspondent" does not dictate the editorial policy of a journal.—ED. L.

THE TREATMENT OF DIABETES MELLITUS

To the Editor of THE LANCET.

"Be not the first by whom the new is tried,
Nor yet the last to cast the old aside."

SIR,—Pope's advice may be taken to apply to the medical practitioner. This letter is a plea to every practitioner not to be the last to cast aside the old treatment of diabetes mellitus by continuing to prescribe a diet of unlimited protein and fat. It is no easy matter to decide whether fat or protein in unlimited quantities is the more injurious, although there is little doubt that excessive fat ushers the young patient into the next world more rapidly than excessive protein, by causing an early and often fatal acidosis. Unlimited or excessive protein is more insidious in its action. The patient does not die rapidly, but the disease advances rapidly and a stage is reached in which the changes in the pancreas are so profound that treatment by alimentary rest and under-nutrition is rendered nugatory. The observations upon which statements are made should always accompany these statements. Shortly after adopting the Allen treatment of diabetes mellitus in 1915, I found that the cases which reacted best to the treatment were comparatively young people who had developed the disease recently, and that those who had been treated by the so-called Pavy treatment for months or years had very low tolerance for food in general; that is to say, that unless the amount of the carbohydrate, protein, and fat in the diet was very small, sugar persisted in the urine, the blood sugar was over 0·18 per cent., and the disease progressed. Still further, one received the impression that the patients who had adhered most strictly to the orders of their medical advisers to refrain from any food containing carbohydrate, and had taken large quantities of breads and biscuits made with protein, were the most refractory to treatment.

Clinical observation anticipated experimental evidence. Allen[1] recorded his observations upon dogs of the results produced by protein excess. He removed six-sevenths of the pancreas from a dog: for three days there was glycosuria without feeding. Upon a meat diet there was a heavy continuous glycosuria, and when this diet was maintained for some time it led to a condition which did not yield to a nine days' fast. Since the same observer has kept dogs alive for six years with no greater proportions of pancreas he concludes that "the downward progress observed in animals on excessive diets is purely the result of food injury; in other words, to functional over-stimulation of the pancreas as an endocrine organ." It is therefore clear that as soon as the diagnosis of diabetes mellitus has been established in a young subject a diet restricted in every way should be ordered, preparatory to making arrangements for estimating the optimum diet; and on no account should unlimited proteins be allowed either as meat or special breads, or in any other form, lest the excess of protein cause an inflammatory change in the pancreas, which materially diminishes the chance of prolonging the patient's life.

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[1] The Journal of Experimental Medicine, May 1st, 1920.

In my opinion, placing a young diabetic upon a diet with unlimited fat and protein is like treating an early case of carcinoma of the sigmoid with hyoscyamus—the symptoms may be alleviated for a time, but when intestinal obstruction occurs it is found that the growth has extended too far to permit of removal, and the patient's life can be prolonged only slightly. When a young diabetic is treated with unlimited protein the disease extends too, and upon the present-day treatment being adopted it is found that life can be prolonged only slightly. I am, Sir, yours faithfully,

Portland-place, W., April 29th, 1921. O. LEYTON.

THE HYGIENE OF THE SAILOR.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Jan. 25th, 1921, I have just read "The Hygiene of the Sailor," having previously read all your correspondent's reports in various sections dealing with this matter on some of the larger ships. Having spent six years at sea in 13 different steamship companies as ship surgeon, a few points not touched on may be of interest in connexion with the Mercantile Marine, dealing with not only the sailor, but the surgeon who looks after him. Possibly some of my "points" will reach the man with the "club," for only in this way is improvement to be attained.

First, with regard to the Board of Trade scale of drugs. This is quite antiquated. It only requires a practical man with sea experience in the tropics to discover its inadequacy. My suggestion is that a new scale should be prepared by medical men having sea experience.

Second, appointment of the ship surgeon. No man ought to be appointed till he can produce evidence of his fitness to carry out the duties of this post. This should be judged by (1) having held a post as house surgeon to a hospital; (2) previous shore surgical experience, as in a colliery district; (3) practice on land for a certain period; (4) the holding of a diploma in tropical medicine (if he is intending to travel East, West Indies, or South American ports).

Third, a ship surgeon's bureau. All intending ship surgeons should be compelled to register at a central bureau, which might be in London or Liverpool. At this office information as to medical qualifications, previous sea experience (if any), hospital appointments, and references from at least three independent sources as to moral character and ability would be available. This would to a definite degree eliminate the "wasters."

Fourth, on ships carrying wireless. A list of all surgeons on the various ships carrying wireless should be available by means of a printed slip given to the wireless operator of each ship. This list could easily be brought up to date at the beginning of each month. In this way one doctor could ring up the man he desired in an emergency, as has been done recently, with benefit to surgeon and patient.

Fifth, report as to surgeon's capability. At the conclusion of each voyage a report should be filled in by the commander as to the surgeon's medical capability, conduct, general character, and reliability.

Sixth, testimonials. All testimonials should be only obtained through the central bureau alone, and would in this way be of intrinsic value.

Seventh, inspection of ships prior to sailing. Inspectors should be appointed to visit all ships at the principal ports the day prior to sailing and inspect as in the following manner: (*a*) see if there is adequate supply of water to all baths and latrines throughout the ship; (*b*) inspection of all water carried for drinking purposes; (*c*) inspection of all water-pipes used for sanitary purposes; (*d*) visit all storerooms for food, pantries, cabins, hospital, laundry, butcher's shops, looking into their sanitary condition and fitness for the purpose for which they are supplied; (*e*) overhaul all medical and surgical stores as to their sufficiency and good condition. Three reports should be made—one for the captain, one for the company, and one for the Board of Trade (that for the captain to be available for surgeon's inspection). By this means urgent requirements could be attended to at once, and those of less importance be dealt with on the return to the home port.

During my six years at sea I found that in every case, unless I had carried a small stock of drugs of my own, the supplies were quite inadequate. Testimonials were only given by the company, and were of such a stereotyped style that all real value was lost.

The urgent need of to-day is better accommodation for sailors and firemen. When one has to lay a man up on board ship, where does he go? If it is an urgent case, and one has the hospital, he goes there. In numbers of cases there is either no hospital accommodation or the case is not bad enough for that, and he is told to "go for'ard, and turn in." As Kipling has it, "Lord, what do they understand?" By "they" I mean directors, owners, and the man on top. The turning-in process takes place amidst the "odour" of meals, mixed (!) tobaccos, and the constant chatter of the last man off watch. Then comes the question of treatment. "Oh, anything will do for him." Have you heard this from the steward? No, but I have, and only by putting one's foot down was it possible to get what one ordered, or what the A.B. ought to have. Hygiene on broad lines is splendid, and ventilation a fine thing, but for the Lord's sake give the man in the fo'c'stle a place where he can have some recreation when he comes off watch, and a place where he can smoke without turning his sleeping quarters into a fourth-rate railway smoking compartment.

"We don't treat eyes." This from the superintendent of a large shipping company. And, again—"Oh, well, perhaps we may put one or two things in the ship the next time." This is no exaggeration, but actually occurred to me. "Want the hospital for a sick man, doctor? But I have several cases of literature in it, and what shall I do with them?" I replied, I hope fairly forcibly, that a sick man took precedence—and the hospital was cleared! I could give you many more instances of matters requiring reform, but perhaps the above will suffice.

I am, Sir, yours faithfully,
LEONARD L. BURTON,
Late Surgeon, Pacific R.M.S.P. Co., &c.

Dargaville, N.Z., March 8th, 1921.

⁂ In the Merchant Marine "the urgent need of to-day is better accommodation for sailors and firemen." Dr. Burton, in so saying, reasserts the principle which THE LANCET, knowing how bad were the conditions of life for the crews on board merchant ships, has been impressing on its readers. In the finer, newer ships better conditions are gradually being introduced. A mess-room, apart from the sleeping places, exists in the large Western Ocean Express steamers, for example, and in the *Achilles*. The want of hospitals on board, or "sick-bays" for the crew, is also being met, though medical officers are often faced by hesitations when they seek to have hospital cabins provided, which may mean sudden removal of stores or of unauthorised persons who have been allowed to occupy the available accommodation. Dr. Burton's claims on behalf of medical officers will awaken sympathetic vibrations in the memories of former ship surgeons, and could be fully met by the establishment of a Mercantile Marine Medical Department, composed of medical officers responsible to the Board of Trade first, to the companies afterwards. But this might be unpopular with doctors unwilling to bind themselves permanently to the sea, and the companies would much prefer to have their surgeons in the first place responsible to themselves. Dr. Burton's letter is the outcome of experience. His seventh point, the detailed inspection of a ship before sailing, may seem too far off for hope, but it is carried out on board every transport we have ever heard of, so there can be nothing impossible about its adoption.—ED. L.

MEDICAL COÖPERATION IN SHEFFIELD.

To the Editor of THE LANCET.

SIR,—I should like to add a few supplementary words to the interesting leading article in your issue of April 30th on "Insurance Practice and Research." In the first place, Professor J. B. Leathes holds the post of consulting physiologist, not only at the Royal Infirmary, as stated in your article, but also at the Royal Hospital. At each institution Dr. C. G. Imrie is in charge, under Professor Leathes, of the clinical physiological laboratories. This ensures identical conditions for students attending at either place. As a matter of fact, all the four voluntary hospitals in Sheffield have for some time been united for purposes of clinical teaching under the control of a joint representative committee, and students of the medical faculty are allotted for various periods to each institution. Personally, I believe that this harmonious coöperation of the staffs of the four voluntary hospitals in connexion with the Faculty of Medicine has indirectly been a factor in leading up to the spontaneous and generous action of the Medical Panel Committee which you record. Just as your article shows that the clinician and the laboratory worker have found there is a mutual advantage in coming more closely together, so there have been, latterly, many signs, in this area at any rate, that the gulf which has for so long separated members of hospital staffs from general practitioners may soon be bridged over.

The generous action of the Medical Panel Committee of Sheffield has laid a solid foundation for one pier of the bridge, and with this excellent start I have no doubt whatever that the structure will soon be complete. If such a "rapprochement" between hospital staffs on the one hand and general practitioners on the other can be realised here, there is no obvious reason why it should not be realised elsewhere. When such a thing once comes about it will require but little more to acquire all that is of real importance in the Dawson Committee's findings, and practically at very little cost.

I am, Sir, yours faithfully,

University of Sheffield, May 2nd, 1921. ARTHUR J. HALL.

INTRAVENOUS INJECTION OF STIBENYL IN KALA-AZAR.

To the Editor of THE LANCET.

SIR,—Referring to my paper in THE LANCET of July 24th, 1920, entitled "The Intravenous Use of Acetyl-aminophenyl Salt of Antimony (Stibenyl) in the Treatment of Human Trypanosomiasis and Kala-azar," I have recently read[1] that severe and alarming symptoms have been reported from India following intravenous injection of the organic antimony compounds advocated for the treatment of kala-azar, and with which I obtained remarkable success in one particular case. In my own practice recently severe reactions—vomiting and diarrhœa—have ensued after the injection of 0·4 g. of these compounds.

I venture, therefore, to suggest that further trials should be made with the acetyl-*p*-aminophenyl salts of antimony in doses smaller than those originally advocated in my original paper—say, commencing with doses of 0·05 and 0·1 g. The explanation of this reaction in certain individuals is at present not forthcoming. I am of the opinion that a preparation of antimony, such as the acetyl-*p*-aminophenyl salt, will prove to be more specific for kala-azar than the potassium or sodium tartrates at present in use.

I might add that my name has been used in connexion with advertisements of these antimony compounds in the medical press without my knowledge or consent.—I am, Sir, yours faithfully,

PHILIP MANSON-BAHR.

Weymouth-street, W., April 28th, 1921.

TEACHING OF OBSTETRICS IN INDIA.

To the Editor of THE LANCET.

SIR,—At a recent meeting of the Punjab Legislative Assembly at Lahore, the medical budget was reduced by 4 lakhs of rupees, thereby cutting short the initiation of a scheme to improve the education of Indian students in midwifery. Opinions will no doubt differ, even among those interested in medical education, as to the wisdom or otherwise of the Assembly's action. The teaching of midwifery in India is beset with difficulties, and improvement is urgently needed in the interests of the medical profession. Indian women, like those of other Eastern countries, shrink from male attendance at the time of childbirth. The women of the country are practically all attended by untrained midwives, with a sprinkling of trained midwives and women doctors. Even those who consult male doctors freely enough at other times will not call him in for labour.

Under these circumstances it may be asked, Why train Indian students in midwifery? Because, in the first place, it is necessary if Indian degrees are to be registrable in the United Kingdom. Again, an Indian doctor is frequently called in to serious midwifery cases after all the efforts of the midwife to deliver have failed. He may be called on to deliver a transverse presentation, where the shoulder has been impacted in the pelvis for 48 hours, or a woman whose pelvis is so contracted that two fingers cannot be passed in. Handicapped already by the inconvenience of a small dark room, by lack of skilled help, and by the suspicion and disapproval of the patient's elderly female relatives, woe betide him if he also has no knowledge of midwifery! The Indian doctor is also frequently consulted by his male patients about their female relatives, and has to advise and prescribe for the ailments of pregnancy and the puerperium, even if he never sees the patient. Sometimes his fate is to sit for hours outside a labour room directing a case on the reports of a questionably qualified midwife. He is also sometimes required to attend European women at their confinements, and the fact that he is suspected often to be incompetent to do so is a source of great anxiety to the European community. If Indian medical men had better training and more practical knowledge of obstetrics there can be little doubt that maternity conditions in India, at present deplorable, would improve. At present Indian medical men as a body do little to secure their improvement.

Conditions as regards training in obstetrics differ in different parts of the country. In Madras there is a large Government Maternity Hospital, where thousands of children are delivered annually. Madras has a considerable Eurasian and low-caste population. There is much poverty, and a little money judiciously distributed among the patients has made it possible to organise this fine teaching institution, where both male medical students and midwives receive a good practical training. In Bombay and Calcutta also there are maternity hospitals with a number of cases varying from 1500 to 2000 annually, many of them abnormal. Many of the patients object to be examined by the male students, and so are relegated to the training of midwives.

The scantiness of the clinical material is shown by the fact that the universities require only six cases to be conducted before admission to examination, and to each case four students are allocated. There is nothing corresponding to the system in England by which medical students get a large part of their practical training in the homes of the poor, nor would such a system be possible in India. As one proceeds farther north prejudices become more acute, and in Lucknow and Lahore the labour cases treated in hospital are very few. In Lahore some years ago the medical students struck, and one of the causes of complaint was that students were frequently obliged to go up for the final examination without having seen a single case of labour. The authorities somewhat rashly promised to remedy this, and with that end in view it was proposed to build an up-to-date maternity hospital at Lahore and to offer money rewards to women who would enter it for delivery.

While all must sympathise with the legitimate aspirations of the students and the desire of the Government officials to provide a proper training, there will be many who agree that efforts on the part of Government to break down (in the interests of a small section) a domestic custom so rooted in the hearts of the people would be a dangerous matter. If the scheme were to be tried, it would surely be better to try it on a small scale in an existing ward and to build a special hospital only when the results had shown that practical success was certain to be attained. In the meantime it appears as if better use might be made of the material in the country. At present there is nothing to show whether an Indian medical man has any practical knowledge of midwifery or not. A special Licence of Obstetrics might be instituted in all the universities, open to those who had held resident posts in maternity hospitals or who could produce satisfactory evidence of having attended 100 cases of labour. Post-graduate scholarships might be offered by local governments and arrangements made to allow the holders of these certificates facilities in the larger maternity hospitals. Maternity homes might be opened in connexion with large Eurasian communities, and the holders of the post-graduate scholarships appointed as resident medical officers. In such communities even an externe maternity department might be possible. Holders of the L.O. would be picked men, useful as teachers in medical schools and for appointment to those stations where midwifery is an important item in the work.

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[1] Mackie: Ind. Med. Gaz., February, 1921, vol. lvi., No. 2, pp. 76–77.

In connexion with the education of the ordinary medical student more attention might well be paid to instruction in operative work with a dummy and preserved fœtus, and less stress laid on vaginal examination and on the witnessing of labour. It is these last items which form an insuperable barrier to most women who might otherwise enter a maternity ward. If a maternity ward were kept private, with an entirely female staff, and the male students were only allowed to enter it twice a week for the clinic, many more women would attend. The students would receive far more knowledge of midwifery from such clinics, which might include a good deal of abdominal examination of waiting cases, than they do from witnessing a case of labour at a distance in the midst of a crowd of men.

One thing is clear. European medical men introducing Western medicine in an Eastern country must be prepared to abandon details only suited to a Western environment, and to adopt new methods of teaching suited to the conditions found in the country if they are to attain the best possible results.

I am, Sir, yours faithfully,

April 4th, 1921. AUDAX.

*** This letter, received from a well-informed source in India, may be taken as supplementing the passage in our leading article of April 9th, in which we expressed the hope that the difficulty in obtaining sufficient obstetric experience for Indian students would not prove insurmountable.—ED. L.

"LIFE AFTER DEATH."

To the Editor of THE LANCET.

SIR,—The adjustment between concrete and abstract knowledge is ever taking place, and sometimes it is sufficiently active to create some sort of disturbance in our mental outlook. When this affects our lay population, as the fashionable "inquiry" into spiritualism is now doing—an aftermath of war and suffering—we become concerned as to the national sanity; when it appears in our scientific press, as the annotation on Life After Death in the issue of THE LANCET of April 23rd shows, we are made to realise that the purported happenings of spiritualism are left to only a few scientific men, and mainly to the mercies of laymen who do not understand the little we ourselves know of the subliminal or unconscious mind. Thus we are reminded that we are guilty of neglecting this means of studying the unconscious mind.

That these spiritualistic phenomena are most probably the reactions of the unconscious mind, capable itself of error and misdirection, most men versed in psychological findings will agree. But yet, as the atomic nucleus remains unknown in all but its mass and its radio-activity to the physicist, so does the unconscious remain equally unknown to the physician, who only knows those mental "radiations" manifested in his patient's dreams and in the storms of mental disease. The whole of the latent content of the mind remains, like the structure of the atomic nucleus, unknown. It seems, therefore, that the interest of these phenomena lies in the aspect they present in the study of the unconscious mind, and investigation should not be left to a small scientific group which may be in error, far less to lay amateurs, who are more liable still to erroneous deductions. The student of the unconscious must remember that certain of its units of memory, the "images lying dormant" in the unconscious,[1] or the bases of the pyramids of memory complexes (Freud), are most apt to be revived in, and taken up from, the sitter by a psychic medium during certain mental states, and that it is the demonstration of this knowledge acquired by the medium that is so liable to startle, convince, and lead astray anyone who sets himself the task to unravel the problem.

It has been stated by responsible men that the unconscious can be definitely excluded as an explanation of these manifestations; but this seems illogical: for it is impossible to exclude an entity as the cause of an effect while having only a limited knowledge of that entity, and this is more so in mental physics than elsewhere. For all we know the phenomena of "materialisation" may be the result of conscious or unconscious falsification on the part of the medium. On the other hand, it must be admitted that all our knowledge of reality is based on instinctive pre-knowledge—a property of the unconscious; further, we know that the events that follow the formation of a retinal image in our fields of vision and their relations to the objects that cause the stimulus, are subjected to a process of unconscious coördination so that we do not get an inverted and diplopic view of the external world. It seems that even our conception of external reality is guided and coördinated by the unconscious.

I am, Sir, yours faithfully,

April 30th, 1921. M.D.

THE DIET OF THE WEANLING.

To the Editor of THE LANCET.

SIR,—The diet of the weanling is a subject of immense importance, but, unhappily, one concerning which disastrous ignorance prevails in this country.

Reference has been made in your correspondence columns concerning the amount of milk the weanling requires. Sir, the weanling requires no milk whatever. It amazes me that this elemental truth is not taught in our medical schools. Pure milk, whether from the cow, goat, mare, or ass, is a good enough food in moderation from the time of weaning to the end of the chapter, but—it is not essential.

Another truth all but wholly overlooked in this country: the diet of the growing human from the time of weaning onwards should be such as shall enable the jaws to grow sufficiently to allow the whole 32 permanent teeth to take up their proper position without jamming. So to feed our youth as not to allow the masticatory apparatus to develop normally is to rob them of their birthright, of what, indeed, is more truly their birthright than any gift which can be bequeathed by testament. A due appreciation of this truth would do more to improve the health of the community than all the team-work carried on at our medical centres is likely to achieve in the next half-century. I say this while fully appreciating the good which is likely to accrue from this movement.

So absorbed are we in the investigation of the obscure that we are in some danger of overlooking the glaringly obvious.

I am, Sir, yours faithfully,

Wimpole-street, W., April 30th, 1921. HARRY CAMPBELL.

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[1] Cf. Jung: Collected Papers on Anal. Psych., 2nd ed., pp. 374, 410.

LIVERPOOL MATERNITY HOSPITAL.—The annual meeting of this hospital was held on April 28th in the Town Hall, the Lord Mayor presiding. The annual report showed an increase in the number of patients, the hospital having been full the whole year; many cases had to be refused for lack of accommodation. During the year 27 women medical students and 68 men students took their midwifery practice at the hospital. Eighty-two pupil midwives took the prescribed course of training, and 77 of these were successful in passing the examination of the Central Midwives Board. Sir William Hartley's generous offer of £25,000 and a site for a new hospital has been accepted, and the Board is about to raise additional funds to set about building this hospital. On the year's workings there is a deficit of £1044, and the committee is anxious for increased contributions.

Obituary.

HENRY EDWARD JULER, F.R.C.S. ENG.,

CONSULTING OPHTHALMIC SURGEON, ST. MARY'S HOSPITAL.

Mr. Henry Juler, whose death on April 23rd, from pneumonia, was recorded last week, was the son of Dr. H. C. Juler, a Suffolk practitioner, and received his medical education at St. Mary's Hospital, London, where he held in succession the appointments of demonstrator of anatomy, medical registrar, and medical superintendent. After post-graduate study in Paris and Berlin, he decided to devote himself to ophthalmic work, and was appointed clinical assistant to the Royal London Ophthalmic Hospital. At the same time he started practice in Wimpole-street, with the usual early struggles, which ultimately gave place to a very large practice in Cavendish-square. On his appointment to the staff of the Royal Westminster Ophthalmic Hospital, where was at that time abundant clinical material but no systematic teaching, he set himself with customary energy to remedy this and, with the assistance of his colleagues, laid the foundation of a successful school of ophthalmology. In 1884 he was appointed to the ophthalmic staff of St. Mary's Hospital as junior to Sir Anderson Critchett, whom he subsequently succeeded. It was then that he became deeply interested in the pathological side of ophthalmology, many of the specimens prepared by him being now in the museum of the Royal College of Surgeons of England.

Juler was not a prolific writer, but his "Handbook of Ophthalmic Science and Practice" went through three editions and is still widely read here and in America. His Harveian lectures on Syphilitic Diseases of the Eye and its Appendages, delivered in December, 1897, were a judicious blend of accurate clinical and pathological observation, and his occasional contributions to medical societies were as much concerned with the basis of disease as with its manifestations. The same attitude is apparent in an introductory address to students delivered at St. Mary's Hospital in 1893.

Two of Mr. Juler's friends and contemporaries have sent us an intimate account of his life and work, which may be quoted:—

> Juler was a man of untiring energy and enthusiasm, both in his work and in his recreation. He was a familiar equestrian figure in Hyde Park in the early morning, educating his children in horsemanship. He rode fearlessly, not without occasional accidents, and his cheeriness of disposition carried others with him in sports and pastimes. His operative skill and dexterity were accompanied by a sympathetic consideration for the patient's trouble which made him very popular as a consultant. Early in the war he lost his younger son, who was in the first Expeditionary Force, a blow from which he never quite recovered. Previous to this he had resigned his hospital appointments, but returned to work at the Westminster Ophthalmic Hospital during the period of stress.

For the last two years he had been gradually retiring from practice, his elder son succeeding to his work. His loss is felt by a large circle of patients and friends, and much sympathy will be extended to his widow, surviving son, and three daughters.

DEATH OF DR. ARTHUR F. DOBBS, OF ATHLONE.—Great regret is felt both in his own neighbourhood and in Dublin at the death of Dr. Arthur Dobbs, one of the leading practitioners of the Irish midlands. He had been overworked for years past, but had remained at his post. On April 20th he entered on his duties as usual, but felt ill in the course of the morning, and died in the afternoon. For many years he had practised in Athlone, and was held in respect and affection by all classes of the community. With a deep sense of the responsibility of professional work, he not only attended to his patients with the most scrupulous care, but as time permitted he kept in touch with modern knowledge by constant study and by post-graduate courses.

DEATH OF DR. F. H. PICKIN.—Frederick Harold Pickin, M.R.C.S. Eng., late Captain, R.A.M.C., who died suddenly on his birthday, April 28th, at the age of 45, received his medical education at the London Hospital and at Bristol, where he held resident appointments at the General Hospital. After qualifying in 1903, he was appointed assistant surgeon at All Saints Hospital, London, where his interest in urinary diseases began. His contributions to medical literature included a paper on A Routine Method of Examination in Gonorrhœa in the Male as a Guide to Treatment, which appeared in THE LANCET, 1913, i., 76. At the time of his death he was hon. surgeon to out-patients at St. Paul's Hospital for Skin and Genito-urinary Diseases.

THE LATE DR. W. H. WOODGER.—William Hawkley Woodger, who died suddenly on April 23rd at his residence in Newcastle-on-Tyne, was a well-known medical practitioner in that city. Educated at the University of Durham, he obtained the triple Scottish qualification in 1905, and immediately entered into general practice at Newcastle. During the war he was employed on active service in Egypt, where he contracted malaria, from which he never fully recovered. He leaves a widow and three sons.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surgeon-Lieutenants to be Surgeon Lieutenant-Commanders: J. O. Sinclair and H. L. P. Peregrine.

Surg. Lieut. (D.) A. T. Dally to be Surgeon Lieutenant-Commander (D.).

ROYAL ARMY MEDICAL CORPS.

Capt. E. Catford relinquishes the acting rank of Major.

Temp. Capt. G. J. McGorty to be Captain.

Lieutenants (temporary Captains) to be Captains: A. R. Barlas and E. N. P. Martland.

E. C. Fawcett, late temporary Captain, to be temporary Captain.

Officers relinquishing their commissions: Temp. Major R. A. Beaver (retains the rank of Major). Temp. Capt. F. L. Dickson. Temporary Captains retaining the rank of Captain: J. Joule, W. Spiteri, G. Fleming, E. Bryceson, H. R. McNair, J. Crean, E. S. Joske, T. H. Jackson, and W. D. Perry. Temporary Lieutenants retaining the rank of Lieutenant: S. E. Price and W. A. Byrn.

ARMY DENTAL CORPS.

To be Majors: Temp. Majors W. T. Finlayson (from R.A.M.C.) and A. K. Macdonald (Dental Surgeon, from Special List), and Temp. Capt. (acting Major) J. A. Seymour (Dental Surgeon, from General List). Dental Surgeons to be Captains: Temp. Capts. R. H. Bebb (from General List), A. B. W. Rust (from General List), E. Smith (from General List), A. B. Austin (from Special List), R. H. Mills (from Special List), and E. R. Saul (from Special List); A. F. Salsbury (from temporary Major, Special List).

OVERSEAS FORCES.

South African Medical Corps.—Temp. Capt. G. S. Coghlan relinquishes his commission on completion of service, and retains the rank of Captain.

TERRITORIAL FORCE.

Capt. (acting Major) E. Osborne relinquishes the acting rank of Major on ceasing to be specially employed.

Capt. F. D. Marsh, from 1st Southern General Hospital, to be Captain.

D. J. Davies to be Lieutenant.

DEFENCE FORCE.

To be temporary Majors: C. Walker, B. Addenbrooke, C. B. Baxter, S. J. C. Holden, and L. R. Colledge. To be temporary *Captains*: A. Morris, C. H. Comerford, J. Morham, W. George, A. C. H. McCullagh, S. J. Clegg, B. E. A. Batt, H. Wilson, W. Tresawna, J. Grant-Morris, O. H. Mavor, J. A. Stenhouse, H. L. Garson, A. Walker, H. K. Ward, E. Scott, and F. J. Morris. To be temporary Lieutenant: A. Fisher.

4th London (D.F.) Field Ambulance:—To be temporary Lieutenant: C. C. Coghlan.

5th London (D.F.) Field Ambulance:—To be temporary Major: E. T. H. Lea.

6th London (D.F.) Field Ambulance:—To be temporary Captains: J. Rowland and J. O. Thomas. To be temporary Lieutenant: L. Samuels.

1st East Anglian Field Ambulance:—To be temporary Lieutenant-Colonel: H. F. Everett. To be temporary Captains: W. J. Rice, H. V. Walsh, C. S. Stadden, and W. S. Forbes.

Sanitary Section:—To be temporary Captain: G. T. Stewart.

1st South Midland Field Ambulance:—To be temporary Lieutenant-Colonel: W. Stobie.

3rd (Home Counties) Field Ambulance (D.F.):—To be temporary Lieutenant-Colonel:—H. G. G. Mackenzie.

2nd (West Lancs.) Field Ambulance (D.F.):—To be temporary Lieutenant-Colonel: G. C. E. Simpson.

3rd (West Lancs.) Field Ambulance (D.F.):—To be temporary Major: A. J. D. Riddett.

2nd West Riding Field Ambulance (D.F.):—To be temporary Major: T. B. Kenworthy. To be temporary Captain: D. F. Dobson.

3rd West Riding Field Ambulance (D.F.):—To be temporary Major: E. F. Skinner. To be temporary Captains: R. A. Stark, W. T. D. Mart, and R. E. Pleasance.

2nd (Wessex) Field Ambulance (D.F.):—To be temporary Lieutenant-Colonel: C. M. Kennedy.

3rd (Wessex) Field Ambulance (D.F.):—To be temporary Lieutenant-Colonel: E. Alderson.

ROYAL AIR FORCE.

The undermentioned are granted temporary commissions as Flight Lieutenants: C. P. Barber, J. F. P. Gallagher, H. C. E. Quin.

Capt. G. M. Mellor is transferred to the unemployed list.

Parliamentary Intelligence.

HOUSE OF LORDS.

TUESDAY, MAY 3RD.

PUBLIC HEALTH (TUBERCULOSIS) BILL.

THE Earl of ONSLOW (Parliamentary Secretary of the Ministry of Health), in moving the second reading of the Public Health (Tuberculosis) Bill, said that the deaths from tuberculosis during the past six years were as follows:—1915, 54,295; 1916, 53,858; 1917, 55,734; 1918, 58,073; 1919, 46,312; 1920, 42,545. The drop in the figures in the last two years was mainly due to the valuable services rendered by the county councils in combating disease, and afforded proof of the immense gain to the nation through their work. The number of beds provided for tuberculosis patients by the local authorities and voluntary institutions had increased since 1912 from 4300 to 17,447.

Lord STRACHIE said that, on the whole, the county councils were fairly satisfied with the Bill, and were obliged to the Ministry of Health for the way in which they had considered many amendments they had suggested. They approached the Bill in no hostile spirit. The feeling at the meeting of the County Councils Association was that as the Bill made sanatorium treatment compulsory on the county councils the obligation to pay for the same should also be compulsory.

The Earl of ONSLOW said that the Government had promised to find £300,000 to reimburse the councils plus a further grant this year of £1,000,000. It was the fixed and firm policy of the Government to continue this institutional treatment of tuberculosis.

Lord SYDENHAM asked whether the figures mentioned by the noble lord represented the maximum annual expenditure under this bill.

The Earl of ONSLOW said that the block grant might be regarded as final, but the £200,000 depended on the amount that the councils spent on the approved schemes each year.

Lord HARRIS protested against the enormous charge which was being thrown on the rates for this purpose. The treatment of tuberculous people was a national object and their cure was a national advantage. Why, then, should such a very large proportion of the cost be thrown on the rates? Why should it not be 25 per cent. on the rates and 75 per cent. on the Exchequer?

The Bill was read a second time.

HOUSE OF COMMONS.

THURSDAY, APRIL 28TH.

Grouping of Medical Appeal Boards.

Mr. WATERSON asked the Minister of Pensions whether there had been any joining together of medical appeal boards; if so, for what purpose; and under what powers such had been done.—Mr. MACPHERSON replied: The answer to the first part of the question is in the negative. Perhaps my honourable friend has in mind an administrative arrangement by which, in certain large areas, a number of boards may be grouped for supervision under one Deputy Commissioner of Medical Services, each board, however, retaining its own chairman.

University Students and Defence Force.

Mr. RENDALL asked the Secretary for War what action he intended taking on the letter received from Sir I. Owen, Vice-Chancellor of the University of Bristol, which pointed out the importance of university students being released from the Defence Force at the earliest possible moment.—Sir CHARLES OMAN asked the Secretary for War whether he would take measures to secure the prompt demobilisation of those university students who were still retained by their colonels in the battalions of the Defence Force, when the large majority of such persons had been granted leave to return to their studies and examinations, as cases of great hardship were being reported by university authorities.—Sir L. WORTHINGTON-EVANS replied: It is not possible to give leave to students from the Defence Force without at the same time giving leave to others who may desire it on urgent grounds. It is hoped, however, that the present negotiations will lead to a speedy settlement, when steps will be taken to demobilise the Defence Force.

Medical Equipment of Auxiliary Division, R.I.C.

Lieutenant-Colonel WALTER GUINNESS asked the Chief Secretary to the Lord Lieutenant of Ireland whether the Auxiliary Division, Royal Irish Constabulary, were still entirely without medical staff or ambulances; and whether, in view of the very dangerous work and heavy casualties which their units were now sustaining, he would consult the Director of Medical Services as to the advisability of attaching to each company one motor ambulance, one medical non-commissioned officer, and two medical orderlies.—Sir H. GREENWOOD replied: As stated by my right honourable friend, the Attorney-General (Mr. Henry), in reply to a question on this subject on April 14th, the Auxiliary Division is not provided with its own special medical transport, but ambulances and other necessaries of medical equipment are borrowed from the Regular Forces as and when required. I have inquired into the working of this arrangement, and am assured that it is found to answer satisfactorily, as the whereabouts of neighbouring military stations are well known and can be communicated with easily in the event of casualties occurring.

Supervision of Private Vaccine Farms.

Mr. HAYDAY asked the Minister of Agriculture whether his department exercised any supervision over the private vaccine farms in this country in which vaccine lymph was manufactured, having regard to the fact that at least two outbreaks of foot-and-mouth disease in the United States of America had been attributed by the authorities to the use of contaminated vaccine lymph on private vaccine farms.—Sir. A. BOSCAWEN replied: The Ministry exercises no supervision or control over private vaccine farms in this country in which vaccine lymph is manufactured. I may add that the Ministry has inquired into hundreds of outbreaks of foot-and-mouth disease in this country since the report from the United States of America was published, but in no case has any evidence been obtained that foot-and-mouth disease has ever been introduced into Great Britain through the medium of vaccine lymph.

Proposed Reduction of Government Medical Staff.

Major Sir KEITH FRASER asked the Minister of Health what necessity there was for having increased the number of medical men on the public health staff in the direct service of the Government from 39, who performed the functions under the Local Government Board in 1914, to 100, at present employed by the Ministry of Health, at an annual cost which was increased from £26,871 15*s.* 9*d.* in 1914 to £130,630 3*s.* in 1920; and whether he proposed to take any steps to reduce the numbers and cost.—Sir A. MOND replied: I am inquiring into the functions and numbers of the medical branch of the Ministry, and pending the result of the inquiries have given instructions that no vacancies arising in the medical branch are to be filled.

Educational Food Leaflet.

Colonel Sir ARTHUR HOLBROOK asked the Minister of Health when it was proposed to issue the educational food leaflet, the draft of which was submitted early in March, with a memorial on this subject from medical, scientific, health, and other associations; and would he deal with the matter as one of urgent importance, having regard to the present general distress and the consequent necessity for disseminating knowledge of healthy, nourishing, and economical foods.—Sir A. MOND replied: The matter is receiving attention and I will see whether any useful purpose can be served by issuing any such pamphlet.

Protection against Small-pox.

Mr. FREDERICK GREEN asked the Minister of Health, in view of the statement contained on page 219 of the annual report of the chief medical officer of the Ministry for the year 1919-20 that cases of small-pox did not occur after recent successful re-vaccination, how recent re-vaccination should be in order to be absolutely protective; and what were the characteristics represented by the word successful.—Sir A. MOND replied: I am advised that the protection against small-pox infection by efficient vaccination is practically absolute during the early years following the operation and that in the great majority of cases the protection remains effective up to the tenth or eleventh year after vaccination. The evidence of successful vaccination is the production at the seat of inoculation of the characteristic lesions followed by well-defined marks.

MONDAY, MAY 2ND.

The Spahlinger Treatment.

Mr. HIGHAM asked the Prime Minister whether he would consider the advisability of appointing a commission to investigate at once the merits of the Spahlinger treatment for consumption, particularly in view of the fact that 18 persons were treated in England with this serum in 1913-14 when they were in the third degree of consumption, and to-day these persons were well and able to carry on their former occupations; and whether, in view of this fact and also that 40,000 people died of consumption annually in this country, he would consider it desirable to exhaust every means in his power to secure the Spahlinger treatment for this country so that it might be available to all people suffering from consumption in any of its stages.—Sir A. MOND (Minister of Health) replied: I may remind my honourable friend that the question of the merits of the Spahlinger treatment for consumption have been under consideration by the responsible medical authorities in this country since 1914; and during the last few months the Ministry of Health, following their usual practice of investigating the efficacy of all new methods of treatment for tuberculosis which are brought forward, have given further special attention to the matter at the particular request of Mr. Spahlinger. The difficulty in the case is, however, that the serum itself and reliable details of the clinical evidence in support of its use are not forthcoming. An undertaking has, however, been given that when supplies of this serum become available for independent and scientific investigation in this country the Ministry of Health will facilitate an exhaustive examination of its efficacy. The appointment of a commission as suggested by my honourable friend would not therefore appear to be of any advantage at the present time. I think it desirable to emphasise that in the opinion of my medical advisers there is not yet available a sufficient body of evidence to justify the claims made for this treatment.

Cost of the Ministry of Health.

Mr. MILLS asked the Minister of Health if he would submit a return showing the total expenditure defrayed out of national funds in respect of each of the administrative sections under the control of his department during each of the last two completed financial years, and also the estimated similar expenditure in respect of the current financial year.—Sir A. MOND replied: I am not quite clear what the honourable Member has in mind. If, as I assume to be the case, he refers to grants made by the department out of voted moneys towards the cost of housing, national health, insurance, and miscellaneous health services, the information is as follows:—

	Expenditure.		Estimated expenditure.
	1919–20	1920–21	1921–22
	£	£	£
Housing	24,109	3,145,888	11,000,000
National Health Services	6,596,436	7,713,704	8,500,000
Miscellaneous „ „	777,142	2,451,059	3,000,000

Indian Medical Service Appeals.

Major GLYN asked the Secretary for India whether British officers of the Indian Medical Service had any right of appeal if the contention was upheld that such officers had no right of appeal under Section 42 of the Army Act, and with special reference to the notification in the *London Gazette* of March 15th, p. 2099; and, if so, by what procedure they could appeal.—Mr. MONTAGU replied: I am advised that officers of the Indian Medical Service have no right of appeal under Section 42 of the Army Act, but have a right of appeal to the Governor-General under Section 180 (2) (d) of that Act. If dissatisfied with his orders they may then appeal to the Secretary of State for India, and through him to H.M. the King.

Small-pox and Vaccination.

Mr. ROBERT YOUNG asked the Minister of Health if his attention had been called to the following figures relating to the cases of small-pox notified in 1919—namely, 294—as shown on pages 34 and 39 of the First Annual Report of the Minister of Health, and pages 27 and 241 of the Annual Report of the Chief Medical Officer for 1919-20; 288, as shown on page 215 of the last-named Report; and 361, as shown on page lxviii. of the Registrar-General's Annual Report; if he would state the reason for these differences and say what was the total number of cases notified or discovered in 1919, and how many of those cases occurred amongst each of the civilian, military, and naval sections of the population, and how many in port sanitary districts; and how many deaths occurred in each of these sections.—Sir A. MOND replied: The figure 288 shown on page 215 of the Annual Report of the Chief Medical Officer of the Ministry for 1919-20 is the total number of cases of small-pox notified under the Infections Diseases (Notification) Act during 1919. Twenty-three of these cases were afterwards withdrawn on the ground of incorrect notification, and 29 cases were discovered in the civilian population which had not been notified. The figure 294 shown on pages 34 and 39 of the first Annual Report of the Minister of Health, and on pages 27 and 241 of the Annual Report of the Chief Medical Officer, which is arrived at by adding 29 to the figure 288 and deducting 23 therefrom, is the actual number of cases of small-pox occurring in the civilian population during 1919. Of these cases 38 occurred in port sanitary districts. In addition, 13 military and 4 naval cases occurred in this country, and 50 service men arrived in this country convalescent from small-pox incurred abroad. The figure 361 shown on page lxviii. of the Registrar-General's Annual Report is arrived at by adding these 50 cases to the total number of civilian, naval, and military cases which occurred in this country. The number of deaths was 25 in the civilian, 4 in the military, and none in the naval sections of the population.

Mr. LUNN asked the Minister of Health how many deaths from small-pox had occurred amongst children under 5 years of age in each year since the passing of the Vaccination Act, 1907; and how many deaths of children under 5 years of age in each of those years had been certified by the doctor in attendance as having been caused by, or associated with, the operation of vaccination.—Sir A. MOND replied: The particulars asked for, according to the Registrar-General's Returns so far as England and Wales are concerned, are as shown in the following table:—

Deaths of Children Under 5 Years of Age.

Year.	Small-pox.	Vaccination.*	Year.	Small-pox.	Vaccination.*
1908	1	13	1915	2	7
1909	1	11	1916	3	2
1910	2	8	1917	—	6
1911	5	15	1918	—	3
1912	2	9	1919	2	6
1913	1	7	1920	5	10
1914	1	5			

* Certified by doctor to have been caused by, or associated with, vaccination.

Mr. CHARLES WHITE asked the Secretary for Scotland how many deaths from small-pox had occurred in Scotland amongst children under 5 years of age in each year since the passing of the Vaccination Act, 1907; and how many deaths of children under 5 years of age in each year had been certified by the doctor in attendance as having been caused by, or associated with, the operation of vaccination.—Mr. MUNRO replied: The answer to the first part of the question is 28, of whom 27 were unvaccinated and 1 vaccinated. The answer to the last part of the question is 6.

BOOKS, ETC., RECEIVED.

APPLETON, D., AND CO., London and New York.
Gynecological and Obstetrical Tuberculosis. By Charles C. Norris, M.D. Pp. 356.
Cesarean Section. By Prof. Franklin S. Newell. Pp. 210.
Menstruation and its Disorders. By Emil Novak, M.D. Pp. 357.
Extra-Uterine Pregnancy. By Edward A. Schumann, M.D. Pp. 189.
Pelvic Inflammations in Women. By Prof. John Osborn Polak, M.D. Pp. 229. Five vols. will be issued in August; *10 vols. complete, £10 10s.*

BARTH, A., Leipzig.
Handbuch der Arztlichen Erfahrungen im Weltkriege. 1914–1919. Band VIII. Pathologische Anatomie by Ludwig Aschoff. Pp. 590. M.170.

DAVIS, F. A., COMPANY, Philadelphia.
Eye, Ear, Nose, and Throat Nursing. By Prof. A. E. Davis and *Prof. B. Douglass. 2nd ed. Pp. 346.* $2.50.
Rational Treatment of Pulmonary Tuberculosis. By C. Sabourin, M.D. Authorised English translation from the 6th French ed. Pp. 440. $3.50.

HARRISON AND SONS, London.
Transactions of the *Medical Society of London.* Vol. XLIII. Edited by Donald Armour, F.R.C.S., and W. H. Willcox, M.D. Pp. 291.

HEINEMANN, W., London.
A Text-book of General Pathology for the Use of Students and Practitioners. By J. M. Beattie, M.D., and W. E. C. *Dickson,* M.D. 2nd ed. Pp. 496 + xlv. 31*s*. 6*d*.

JOHNS HOPKINS PRESS, *Baltimore.*
Diagnosis of Protozoa and Worms Parasitic in Man. By Associate Professors R. W. Hegner and W. W. Cort. Pp. 72.
Hospital Reports, Vol. XX., Fasc. 1, pp. 147, and plates; Vol. XX., Fasc. 2, pp. 249, and plates; Vol. XXI., Fasc 2, pp. 156, and plates.

KIMPTON, HENRY, London.
Clinical Surgery by Case Histories. By Prof. A. E. Hertzler. Vol. I., Head, Neck, Thorax, and Extremities. Pp. 546. Vol. II., Diseases of the Abdominal and Genito-urinary Organs. Pp. 547–1106. £5 complete.

LIBRAIRIE FÉLIX ALCAN, Paris.
Traumatismes Cranio-Cérébraux (Accidents Primitifs, Leurs Grands Syndromes). Par Prof. H. Duret. Vol. II., Pt. 1, pp. 800; Pt. 2, to pp. 1357. Fr.150, 2 vols.

LONGMANS, GREEN, AND CO., London.
The Electronic Conception of Valence and the Constitution of Benzene. *By H. S. Fry,* Ph.D. Pp. 300. 16*s*.

MASSON ET CIE, Paris.
Manuel de Coprologie Clinique. Par le Dr. J. Ch. Roux. Pp. 383. Fr.12
Chirurgie de Guerre et D'après-Guerre. Par Prof. A. Broca. Pp. 479.

SCIENTIFIC PRESS, LTD., London.
A *Handbook for Nurses.* By J. K. Watson, Capt., R.A.M.C. 6th ed. Pp. 770. 10*s*. 6*d*.

SPRINGER, JULIUS, Berlin.
Das Sputum. Von Prof. Dr. H. von Hoesslin. Pp. 393. M.148.
Konstellationspathologie und Erblichkeit. Von Dr. N. Ph. Tendeloo. *Pp. 32.* M.8.60.

UNIVERSITY OF CHICAGO PRESS, Chicago.
The Origin and Development of the Nervous System from a Physiological Viewpoint. By Prof. C. M. Child. Pp. 296.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At a Congregation held on April 29th the following degrees were conferred:—

M.D.—C. R. Taylor, Caius.
M.B. and B.Ch.—P. F. Bishop, Clare.
M.B.—E. H. H. Granger, Clare.
B.Ch.—H. B. Dodwell, Emmanuel.

UNIVERSITY OF LONDON: *Election of Senate.*—The semi-general election has resulted in the appointment of the following medical men as members of the Senate for the period 1921-25: Sir Wilmot Herringham (R.C.P. Lond.), Mr. Raymond Johnson (R.C.S. Eng.), Mr. H. J. Waring (Faculty of Medicine), Dr. G. N. Pitt (City and Guilds Institute), and Dr. E. G. Graham Little (Convocation).

The Graduation Dinner.—On account of the present industrial crisis and the necessity for saving coal and light, the University authorities were compelled to cancel the graduation dinner fixed for yesterday evening, Thursday, May 5th. In order to mitigate the disappointment which this decision will necessarily cause, the Prince of Wales consented to attend a reception at the Guildhall during the afternoon, when the manuscript given by the graduates and undergraduates of the University was presented to His Royal Highness.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An ordinary Comitia of the College was held on April 28th, Sir Norman Moore, the President, being in the chair. The following were admitted to the *Membership* of the College: Dr. James B. Alexander, Dr. George Ashton, Dr. Percy S. Blaker, Dr. John A. M. Bligh, Dr. Loswel I. B. Braun, Dr. Ernest A. Broughton, Dr. George S. Buchanan, Dr. Ruth E. Conway, Dr. Arthur J. Eagleton, Dr. Ernest G. Ffrench, Dr. Charles B. Heald, Dr. Godfrey T. Hebert, Dr. Arthur H. Holmes, Dr. Alice M. Hutchison, Dr. Henry W. Jones, Dr. John W. Linnell, Dr. Charles C. Okell, Dr. Donald H. Paterson, Dr. Miles K. Robertson, Dr. James A. Shorten, Dr. James C. Spence, Dr. Ernest B. Verney, and Dr. Cecil C. Worster-Drought.—Licences to practise Physic were granted to 103 candidates who had passed the required examinations and conformed to the by-laws and regulations.

Diplomas in Tropical Medicine and Hygiene were granted, jointly with the Royal College of Surgeons, to the following candidates: John O. Beven, Francis Xavier Costello, Andrew Crawford, John P. de Silva, William M. Howells, Annie M. Mackay, Charles T. Maitland, Mary Martin, Malcolm Morrison, Parasurama Parthasarathy, Robert A. W. Proctor, Benoy Kumar Ray, Henry E. S. Richards, Mona M. Ross, Chuni Lal Sahni, Douglas S. Scott, Jacob Ségal, Lolitmohan Sen, Pran Nath Seth, Robert G. Simpson, and Herbert Smith.

The following were elected to the *Fellowship* on the nomination of the Council: Dr. Charles O. Hawthorne, Dr. Arthur J. Cleveland, Dr. Charles H. Melland, Dr. Joseph G. Emanuel, Dr. Frank H. Jacob, Dr. Alfred E. Barnes, Dr. John P. Hedley, Dr. James A. Torrens, Dr. Alfred J. Clark, Dr. Anthony Feiling, Dr. Robert H. Steen, Dr. Charles McMoran Wilson, Dr. George E. S. Ward, and Dr. John B. Leathes.

Sir Norman Moore was unanimously re-elected a Representative of the College on the General Medical Council, and Sir Wilmot Herringham was re-elected a Representative of the College on the Senate of the University of London.—The following schools were recognised for instruction in chemistry and physics: Christ's Hospital, Horsham; Handsworth Technical School, Birmingham; and Ipswich High School for Girls. Leicester Municipal Technical School was recognised for Instruction in Biology, and the South London Hospital for Women was recognised for the gynæcological clerkship. It was resolved to admit licentiates in medicine and surgery of King Edward VII. Hospital Medical School, Singapore, to the Second and Final Examinations.—After some formal College business had been transacted the President dissolved the Comitia.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Final Examination of the Conjoint Examining Board, held from April 5th to 25th, the following candidates were approved in the under-mentioned subjects, but are not eligible for diplomas:—

Medicine.—S. Adler and D. R. Ainsworth, Manchester; W. Beaumont, London; Lorna Phœbe Brown, Univ. Coll.; E. M. Burrell, Cambridge and St. Thomas's; Christabel L. M. Charlesworth, King's Coll.; J. C. Churcher, St. Thomas's; C. S. Cloake and E. C. T. Clouston, London; C. L. Cottle, Glasgow and Liverpool; Nancy M. Coutts, Royal Free; P. T. Davidson, Middlesex; H. K. Denham, Oxford and St. Bart.'s; E. C. Dodds, Middlesex; T. W. K. Dunscombe, Durham; E. S. Etheridge, Univ. Coll.; J. C. Evans, London; H. Finklestone, Sheffield; Betty Fletcher, St. Mary's; J. Franks, London; E. St. C. Gainer, Middlesex; L. D. Gorton, Birmingham; A. Gullertein, London; A. H. Hall, Birmingham and London; Marjorie C. Hawkins, Westminster; A. D. Hepburn, Cardiff and Westminster; R. J. Hodgkinson, Guy's; Marjorie Browning Hubert, St. Mary's; A. Ismail, Dublin; E. R. Jagger, Manchester; Erna Henrietta Jebens, Royal Free; D. J. Jones, Westminster; A. M. Khaleel, Middlesex; A. Kotbi, St. Mary's; W. E. Lloyd and D. M. Lloyd-Jones, St. Bart.'s; D. McClean, St. Thomas's; J. F. C. McColl, Liverpool; A. Maude, Manchester; Enid M. Moore, St. Mary's; Rose Moss, Charing Cross; R. E. Murray, Calcutta; E. R. D. Nagel, St. Thomas's; V. L. Parmar, King's Coll.; V. D. Pennefather, London; B. T. Richards, Birmingham; W. G. Roberts, Liverpool; A. Robertson, Guy's; T. Seschachalam, Madras and London; H. Shannon, St. Bart.'s; A. H. Shelswell, Guy's; S. S. Shri-Kent, Liverpool; S. R. Simaika, St. Bart.'s; H. K. Snell, King's Coll.; A. D. Soares, Bombay; A. Sourasky, Leeds; Dorothy Mary Stewart, St. Mary's; L. W. Studdy, Durham; Muriel Amy Sutton, Univ. Coll.; J. G. Tait, Edinburgh; Wenefride Thompson, St. Mary's; Doris Lyne Veale, Royal Free; J. G. Walker, Charing Cross; L. R. A. Wells, Guy's; E. T. Wright, St. Mary's; and J. E. Wright, Guy's.

Midwifery.—N. A. Aiengar, Guy's; O. A. Akjaly, Liverpool; V. H. Barker, London; Marjorie M. S. Bartlett, St. George's; A. W. Brown, Cambridge and St. Bart.'s; Lorna Phœbe Brown, Univ. Coll.; Margaret H. Burrows and Linda Catmur, London; R. B. Chandrachud, Guy's; Christabel L. M. Charlesworth, King's Coll.; A. J. Chiappa, Middlesex; J. C. Churcher, St. Thomas's; W. E. R. Coad, Toronto; W. E. Cody, St. Bart.'s; Muriel Coope, Manchester; J. M. Craig, Dundee and St. Mary's; G. C. W. Curson, Guy's; K. A. Darukhanawala, Middlesex; J. B. Devine, King's Coll.; J. H. Doggart, Cambridge and St. Thomas's; H. S. Drabble, Sheffield; Winifred M. Edghill, Manchester; Doris Emery, Royal Free; F. T. Evans, St. Bart.'s; A. Farid, Guy's; W. E. Farnham, Birmingham; Ena Dorothy Foster, St. Mary's; N. Gallant, London; G. L. Gatoly, Liverpool; Kate Glyn-Jones, London; L. D. Gorton, Birmingham; E. F. Griffith, St. Mary's; F. Guiver, London; C. M. Gwillim, St. Bart.'s; J. F. Hackwood, St. Thomas's; T. H. J. Hargreaves, Charing Cross; Muriel M. Harris, King's Coll.; S. G. Harrison, St. Bart.'s; S. Hartley, St. Thomas's; I. Hipshon, Leeds; R. V. Hudson, Middlesex; A. B. Isaacs, St. Thomas's; Erna Henrietta Jebens, Royal Free and St. Mary's; A. O. Jones, Liverpool; R. G. Karn, Univ. Coll.; Kathleen H. B. King, Royal Free; G. B. Kirkland, Guy's; D. H. J. Kirton, Birmingham; Emilia B. M. Krause, London; D. M. Lloyd-Jones, St. Bart.'s; Eva Lombard, Geneva; Geraldine N. Longford and Muriel J. Lough, St. Mary's; F. Q. McKeown, Liverpool; Frances Mary Margerison, Charing Cross; A. Mitchell, King's Coll.; Enid M. Moore, St. Mary's; J. N. Morris, King's Coll.; D. C. Muir, Middlesex; J. Ness-Walker and W. H. Nettlefield, St. Bart.'s; J. B. Oldham, Liverpool; A. E. Parkes, St. Bart.'s; V. L. Parmar, King's Coll.; D. H. Patey, Middlesex; V. D. Pennefather and Ruth E. Pilgrim, London; Mary W. Pitt-Lewis, St. Mary's; J. H. Porter, Univ. Coll.; Enid M. Powell, Charing Cross; F. L. Rayner, Guy's; J. G. Reed, St. Thomas's; P. D. Richards, St. Bart.'s; W. G. Roberts, Liverpool; A. R. Rutnam, Middlesex; T. A. S. Samuel, London; I. A. Senanayeke, Univ. Coll.; T. Seshachalam, Madras and London; K. E. Shellshear, St. Bart.'s; S. S. Shri-Kent, Liverpool; G. H. T. Stovin and R. S. Swindell, London; E. J. Targett, Birmingham; Marjorie P. Taylor, Charing Cross; N. S. Taylor, Liverpool; Wenefride Thompson, St. Mary's; C. A. Wells, Liverpool; B. W. Williams, St. Thomas's; D. H. Williams, London; and S. J. Woodall, Manchester.

Surgery.—F. C. W. Capps, St. Bart.'s; R. B. Chandrachud, Guy's; L. E. Claremont; Univ. Coll.; I. J. Corbett, London; J. M. Craig, Dundee and St. Mary's; E. Cuerel, Lausanne; E. C. Dodds, Middlesex; T. W. K. Dunscombe, Durham; A. H. El-Ramli, Liverpool; F. T. Evans, St. Bart.'s; R. A. Fanous, Manchester; E. Gallop, St. Bart.'s; P. P. Gandhy, St. Mary's; M. Hall, Guy's; A. V. Johnson, Cambridge and Birmingham; K. W. Leon, St. Bart.'s; A. Livingston, Liverpool; R. Mikhail, Charing Cross; J. N. Morris, King's Coll.; H. W. L. Nichols, London; H. A. Osborn, King's Coll.; L. S. Perera, London; G. W. Phillips, Liverpool; A. I. Silverman, Middlesex; S. R. Simaika, St. Bart.'s; Muriel Amy Sutton, Univ. Coll.; D. R. Thompson, London; D. L. Veale, Royal Free; A. Verwey, Leiden and St. Bart.'s; and W. H. Williams, Charing Cross.

RONTGEN SOCIETY.—The Manchester meeting of this Society, announced for May 6th and 7th, was postponed owing to the coal strike.

POST-GRADUATE COURSE OF INSTRUCTION IN TREATMENT OF VENEREAL DISEASES.—A two weeks' course for qualified medical women, arranged by the London (R.F.H.) School of Medicine for Women, the Royal Free Hospital, the Elizabeth Garrett Anderson Hospital, and the London Lock Hospital, will begin on Tuesday, May 17th, at 10 A.M., with an introductory lecture on "Some Aspects of the Venereal Problem," by Mr. J. E. R. McDonagh, at 8, Hunter-street, London, W.C. The Ministry of Health recognises attendance at this course as qualifying the medical practitioner who has pursued it to receive free drugs for treatment. The course will consist of visits to and demonstrations in various departments of the three hospitals under the direction of Miss Margaret Basden, Dr. Margaret Rorke, Mr. Charles Gibbs, Dr. Ruth Balmer, Dr. David Thomson, Mr. J. Ernest Lane, Mr. J. E. R. McDonagh, and Mr. J. Johnston Abraham. Fees for the full course, £5 5s., payable on entry. The library, refectory, and common rooms at the London (R.F.H.) School of Medicine for Women are available for use by the post-graduate students attending the course. Qualified medical women wishing to attend are asked to send in their names not less than seven days before the course begins to Miss L. Brooks, at 8, Hunter-street, London, W.C.1.

The King has sanctioned the promotion of Lieutenant-Colonel L. N. Robinson, C.B.E., R.A.M.C., to Knight of Grace, and the appointment of Captain E. B. Allnutt, M.C., R.A.M.C., to Esquire in the Order of St. John of Jerusalem in England.

Guild of Blind Gardeners.—A project for the useful and healthy employment of the labours of the blind, entitled the Guild of Blind Gardeners, was brought before the Oxford Ophthalmological Congress in 1919, and met with warm sympathy. The Guild will be inaugurated on May 26th at the National Library for the Blind, 18, Tufton-street, Westminster, and medical men who are interested should communicate with Mrs. Duncombe, president of the Guild, 1, Stafford Mansions, Buckingham Gate, London, S.W.

Federation of Medical and Allied Societies.—The annual dinner will be held at the Café Royal, Regent-street, London, on Thursday, May 26th. The chief guest will be Dr. Addison, M.P., in recognition of the services which he has rendered, in circumstances of exceptional difficulty, as first Minister of Health. Sir Alfred Mond, M.P., the Minister of Health, will be present, as also will members of the medical group in Parliament, and other guests. Those wishing to attend are requested to make early application to the general secretary, 5 Vere-street, London, W. 1, for tickets, price 12s. 6d., exclusive of any wine taken. Extra tickets are available for private guests, whose names, together with remittances, should accompany all applications.

National Council for Combating Venereal Diseases.—A conference is to be held at the Caxton Hall, Westminster, London, S.W., on Tuesday, May 10th, at 3.30 P.M., for the purpose of hearing reports from the three Commissions which recently returned from the Far East, the West Indies, and the Mediterranean. The meeting will include representatives from Government departments interested in home and colonial health and industrial administration, from mercantile marine associations and shipping firms, and from commercial houses trading with the places visited by the Commissions. Speakers will include Lord Gorell, President of the Council; the Earl of Onslow, Parliamentary Secretary, Ministry of Health; Hon. E. F. L. Wood, M.P., Parliamentary Under Secretary of State for the Colonies; Lieutenant-Colonel L. S. Amery, M.P., Financial Secretary, Admiralty; Mr. D. Bramah, of the Seafarers Joint Council; Dr. Rupert Hallam, Medical Commissioner to the Far East; Dr. Letitia Fairfield, Educational Commissioner to the West Indies; Dr. Winifrid Cullis, Educational Commissioner to the Mediterranean; and Dr. A. F. Wright, M.C., Medical Commissioner to the West Indies. The meeting will be open to the public. Tickets obtainable from the Secretary of the Council at 80, Avenue Chambers, London, W.C. 1.

Chartered Society of Massage and Medical Gymnastics.—The annual meeting of this Society was held on April 16th at Armitage Hall, Great Portland-street (by permission of the National Institute for the Blind). The report of the council was presented by Sir Cooper Perry, the chairman, who said that during its nine months' of existence the Chartered Society had done much work. The Examinations, Training, and Registration, Establishment and General Purposes, Finance, Journal, and Badge Committees had met twice monthly and their various recommendations to council showed that a variety of important matters had received careful deliberation. Requirements for training and for examination had been set out; provisional conditions for entry to registered membership and to additional registers had been publicly announced; an insurance scheme to meet the needs of professional workers was available; lectures and special courses have been given, and arrangements were already in hand for a conference of members to be held in the autumn. The appointments bureau had since July, 1920, supplied 185 members with work. Ten examinations had been carried out by the Chartered Society of Massage and Medical Gymnastics, and 1426 certificates granted. The Chartered Society had appointed representatives to the Massage Advisory Committee (Ministry of Pensions), the British Federation of Medical and Allied Societies, the National Council of Women Workers, and the Federation of Professional Women. The registered membership on March 31st was 2655, consisting of 2464 masseuses and 191 masseurs. The numbers on the additional registers on March 31st were as follows: medical electricity, 677; medical gymnastics, 304; teachers of medical electricity, 38; teachers of medical gymnastics, 39. The effect of Red Cross massage clinics for the treatment of civilian cases on those in private practice was discussed and will be further investigated. It was announced that members of the Chartered Society were to be eligible for membership of the Cowdray Club attached to the College of Nursing.

Harveian Society.—A clinical meeting of this Society will be held at the Paddington Infirmary, Harrow-road, W., on Thursday, May 12th, at 4.30 P.M. Programme will be found in our Medical Diary.

Glasgow University Club, London.—The annual summer dinner will be held on Friday, May 27th, in the Holborn Restaurant, Professor F. O. Bower, F.R.S., in the chair.

Liverpool Samaritan Hospital for Women.—This hospital was founded 25 years ago, and in 1920 there were 7100 attendances and 764 operations. The accommodation has become inadequate, and it is proposed to erect a new hospital building. For this purpose the committee has in hand a sum of £12,163. The proposed new premises are designed to occupy a site bounded on the north by Upper Parliament-street, on the west and south by Lestock-street, and on the east by the Windsor-street Municipal Library. The front will face the end of the cathedral. The out-patient department will open into Lestock-street, and there will be an entrance in Upper Parliament-street for stretcher cases. On the main floor there will be two general and three private wards, an administrative department, and dining- and recreation-rooms for the nurses. On the upper floors will be general wards, private wards, up-to-date theatres, and staff rooms. In the general wards there will be accommodation for 62 patients, and, in addition, there will be eight private wards. The building is to be constructed of rustic brick and Portland stone, and will harmonise in design and style with the eighteenth-century houses in Rodney-street and neighbourhood.

Norfolk and Norwich Hospital.—This hospital has adopted a scheme for attempting to raise funds which presents some novel features. It is calculated that the excess of expenditure over income amounts roughly to £250 a week. A system of payment by patients (both in and out) was started on Jan. 1st this year, and this is found to work most satisfactorily, bringing in an average of £60 a week. The hospital almoner reports that on the whole patients are quite willing to contribute towards the cost of their maintenance and treatment. The workmen's contributory scheme has also been extended, and the most recent suggestion for increasing the revenue of the hospital is that known as the "county parish scheme," according to which each parish in the county is asked to accept the responsibility which properly belongs to it. As a guide to the amount required from each parish, the expenditure of the hospital has been divided amongst the population who might be expected to contribute, and the sum arrived at is 2s. 3d. per head for each parish. This amount could be made up from various sources, such as private subscriptions, workmen's contributions, church collections, &c. This appears a good method of appealing to all persons in the county of Norfolk who are liable at any time to apply for the benefits of hospital treatment and good results are hoped for.

Donations and Bequests.—Alderman James Fildes, of Bowdon, Cheshire, a member of the City Council, Manchester, and for many years chairman of the Public Health Committee, by will bequeathed nearly £13,000 to local charitable institutions, including £2000 to Manchester and Salford Boys' and Girls' Refuges and Homes, £1000 each to Manchester Hospital for Skin Diseases, Royal Infirmary, Manchester and Salford Sick, Poor, and Private Nursing Institution, Manchester City Mission, and three other institutions; and £500 each to the Manchester Surgical Aid Society, Hospital for Consumption and Diseases of the Throat, Henshaw's Blind Asylum, Royal Eye Hospital, and several other local institutions.—St. Mary's Hospitals, Manchester, have received donations from the Hospital Saturday Fund of £905, and from Booth's charities and other sources the sum of £150.—The Manchester Royal Infirmary has received a donation of £1716 from the Manchester and Salford Hospital Saturday and Convalescent Homes Fund, and about £210 from various employees and firms, and from legacies.—By will the late Alderman James Bracebridge Hilditch, of Richmond, Surrey, left £1000 to his wife for any worthy object such as the cure and benefit of the wounded in the war. Among bequests under the same will are £4000 to the Chelsea Hospital for Women towards the building fund, £1000 to the Hospital for Consumption and Diseases of the Chest, Brompton, £2000 to the Royal Hospital, Richmond, £1000 to Dr. Barnardo's Homes, £1000 to the Richmond branch of the Red Cross Society for a benevolent fund for nurses employed at the Star and Garter Hotel, and £100 each to the Richmond Dispensary, London Fever Hospital, Poplar Hospital for Accidents, Royal Hospital for Incurables, Putney, City Dispensary, British Homes for Incurables, and Society for the Prevention of Cruelty to Children.

ANCOATS HOSPITAL, MANCHESTER.—The ninety-second annual report, which has just been issued, states that despite the increase of ordinary income from £8841 in 1914 to £20,237 in 1920 the deficit on the ordinary receipts and expenditure for the past year was £7339, and the institution now owes upwards of £16,000 to its bankers.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. A. Abrahams, Lond.; *Answers*, Lond., Editor of.

B.—Sir J. R. Bradford, Lond.; Dr. G. Blacker, Lond.; British Spa Federation, Harrogate, Hon. Sec. of; Mr. W. Boulton, Lond.; Mr. C. W. G. Bryan, Lond.; Prof. Bolk, Amsterdam; Dr. H. W. Barber, Lond.; Mrs. C. Brereton, Lond.

C.—Miss C. Cowdroy, Lond.; Dr. R. B. Carslow, Glasgow; Cambridge and Paul Instrument Co., Lond.; Messrs. Carters, Lond.; Chicago School of Sanitary Instruction; Cassel Hospital for Functional Nervous Disorders, Lond., Committee of; Dr. M. Cockerell, Letchworth; Dr. H. Campbell, Lond.; Dr. F. G. Chandler, Lond.; Dr. R. Cannon, Viñar del Mar, Chili.

D.—Dorland Agency, Lond.; Mrs. A. Duncombe, Lond.; Prof. G. Dreyer, Oxford.

E.—Equitable Life Assurance Society, Lond.; Dr. W. McA. Eccles, Lond.

F.—Federation of Medical and Allied Societies, Lond., Gen. Sec. of; Mr. W. A. Frost, Forest Row; Messrs. Fenton, Russell, and Co., Edinburgh.

G.—Dr. A. Withers Green, Lond.; Mr. G. H. C. St. G. Griffiths, Gibraltar; Prof. E. E. Glynn, Liverpool; Mr. F. B. Gilbreth, Montclair.

H.—Mr. E. T. Heys, Stockport; Capt. T. B. Harden, Rhyl; Harveian Society, Lond., Sec. of; Harrogate Royal Baths, General Manager of; Miss L. Hoblnstock, Lond.; Prof. A. J. Hall, Sheffield; Dr. A. Hodgson, Lond.; Holborn Surgical Instrument Co., Lond.; Mr. C. E. Hecht, Lond.; Dr. G. A. Harrison, Lond.

I.—Industrial Welfare Society, Lond.; Insurance Committee of the West Riding of Yorkshire, Wakefield, Chief Tuberculosis Officer of.

J.—Dr. R. C. Jewesbury, Lond.; Mr. F. Juler, Lond.; Mr. G. Jessel, Preston.

K.—Mr. G. L. Keynes, Lond.; Dr. W. H. Kesteven, Kingston Hill; King Edward's Hospital Fund for London; Messrs. Kegan Paul and Co., Lond.; Dr. W. N. W. Kennedy, Croydon.

L.—Dr. C. Lillingston, Gorleston-on-Sea; London Hospital Medical College; London (Royal Free Hospital) School of Medicine for Women, Warden and Sec. of; Liverpool Medical Institution; Dr. H. A. Lediard, Carlisle; Dr. O. Leyton, Lond.

M.—Dr. P. Manson-Bahr, Lond.; Ministry of Health, Lond.; Ministry of Finance (Statistical Dept.), Cairo; Dr. A. Macphail, Lond.; Meteorological Office, Air Ministry, Lond.; Dr. S. G. Moore, *Huddersfield*; Dr. C. F. Marshall, Lond.; Dr. R. W. MacKenna, Liverpool; Chartered Society of Massage and Medical Gymnastics, Lond.

N.—Lord Northampton, Lond.; National Council for Combating Venereal Diseases, Lond.

O.—Official Medical History of the War, Lond.; Dr. J. S. Owens, Lond.; Ophthalmological Congress of the United Kingdom, Sec. of.

P.—Messrs. G. P. Putnam's Sons, Lond.; Dr. H. R. Prentice, Lond.; Dr. E. Pritchard, Lond.; Mr. L. Pickin, Lewes; Mr. W. H. Plows, Lond.

R.—Sir L. Rogers, Lond.; Royal Sanitary Institute, Lond., Sec. of; Radium Institute, Lond.; Mr. S. H. Rylett, Lond.; Royal Institution of Great Britain, Lond.; Rontgen Society, Lond., Hon. Sec. of; Prof. S. Russ, Lond.; Royal Society of Arts, Lond.; Royal College of Veterinary Surgeons, Lond., Sec. of.

S.—Prof. W. Stirling, Manchester; Savoy Hotel, Lond., Directors of; Société des Sciences Médicales et Biologiques de Montpellier; Scottish Board of Health, Edinburgh; Society for the Propagation of the Gospel in Foreign Parts, Lond.; Dr. S. H. Stewart, Whiteabbey; Mr. A. Smith, Lond.; Dr. R. Samut, Sliema, Malta.

T.—Mr. E. B. Turner, Lond.

W.—Dr. R. L. M. Wallis, Lond.; West London Post-Graduate College; Mr. A. J. Walton, Lond.; Dr. F. J. Waldo, Lond.; Mr. T. E. Wallis, Lond.; Dr. E. W. A. Walker, Lond.; Dr. J. D. Wynne, Norwich; Prof. F. Wenckebach, Vienna.

Y.—Dr. R. A. Young, Lond.

Z.—Zoological Society of London, Sec. of.

Communications relating to the editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.

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SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, May 9th.

WAR SECTION: at 5.30 P.M.
Annual General Meeting—Election of Officers and Council for 1921–1922.
Paper: Surg.-Commander S. F. Dudley, R.N.: A Few Observations on the Influenza Epidemic as it affected the Royal Navy.

Tuesday, May 10th.

SECTION OF PSYCHIATRY: at 5.30 P.M.
Annual General Meeting—Election of Officers and Council for 1921–1922.

Wednesday, May 11th.

SECTION OF SURGERY: SUBSECTION OF PROCTOLOGY: at 5.30 P.M.
Annual General Meeting—Election of Officers and Council for 1921–1922.
Informal Discussion introduced by the President.

Thursday, May 12th.

SECTION OF NEUROLOGY: at 8.30 P.M.
Annual General Meeting—Election of Officers and Council for 1921–1922.
Paper: Professor Marinesco (Bukarest): Encephalitis Lethargica (communicated by Sir Frederick Mott).

Friday, May 13th.

CLINICAL SECTION: at 5.30 P.M.
Annual General Meeting—Election of Officers and Council for 1921–1922.

SECTION OF OPHTHALMOLOGY: at 8.30 P.M.
Exhibits (at 8 P.M.):
Mr. B. T. Lang: (1) Test Types; (2) Daylight Lamp.
Papers:
Dr. D. Leighton Davies: Lacrymal Obstruction—the Results of the Anastomotic Method of Treatment. (Toti.)
Mr. *Ernest Clarke: Lessons Learnt from 40 Years of Refraction* Work.
Miss J. C. Mann: Specimen of Aphakia in a Human Embryo of 5 or 6 weeks.

HARVEIAN SOCIETY OF LONDON, at the Paddington Infirmary, Harrow-road, W.

THURSDAY, May 12th.—4.30 P.M., Clinical Meeting. The following Cases will be shown:—(1) Cases of Multiple Bone Disease—(*a*) Carcinoma, (*b*) Osteomyelitis, (*c*) Rickety Deformities; (2) Actinomycosis (Thoracic); (3) Osteo-arthritis of Hip (after Albée Operation); (4) Epithelioma of Ear; (5) Tuberculosis of Skin; (6) Gonococcal Septicæmia; (7) Case of Graves's Disease; (8) Cases for Diagnosis. Dr. M. *Berry: Lantern* Demonstration of X Ray Plates. Dr. H. Dutch: Demonstration of Aurorascope.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, May 9th.—Opening of the Summer Session. 12.15 P.M., Dr. Burnford: Pathological Demonstration. 2 P.M., Dr. S. Pinchin: Medical Out-patients. Dr. Morton: X Ray Department. 2.30 P.M., Mr. Baldwin: Visit to Surgical Wards. 5 P.M., Lecture:—Mr. B. Harman: The Education of Children with Defective Vision.

TUESDAY.—10 A.M., Mr. Steadman: Dental Department. 11 A.M., Dr. McDougal: Electrical Department. 12 noon, Mr. T. Gray: Demonstration of Fractures. 2 P.M., Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. 5 P.M., Lecture:—Mr. B. Harman: Blind and Partly Blind Children.

WEDNESDAY.—11 A.M., Mr. MacDonald: Demonstration of Cystoscopy. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Mr. Addison: Operations. Mr. D. Armour: Visit to Surgical Wards. 5 P.M., Lecture:—Dr. Owen: The Treatment of Nephritis. (I.)

THURSDAY.—10.30 A.M., Dr. Simson: Gynæcological Demonstration. 12 noon, Dr. S. Pinchin: Diseases of the Heart. 2 P.M., Mr. Baldwin: Orthopædic Department. 2.30 P.M., Dr. A. Saunders: Visit to Medical Wards. 5 P.M., Special Lecture:—Dr. E. S. Reynolds: Some Vascular Lesions of the Brain (open to all medical practitioners).

FRIDAY.—10 A.M., Dr. G. Stewart: Neurological Demonstration. 2 P.M., Dr. Burnford: Medical Out-patients. Dr. Pernet: Skin Department. 2.30 P.M., Dr. Pritchard: Demonstration of Cases (Medical Wards). 5 P.M., Lecture:—Dr. Snowden: Psychical Analysis.

SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 2 P.M., Dr. Owen: Medical Out-patients. Mr. Sinclair: Surgical Out-patients.

Daily:—10 A.M. Visit of Post-Graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, W.C. 1.

MEDICAL SCHOOL.

MONDAY, May 9th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Lecture:—Dr. Saunders: Pituitary Disorders.

TUESDAY, May 10th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Dr. James Taylor: Epilepsy.

THURSDAY, May 12th.—2 P.M., Out-patient Clinic: Dr. Farquhar Buzzard. 3.30 P.M., Lecture:—Dr. Tooth: Disseminated Sclerosis.

FRIDAY, May 13th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M. Lecture:—Dr. Collier: Aphasia.

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TUESDAY, May 10th.—10.30 A.M., *Demonstration XI., The Training (1) of the Motor Functions of the Digestive System, (2) of the Heat Regulating Functions, &c.*

THURSDAY.—3 P.M., Demonstration XII., The Feeding of Children between 9 Months and 2 Years.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF *LONDON*), Turner-street, Mile End, E.

Courses of Lectures:—

A Course of Fourteen Lectures on Pscho-Neuroses, to be given by Dr. M. Culpin in the Clinical Theatre of the Hospital. Open to Students of the Hospital and to Members of the Profession.

TUESDAY, May 10th.—5.15 P.M., Lecture III.:—The Unconscious.

FRIDAY.—5.15 P.M., Lecture IV.:—Suggestion.

Advanced Lectures in Physiology, to Students of the University and to others interested in the subject.

A Course of Eight Lectures on Reception of Sensory Stimuli, to be given by Prof. H. E. Roaf in the Physiology Theatre.

THURSDAY.—4.30 P.M., *Lecture I.*

ST. BARTHOLOMEW'S HOSPITAL (UNIVERSITY OF LONDON), West Smithfield, E.C.

A Course of Eight Advanced Lectures in Physiology, to be given in the Physiological Laboratory, to Students of the University and others interested in the subject.

TUESDAY, May 10th.—4 30 P.M., Lecture II.:—Prof. M. S. Pembrey: The Secretion of Milk.

TAVISTOCK CLINIC FOR FUNCTIONAL NERVE CASES, 51, Tavistock-square, W.C.

A Course of Ten Lectures on Elementary Psychotherapy, to be given by Dr. H. C. Miller, at the Kingsway Hall, Kingsway, W.C.

FRIDAY, May 13th.—5.15 P.M., Lecture II.: Suggestibility and *Authority; Phantasy and Reality.*

INSTITUTE OF PATHOLOGY AND RESEARCH, St. Mary's Hospital, in the Lecture-room of the Bacteriological Department.

A Course of Lectures on Pathological Research in its Relation to *Medicine, open to all Members of* the *Profession* and Students.

THURSDAY, May 12th.—4.30 P.M., Sir James Mackenzie: The Opportunities of the General Practitioner are Essential for the Investigation of Disease and for the Progress of Medicine.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

TUESDAY, May 10th.—3 P.M., Lecture IV.:—Prof. A. Keith: Darwin's Theory of Man's Origin (in the Light of Present Day Evidence).

THURSDAY.—3 P.M., Lecture:—Dr. C. S. Myers: Pyschological Studies—*(II.) The Appreciation of Music.*

FRIDAY.—9 P.M., Discourse:—Mr. W. Bateman: The Determination of Sex.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

TUESDAY, May 10th.—4.30 P.M., Lecture:—Prof. G. R. Murray: Treatment of Diseases of the Endocrine Glands.

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.

Special Course of Lectures in Gynæcology.

WEDNESDAY, May 11th.—11 A.M., Demonstration Operations.

THURSDAY.—4.30 P.M., Lecture V.:—Dr. A. C. Magian: Malignant Disease of the Uterus.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

CORFIELD, C. R., M.D. Brux., L.M.S.S.A. *Lond.*, has been appointed Medical Officer to Swinton and Pendlebury and Stalybridge Ante-natal Clinics.

DARLOW, F., M.B., Ch.B. Vict., Certifying Surgeon under the Factory and Workshop Acts for Horsforth.

HIRSCH, Capt. C. T. W., late R.A.M.C., Honorary Anæsthetist to the West End Hospital for Nervous Diseases.

Vacancies.

For further information refer to the advertisement columns.

Abergavenny, Monmouthshire Asylum.—Jun. Asst. M.O. £400.
Adelaide University.—*Professor of Zoology.* £1100.
Bath, Royal Mineral Water Hospital.—Res. M.O. £250.
Bedford County Hospital.—Asst. H.S. £150.
Bethlem Royal Hospital, Lambeth-road, S.E.—Jun. Asst. P. £350.
Birmingham City Education Committee.—Anæsth. £200.
Bury St. Edmunds, West Suffolk General Hospital.—Res. H.S. £200.
Buxton, Derbyshire, Devonshire Hospital.—H.P. £250.
Cambridge, Addenbrooke's Hospital.—H.S. £130.
Cardiff City and Port Education Authority.—M.O.H. and Chief M.O. £1200.
Colchester, Essex County Hospital.—H.S. £200.
East Islington Infant Welfare Centre.—Lady Doctor. 1½ gs. per session.
Exeter, Royal Devon and Exeter Hospital.—Hon. Asst. S. and Hon Surg. Reg.
Hackney Union Infirmary.—Sen. Asst. M.O. £571 19s. 2d.
Hampshire County Council.—Asst. M.O.H. £719.
Holloway Sanatorium, Virginia Water, Surrey.—Jun. Asst. M.O. £400.
Hong-Kong, Port Health Officer.—Sec. Health O. £600.
Hospital for Sick Children, Great Ormond-street, W.C.—Radiographer. Also Asst. in Venereal Dept. £200.
Inverness District Asylum—Asst. M.O. £300.
Kettering and District General Hospital.—Res. M.O. £250.
Kingussie, N.B., Grampian Sanatorium.—Locum.
Leamington Spa, Warneford, Leamington, and South Warwickshire General Hospital.—Res. H.P. £200.
Liverpool.—Asst. Port M.O. £700.
Liverpool, Bootle Borough Hospital, Derby-road.—Hon. S.
Llanelly Borough.—Female Asst. M.O.H. and Asst. Sch. M.O. £500.
London County Council Industrial School for Boys, Highbury-grove, N.—M.O. £153.
London Temperance Hospital, Hampstead-road, N.W.—Ophth. S. and Asst. S.
Manchester County Asylum, Prestwich.—Locum Tenens. £8 8s. per week.
Manchester Royal Infirmary.—Res. M.O. £250. Also Res. Surg. O. £250.
Manchester, St. Mary's Hospitals for Women and Children.—Asst. M.O. £100.
Metropolitan Ear, Nose, and Throat Hospital, 2, Fitzroy-square, W.—Anæsth.
Middleton-in-Wharfedale Sanatorium, Ilkley.—Asst. Res. M O. £325.
Miller General Hospital for South-East London, Greenwich-road, S.E.—Res. Cas. O. £150. Also M.O. for X Ray Dept. £75.
Mount Vernon Hospital for Tuberculosis and Diseases of the Lungs and Heart, 7, Fitzroy-square, W.—Asst. S. Also Asst. Res. M.O. £200.
National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—M.O. in charge of Electro-Therapeutic Dept. £100. Also Res. M.O. £200.
Nottingham City Education Committee.—Jun. Asst. Sch. M.O. £537 10s.
Oswestry, Shropshire Orthopædic Hospital.—H.S. £250.
Portsmouth Royal Hospital.—H.S. £150.
Preston and County of Lancaster Royal Infirmary.—H.S £180.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. P.
Queen Mary's Hospital for East End, Stratford, E—Cas. O.
Rotherham Hospital.—Jun. H S. £150.
Royal Free Hospital, Gray's Inn-road, W.C.—Sen. Res. M.O. £200. H.S. £50. Obstet. H.S. £50. Res. Asst. Cas. O. £50.
Royal Naval Medical Service.—Surg.-Lieuts. 26s. 6d. per diem.
Royal Waterloo Hospital for Children and Women, S.E.—Hon. P. and Hon. Gynæcol.
St. Bartholomew's Hospital.—Asst. P.
S. George's Home, Milman's-street, Chelsea, S.W.—Part-time Visit. Asst. M.O. £200.
Sheffield City.—Asst. Tuberc. O. £350.
South Mimms, Barnet, Clare Hall Sanatorium and Hospital.—Asst. M.O. £350.
Taunton and Somerset Hospital.—Sen. and Jun. H.S.'s. £200 and £150.
West Bromwich and District Hospital.—Res. Asst. H.S. £200.
Wigan Education Committee.—Female Asst. Sch. M.O. £500.
Worcester County and City Mental Hospital, Powick.—Sen. Asst. M.O. £450. Also Jun. Asst. M.O. £350.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Wath-on-Dearne, Mullingar, and Evesham.

Births, Marriages, and Deaths.

BIRTHS.

O'CONNOR.—On April 29th, at a nursing home, Clifton, the wife of Major A. P. *O'Connor*, M.C., R.A.M.C., of a daughter.

VICKERS.—On April 28th, at Rosslyn, Uxbridge, the wife of Harold Vickers, M.R.C.S., L.R.C.P., of a son.

MARRIAGES.

LANKESTER—YOUNG.—On April 28th, at the Brompton Parish Church, S.W., *Ralph* A. R. Lankester, M.D., to Constance Nevill, eldest daughter of the late Charles Young, of Alton, *Hants*, and Mrs. Young, of Camberley.

MCCLOGHRY—ACHESON.—On April 29th, at Christ Church, Leeson Park, Dublin, Colonel J. McCloghry, F.R.C.S.I., Indian Medical Service (retired), to Hilda Sara Shaw, daughter of [illegible] J.P., Rushill, County Roscommon.

SMITH—GLYNNE.—*On* April 26th, at Princes-road [illegible] Church, Bangor, Dr. Malcolm Smith, of [illegible] Dr. Eryl Glynne, elder daughter of Mr. and [illegible] Jones, of Glyndyl, Bangor.

DEATHS.

HONEY.—On May 1st, at Shutta, East [illegible] Edward Honey, M.D., Staff Surgeon [illegible] 56th year.

[illegible]ICKIN.—On April 28th, suddenly, [illegible] M.R.C.S., L.R.C.P. (late Captain [illegible]

[illegible]ARD.—On April 30th, at [illegible] F.R.C.S., aged 65 years.

N.B.—A fee of 7s. 6d. [illegible] Births, [illegible]

Notes, Short Comments, and Answers to Correspondents.

A CATALOGUE OF EARLY MEDICAL WORKS.

A CATALOGUE of "Early Works on the Sciences of Medicine and Chirurgery," published at intervals by Charles J. Sawyer, Ltd., of 23, New Oxford-street, London, claims, not without good reason, to be the only special list of this class of books issued in Great Britain. But even if this were not so, and if catalogues of this kind abounded, the copy before us would prove of great interest to the medical historian or collector. Among some 400 titles we meet with a tempting *embarras de richesses*, dating in many cases from the epoch immediately following that of early printed books, which ends somewhat arbitrarily in the year 1500. One of the first titles to catch the eye of the curious is the "Practica Nova in Medecina" of Simphorianus Champerius, published in black letter at Leyden in 1517. The work is in its contemporary binding, the boards composed of leaves of MS. covered with a portion of a MS. on vellum. It is a collection of all that has been said concerning every kind of disease by the Greeks, Romans, and Arabs, and the present book is annotated in what appears to be a contemporary hand, which on examination—especially if a signature could be found—might very well prove to be that of Symphorien Champier himself. This famous medical man flourished in the early sixteenth century, was physician to the Duke of Lorraine, and a relative of Bayard the *chevalier sans peur et sans reproche*. He was well known as a historian, and perhaps Bayard may have possessed this volume.

The romance of old books grows on the collector as he examines ownerships as evidenced by old signatures and epigrams in fly-leaves, where surprising discoveries are often made. Another point worth study in old medical works is the illustrated title-page, which is often adorned with curious representations of ancient contemporary practice. The catalogue in front of us reproduces some eight of such scenes. Thus we have a picture from the "Discorsi di Pietro Paolo Magni Piacentino sopra il Modo di Sanguinare" (8vo, bound in limp vellum, Roma, 1586), in which the patient is seen on a curious box-bed in the act of being bled by a barber-surgeon, whose assistant holds tight the end of a ligature, while the physician, in robe and flat cap, looks on in the foreground and ostentatiously avoids touching the figure in front of him. The "De Monstris" of Fortunius Licetus (4to, old calf, Amst., 1665) has a fine title-page, which is probably known to some of us, as it may be found in many medical libraries. The monsters—a woman with five breasts, a child with elephantiasis, and armless men—are shown us on view in a design notable for its artistic composition, vivid lights, and deep shadows.

This Amsterdam edition is far more complete than the earlier ones printed in Padua. Another thick folio of close on 1100 pages has a title-page illustrative of various operations. This is the "Medical Observations of John Schenck," dated at Frankfort in 1609. Such a work may have been known to Shakespeare, as, indeed, others in this collection may have been known to Milton and the great men of the seventeenth century. We can well imagine with what curious interest those old omnivorous men of culture turned over the pages of such a work as Richard Sanders's "Physiognomie and Chiromancie, Metoposcopie, the Symmetrical Proportions, and Signal Moles of the Body," published in London in 1653, or "The Compleat Midwife's Practice, in the Most Weighty and High Concernments of the Birth of Man," 1656. Several of Nicholas Culpeper's works are here offered, and the eighteenth century is well represented, especially with six medical portraits of John Hunter, the charming mezzotint of John Haighton, and a fine old engraved portrait of Garth, after Kneller.

TYPHUS IN SIBERIA, 1919-20.

Captain Francis McCullagh, Royal Irish Rifles, who, captured in Siberia, worked his way through Moscow to England, has written a book of absorbing interest on Russia as she now is, entitled "A Prisoner of the Reds." He cannot tell us how many died of typhus, but he says the mortality (death-rate, probably) was in Siberia in 1918 from 5 to 8 per cent., but in 1920 about 10 per cent. 20,000 cases were reported in the one town of Taiga, two huge piles of unidentified dead bodies were there, one near the station, the other some distance off. 20,000 corpses lay unburied outside another town. In the district between Omsk and Krasnoyarsk practically all the doctors had been attacked, and 50 per cent. had died. One doctor told the author that the highest mortality was amongst middle-aged people engaged in intellectual work, so that the effect on the future education and literary condition of Russia is disastrous, already so shaken by the murders and proscriptions of the Reds. Of 800 staff officers who travelled from Omsk to Krasnoyarsk in a train 26 died. "My whole journey from Omsk to Krasnoyarsk, and from Krasnoyarsk to Moscow was overshadowed by this scourge, as well as by the venereal and other diseases which are fast eating away the vitality of the Russian race, and my fears on the score of typhus were increased by what I saw of the filthy personal habits of the Russians; some of them could not shake the folds of their dress without sprinkling lice on everybody in the immediate vicinity. ...... Going through Russia at the present moment is, owing to typhus alone, as dangerous as going 'over the top' was in France. ...... In the present atmosphere of Russia all human charity withers away. ...... Sometimes when I spoke to a man about his wife or children ...... I heard the phrase 'died of typhus' pronounced in as unconcerned a tone as that in which an Englishman might say, 'Gone to Brighton for the week-end.'" He tells how Trotzky found typhus raging at Ekaterinburg, and causing great losses. He asked the D.M.S. what could be done about it, and listened "with ominous calm" while the D.M.S. placidly told him it would not decrease till April. Trotzky then said with alarming violence, "I am no doctor, but I understand from you that typhus is conveyed by lice. Now, it must be possible to destroy these by some degree of heat that could be produced in some of our public baths, and the soldiers might wash in one part of the bath-house while their clothes are being disinfected in another. I do not believe in fatalism. If I find you do not at once take some steps I will hand you over to the Extraordinary Commission." The Extraordinary Commission is the Commitee of Public Safety, whose prisoners so often fail to reappear. Consequently next day an excellent bathhouse was opened free, and the author had his first bath for three months.

A HANDBOOK FOR THE LIMBLESS.

A USEFUL handbook has just been issued by the "Disabled" Society (48, Grosvenor-square, London, W.1) for the general guidance of ex-Service men of all ranks who have lost one or more limbs. The handbook, which is the work of Captain H. H. C. Baird, D.S.O., is described as a skeleton edition, setting forth the lines along which the next edition will be expanded. The hope is that those who have lost limbs will, in the main, themselves supply the contents of the more comprehensive publication; the provisional edition has been brought out owing to an increasing demand from many quarters for immediate information concerning the supply and use of artificial limbs.

The "Disabled" Society and Its Aims.

The handbook begins by a statement of the advantages obviously to be gained by members of a large society composed of men with similar disabilities; there are approximately 38,000 men who lost a limb or limbs in the recent war, and all are invited to become members and to subscribe to the funds of the Society, which has at present no membership fee. The objects of the Society are briefly as follows:—

1. To assist all who have lost limbs on service, by the collection and registration of all forms of information useful to the wearer of an artificial limb for purposes of trade, business, or recreation.
2. To disseminate this information by means of a handbook posted to the members of the Society, and by publishing from time to time in various journals articles dealing with new types of limbs which may become available.
3. To arrange for lectures, demonstrations, and physical training by experts at centres throughout the country.
4. To organise and maintain a permanent and up-to-date exhibition open to all who have lost a limb, of all the best limbs, appliances, and tools collected from all sources, at home and abroad.
5. To maintain accommodation suitable for the interviewing of members; for the testing of artificial limbs; and for giving instruction in their usage.
6. The aim of the Society is to put its members in the most favourable position for taking their place in the normal life and pleasures of the nation by ensuring that the most suitable limbs are supplied to all.

Medical Advice and Advice from the Disabled.

The Society has made arrangements with St. Thomas's Hospital, London, whereby those with lower-limb amputations can obtain help, advice, and thorough instruction in the use of an artificial limb. Applications for the facilities thus offered should be addressed to the Secretary of the Society, at the address given. Reference is also made in the handbook to the well-known Surgical Supply Depôt, Kensington, which is continuing the work done during the war for the benefit of ex-Service and other civilian patients. The "Disabled" Society's preliminary researches have already resulted in the collection of much valuable information; a short selection of interesting details supplied by one-legged and one-armed men shows how ingenious the crippled man may be, and how ready he is to help those with disadvantages similar to his own. Although much of the information given cannot, of course, be applied to cases of double amputation, one remarkable instance of perseverance by an armless man is quoted and will doubtless encourage others; this man not only learnt to write with his teeth, but when he received artificial arms taught himself to use a fork, cycle, dig, and play billiards and the piano.

Pensions : The Committee and Local Pensions.

The functions of the Local War Pensions Committees are described, and an extract is given from the First Schedule of the Royal Pensions Warrant of December, 1919, containing detailed regulations regarding pensions, allowances, treatment, constant attendance, initial supplies on discharge from the Service, renewals and repairs, and chairs and tricycles. A note on the fibre-cone "peg-legs" supplied by the British Red Cross completes this useful section.

A brief description is given of the industrial training made available by the Ministry of Labour, together with notes on the Maintenance and Training Grant Scheme, the Business Training Scheme, and the Disabled Soldiers' Sections of Employment Exchanges. The Civil Liabilities Scheme is also explained, and the work of the ex-Service men's adviser. The handbook closes with a few general notes for officers, and with an appeal to all who have lost a limb to support the Society and make it widely known. The price of the handbook is 6d., and all proceeds from its sale go to the funds of the Society.

THE BUFF BOOK.

To the Editor of THE LANCET.

SIR,—In reference to your paragraph on this question in the issue of April 30th, I think you will be interested in the following sequence of events:-

1. I informed the publishing company of the decision of the Council of the R.C.V.S. that members would be required to refrain from inserting paid announcements in the Buff Book.
2. The secretary of the publishing company replied, stating that they had decided to include in the Buff Book the names of all professional gentlemen free of charge.
3. I pointed out that the form given in the book referred to "traders," and made no special mention of professional men. I asked whether it was not true that unqualified practitioners, who would be liable to prosecution if they used a professional title, also had the right to the free insertion of their names in the Buff Book, and the further right, denied to qualified members of the professions, to pay for an insertion in the boldest type obtainable. This would be manifestly unfair to the members of the professions, and misleading to the uninstructed public.
4. The managing director replied stating that the secretary was somewhat premature in stating definitely that they had decided to include the names of professional gentlemen free of charge. It was in contemplation, but no decision had been taken. With regard to my question as to the rights of unqualified persons, he agreed that my supposition was correct, and added: "You will readily understand that it is impossible for us to enter into the ethics of professional objections, and having regard to the heavy expenses to which we are put in delivering a free copy to every telephone subscriber we cannot refuse business." He then made the following suggestion: "There is a simple way out of the difficulty and, I think, one that would be of distinct advantage to practising veterinary surgeons—namely, for your Institute to reserve a page or two in the book for qualified surgeons and pay for the same out of the College funds. As there would not be any cost to the company for canvassing, we should be prepared to quote you special terms. Perhaps you will consider this suggestion and let me hear from you? It would, of course, be understood that no advertisement whatever appeared on the pages so reserved."

I have not answered this letter. But one is entitled to wonder whether the manager, who cannot enter into the ethics of professional objections, has visions of the Law Society, the General Medical Council, and the other governing bodies of the professions subsidising the Buff Book and acting as agents in place of canvassers so as to provide the complete lists of professional men with their telephone numbers, while at the same time reserving to himself the right to accept advertisements from any quack who rents a telephone, and to give him a whole page, if he pays for it, in proximity to the lists of qualified men.

I am, Sir, yours faithfully,
FRED. BULLOCK,
Secretary and Registrar, Royal College of Veterinary Surgeons.
10, Red Lion-square, W.C., May 3rd.

CONVALESCENT HOME FOR MIDDLE-CLASS WIVES AND BABIES.

A COTTAGE at Farnham, formerly the home of Sir James Barrie, has been adapted as a convalescent home for six recently confined mothers and their babies. The intention is to help the wives of professional and business men who find it difficult to get suitable and reasonable accommodation. The cottage is well furnished, fitted with radiators as well as open grates, and the presence of an experienced matron, a nursery nurse, and an adequate domestic staff, will ensure to the mother a real holiday before she returns to her home duties. The inclusive terms are 35*s.* a week for the smaller and £2 2*s.* for larger rooms. Special arrangements as to fees can sometimes be made. If desired, a bedroom can be procured for the husbands at Farnham, who can have meals at the cottage at a small payment. Mothers are received on a doctor's recommendation only, and can stay for a period of one to four weeks.

Full particulars can be obtained from the Matron, Black Lake Home, near Farnham, Surrey, but all applications must be made to owner of the cottage, the Hon. Mrs. Gerald S. Montagu, Great Fosters, Egham, Surrey.

THE LIGHTING OF SHIPS.

IN a paper on "Ship-lighting in Relation to Comfort, Safety, and Efficiency," read before the Illuminating Engineering Society on April 26th by Mr. W. J. Jones, the hygienic advantage conferred on ships by the introduction of electric lighting is noted. It diminishes the vitiation of the limited air-supply. The first ship to be recorded as fitted with electric light was built in 1879, and it was about 1883 that electric lighting was introduced into the navy in H.M.S. *Polyphemus*. Mr. Jones emphasises the great advantage of painting the inner surfaces of ships white, as this enables sufficient illumination to be given with fewer lights, and diminishes the glare from naked lamps. The White Star Company having permitted him to examine the illumination of *Olympic*, he found this "distinctly pleasing and comfortable." He quotes the illumination three feet above the deck as follows:—In white painted alleyways (passages) 0·5 candle-power per square foot, in the first-class cabins 1·0, in the first saloon 2·5 candle-power. It will be remembered that the *Olympic* was reported[1] by our own representative to be unusually well ventilated. We are glad to find it urged that white-painting of the inner surfaces of ships results in economy, as it may thus become more usual. It certainly makes a ship more healthy to be white painted within, for she can be, and must be, better cleaned, the white paint "showing up the dirt."

CARAVAN SQUATTERS.

A QUESTION was recently asked in the House of Commons concerning the petition of the Moreton (Cheshire) District Council upon the subject of the caravan settlement in that and adjoining parishes. The settlement is said to contain about 1100 caravans, many of which are only nominally vehicles, being supplied with bogus wheels. During the summer months numerous tents are added, and the population of the settlement is increased to many thousands. The drainage system, latrines, and urinals are described as wholly inadequate and insanitary, and admit of little hope of improvement; the land is below high-water mark, and becomes a quagmire in wet weather. Excreta, washing refuse, and food scraps thus collected attract swarms of flies, and there is grave danger of an epidemic amongst the caravan population and that of the surrounding district, to which the state of affairs has become an intolerable nuisance. Sir Alfred Mond replied to the effect that the local authority had sufficient powers to deal with the serious factors of the situation, and that he was in touch with them concerning the matter.

It is not clear what proportion of this settlement consists of gipsies or to what degree the conditions of the camp are due to their presence. A recent protest by the people of Whitton, in Middlesex, against a small invasion of gipsies was countered by the vicar of the village, who expressed his satisfaction at their large attendance at church and at the reverent behaviour of the crowd which collected at an open-air service held among the caravans. It would seem possible, however, that the caravan town in Cheshire is largely tenanted by victims of the housing shortage, taught by army life to make the best of an unpleasant situation—unless, indeed, experience of strange lands has stirred to life an atavistic wanderlust in the descendants of generations of townsfolk and agriculturists. The best way to avoid creation of such potential centres of disease is to build houses; the man who, in the words of the war artist, "knows of a better 'ole" will generally "go to it."

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[1] THE LANCET, 1920, ii., 666.

CENTRAL COUNCIL FOR DISTRICT NURSING IN LONDON.

A DIRECTORY of district nursing and streets list for London, which first appeared in 1917, is now issued at 2*s.* 6*d.*, with a 1921 supplement. It contains, besides a comprehensive list of streets, with an index number indicating the district nursing association from which it is served, the addresses of divisional offices of the Public Health Department of the London County Council and of children's care offices; also particulars of the ambulance service of the Metropolitan Asylums Board. Lists are given of boards of guardians, of boroughs and corresponding Poor-law areas, of city and borough councils, of hospitals (general and special), with addresses and telephone numbers, and of maternity and child-welfare centres. Particulars of nurses attached to religious organisations, associations of midwives, facilities for massage and for material relief in sickness are also added. We note as trivial errors the omission of any hospitals for diseases of the chest among the special hospitals mentioned (pp. 6 and 7), and the fact that the Chartered Society of Massage and Medical Gymnastics is still alluded to under its old name (p. 8).

HOW NOT TO PREPARE A MEDICAL ARTICLE.

WE referred last week to a useful pamphlet drawn up by the Publications Department of the Medical Research Council containing a series of Notes upon the Preparation of Monographs and Reports for Publication by the Council. With the advice therein given we cordially concur except that we should much prefer the abbreviation of the gramme and its derivatives to follow the procedure laid down by the Council of the Chemical Society, i.e. :—

kilogramme, kg. or 1000 g.;
gramme, g.;
centigramme, cg. or 0·01 g.;
milligramme, mg. or 0·001 g.;

and not kgm., gm., cgm., mgm. as given in the Notes. And we should have welcomed some warning against the tendency to spurious accuracy in giving decimal fractions of more significant figures than are justified by the number of cases dealt with.

The March issue, we are now reminded, of the *American Journal of Surgery* contains an opportune leading article on how *not* to prepare a medical article which inculcates the same lessons in the Belloc method of a cautionary tale. A few extracts from this entertaining publication may induce our readers to turn to the original, which opens with the advice :—

> If you feel the urge—or the need—to write a medical article, *don't—don't restrain yourself* merely because you have nothing new to say and hardly know how to say it! Facts and theories in medicine must be repeated again and again to drive them home. Remember that not all your colleagues read the same text-books that you do, and therefore it is your duty to disseminate their information. If, at the eleventh hour, you have hastily scratched off a "pot-boiler" as your contribution to a "symposium," don't waste it on the limited audience of a medical society—publish it!

Another paragraph treats of the choice of language for a medical article in a manner reminiscent of Lewis Carroll's reminder to the would-be poet: Then, fourthly, there are epithets that suit with any word, as well as Harvey's Reading Sauce with fish, or flesh, or bird :—

> There are certain words and expressions that belong in every medical article. Be sure to use them. These are: "Cito, tuto et jucunde," "fons et origo," "pari passu," "marked," "throws light," "presented," "examination revealed," "symptom-complex," "interesting and instructive," "significant observation," "points out," "unexplored fields." (There is room in almost every article to scatter a few small "fields.") When reporting a case refer frequently to "patient," but never write "the patient died"; say "ceased" or "exitus lethalis."

The advice given to the author on the difficult subject of references is full of subtle malice, and we could wish that it had no applicability to cis-Atlantic writers :—

> Embellish your article with references. If you wish, you may add to it a bibliography taken from a recent paper on the same subject. If that is not convenient you may, on the other hand, simply append the names of a few text-books without indicating what parts of them are concerned. Either way is acceptable, under the rules. If you quote or refer to a few publications, gather these titles at the end of the manuscript and label them sententiously "bibliography," not merely "references." Don't bother to read these publications in the original, nor to verify the accuracy of the references themselves, or of their dates, or of the authors' names. Especially avoid any uniformity in arranging these titles. Abbreviate the names of journals in as many different ways as you can. Give only the volume number, not the date; the reader can discover in a library what year the article was published. References to articles in weekly journals, however, should be simply by the year and the page number; anyone that wants to can find out for himself whether it was in the first or second volume of that year. Don't spend ten cents to buy the little pamphlet on *The Bibliographic Style of the Journal of the A.M.A.*; you might be tempted to follow its scheme of abbreviations of journal titles. Establish your own style, or, better yet, avoid all style.

Finally, the need of a revised medical dictionary is indicated in which Temperature shall be synonymous with Fever, Pathology used to indicate the Disease removed from an organ at operation, and Wassermann, Babinski, and Romberg stand for reactions (or "pathologies"), and not for once distinguished physicians and investigators.

A MEMORIAL TO THE LATE DR. ERNEST ROBERTS.

AN appeal is being issued by the Minories (Stepney) Centre of the Women's League of Service for Motherhood for an endowment fund of £6000 as a memorial to the late Dr. Ernest Roberts, the founder of the Centre, who died last year. The scope of the work includes infant consultations, clinics, medical advice and dental aid for mothers; dinners for expectant and nursing mothers; a creche; supply of clothing for children (at cost of materials); needlework, nursing, and other classes. Concerts and entertainments for the mothers are arranged, and home visiting is done by a trained nurse. Medical clinics and country convalescent holidays for specially delicate children have hitherto been financed by Dr. Roberts himself, save for the mothers' small contributions. His brothers have undertaken to help the drug department; for the Children's Country Convalescence Fund extra help is required. Contributions should be sent to the honorary treasurer, Mrs. W. B. Gladstone, 32, Prince's Gardens, London, S.W. 7.

COLONIAL HEALTH REPORTS.

Jamaica.—In the report for 1919-20 the population is estimated at 893,580. The birth-rate worked out at 33·5 and the death-rate at 22·2 per 1000. Of the total deaths 32·6 were those of children under 2 years of age, and of these 24·4 were those of children under 1 year. The principal causes of death among the inhabitants of Kingston, the capital, were: Phthisis, 11·3; diarrhœa and enteritis, 10·4; heart disease, 7·0; atrophy, icterus, and scleroma of the new-born, 6·9; pneumonia, 4·0; influenza, 3·2. Matters in connexion with health and sanitation have been receiving for some time past the earnest attention of the Government, and active steps were taken during the year. The Rockefeller Foundation began extensive operations in connexion with the treatment of hookworm, and the United Fruit Company inaugurated a system for medical attendance on their employees. A great diversity of climate is obtainable in the island. From a tropical temperature of 80° to 86° F. at the sea coast the thermometer falls to 45° and 50° on the tops of the highest mountains, and with a dryness of atmosphere particularly delightful and suitable to the most delicate constitution. There are many mineral springs, some of them possessing valuable qualities for the cure of various diseases and infirmities of the body; the two principal are the spring at Bath, in St. Thomas-in-the-East, and the spring at Milk River, in Clarendon.

British Guiana.—In the year 1919, when the population was estimated at 305,991, the birth-rate was 26·0 and the death-rate 40·4 per 1000. The deaths of children under 1 year of age were 185 per 1000 births. The following table shows the variation of the birth- and death-rates amongst the different races :—

—	Birth-rate.	Death-rate.
Portuguese	23·0	35·5
Europeans other than Portuguese ...	10·9	10·1
East Indians	24·6	49·3
Chinese	28·0	31·2
Blacks	26·8	33·2
Mixed races	27·2	22·4

Enteric fever is a notifiable disease, and during the year 524 cases were notified with 112 deaths. Anti-malaria and anti-mosquito measures are being generally and gradually enforced, with visible signs of success. In 1906-7 33,748 cases of malarial fever were treated in the sugar estates' hospitals; in 1919 the numbers fell to 7046. Quinine has been for some years sold at all post offices to the general public at cost price. It is also distributed by the sugar estates free to their labourers. Ankylostomiasis, which has engaged the attention of the Medical Department for several years, has considerably decreased on the sugar estates; this is attributed to improved sanitary measures and the erection of latrines. There were 683 patients in the public hospitals at the beginning of 1919, and during the year 15,007 were admitted. There were 1634 deaths. Out-door treatment was given to 48,697 persons. At the leper asylum there were at the beginning of 1919 194 males and 76 females—total 270—and during the year 72 more were admitted. The total rainfall for the calendar year at the Botanic Gardens, Georgetown, was 84·16 inches, and the total amount of bright sunshine recorded during the year was 2602·7 hours.

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The Goulstonian Lectures

ON

GLYCÆMIA AND GLYCOSURIA.

Delivered before the Royal College of Physicians of London

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F.R.C.P. LOND.,
SECOND ASSISTANT, MEDICAL CLINIC, ST. BARTHOLOMEW'S HOSPITAL;
ASSISTANT PHYSICIAN, GREAT NORTHERN CENTRAL HOSPITAL.

LECTURE II.[*]

(Delivered on March 3rd, 1921.)

IN my first lecture I spoke of the fate of the sugar which is in the blood after a meal, and in this lecture I shall speak of some of the conditions under which sugar is excreted in the urine.

CONDITIONS UNDER WHICH SUGAR IN EXCRETED IN THE URINE.

It is incorrect to say that every patient who passes a reducing substance in the urine is suffering from diabetes mellitus. Before that conclusion is possible the nature and amount of the reducing substance must be investigated, and even if dextrose is present the diagnosis is not necessarily correct. Fehling's solution is still usually employed in testing for sugar, and if the test is going to be of use its faults and fallacies must be learnt. First, the solutions A and B must be freshly mixed, for an old solution may reduce itself. Secondly, equal quantities of urine and mixed solution should be boiled separately, mixed when boiling, and not re-heated. If sugar is present in a concentration of over 0·5 per cent. a reduction takes place almost instantaneously; if a concentration of 0·1 or 0·2 per cent. be present the reduction may not take place for five or even ten minutes.

When a delayed reduction of this kind occurs it is always necessary to confirm the presence of sugar by other tests—e.g., Benedict's or Nylander's. In order to be quite certain of the presence of a sugar it is necessary (1) to do a fermentation test with yeast to see if the sugar will ferment; (2) to determine whether the plane of polarised light is rotated to the right or left; (3) to prepare the glucoasazone and to determine the melting-point of the crystals.

Fehling's solution, unfortunately, is reduced by other substances—e.g., uric acid, creatinine, and salicyluric acid, and it would lead to less confusion if Benedict's solution were substituted, as the latter is not affected by these other substances. Benedict's solution is used rather differently, as 5 c.cm. of the reagent and eight drops of urine are boiled together for about two minutes, and then allowed to cool. If only a trace of sugar is present precipitation takes place slowly and is green in colour. The limit of detection is about 0·08 per cent.

Sugars other than Dextrose Found in the Urine.

The other sugars which are found in the urine besides dextrose are lævulose, lactose, and a pentose.

Lævulose may occur in urine either alone or with dextrose. It is a somewhat rare occurrence for lævulose to be present by itself, and as I mentioned in my first lecture, it is regarded as a sign of liver inadequacy. As lævulose gives the same reduction test as dextrose it can only be differentiated (1) by determining whether the solution is lævorotatory, (2) by using Seliwanow's test. The presence of lævulose in the urine does not necessitate a diagnosis of diabetes. It should, however, direct an inquiry into the state of the liver as far as that is possible. Mild restrictions of the carbohydrates are usually sufficient to prevent the excretion of lævulose.

Lactose is only present in the urine of women who are lactating or who have had to cease suckling a child, and in infants with gastro-enteritis.[1] The reduction with Fehling's solution is not quite the same as with dextrose, as it often does not reduce copper unless the mixture is re-heated, but in the last case I saw that the urine reduced Fehling's solution just as dextrose does. This sugar is dextrorotatory, and the osazone is difficult to prepare; it does not ferment with yeast. Once the diagnosis is established the patient needs no treatment, as the condition is one which will right itself in time. An ingenious method of distinguishing between these sugars by means of the ferment action of various higher fungi has been devised by Castellani.[23]

Pentosuria is a rare freak, and until recently no case had been recorded in England, although Sir Archibald Garrod sought for it diligently. Cammidge,[1] however, has recently reported no less than 7 cases; of these patients, 3 were Jews and 2 were Greeks. The sugar reduced Fehling's and Benedict's solutions, but only slowly, as the amount of the sugar was small. Bial's test in the best test for a pentose, and the presence of glycuronic acid, which also gives this test, can be excluded, as it does not give a positive test with Benedict's solutions. Pentose is not fermented by yeast and is usually optically inactive, but may be dextrorotatory. Removal of all carbohydrates from the diet caused no reduction in the pentose, but a diminution in the protein caused a decrease in the pentose output.

So-called Diabetes Innocens.

Dextrose is excreted in the urine in a number of other conditions besides diabetes—e.g., in exophthalmic goitre and acromegaly, and after adrenalin injections—but it would take me too far afield to describe all these types. I will therefore confine myself to the cases of true diabetes and to those groups of rare cases in which sugar is excreted without causing any symptoms, dealing with this latter group first. It has only been recognised comparatively recently that there are patients who pass sugar year in and year out without suffering any ill-effects.

Klemperer,[3] in 1896, described the case of a man who was suffering from renal disease, but also passed a little sugar. Lütbje[3] and Bönninger[4] reported similar cases, and Lüthje observed that the amount of sugar excreted bore no relation at all to the amount of sugar eaten and that the amount of sugar in the blood was less than normal. As these cases all had albuminuria the name "renal diabetes" was suggested. Since then numerous cases of a similar type, but with no signs of renal disease, have been described and that name has been abandoned. Salomon[5] has suggested the title of "diabetes innocens" as the disease seemed such an innocent one. This name is a bad one as the word diabetes indicates that much urine is excreted and in these cases there is no increase in the output of urine. However, the name is now well recognised and cannot well be altered. During the last few years a good many more of these cases have been described, and the total number is approaching 30.[6] [7] [8] [9] [10] Pavy undoubtedly recognised this type, as in 1908 he told a man, whom I saw afterwards, that he had "a family idiosyncrasy involving a slight defect of the carbohydrate assimilative power," and added that he had seen similar cases.

The characters of the class are as follows:—

The sugar is usually discovered by accident and is small in amount, less than 5 g., often only 1 or 2 g., in the day. The amount of sugar excreted does not depend on the amount of carbohydrate eaten, and a dose of 100 g. produces no increase in the amount of sugar. The amount of sugar in the blood lies within normal limits, and in my cases it responded to a dose of carbohydrate in the usual way. Salomon stated that the level of the blood sugar was unaltered by a dose of sugar after one hour, but he worked before it was recognised that the rise in the blood sugar was a rapid one, followed by a rapid fall. The after-history of these cases shows that whether they are treated or not, they continue to pass sugar in small amounts, and that in the end no restrictions are placed on them. As to causation practically nothing is known. The condition is apt to occur in several members of a family. Salomon described 10 cases; 5 of them belonged to two families, and two first cousins of one of the families were affected; while a sixth patient had a sister who passed sugar. I have only seen three of these cases, but one of the patients had a sister and brother who passed sugar. Consanguinity does not seem to play any part in the causation.

Sugar in the Urine with no Symptoms of Diabetes.

There is another group of cases[13] which differs from this group in some points.

The group might almost be called the St. Bartholomew's group, as two of the cases were patients of Sir Archibald Garrod, the third was one of the residents of the hospital, two others were officers (one naval and one military) who came to the hospital to have their blood sugar tested, and the sixth case was reported by Dr. Parkes Weber,[11] an old

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[*] Lecture I. appeared in THE LANCET of May 7th, p. 951.

No. 5098.

St. Bartholomew's man. Besides these 6 cases I only know of 3 others, those reported by Bailey,[12] and Lewis and Mosenthal,[13] and perhaps by Murlin and Niles,[14] which seem to resemble them. Most of the cases were discovered accidentally. The first one came to Great Ormond-street, complaining of nocturnal enuresis, and the sugar was discovered in the course of a routine examination. Two years later the urines of the father, mother, and brother were examined and that of the brother contained sugar. Two cases were discovered during examination for life insurance. On man was ailing and the sugar was found in the course of the routine examination. None of the patients complain of thirst and they have no symptoms which suggest diabetes.

The chief characters of the group are:—

The amount of sugar excreted is fairly large, 10-30 g. a day, which is much larger than in the case of the previous group. The amount of sugar excreted seems to be almost independent of the amount of sugar eaten. In one of Garrod's cases the sugar output and sugar intake is shown in the following table:—

Sugar intake (grammes).	*Sugar output* (grammes).
64	39-42
56	20-33
28	23-30
0	20

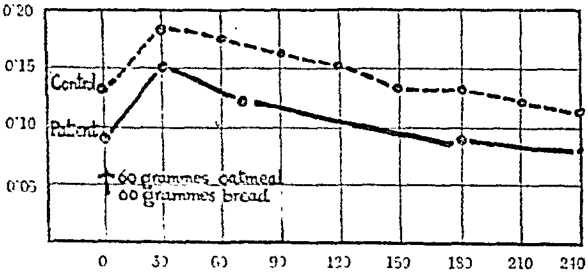
The concentration of sugar in the urine is high—often over 4 per cent. if the urine is collected immediately after a meal. This, again, contrasts with the other group, in which it is usually less than 0·5 per cent. Starvation for a whole day reduces the sugar to a mere trace or to nothing at all. Starvation did not affect the patients adversely, and one of them used to play tennis both morning and afternoon of the hunger day. The sugar returns again as soon as food is given, even if the food contains no carbohydrate. The level of the blood sugar taken when the patient is fasting lies within normal limits, yet sugar is often excreted during a fast.

Sugar Tolerance.

This must be tested by giving a dose of sugar or a carbohydrate meal and determining the effect of the meal on the level of the blood sugar. The urine is collected before the experiment begins and for each hour afterwards. The curves, one from a published case (Fig. 1), the other from a recent case (Fig. 2), show that (1) sugar is excreted when the level of the sugar is normal, though in one case no sugar was excreted on one occasion; (2) the response to the dose of sugar is no greater than that of a normal individual to a similar dose; (3) more sugar is excreted when the level of the blood sugar is raised; in one case sugar continued to be excreted in considerable amounts, although the blood sugar had fallen almost to the original level.

The criticism has been made that these may be mild cases of diabetes, but a mild case of diabetes differs from this type of case in response to the above tests. A mild diabetic who is passing 20-30 g. of sugar in the day will respond to the tests in the following way: (1) the sugar will not be present in each specimen—the urine after the meal will contain most sugar and the fasting urine will not contain any; (2) the amount of sugar will bear some relation to the amount of carbohydrate in the diet; (3) a starvation day will cause all the sugar to disappear; (4) on gradually increasing the diet no sugar will appear for an indefinite period depending on the severity of the disease; (5) if the sugar tolerance is tested with a dose of sugar and the blood curve determined at the same time, the picture is very different. (Fig. 3.) The figure shows that no sugar is passed when the blood sugar is normal, but that the sugar in the blood increases rapidly after the meal and goes up much higher than in the normal person, and that sugar is excreted when the blood sugar is high.

In all the charts the figures at the left side indicate grammes of sugar in 100 g. blood.



The figures at the foot of Charts 1 and 2 represent minutes after meal.

FIG. 1.—Showing the effects of 60 g. oatmeal and 60 g. bread on level of blood sugar.

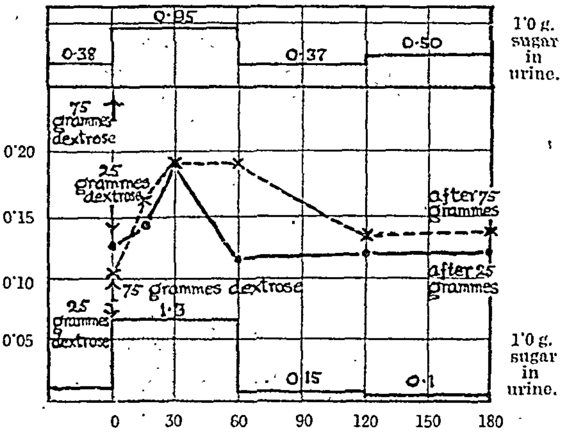
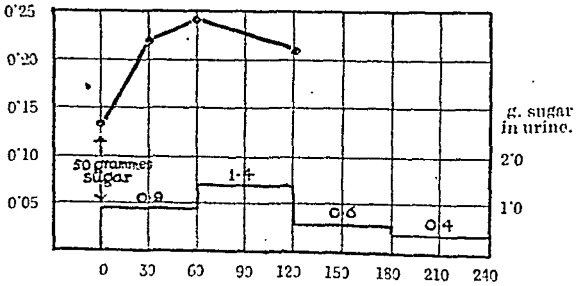


FIG. 2.—The effects of 25 and 75 g. sugar on level of blood sugar (shown by curves); and on sugar excretion in the urine (shown by stippled graphs).

No Treatment Required for Diabetes Innocens.

It is very important to make this distinction clear, as it is a mistake of the first magnitude to make a diagnosis of diabetes innocens unless the case has been tested in the way I have described.

A case of diabetes innocens needs no treatment, but if the patient is treated as a diabetic no harm will ensue; sooner or later he will abandon the treatment with no ill-effect.



The figures at the foot of Charts 3, 4, and 5, represent minutes after sugar.

FIG. 3.—Showing effect of 50 g. sugar on level of blood sugar and on sugar excretion in the urine.

The sister of one of the patients in group 1 endured a fairly strict treatment for two years, but then abandoned it. Later on she married and bore a child with no ill-effects. The child does not pass sugar, but the mother still does so. But if a mild diabetic is treated as a case of diabetes innocens he will inevitably grow worse. I have known this happen on one occasion in the early days of blood sugar determination before the cases had been properly worked out. The man was a diabetic of about two years' standing, and he had become sugar free with carbohydrate restrictions. At this stage his case excited interest, and his blood sugar was determined and found to be normal. The patient was therefore thought to belong to the innocens class, and no diet restrictions were imposed. Two years later he was shown to me as a case of diabetes innocens which had been converted into a case of true diabetes mellitus. His old notes were available, and we were able to obtain the story which I have told you. Unfortunately the man did not respond to treatment as well as he had done before, and three years later he died. The diagnosis of diabetes innocens must therefore be made with great care.

Prognosis as yet Uncertain.

The prognosis in these cases is a little uncertain, as they have not been known long.

Dr. Parkes Weber's case has been watched longest but not continuously. She was in St. Mary's Hospital 35 years ago, and then passed 30 g. of sugar a day. She was in the German Hospital five years ago for a multiple polyneuritis of uncertain causation which got quite well. She was still passing about 30 g. of sugar in the day on a mixed diet. Sir Archibald Garrod's first case has been watched for nine years; the girl, first seen at the age of 8, is now 17, and the boy, first seen at the age of 12, is now 19. Both of them seem very well and lead active lives with no restrictions. One of the men, first seen nine years ago, is still quite well. The other two cases are only of short duration, less than two years. Bailey's case has been watched for eight years. It is clear that these cases are of an innocent type, but various questions arise in connexion with them. Should they marry? Should they live in a hot climate? What should be the attitude of the life insurance offices to them? So far two of my male patients have married, and one of them only came to me to know if he might marry. It was with considerable diffidence that I answered Yes, and I failed to satisfy the prospective father-in-law completely. Hot climates do not seem to agree with cases of the milder type of diabetes innocens. One of Garrod's patients was unwell in India. One of mine in group 1 became very slack in Egypt and lost a great deal of weight. In spite of this evidence, however, one of the recent patients persisted in going to Assam, though another one was deterred.

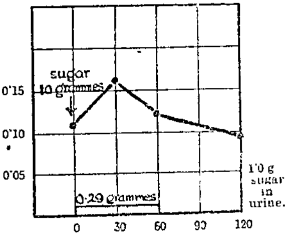


FIG. 4.—Showing effect of 10 g. sugar on level of blood sugar and on sugar excreted in the urine.

The correct attitude of the insurance company is still more difficult. The disease as an entity is a new one; the cases have only been fully worked out since 1916. It is perhaps too much to expect that the innocency of the disease will be admitted, but I believe that the time will come when a case which has been properly worked out will be accepted at low rates by the insurance offices.

The treatment of these cases does not seem to matter. One of my army officers was treated on modern lines for three months without any effect. The only possible line of treatment lies in the discovery of how to alter the leak-point, and of that we at present know nothing.

Exceptionally Large Sugar Excretion.

In the two groups I have described the sugar output was less than 10 and about 30 g. per day respectively. Galambos[15] has described a case where 100–150 g. of sugar per day were excreted. These amounts are very large and in the ordinary way the patient would undoubtedly be considered to be a true diabetic. The case was carefully worked out and it seems certain that sugar was passed, although the blood sugar was not raised. As the amounts of sugar which were excreted are so large I have thought it better to place this case in a separate group, of which it is the only member, although it only differs in degree from the other groups.

Position of Leak-points.

All the cases I have seen in the two groups of diabetes innocens have leaked sugar with a normal blood sugar of 0'09 to 0'11 It is difficult to believe that there is a hard-and-fast division between the diabetes innocens class and the healthy people. So far I have only come across one patient in whom the question has arisen.

He is a boy, aged 6, who has been passing sugar irregularly for the last two years. He has been fairly strictly dieted by Dr. Ernest Young, and seems quite well. He can eat 15 g. of sugar in the form of bread, &c., at each meal of the day without passing sugar. (Fig. 4.) A dose of 10 g. of sugar sent up the blood sugar from 0·11 to 0·16 in 30 minutes, but it was down at 0·12 in 60 minutes and to 0·09 at the end of two hours. During the hour he passed 0·2 g. of sugar, and none in the next hour. His leak-point is set somewhere between 0·12 and 0·16. I am still in doubt as to the correct diagnosis, but I am in no doubt at all as to the correct treatment. With our present knowledge he must continue to be treated as a true diabetic with restricted carbohydrates. To treat him as a member of a new innocens type would be far too great a risk.

In the class of diabetes innocens the leak-point is set at the 0'10 or 0'12 level, and consequently sugar escapes all the time, but most of all after a meal. In the cases that I am now going to describe, the leak-point is not set at 0'20, but may be at 0'25 or 0'27, or higher.

The first case to which I want to refer is one which Garrod[16] first reported in 1912. The patient, a man of 58, came to St. Bartholomew's Hospital in 1909 complaining of thirst and jaundice of three days' duration. The liver was enlarged, reaching four fingers'-breadth below the costal margin; the total output of sugar was not large, 42 g. a day. Under the dietetic treatment then in vogue the sugar was reduced to 4 g. a day in the course of five weeks; the jaundice disappeared in two weeks. After discharge from the hospital the sugar disappeared from the urine and did not return, although the patient ate a liberal diet and no sugar was passed after 100 g. Garrod reported the case in 1912 as one of diabetes with complete recovery of tolerance. In 1915 I[17] made an estimation of the blood sugar at Sir Archibald Garrod's request. He was not passing any sugar at this time, but his blood sugar was 0·26 g. per cent. and a week later it was 0·27 per cent.[10] In 1919 I made sugar tolerance tests with 25 and 50 g. of sugar. (Fig. 5.) The dose of 25 g. did not raise the blood sugar above 0·185 and no sugar was excreted. The dose of 50 g. raised the level of the blood sugar to 0·30 at the end of one and a half hours and 1 g. of sugar was excreted in the urine in two hours. A consideration of the curves shows that the patient now has a distinctly lowered sugar tolerance, but that he does not pass sugar as a rule because the leak-point is set at an unusually high level.

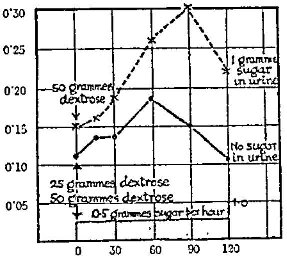


FIG. 5.—Showing effect of 25 g. and 50 g. sugar on level of blood sugar, and effect of 50 g. sugar on sugar excretion in the urine.

The leak-point may also be raised in cases of severe diabetes. I[17] estimated the blood sugar of one man six times on each of two successive days. (Fig. 6.) On the first day 40 g. of sugar in the form of carbohydrate were eaten, and 45 g. of sugar were excreted in the day period of 12 hours and 55 g. in the night period. The blood sugar varied between 0·36 and 0·29 during the day. On the second day tea and coffee with no milk and sugar were given, and only 2 g. of sugar were excreted in the day urine and none at night. The level of the blood sugar varied between 0·27 and 0·29 throughout the day. This man went out of hospital sugar free, and remained well for two and a half years during the war period in spite of its great difficulties about food. He then developed phthisis and died of tuberculosis six months later, three and a half years after the first symptoms of disease.

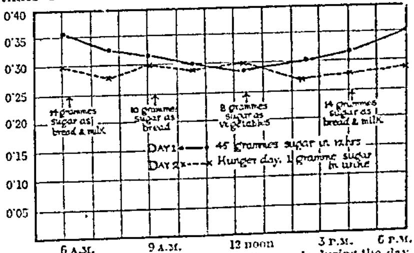


FIG. 6.—Showing level of blood sugar after meals during the day, and on a hunger day.

The blood sugar may be considerably raised in pneumonia and nephritis without sugar being excreted, figures up to 0·28 being reported.

Two Cases in Children.

Lastly,[18] I wish to speak of a little group of cases in children which possess several peculiar features, as the disease is always considered to be more serious in children than in adults. The group consists of two patients, a girl, aged 11, who has been under observation five years, and a girl, aged 10, who has been under observation two and a half years. The case reported by Porter Parkinson[19] may belong to this group. The two girls came to hospital chiefly because they had pruritus vulvæ. They are both very small for their age; a year ago they were both 4 inches under the average height and 11 lb. under the average weight for their age. One of them, E. B., has grown 3 inches in the last year, but the other one has grown ¼ inch only. The girl, E. B., had a sugar tolerance of about 50 g. of sugar in May, 1916, and of 70 g. in October, 1920. The girl, E. L., has a sugar tolerance of about 12 g. on a diet of 400 calories. The blood-sugar curves of this group of children are very interesting.

E. B. (Fig. 7).—A dose of 15 g. caused the blood sugar to rise from 0·16 g. to 0·29 g. in one hour, and it gradually fell in the course of the next two hours to 0·23 g. In the first two hours there was a trace of sugar in the urine, but it was too little to estimate with the polarimeter, and none at all in the third hour.

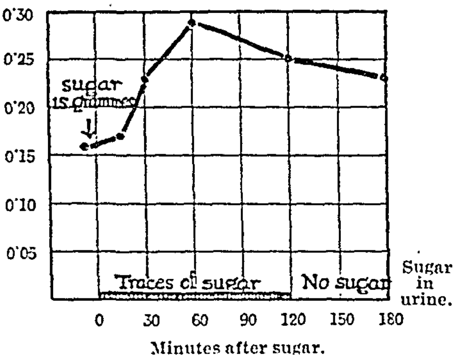


FIG. 7.—Showing effects of 15 g. sugar on level of blood sugar.

E. L.—On Nov. 7th, 1919, a dose of 10 g. of sugar caused the blood sugar to rise from 0·15 g. to 0·30 g. at the end of one hour, and at the end of three hours it was still at 0·23 g. In the first 90 minutes 1·5 g. were excreted in the urine, and in the next 90 minutes 1·1 g. (Fig. 8.) On July 13th, 1920, a dose of 10 g. of sugar raised the level of the blood sugar from 0·13 g. to 0·24 g. in one hour, and at the end of two hours it was still at 0·30. In the first hour 0·10 g. was excreted, in the second hour 0·15 g., and in the third hour 0·20 g. On Feb. 1st, 1921, a dose of 10 g. of sugar raised the level of the blood sugar from 0·145 g. to 0·26 g. in 90 minutes, and it had begun to fall after 120 minutes. Although the blood sugar did not rise so high or so rapidly, about 0·8 g. of sugar was excreted. The level of the leak-point seems, therefore, to have fallen somewhat.

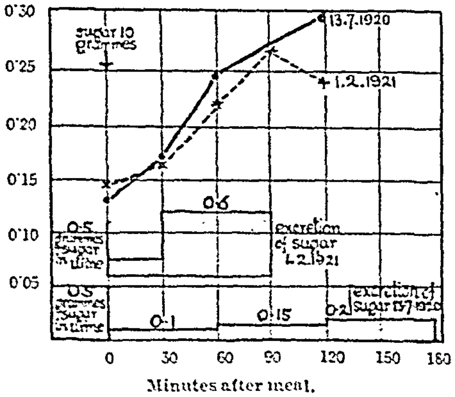


FIG. 8.—Showing effect of 10 g. sugar on level of blood sugar and amount of sugar excreted in urine on two given dates.

A consideration of these experiments shows that the dose of sugar causes a considerable and sustained rise in the blood sugar. On this evidence they must be considered as being true diabetics. It is clear also that the only reason these children do not pass more sugar is that the leak-point is usually considerably raised.

Raising of the Leak-point a Defensive Mechanism.

In 1915 I expressed the opinion that the raising of the leak-point must be in the nature of a defensive mechanism, and that is an opinion to which I still incline. The gradually increasing sugar tolerance in the case of E. B. may be due not to an increase in the power of the liver and muscles to store up sugar any more quickly from the circulating blood, but to the rise in the leak-point.

Allen[20] has considered this point in connexion with some of his dog experiments. He is strongly of the opinion that the raising of the leak-point is a disadvantage to the animal, as the internal secretion of the pancreas is being overworked whenever the level of the blood sugar is considerably raised. Williams[21] and Humphrey also think that the raising of the leak-point is a sign of evil import. Allen[22] has recently expressed the opinion that in some way the dogs were able to use the "extra" sugar which was in the blood with apparent benefit.

I am in complete agreement with Allen's views on the overtaxing of the internal secretion of the pancreas, but the course of the disease in these two children does not quite tally with his views about the high leak-point. One child has increased her sugar tolerance, and although the other one seems to remain stationary, she does not show any signs of dying. I must confess that I do not understand why the children continue to look so well.

This completes the account of the innocent types of diabetes and of those cases in which the change in the leak-point is an important factor.

Types of Diabetes Mellitus.

It has been the custom to divide the cases of diabetes mellitus into alimentary glycosuria and pancreatic diabetes. A study of the clinical picture shows that although a mild case of alimentary glycosuria differs greatly from a severe case of diabetes, yet cases occur of all degrees of severity, from the mild elderly glycosuria to the severe case whose duration of life after the onset of the disease may be a matter of days. Further, a study of the blood sugar in cases of alimentary glycosuria and severe diabetes does not suggest that there is any essential difference between the two types. In both the machine which regulates the taking up of sugar from the blood is out of action to a greater or less extent, and sugar floods the blood and is excreted in the urine. It seems to me better, therefore, to class all these cases under the head of true diabetes and to subdivide them into mild, medium, and severe types of the disease.

Mild type.—The mild cases usually, but by no means always, occur among elderly people; young people may also have a mild form of the disease.

The mild type is especially common among the natives of India and Ceylon. The patient, as a rule, does not at first complain of any symptom, and the sugar is often discovered accidentally in the course of a routine examination for life assurance, or for some other ailment. The amount of sugar excreted is usually small, 30–50 g., and is only excreted after a carbohydrate meal. The sugar may be present for one or two hours after the meal, and after that the urine may contain no sugar until the patient eats another meal which contains sufficient carbohydrates to overtax the sugar tolerance. The urine passed before breakfast usually contains no sugar. If these facts are considered in the light of our knowledge of blood sugar, it will be realised that the carbohydrates eaten at the meal raise the level of the blood sugar above the leak-point of the individual for a variable period, one, two, or three hours. During this period the sugar will be excreted in the urine until the level of the blood sugar falls below the leak-point. After that the extra sugar circulating in the blood will be gradually taken up and stored.

Many of the cases of mild diabetes occurring in elderly people are, in my opinion due to a temporary depression of the sugar mechanism by another illness. *The case of the elderly person who develops gangrene of one limb is typical* of this. Gangrene is so frequently accompanied by glycosuria that the surgeon always examines the urine carefully for sugar. So long as the leg remains in a damaged condition it may not be easy to keep the urine sugar-free, but once the leg has been amputated, always assuming that no sepsis or other complication occurs, the sugar usually disappears at once. The patient may recover quite a large sugar tolerance. The association of carbuncle and glycosuria is also well known. On this hypothesis there are a great many elderly people who are potential diabetics. That is, under ordinary circumstances they do not pass sugar on an ordinary diet, although their sugar tolerance is actually reduced. *When they are subjected to the additional strain of* an illness the sugar tolerance is so much reduced that sugar is excreted.

Medium type.—The medium type of case occurs more often among younger people, and in these cases the sugar is usually discovered because of the symptoms which the patient complains of.

He usually comes to the doctor complaining of weakness, lack of energy, pruritus, and thirst. The thirst in a medium case *is not a very prominent complaint and does not*, by itself, bring the patient to the doctor. He waits until after the other symptoms have appeared. That is, the medium case is very rarely seen quite early in the disease and the history is usually one of weeks or months.

The amount of sugar passed may be up to and over 100 g. of sugar, and when a patient of this type is investigated *sugar is found to be present in every specimen of urine* passed. The output of sugar per hour varies greatly, however, as there is an increase in the amount after each meal, and the urine passed before breakfast will contain least sugar. This, in terms of blood-sugar curves, means that the level of the blood sugar is always above the leak-point, although it varies with the amount of carbohydrate eaten at each meal. *It was formerly believed that the level* of the sugar in the blood was raised because there was a persistent call for the sugar on the part of the tissues which were, however, unable to use it. This hypothesis gains little support from the examination of blood-sugar curves. The effect of each dose of sugar in these cases is to raise the level of the blood sugar from an already high level to a yet higher level. *On the present hypothesis the sugar cannot be stored* by the liver and muscles and other depôts as well as before; consequently, the sugar circulates in the blood until the excess of it is excreted.

As I pointed out in the last lecture, the total sugar in the blood of a man of 10 st. 3 lb., or 65 kilos, is only 5 g. if the concentration of the sugar in the blood is 0·10 g. per cent. *It only needs an extra 5 g. in the blood to raise the percentage* of the blood sugar to 0·20 g. per cent., and of 10 g. to raise it to 0·30 g. per cent. These amounts are therefore very small in comparison with the amount usually eaten at a meal, and with the amount excreted by some diabetics. If these patients fast the level of the blood sugar usually drops below the leak-point at once, and may reach a normal figure. *When they are tested with a small dose* of sugar (10, 20, or 30 g.) there will be a rise and fall in the blood sugar from *0·12 to 0·20* and *down again, provided that the patients can* tolerate that dose of sugar. If the sugar tolerance is less than 10–20 g. the level of the blood sugar will rise above the leak-point and some sugar will be excreted. The patient therefore behaves just like a healthy person, but his tolerance *is reduced from*, say, 100 g. of sugar, to 10 or 20 g. The medium case will, of course, pass acetone bodies —aceto-acetic acid which is the dangerous substance, β-oxybutyric acid, and acetone.

Severe type.—The severe cases usually have an acute onset, though it must be remembered that any mild or medium case may become severe in course of time. Further, a mild or medium case may be converted suddenly into a severe one by any intervening disease such as influenza or septic infections.

The newly developed severe cases usually come to a doctor complaining of thirst, and if the case is very severe the actual day of onset can often be discovered. We have recently had three cases in which this could be done. One patient gave a six weeks' history of thirst and could fix the day of onset, having been very thirsty one evening in church and having had to get up twice that night to get water to drink. One boy of 17 gave a history of thirst of 17–20 days' duration. He was able to give the day approximately, as he was not thirsty on a Sunday, but was very thirsty on Thursday, *the early closing day of the week.* One boy, aged 10, gave a ten days' history, as he was not thirsty on the Sunday but was very thirsty on the Monday. This boy was the only one who complained of anything else at the onset. He was unwell with an indefinite malaise, and was kept in bed for three days after the onset. After that he went back to school, but was very easily tired. This boy *died on the fourteenth day after the onset of the thirst.*

Very acute cases of this type are rare, but may be commoner than is supposed.

Sir Archibald Garrod was once called out to see a young woman who had become unconscious that morning and had not complained of any illness before this day. The urine was examined, and a great deal of sugar and aceto-acetic acid was found. Dr. T. H. G. Shore tells me that he has made post-mortem *examinations on two soldiers who had died in* France of diabetes mellitus. One had died in the train on the way down from a C.C.S. to the base, and the other died *at a base hospital. In neither case had the disease been* recognised during life, but the bodies smelt so strongly of "acetone" that Dr. Shore examined the urine in the bladder, which was found to contain sugar and aceto-acetic acid in large amounts. *No other cause of death was found.* Even if allowance is made for the extreme degree of overwork which occurred at times in France it is difficult to avoid the conclusion that these two undiagnosed cases belong to the very severe and rapidly fatal type of the disease.

The symptoms which bring these patients to the doctor are usually thirst coupled with weakness or a feeling of tiredness. There is usually no malaise.

The sugar excreted in severe cases is large in amount—200 to 300 g. in the 24 hours—and is always present in the urine. In fact, the amount of sugar passed during the night hours may be as large or larger than that passed during the *day when the meals are eaten. The amount of sugar in the* blood is usually very high in these cases, and may be as much as 0·40 or even 0·60 g. per cent. The level of the blood sugar remains above the leak-point the whole of the day. If a dose of sugar be given to these cases in the form of a meal the level of the blood sugar rises rapidly after the meal *and then falls again.*

This is not quite the whole story, as the blood sugar at 6 A.M. was higher in one case than it was at 6 P.M., although nothing had been eaten for some hours. If these patients are starved the blood sugar usually decreases in amount, but it may take several days before it falls *below the level of the leak-point,* and longer still before it falls to the normal level for a healthy adult. The power of a severe diabetic to store sugar is exceedingly small, and a dose of 10 g. of sugar may be sufficient to cause the excretion of several grammes of sugar. (Fig. 9.)

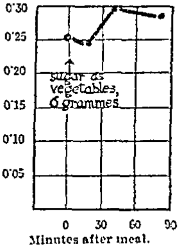


FIG. 9.—Effect of 6 g. sugar in vegetables on level of blood sugar.

Conclusion.

This completes my survey of the different types of diabetes mellitus. Many conditions may cause the presence of sugar in the urine, and the study of these is both fascinating and useful. If we are able to differentiate the cases into groups, and therefore to give a better considered prognosis, then we have at least achieved something. I am tempted to say that anything is better than the teaching of my student days—"death within two years whatever you do." It was not true then, and still less is it true now.

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THE PREVENTION OF
URINARY OBSTRUCTION AFTER PROSTATECTOMY.[1]

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THIS article deals with fibrous contraction of the vesical outlet after suprapubic prostatectomy, and with an open operation for its prevention. No paper upon this subject should open without a reference to the fundamental work of our President, Sir Peter Freyer. I can look back to the time when castration, following the erroneous teaching of White, was in vogue as a cure for enlarged prostate, and when Harrison was attempting to prove by statistics that resecting the vas was an efficient substitute and would cure the condition.

I can thus appreciate more fully than many of you here the immense change that was brought about by the introduction of suprapubic prostatectomy by Sir Peter Freyer. It is therefore in no carping spirit of criticism of the operation of suprapubic prostatectomy that I bring forward those cases of post-operative obstruction, but with a view to discussing with you whether some modification of the original operation is not necessary in order to meet this sequel shown by experience to occur.

I shall first relate 16 cases of post-prostatectomy obstruction and then discuss them.

CASE 1.—R. T. H., aged 55 (Ref. No. 24). Examined Jan. 23rd, 1917. Prostatectomy Sept. 28th, 1916 (general surgeon). Prostate adherent and operation difficult. Fistula persisted. On Nov. 18th surgeon introduced forefinger into the bladder and pushed metal bougie through the closed internal meatus. Jan. 13th, 1917: Fistula still leaking, instruments passed under anæsthetic. On the 23rd urinary fistula through which all urine discharged; bougies arrested at internal meatus. Feb. 14th: Operation. Internal meatus admitted a small metal bougie and was surrounded by hard scar tissue. This was excised and a free opening into the prostatic cavity obtained. Wound healed satisfactorily and urine passed in good stream.

A year later the surgeon who had performed the original operation wrote to me about him as follows: "I saw a few days ago an old patient on whom I operated for enlarged prostate. I was pleased and surprised to see him so well, as when I last saw him there was great trouble from cicatricial contraction of the commencement of the urethra and I feared carcinoma. I congratulate you on a remarkable result."

CASE 2.—H., aged 71 (Ref. No. 29). Examined March 21st, 1918. Prostatectomy Jan. 14th, 1918 (general surgeon). Prostate large and shelled out in one piece. Difficulty in separation on left side and posteriorly. Emphysema, bronchitis, dilated heart, and glycosuria. Three weeks after operation attempts to pass catheter failed. Feb. 17th: Instruments passed with finger in bladder and catheter tied in for 14 days. March 21st: Urine discharged entirely by suprapubic fistula, metal instrument arrested at entrance into the bladder. Bladder opened freely, internal meatus completely closed by thick membrane. Membrane excised and large opening into prostatic cavity obtained. A month later suprapubic wound healed and urine passed naturally.

Three months after operation patient died of cardiac failure, having continued to void urine naturally.

CASE 3.—P. W., aged 64 (Ref. No. 35). Examined April 15th, 1918. Prostatectomy Nov. 3rd, 1917 (urinary surgeon). Difficulty in enucleation at lower part of prostate. After operation increasing difficulty in passing catheters. Fistula persisted and urine passed partly by urethra. February, 1918: Surgeon opened bladder and tied catheter in urethra. Wound healed but repeatedly broke down again. There was difficult micturition and attacks of retention. A catheter was obstructed at the internal meatus. At night urine passed only by catheter. April 29th, 1918: Bladder opened freely; vesico-prostatic opening was a small aperture surrounded by a thick cuff of fibrous tissue which gripped a fine catheter tightly. Fibrous tissue removed and prostatic cavity exposed. July: Wound closed, micturition normal.

CASE 4.—A. W. W., aged 65 (Ref. No. 35). Examined Nov. 4th, 1918. Prostatectomy November, 1917 (general surgeon). Since operation frequent micturition day and night and intense desire and spasm. Catheter passed occasionally with difficulty 8 inches from meatus.

On rectal examination a hollow in region of prostate with some thickening on either side. On cystoscopy outline of internal meatus very irregular, a diverticulum at bladder base. Nov. 20th, 1918: Bladder opened, a pea-sized nodule of gland tissue at posterior lip of internal meatus. Internal meatus surrounded by fibrous ring; diverticulum with capacity of bean. Nodule removed and large opening into prostatic cavity obtained by cutting away fibrous ring; diverticulum excised. October, 1919: He reported "result of operation splendid and water passed very easily."

CASE 5.—W. M., aged 60 (Ref. No. 33). Examined Feb. 13th, 1919. Prostate removed September, 1918 (general surgeon). Prostate large and operation straightforward. Fistula persisted and healed up for short periods. Difficult micturition, sometimes performed only in recumbent position; dribbling at end of act. Metal instruments passed regularly but with difficulty. Rectal examination showed hollow area in prostatic region and no sign of malignant infiltration. February, 1919: The surgeon again operated, but failed to reach the obstruction and could not pass an instrument through the urethra.

May: I exposed the bladder and found internal meatus surrounded by hard fibrous tissue. This was cut away and a free opening obtained; the wound healed satisfactorily, the bladder closed, and patient was able to pass water freely.

CASE 6.—A. H., aged 53 (Ref. No. P. 246). Examined July 8th, 1920. Prostatectomy March, 1920 (urinary surgeon). Wound healed. Two weeks after returning home difficulty of micturition recommenced, and finally no instrument could be introduced into bladder, obstruction being at internal meatus.

Operation July 12th, 1920. Internal meatus surrounded by scar tissue and admitted probe. Scar tissue cut away; irregular areas of fibrous tissue in wall of prostatic cavity, and in dissecting a fibrous mass a portion of the rectal wall was excised. Edges of rectal wound brought together with catgut stitches, catheter tied in urethra and prostatic cavity packed with iodoform gauze. Continuous irrigation of bladder and prostatic cavity, and frequent rectal washing. Wounds healed, and patient left hospital passing clear acid urine freely.

CASE 7.—A. F. H., aged 63 (Ref. No. 46). Examined Oct. 11th, 1920. May, 1918, prostatectomy (general surgeon with special experience). Moderately enlarged firm prostate. After operation great difficulty in passing instruments. Urethra dilated with metal instruments. Fistula persisted in spite of retained catheter. For 18 months urine passed only in a dribble, and has been on catheter life. Fistula closes for some weeks and then reopens. Micturition ceases after passing an ounce of urine and then catheter withdraws about a pint. In rectum a hollow prostatic area without induration. Small catheter passed but was gripped at internal meatus.

Operation Oct. 21st, 1920. Masses of fibrous tissue removed and bladder mobilised. Neck of bladder and internal meatus drawn under arch of pubes and fixed with fibrous tissue. Mucous membrane at internal meatus fell together laterally so as to close it. With finger no opening felt. On introducing catheter the internal meatus was found to be an antero-posterior slit, surrounded by hard, fibrous tissue, which gripped the point of the catheter. Fibrous ring was dissected away and free entrance to prostatic cavity obtained. Small fistula persisted for some weeks, but eventually healed. There was a full and powerful stream and no residual urine.

CASE 8.—E., aged 63 (Ref. No. 48). Examined Oct. 27th, 1920. October, 1918, prostatectomy (urinary surgeon). Enlarged prostate and some calculi removed. During convalescence difficulty in passing urine and instruments were passed. After leaving the home obstruction increased, and in March, 1919, catheter passed with difficulty. April, 1919: Complete retention. Instruments failed. A general surgeon opened bladder and introduced catheter. After that much better, but had to use catheter frequently. Difficulty of micturition increased, and in June, 1920, instruments were passed twice. Dilatation was followed by increased difficulty and retention, requiring catheter. During September and October, 1920, there were repeated attacks of retention of urine, relieved by dilatation by bougies and passage of catheter. I examined him on Oct. 27th, 1920. He was confined to bed and in a nervous, depressed condition, with tremors of hands and legs. Bladder not distended; in rectum there was a hollow prostatic area; no dilatation of seminal vesicles and no induration. Metal catheter (No. 8) passed an obstruction at the membranous urethra and another at entrance into bladder, where it was tightly gripped.

I operated on Nov. 4th, 1920. Large hernia of suprapubic scar. Lower part of bladder and internal meatus were dragged down under the pubic arch by fibrous tissue and were very difficult to reach. Internal meatus was a rigid ring admitting tip of little finger. A quarter of an inch below this the catheter lay in hard ring of fibrous tissue. Fibrous tissue at internal meatus and in prostatic cavity was dissected away. Anterior wall of prostatic cavity also dissected away from pubic symphysis.

Patient returned home five weeks after operation. Urine was then passed freely with good stream but with some lack of force. Catheter passed easily into bladder; no residual urine. At times there is an escape of a few drops of urine on rising suddenly or on sitting up in bed, but this symptom now (March, 1921) occurs at long intervals.

CASE 9.—W. S., aged 55 (Ref. No. P. 387). Examined Nov. 4th, 1920. Prostatectomy June, 1920 (general practitioner). After operation never passed urine by urethra except with catheter; urinary fistula persisted, instruments being arrested at internal meatus. Prostatic area soft, no induration.

Operation Nov. 8th, 1920. Scar excised, bladder base exposed; internal meatus found to be completely closed; tongue of tissue about size and shape of bean and free at one end projected upwards from the bladder base in position of internal meatus. This mass was cut away and mucous membrane and fibrous tissue forming roof to prostatic cavity removed, and free opening made. The patient made uninterrupted recovery, and left hospital healed and passing urine freely in powerful stream.

CASE 10.—A. D., aged 60. Examined Jan. 13th, 1921. Prostatectomy Sept. 11th, 1920 (general surgeon). Prostate removed with difficulty in two pieces. Very adherent posteriorly. Catheters passed during convalescence. Healed in nine weeks, but broke down again and has since healed and broken down several times. Metal instruments were passed. Urine passed with difficulty; micturition easier lying on back. Residual urine varied from six to nine ounces.

Operation Jan. 19th, 1921. Thick masses of scar tissue dissected from suprapubic area and bladder freely opened. Internal meatus admitted tip of little finger, and was filled with soft granulation tissue. About a quarter of an inch below internal meatus prostatic cavity narrowed by fibrous tissue which reduced lumen to No. 6 English bougie. Fibrous tissue was dissected away and found to extend down to triangular ligament where opening was small and rigid. Catheter was tied in; recovery was complete, with free and powerful stream.

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[1] A paper read before the Section of Urology of the Royal Society of Medicine on Jan. 27th, 1921.

CASE 11.—R. S., aged 60 (Ref. No. 18). Examined June 15th, 1914. Prostatectomy March 4th, 1914 (general surgeon). Operation difficult; prostate hard and fibrous; no irrigation of bladder during convalescence. First time catheter was passed a gush of pus came away, but no urine. Many unsuccessful attempts were made to pass instruments into the bladder. Suprapubic fistula persisted, and all urine discharged through this. On examination skin of lower abdomen eczematous; suprapubic scar thick and indurated. All urine was discharged through fistula. Obstruction to instruments after passing membranous urethra, and between this and the bladder there was an area of hard fibrous tissue. Metal instruments passed up to 16/18 English and a catheter tied in urethra. In 14 days suprapubic wound healed and eczema disappeared. Urine passed freely by urethra. Patient died suddenly four months after I saw him after obscure abdominal symptoms. Intestinal obstruction was found, due to a band extending from upper part of right side of bladder down into pelvis.

CASE 12.—C. H., aged 61 (Ref. No. 16). Examined April 6th, 1914. Prostatectomy (general practitioner), January, 1914. Suprapubic tube retained for 14 days after operation. Fistula persisted, only a few drops of urine being discharged from urethra and a stream from fistula. Obstruction at vesico-prostatic junction, which admitted small instrument. *On rectal examination a hollow area* was found in place of prostate and no induration. Catheter tied in and suprapubic wound healed, but there was constantly recurring difficulty of micturition and instruments were passed at intervals. He lived in the country, and finally was able to pass instruments himself and keep the scar dilated.

CASE 13.—S. W., aged 58 (Ref. No. 14). Examined March 17th, 1914. Prostatectomy Oct. 23rd, 1913 (urinary surgeon); simple adenoma. Great difficulty in passing catheter three weeks after operation. Patient left the home Nov. 30th healed and passing fairly good stream, which got gradually worse and at end of December was reduced to a mere dribble. Surgeon again attempted to pass catheter and failed. Patient was told that there was block at neck of bladder. When I examined him urine was passed in feeble dribbling stream. In the rectum there was a hollow area in place of prostate, but no induration. In passing instrument there was difficulty at membranous urethra and also at internal meatus and I *failed to enter bladder. Operation for removal of obstruction* recommended, but I did not see patient again.

CASE 14.—W. P., aged 75 (Ref. No. 34). Examined Dec. 12th, 1918. *Prostate removed (urinary surgeon). Prostate large and shelled out* easily. Wound closed, but in a few months he had increasing difficulty in micturition and required catheter. In March, 1916, bladder was opened and internal meatus dilated; the wound healed quickly. When I examined him he complained of frequent micturition, and passed a small dribbling stream after great difficulty. I failed to pass an instrument into the bladder, the obstruction being at the internal meatus. Fibrous thickening in prostatic *area was felt from rectum.*

On Dec. 18th, under spinal anæsthesia, instruments passed and a catheter tied in urethra. The obstruction slowly recurred, and on March 20th, 1919, I again passed instruments.

CASE 15.—W. G., aged 77 (Ref. No. 33). Examined Oct. 5th, 1918. Prostatectomy five years before (general practitioner). Prostate weighed 11¼ ounces. For some months before I saw him he had increasing difficulties of micturition and frequency of straining. Prostatic area flat and no sign of malignant infiltration. I failed to pass instruments, the obstruction being at the internal meatus. Under an anæsthetic the fibrous ring was dilated and a catheter tied in. *Micturition was free for a time*, but on Nov. 29th, 1918, the obstruction at the internal meatus had again developed. Urethra dilated and a catheter tied in. I have lost sight of this patient.

CASE 16.—R. S. R., aged 58 (Ref. No. 49). Examined Dec. 1st, 1920. Prostatectomy May, 1919 (urinary surgeon). Previous to operation was on catheter life. Operation said to be difficult, but no information in regard to prostate; wound healed in four weeks. Had bilateral epididymitis. Since operation patient can pass one ounce of urine voluntarily and then requires catheter. *He had undergone* a course of electric treatment for the bladder since the operation. *On examination the bladder was distended. The prostatic area* was hollow and without induration. A small catheter passed with difficulty, being gripped in prostatic area. Two pints of stinking alkaline urine were withdrawn. No sign of disease of the nervous system and no history of syphilis. I did not consider that there was nerve atony of the bladder, but regarded the condition as one of obstruction at the internal meatus. Cystoscopy recommended, but patient refused.

DISCUSSION OF CASES.

These 16 cases are patients suffering from obstruction after suprapubic prostatectomy, *the obstruction being due to the formation of fibrous tissue in the* area from which the prostate was removed. The cases have been carefully selected so as to exclude two types of case in which there is post-prostatectomy obstruction, but which for the sake of clearness I am anxious to exclude from discussion at present. These types are:—

(1) Obstruction due to prostatic lobes left behind at the operation. I have seen a few cases where a large part of the prostate, amounting to a whole lobe, or even *what would* appear to be both lobes, was discovered in examining for the cause of the obstruction after a so-called prostatectomy. Freyer has published such cases.

(2) Obstruction due to malignant growth following the *removal* of a prostate. This includes cases *frankly malignant* at the time of the operation, cases where there was a suspicion of malignancy, and the difficulty in enucleation and eventually the microscope proved that malignant change had occurred in a simple enlargement of the prostate, and finally, cases where clinically there was a simple enlargement, *but the pathologist reported that some part of the* adenomatous prostate showed malignant changes.

All *these types I have excluded from this* article as they raise issues outside those I wish here to discuss. Further, I wish to make it clear that there are here no cases of atony of the bladder from disease of the spinal cord, or atony of the bladder of the type I have described as atony without obstruction or signs of nervous disease. The tone of the bladder in these cases was normal and capable of projecting a good stream of urine when the obstruction was removed.

Post-Operative History.

The post-operative history of these cases is of interest. In some the obstruction appeared early in the convalescence from the operation. There was a delay in passing urine, and instruments were passed usually about three weeks after the operation in order to dilate the urethra and assist the passage of urine. In other cases there was difficulty in passing a catheter *from an early date after the operation, and a catheter* was tied in. In spite of these precautions obstruction commenced either at once or soon after leaving the home. In one case the obstruction became evident some months after the operation and in another only four years after the operation. In two cases no urine was passed at any time after the operation, and all attempts to pass instruments into the bladder failed. These two patients were told that the condition was incurable, and the suprapubic fistula must remain open. A suprapubic fistula persisted in 8 of the 16 patients and in 4 of these all the urine was passed through the fistula, no urine passing by the urethra. In the *remaining 4 cases some* urine passed by the urethra and some by the fistula. In two of these (Cases 5 and 7), the fistula healed up from time to time and then broke down again.

In cases where the wound healed completely or the fistula only broke down occasionally the symptoms were those of severe obstruction, usually constant, but occasionally varying from difficult micturition and straining to periods of retention. In such cases the *patient was on catheter life, the catheter being* passed with great difficulty. In three cases after some months instruments were passed under an anæsthetic and the stricture dilated, this proceeding being repeated on several occasions. In four cases a second operation had been undertaken, the bladder being opened, instruments being passed, and a catheter tied in the urethra. In all of them the obstruction had recurred.

Anatomy of the Prostatic Bed after Prostatectomy.

In order to understand the condition present in these cases *it is necessary* to have a clear idea of the anatomy of the parts after prostatectomy. The enlarging prostate expands in two directions: (1) backwards towards the rectum, expanding the fascial sheath and stripping it from the bladder base; and (2) upwards into the bladder, stretching the sphincter and pushing up through it into the bladder cavity.

After enucleation of the prostate a cavity of varying size is left. Lying on the postero-inferior wall of this is a small strip of the mucous membrane of the urethra, representing the portion of the posterior wall of the prostatic urethra which *lies between the* verumontanum and the membranous urethra. *(Fig. I., 1 and 2.)* The seminal vesicles lie in the posterior wall, having been stripped from the bladder base by the enlarging prostate. This cavity is roofed by a shelf or canopy formed by the bladder base, and communicates with the bladder cavity by the opening through which the prostate was *enucleated*. This opening varies very greatly in size.

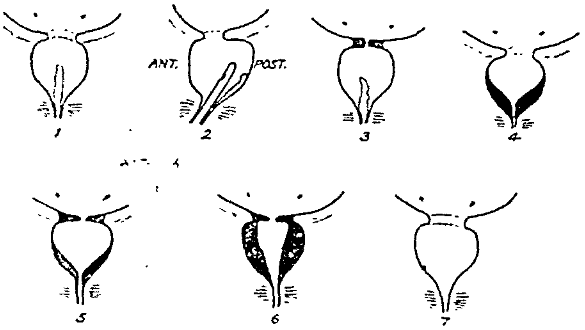
In prostates where the intravesical projection of the prostate has been very large, the opening may be so wide that there is scarcely any ledge at all. In the majority of prostates, however, this ledge is very pronounced, and the *opening* into the vesical cavity lies at the anterior part of the *roof of the prostatic* bed. This is most evident in the type of prostate where the enlargement has been extravesical and can be felt prominently in the rectum, but does not project through the sphincter into the bladder, and in those prostates where there is a small intravesical nodule and a large extravesical adenomatous mass. At this prostato-vesical opening the mucous membrane of the urethra, when it joins that of the bladder, is torn across.

The urethra communicates with the prostatic cavity at the lower end and anterior part, this part of the urethra being directed obliquely upwards and backwards. The mucous membrane of the urethra is usually torn across very obliquely at the prostato-urethral junction. The anterior wall is torn at or near the point where the membranous urethra joins the prostatic cavity, a strip of the posterior wall of the prostatic urethra extending as high as the verumontanum is usually left behind, adhering to the posterior wall of the prostatic bed. On examining specimens of the enucleated prostate, when the gland has been removed in a mass, the absence of this strip of the posterior wall of the prostatic urethra will be noted. In some cases a large part of the prostatic urethra remains as a long ragged tube attached to the membranous urethra, in other cases a long tube of the mucous membrane of the membranous urethra is removed with the prostate. These conditions are, however, exceptional, and the common condition is as I have noted.

Anatomy of Post-Operative Contraction.

It is many years since I showed[2] that there were two danger points for the development of stricture after prostatectomy—namely, at the membranous urethra when the mucous membrane is severed, and at the outlet of the bladder when the mucosa of the bladder neck is torn across. It is rare to find any contraction at the membranous urethra, partly because it is the custom to pass the catheter in order to wash the bladder during convalescence; if there is any obstruction here it will at once be noticed, and catheters of different calibres passed through it. But the principal reason for the absence of contraction at this point is, I believe, to be found in the strip of mucous membrane which almost always remains attached to the posterior wall of the prostatic bed. This strip prevents the formation of a circular ring of fibrous tissue, which might develop if the mucous membrane were torn across transversely.

FIG. I.—*Prostatic Cavity after Suprapubic Prostatectomy.*



1. Coronal section showing prostato-vesical opening (dotted lines), strip of prostatic urethra on posterior wall, compressor urethral muscle.
2. Sagittal section with catheter showing posterior ledge.
3. Fibrous contraction at prostato-vesical opening.
4. Fibrous contraction at prostato-urethral outlet.
5. Fibrous contraction at both outlets.
6. Fibrous tissue in wall of cavity.
7. Prostatic cavity after removal of fibrous masses.

In some cases where a sleeve of mucous membrane of the membranous urethra is removed with the prostate there is certainly a tendency to contraction of the scar in the region of the triangular ligament. In these 16 cases there are only 2 where the obstruction was very pronounced at the urethral end of the prostatic cavity. It is at the inlet of the prostatic cavity into the bladder that the contraction may take place, and obstruction at this part was present in 14 out of the 16 cases here recorded. (Fig. I., 3.)

In 10 of the 16 cases I operated, opening the bladder freely and inspecting the prostato-vesical opening. In 4 of the cases the obstruction was physiologically complete, all the urine passing through a suprapubic fistula. In the remaining 12 the obstruction was incomplete. There were two cases where the internal meatus was completely closed, no trace of an opening being discovered either by palpation or by inspection. In one of these (Case 2) the base of the bladder was smooth and there was no indication as to where the opening into the prostatic cavity had been. In the other case (Case 9) the opening was obliterated, but just behind its probable position, judged by pushing up the roof of the prostatic cavity from below with a metal sound, a tongue-shaped nodule of prostatic tissue, the size of the terminal joint of the thumb, projected upwards and forwards. This tongue of prostatic tissue was attached by a comparatively narrow base, and had evidently been a nodule which was partly detached at the time of the operation, but had retained a sufficient blood-supply to survive. Had an opening into the prostatic cavity been present it would have acted as a valve. In the two remaining cases, where the obstruction to the passage of urine was complete and the introduction of a catheter was impossible, the internal meatus was so small that only a fine probe could be passed through it from the bladder into the prostatic cavity (Cases 1 and 6).

In two cases a fine catheter could be passed with great difficulty. In one the catheter was found at operation to be firmly gripped by a ring of fibrous tissue (Case 3). In the second (Case 8) the internal meatus was fibrous but open, and admitted the tip of the forefinger. Below this, near the apex of the prostatic cavity, there was a dense mass of fibrous tissue which caused the obstruction. This on dissection was proved to extend to the membranous urethra. (Fig. I., 4.)

In three cases a No. 8 catheter could be passed after some difficulty, and at operation there was a fibrous ring which held the catheter in a firm grip (Cases 4, 5, and 7). In one of these, in addition to the fibrous ring, there was a small nodule of prostatic tissue on the posterior lip of the opening, and also a diverticulum of moderate size (Case 4). In another, on removing the catheter the fibrous sides of the ring came together and formed a narrow antero-posterior slit.

In all the cases complete restoration of the bladder function with free flow of urine followed the operation and the fistula healed.

Possible Causes for Failure of the Operation.

Before passing on to consider the treatment of these cases and the method of prevention, two points will be considered.

(1) Is the post-operative obstruction in these cases due to inexperience or lack of skill on the part of the operator?

In the cases here recorded we find that three were operated on by general practitioners, six by general surgeons, one by a general surgeon with special urinary experience, and six by urinary surgeons. I do not wish to give the impression that although the cases are practically divided between the general surgeons and the urinary surgeons, these two types of operator are specially responsible for the result, for it must be obvious to anyone that the general surgeon operates on a much greater number of cases of enlarged prostate than the general practitioner, and it is a fact that the urinary surgeon operates on more cases of enlarged prostate than the general surgeon. The true proportion could only be reached by taking the percentage of the results of all cases operated on by each class, a figure impossible to state. What I think these figures show is, however, that post-operative obstruction of this nature may, and does, occur in the hands of the most experienced class of operators on the prostate. I draw the inference from this that, although lack of skill might have been shown in one or two cases, the operation may be skilfully carried out and still, in a certain number of cases, be followed by obstruction of this special kind.

(2) The second point to which attention will, I think, be directed is the question as to whether the type of prostatic enlargement may have some influence on the result.

I have already made clear that all cases of malignant growth have been excluded from these records. There remain two types of prostatic enlargement, the extreme examples of which differ materially from each other, the small fibrous or fibro-adenomatous type and the large prostatic adenoma. Broadly speaking, the small fibrous or fibro-adenomatous type is enucleated with difficulty and leaves a small cavity, while the large adenoma shells easily and leaves a large cavity. There has been some difficulty in discovering what type of prostate was removed in these 16 cases and in 5 cases I have no information. In the remaining 11 cases 5 were known to be small and fibrous and 6 were adenomatous, 5 being designated "large adenoma" and one "simple adenoma." I do not consider these figures are conclusive, one-third of the cases being excluded.

I have the impression, gained from some years' experience of open inspection of the prostatic cavity and internal meatus during prostatectomy, that the condition likely to produce post-operative obstruction by contraction of fibrous tissue is more frequently present in operation on the fibrous or fibro-adenomatous prostate than on the large adenomatous

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[2] Brit. Med. Jour., 1905, ii., 1250.

—that is to say, where the size of the prostato-vesical aperture is small. In the adenomatous prostate there are frequently found long loose strips of capsule or of the anterior commissure, semi-detached nodules or prostatic tissue, or loose strips of torn urethra.

I have fully discussed and illustrated these strips, flaps, and nodules elsewhere,[3] and shall refer to them again in discussing the operation. But the fact that in six of these cases the prostate was stated to be adenomatous (five being large adenomas) shows quite clearly that fibrous contraction of the bladder outlet may occur after operation on this type of prostatic enlargement, as well as after that on the fibrous prostate.

Treatment of Post-operative Obstruction.

I will first discuss the treatment of obstruction when it has actually occurred and then turn to my proposal for prevention. It is, I believe, the routine custom with most surgeons in this country to pass a catheter daily after the operation and wash the bladder, commencing with the catheter about a week after the operation and continuing until the suprapubic wound is healed. The first evidence of obstruction is difficulty in passing the catheter, and there is delay in the healing of the wound. The wound may, however, heal up either in average time or after some delay. A fistula persisted in 8 out of the 15 cases here recorded.

The difficulty of passing a catheter into the bladder after many cases of prostatectomy is, I think, pretty generally recognised; it is due to the catheter hitching under the ledge over the posterior part of the prostatic cavity found by the bladder base, and is surmounted by using a fully curved catheter and keeping well forward, when the instrument slips easily into the bladder. The obstruction to the passage of instruments, where there is narrowing at the internal meatus, is of similar character, but either the instrument entirely fails to enter the bladder after the whole of the roof of the prostatic cavity has been searched, or it enters the bladder and is felt to be gripped in a stricture.

In most cases of this series this has been the signal for an attempt to dilate up the internal meatus by the passage of instruments, and if the attempt was successful a catheter was tied in for a time. This treatment was adopted during the early part of convalescence after operation in several of the cases here recorded. Where it failed the forefinger was passed along the still open wound and metal instruments guided through the internal meatus or forced through the almost closed aperture. This was carried out in two of these cases. In some instances this treatment was not successful, and the obstruction either progressively increased or recurred after a time. Now either a catheter was passed constantly with difficulty, or regular or recurrent dilatation was carried out, or instruments failed altogether. When the obstruction had reached this stage either the patient was abandoned to a life of misery with a suprapubic fistula or a second operation had been performed. In four cases secondary operations had been performed at intervals of from four to ten months after the operation. These secondary operations consisted of opening the bladder, forcing a metal instrument through into the bladder from the prostatic cavity, and tying in a catheter for a varying time. In all these cases the obstruction recurred after a comparatively short interval.

I saw these patients at a time varying for two months to five years after the prostate had been removed. Four of them I treated by dilatation with metal instruments under an anæsthetic, and this was repeated several times in some cases. The contraction was temporarily relieved, but in none was a permanent cure effected. One patient learned to pass a bougie himself and used the instrument regularly; the others after one or several dilatations passed out of my care.

Dilatation in these cases is, I consider, an unsatisfactory method and gives only temporary relief. The condition is a traumatic stricture, and resembles a traumatic stricture in the bulbous urethra in the difficulty in treatment by dilatation. Moreover, the passage of instruments is usually attended with much difficulty, owing to the presence of the prostatic cavity in front of the stricture. In ten cases I operated and removed the scar tissue through a suprapubic wound.

The following points are essential in carrying out the operations:—

(1) All scar tissue in the abdominal wall is removed and the bladder separated from the abdominal wall.

(2) The bladder is dissected from the posterior aspect of the pubic symphysis, and mobilised.

(3) With the patient in the Trendelenburg position the base of the bladder is freely exposed by means of retractors.

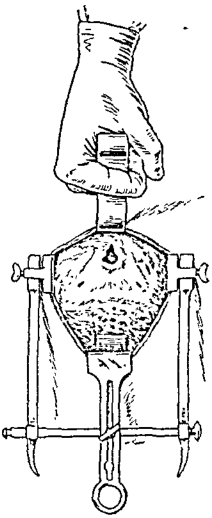
(4) In the cases where a catheter can be passed through the internal meatus, it is necessary to withdraw this before attempting to excise the fibrous ring. The ring is grasped with long forceps and cut backwards with long curved scissors. The scar tissue on each side is then dissected away so that a free opening is obtained. (Fig. I., 7.) Where the internal meatus is completely closed a metal instrument should be passed along the urethra and the roof of the prostatic cavity pushed up on the point of the instrument and incised. The whole of this canopy is then dissected away. Dissection may have to be carried into the prostatic cavity, for in some cases thick ridges of fibrous tissue may be found on the wall. (Fig. I., 5 and 6.) Great care must be exercised here. The rectum lies immediately beneath and is adherent. In one case, when dissecting away a mass of fibrous tissue, I excised a strip of the rectal wall. Stitches were introduced and irrigation of the prostatic cavity and rectum carefully carried out and the wound healed, the patient leaving hospital with a clean sterile urine. This case shows the danger of too free dissection inside the prostatic cavity.

Where the obstruction lies in the neighbourhood of the membranous urethra the dissection is extremely difficult owing to the fact that the scar tissue round this part drags the urethra under the arch of the pubes, and even with a perfect exposure of the bladder base and prostatic cavity it is difficult to reach this area. I have not found it necessary after the free opening up of the prostatic cavity to tie in a catheter unless it is desired to treat concurrent sepsis by constant irrigation.

An Open Operation for the Prevention of Post-prostatectomy Obstruction.

The operation consists in first enucleating the prostate and then in freely exposing the bladder base and prostato-vesical opening by means of the Trendelenburg position and special retractors. Any fold or flap that might cause obstruction is then removed. The details of the operation are as follows:—

FIG. II.



Exposure of bladder base and prostato-vesical opening after enucleation of the prostate.

A catheter is passed and the bladder distended with 12 or 14 ounces of fluid. A free suprapubic incision is made, the bladder is opened, and the prostate is enucleated with the gloved right forefinger. I can in most cases dispense with the finger in the rectum, but in small tough or in very large prostates the gloved forefinger is used to push up the prostate from the rectum. The prostate being free in the bladder, the left forefinger is removed from the rectum; the glove is stripped from the left hand by a nurse and replaced by a fresh glove. The prostate is then removed from the bladder by means of forceps, aided with the left forefinger.

So far, except for the matter of gloves and the avoidance in many cases of the introduction of a finger into the rectum, the operation is that practised by Freyer. Now we depart from his technique. Instead of irrigating the bladder with hot solution, a catgut stitch is passed through each lip of the bladder wound and the patient is placed in the full Trendelenburg position. A good headlamp is essential for this part of the operation.

I then introduce my bladder retractors and freely expose the base of the bladder and the prostato-vesical opening. (Fig. II.) A gauze plug is pushed into the prostatic cavity to control bleeding temporarily and the bladder is emptied of clot. When this is done the plug is removed, and a careful inspection of the prostatic cavity and its inlet into the bladder is made. Hæmorrhage first claims attention. In some cases, by the position of the patient and the temporary plugging the hæmorrhage is already reduced to a very small amount of venous oozing. In most cases, however, some amount of bleeding is in progress and in some spouting arteries are seen.

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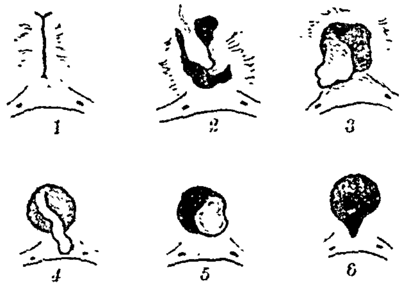
[3] British Journal of Surgery, 1920, No. 28, vol. vii.

The bleeding is of two kinds, arterial and venous. Arterial bleeding comes in many cases from an artery situated at the brim of the vesico-prostatic entrance on one or both sides. There is frequently a spouting vessel on each side in this position, just below the mucous membrane. Long Spencer Wells forceps are placed on these vessels. With my handled bladder needle, a catgut stitch is passed on each side through the edge of the mucous membrane of the bladder and the sphincter and tied anterior to the forceps. Care must be taken not to pass these stitch ligatures too deeply, for the *prostatic plexus of veins runs horizontally in the angle just* outside this on each side. These two sutures now act as tractors to pull up the neck of the prostatic cavity and keep the edges apart. Arterial bleeding from the wall of the cavity may be seen, and Moynihan's rather heavy artery forceps with curved beak are applied and the tissue in their grasp crushed. Venous bleeding comes mostly from the anterior wall of the cavity in which lies the vertical limb of the prostatic plexus. It is difficult to see the bleeding point here, but in most cases it is not serious and may be controlled by a temporary plug. In cases where the bleeding is unusually severe plugging with iodoform gauze will efficiently control it; this is very accurately carried out with the cavity freely exposed. The point of the catheter is pulled well into the bladder and strips of gauze packed into the prostatic cavity round this, the gauze being removed on the second day.

FIG. III.—*Internal Meatus after Prostatectomy.*



1. Lateral folds of mucous membrane closing internal meatus.
2. Flaps of mucous membrane.
3. Adherent flap of prostatic capsule.
4. Strip of prostatic urethra.
5. Adherent nodule of prostate.
6. Flaps removed and wedge of posterior fold excised.

Having controlled the hæmorrhage, the next point to attend to is the removal of any structure that might produce post-operative obstruction. A large variety of tags, flaps, strips, nodules, or folds are found. It is a revelation when one comes to examine the prostatic cavity after enucleation of the prostate to see the number, size, and variety of these loose masses of tissue.

I have described elsewhere the following:—

1. Strips of mucous membrane at the prostato-vesical opening. (Fig. III., 2.)
2. Nodules of prostatic tissue in the neighbourhood of the opening. These may be present even where the prostate has apparently shelled out cleanly.
3. Loose strips of prostatic capsule and occasionally small nodules of gland tissue attached loosely to the wall of the prostatic cavity. (Fig. III., 3, 5.)
4. Loose strips of urethral wall pulled out and torn across. (Fig. III., 4.)
5. Flaps of mucous membrane. At the *prostato-vesical* opening there is frequently a large loose flap of mucous membrane on each side, and these flaps may almost meet over the prostatic cavity. (Fig. III., 1.)
6. A prominent semilunar ridge forms the posterior lip of the opening. This ledge is formed by the trigone and adjoins the base of the bladder.

It is to the last two structures that I wish specially to direct your attention at present, *for they are the* cause of the permanent obstruction. These flaps of mucous membrane may unite so as completely to close the prostato vesical orifice and the crescentic fold is the structure that promotes the narrowing by fibrous contraction after the operation. The flaps of mucous membrane are dissected away; the posterior fold is grasped in long forceps, and a wedge with the base anterior is cut out of it with curved scissors. (Fig. III., 6.) The tissue removed consists of mucous membrane, trigonal muscle, *and frequently some gland tissue. This* effectually removes any possibility of narrowing at the prostato-vesical opening.

It may be objected that this free enlargement of the prostato-vesical opening destroys the vesical sphincter. In 1904 I pointed out that the action of the internal vesical sphincter was destroyed in cases of suprapubic prostatectomy from enlarged prostate. The sphincter action is taken up by the compressor urethræ, which effectually prevents the escape of urine. The prostatic cavity thus forms a prolonged neck communicating with the bladder cavity.

Having completed *the clearing out of the prostatic* cavity and the enlarging of the prostato-vesical opening, repair of the bladder and abdominal wall is undertaken. The retractor is removed from the bladder and the bladder blades replaced by the abdominal blades. By inserting it so as to retract the abdominal wall with the frame to the kneeward side of the operation field the anterior wall of the bladder is fully exposed. A large rubber tube is placed in the bladder and the catgut slings are crossed in front of this so that the edges of the cystotomy opening are brought together. Interrupted catgut sutures are placed in this, the slings are removed, and the bladder drops down into the pelvis. A small rubber tube is placed in the prevesical space. Two catgut mattress sutures are placed through the recti and sheath about an inch on each side of the wound, and the margin of the anterior rectus sheath are united with a continuous catgut suture.

A CONTRIBUTION TO THE

STUDY OF THE ENDOTHELIOMATA.

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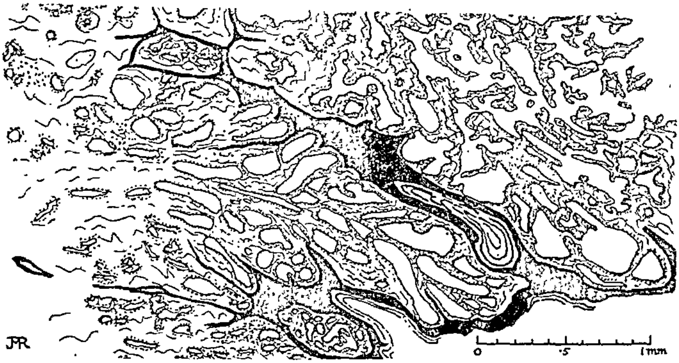
NO one will dispute the statement *that there* is less unanimity among pathologists on the subject of the endotheliomata than there is about any other type of tumour. Every standard text-book of pathology bears witness to this, and in all of them it is acknowledged that the relative incidence of the endotheliomata varies according to the point of view of different pathologists. In some laboratories the diagnosis of an endothelioma is a commonplace of routine work; in others it is rarely and unwillingly indulged in. This state of affairs is obviously *unsatisfactory* and reflects both upon our skill and upon the scientific standards on which our work is supposed to be based. In point of fact, when the subject is considered critically, it appears that the diagnosis of the endotheliomata rests on a very precarious basis, and *there* is no doubt *that* it is a common practice to label a tumour an endothelioma because, as it is said, it is impossible to force it *without violence* into any of the accepted groups of carcinomata and sarcomata. Inasmuch as this attitude of mind presupposes a finite knowledge of the histological potentialities of the malignant epithelial and connective tissue cell, it cannot be considered scientifically correct; and it is certain that in the past it has led to grave errors. When, for example, the sarcomatous transformation of the stroma of a carcinoma of the mouse was first observed, the opinion was freely expressed *that the* phenomenon could be explained on the assumption that the primary growth was really an endothelioma, and that the *sarcomatous tissue* represented another phase of the growth of the endothelial cell. This, of course, we now know to be untrue.

In Adami's classification the endotheliomata are grouped under the transitional lepidomata, and he teaches that in conditions of new growth they may assume either carcinomatous or sarcomatous characters. This is a *convenient* doctrine, but one which, in our experience, is not borne out in practice. On the other hand, we hold that the power of polymorphic growth possessed by the malignant epithelial cell has been insufficiently recognised. The carcinoma cell does not always *conform* to type, but may vary so greatly from the elements of the general run of tumours derived from similar epithelium as to be scarcely recognisable.[1] We would describe many so-called endotheliomata as atypical carcinomata, including the large group occurring in the parotid and other salivary glands.

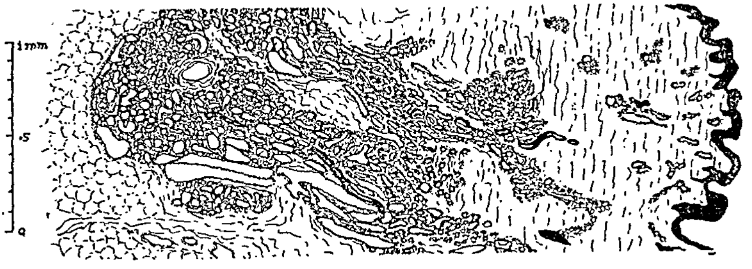
Another diagnostic feature of these tumours has been the supposed relation of their cells to *blood* or lymph vessels, and endotheliomata and peritheliomata have been described in the belief that the neoplastic cells grow either into, or away from, the lumen of the vessel from which they arise. It is difficult to see, however, how such a relationship can persist. In the ordinary course of events the normal structure of the tissues must be totally obscured by proliferation of the tumour cells, and in growths of any but microscopic size the site of origin must be indistinguishable. The only possible explanations of such appearances are either permeation within the lumen of a vessel or in the lymphatics surrounding it, or the survival of tumour cells which are more favourably situated than their fellows in respect to the vascular supply of the part.

FIG. 1.



Cutaneous hæmangeioma. Low-power drawing. The tumour is of the capillary type.

FIG. 2.



Low-power drawing of hæmangeioma of skin. The capillary structure is maintained but there is moderate proliferation of the endothelium.

Behaviour of the Neoplastic Endothelial Cell.

These criteria, then, have little to recommend them, and it is plain that if we are to arrive at any more definite conceptions as to what constitutes an endothelioma we must approach *the* problem in another way. The logical, and indeed the obvious, way is to determine, if possible, how the neoplastic endothelial cell behaves, and what *forms it can assume; that is,* to establish definite standards and to insist that any tumour shall conform to them before it can be called an endothelioma.

Some three years ago one of us[2] described two interesting vascular tumours which were remarkable in the close resemblance *their* cells bore to vaso-formative tissue, and the way in which they developed into capillary vessels or arranged themselves as lining membranes. It seemed worth while to determine whether these properties were shared by the *cells of* vascular tumours as a whole, and to this end we have collected and examined in detail a large number of such growths. And since our object was to endeavour to establish standards for the recognition of the neoplastic endothelial cell, we have worked chiefly with angeiomata so that our material might be free from the criticism that the tumours were not really of endothelial origin.

The majority of our tumours are cutaneous or subcutaneous angeiomata, which are admirable material *for an* investigation of this kind since they are more or less innocent and closely resemble normal vascular tissue. They form a series running *from the simple* capillary angeioma to the more solid or compact hæmangeioma simplex. The simplest types consist of collections of dilated capillary vessels filled with

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[1] Kettle, E. H. (1919). On Polymorphism of the Malignant Epithelial Cell. Proceedings of the Royal Society of Medicine, Section of Pathology, vol. xii., p. 1.

[2] Kettle, E. H. (1918): Tumours arising from Endothelium. Proceedings of the Royal Society of Medicine, Section of Pathology, vol. xi., p. 19

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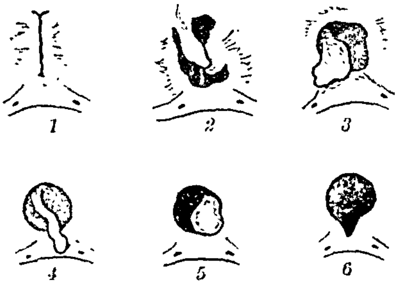

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4. Strip of prostatic urethra.
5. Adherent nodule of prostate.
6. Flaps removed and wedge of posterior fold excised.

Having controlled the hæmorrhage, the next point to attend to is the removal of any structure that might produce post-operative obstruction. A large variety of tags, flaps, strips, nodules, or folds are found. It is a revelation when one comes to examine the prostatic cavity after enucleation of the prostate to see the number, size, and variety of these loose masses of tissue.

I have described elsewhere the following:—

1. Strips of mucous membrane at the prostato-vesical opening. (Fig. III., *2.*)
2. Nodules of prostatic tissue in the neighbourhood of the opening. These may be present even where the prostate has apparently shelled out cleanly.
3. Loose strips of prostatic capsule and occasionally small nodules of gland tissue attached loosely to the wall of the prostatic cavity. (Fig. III., *3, 5.*)
4. Loose strips of urethral wall pulled out and torn across. (Fig. III., *4.*)
5. Flaps of mucous membrane. At the prostato-vesical opening there is frequently a large loose flap of mucous membrane on each side, and these flaps may almost meet over the prostatic cavity. (Fig. III., *1.*)
6. A prominent semilunar ridge forms the posterior lip of the opening. This ledge is formed by the trigone and adjoins the base of the bladder.

It is to the last two structures that I wish specially to direct your attention at present, for they are the cause of the permanent obstruction. These flaps of mucous membrane may unite so as completely to close the prostato vesical orifice and the crescentic fold is the structure that promotes the narrowing by fibrous contraction after the operation. The flaps of mucous membrane are dissected away; the posterior fold is grasped in long forceps, and a wedge with the base anterior is cut out of it with curved scissors. (Fig. III., *6.*) The tissue removed consists of mucous membrane, trigonal muscle, and frequently some gland tissue. This effectually removes any possibility of narrowing at the prostato-vesical opening.

It may be objected that this free enlargement of the prostato-vesical opening destroys the vesical sphincter. In 1904 I pointed out that the action of the internal vesical sphincter was destroyed in cases of suprapubic prostatectomy from enlarged prostate. The sphincter action is taken up by the compressor urethræ, which effectually prevents the escape of urine. The prostatic cavity thus forms a prolonged neck communicating with the bladder cavity.

Having completed the clearing out of the prostatic cavity and the enlarging of the prostato-vesical opening, repair of the bladder and abdominal wall is undertaken. The retractor is removed from the bladder and the bladder blades replaced by the abdominal blades. By inserting it so as to retract the abdominal wall with the frame to the kneeward side of the operation field the anterior wall of the bladder is fully exposed. A large rubber tube is placed in the bladder and the catgut slings are crossed in front of this so that the edges of the cystotomy opening are brought together. Interrupted catgut sutures are placed in this, the slings are removed, and the bladder drops down into the pelvis. A small rubber tube is placed in the prevesical space. Two catgut mattress sutures are placed through the recti and sheath about an inch on each side of the wound, and the margin of the anterior rectus sheath are united with a continuous catgut suture.

A CONTRIBUTION TO THE STUDY OF THE ENDOTHELIOMATA.

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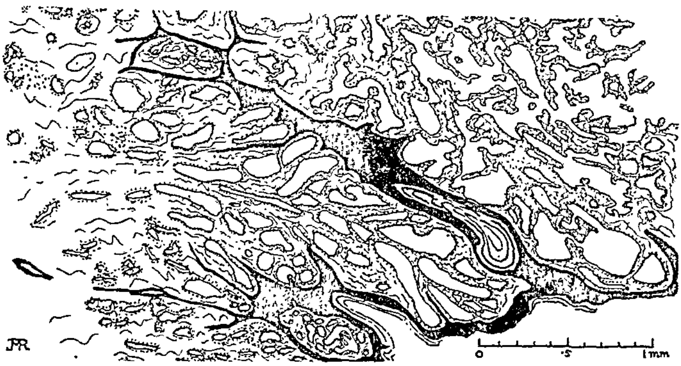
NO one will dispute the statement that there is less unanimity among pathologists on the subject of the endotheliomata than there is about any other type of tumour. Every standard text-book of pathology bears witness to this, and in all of them it is acknowledged that the relative incidence of the endotheliomata varies according to the point of view of different pathologists. In some laboratories the diagnosis of an endothelioma is a commonplace of routine work; in others it is rarely and unwillingly indulged in. This state of affairs is obviously unsatisfactory and reflects both upon our skill and upon the scientific standards on which our work is supposed to be based. In point of fact, when the subject is considered critically, it appears that the diagnosis of the endotheliomata rests on a very precarious basis, and there is no doubt that it is a common practice to label a tumour an endothelioma because, as it is said, it is impossible to force it without violence into any of the accepted groups of carcinomata and sarcomata. Inasmuch as this attitude of mind presupposes a finite knowledge of the histological potentialities of the malignant epithelial and connective tissue cell, it cannot be considered scientifically correct; and it is certain that in the past it has led to grave errors. When, for example, the sarcomatous transformation of the stroma of a carcinoma of the mouse was first observed, the opinion was freely expressed that the phenomenon could be explained on the assumption that the primary growth was really an endothelioma, and that the sarcomatous tissue represented another phase of the growth of the endothelial cell. This, of course, we now know to be untrue.

In Adami's classification the endotheliomata are grouped under the transitional lepidomata, and he teaches that in conditions of new growth they may assume either carcinomatous or sarcomatous characters. This is a convenient doctrine, but one which, in our experience, is not borne out in practice. On the other hand, we hold that the power of polymorphic growth possessed by the malignant epithelial cell has been insufficiently recognised. The carcinoma cell does not always conform to type, but may vary so greatly from the elements of the general run of tumours derived from similar *epithelium* as to be scarcely recognisable.[1] We would describe many so-called *endotheliomata* as atypical carcinomata, including the large group occurring in the parotid and other salivary glands.

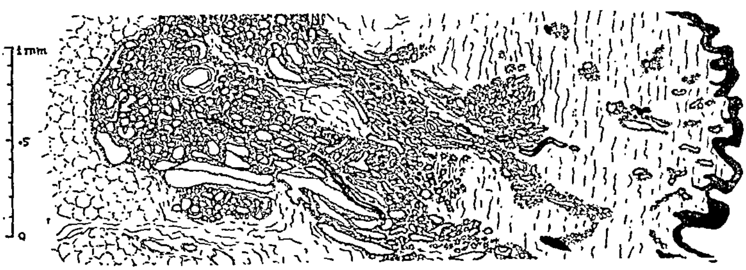
Another diagnostic feature of these tumours has been the supposed relation of their cells to blood or lymph vessels, and *endotheliomata* and peritheliomata have been *described in the belief that the neoplastic* cells grow either into, or away from, the lumen of the vessel from which they arise. It is difficult to see, however, how such a relationship can persist. In the ordinary course of events the normal structure of the tissues must be totally obscured by proliferation of the tumour cells, and in growths of any but microscopic size the site of origin must be indistinguishable. The only possible explanations of such appearances are either permeation within the lumen of a vessel or in the lymphatics surrounding it, or the survival of tumour cells which are more favourably situated than their fellows in respect to the vascular supply of the part.

FIG. 1.



Cutaneous hæmangeioma. Low-power drawing. The tumour is of the capillary type.

FIG. 2.



Low-power drawing of hæmangeioma of skin. The capillary structure is maintained but there is moderate proliferation of the endothelium.

Behaviour of the Neoplastic Endothelial Cell.

These criteria, then, have little to recommend them, and it is plain that if we are to arrive at any more definite conceptions as to what constitutes an endothelioma we must approach the *problem* in another way. The logical, and indeed the obvious, way is to determine, if possible, *how the neoplastic endothelial* cell behaves, and what forms it can assume; that is, to establish definite standards and to insist that any tumour shall conform to them *before* it can be called an endothelioma.

Some three years ago one of us[2] described two interesting vascular tumours which were remarkable in the close resemblance their cells bore to vaso-formative *tissue, and the way in which they developed into* capillary vessels or arranged themselves as lining membranes. It seemed worth while to determine whether these properties were shared by the cells of vascular tumours as a whole, and to this end we have collected and examined in detail a large number of such growths. And since our object was to endeavour to establish standards for the recognition of the neoplastic *endothelial cell, we have worked chiefly with angeiomata* so that our material might be free from the criticism that the tumours were not really of endothelial origin.

The majority of our tumours are cutaneous or subcutaneous angeiomata, which are admirable material for an investigation of this kind since *they* are more or less innocent and closely resemble normal vascular tissue. They form a series running from the simple capillary angeioma to the more solid or compact hæmangeioma simplex. The simplest types consist of collections of dilated capillary vessels filled with

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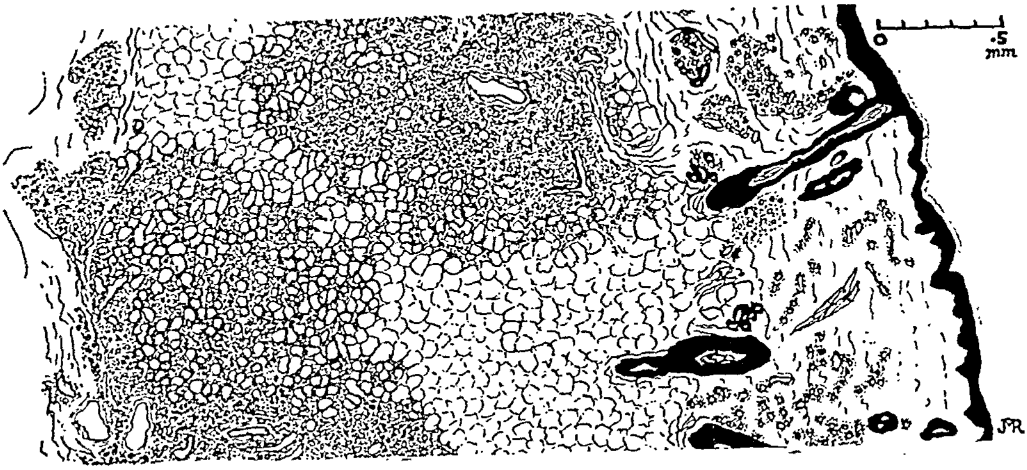
[1] Kettle, E. H. (1919): On Polymorphism of the Malignant Epithelial Cell. Proceedings of the Royal Society of Medicine, *Section of* Pathology, vol. xii., p. 1.

[2] Kettle, E. H. (1918): Tumours arising from Endothelium. Proceedings of the Royal Society of Medicine, Section of Pathology, vol. xi., p. 19

FIG. 3.

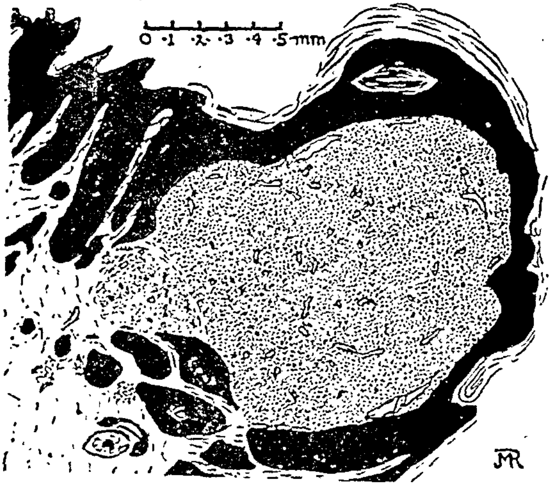


Low-power drawing of hæmangeioma of skin. The structure is more compact though capillaries are still well formed, especially beneath the epidermis. Infiltrative growth is well shown.

circulating blood. (Fig. 1.) In the more complex variety the angeiomatous structure is still maintained but the capillaries are lined by a double or triple layer of cells and the spaces between the closely set vessels are occupied by endothelial cells. (Figs. 2 and 3.) In the most atypical or compact form the tumour consists of a dense felted mass of endothelial cells and contains but few rudimentary capillaries. (Fig. 4.) It is not possible, however, to adopt any hard-and-fast classification along these lines, for intermediate forms, in which the capillary and the compact structure are both present, occur quite frequently, and there is an important group, an example of which was described in the article to which we have already referred, in which complex systems of simple capillaries are associated with areas of atypical solid growth. Most of these growths are comparatively innocent; only in the more compact forms do the numerous mitoses and the absence of well-developed capillaries suggest malignancy. But practically all of them have remarkable powers of infiltration; they are never encapsuled; their margins are ill-defined, and they extend widely throughout the subcutaneous tissues, or, should they be situated more deeply, among the individual fibres of muscle bundles. This, of course, is well recognised, and it is also generally agreed that the tumours increase in size from their own resources. In a few instances we believe that we have been able to trace connexions between the tumour capillaries and the normal vessels of the part, and it is possible, therefore, that there may be multiple foci of origin continuously developing. The evidence for this, however, is very meagre, and there is no doubt that usually increase in size is due to the actual proliferation of the tumour cells.

According to the generally accepted teaching, the growth of the hæmangeiomata takes place by a process of budding from the cells lining the capillaries. These buds grow out as long processes into the connective tissue, and eventually channels are formed by the approximation of adjacent processes or the splitting of parallel rows of cells. Fraser[3] states that "active proliferation of the endothelial cells is always occurring, and it is possible to demonstrate the development of fresh formation of vessels. Within the accumulation of several endothelial cells, which have proliferated from the walls of an existing vessel, a vacuole makes its appearance, and by its enlargement establishes the lumen of the future vessel. Around the central vacuole the endothelial cells become so arranged as to form the vessel wall." Our own observations suggest that the process is rather more complicated. The tumour cells are usually ill-defined. They possess a scanty reticulated cytoplasm and comparatively large oval or spheroidal nuclei, with a fine chromatin network. In the younger cells the cytoplasm is more dense and the cell outlines can be distinguished with ease, but in the older cells the cytoplasm becomes fibrillar or reticular, and it is scarcely possible to separate the individuals in the closely-packed masses of cells. There is one characteristic feature, however, which is constantly seen; that is, the development of small intracellular vacuoles, which gradually increase in size and flow together till eventually the greater part of the cell is occupied by a single vacuole around which the nucleus and the remains of the cytoplasm are folded and compressed. The next step is the rupture of the walls of adjacent cells, so that neighbouring vacuoles become thrown into one, and in this way irregular spaces are developed which in time come to contain blood. Though in many tumours these spaces remain more or less irregular in shape, in others the lining cells become arranged as a definite endothelium and practically normal capillaries are produced.

FIG. 4.



Low-power drawing of hæmangeioma of the skin. The tumour is solid and shows practically no capillary differentiation.

This, then, is the mode of growth of this particular group of tumours, and it recalls very closely the method of formation of vascular tissue from the primitive vaso-formative cells of the embryo. The cells of the tumour capillaries proliferate and extend as buds or processes into the neighbouring connective tissue. In

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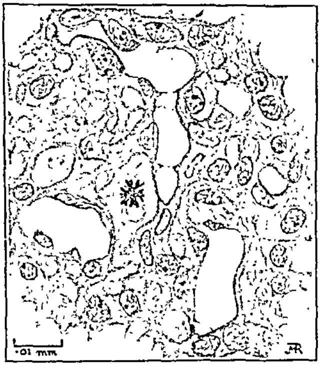
[3] Fraser, John (1920): The Hæmangeioma Group of Endothelio-Blastomata, British Journal of Surgery, vol. vii., p. 335.

course of time they become vacuolated and the vacuoles of adjacent cells coalesce and establish communication with the parent capillary, and the nuclei with the *remnants of the cytoplasm form an endothelium to the* new-formed vessel. This process is illustrated in Figs. 5 to 7.

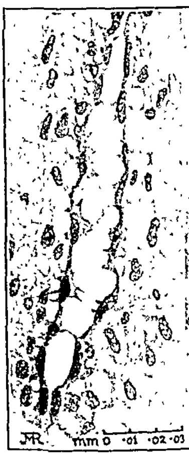
Fraser[4] states that these tumours spread by individual enthothelial cells which afterwards proliferate and become vacuolated, eventually forming the embryonic capillary tissue. But his description of the formation of capillaries in an earlier part of his article, which we have already quoted, suggests that the vacuoles arise by the grouping of neighbouring cells, not by development actually within the cell and it is this intracellular formation of vacuoles which we hold to be important. It is a common phenomenon in vascular endothelium under pathological conditions; it represents a fundamental property of the embryonic endothelial cell, and it is, we believe, the method of formation of lumina in endotheliomata of lymphatic as well as vascular origin. If we recognise that the lumina of endotheliomata are produced in a definite way, by an *attempt at functional activity by the neoplastic cell, it* should enable us to distinguish them from similar *formations in the carcinomata either from necrosis or* from incomplete development into glandular tissue.

FIG. 5.



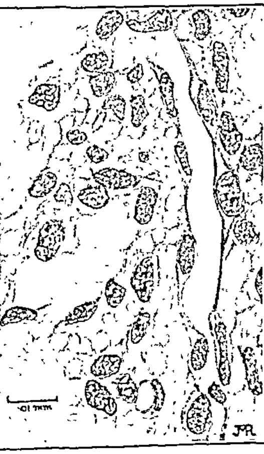
High-power drawing of a section of a submucous angeioma showing vacuolation of the cells with the formation of primitive capillaries.

FIG. 6.



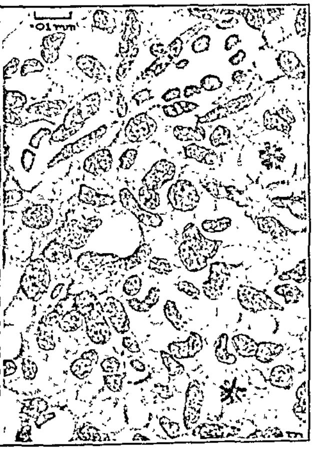
High-power drawing of another part of the tumour illustrated in Fig. 5, showing a further stage in the formation of a capillary from the tumour cells.

FIG. 7.



High-power drawing of a section from a subcutaneous angeioma showing a later stage in the formation of a capillary.

FIG. 8.



High-power drawing of section illustrated in Fig. 4. The tumour is growing *rapidly*, two *mitotic* figures are present in the field, and there is no true differentiation. Intracellular vacuoles are present, however, and irregular blood-containing *spaces are formed by their coalescence.*

More Complex Tumours.

So far we have been dealing with tumours which can all be grouped as angeiomata—that is to say, they all show a greater or less degree of differentiation and form recognisably vascular tissue. Our material also contains a considerable number of hæmendotheliomata, tumours in which, while it is still possible to recognise the type cell, differentiation is rudimentary or absent altogether. *It would serve no useful purpose to describe* any number of these tumours in detail; one or two examples are sufficient. But we would emphasise the fact that when a diagnosis of endothelioma is possible in these more atypical forms it is because of the tendency of the tumour elements to revert to the primitive vaso-formative type of cell. We do not believe that any reliance should be placed upon the relationship of the vessels of the stroma to the tumour parenchyma, or upon the intimate association of blood corpuscles with the tumour cells. These are not features upon which the diagnosis of an endothelioma can be based. Another observation on which we would lay stress is a negative one, but not, we think, the less important for that. *In our experience the neoplastic* endothelial cell may assume one of three forms: it revert to the primitive vaso-formative type of cell. may *lose all the characteristic* features of endoth and grow as a spindle cell, when it gives simple undifferentiated sarcoma; or it may *into* a flattened pavement type of cell, however, departing so far from the normal

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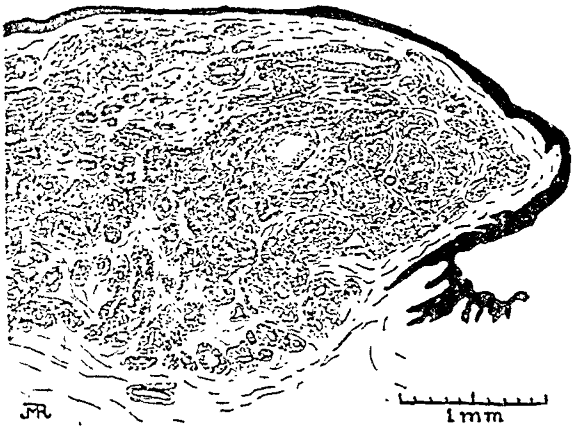
[4] Loc. cit.

FIG. 9.



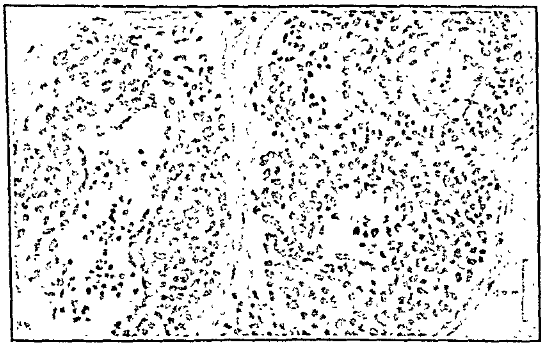
Low-power drawing of a hæmangeioma showing the alveolar type of growth.

unrecognisable. Within these limits it remains a comparatively simple element, and we have entirely failed to observe those extreme instances of polymorphism which are commonly held to be characteristic of endotheliomata.

Among the more common atypical endotheliomata is a group intermediate in structure between the hæmangeioma simplex and the pure sarcoma. One of these is illustrated in Fig. 8. Growth is rapid and mitotic figures are numerous, and though the tumours are not so densely cellular as the sarcomata they differ from the hæmangeiomata in that they do not form definite capillaries. Nevertheless, the fibrillar structure of the cells and the tendency they exhibit to the formation of vacuoles makes it possible to recognise them as endothelial in origin.

Another interesting variety is the alveolar type, in which the tumour cells do not grow diffusely but are arranged in alveoli, so that there is a sharp distinction between parenchyma and stroma, and the structure resembles that characteristic of the epithelial neoplasms.

FIG. 10.



High-power drawing of section illustrated in Fig. 9, showing the pseudo-peritheliomatous structure. The lumina do not represent the remains of blood vessels but are new formations due to the coalescence of intracellular vacuoles.

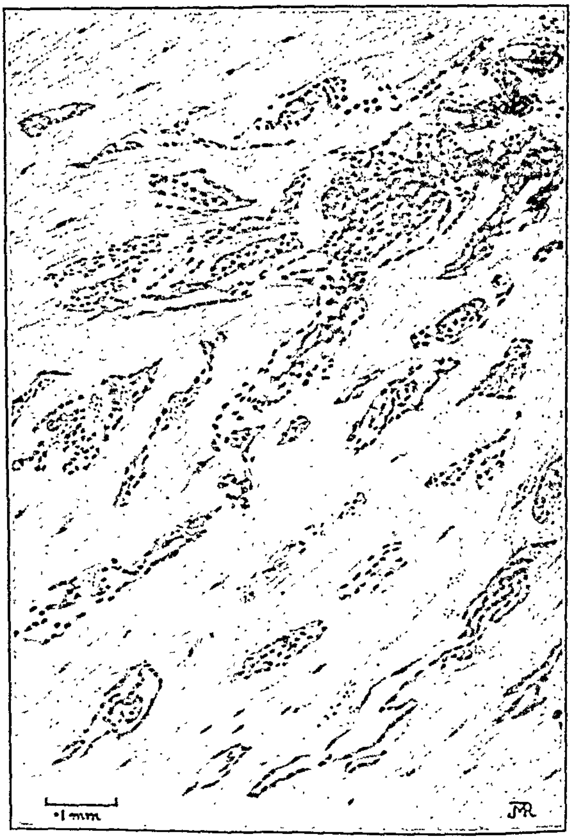
An example of this type is illustrated in Figs. 9 and 10. The tumour consists of alveoli or branching columns of cells, many of which present central lumina which contain blood. At first sight the structure would suggest a perithelioma, but Fig. 10 shows the true nature of the growth. The central lumina do not represent blood-vessels surrounded by tumour cells, but are actual new formations, and the stages in their development from intracellular vacuoles are shown very clearly.

Finally, we may refer to the type illustrated in Fig. 11. In this there is a tendency for the tumour cells to adopt a flattened squamous form, and though they exhibit cytoplasmic vacuoles their endothelial origin is chiefly revealed in the way they grow out on long processes which form the linings of irregular spaces.

Summary and Conclusions.

We have examined a large number of vascular tumours in the attempt to distinguish and define the characteristic features of the neoplastic endothelial cell and so place the diagnosis of the endotheliomata on a more secure basis. We have found that in tumours which can be recognised as of endothelial origin the cells invariably revert to the primitive vaso-formative type, and that this reversion is adequate to explain the structure and growth of these neoplasms. We suggest that the mere relation of tumour cells to blood-vessels or to circulating blood is not conclusive evidence of an endotheliomatous origin, and that there is no evidence that the cells of an endothelioma can so closely resemble those of a carcinoma as to give rise to confusion. It is possible that this polymorphism can occur, for under certain conditions endothelial cells, especially those of serous membranes, can assume a cubical or even columnar form, but it has not been observed in any of the endotheliomata which have been examined. On the other hand, the more atypical endotheliomata progress gradually to a type of growth which is indistinguishable from a spindle-celled sarcoma. But in these, as in the hypothetical carcinomatous forms, differentiation is entirely lost, so that it is no longer possible to distinguish their endothelial origin, and there is no justification for including them among the endotheliomata. This name should be kept for tumours which reveal in their structure definite evidence of having originated from endothelium.

FIG. 11.



Hæmendothelioma of the orbit, showing a solid epithelial type of growth combined with the formation of endothelial processes.

THE RELATION OF THE LIVER TO THE DIFFERENCE VALUE OF THE BLOOD.

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AND
H. A. H. HOWARD, B.SC. LOND.

IN a previous communication[1] we brought forward evidence to show that the relation between the difference value and the sugar content of the blood, estimated at hourly intervals before and after a test-meal taken fasting, furnishes evidence as to the functional efficiency of the pancreas, and that the increase in the difference value associated with disease of the pancreas is dependent upon a diminished control of the gland over the glycogenic ferment of the liver, owing probably to a lack of its internal secretion. At a later date it was stated in a paper read by one of us before the Medical Section of the Royal Society of Medicine[2] that disturbances in the functions of the liver also change the relation normally existing between the difference value and the sugar content of the blood, but that when the estimations are made at hourly intervals after a meal a difference-value curve of an entirely distinct character to that occurring in association with pancreatic insufficiency is found. In this paper we propose to consider the experimental evidence on which this conclusion is based, and to discuss its bearing upon the original problem of our research—namely, the origin and significance of the dextrinuria of pancreatic disease.

Unlike the difference value of the blood associated with disturbances of the functions of the pancreas, which is abnormally high in the fasting state (Fig. 1), the difference value in hepatic derangement is within the normal limit of 0·005 per cent. and is often zero in the early morning before any food has been taken. After breakfast it gradually rises and continues to increase for several hours independent of the fall in the blood sugar which usually occurs at, or about, the third hour after the meal, until a level which may be 10 or 12 times the highest normal limit of 0·010 per cent. is attained. (Fig. 2.) In some instances the rise in the difference value is rapid and reaches its maximum in four or five hours after the meal, in others it takes place more slowly and does not reach its highest point until after a lapse of seven or eight hours. In any case it bears no constant relation to the blood-sugar curve, in contrast to what is found in pancreatic disease, where the blood-sugar curve and difference-value curve move regularly in opposite directions.

In order to test the correctness of the hypothesis arrived at on clinical grounds that a difference-value curve of this description is associated with disturbances in the functions of the liver we proceeded to carry out a series of experiments upon animals and tried to produce the curve artificially by interfering with the functional efficiency of that organ. For this purpose we selected injections of hydrazine phosphate. It is well known that certain drugs, notably phosphorus, chloroform, brombenzol, and hydrazine, have a toxic action on the liver, causing changes similar to those met with in acute yellow atrophy. Of these hydrazine is peculiarly suited to the investigation of hepatic insufficiency, as it was shown by Wells[3] to have a selective action on the hepatic parenchyma, and histological examinations carried out by MacAdam[4] confirmed the limitation of the toxic effect of the drug to the liver. Borisow, who was the first to point out the toxic action of hydrazine salts upon the liver,[5] employed the sulphate, and most subsequent observers appear to have done the same, but as we were unable to obtain a supply we were obliged to use the only available compound, the phosphate. This was given subcutaneously in a neutralised 2·5 per cent. solution. According to MacAdam, the lethal dose of hydrazine sulphate for a dog varies between 0·07 and 0·10 g. per kilo of body weight. As preliminary experiments proved that 0·025 g. per kilo of hydrazine phosphate gave rise to a violent reaction, which persisted for several days, we subsequently gave only 0·0125 g. per kilo, a dose we found sufficient to produce distinct symptoms of hepatic disturbances in the shape of slight jaundice and diarrhœa, with disinclination for food, lasting for 24 to 48 hours.

We first investigated the effects of hydrazine phosphate injections upon the carbohydrate tolerance and difference value of the blood.

Two dogs were given repeated sublethal doses of 0·0125 g. per kilo, at weekly intervals, after the normal blood changes induced by a weighed quantity of dextrose in one case and of lævulose in the other had been ascertained. Two days after the third injection the same amount of lævulose, given under exactly similar conditions, was found to produce a decided increase in the sugar content of the blood (Fig. 3), with a slower return to the fasting level than before the injections had been commenced, but there was no marked change in the difference values. Examination of the urine of this dog showed that lævulose, 0·6 per cent., was present in the urine, and it continued to pass lævulose subsequently when on a diet of meat and dog-biscuit.

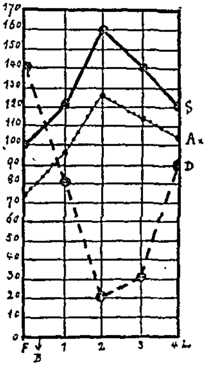

FIG. 1.—Chronic pancreatitis from invading gastric ulcer.

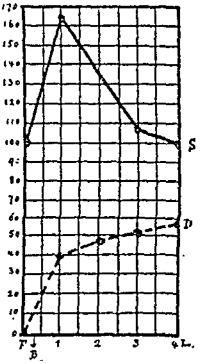

FIG. 2.—Hepatic insufficiency.

A, Amylolytic ferment × 10. F, Fasting. B, Breakfast. S, Blood sugar. D, Difference value.

In the other dog dextrose by the mouth two days after the third injection of hydrazine gave results practically identical with those obtained under normal conditions as regards the sugar content of the blood, but the difference value was decidedly higher than when a similar dose of the sugar had been taken before the injections, and it rose to about double the normal height at the end of two hours in a curve of the "hepatic" type.

Two more injections of hydrazine were given and the dose of dextrose was then repeated. Again the sugar content of the blood showed no striking deviation from the normal (Fig. 4), but the difference value rose from a fasting level of 0·004 per cent. to 0·018 per cent. at the end of two hours.

From these experiments it would appear that the injections of hydrazine lowered the animal's tolerance for lævulose but had no appreciable effect on its powers of dealing with dextrose. On the other hand, the sugar, which was poorly tolerated and appeared in the urine, caused no striking change in the difference value of the blood, whereas that which was retained as well after as before the injections gave rise to a difference-value curve of the "hepatic" type, which became more marked as the number of injections was increased. According to Strauss[6] and others, a diminished tolerance for lævulose is, with few exceptions, a characteristic sign of hepatic insufficiency, so that its occurrence after hydrazine injections lends further support to the conclusion that this drug has a toxic effect on the liver. This being the case, we may infer that the abnormal difference-value curve following the ingestion of dextrose is probably also an indication of hepatic insufficiency. The absence of a similar curve after lævulose had been taken is not easy to explain unless we assume that, as this sugar passes through the liver unchanged to a considerable extent, it does not induce the same metabolic changes as dextrose.

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[1] THE LANCET, 1920, ii., 393.
[2] Ibid., 1921, i., 274.
[3] Jour. Exp. Med., 1908, x., 457.
[4] Jour. Path. and Bact., 1913-14, xviii., 281.
[5] Zeit. f. Phys. Chem., 1894, xix., S. 499.
[6] Deutsche med. Wochenschr., 1901, xliv.

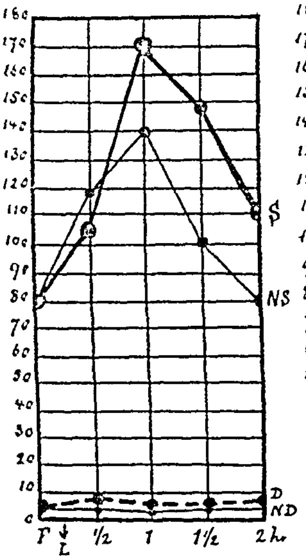

FIG. 3.—Lævulose after three hydrazine injections in a dog.

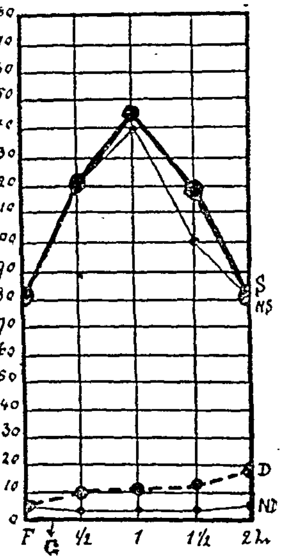

FIG. 4.—Dextrose after five hydrazine injections in a dog.

F, Fasting. L, Lævulose. G, dextrose. S, Blood sugar. NS, Normal blood sugar. D, Difference value. ND, Normal difference value.

An experiment carried out by one of us upon himself suggests that dextrose may interfere with the normal metabolism of the liver under certain circumstances, and at the same time shows that the "hepatic" difference-value curve is a very delicate index of the functional condition of the liver. In our experience dextrose taken fasting by a healthy person does not increase the difference value of the blood, the only effect being a slight drop when the sugar content of the blood reaches its maximum level at the end of the first hour; when, however, the sugar is taken at the highest point of the blood-sugar curve following an ordinary mixed meal a rise similar to that found in a dog poisoned with hydrazine can be produced.

A test breakfast was taken by the experimenter, and at the time previous experience had shown the highest point of the blood-sugar curve to occur with a similar meal, 20 g. of pure dextrose, dissolved in water, were swallowed. The result was that the percentage of sugar in the blood continued to rise for another hour instead of falling as it otherwise would have done, and, what is the chief point, the difference value rapidly increased and continued to do so for at least an hour and a half, far above what had been found when no sugar had been taken. (Fig. 5.) Shortly after the sugar had been swallowed the experimenter felt nauseated and experienced uncomfortable sensations in the abdomen similar to those complained of sometimes by children who have indulged freely in sweets between meals.

As rabbits are better suited for repeated blood analyses than dogs most of our observations were carried out on them, but, since no data concerning the fatal dose of hydrazine phosphate were available, we had first to determine it experimentally.

For this purpose a rabbit weighing 1 kg. was given a dose of 0·025 g. of neutralised hydrazine phosphate subcutaneously after a sample of blood had been taken from the marginal vein fasting, and again one hour after a mixed meal of oats and green food. Twenty-four hours later the animal had apparently suffered in no way from the dose, but its blood showed a rise in the difference value from 0·006 per cent., the previous fasting level, to 0·010 per cent., and a fall in the sugar from 0·086 per cent. to 0·074 per cent.; there was considerable lipæmia, but no change in the amylolytic ferment. Another injection of 0·05 g. of hydrazine phosphate was then given. Next day the animal refused food and was seriously ill, passing liquid bile-stained motions. Examination of the blood now showed an enormous increase in the difference value, which stood at 0·100 per cent., a sugar content of 0·050 per cent., and an entire absence of amylolytic ferment. Two days later it was found dead. Post mortem the liver was seen to be enlarged and of a yellow colour. Microscopical examination showed vacuolation of the protoplasm with coarse granular changes, feebly stained nuclei, and small localised deposits of fat staining deeply with osmic acid. No other pathological changes were discovered.

It was evident, therefore, that hydrazine phosphate in the doses given produced in the liver of the rabbit profound degenerative changes affecting both the cell nuclei and the cytoplasm.

Having learnt from this experiment that the liver of the herbivorous rabbit is more resistant to the toxic action of hydrazine phosphate than the liver of the carnivorous dog, so that 0·025 g. per kilo is not sufficient to produce serious disturbances in its functions, while a further dose of 0·05 g. produces fatal results, we proceeded to inject a series of rabbits with a medium dose of 0·05 g. per kilo and studied the effects of different diets. In each instance specimens of blood were taken from the marginal vein for analysis before the meal and at hourly intervals after for five or six hours on the second and successive days following the injection. Earlier observations on the effect of food were not possible as the animals refused to eat for the first 48 hours.

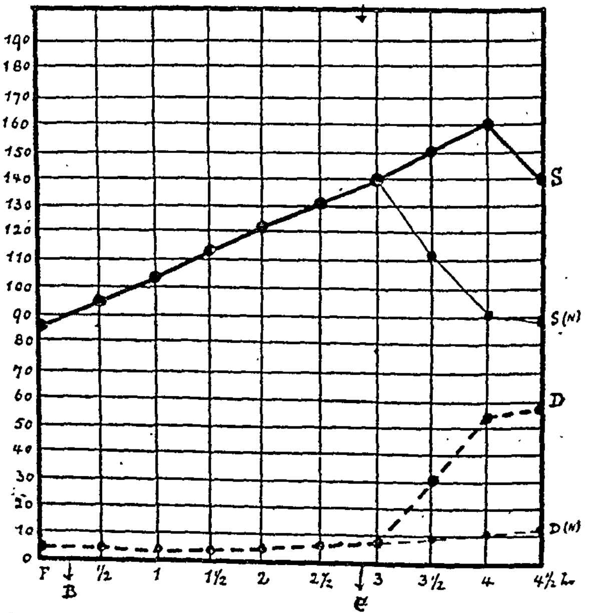

FIG. 5.—Dextrose after a meal in a healthy man. F, Fasting. B, Breakfast. G, Dextrose. S, Blood sugar. S (N), Blood sugar without dextrose. D, Difference value. D (N), Difference value without dextrose.

The first series of rabbits was fed on oats and cabbage. Two days after the injection the blood-sugar curve was found to follow a normal course for the first two hours after the test-meal (Fig. 6), but at the third hour the percentage of sugar was not as high as in a normal rabbit on similar food, and in the succeeding two hours it was still subnormal. By the fourth day after the injection this variation had disappeared and the sugar curve followed the same course as in a normal rabbit. (Fig. 7.) A much more striking change was found in the difference value. Forty-eight hours after the injection (Fig. 6) this stood at the normal level fasting, and showed only a very slight rise for two hours after the test-meal; it then increased rapidly, and at the fourth hour stood at ten times its previous height. After that there was a fall, which took place more slowly than the rise, so that at the sixth hour the fasting level had not been regained. The difference value four days after the injection

(Fig. 7) showed a similar rise, but it was slower in commencing, starting at the fourth hour instead of at the third, and failed to reach the same level at the maximum, five hours after the meal. On the seventh day (Fig. 8) the difference-value curve varied little from the normal, but still gave slightly higher figures at the fourth and fifth hours than in a healthy animal on the same food.

Another series of rabbits fed on thoroughly boiled (six hours) oatmeal porridge gave similar results, excepting that 48 hours after the injection the difference value commenced to rise an hour sooner and attained a maximum level 6 per cent. higher than had been found in animals fed on dry oats and cabbage. The delay in the rise in the difference value on the fourth and seventh days was likewise not so prolonged as in the other series, and on these days, too, the maximum height attained was about 10 per cent greater than in the corresponding rabbits of the first series.

In order that we might compare the blood changes in carnivorous and herbivorous animals we injected a dog weighing 10 kilos with 0·25 g. of neutralised hydrazine phosphate. For the first 48 hours it refused all food and was then with difficulty induced to eat an ounce of meat. As will be seen from the chart (Fig. 9) the blood-sugar curve, after a slight preliminary drop at the first hour, rose more slowly than in a normal dog after a similar meal and failed to attain the same maximum level. Although the difference-value curve was similar in its course to that met with in rabbits on a carbohydrate diet, the increase was not as marked and the maximum level attained was only about four times the normal.

On comparing the difference-value curves produced experimentally in animals with those found in patients exhibiting clinical signs and symptoms of disturbance of the functions of the liver it will be seen that they correspond very closely; it seems justifiable to assume, therefore, that the presence of a curve of this description is indicative of functional inefficiency of the liver, in the same way as the type of curve we described in our previous paper is a sign of functional inefficiency of the pancreas. The question then arises whether the substance, or substances, giving rise to the difference value of the blood is the same in hepatic as in pancreatic disturbances.

Analyses of the urine of patients exhibiting a typical "hepatic" curve in their blood after a meal, and of animals in which hepatic disturbances have been produced by injections of hydrazine, have shown that the difference value of the urine, estimated at hourly intervals, moves in a curve corresponding to the variations in the difference value of the blood, in the same way as the difference value of the blood and the iodine coefficient or difference value of the urine correspond in pancreatic disease. This suggests that in both conditions the increase in the reducing power of the blood and urine after boiling with dilute acid is dependent upon the presence of a hydrolysable carbohydrate, and, since the carbohydrate in the urine has the chemical properties and composition of a dextrin, it is probable that the hydrolysable carbohydrate in the blood is also of a dextrin-like nature. In spite of the similarity of the reacting substance it is unlikely that its origin is the same in the two conditions however, for while the difference value is highest in pancreatic affections when the patient is fasting, it is then normal, or subnormal, in hepatic disorders; further, the difference value varies inversely as the percentage of sugar in the blood in diseases of the pancreas, but in affections of the liver it rises irrespective of any increase or decrease in the sugar, to which it bears no constant relation. The fact that the excursion of the difference-value curve of the blood above the normal, on the same diet, after a sublethal dose of hydrazine diminishes with the lapse of time, and as the injury of the liver is repaired, shows that the substance giving rise to the difference value in hepatic derangement is either formed by the liver in response to the ingestion of food or is a product which is normally intercepted and stored by the liver cells. That the latter is the more probable explanation is suggested by the higher difference value found in rabbits fed on thoroughly boiled oatmeal than in those receiving uncooked oats and raw cabbage. Uncooked oatmeal contains no dextrine and about 0·8 per cent. of reducing sugar; when coarse oatmeal is boiled with water the percentage of sugar slowly increases, so that at the end of six hours it attains to about 6 per cent., meanwhile dextrins appear and reach a maximum of about 45 per cent. between the sixth and seventh

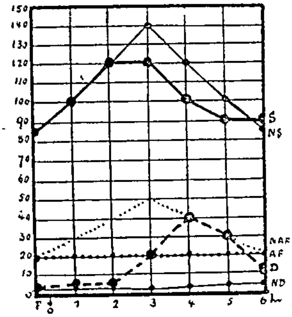

FIG. 6.—Two days after.

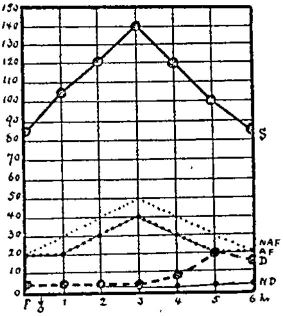

FIG. 7.—Four days after.

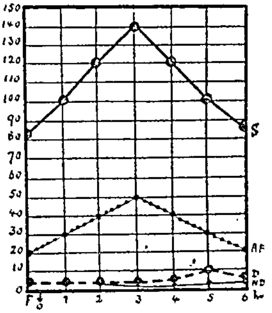

FIG. 8.—Seven days after.

Oats and cabbage in a rabbit after a hydrazine injection—

F, Fasting. O, Meal. S, Blood sugar. N S, Normal blood sugar. N A F, Normal amylolytic ferment × 10. A F, Amylolytic ferment × 10. D, Difference value. N D, Normal difference value.

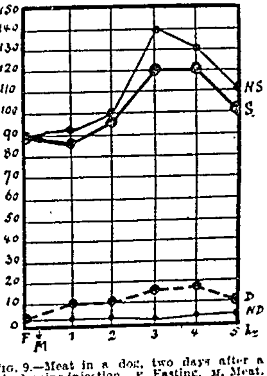

FIG. 9.—Meat in a dog, two days after a hydrazine injection. F, Fasting. M, Meat. N S, Normal blood sugar. S, Blood sugar. D, Difference value. N D, Normal difference value.

hours, after that the proportion of dextrin diminishes and the reducing sugar rapidly rises. Previous experiments[7] have proved that the mesenteric blood of rabbits fed on dextrinised (six-hour) oatmeal contains about 25 per cent. of dextrin compared with under 2 per cent. in oat-fed rabbits, but that the difference value of the peripheral blood in normal animals is the same on both diets. Since, therefore, the effect of hydrazine injections is to raise the difference value more when the mesenteric blood contains a higher proportion of dextrin it seems reasonable to infer that it is due to a diminished ability of the liver to retain dextrins coming to it from the intestine, and that they consequently leak into the peripheral blood. The slow and steady rise in the difference value, commencing more rapidly after a meal of dextrinised carbohydrate than after uncooked starch, and its persistence for several hours would be consistent with a gradual absorption from the alimentary tract, while the comparatively slight increase produced by a meat meal in the dog tends also to support this conclusion. Such an explanation would further account for the very delayed rise in the difference value sometimes met with in patients suffering from digestive disturbances, but not encountered in animals with presumably healthy digestive tracts.

Before coming to the conclusion definitely that the rise in the difference value of the blood following a meal in hepatic derangements is entirely and invariably due to the passage into the peripheral circulation of dextrins derived from the food, we must consider the effects following the injection of hydrazine in fasting animals. Small doses produce no characteristic change, but when larger injections are given the difference value of the blood rises, and shortly before death from a lethal dose it reaches a level far in excess of that encountered in any animal which has received only a sublethal dose, no matter what the nature of the diet. In spite of the high difference value of the blood the urine of such an animal gives a normal difference value and iodine coefficient, showing that in this case the hydrolysable carbohydrate of the blood does not pass through the kidneys. As the increase in the difference value occurs in a fasting animal, the substance giving rise to it cannot have come direct from the food. In a previous paper we showed that the substance giving rise to the high difference value in the fasting condition in pancreatic affections is probably derived from glycogen stored in the liver, and it seems likely that the increase in the difference value of the blood in a fasting animal the subject of a destructive lesion of the liver may have a similar source; but as the hydrolysable carbohydrate met with in pancreatic affections is dialysable and passes into the urine, whereas after a lethal dose of hydrazine it is non-dialysable and does not appear in the urine, it is evident that the circulating carbohydrate is not the same. The key to the different physical properties of the abnormal hydrolysable carbohydrates of the blood in the two conditions possibly lies in the absence of amylolytic ferment in the animals poisoned with hydrazine and its presence in excess in pancreatic lesions. In our experiments upon depancreatised dogs we found that the amylolytic ferment of the blood increased as the functional activity of the pancreas was interfered with by the excision of larger proportions of the gland, but that even when the whole organ had been removed the usual increase and decrease following a meal took place. From this we inferred that the ferment is not derived from the pancreas, but originates in some other tissue, which is under the control of the pancreas, however, probably through its internal secretion. The balance of evidence suggested that the liver is the most likely source of at least the bulk of the amylolytic ferment of the blood, and observations made in the course of these experiments tend to confirm this conclusion. In a fasting animal small doses of hydrazine produce no appreciable alteration in the ferment content of the blood, but as the amount of hydrazine injected is increased and more profound degenerative changes are produced in the liver the percentage of ferment steadily drops, so that eventually it disappears entirely some 24 hours before the animal succumbs to a fatal dose. If, then, as our previous experiments have suggested, the breaking down of stored glycogen in the liver is effected through the agency of an amylolytic ferment which passes into the circulation along with the products of its activity, the absence of such a ferment will probably be associated with a more or less complete failure of the usual hydrolytic processes, so that any glycogen set free by destructive changes in the hepatic parenchyma will appear in the blood as such, or in the form of some closely related non-dialysable compound, consequently the difference value of the blood will be raised but the iodine coefficient of the urine will be unaffected. When, on the other hand, the ferment is produced in increased amount it will break down glycogen through the usual dextrin stages to maltose and glucose, but more quickly and completely than normal; if the pancreas is still capable of exercising the controlling influence we have previously suggested it possesses, however, it may not be able to prevent the initial stages of the degradation of glycogen arising from the increased activity of the liver ferment, but it may interfere with their progress and cut them short to a considerable extent at the dextrin stage, so that dialysable substances of this nature pass into the circulation and, being excreted in the urine, raise the iodine coefficient in proportion to the increase in the difference value of the blood. If we apply a similar process of reasoning to the blood conditions produced by a meal in an animal which has previously received a sublethal dose of hydrazine it would appear likely that the rise in the difference value may be partly explained by changes in the liver similar to those following a lethal dose in a fasting animal, for on the second day after the injection the amylolytic ferment did not show the normal rise and fall corresponding to the sugar curve subsequent to the meal which had been met with in a normal animal on the same food; by the fourth day it rose a little, but more slowly and still not to the same maximum level as in health, but on the seventh day, when the animal had apparently recovered almost entirely from the effects of the drug, it followed a normal curve. Assuming, then, that a defective formation of amylolytic ferment is associated with retarded glycogen hydrolysis, the rise in the difference value, and especially that occurring two days after the injection and within three hours after the meal, might be due to dextrins derived from the liver store. That the rise in the earlier hours after the meal particularly is partly attributable to this cause is also suggested by the subnormal blood sugar, since, as we have already seen, one of the effects of a lethal dose of hydrazine is to depress the sugar content of the blood.

Summary.

(1) The difference value of the blood, estimated at hourly intervals before and after a test-meal, follows an abnormal course in conditions where the functions of the liver are interfered with.

(2) This "hepatic" curve differs markedly from the type of curve associated with pancreatic affections previously described, and bears no constant relation to the sugar content of the blood.

(3) The increase in the difference value of the blood following a meal in disease of the liver is chiefly due to hydrolysable carbohydrate, probably of a dextrin-like nature, absorbed from the alimentary tract, which is permitted to pass through the liver into the peripheral circulation instead of being retained as it is normally.

(4) Dextrin-like bodies derived from the glycogen store of the liver may be a contributory factor in the production of the raised difference value under certain circumstances.

(5) Destructive changes in the hepatic parenchyma are associated with a diminution of the amylolytic ferment content of the blood, thus tending to confirm the conclusion that the liver is the main source of that ferment.

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[7] THE LANCET, 1920, ii., 533.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CONDITION SUGGESTING LUPUS PERNIO IN A CHILD.[1]

BY F. PARKES WEBER, M.A., M.D., F.R.C.P. LOND.

THE patient, a boy aged 2½ years, shows a remarkable condition of his face, hands, and feet. This condition, in regard to the hands and feet, might almost be termed "acrodermatitis chronica mutilans."

There is extreme redness, sometimes associated with lividity, of the cheeks and chin. On the cheeks there are also fine hair-like superficial telangiectases. The skin of the cheeks is slightly scaly, and feels slightly thickened and infiltrated when one pinches it up. The edges of the pinnæ of the ears are very hyperæmic and also scaly, as in the subjects of so-called "chilblainy circulation" during winter. There is ozæna, with an offensive muco-purulent discharge from the nose, the bridge of which is very depressed. The arms and legs show red, sometimes livid, reticular mottling. The hands present a very mutilated appearance, especially the right hand, the tips of some of the fingers having been lost by gangrene or ulceration. The skin of the hands has sometimes been swollen and red or cyanotic, but lately has become less turgid and paler. None of the toes have been lost, but the feet have been swollen and red or livid, like the hands; in the sole of each foot there is an irregularly shaped, chronic ulcer. Of late the feet have been less swollen and paler, and the ulcers have become smaller.

Otherwise the child's condition does not appear bad. Mental development seems to be normal. There is occasional moderate fever, probably connected chiefly with the nasal disease. There is no evidence of disease in the thoracic or abdominal viscera, excepting that a Rontgen skiagram of the thorax (Dr. James Metcalfe, March, 1921) shows a chain of enlarged hilus glands on the right and some hilus thickening on the left side; also slight shadowing in the mediastinal area. There is no enlargement of the superficial lymphatic glands nor of the liver or spleen. The urine is free from albumin and sugar. Blood count (March, 1921): erythrocytes 4,300,000, and white cells 6100, to the cubic millimetre of blood; hæmoglobin 90 per cent. The differential count of white cells gave: lymphocytes, 38·3 per cent.; polymorphonuclear leucocytes, 61·7 per cent.; no eosinophiles or mast cells were seen during the count. There was no poikilocytosis or polychromatophilia, and no abnormal cells of any kind were found. Rontgen skiagrams of the hands show, besides more or less complete loss of some of the phalanges (owing to the tips of some of the fingers having been destroyed), small areas of imperfect calcification or of decalcification (such, as Dr. H. G. Adamson kindly tells me, have been noted in cases of lupus pernio). A microscopical ("biopsy") examination of a small piece removed (Feb. 28th, 1921) from the edge of the chronic ulcer on one foot showed the corium permeated with lymphocytes, plasma cells, and fibroblasts; no giant cells and no tubercle bacilli discovered.

The patient's parents are apparently quite healthy, and their other child is a bright, well-built, normal-looking boy, aged 8¼ years. The mother has had no other children and no miscarriages. The blood serum of both the patient and his mother gave a negative Wassermann reaction on two occasions. This was when the patient was under Dr. E. A. Cockayne's care, previously to Oct. 22nd, 1920, when he first came under my care. Dr. Cockayne also kindly informs me that an acid-fast bacillus was discovered in the nasal discharge. For the early history of the case I must refer to Dr. Cockayne's account.[2] When Dr. Cockayne showed the case (January, 1920) I agreed with him that it was one of a kind of sclerodactylia. Afterwards, in spite of the patient's early age, I thought that it was allied to lupus erythematosus, and Dr. Adamson suggested that it more nearly resembled lupus pernio. The symptoms in the left hand apparently commenced at 3 weeks of age. The offensive nasal discharge was first noticed at the age of 10 weeks, and has continued on and off since then. The child was breast-fed for the first seven weeks of life, and then brought up on various milk foods. There seems lately to have been a slight improvement under arsenical treatment. A thorough trial of mercurial treatment was made by Dr. Cockayne, but with no obvious benefit. Benzyl-benzoate, pituitary gland substance (by the mouth), and adrenalin (subcutaneous injections) have also been given, but without any striking good result. The child's weight on Oct. 25th, 1920, was 1 st. 3 lb. 1 oz.; and on March 14th, 1921, it was 1 st. 5 lb. 11 oz.

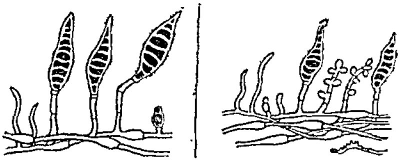
Dr. J. H. Sequeira has suggested that the case may be an exaggerated example of the toxic condition in very young children, described as "erythrœdema," by *Dr. H. Swift and Dr. A. J. Wood*, and previously spoken of by Dr. W. Snowball (Melbourne, Australia) as "raw-beef hands and feet."[3]

A NEW VARIETY OF RINGWORM.

BY ROBERT CRAIK, M.D. GLASG.

A HEALTHY girl, aged 21, had in October, 1916, a skin eruption on her thigh. It began a fortnight before as a small red point which was thought to be a bite, and was now about the size of a shilling and quite suggestive of ringworm. Fine scales showed plenty of mycelium. The source of infection remained unknown. Treatment was soon successful.

Seeded on wort agar fine particles gave good growths. At first grey and semi-transparent, after the sixth day, at room temperature, a white floury centre appeared and spread over most of the culture. In plate cultures this centre, under a low power, was a forest of upstanding, large, rough, multiseptate spindles; and the peripheral zone showed matted mycelium with a smooth surface on which were a few scattered small spindles and a few simple, attenuated, sterile, aerial hyphæ. Under a higher power (1/6 in.) a slide preparation showed pyriform swelling at the septa in several hyphæ; many large spindles were seen to have 6–9 septa and thick walls conspicuously rough on the outside. Repeated culture on several media at various temperatures gave no material change except in rate of growth.



The figure shows *M. audouini* var. *canis* on the right and the new variety on the left.

1. The pyriform swellings at the septa, even in young cultures, are characteristic of microsporon.

2. The floury centre contrasts with the downy centre of *M. audouini*. Microscopically total absence of acladium conidiophores explains this, for these are abundant on all media in microsporon of the child, and form the white down on its cultures. The multitudes of coarse spindles forming the floury centre are not present in microsporon of the child, which is remarkable for scarcity of little divided spindles.

3. In microsporon of the dog large spindles are fairly numerous, but its cultures also bear numerous acladium conidiophores—one is as important as the other. Under stress of circumstance the new organism has completely scrapped the primitive acladium conidiophore and staked its existence on multilocular spindles, which it produces in countless numbers.

The microsporons are usually regarded as one species, *M. audouini*, with two varieties—*M. audouini* var. *canis* and var. *equinum*. Obviously var. *canis* is only halfway between *M. audouini* and the new variety which deserves the name var. *macrosporium*. This plurality of conidial forms in microsporon, these elaborate multilocular spindles and the constantly hall-marked mycelium, are reminiscent of certain higher ascomycetes. Under pathogenic conditions such forms are never seen. It is to be inferred that such an organism, growing well on ordinary media at ordinary temperatures and passing through a parasitic phase in which development is much restricted, leads a double life in nature for which the conidial forms are designed.

Ealing, W.

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[1] The case was demonstrated at the Dermatological Section of the Royal Society of Medicine on April 21st, 1921; and also at the Section for the Study of Disease in Children, on April 22nd.

[2] Proc. Roy. Soc. Med., Section for the Study of Disease in Children, 1919-1920, xiii., pp. 50-52.

Cf. annotation on the subject in THE LANCET, 1921, i., 87.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

EXHIBITION OF CASES AND SPECIMENS.

A MEETING of this section of the Royal Society of Medicine was held on May 5th, Professor HENRY BRIGGS, the President, being in the chair.

Mr. HENRY CURTIS communicated a case of

Angioma of the Vagina Spontaneously Evacuated.

The patient was a single woman with intact septate hymen. Two years before being seen by Mr. Curtis the patient, then aged 32, for the first time became aware of a protrusion from the vagina, which remained for a month and then gradually receded. Six months after it had completely disappeared, but reappeared five months later, and thenceforward regularly a few days before each period. Its appearance was associated with aching pains across the back at the bottom of the spine. The protrusion was described as appearing in the form of two or three lobes, usually of a bright red colour, but rarely dark red. On two or three occasions it projected for half an inch or more, but receded when the patient lay down, and it disappeared with the period. On examination a narrow hymeneal orifice, obstructed and reduced in size by an obliquely placed bar-like septum was found. The urethral orifice was normal, and showed no trace of a caruncle. Nothing abnormal could be detected within the vagina or external to the hymen. A few months after her first visit the patient stated that at the end of a period, after some offensive discharge, a fleshy mass had been spontaneously expelled from the vagina. On examination no trace of a pedicle or of any nævoid structure could be detected. Mr. Curtis suggested that the septate condition of the hymen had strangulated the growth and helped to cut through the pedicle. Six months later there had been no local recurrence. The fleshy mass expelled was of a pinkish-red colour, resembling a blood-clot. The specimen, when imbedded in paraffin, measured 2·7 cm. by 0·9 cm.

Mr. Curtis considered that the growth could not have arisen from a caruncle, and that though its surface had been denuded of epithelium its origin from the vagina rather than from the cervix or body of the uterus was indicated by the absence of any glandular tissue and characteristic stroma. Dr. E. H. Shaw had made a report on the microscopic appearance of the tumour, in which he stated that it was most probably a nævus, and gave his reasons for suggesting that a nævoid hypertrophy of one of the rugæ of the vagina was the most likely origin.

Dr. H. RUSSELL ANDREWS showed a specimen of

Carcinoma of the Uterus originating in an Adenomyoma.

The patient, a single woman aged 52, was sent to him in November, 1920. The menstrual periods had stopped completely three years previously after almost continuous bleeding for a year. In July, 1920, there was slight bleeding, and in September four weeks' bleeding ending with a flooding, but no hæmorrhage during the last month. She was well-nourished and had not lost flesh; for five or six months she had felt tired and had had some pain in the right iliac fossa. Lately there had been "neuralgic pain" in the lower abdomen. Nothing abnormal was found on abdominal examination. On bimanual examination the cervix was found to be normal; the body of the uterus was considerably enlarged. Under an anæsthetic the body of the uterus was found to be as large as a three months pregnancy. Dr. Andrews thought that the condition was probably carcinoma of the body of the uterus with fibroids and proceeded to perform hysterectomy. The operation was difficult, as the rectum was adherent to the back of the uterus and the parametrium was dense and inelastic, making dissection difficult. The pelvic peritoneum was studied with minute nodules resembling miliary tubercles. Both tubes were considerably enlarged and contained caseous material. The patient made a good recovery and was in good health five months after the operation.

Naked-eye description of the uterus and tubes.—The uterus measures 12 × 9·5 × 9 cm. The peritoneum is covered with coarse, fibrous tags and has scattered over it raised, solid, pink nodules of various sizes, most of them very small. The wall is soft, except in the fundus and the right cornu where there are two rounded nodules, which on section show a pink and white whorled surface and a few small cystic spaces. The endometrium is smooth and thin. The cavity of the uterus is irregular and enlarged. Both tubes are thickened and contain white or grey caseous material.

Microscopical appearances.—The endometrium is atrophic and shows no malignant change. Sections taken from various parts of the uterine wall show carcinomatous change in an adenomyoma. A few small areas of unchanged adenomyoma can be found. The nodules seen in the peritoneum consist of tubular or solid columnar-celled carcinoma. Both Fallopian tubes are filled with the same growth.

Dr. Andrews said that cases of adenomyoma becoming carcinomatous with no carcinomatous change to be found in the endometrium were very rare. On the suggestion of Dr. HERBERT SPENCER the specimen was referred to the Pathological Committee.

Dr. ARTHUR E. GILES opened a discussion on

THE PROGNOSIS AND TREATMENT OF STERILITY.

He said that he proposed to touch on two of the general aspects of the subject, the prevalence of sterility and the responsibility of the male partner, and then to sketch out three types of sterility in women, viewed from the standpoint of prognosis and treatment: Inevitable and incurable sterility, functional sterility, and conditions that cause or favour sterility but allow of treatment. Data and statistics referred to were derived from his recent monograph.[1]

The Prevalence of Sterility.

Estimates of the proportion of infertile marriages varied with different authors and in different countries between 2 and 20 per cent.

Dr. Giles's own case papers showed that among 3128 married women who were seen *as patients* the percentage of sterile cases was 22·2. Many of these were still young; when he took into consideration only women who had reached the age of 40 the percentage dropped to 15·3. In a large proportion of cases the women sought advice on account of some disease of the reproductive organs; and it was therefore certain that among an equal number drawn from the community at large the proportion of sterile women would be notably less. In Dr. Giles's opinion the proportion of sterile marriages in this country was well below 15 per cent. Difficulties in comparing statistics given by various writers arose because still-births were taken into account by some but not by others, while miscarriages and extra-uterine pregnancies were mostly overlooked or ignored. A woman who has conceived should not be regarded as sterile, even though the ultimate product of conception were not a living child. Dr. Giles was disposed to regard as being nearest to the truth the estimate of Simpson, who found the proportion of unfruitful marriages to be 10·9 per cent. in village communities and 16·3 per cent. in families of the aristocracy. The ratio was probably higher in towns than in the country. In any case the proportion was undesirably and unnecessarily high, the actual figures being of only academic interest. The only way to obtain a really reliable estimate of the number of unproductive marriages would be to get the particulars of at least 1000 marriages in which the wife was under 35 and the husband under 40 at the time of marriage and married life had lasted at least 15 years. But even these figures would not tell us the proportion of sterile *women* in the community, because in a number of cases the husband would be at fault.

The Responsibility of the Male Partner.

Estimates varied widely as to the proportion of cases in which the husband is to blame. Court placed it at 10 per cent., Duncan at 12 per cent., Brothers at 20 per cent. (based on 250 cases), Engelmann at 25 per cent., Hühner at 41 per cent. (186 cases), and Noeggerath at 90 per cent.

Noeggerath was apparently obsessed by the idea that gonorrhœa was the one important factor in the causation of sterility, and both he and Engelmann include under man's responsibility all cases of disease in the female which are directly traceable to the male. Dr. Giles pointed out that while it was no doubt morally justifiable to blame the man who had made his wife sterile by giving her gonorrhœa, from the statistical point of view this led to fallacious results; for while the woman whose tubes have been destroyed by gonorrhœa is permanently sterile, the man who infected her may remain quite capable of procreating children. But the actual figures were less important than the recognition of the principle that in doubtful cases the responsibility of the wife should not be assumed, and that she should not be submitted to operative procedures before definite evidence that the husband is healthy has been obtained.

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[1] Sterility in Women. By Arthur E. Giles, M.D., &c. London: Henry Frowde, Hodder and Stoughton, Oxford University Press. 19.9.

Inevitable and Incurable Sterility in Women.

Cases of incurable sterility were easier to recognise if the conditions necessary for successful impregnation were borne in mind. These were, on the man's part, ability to deposit healthy seminal fluid in contact with the os externum cervicis; on the woman's part, (1) ability to receive this fluid in contact with the cervix; (2) such a healthy condition of uterus, tubes, and ovaries as would enable the spermatozoa to travel up to meet the ovum; (3) the production and discharge of healthy ova; and (4) such a healthy condition of the uterus as would enable it to harbour the fertilised ovum. Considering only the woman's side of the question, Dr. Giles said that under the first heading the conditions that caused sterility were absence of the vagina and want of communication between the vagina and the uterus.

Dr. Giles quoted cases in which the patient had stated that intercourse was normal and on examination it was found that the vagina ended blindly in a cul-de-sac. In such a case the woman had never menstruated. Sometimes the lower end of the vagina was patent, and to tell whether there was merely a septum across an otherwise developed vagina, or whether the upper part of the vagina was absent, a dissection of the parts might be necessary. The construction of an artificial vagina in the absence of a natural one Dr. Giles considered a hopeless procedure from the point of view of sterility and an unnecessary one from any point of view. The second condition for impregnation was unfulfilled in the absence or marked under-development of the uterus in congenital atresia of the tubes and in occlusion of the tubal channel by inflammation. Pyosalpinx, which was due to gonorrhœa in about 95 per cent. of cases and to tuberculosis or *B. coli* infection in the remaining 5 per cent., certainly caused incurable sterility. Whether a tube that had become occluded by mild salpingitis could be made functionable by surgical means was doubtful. The third condition for conception, the production by the ovary of healthy ova, was very difficult to estimate. Since age and the action of X rays lead to ovarian atrophy we might presume that when this atrophy has come about ovulation ceases. But there are other conditions that apparently interfere with normal ovulation; for example, anæmia, chronic drug taking, certain febrile and some nerve conditions, including pituitary disease. Obesity might come into this category; certainly obesity and sterility were related; but whether as cause and effect, or whether both were the results of some disturbed metabolic process, we did not know. Nor did we know what factors disturbed normal ovulation, nor what was the influence, if any, of internal secretions thereon. If any product of internal secretion did play a part, the ovarian secretion was probably a product of ovulation rather than a causal factor in the process. The fourth condition was not strictly one upon which successful impregnation depends, since failure therein led to miscarriage, not to sterility. But patients were concerned less with the possibilities of conception than with the chances of having a living child. From this point of view cases of uterine tuberculosis, carcinoma and sarcoma of the body of the uterus, and uterine fibrosis must be regarded as hopeless and incurable. In the last-named condition the absence of the mucosa rendered impossible what has been described as the "nidation of the ovum."

Functional Sterility.

When a childless woman who had been married for some years gave a history of regular menstruation without undue loss or unusual pain, and on examination the pelvic organs appeared to be normal, the case might be regarded as one of functional sterility. There were then several possibilities to be considered. In the first place, complete intercourse might not for various reasons have taken place; secondly, the husband might be suffering from azoöspermia or from a deficient vitality of spermatozoa; and thirdly, it might be an instance of "sexual incompatibility." There existed cases where a husband and wife had been unable to effect a conception together and yet each had been fertile with a different mate.

Conditions that Cause or Favour Sterility but Allow of Treatment.

Considering the conditions that prevent normal intercourse Dr. Giles said that atresia of the vaginal orifice was a curable condition; but the prognosis as regards sterility depended on the stage at which treatment was undertaken. If the products of menstruation had been accumulating in the closed vagina for some time secondary changes inimical to conception might be set up in the mucosa of the uterus, and later in the tubes. But if the patency of the vagina was established early there was a good prospect of fertility.

In stenosis of the vagina and rigidity of the hymen dilatation of the vaginal orifice under anæsthesia by means of the fingers or with graduated specula is often sufficient, while in more pronounced cases of stenosis the vaginal wall should be incised vertically, and the resulting wound sewn up transversely. The prognosis was very good. In treating dyspareunia and vaginismus the source of pain during intercourse should be sought; it was most frequently in the neighbourhood of the vaginal orifice and the remedy was usually simple. More deeply seated pain might be due to a prolapsed ovary or some inflammatory condition of the appendages and abdominal operation might be needed. Inflammatory disease would, of course, require treatment on its own account, apart from the question of sterility; but a prolapsed ovary could be sutured up, and if associated with retroversion, the fixing of the uterus in place was often sufficient to lift the ovary out of the painful zone. Vaginismus was more difficult to treat; but a good dilatation of the vaginal orifice under anæsthesia would often help matters. This was a condition in which suggestion might play a useful part. Once the mechanical difficulty was overcome the prognosis as regards sterility was good, as long as the patient had not waited until she was handicapped by the factor of age. Tumours encroaching on the vagina, such as an ovarian tumour or a uterine fibroid situated in the pelvis, might cause a mechanical obstacle to intercourse. The treatment was, of course, surgical, and the prognosis depended on the possibility of leaving at least one ovary and a not too much damaged uterus. Dr. Giles gave details of a case in which a patient became pregnant three months after a myomectomy and hysteropexy, and had a normal confinement. Prolapse and procidentia were usually the sequel of child-bearing, and thus caused secondary rather than primary sterility. Dr. Giles preferred operative to pessary treatment, and had many records of pregnancy and normal confinement following hysteropexy for prolapse and procidentia.

Among conditions that allow intercourse but interfere with ascent of the spermatozoa, Dr. Giles mentioned under-development of the uterus, in which condition the prognosis depended mainly on the patient's age, anteflexion of the uterus, and stenosis of the external os. If a proper dilatation of the cervical canal were carried out, especially if followed by the insertion of an intra-uterine stem for a fortnight, the chances of subsequent pregnancy were very good.

Retroversion of the uterus was another condition unfavourable to conception, but not definitely preventing it. In atresia of the os externum prognosis was hopeless without treatment and not very good with it. As a rule, such atresia was the result of inflammatory conditions, which were likely to have other bad effects on the uterus besides closing its orifice. Nevertheless, in Dr. Giles's opinion, an attempt should be made to restore the patency of the canal. Polypi, fibroid and mucous, and submucous fibroids were in nearly every case curable, and prognosis varied with the gravity of the operation required. In endometritis conception was prevented probably by the injurious effect of the discharge on the vitality of the spermatozoa; where conception occurred the mucosa was in some cases not healthy enough to harbour the oösperm and miscarriage followed. The prognosis after curetting was good. In cases of mild salpingitis without occlusion of the tubal ostia, conception could take place, and the sequel was probably often a tubal pregnancy. However, it might be presumed that uterine pregnancy also followed. When salpingitis with occlusion was present conception was impossible. Where there had not been extensive suppuration or damage to the tubes an artificial ostium could be made by making an incision in the tube near the ovary and oversewing the edges. The prognosis should be very guarded.

Dr. Giles then mentioned certain methods of treatment that have a place when the cause of sterility lies with the man, and, in conclusion, laid special emphasis on the importance of considering the possible responsibility of the husband; on the folly of promising a successful issue as the result of treatment, for though we might secure correct anatomical conditions, we could not control their physiological working. The idea that every sterile woman should be curetted ought to be discouraged; in fact, no operation on a woman should be undertaken before the condition of the husband had been ascertained.

Discussion.

The PRESIDENT congratulated Dr. Giles on his paper, and emphasised the importance of the subject from the personal and racial standpoint.

Dr. R. A. GIBBONS agreed with Dr. Giles on the difficulty of collecting reliable statistics. When Matthews Duncan made his estimates the so-called Malthusian methods were not so widely used. Incidentally, Dr. Gibbons reminded the section that Malthus had spoken of war, pestilence, and famine as natural checks to over-production, and his advice had been that those who could not afford to have children to refrain from marriage, not to use contraceptives. Nowadays it was common for a young married woman to ask her medical man for advice as to the best method of preventing conception. The test of relative sterility was the rapidity with which conception takes place.

Dr. Gibbons had made confidential inquiries in 120 marriages. In 100 cases preventive measures had been used at one time or another, and the number of children was well under 2 per marriage. A declining birth-rate was a disastrous thing for a nation. In Paris some time ago the birth-rate was 104 in the poorer quarters and only 34 in a rich quarter of the city; in London comparative figures had been given as 195 and 63 in poor and rich quarters. These and similar figures showed that women living in comfort and luxury did not want to be bothered with confinements. It had been said that the degree of sterility could be regarded as an index to the morals of a race. Congenital sterility was rare, but the number of children born in England was decreasing. It had been estimated that one-third of the pregnancies of several great cities abroad aborted. Dr. Gibbons quoted figures given by Douglas Wright and Amand Routh to show the high percentage of abortions and stillbirths. In his opinion it was the duty of medical men to point out to the public that physiological laws could not be broken with impunity. It had been observed that if the doe were withheld from the buck at œstral periods atrophy of the ovary took place. In this connexion Dr. Gibbons recalled a large number of patients who had used contraceptives in early married life, and subsequently had longed in vain for a child. This applied also to those who had decided after the first baby to have no more children, and had subsequently regretted their decision.

Dr. MALCOLM DONALDSON expressed his appreciation of Dr. Giles's paper. He was most interested in cases of sterile women who proved normal on physical examination, and their husbands also, and wished Dr. Giles had spent more time on the discussion of these cases. Dr. Donaldson had examined nine women on 22 occasions to see how far up the canal spermatozoa could be traced, without getting conclusive results. Mr. Kenneth Walker had coöperated with him by examining the husbands. Dr. Donaldson asked Dr. Giles whether he considered that estimation of the acidity of the cervical discharge would be useful, and whether he had tried passing oxygen through the uterus to see whether the tubes were patent. He had thought that everyone nowadays examined the husband before submitting the wife to operation, but he had recently found aspermia in a husband whose wife had given a history of two curettings.

Mr. KENNETH WALKER spoke of the results of examinations of men. The statistics of male sterility recorded varied from 18 to 50 per cent. His own series was not really sufficiently large to speak about, but he wanted to emphasise the fact that a large number of men were relatively sterile. Spermatozoa were sometimes scanty in number, and in other cases were of abnormal shapes and sizes, or had more than one head. Occasionally signs of old inflammatory trouble could be detected in the prostate, or crystals of cholesterin in the semen. In 60 per cent. of the cases, where no definite physical abnormality was found in the wife, he would be inclined to blame the husband, and in another 30 per cent. something could be found wrong, enough to say that the man was not quite normal. The genito-urinary surgeon knew very little about the function of the prostate and the seminal vesicles. If the vesicles alone were excised the male remained fertile, also if the prostate was excised, but in the absence of both prostate and vesicles he was sterile. This subject had been very thoroughly investigated in rats. Even if spermatozoa were found in the semen the fault might still lie in the accessory glands of the husband. Detailed and careful overhauling of the husband was needed before it could be assumed for certain that he was not at fault.

Dr. HERBERT SPENCER expressed his agreement with Dr. Giles's condemnation of the operation for an artificial vagina. He disagreed with him on the subject of fixation of the uterus for prolapse and considered that this operation ought to be expunged from the list of operations performed. He was not satisfied with the results of dilatation of a pinhole cervix, and had had better results with Pozzi's operation. He agreed as to the number of women who, after using contraceptives at first, later wanted a child and did not have one. Many of these had used quinine pessaries. Possibly a thickening of the mucous membrane or other alteration followed the use of these pessaries.

Professor LOUISA MCILROY regretted that Dr. Giles had in his interesting paper dwelt so much on pathological conditions. In her opinion we had almost exhausted the pathology of sterility, and the most interesting cases were those which showed no physical signs. The really important aspect of the subject was the consideration of the biological and physiological factors influencing fertility. Professor McIlroy rejoiced that Dr. Giles had not laid excessive emphasis on syphilis as a cause for repeated abortions, as this idea was, in her opinion, much overdone at present. A positive W.R. was not of much value in pregnancy. Certain work on the ductless glands had convinced Professor McIlroy that the ovum was a ductless gland; possibly other ductless glands might have an inhibitory effect on the ovum. In cows a persistent corpus luteum was supposed to prevent pregnancy, and farmers had attempted massage through the vagina. Professor McIlroy deplored the amount of time spent on attempting to cure sterility when contraceptives were so widely used. She said that the fact that neuroses were largely the result of the use of contraceptives should be made widely known, and also that in women the maternal passion was even stronger, though it might develop later, than sexual passion, and would ultimately demand satisfaction.

Dr. J. S. FAIRBAIRN congratulated Dr. Giles on having made the subject as little barren as possible. Professor Arthur Robinson had recently given the results of an investigation into sterility in animals. Among stallions 30 to 40 per cent. of the matings proved sterile. In ferrets a large percentage of fertilised ova became degenerate and did not proceed to normal development. The deduction to be drawn from these investigations was that abortion was often wrongly ascribed to endometritis, &c., in the human subject.

Reply.

In reply Dr. GILES endorsed Dr. Gibbons's remarks as to the great unhappiness resulting from deliberately childless marriages, and had always warned patients of this. He believed that quinine had a permanently bad effect. Those who waited to have a child for a convenient season often laid up trouble for themselves. On the question of fibroids he had come to the conclusion that these were not a cause but in a sense a consequence of sterility. Women who were subjected to sexual excitement with no physiological outlet appeared to have a tendency to develop fibroids. He would like the opinion to go forth from the section that the use of contraceptives was a bad thing. He agreed with Dr. Donaldson and Professor McIlroy that the apparently normal cases were the most difficult, but he had not said more on this subject because of our profound ignorance thereon. As to the reaction of the cervical secretion the normal reaction was of course alkaline. After endometritis it might become acid, and spermatozoa could not live in an acid medium. He had not tried the injection of oxygen for diagnostic purposes. He was interested in Mr. Kenneth Walker's remarks as to the large percentage of defect traceable to the male partner. It must be borne in mind that the success of treatment was difficult to estimate, since in some cases after many years conception occurred spontaneously. He had heard of one case where pregnancy was reported to have occurred after 20 years of sterility. Changes in habits were also a factor; too great frequency of intercourse might prevent conception, whereas rest and change often proved beneficial.

LIVERPOOL MEDICAL INSTITUTION.

THE last ordinary meeting of the session was held on April 28th, Dr. J. E. GEMMELL, the President, in the chair.

Dr. FRANK H. BARENDT read a note on the Antiquity of Syphilis.

Dr. ISAAC HARRIS read a paper on the

Value of the Electro-cardiograph in Diagnosis and Prognosis.

Whilst the electro-cardiograph had its limitations, there were, he said, a great number of affections of the myocardium which could only be diagnosed by means of it. The practical significance was indicated of an inverted T in the second lead, of abnormal Q.R.S. complexes and other cardiographic aberrations. A case of auricular fibrillation complicated by degeneration of the heart muscle was given as an illustration of the value of electro-cardiography as guide in treatment. Digitalis was to be avoided in such a case which could not be diagnosed without the cardiograph. In regard to the Adams-Stokes syndrome, Dr. Harris pointed out that in his experience heart-block, partial or complete, uncomplicated by degeneration of heart muscle, never gave rise to the syndrome, while whenever it appeared degeneration of the muscle was found. Hence Mackenzie's contention that the syndrome was due to a sudden transition from normal to ventricular rhythm was considered untenable. The prognosis of these cases was, as a matter of fact, much worse than that of ordinary block.

Dr. JOHN HAY said that it was essential to understand what an electro-cardiogram represented. It gave in graphic form the variation in electric potential associated with each systole of the heart and nothing more. If for any cause any portion of the heart beats abnormally there was a change in the curve. Fibrillation, flutter, extrasystoles, heart-block, relative hypertrophy of either ventricle all presented their characteristic electro-cardiogram because some portion of the heart was contracting in an abnormal manner. A recognition of these variations made diagnosis certain, and brought some accuracy into prognosis. Variations in the ventricular complex were significant of myocardial damage—i.e., arborisation-block. Data were being collected of patients presenting bizarre forms of Q.R.S. complex. At the Royal Infirmary cases of auricular fibrillation in which this unusual form of electro-cardiogram was present were being observed in regard to the course of the disease. In patients suffering from fibrillation there was a small percentage in whom ectopic beats occurred; the prognostic import of this abnormality was not yet settled, though it was considered to indicate a serious outlook.

Mr. FRANK JEANS read a note on the Uses and Limitations of the Cystoscope, with special reference to conditions in which the cystoscope was the sole method of diagnosis.

Mr. G. P. NEWBOLT described a case of Cyst of the Brain occurring in a youth aged 17.

Correction.—In a report of a paper read by Dr. Jane Walker before the London Association of the Medical Women's Federation on Tuberculosis in Children of School Age, which appeared in THE LANCET of April 23rd (p. 862), the following sentence occurs: "From 1914 to 1919 at the East Anglian Sanatorium 62 per cent. of the 807 children had T.B. in the sputum and of these 56·4 per cent. died." This should read: "From 1914 to 1919 at the East Anglian Sanatorium *68, or 8·4 per cent.*, had T.B. in the sputum and of these 35, or 56·4 per cent., died."

THE SOUTHERN UNIVERSITIES OF IRELAND AND THE ELECTIONS.—Our Dublin Correspondent writes: "It is symptomatic of the lack of interest shown by the Irish public in the elections to the Southern Ireland Parliament that, writing only a few days before the nominations, one cannot discern with any certainty what candidates are likely to present themselves in the two university constituencies. Dublin University and the National University are each entitled to elect four members. In regard to the former, three or four names have been mentioned in the press, of whom some at least could hardly be regarded as serious candidates if the election were a serious affair. Among them no medical name occurs, nor have I heard of any medical man contemplating candidature. In the National University it is understood that Professor John McNeill, the present member for the University, will be a candidate, but it is not known who his colleagues will be, or whether there will be a contest. The likelihood of a contest is much diminished by the decision of Mr. Dillon not to encourage Nationalists to seek election at present, but there may be some independent candidates."

Reviews and Notices of Books.

DISEASES OF THE SKIN.

By J. M. H. MACLEOD, M.D., F.R.C.P. London: H. K. Lewis and Co., Ltd. 1920. Pp. 1307. £3 10s.

Dr. MacLeod has dedicated his book to his colleagues in dermatology, and the appreciation with which it will surely be received by them should compensate him for the infinite pains he has bestowed upon it. We think it may rank among the most authoritative text-books of dermatology that has yet appeared in the English language; it is certainly the most readable English modern work. It is unlikely that the charm and the vivid word-pictures which characterise Darier's "Précis de Dermatologie" will ever be reproduced; this stands alone and hardly admits of comparison. But Dr. MacLeod's book resembles the Précis in this respect—while his descriptions are admirably succinct, they are not written in the text-book style which makes consecutive reading almost an impossibility. The author admits that he has been compelled to omit a good deal of the historical side of the subject, and to restrict the bibliographies; at the same time he has given us an excellent short account of the history of leprosy. The bibliographies, if not complete, are at any rate very useful, and, as a rule, the most important references to the literature of the various diseases are given. Curiously enough, soft sore is not dealt with except in the discussion on the diagnosis of genital chancres, but this is not a very serious omission.

No text-book can be quite up to date, but this volume can be little criticised in this respect. A few important sections might have been modernised. For example, in that dealing with oriental sore the treatment is said to be "unsatisfactory," and, while Low's method of applying an ointment of tartar emetic is given, administration of antimony by intravenous injection is not mentioned, although Ferra, of Brazil, used this method successfully several years ago. Again, in the description of xanthoma, which is included in the chapter on "Pseudo-neoplasms of the Skin," no reference is made to the work of Pinkus and Pick, and of Chauffard and his assistants on cholesterinæmia, nor is the fact mentioned that in xanthoma multiplex, at any rate, the amount of cholesterin in the blood is greatly in excess. Describing herpes zoster, Dr. MacLeod says: "Should suppuration occur, the neighbouring lymphatic glands generally become enlarged—a feature which has been noted even in cases in which the lesions were uncontaminated by pyogenic micro-organisms;" and Dr. Henry Head, in a classical article on zoster, states that "in most cases the contents of the clear vesicles become turbid. Possibly it is in connection with this pus formation that the lymphatic glands that drain the affected tract of skin are in the majority of cases enlarged." It is curious that these two accurate observers should apparently not have noticed that the adenitis associated with herpes is such an early symptom that it certainly sometimes, if not always, precedes the appearance of the eruption.

We are surprised, too, to find in the section on pruritus ani that Murray's view that the actual pruritus is due to infection of the skin with the *Streptococcus fæcalis*, whereas local disorders of the rectum, threadworms, &c., are only predisposing factors, is summarily dismissed as untenable, and treatment by vaccines as unreasonable. Bassler entirely supports Murray's work, and considers that autogenous vaccine treatment is the most valuable method in cases in which the pruritus persists after any local abnormality has been corrected by operation or otherwise, and, according to him, failure with vaccines is usually due to ignorance of the technique and of the dosage required. The last chapter is devoted to tropical diseases of the skin, upon which the author is a recognised authority, and it is to be noted that, in discussing the ætiology of pellagra, he seems rather to favour the views of Sambon, which, in the light of Boyd's work among Turkish prisoners of war, to which no reference is given, and of the observations of American workers on the subject, can hardly now be seriously considered.

But, in criticising such minor points as these, we do but emphasise the general excellence of Dr. MacLeod's work; his clinical and histological descriptions are clear, his discussions of the ætiology of diseases of doubtful causation are eminently fair, and the sections on treatment are unusually detailed and helpful. We were particularly impressed by the sections on syphilis and leprosy. The illustrations have been carefully selected, and are almost uniformly good, and we gather that the publishers have spared no pains to assist Dr. MacLeod in the great task which he has so successfully accomplished.

FEEBLENESS OF GROWTH AND CONGENITAL DWARFISM.

By MURK JANSEN, O.B.E. London: Henry Frowde and Hodder and Stoughton. 1921. Pp. 82. 12*s.* 6*d.*

Dr. Murk Jansen's writings are suggestive, even when we do not quite see our way to full agreement. In this book he has endeavoured to show the causative relations between several conditions, many of them ill-defined, and all of them obscure, and to link these together as examples of the injurious effects of noxious influences acting on the growing body under different circumstances and at different periods. In the first part, dealing with "feebleness of growth," the author points out that this result may follow from any injurious agent acting on the developing body, and that it is proportional, not only to the intensity of this agent, but to the rapidity of growth both of the individual and of his various parts. Dealing mainly with the skeleton, he goes into physiological details of bone formation, and shows how these functions may be affected. We do not think that there will be serious objection to the general "laws" which Dr. Jansen has laid down to explain the affections with which he is dealing, and which enable him to bring them together as a series in harmonious conjunction. The few paragraphs devoted to growth feebleness in the soft parts might prove of suggestive value to clinicians other than the orthopædic surgeon.

In the second part of this short treatise (Congenital Dwarfism), however, we must join issue with the author on some of his suppositions. We have no desire to lay stress on what are probably inaccurate dates in organogeny, for these are easily adjusted, but we cannot help feeling that the author is mistaken in his views when he refers the physical abnormalities in achondroplasia, anencephaly, &c., to the mechanical action of an imaginary small amnion. The amnion has always been liable to indictment for all sorts of offences, and amniotic bands are a regular refuge for many ætiologists in their search for causes. It cannot be denied that such bands occur, but they are rare, and any connexion with deformities has not, we believe, yet been shown. In many cases an "amniotic band" is credited with an effect it could not possibly produce, even if it were present, and the presence of an efficient cause of both the band and the abnormal development, such as uterine disease, is overlooked. Dr. Jansen, however, does not depend on such accessory structures in his ætiological conceptions, but postulates a shortness or want of growth of the amnion, probably only temporary in nature, to account for the interference with nutrition which he recognises in his cases. We do not believe that any practical human embryologist would admit for a moment that the embryonic amnion with which he is acquainted could, under any circumstances, oppose a barrier to the growing power of the embryo, or interfere with its blood-supply, in the way imagined by Dr. Jansen. It may be pointed out that one of the commonest and earliest signs of a pathological ovum or embryo is enlargement of the amniotic sac, and diminution in its size has not, so far as we know, been recorded. On the other hand, although it may not bear directly on the question, it is of interest to recall that in some of the lower vertebrates, the embryos develop under the pressure of a thick resistant zona, so that they are flattened out and deformed by being pressed down to one side; yet when the membrane gives way they are found unaffected and pursue their course, straight, but otherwise as before. We do not see the necessity for the postulate. Surely the noxious agents which can be held responsible for upsetting normal nutrition may be thought potent enough to cause local emphasis, if periodicity is granted, without calling in the aid of probably impossible factors.

Dr. Jansen works in his theories most ingeniously with the facts, but, as we consider that the explanations are based on a wrong assumption, we cannot allow our admiration to alter our belief that the embryological evidence is against him. Nevertheless, we have no hesitation in recommending all those who are interested in thoughtful contributions to the pathology of deformities to read this book. When they have finished it they will probably have a better grasp of the subject-matter of the work, whatever views they may hold about the cast-iron potentialities of the amnion.

RADIOGRAPHIC TECHNIQUE.

By T. THORNE BAKER, A.M.I.E.E. London: Constable and Co., Ltd. 1921. Pp. 196. 15*s.*

THIS is a small volume devoted almost entirely to the photographic side of radiography, and is evidently written by one who is thoroughly conversant with all the necessary photographic processes that go to make the perfect radiograph. The author's assertion that the photographic knowledge of many operators is lamentably deficient is probably true, and it is to meet this difficulty that the present volume is written. A preliminary chapter is given on the installation itself, to aid the user to locate faults, but the main object is to explain and instruct the operator in carrying out the dark-room processes, the proper management of intensifier screens, and such other details as help to make a radiograph pleasing to the eye as well as valuable in diagnosis. The two concluding chapters deal with industrial applications of radiography, which open up a new field to this branch of science.

MANSON'S TROPICAL DISEASES.

Seventh edition. Edited by PHILIP H. MANSON-BAHR, D.S.O., M.D. Camb., M.R.C.P. Lond. London: Cassell and Co. 1921. Pp. 960. 31*s.* 6*d.*

THE publication of the seventh edition of "Manson's Tropical Diseases," under the editorship of Dr. P. Manson-Bahr, provides a most comprehensive and up-to-date study of the vast field of tropical medicine. The subject-matter of the new edition is divided into eight sections and three appendices. Section I. embraces the wide range of tropical fevers and occupies approximately one-third of the whole volume.

The subject of malaria is elaborately dealt with. The whole question of quinine treatment and of the methods of administration is placed before the reader in a convincing and unbiassed manner. Due weight is given to quinine prophylaxis, but the importance attached thereto previous to the war appears to have been excessive. Certain points connected with the epidemiology and endemiology of malaria are emphasised as requiring further elucidation and explanation, in particular "the exemption of certain islands from malaria, even though in the midst of an archipelago of malaria-haunted islands"; also the existence of malaria-free districts surrounded by highly malarious country and abounding in Anophelinæ. It is suggested that hyper-parasitism or the destruction of the plasmodium by some other kind of parasite, such as the "black spores" described by Ross, may account for such anomalies. A lucid and interesting account is given of blackwater fever, the ætiology of which must still be regarded as unsettled. New work on trypanosomiasis is included. The question of the identity of *T. rhodesiense* and *T. brucei* is still much in dispute, as also is the question of the harbourage of *T. rhodesiense* by big game. This point is important as it has been raised in connexion with the desirability of game extermination, as a means of prophylaxis in addition to the clearing of areas infested by *Glossina palpalis* and *morsitans* in the regions respectively affected by *T. gambiense* and *T. rhodesiense*. It is curious that antimony tartrate and atoxyl, though advocated in the treatment of *T. gambiense* infections, are relatively powerless against *T. rhodesiense*. The forms of leishmaniasis, kala-azar, oriental sore, and *L. americana* are fully described with coloured drawings of the parasites concerned. Remarkable results appear to have followed the adoption of intravenous antimony tartrate treatment.

In connexion with yellow fever the recent work of Noguchi and the discovery of the leptospira conveyed by *Stegomyia fasciata* promises to prove of the highest importance. Recent researches into Rocky Mountain fever and typhus fever—in the case of the former by Ricketts, and the latter by Arkwright, Bacot, and others—are described, and lend much hope to the discovery of the real causes. In Rocky Mountain or spotted fever the so-called Rickettsia bodies are the supposed virus of the disease, conveyed by and found in the tick *Dermacentor venustus*. In typhus fever and trench fever similar bodies are met with; and termed *Rickettsia prowazekii* they are found in lice infected with typhus blood. A full account is given of relapsing fever. The chief transmitting agent of the North African and European forms of the disease, from the most recent evidence, is in all probability the louse (*Pediculus humanus*), whereas in Central Africa and Persia the ticks *Ornithodorus moubata* and *Argas persicus* are concerned as carriers. Considerable space is devoted to the subjects of plague, Malta fever, and the enteric group of fevers. The Marris atropine test receives a full description, and is noted as "the most important contribution made during the war to the diagnosis of enteric fevers." Section I. concludes with a valuable summary of the diagnosis of fevers in the tropics.

Under Section II. are included "General Diseases of Undetermined Nature"—i.e., beri-beri, epidemic dropsy (war œdema), pellagra, and scurvy in the tropics. The food-deficiency and other ætiological theories are fully discussed. Under Section III. are described Abdominal Diseases. A graphic account of cholera and its treatment by Rogers's intravenous injection of hypertonic saline solution combined with injections of atropine, and also by Cox's method of slow intravenous injections of isotonic saline fluid is given. The dysenteries, both bacillary and amœbic, are considered in a full and admirable account. Under Section IV. are described the infective granulomatous diseases, including, in particular, leprosy and yaws, both of which are graphically dealt with. In the treatment of leprosy prominence is given to the value of chaulmoogra oil, of the gynocardate and morrhuate of soda advocated by Rogers and Muir, while the more recent soya bean oil, which is still on trial, is noticed. Section V. includes the important group of animal parasites and associated diseases. In the treatment of schistosome infestations the value of intravenous injections of tartar emetic is mentioned as having been placed on a sound basis by Christopherson. The important subject of filariasis is even more comprehensively dealt with than in the previous edition. The succeeding chapters of the helminthological section deal fully with fluke parasites of the lung and liver in paragonimiasis and clonorchiasis and the many forms of infection by intestinal parasites, in particular ankylostomiasis. Section VI. is devoted to diseases due to poisons, including the various forms of snake-bite, and an account is given of the vomiting sickness of Jamaica, the cause of which, long obscure, has been clearly determined by the able work of Harold Scott to be due to ackee poisoning. In the two concluding sections are described tropical skin diseases and local diseases of uncertain nature, such as craw-craw, chappa, climatic bubo, goundou, and ainhum.

The value of the new edition is much enhanced by the important and practical information contained in the three appendices occupying the last 200 pages under the headings of Medical Protozoology, largely the work of Dobell; Medical Helminthology, Entomology, &c., and a very complete account of laboratory methods as applied to clinical medicine in the tropics. The last will undoubtedly prove of the greatest use not only to those engaged in practice in the tropics and in the Colonial Medical Service, but also to the student of tropical medicine at home.

The outstanding merits of this edition, retaining, as it does, the lucidity of expression and charm of style of previous editions, will ensure it a large circle of readers both at home and in the tropics. The type and general arrangement of the various subjects are excellent, and the numerous coloured plates are beautifully executed.

AIDS TO DENTAL SURGERY.

Third Edition. By DOUGLAS GABELL. London: Baillière, Tindall, and Cox. 1921. Pp. 192. 3*s.* 6*d.*

THE student will find this little book of some value if he will use it as an aid to revising his work and not rely upon it for the purpose of cramming for examination. The author might have added to the usefulness of the book by bringing it thoroughly up to date and extending certain sections—for example, that dealing with the relation of dental sepsis to other pathological problems. In the introduction attention is directed to the necessity of ascertaining all the facts of a case by systematic examination, and a clear account is given of the way in which this examination should be conducted. There is a useful section on the hygiene and care of the teeth and mouth. Hæmophilia is not mentioned—probably an oversight.

AN ATLAS OF NORMAL LABOUR.

With an Appendix showing Sylvester's and Schultze's Methods of Artificial Respiration. By G. DRUMMOND ROBINSON, M.D., B.S. Lond., F.R.C.P., Obstetric Physician to the Westminster and West London Hospitals. London: William Heinemann, Ltd. 1921. Pp. 104. 25*s.*

THIS Atlas consists of a number of photographs made from kinematograph films demonstrating the processes of normal labour in the living subject, and from drawings which the author had prepared for teaching purposes. It is obvious that it is only possible to employ the kinematograph to a very limited extent in showing the various processes of parturition, and that such photographs can only be obtained of the latter part of the second stage and of some part of the third stage of labour. The great majority of the plates, therefore, represent photographs of drawings of what the author, no doubt quite correctly, conceives to be taking place during labour. The actual kinematographic photographs of the stages of labour which it is possible to represent in this way are very interesting and valuable, but the question must arise as to whether the results are worth the trouble and expense entailed. Nothing can be photographed in a case of labour which cannot be equally well seen, and observation at the bedside must always be much more valuable than any series of drawings or photographs. The Atlas is, however, an interesting production, obviously compiled only at the expense of much care and trouble.

THE EXTRA PHARMACOPŒIA.

Sixteenth edition. Vol. II. By W. H. MARTINDALE, Ph.D., and W. WYNN WESTCOTT, M.B., D.P.H. London: H. K. Lewis and Co. 1921. Pp. 688. 17*s.* 6*d.*

THE second volume of Martindale and Westcott follows rapidly on the first; it has grown largely in bulk and usefulness since the last edition five years ago. The scope of the volume is difficult to express in a few words. Primarily it consists of analytical addenda to the materia medica described in the first volume. These are almost indispensable to anyone who dispenses his own physic, but they should be appreciated, too, by all who desire to prescribe quickly, pleasantly, and effectively. A knowledge of the manners and habits of drugs greatly enhances the range of intelligent medicamentation. In this section appear in the present edition interesting notes on aspirin, cinchona, and digitalis. Around this primary nucleus has grown up layer by layer a number of sections on animal organotherapy, on physiological methods of assay, on radio-active substances, and on the antiseptic power of disinfectants. The information may be available elsewhere but only by stress and toil; here it is accessible, precise, and properly documented. Notes on the analysis of water, milk, butter, and the like, make the book welcome in any laboratory, large or small. Bacteriological and clinical notes on special diseases appeal to practitioners of medicine whose information on, say, leprosy or leishmaniasis is not quite recent and methodical. There is a large but not quite exhaustive list of proprietary medicines and a glossary of foreign words used in pharmacy, which contains the only piece of careless proof-reading in the whole work. An index is now added to include both volumes of the Extra Pharmacopœia. It is not easy to commend this book to anyone unacquainted with it without appearing to exaggerate. Martindale and Westcott picks up many of the fringes of medicine and makes them neat and tidy. Lacking it, the practitioner can hardly feel professionally quite well-groomed. The price has risen from 7*s.* to 17*s.* 6*d.*, but value is offered for the extra half-guinea.

JOURNALS.

Journal of Laryngology and Otology. March and April, 1921. Vol. XXXVI., Nos. 3 and 4.—In the March number Professor Ross Hall Skillern, of Philadelphia, discusses the operative treatment of ethmoidal suppuration. He finds that patients are frequently made worse by indiscriminate ablation of ethmoidal cells, and that in most cases the best results are to be obtained by preliminary removal of the middle turbinal, and then, after healing has occurred, by carefully following the pus to its source; good stereoscopic skiagraphs are of material assistance.—Mr. James Harper describes a method of partial thyroidectomy by which the gland is shelled out of its capsule with the finger; he claims that there is no shock nor risk of post-operative hæmorrhage or of injury to the recurrent nerve, and that it is never necessary to ligature an artery.—Mr. Andrew Campbell describes Bezold's method of treating chronic suppuration of the middle ear by intratympanic syringing, inflation, drying, and the insufflation of boric acid.——The April number contains a description of four cases of thrombosis of the cavernous sinus, by Dr. Ritchie Rodger.—Mr. Layton reports a death after tonsillectomy in a man aged 32 years; he had had the fauces anæsthetised two and a half hours before by injection of novocaine and adrenalin, and the pillars were sutured at the close of the operation on account of persistent oozing, but bleeding recurred and was finally arrested about 11 P.M., and the patient died at 4.30 on the following morning; it is doubtful whether death was due entirely to hæmorrhage as there was some post-mortem evidence of pulmonary embolism.—Dr. J. N. Roy, of Montreal, describes the successful removal by œsophagotomy of a foreign body which had remained in the gullet for nearly 14 months.—Mr. W. M. Mollison contributes a study of the tonsil as a focus of infection in chronic arthritis.

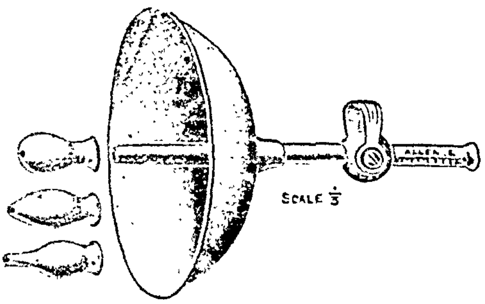
Archives of Radiology and Electrology (January, February, and March).—Recent issues present many subjects of interest. In the January number Dr. A. E. Barclay points out a danger attending the use of the Coolidge tube for screen examinations, while some studies in gastro-intestinal diagnosis are contributed by Dr. R. Knox.—Sir James Cantlie describes an X ray motor ambulance for use at home and in tropical countries that is likely to be of great value. The question of pastilles and their colour measurement is dealt with by Messrs. Donnithorne and Baker, and emphasises the conditions in which these should be used if reliable results are to be obtained.——In the February number Dr. Gosta Forssell, of Stockholm, contributes a valuable paper on the Differential Diagnosis of Tuberculosis in Bones and Joints, which is admirably illustrated with a series of splendid radiographs.—A sketch of the History of Electrotherapy by Dr. Hector A. Colwell is evidence of much painstaking research, and is accompanied by many illustrations of persons, appliances, and methods that have made the history of this interesting subject.——Dr. Forssell's paper on Tuberculosis is continued in the March number, and Dr. J. Neil Leitch refers to some uses of the infrequently interrupted faradic current, which seems to have a special value in cases of incontinence.—The principle of the Bucky Diaphragm for radiography of the thicker parts of the body is described by Dr. H. E. Potter. —The usual sections are devoted to reviews, notes, and abstracts.

New Inventions.

URETHRO-VESICAL MEDICATION.

(1) *An Improved Irrigator Handle.*

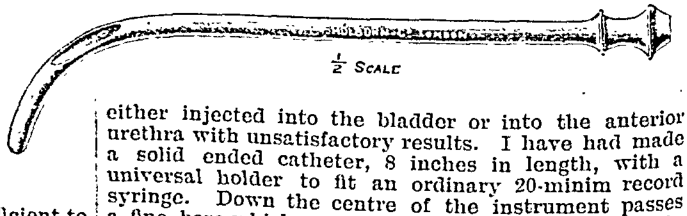
THE advantage of the irrigator handle herewith illustrated is that by means of a special stopcock inserted in the stem the flow can be regulated from a drop to a force sufficient to allow the fluid to enter the bladder, only one hand being required for this manipulation. It thus does away with the necessity for any clip upon the rubber tubing. A dome 4½ in. in diameter, sufficient to protect from splashing, is soldered on to the stem at a distance from the rubber tubing, to permit of the instrument being supported on the palm of the hand and the flow controlled by compressing the rubber tubing between the thumb and index finger, as some operators desire, yet the stream can immediately be shut off by closing the stopcock with the thumb of the same hand. The stem projects from the dome a distance sufficient to give a good view to the operator when the nozzle is inserted. The nozzles, metal or rubber, are made in three sizes to suit a small, medium, or large meatus. They block the meatus but do not enter the urethra. They are easily sterilised and extremely durable.



The handle is made by Messrs. Allen and Hanburys, Ltd., 48, Wigmore-street, London, W.

(2) *A New Syringe for the Treatment of the Posterior Urethra.*

In the treatment of chronic posterior urethritis or the sexual neuroses one often wishes to instil a medicament into the posterior urethra, and Ultzmann's syringe is used for that purpose. All operators are aware of the difficulty of localising the instillation to the spot desired, and unless considerable skill is used the fluid is either injected into the bladder or into the anterior urethra with unsatisfactory results. I have had made a solid ended catheter, 8 inches in length, with a universal holder to fit an ordinary 20-minim record syringe. Down the centre of the instrument passes a fine bore which opens into a hollow notch, 1 inch in length, placed on the convex side of the catheter curve. When the instrument is in situ the verumontanum projects into this concavity and so can be treated; on slightly withdrawing the instrument the remainder of the posterior urethra can be dealt with.



The instrument is made by the Holborn Surgical Instrument Co., Ltd., Thavies Inn, London, E.C.

Harley-street, W. M. W. BROWDY, M.B., Ch.B.

THE LANCET.

LONDON: SATURDAY, MAY 14, 1921.

The Teeth of the Nation.

The Dentists Bill was introduced by Sir ALFRED MOND on Thursday, May 5th, and read for the first time. Although it is a mere truism to say that to have sound teeth is one of the conditions of good health, few of the public, we imagine, realise how accurately the quality of the teeth is an index of the soundness of general hygienic upbringing, and how badly, judged by this criterion, the British nation would emerge from the ordeal. It cannot be claimed in mitigation that we have been kept in ignorance of this alarming state of affairs, for has not Sir GEORGE NEWMAN repeatedly warned us in his illuminating reports to the Board of Education, and with all the weight and authority of statistical evidence out of the mouths of some 8,000,000 school children? And did not the medical examination of recruits for our recent armies also prove beyond any possible question that as far as the teeth are concerned we are a sick nation? The Ministry of Health undoubtedly realises its responsibilities in this regard. And this is well, for in no department of medicine is quackery more rife than in that which is concerned with the care of the teeth. But the problem of the prevention of dental caries will not be solved by setting up a State Board of Dentistry or by the maintenance of a register, be the latter never so carefully kept. Both these innovations will help in setting our house in order, but public coöperation is needed.

With the best will in the world, and without considerations of expense, the care of the nation's teeth is a large task. There are not enough dentists in the United Kingdom to repair all the damage which has been inflicted by neglect, so that the interests of the public will certainly not be served by any drastic measures which deprive a large section of the practising dentists of their chance to pursue their calling. The views of the Dentists' Committee and of the British Dental Association on the rights of various practitioners to be included in the registry, should the new Bill be placed on the statutes, will be heard with respect. But these bodies must inspire the sense of Parliament to protect the public from fraudulent practice—that must be the main objective. Good teeth do not depend solely on the skill of the dental practitioner; his services are mainly essential to make amends for failure in prophylaxis. Well-made and well-mineralised teeth should not stand in need of the benefit of dentistry, at any rate until after middle age. What we want to know is what are the conditions on which the development of healthy teeth depend. We are just beginning to understand some of the essential factors on which nutrition is based, and sound general nutrition is one, perhaps it is the chief, condition on which the development of good teeth depends. We recognise, indeed, that in the main the problem is one of dietetics, not only in the child during the whole of the time the teeth are forming in the jaws, but also in the mother before the child is born. While not accepting without reservation the theory of the school which explains both carious teeth and the larger problem of rickets on the grounds of vitamin starvation, it must be admitted that deprivation of accessory food factors seems established as one of the causes which lead to malnutrition and defective teeth. It would be fatal to allow an attractive theory to obscure the clearness of our judgment, or to tempt us to stake too much on a speculative hypothesis. The problem of rickets or that of carious teeth is not going to be solved by the distribution of cod-liver oil, the prevention of food adulteration, or a drop in food prices. We must promote the development of good teeth in the light of knowledge we already possess. The difficulty is to disseminate this information sufficiently widely in the quarters where ignorance prevails.

Much can be done by attending not only to the diet but also the general hygienic management of the mother during pregnancy and of the child after. Breast-feeding is clearly of first-rate importance, while, after weaning, the diet must be adjusted to physiological requirements as regards quantity no less than quality, and as regards general balance no less than as regards the special balance of the constituents. The development of the jaws by adequate mastication appears no less valuable than nose-breathing, while the toilet of the nose is just as necessary as the hygiene of the mouth. Among indirect causes of dental caries must be included general infection, such as measles, unhealthy tonsils, and oral sepsis, all of which tend to produce either a condition of general acidosis or some local condition of acidity which demineralises the teeth. Well-formed and well-mineralised teeth are not easily affected by passing conditions of acidity, either of the mouth or of the tissue juices; but when acidity is chronic or long-continued the teeth are liable to suffer, especially if badly made. Enlightened public opinion and the spread of knowledge are the only reliable prophylactics against risks arising from so many sources. It would be disastrous to rely only on skilled and registered dentistry to save us from the Nemesis of mismanaged infancy, and every scientific dentist knows this to be so. Welfare centres, health visitors, and our national societies for the prevention of infant mortality have done, and are doing, stalwart service in instructing the mothers of the rising generation in some of the elementary laws of dental prophylaxis. Much, however, still remains to be done. The Dentists Bill may be felt to press hardly on the present registered constituency, who have all our sympathies; but inasmuch as it eliminates quackery it will promote public effort.

Aphasia.

The study of thought and speech presents an interesting example of the manner in which knowledge grows. Different investigators approaching a problem along different routes observe facts, devise terminologies, and evolve theories to explain the phenomena. These researches appear for some time to have no tangible connexion or relation with one another until a bridge builder appears who tries to throw an arch from one to the other. Under the new stress a buttress of carefully fashioned theory may collapse and require rebuilding in the light of the newly won experience, or the whole may stand and the world be in possession of a new, illuminating conception. For 2000 years philosophers have reasoned about the phenomena of thought and speech; analysis and introspection yielded various explanations of the relationship between mind and body. Then came the period of the experimental method; on the one hand the phenomena of mind were studied by the psychologists, and on the other the anatomists and physiologists began building up a sure knowledge of the organ of mind. Medical men being necessarily observers of what amount to destructive experimental lesions carried out by Nature, it is natural that bridge-builders should be found working in their ranks.

Dr. Henry Head, in his recent papers,[1] has reopened the whole question of aphasia. He traces the modern development of our knowledge from Gall, with his six varieties of memory located in the frontal lobes, to the schematic explanations of Charlton Bastian and Wernicke and the attempt to make theory fit facts more closely, which was made by Marie. Dr. Head has devised a new method of examination of the aphasic, based upon the principle that the patient's power of response must be tested by a series of observations in which the same task occurs on two or more occasions. He claims that the observations made indicate that disorders in the use of language cannot be classed under the category of isolated affections of speaking, reading, or writing, nor can they be explained as due to the destruction of visual, auditory, or motor images. What is affected is essentially the ability to grasp the significance of symbols of all kinds, the power of "symbolic thinking and expression," so that even in "motor" aphasia, not only external speech, but certain aspects of internal speech are affected. As a result of lesions in different parts of the brain this power becomes dissociated in a manner analogous to the effect produced on sensation by lesions of the cerebral cortex; and Dr. Head distinguishes four main varieties of dissociation resulting in verbal, nominal, syntactical, and semantic aphasia. In verbal and syntactical aphasia it is the idea of the structure of the word which principally suffers both in external and internal speech; there is a defective conception of the structure and the rhythmic balance of the symbol. In nominal and semantic aphasia the ultimate significance, the full range of association, of the word is impaired or lost, so that the word cannot be used perfectly as a language symbol. He maintains that we have been led astray by Bastian and others, who based their work upon the theory that we think in words, while his results substantiate the teaching of Hughlings Jackson that it is the power to form propositions which is affected, and the more nearly a symbolic action approximates to a proposition the greater the difficulty it presents. A priori terms, such as "motor" or "sensory" aphasia, "alexia," and "agraphia" do not correspond to any actual discoverable functional categories; they should be abandoned, as should be all attempts to find any localisation for them in the brain.

At present Dr. Head has not indicated any localisation of the lesions producing his four varieties, and he modestly states that his results "are of no direct practical value to the physician"; but it has long been clear that our theories, based upon hypothetical "centres" for memories of images have been inadequate to explain the actual symptomatology of any patient, and destructive criticism based upon experimental evidence in conjunction with a new classification, running across the lines of the older theories, constitutes an important step. It means that we are enabled to study our patients from a new angle. If experience of his methods in other hands leads to confirmation of his results, and still more if he discovers to us a localisation corresponding to the new varieties of aphasia, Dr. Head will have placed a valuable diagnostic weapon in our hands. Until then we must rely upon the older methods which, although possibly based upon an incorrect psychological foundation, have nevertheless many clinical successes to their credit.

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Sterility and Abortion.

In his Sir John Struthers lecture[1] Professor Arthur Robinson offers a serious challenge to the current belief that sterility and prenatal death, and abortion resulting therefrom, are due to disease or abnormal environment of either parent. Defining prenatal death as the death of ripe extruded ova, or of the zygotes formed by the union of such ova with spermatozoa before the termination of the normal period of gestation, he proceeds to offer evidence that this is a frequent and regular occurrence in certain groups of healthy mammals under ordinary conditions. In order to prove whether the defect leading to death is germinal or parental in origin in any species, the ovum extrusion-rate and the actual birth-rate must first be ascertained in a satisfactory number of cases; the period, before or after fertilisation, at which prenatal death occurs—and if the latter, whether before or after the attachment of the zygote to the uterine mucosa—is also important. Professor Robinson's investigations on horses and ferrets, two very different groups of mammals, provide much, though not all, the data.

The records of the matings of 390 Clydesdale stallions with 28,241 mares, and of 43 thoroughbred stallions with 3640 mares were placed at his disposal. The mare ovulates at every heat period, whether inseminated or not. Since none of the mares died or were killed, the ovaries and genital canals could not be examined, and in these respects the history is incomplete. The average prenatal mortality of the Clydesdales during a period of six years worked out at 48 per cent.; the thoroughbreds during five years gave a prenatal mortality of 58 per cent. Of the ferrets, 165 only were available, but since the ovum production-rate, as calculated by the number of corpora lutea present in the ovaries, amounted to 9·95 per animal at each breeding period, these could be regarded as representing over 1600 ova. Ferrets ovulate only after insemination, and, according to Professor Robinson, not till after the spermatozoa have entered the caudal third of the oviduct. Other anatomical characteristics of the ferret, as well as the conveniently small size of its ovary for purposes of serial section, make it an excellent subject for this investigation. The genital apparatus of 165 animals, killed at intervals after insemination varying from 18 hours to 42 days, the usual period of gestation, yielded a considerable amount of material for detailed microscopical examination, the results of which have been tabulated by Professor ROBINSON.

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[1] Disorders of Symbolic Thinking and Expression, British Journal of Psychology (General Section), vol. xi., Part II. Aphasia and Kindred Disorders of Speech, Brain, vol. xliii., Part II. Aphasia: An Historical Review, Brain, vol. xliii., Part IV.

[1] Edinburgh Medical Journal, xxvi., Nos. 3 and 4, March and April, 1921.

The prenatal death-rate of the extruded ova works out at 24·16 per cent., but since the animals were killed at various periods of gestation, and not at the end, the figure is not comparable with the horse figures. Professor ROBINSON suggests that some of the ova and zygotes which appeared normal in the first week or two of gestation would doubtless have shown signs of degeneration had the killing of the mothers been delayed. These and other considerations lead Professor ROBINSON to place the normal prenatal death-rate at not more than 39 per cent.; but, as he says, the exact percentage is unimportant. His main point is that in ferrets, as in horses, the prenatal death-rate in healthy animals in a normal environment is high and variable. In general support of the contention that this is probably true for other animals he adduces the observations of J. P. HILL on marsupials, of J. HAMMOND on swine, and of C. R. STOCKARD and G. N. PAPANICOLAOU on guinea-pigs, though he admits that the evidence is not conclusive.

Professor ROBINSON makes other interesting deductions, positive and negative, from his material. From breeding experiments alone, unless carried out on a very extensive scale, he considers that it would not be possible to say that any stallion, or probably any other male animal, was impotent. One thoroughbred stallion was infertile with 51 out of 52 mares with which he was mated, a second with 93 out of 103 mares, and one Clydesdale stallion with 96 out of 104 mares. The horse data give no help as to where, when, and how death takes place, but the evidence offered by the ferrets appears again to be confirmed by the work of HAMMOND on swine and rabbits, G. W. CORNER on swine, HILL on marsupials, and A. W. MEYER on intra-uterine absorption of ova, which show that the cause of prenatal death cannot in some cases be attributed to uterine disease. Professor ROBINSON finds that in ferrets extruded ova die in the peritoneal cavity, into which they have escaped; in the peri-ovarial sac, from which they have failed to escape into the oviduct; in the oviducts; and in the uterine cornua. They die when still ova, either lost in the peritoneal cavity or because they fail to unite with the spermatozoa present. As zygotes they die in the morula and in the blastula stage, after attachment to the decidua and after differentiation into embryo and appendages. The majority of the extruded ova become zygotes, and of these the majority which die in the prenatal period die after they have become attached to the decidua. How they die is more difficult to decide, but it is always apparently by an alteration of their structure, ending in disintegration. "The death is not due to inflammation or to micro-organismal attack, but apparently simply to an incapability to live and develop properly under conditions which are quite favourable to immediately adjacent zygotes."

After discussing and dismissing other possible factors, Professor ROBINSON concludes that the cause of prenatal death is the constitution of the gametes and zygotes, and further, that it is a structural peculiarity of the gametes which is the cause of sexual incompatibility. He goes still further. To him his material suggests that a large amount of the prenatal death which occurs in mammals is normal, that it is not dependent upon disease of the parents, detrimental environment, insufficient nutrition, or disease of the gametes, but is in a sense a side issue of the process which gives rise to the variations which appear so universally in all mammals and probably in all living beings. Again, if prenatal death is admitted to be constant and normal, Professor ROBINSON points out the obvious corollary that in some animals abortion also must be normal. In mammals which produce multiple young at birth, any dead zygotes are removed by absorption in all but the very latest stage, for obvious reasons. In animals which produce only one young after a long gestation period abortion immediately following death of the zygote, is an economical and necessary arrangement, as the uterine mucosa quickly regains a condition favourable to a new gestation. Thus the changes in the decidua usually regarded as degenerative, and as the possible cause of the death of the zygote may be the result thereof, and should in this case be regarded as regressive changes adapted to bring about as soon as possible a normal pro-œstral condition of the uterine mucosa. If Professor ROBINSON is right that a considerable number of abortions are not only normal but necessary, and adapted to prevent diminution of the birth-rate, his further contention that the condition of the uterine mucosa associated with them is not degenerative or diseased and that treatment directed thereto is unnecessary, if not detrimental, is justified. The discussion on sterility, its causation and treatment, reported in our present issue, would certainly appear to show that the practical clinical experience of obstetricians at least does not conflict with his experimental findings.

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THE PROBLEM OF SLUM AREAS.

THE slum area of Brady-street, Bethnal Green, was the subject of a recent question in the House of Commons. The Minister of Health was asked whether the London County Council had presented to his Department a plan for dealing with the area, whether the plan had been approved or rejected, and when the Council had been informed of the decision. Sir ALFRED MOND replied to the effect that a local inquiry was held in June, 1920, into the scheme proposed by the London County Council; it was then found that adoption of the scheme involved a number of legal and administrative questions, of which settlement was necessary before a decision could be given upon the case in question. Action upon the scheme would in any case have to be deferred until further progress was made with provision of new houses. The numerous complications attendant, under existing conditions, upon any conveyancing of densely-populated property must inevitably tend to hamper the advancement of public health in this country; and it is made plain in the answer of the Minister of Health that even when slums have been acquired by local authorities for purposes of destruction, shortage of new houses still bars the way to demolition of property unfit for habitation. It may be true, as some would have us believe, that the slum-bred tenant speedily reduces any house he occupies to the level of his own personal squalor; but if any progress is to occur this fact constitutes no argument against the making of a steady effort to supply dwellings built and drained and lighted in such a way that the slum tenant may have at least the opportunity to prove the statement false.

Annotations.

"Ne quid nimis."

X RAY AND INFLUENZA SCARES.

THE Parisian popular press has recently promulgated two "scares," one having reference to the "danger" of living near a laboratory or clinic where X rays are employed, the other being an allegation to the effect that the country is on the eve of another influenza epidemic. The latter is the more serious suggestion of the two. A few cases of influenza have been reported at the ports of Brest, Cherbourg, and Lorient, and also inland, amongst troops stationed at Orleans, Saint-Estienne, Bourges, and Albi. In Paris at the end of April there had been no demand at the Pasteur Institute for anti-influenza vaccine. Most of the military cases have occurred among recruits who have recently joined their regiments. The symptoms are not so severe as those noticed during the great epidemic of 1918. The Minister of Hygiene, Mr. Lerédu, has, however, ordered the strict disinfection of public halls, schools, restaurants, cafés, kinemas, and theatres. The public has also been advised to avoid sudden changes of temperature, to isolate the sick, to observe great personal cleanliness, and to indulge abundantly in hot drinks. This latter welcome piece of advice will, of course, result in a renewed outcry against profiteering in rum. Hope is still entertained, however, that there will be no epidemic, and that the few cases mentioned are due to the recent sudden changes in the weather.

The apprehension lest proximity to X ray centres of employment should affect health, though it affects very few people, has led to almost as lengthy a controversy. Mr. Contremoulins, who won the Montyon prize for medicine and surgery and is laureate of the Institut, has sent a report to the Academy of Sciences on experiments of his own which indicate that it may be dangerous to live in a building where X rays are constantly employed. Journalists have thereupon invaded the laboratories of many known authorities, have obtained interviews, and have written long articles about X rays. At the Saint-Antoine Hospital, however, Dr. Iser-Solomon refused to consider the matter in a tragic light. He pointed out that to affect the health of persons living in the neighbourhood the X rays would have to pass through the walls of the building; the solidity of the walls and the distance must be considered. At the Saint-Antoine Hospital three X ray apparatuses are at work every morning and nowhere else in France is there so considerable a production of X rays. A ward full of patients is separated from the X ray theatre by nothing but a light partition wall, and on the floor above there are more patients. Neither the patients in their wards nor photographic films, many of which have been kept for a year near the X rays, have been affected. In any case, what danger there may be can be overcome by the use of lead to cut off the rays. To this and similar arguments, Mr. Contremoulins replied that the patients at the Saint-Antoine Hospital leave when cured, and he was concerned with the employment of X rays near private dwellings and their effect in the course of years. It is therefore a question not only of distance and the thickness of walls, but also of time.

PAPILLARY EPITHELIOMA OF THE RENAL PELVIS.

Dr. Edwin M. Miller and Dr. Robert H. Herbst,[1] of Chicago, reporting a case under their care, remark that primary papillary epithelioma of the renal pelvis is a rare tumour, only 54 cases having been recorded in the world's literature. The tumour is twice as common in males as in females, nearly half the cases occur in subjects between the ages of 50 and 60, about one-fifth between 40 and 50, and the same number between 60 and 70. The oldest case was in a woman, aged 86, and the youngest in a boy. As regards the ætiology, although it is possible that irritation from a calculus or chronic infection may be a predisposing factor, infection is mentioned in but three and calculus in only 10 of the 54 cases. The tumours may vary in character from multiple, small, isolated growths to a single large cauliflower-like mass, filling the renal pelvis and producing destruction of the renal parenchyma. They usually arise from the lining of the pelvis of the kidney, but sometimes originate in the terminal portion of the collecting tubules. Their histological structure resembles that of papillomata elsewhere in the urinary tract. Bleeding occurs readily, and the clots formed may block the outlet of the pelvis with consequent hydronephrosis, or cause varying degrees of obstruction as they pass down the urinary tract. The tumour may remain localised in the kidney or involve the lower urinary tract either by direct extension or by implantation. Of the 54 cases, 25 showed involvement of the ureter, and in 18 the tumour invaded the kidney, ureter, and bladder. The symptoms vary considerably with the size of the tumour and the associated pathology. Hæmaturia is the most constant manifestation. It is usually intermittent and may vary from a slight cloudiness of the urine to a severe hæmorrhage. Pain is inconstant, and ranges in degree from mild bladder irritation to severe colicky pains like those caused by ureteral stone. The condition may last for years in the absence of surgical treatment, but in the great majority of cases a relatively early termination takes place. As regards the diagnosis, the possibility of this condition should always be considered when intermittent hæmaturia occurs in adults in association with pain in the kidney region. It should be strongly suspected if the skiagrams show no stone and there are colicky pains along the ureter, diminution or absence of function of the affected kidney, and a palpable tumour in the loin. The diagnosis is confirmed by cystoscopy revealing a papilloma in the bladder or ureteral orifice, by the presence of otherwise unexplained epithelial cells in the urine, and by the pyelogram showing defect in the renal pelvis. The nature of the treatment depends on whether the bladder is involved or not. In the former cases complete removal of the kidney and ureter, followed by fulguration of the bladder implantations, is required; in the latter cases removal of the affected kidney and ureter is indicated.

THE MEASUREMENT OF ACTIVITY AND FATIGUE.

EFFICIENCY in industrial work is closely connected with activity and fatigue, which in their turn depend upon muscular and nervous energy. Considerable attention has recently been paid to this side of efficiency, but one of the difficulties experienced has been to obtain a direct measure of activity. Investigators mistrusting the introduction of subjective influences into any test used have been relying to a great extent upon records of output, concerning which the operatives have no knowledge that they may be used for the purposes of investigation; but a tendency is showing itself to have recourse to ergometric methods as originally carried out by Mosso. Recently we drew attention to the use in South African gold mines of specially devised ergometers to throw light upon the influence exerted by atmospheric conditions upon efficiency. A further investigation has now come under notice reported upon from France by Dr. H. Dausset and Dr. Boigey.[1] These workers made use of a universal registering goniometer capable of recording graphically the weights used, the number of movements made, their extent, and the total kilogrammes of work done. The activity of the deltoid, the biceps, and the extensor muscles of the hand were investigated on a number of subjects.

The curves obtained showed first a plateau during which the amplitude of the movements was constant, and then a decline during which the amplitude of each succeeding movement was less than that of its predecessor. So far the work simply corroborates that of Mosso. But a new point is introduced as the result of examining carefully a large number of curves. The observers found they could divide the curves into four main types: one in which the plateau was comparatively short followed by a long decline; a second in which the plateau was comparatively long followed by a short decline; a third with both plateau and decline short; and a fourth with a short plateau followed by an abrupt fall. The first two types may be obtained from similar amounts of work done. Thus 124 kilogrammeters of work was represented by a curve with 30 movements composing the plateau, and 115 in the decline which represented 58 per cent. of the work done. While another curve representing 114 kilogrammeters had 75 movements composing the plateau and only 28 in the decline, which represented 20 per cent. of the work done. Subjects who are described as strong and nervous (*au sens sportif du mot*) gave curves with short plateau and long decline. Strong and slightly nervous subjects gave curves with long plateau and short decline. The third type was found associated with an inferior amount of work done, and to be obtained from invalids and nervous subjects, while the fourth type represented asthenia and was obtained from feeble and slightly nervous persons.

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[1] Journal of the American Medical Association, April 2nd, 1921.

[1] Sur l'utilité des Courbes de Fatigue pour le control de l'Entrainement en education Physique," by Drs. H. Dausset and Boigey Paris Médical, April 16th, 1921.

The plateau is claimed to represent the period of activity before the onset of fatigue, and the decline the definite appearance of impaired nervous activity. The relation of one to the other is proposed as a measure of the capacity of the individual to resist fatigue. "This evaluation should lead to a precise classification of subjects according to their mode of resisting fatigue, the part played by the nervous and muscular elements being variable." The authors suggest that fatigue curves of this kind, taken at regular intervals, might provide a control during athletic training; "a control much more precise than the criteria actually in use. It should permit the physical exercises of patients to be graduated at will; by these means the amount of nervous exhaustion caused by excessive work, by violent exercise, or by overtraining could be valued." Great interest would attach to measurements made in this way on industrial workers, compared subsequently with records of output. In the absence of any direct test of fatigue we hope that attention will be given to following up the field of investigation opened out by this interesting research.

THE SPECIFICITY OF THE SYPHILITIC ORGANISM IN GENERAL PARALYSIS.

WHILE the debate on the biology of the *Treponema pallidum* in common syphilitic affections and general paralysis continues with undiminished vigour, a young and hitherto unknown Italian scientist, Dr. Sanguineti,[1] has brought to light in Paris a thesis of his which attempts some explanation of this problem and may be considered a new interpretation of the ætiological and clinical aspects of progressive paralysis. It is well known that Levaditi and Marie maintain that ordinary syphilis is due to a dermotropic treponema, while progressive paralysis is caused by a neurotropic treponema, and they back up their opinion with the following biological variations met with in both, viz.:—

(1) That the neurotropic treponema has a period of incubation much longer; (2) that in rabbits the dermotropic treponema when inoculated into the scrotum gives rise to a hard sore, whereas the neurotropic produces a diffuse papulo-squamous lesion; (3) that the neurotropic has a greater epithelial and perivascular affinity, while the dermatropic has an *endovascular* affinity and a marked sclerosing action; (4) that the lesion caused by the neurotropic in rabbits develops slowly and recovers spontaneously; and (5) that the animals rendered refractory to either virus are not so towards the other.

These conceptions receive some clinical confirmation, for no one who has had the opportunity of observing a large number of cases will deny the existence of two well-marked forms of syphilis, one developing with cutaneous mucous and grave visceral lesions, the other affecting slowly the nervous system. On the other hand, the unicists, led by Sicard, still hold that the evidence put forward by Levaditi and Marie is not completely proved as yet, since neurotropism might well be interpreted as a special attribute acquired by the treponema during its long sojourn in the nervous system, and similarly other biological peculiarities might well have been acquired by either virus during a series of years in the various tissues in which it was lodged. Now Sanguineti has made a study of a hundred general paralytics, inquiring especially into the condition of the consort and descendants, and hence the relationship with the two different forms of syphilis which he thus describes; a latent syphilis which after the primary infecting sore is free from specific manifestations, and a florid syphilis which gives rise to the well-known secondary symptomatology. (It will be gathered that what follows is the substance of Sanguineti's thesis.) In the first case the infection is due to a neurotropic treponema which from the commencement will fix itself in the brain; in the second case it is the generic treponema which is concerned and ordinary syphilis results. Neurotropic syphilis gives rise to a paralysis which may break out 10–15 years after infection, and at the onset reveals itself in phenomena of psychic and somatic exaltation, leads to late dementia, leaves intact for a long time the general physical condition, does not infect the consort, gives a negative Wassermann, and induces towards an offspring of irregular development but of marked precocity. The other, ordinary syphilis, causes, on the other hand, a general progressive paralysis with very different characteristics, in that it begins 2 to 3, or 25–30 years after infection, leads to rapid dementia with bodily and psychic depression, infects the consort, gives a positive Wassermann and induces towards an offspring late development, and signs of hereditary syphilis. The first variety constitutes 74 per cent. of all cases of progressive general paralysis, the second 22 per cent. Sanguineti, however, admits the existence of mixed forms (4 per cent.) in which elements of one or the other are found when the soil offered by the patient allows the treponema to fix itself early in the nervous system after having given rise to well-marked specific manifestations. From an anatomico-pathological aspect he has noticed that in the first variety the arteries remain soft and normal, so that the mental symptoms must be explained by the direct action of the neurotropic germs on the nerve cells, while in the second type the arteries are sclerotic, so that these phenomena are the result of vascular and nutritive changes. The treatment of both forms by specific methods is devoid of result—in the former by the impossibility of reintegration of the elements invaded by the treponema; in the second on account of the extent of the arterial disorganisation. He has hopes, however, of a future serological therapy not yet realisable.

"BOTULISM" FROM CHEESE.

IN the March number of the *Journal of Infectious Diseases*, published at Chicago, there is an interesting contribution on the subject of "Botulism from Cheese" by Miss Mary Nevin, of the Research Laboratories of the New York State Department of Health, giving some account of an outbreak of botulism which occurred in 1914, attributed to the eating of "home-made cottage cheese." Three persons who had eaten the cheese died, and samples were sent to the State Research Laboratories for examination. The nature of the fatal illness was not at first diagnosed, but ultimately it was recognised that the clinical picture in these patients corresponded with that described by Ostertag, van Emenengen, and others. The symptoms included paralysis of the muscles of deglutition, suffusion of the face, ptosis, total dilatation and failure of the pupils to react to light, paralysis of the muscles of the throat, with difficulty of speech. The cheese was bacteriologically examined, and *B. botulinus* was isolated from the sample. Miss Nevin claims that this is the first time that this bacillus has been identified in cheese. The early investigators of botulism thought that the toxin was produced by the bacillus only in the presence of meat protein. Since then, however, it has been shown that the toxin has been produced in association with vegetable protein. It is, therefore, apparent that meat protein is not necessary to the growth and consequent production of toxin by *B. botulinus*, and that cheese can serve as a medium.

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[1] La Riforma Medica, April 9th, 1921.

RUPTURE OF ANEURYSM OF THE SPLENIC ARTERY DURING PARACENTESIS ABDOMINIS.

Dr. J. Garland has recently reported[1] a very rare fatal complication of paracentesis abdominis. A man, aged 52 years, a granite polisher, was admitted to the Massachusetts General Hospital on August 6th, 1920, complaining of dyspnœa on exertion and œdema. There was a history of gonorrhœa at 29, but syphilis was denied. About four months ago his feet became swollen at night and he stopped work for a week. The abdomen was slightly distended. Although the swelling was not much reduced he returned to work, but after half a day's work the swelling greatly increased and he became dyspnœic and returned to bed. On examination he was well nourished and of a good colour. The left pupil was larger than the right, but both pupils reacted normally. There was a small right retinal hæmorrhage and a few fine râles were heard at the bases of the lungs. The cardiac impulse was in the fourth interspace 13 cm. to the left of the middle line. The action was slightly rapid and the aortic second sound was accentuated. There was a systolic murmur at the apex and a diastolic over the left fourth interspace at the sternal border. The pulses were equal and synchronous and of high volume and tension. The artery walls were palpable. The blood pressure was 210, systolic; 125, diastolic. The abdomen was distended and tympanitic with a definite fluid wave and shifting dullness. The scrotum and feet were œdematous and a fine tremor of arms and hands was present. The knee-jerks were normal. The temperature varied from 98° to 103° F. The urine contained a trace of albumin, white and red blood corpuscles, and rare granular casts. On two examinations occult blood was found in the stools. The Wassermann reaction was positive. Radiographic examination showed definite change in the heart shadow, especially to the left. Digipuratum was given and on August 16th paracentesis abdominis was performed; 5500 c.cm. of slightly cloudy, straw-coloured fluid were withdrawn. On the 19th the temperature and leucocyte count were elevated and the patient was weaker. Both bases were dull, but the œdema was gradually disappearing. On August 20th paracentesis was performed at 9 A.M., the trocar being inserted in the mid-line about midway between the umbilicus and symphysis. After 1200 c.cm. slightly cloudy reddish fluid had been withdrawn the flow stopped. As there still seemed to be fluid in the abdomen the trochar was again inserted about half an inch lower. Immediately the patient felt a sharp pain in the abdomen and the needle was withdrawn. Slight bleeding from the puncture followed, and the patient became pale and showed signs of collapse, with a weak, thready pulse and cold extremities. Respiration was periodic and gasping. Intravenous injection of saline solution was attempted, but the veins were too collapsed to be entered. Death occurred at 12.30 P.M. At the necropsy 3000 c.cm. of thin bloody fluid and a large amount of clot, weighing about 1100 g., were found in the peritoneum. The splenic artery was calcareous and showed an aneurysm about 3 cm. in diameter, with a crevice about 4 mm. long in a fibro-calcareous area. The sac contained a small amount of blood and clot. The case is interesting on account of the rarity of the lesion and the dramatic ending, the rupture occurring during the simple procedure of paracentesis abdominis. The reason for the rupture at this moment can only be conjectured. The excitement of moving the patient and performing the operation might have increased the blood pressure to the bursting-point of the aneurysm, or the withdrawal of the fluid in the peritoneum may have diminished the pressure of the structures surrounding the aneurysm. Direct trauma from the trocar was shown at the necropsy to have been impossible. In over 4100 necropsies at the Massachusetts General Hospital aneurysm of the splenic artery was found three times.

"IMAGINATION, COÖPERATION, AND ENTHUSIASM."

ON May 5th the Savoy Hotel, London, washed its dirty linen in public, and far from being an unsightly, evil-smelling, or otherwise unseemly procedure it was a revelation of the possibilities of laundry-work. A V-shaped building, of which one arm is devoted to work and the other to welfare, presents many interesting features. We could spend much time describing the processes of marking (by sewing on labels, not by a red cotton spider) and sorting; the drums which wash by rotating through soapsuds; the perforated ringers, which do not twist; and the drying and ironing machines. But we can comment here only on two details. Those who are specially interested in the spread of infection will rejoice to hear that the handkerchiefs are kept separate throughout, and, when washed apparently clean, are boiled more than once; while to the wearers of the double collar we would speak of a moulding machine which gives a round edge to its bend, leaving room for the tie to slip easily. But we are more concerned with the welfare of the cheerful-looking men and girls who feed the machines, fold, and sort the linen into rubber-wheeled trollies, and of the specially skilled hands who manipulate the electric irons. The atmosphere is fresh and cool throughout the building; a representative of the Industrial Fatigue Research Board, who is investigating conditions in the laundry trade, is now making interesting comparative observations in this laundry. Each employee is weighed and medically examined on engagement, and his or her condition card-indexed. A weekly medical inspection is then carried out. The triangular welfare room and surgery combined has doors at each angle of its base, so that the staff can file past the doctor, with bare chests and arms, with the least possible delay, and dermatitis or scabies can thus easily be detected. Those who wish to consult the doctor, or who look ill, are given a ticket and return later for a more detailed examination. Dental cases are referred to hospitals or clinics. A full-time welfare worker, who has had nursing experience, is in charge of this welfare room, and provides first-aid treatment and the medical officer proposes shortly to start a series of lectures or informal talks on hygiene to the workers. Each girl, having been passed by the doctor, is given a steam-heated ventilated metal locker where her out-door garments can dry if necessary, and where she keeps the hand towel provided for her individual use. Ample lavatory accommodation is available. Wash troughs with many separate jets replace the ordinary basin and plug. Two bath-rooms are in constant use by the staff in rotation during working hours, so that every employee can have a bath a week. The working hours are 8 to 6, with an hour off for dinner at 12, and 10 minutes' break at 10 A.M. and at 3 P.M. Dinner is provided at a low price in a spacious mess-room, with polished floor available for dancing; it seats 150 at small tables, and separate chairs with backs are provided. This canteen is also open for the supply of tea and coffee half an hour before work starts in the morning. The employees much appreciate this arrangement, for difficulties are frequently associated with the domestic facilities of workers for obtaining food early in the morning. A general committee of employees, from which even forewomen are excluded, elects appropriate subcommittees to arrange the bill of fare for the meals and occasional entertainments. A rest-room, lending library, and tiled kitchen with steam and gas apparatus, complete this part of the building. The flower and fruit garden lies between the two arms of the V and is well planned; a vegetable garden adjoins. A week's holiday on full pay is granted to each employee who has worked for a year, increasing by a day a year to a fortnight.

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[1] Boston Medical and Surgical Journal, April 14th.

It is the human side of the undertaking that is most striking, and the pleasant impression is given that the human element is regarded as the most important part of the machinery of this very complex factory, which, by the way, is open to inspection by appointment. Regular meetings between the manager and the staff take place, when valuable hints as to possible improvements have been offered by the latter. This arrangement ensures also that grievances will be ventilated and discussed. Laundry-work has hitherto been considered one of the most backward and difficult trades to organise on a healthy basis, but this appears to be good pioneer work. When the economic aspect of this excellent scheme of preventive medicine is considered the debit side of the account, the money actually expended, which is easy to reckon, may at first sight seem to outbalance the credit side, which is less easy to estimate and is not so immediately obvious. But when decrease in labour turnover, and in lost time, increase in quality and quantity of work, and that indefinable though invaluable asset, a contented personnel, come to be reckoned up, the debit side sinks into the background, and the scheme is found to be based on true economy. Even on the present scale of charges it is hoped that a laundry run on these lines may be made remunerative. It is noteworthy that the personal laundry of the hotel staff is done here as well as that of the visitors. But clean healthy laundries are at least as desirable as clean milk, and for both an adequate price will have to be paid. Meanwhile, it would be difficult to find words more appropriate to describe the impression created by this most recent addition to our model factories than those of "Imagination, Coöperation, and Enthusiasm" adopted by the manager as its watchword.

THE CYCLE OF CHOLESTEROL IN THE ORGANISM.

ACCORDING to A. Chauffard, G. Laroche, and A. Grigaut,[1] there are three factors which determine the metabolism of cholesterol, the food, certain endocrine glands, and the liver. The influence of food is but temporary, and any increase of cholesterol in the blood rapidly disappears. The most important endocrine factors are the cortex of the adrenals and the corpora lutea. The latter contain much cholesterol, but are only active at certain periods. The cells of the adrenal cortex are the chief factories of cholesterol in the organism. The adrenals surpass all other organs in their cholesterol-content, even the nervous system itself. In the adrenals of individuals killed suddenly cholesterol forms 42–54 per mille of the fresh gland; in those who die of disease there is only 20 per mille. Cholesterol appears to exist in two forms in the adrenals; part is "fixed" and forms an integral part of the construction of the cells, while the larger part is mobile. The former or "organ-cholesterol" appears to be common to all organs and amounts to about 2·5 per cent. This seems specially evident in the fœtus. During the first five months the adrenals contain about the same amount as the liver and kidneys, corresponding to the amount of organ-cholesterol in the adult. During development the amount of cholesterol in these organs does not increase, while the amount in the adrenals from the sixth month (at the seventh month it is 8·16 per cent.) greatly increases and at birth reaches 36 per cent. At the sixth to the seventh month the cells of the cortex take on their cholesterol-forming function, probably corresponding to the greater demands of the growing organism for cholesterol. The authors give their reasons for not regarding the adrenals as merely storage organs for cholesterol. The increase of this substance in the cortical cells is associated with other indications of their cell activity. The liver and bile play an important part in the cholesterol cycle. The bile by the amount of its cholesterol gives an indication of the activity of the hepatic cells which secreted it, and on the whole the amount of cholesterol in the bile runs fairly parallel with the amount present in the blood. Ligature of the bile-duct increases the amount of cholesterol in the blood. During gestation the fœtus seems to receive some cholesterol from the mother.

THE MEDICAL AND DENTAL REGISTERS.

THE *Medical Register* for 1921 contains 41,761 names, being an increase of 251 on the number recorded the previous year. 1457 names were added during the year on registration—457 in England, 393 in Scotland, and 264 in Ireland; the last figure being the highest recorded and double the entries of 20 years ago, whereas the figures for Scotland and England have declined in the same period. 333 names have been added to the separate Colonial List, to which attention is now called by painting blue the edges of the leaves. From year to year it becomes more inopportune to place these names at the end of a large volume, where they may readily be overlooked, when the privileges and duties attached to registration are precisely the same in whatever part of the Register the name is entered. Ten new names appear on the Foreign List, the degree-granting university being in one instance each Florence, Brussels, Louvain, Bologna, Palermo, Turin, and in four instances Ghent. Reciprocity has ceased with Belgium, and no further registrations will be accepted without examination. It would add to the helpfulness and interest of the Register if the numbers of men and women respectively were severally noted.

The *Dental Register* for 1921 contains 5610 names, being an increase of 155 on the number recorded the previous year, a matter for congratulation. Eighteen new names appear on the Colonial List and 5 on the Foreign List, the professional qualifications of the last-named having been obtained at Kharkoff (2), Petrograd (2), and Novorossiisk. The number of British registrations occurring in 1920 was the same as in 1917 and 1914.

The Medical and Dental Students Register contains the names of 2531 medical students and 560 dental students who have passed their entrance examinations and entered for professional study.

COLSTON UNIVERSITY RESEARCH SOCIETY, BRISTOL. This Society, formerly known as the University of Bristol Colston Society, collects funds annually for the furtherance of research in the University of Bristol, and is believed to be the only society of its kind in Britain. Last year, under the presidency of the Bishop of Bristol, £406 was collected. This year's President is Alderman Frank Sheppard, and the guest of the evening at the forthcoming annual dinner will be Sir W. H. Bragg. The Society has recently published a brief summary of work done during the past three years. Under the heading of chemistry there is a brief reference to the work of Dr. M. Nierenstein on tannins. In the departments of anatomy and physiology Professors E. Fawcett and G. A. Buckmaster are pursuing their personal researches, the former on the morphology of the cranium, and the latter on the transport of carbon dioxide. Professor Buckmaster and Dr. Hickman are also engaged on the production of apparatus for simplified electro-cardiography and the recording of body movements. Mr. A. L. Flemming is investigating the action of surgical anæsthesia on respiration. From the department of pathology Professor Walker Hall announces progress in investigation into the relation between nutrients and the life-history of pathogenic bacteria. The department of medicine reports researches by Professor F. H. Edgeworth into the development of the laryngeal muscles; also work by Dr. Carey Coombs on the ætiology of rheumatic heart disease (an account of which appeared in THE LANCET, 1920, ii., 220), and work by Dr. Coombs, with Dr. C. E. K. Herapath, on the intrinsic anatomy of the human auricles. Alderman Sheppard, in his appeal for funds, says that at least £1000 a year are needed to maintain pre-war activities.

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[1] Ann. de Méd., 8, 1920.

face, ptosis, total dilatation and failure of the pupils to react to light, paralysis of the muscles of the throat, with difficulty of speech. The cheese was bacteriologically examined, and *B. botulinus* was isolated from the sample. Miss Nevin claims that this is the first time that this bacillus has been identified in cheese. The early investigators of botulism thought that the toxin was produced by the bacillus only in the presence of meat protein. Since then, however, it has been shown that the toxin has been produced in association with vegetable protein. It is, therefore, apparent that meat protein is not necessary to the growth and consequent production of toxin by *B. botulinus*, and that cheese can serve as a medium.

RUPTURE OF ANEURYSM OF THE SPLENIC ARTERY DURING PARACENTESIS ABDOMINIS.

Dr. J. Garland has recently reported[1] a very rare fatal complication of paracentesis abdominis. A man, aged 52 years, a granite polisher, was admitted to the Massachusetts General Hospital on August 6th, 1920, complaining of dyspnœa on exertion and œdema. There was a history of gonorrhœa at 29, but syphilis was denied. About four months ago his feet became swollen at night and he stopped work for a week. The abdomen was slightly distended. Although the swelling was not much reduced he returned to work, but after half a day's work the swelling greatly increased and he became dyspnœic and returned to bed. On examination he was well nourished and of a good colour. The left pupil was larger than the right, but both pupils reacted normally. There was a small right retinal hæmorrhage and a few fine râles were heard at the bases of the lungs. The cardiac impulse was in the fourth interspace 13 cm. to the left of the middle line. The action was slightly rapid and the aortic second sound was accentuated. There was a systolic murmur at the apex and a diastolic over the left fourth interspace at the sternal border. The pulses were equal and synchronous and of high volume and tension. The artery walls were palpable. The blood pressure was 210, systolic; 125, diastolic. The abdomen was distended and tympanitic with a definite fluid wave and shifting dullness. The scrotum and feet were œdematous and a fine tremor of arms and hands was present. The knee-jerks were normal. The temperature varied from 98° to 103° F. The urine contained a trace of albumin, white and red blood corpuscles, and rare granular casts. On two examinations occult blood was found in the stools. The Wassermann reaction was positive. Radiographic examination showed definite change in the heart shadow, especially to the left. Digipuratum was given and on August 16th paracentesis abdominis was performed; 5500 c.cm. of slightly cloudy, straw-coloured fluid were withdrawn. On the 19th the temperature and leucocyte count were elevated and the patient was weaker. Both bases were dull, but the œdema was gradually disappearing. On August 20th paracentesis was performed at 9 A.M., the trocar being inserted in the mid-line about midway between the umbilicus and symphysis. After 1200 c.cm. slightly cloudy reddish fluid had been withdrawn the flow stopped. As there still seemed to be fluid in the abdomen the trochar was again inserted about half an inch lower. Immediately the patient felt a sharp pain in the abdomen and the needle was withdrawn. Slight bleeding from the puncture followed, and the patient became pale and showed signs of collapse, with a weak, thready pulse and cold extremities. Respiration was periodic and gasping. Intravenous injection of saline solution was attempted, but the veins were too collapsed to be entered. Death occurred at 12.30 P.M. At the necropsy 3000 c.cm. of thin bloody fluid and a large amount of clot, weighing about 1100 g., were found in the peritoneum. The splenic artery was calcareous and showed an aneurysm about 3 cm. in diameter, with a crevice about 4 mm. long in a fibro-calcareous area. The sac contained a small amount of blood and clot. The case is interesting on account of the rarity of the lesion and the dramatic ending, the rupture occurring during the simple procedure of paracentesis abdominis. The reason for the rupture at this moment can only be conjectured. The excitement of moving the patient and performing the operation might have increased the blood pressure to the bursting-point of the aneurysm, or the withdrawal of the fluid in the peritoneum may have diminished the pressure of the structures surrounding the aneurysm. Direct trauma from the trocar was shown at the necropsy to have been impossible. In over 4100 necropsies at the Massachusetts General Hospital aneurysm of the splenic artery was found three times.

"IMAGINATION, COÖPERATION, AND ENTHUSIASM."

ON May 5th the Savoy Hotel, London, washed its dirty linen in public, and far from being an unsightly, evil-smelling, or otherwise unseemly procedure it was a revelation of the possibilities of laundry-work. A V-shaped building, of which one arm is devoted to work and the other to welfare, presents many interesting features. We could spend much time describing the processes of marking (by sewing on labels, not by a red cotton spider) and sorting; the drums which wash by rotating through soapsuds; the perforated ringers, which do not twist; and the drying and ironing machines. But we can comment here only on two details. Those who are specially interested in the spread of infection will rejoice to hear that the handkerchiefs are kept separate throughout, and, when washed apparently clean, are boiled more than once; while to the wearers of the double collar we would speak of a moulding machine which gives a round edge to its bend, leaving room for the tie to slip easily. But we are more concerned with the welfare of the cheerful-looking men and girls who feed the machines, fold, and sort the linen into rubber-wheeled trollies, and of the specially skilled hands who manipulate the electric irons. The atmosphere is fresh and cool throughout the building; a representative of the Industrial Fatigue Research Board, who is investigating conditions in the laundry trade, is now making interesting comparative observations in this laundry. Each employee is weighed and medically examined on engagement, and his or her condition card-indexed. A weekly medical inspection is then carried out. The triangular welfare room and surgery combined has doors at each angle of its base, so that the staff can file past the doctor, with bare chests and arms, with the least possible delay, and dermatitis or scabies can thus easily be detected. Those who wish to consult the doctor, or who look ill, are given a ticket and return later for a more detailed examination. Dental cases are referred to hospitals or clinics. A full-time welfare worker, who has had nursing experience, is in charge of this welfare room, and provides first-aid treatment and the medical officer proposes shortly to start a series of lectures or informal talks on hygiene to the workers. Each girl, having been passed by the doctor, is given a steam-heated ventilated metal locker where her out-door garments can dry if necessary, and where she keeps the hand towel provided for her individual use. Ample lavatory accommodation is available. Wash troughs with many separate jets replace the ordinary basin and plug. Two bath-rooms are in constant use by the staff in rotation during working hours, so that every employee can have a bath a week. The working hours are 8 to 6, with an hour off for dinner at 12, and 10 minutes' break at 10 A.M. and at 3 P.M. Dinner is provided at a low price in a spacious mess-room, with polished floor available for dancing; it seats 150 at small tables, and separate chairs with backs are provided. This canteen is also open for the supply of tea and coffee half an hour before work starts in the morning. The employees much appreciate this arrangement, for difficulties are frequently associated with the domestic facilities of workers for obtaining food early in the morning. A general committee of employees, from which even forewomen are excluded, elects appropriate subcommittees to arrange the bill of fare for the meals and occasional entertainments. A rest-room, lending library, and tiled kitchen with steam and gas apparatus, complete this part of the building. The flower and fruit garden lies between the two arms of the V and is well planned; a vegetable garden adjoins. A week's holiday on full pay is granted to each employee who has worked for a year, increasing by a day a year to a fortnight.

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[1] Boston Medical and Surgical Journal, April 14th.

It is the human side of the undertaking that is most striking, and the pleasant impression is given that the human element is regarded as the most important part of the machinery of this very complex factory, which, by the way, is open to inspection by appointment. Regular meetings between the manager and the staff take place, when valuable hints as to possible improvements have been offered by the latter. This arrangement ensures also that grievances will be ventilated and discussed. Laundry-work has hitherto been considered one of the most backward and difficult trades to organise on a healthy basis, but this appears to be good pioneer work. When the economic aspect of this excellent scheme of preventive medicine is considered the debit side of the account, the money actually expended, which is easy to reckon, may at first sight seem to outbalance the credit side, which is less easy to estimate and is not so immediately obvious. But when decrease in labour turnover, and in lost time, increase in quality and quantity of work, and that indefinable though invaluable asset, a contented personnel, come to be reckoned up, the debit side sinks into the background, and the scheme is found to be based on true economy. Even on the present scale of charges it is hoped that a laundry run on these lines may be made remunerative. It is noteworthy that the personal laundry of the hotel staff is done here as well as that of the visitors. But clean healthy laundries are at least as desirable as clean milk, and for both an adequate price will have to be paid. Meanwhile, it would be difficult to find words more appropriate to describe the impression created by this most recent addition to our model factories than those of "Imagination, Coöperation, and Enthusiasm" adopted by the manager as its watchword.

THE CYCLE OF CHOLESTEROL IN THE ORGANISM.

ACCORDING to A. Chauffard, G. Laroche, and A. Grigaut,[1] there are three factors which determine the metabolism of cholesterol, the food, certain endocrine glands, and the liver. The influence of food is but temporary, and any increase of cholesterol in the blood rapidly disappears. The most important endocrine factors are the cortex of the adrenals and the corpora lutea. The latter contain much cholesterol, but are only active at certain periods. The cells of the adrenal cortex are the chief factories of cholesterol in the organism. The adrenals surpass all other organs in their cholesterol-content, even the nervous system itself. In the adrenals of individuals killed suddenly cholesterol forms 42-54 per mille of the fresh gland; in those who die of disease there is only 20 per mille. Cholesterol appears to exist in two forms in the adrenals; part is "fixed" and forms an integral part of the construction of the cells, while the larger part is mobile. The former or "organ-cholesterol" appears to be common to all organs and amounts to about 2·5 per cent. This seems specially evident in the fœtus. During the first five months the adrenals contain about the same amount as the liver and kidneys, corresponding to the amount of organ-cholesterol in the adult. During development the amount of cholesterol in these organs does not increase, while the amount in the adrenals from the sixth month (at the seventh month it is 8·16 per cent.) greatly increases and at birth reaches 36 per cent. At the sixth to the seventh month the cells of the cortex take on their cholesterol-forming function, probably corresponding to the greater demands of the growing organism for cholesterol. The authors give their reasons for not regarding the adrenals as merely storage organs for cholesterol. The increase of this substance in the cortical cells is associated with other indications of their cell activity. The liver and bile play an important part in the cholesterol cycle. The bile by the amount of its cholesterol gives an indication of the activity of the hepatic cells which secreted it, and on the whole the amount of cholesterol in the bile runs fairly parallel with the amount present in the blood. Ligature of the bile-duct increases the amount of cholesterol in the blood. During gestation the fœtus seems to receive some cholesterol from the mother.

THE MEDICAL AND DENTAL REGISTERS.

THE Medical Register for 1921 contains 44,761 names, being an increase of 251 on the number recorded the previous year. 1457 names were added during the year on registration—457 in England, 393 in Scotland, and 264 in Ireland; the last figure being the highest recorded and double the entries of 20 years ago, whereas the figures for Scotland and England have declined in the same period. 333 names have been added to the separate Colonial List, to which attention is now called by painting blue the edges of the leaves. From year to year it becomes more inopportune to place these names at the end of a large volume, where they may readily be overlooked, when the privileges and duties attached to registration are precisely the same in whatever part of the Register the name is entered. Ten new names appear on the Foreign List, the degree-granting university being in one instance each Florence, Brussels, Louvain, Bologna, Palermo, Turin, and in four instances Ghent. Reciprocity has ceased with Belgium, and no further registrations will be accepted without examination. It would add to the helpfulness and interest of the Register if the numbers of men and women respectively were severally noted.

The Dental Register for 1921 contains 5610 names, being an increase of 155 on the number recorded the previous year, a matter for congratulation. Eighteen new names appear on the Colonial List and 5 on the Foreign List, the professional qualifications of the last-named having been obtained at Kharkoff (2), Petrograd (2), and Novorossiisk. The number of British registrations occurring in 1920 was the same as in 1917 and 1914.

The Medical and Dental Students Register contains the names of 2531 medical students and 560 dental students who have passed their entrance examinations and entered for professional study.

COLSTON UNIVERSITY RESEARCH SOCIETY, BRISTOL. This Society, formerly known as the University of Bristol Colston Society, collects funds annually for the furtherance of research in the University of Bristol, and is believed to be the only society of its kind in Britain. Last year, under the presidency of the Bishop of Bristol, £406 was collected. This year's President is Alderman Frank Sheppard, and the guest of the evening at the forthcoming annual dinner will be Sir W. H. Bragg. The Society has recently published a brief summary of work done during the past three years. Under the heading of chemistry there is a brief reference to the work of Dr. M. Nievenstein on tannins. In the departments of anatomy and physiology Professors E. Fawcett and G. A. Buckmaster are pursuing their personal researches, the former on the morphology of the cranium, and the latter on the transport of carbon dioxide. Professor Buckmaster and Dr. Hickman are also engaged on the production of apparatus for simplified electro-cardiography and the recording of body movements. Mr. A. L. Flemming is investigating the action of surgical anæsthesia on respiration. From the department of pathology Professor Walker Hall announces progress in investigation into the relation between nutrients and the life-history of pathogenic bacteria. The department of medicine reports researches by Professor F. H. Edgeworth into the development of the laryngeal muscles; also work by Dr. Carey Coombs on the ætiology of rheumatic heart disease (an account of which appeared in THE LANCET, 1920, ii., 220), and work by Dr. Coombs, with Dr. C. E. K. Herapath, on the intrinsic anatomy of the human auricles. Alderman Sheppard, in his appeal for funds, says that at least £1000 a year are needed to maintain pre-war activities.

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[1] Ann. de Méd., 8, 1920.

Public Health Services.

Hospitals and Insured Patients.

A RECENT meeting between members of the British Hospitals Association and representatives of the principal Approved Societies discussed the possibility of providing institutional treatment for members of these societies in return for contributions on an agreed percentage basis. The arrangement would involve some measure of priority being given to members requiring in-patient treatment over other cases of like urgency. If the hospital committees generally should prove inclined to grant this preference, the two parties will meet again for the purpose of drafting a definite scheme. In the meantime we note with satisfaction that at its annual conference, held early this week, the National Deposit Friendly Society decided to allocate £127,000, namely one-third of surplus of £381,000 for the treatment of its members in hospitals.

Paying Patients at Poor-law Hospitals.

An important deputation from the British Medical Association was received on April 26th by Sir Alfred Mond and some of the principal officers of the Ministry of Health, when Sir Clifford Allbutt and Dr. R. A. Bolam emphasised the desire of the Association to work in harmony with the Ministry. Mr. N. Bishop Harman, as chairman of the Hospitals Committee, then laid before the Minister three points which the Association regarded as essential to the utilisation of Poor-law hospitals for civil needs:—

1. The local medical profession of the districts concerned should be consulted with regard to any scheme which it was proposed to bring into operation.
2. Patients should only be accepted, as a general rule, on the recommendation of a private practitioner.
3. Private practitioners should have the right of entry so that patients might continue to be attended within the institution by the practitioner of their choice.

In reply the Minister of Health admitted that the whole position of the voluntary hospitals was one of great difficulty owing to their foundation in the past upon the generosity of private individuals and the generosity of the medical profession. Our voluntary hospitals had been equal, if not superior, to any run on municipal or State lines in other countries. There was much to be said for the close coöperation of voluntary effort, and he did not think anybody would like to see the voluntary system disappear. He felt hopeful that we were not always to remain in the present financial difficulties. Many people of means who found it impossible to go to nursing homes and inconvenient to be nursed at home, were looking for some institution which would enable them to get reasonable nursing and medical attendance on cheaper terms. Something was now being done in our general hospitals, following the lead of St. Thomas's. He hoped for further developments in this direction. In continental countries people did not hesitate to go into a large municipal hospital. People here would have to get rid of prejudice a little and make use of institutions. The whole question of Poor-law administration was tied up with the legal position of boards of guardians which could not be altered except by legislation. The Ministry had made an endeavour at Bradford to put into practice the principle of consultation with professional men, and he thought that would prove to be a valuable line. But boards of guardians could not be compelled: they could only be advised.

The suggestion of only allowing people to use the infirmary on the recommendation of a general practitioner had, Sir Alfred Mond agreed, many advantages, but he also saw difficulties. Suppose a patient wanted to go there and the doctor attending refused to allow him to go. The patient then might change his doctor and find one who would send him. That was a possible contingency. Or a man might insist on going and create difficulty. The doctor had some knowledge of the patient's financial standing, and would be in a position to judge whether he ought to go to the infirmary or not. But that might be putting on the doctor a line of examination suitable only to a chartered accountant. He did not wish to create opportunities of friction between the doctor and his patient.

Sir Alfred Mond concluded with a promise to go into all these matters with a view to being as helpful and sympathetic as the circumscribed powers which he possessed would permit, and he suggested another meeting for further discussion.

Workmen's Contributory Hospital Scheme.

A contributory scheme has been working well since the beginning of the year in connexion with the Norfolk and Norwich Hospital. This hospital, which serves a large part of the county, requires something like £250 a week to make its income and expenditure account balance. Each parish in the county is now being asked to accept its proper share of responsibility, which amounts to about 2*s*. 3*d*. per head. As patients, on the whole, are willing to contribute towards the cost of their maintenance and treatment, there is a good prospect of a solution of the question of voluntary hospital finance in Norfolk without any levy on the rates.

Women Practitioners and a Restricted Panel.

An important side issue affecting the new allocation scheme came before the London Insurance Committee on April 28th. Four women practitioners on the London medical list prefer not to undertake the treatment of men patients, and the insurance committee admits that it is not unreasonable for them to decline to do so. But under the terms of the 1921 contract any practitioner who is relieved by the insurance committee of the liability to have insured persons assigned to him surrenders 7½ per cent. of his share in the practitioner's fund. It may be doubted whether Section 5 of the Distribution Scheme was intended to have this construction placed upon it. While there are women who may prefer to have a mixed practice and would regard any restriction as a tacit admission of sex disqualification, there are others whose natural bent is towards children and adults of their own sex. Should the latter be willing to have any insured women assigned to them, they are not restricting their lists capriciously. Their bent may well be in the public interest; the question merits a solution on public grounds, and, in the meantime, it is hardly fair to mulct them in a substantial part of their income. They would be quite entitled to retaliate by choosing their own panel entirely and refusing to have *any* patients assigned to them. We cannot avoid the impression that the London Insurance Committee has misinterpreted the spirit of the regulations, if not their letter.

Medical Records.

The London Panel Committee recently resolved that the present medical records are neither advantageous to the medical service nor beneficial to the community, and that it is desirable they should be discontinued forthwith. No concrete suggestion was offered for any alternative form of record. At its meeting on April 28th the London Insurance Committee, without expressing any opinion on the present form of record, recommended that provision should be made in the records for all matters likely to be of value in connexion with the case. That is, of course, the crux. What is likely to be of value? One illustration may serve. Dr. Stevenson noticed some years ago that gastric ulcer was disappearing from the certificates as a cause of death in young women. Was this due (as we believe) to a change in the interpretation of hæmatemesis or to an actual alteration in the incidence of gastric disease? Hospital records deal with too selected a population to decide the point. There is nothing left but the records of panel practice.

Range of Medical Service.

The Wigan Insurance Committee has circularised the insurance committees throughout the country pointing out the cumbersome and expensive procedure necessary to decide whether or not an operation comes within the scope of medical benefit, and suggesting that every kind of medical treatment should be made available to insured persons under the provisions of the National Insurance Acts. The London Insurance Committee, concurring in this view, has passed on the recommendation to the Minister of Health. Formal resolutions such as these, useless though they may appear, will strengthen the hands of those who are determined to offer a complete medical service to insured persons.

In Wiltshire county during the first quarter of 1921 some 12,500 persons applied to make their own arrangements for medical treatment—namely, 12,311 with the G.W.R. Medical Fund Society, 103 with the R.A.M.C., 97 with the Salisbury Infirmary, and 6 on personal grounds.

UNIVERSITY OF BRISTOL APPEAL:
THE CLAIMS OF THE MEDICAL SCHOOL.

(FROM A CORRESPONDENT.)

IN an address to the Bristol Medical School some years ago the late Sir William Osler remarked that some universities had both money and men; others had plenty of money but no men; others, again, had the men but not the money. Bristol has never failed to produce the men, so far as medicine is concerned. If we look back at the brief history of the University movement in Bristol we find that as early as 1814 there were lectures on "Physiology, Pathology, and the Practice of Medicine" by Dr. J. C. Prichard. To these other lectures were added, and in 1832 the Bristol Medical School issued a prospectus, in effect an apologia for the establishment of a school of medicine in the provinces. A year before this the Bristol Medical Library had been formed. In 1874 the foundation of University College, Bristol, was publicly proposed by the late Dr. John Percival, Bishop of Hereford (at that time headmaster of Clifton College), supported by Dr. Temple, Dr. Jowett, Professor Freeman, and others, and in 1876 its first session opened in temporary premises. In 1893 the medical school became affiliated to University College, and was, with the medical library, housed in the permanent premises of the College, the local medical profession contributing more than half the cost of the buildings.

Since that time many considerable additions have been made to these premises, thanks to the generosity of the Wills and Fry families in particular. At the present time a magnificent block of buildings, giving the University (as it became by Royal Charter in 1909) a fine frontage in a main thoroughfare, is being built by the brothers George and Henry Wills in memory of their father, himself first Chancellor of the University, at a cost of £500,000. Not only so, but the same donors have given to the University the Royal Fort House and its gardens, with a site and funds for a new department of physics; the Victoria Rooms, a large public hall, for conversion into a students' union; and several other houses for halls of residence.

Now, the Faculty of Medicine played so honourable and active a part in laying the foundation on which this splendid superstructure is being reared, that its claims to consideration ought to be met in the near future. The distinguished men in charge of the departments of anatomy and physiology have adequate premises, equipment, and assistance. Those in charge of the final subjects are, however, less fortunate. They have no real departments at all, clinical teaching being carried on in institutions separate from the University where they deliver their systematic lectures. What is wanted is a constructive policy to unify these institutions with the University in such a manner as to ensure that any future disposition of existing or new buildings shall make adequate provision for the systematic teaching of medicine in every form. This is a difficult matter, but there is reason to believe that the strenuous efforts made in this direction during the past few years may ultimately be crowned with success. Moreover, the Vice-Chancellor has stated plainly that an early charge on the funds raised by the appeal will be the endowment of professorships in the Faculty of Medicine. If these expectations are realised, the Bristol Medical School should become a leading provincial school of England.

CONTROL OF VENEREAL DISEASE.

Occupation and Venereal Disease.

THIS very difficult question is raised in the report of the medical officer of health for the City of London, presented to the Sanitary Committee on Feb. 22nd last. In May, 1919, Dr. W. J. Howarth gave to his committee particulars of the occupations of 104 patients, and suggested that the matter should be brought to the notice of the Local Government Board with a recommendation that it should be made illegal for persons suffering from venereal diseases to be engaged in certain specific occupations.

In the recent report Dr. Howarth submits a tabular statement showing the occupations of over 1100 patients. The list includes persons engaged in the preparation and handling of food, hair-dressers, domestic servants, &c. In the case of the ordinary notifiable infectious diseases, interference with the occupation of the patient comes as a matter of course, though special difficulties arise in the case of diphtheria or enteric fever "carriers." The General Order of December, 1912, which made tuberculosis notifiable, contains in Article XVI. a special proviso according to which the person notified is not to be subjected to "any restriction, prohibition, or disability affecting himself or his employment, occupation, or means of livelihood on the ground of his suffering from tuberculosis." The object of this proviso was, no doubt, partly humane—to prevent the notified person from being regarded as a pariah, and partly due to the fact that such restrictions might lead to the concealment of the disease and a failure to secure adequate treatment in its early and more hopeful stages. Before the General Order came into force we believe it was customary for sanitary authorities operating under local Acts to exercise some interference with respect to persons suffering from "open" pulmonary tuberculosis who were engaged in occupations such as dairying, baking, or cooking. Objections also inevitably came from fellow-workers, in the case of indoor occupations, to working in contact with a person known to be suffering from an infectious stage of pulmonary tuberculosis. It therefore comes about that Article XVI., whatever may have been the intention of its framers, has not been effective in enabling the consumptive to carry on an occupation for which he is physically fitted, but from which he should be excluded on public health grounds. Fortunately, in the case of the consumptive it is usually desirable in his own interest that he should engage in an occupation of an outdoor character which renders him no danger to his fellows, and the need for a change of work can generally be suggested to him for the sake of his own health.

When we turn to the much more difficult question of the occupation of persons suffering from venereal diseases, we feel that in the first instance we want a great deal more information. Free clinics for venereal diseases have not been in existence very long, and our great object for some time must be to encourage early and continued treatment. No doubt we shall before long have to adopt some modified system of notification and restriction for those cases which will not submit to adequate treatment. At the present time we have to trust to patients carrying out the precautions enjoined upon them by the medical officers of the clinics or the private medical practitioners who are responsible for their treatment. We have said that more information is needed. The information we have in mind is already in the possession of the medical officers of the venereal disease clinics all over the country. It only requires to be tabulated and collected. A considerable section of the public have an altogether exaggerated idea of the danger of contracting venereal diseases "accidentally" or "innocently." Medical men, in the absence of reliable statistics, have only vague opinions on the subject. Even the individual medical officer of a clinic who may be treating either gonorrhœa alone or syphilis alone, has only his own experience as a guide and may not have attempted to classify the cases coming under his ken as to whether they were acquired accidentally or in the ordinary way.

We have had the advantage of obtaining the experience of one medical officer of a venereal disease clinic who had to deal chiefly with syphilis, and it may be useful to give the results of his experience shortly. The cases of gonorrhœa seen by this medical officer were mostly among women, and the number of cases not contracted through sexual intercourse was very few. A few cases of gonorrhœal vaginitis among girls were met with, contracted by sleeping with infected mothers or sisters, but no cases of what might be called "accidental" infection, such as through the use of infected public conveniences. The contacts infected were, in fact, bed-contacts. The experience of this clinic was, however, chiefly with regard to syphilis. Of 1500 cases of syphilis admitted for treatment, there were only 10 cases that had not been acquired in the ordinary way through sexual intercourse. Of these 10, two were medical men with primary sores on the fingers contracted as the result of operations; one was a baby of 18 months old, infected by sleeping in the same bed with an uncle and aunt, who both had florid syphilis; one was a girl of 11 who had slept with a syphilitic elder sister; and another was a girl of 11 who was thought by a syphilitic sister, aged 19, to have been infected by herself. Two of the remaining cases, a girl aged 12, and a boy aged 7, were members of a family of which the mother and father had syphilis. The father died, and it was thought that the girl contracted the disease from nursing the baby which had congenital syphilis and subsequently infected her younger brother. Of the three remaining cases: (1) a girl aged 24 had a chancre of the lip 14 days after a wedding dinner at which she drank from a glass of wine after the bride, who was at the time suffering from syphilis. This girl was, however, keeping company with a soldier about this time and became pregnant. (2) In the case of a boy aged 10, with a papular secondary rash and no history of any primary sore, the source of infection was never elucidated. (3) A soldier developed a chancre on the top of the scalp from an infected glove during a boxing contest.

The experience of this one clinic goes to show that the risks of accidental infection run by the public from public conveniences, the use of cups, forks, and spoons, &c., are remote. Out of 1500 cases only 10 were infected in an extraordinary manner. Of these 10 two were examples of the well-known risks run by surgeons, five were examples of intimate family or bed contact, the wedding-dinner case may have been acquired in the ordinary way, one case resulted from a boxing contest, and the last remained a mystery. It must always be a tragedy for any person to acquire syphilis or gonorrhœa in an accidental or innocent manner, and it is a very uncomfortable thought that we may have our food prepared, our hair cut, or be shaved by attendants who are suffering from an infectious stage of syphilis. It may be, however, that the real risk is a very remote one. We ought to know the facts as far as they can be ascertained. Venereal disease clinics have been in operation long enough to afford valuable information. We suggest that the Ministry of Health might usefully address inquiries to the medical officers of all the clinics in the country for the purpose of having the information in their possession tabulated and collated with a view to ascertaining the approximate percentage of venereal disease which is acquired in what we may call an "accidental" manner. When this has been done we shall be in a better position to consider what restrictive legislation is necessary in the case of persons suffering from an infectious stage of a venereal disease.

A Three-cornered Problem of Infection: Doctor—Patient—Employer.

Whilst the question of obligatory notification of venereal disease still awaits settlement, serious problems arise to emphasise the need for protecting the community against the danger of infection from recalcitrant individuals suffering from gonorrhœa or syphilis. A correspondent has asked us to comment upon one such problem, of which the pertinent facts may briefly be stated as follows:—

> A cook had been attended by her medical practitioner for a considerable time. She informed her mistress that she was suffering from internal discharge. She became worse and was ordered to bed. The lady of the house was unable to obtain any information from the doctor as to the nature of her servant's illness, but was informed by another maid that the cook was suffering from venereal disease, and that the doctor had promised not to disclose the nature of her ailment. The patient was ordered to take a hot bath every evening, there being but one bath in the house and some 12 people to use it. Not wishing, however, to dismiss her cook unless there was serious risk, the mistress again attempted, this time through a friend, to obtain information from the doctor. The latter made no positive statement, but the general impression gathered by the interrogator strengthened the suspicion that the patient was suffering from venereal disease. Eventually the mistress, after consultation with her own doctor, gave notice to the cook, who thereupon left.

The essence of the problem appears to be this. When a medical man is attending for venereal disease a patient whom he knows to be living under conditions which are a menace to the health of others what attitude should he adopt? Certainly he cannot give any information to the employer as to the nature of the patient's illness, but he can impress upon the patient the necessity which exists for giving up the situation at once. It may be objected that the patient will refuse to carry out this injunction. We believe that the practitioner endowed with tact and a knowledge of human nature would practically always achieve his object. The difficulty then arises that patients suddenly leaving their situation would be unable to find residential accommodation while undergoing treatment without attracting an undesirable degree of notice. This points to the establishment of hostels, both for men and women, where they could obtain treatment, or whence they could go to clinics for that purpose. Many such patients must of necessity be received free of charge, whilst others could contribute towards their maintenance. Any expense incurred by the State would be counterbalanced by shortening the period of wage-earning incapacity and preventing extension of infection. In the particular case on which comment was desired it seems to us imperative that professional confidence should be respected, and therefore the medical man acted with propriety in abstaining from informing the mistress, directly or indirectly, as to the condition of the servant. Nor was the doctor bound by law or ethics to insist upon the patient informing the mistress of the nature of her disease. It was, however, his duty to impress upon the patient the necessity of at once vacating her post. In order to facilitate the desired action the medical man might well have given to the patient a certificate to the effect that her physical condition was such as to preclude her from remaining in her situation. If she then voluntarily informed her employer of the nature of her disorder, such a course would facilitate any measures of disinfection. There remains the exceptional case in which the patient refuses after warning to put into practice the doctor's advice. Apart from any wide measure of compulsory notification, it is evident that the hands of the medical man should be strengthened to deal with such a situation. Any patient who has received a written statement from a doctor that he is a danger to the health of his employer and that he should at once vacate his employment, if he then fails to do so, should be notified as wilfully subjecting others to the risk of venereal disease. Legislation is desirable to empower such notification and determine the penalty for default.

A Red Cross Conference.

The first of the Red Cross regional conferences on venereal diseases to be held in Europe will convene at Copenhagen on May 20th, under the auspices of the League of Red Cross Societies. The Danish Red Cross Society will act as host and convener of the conference. The national Red Cross Societies of Holland, Great Britain, Norway, Sweden, Germany, and Finland have been invited to participate. Each Red Cross Society participating will send official delegates, and it is expected also that the governments of the countries concerned will be represented.

The problems to be discussed at the conference are outlined below:—

General summary of conditions in each country.
Medical measures against venereal diseases.
Educational measures against venereal diseases.
Special problems, including supply and costs of arsenical compounds for the treatment of syphilis, the possibility of establishing an international standard for the export and import of such arsenical compounds; the provision in important ports, by international agreements, for the treatment of cases of venereal diseases among sailors, and measures to be taken in connexion therewith; the part of the Red Cross in combating venereal diseases, its relation to government and voluntary agencies.

Following the first European regional conference in Copenhagen, the League of Red Cross Societies expects to arrange other regional conferences in other parts of Europe and subsequently in other parts of the world. The inception of such a conference by the League of Red Cross Societies indicates that the combating of the venereal diseases is recognised as an appropriate function of Red Cross societies. Considerable scope exists at present for such activity on the part of Red Cross Societies in the directions of popular education as to the causes and results of these disease and the provision or extension of facilities for the treatment of existing infections. Both these branches of antivenereal work are very suitable for adoption by Red Cross societies as a part of their programme of coöperation with public health authorities. In this country the instruction of young people, parents, teachers, and others in regard to the dangers of venereal diseases has been undertaken successfully by the N.C.C.V.D., working in close contact with the Ministry of Health and receiving the support and assistance of the British Red Cross Society. We are glad to learn that the National Council will be represented in the British delegation at Copenhagen, and that an exhibit of their educational methods and those employed by the American Social Hygiene Association will be a prominent feature of the conference.

In countries, as in Great Britain, where the Government is alive to the necessity for providing treatment for all sufferers from venereal diseases, and where an influential society for combating venereal diseases is in existence, the Red Cross may probably find it sufficient to content itself with lending moral and financial support. In countries where these factors are lacking or are inefficiently organised the Red Cross could advantageously play a more active rôle in providing education and treatment, and urging the adoption of such measures on the responsible authorities. The training of doctors and nurses, and the encouragement or endowment of further research as to the diagnosis and treatment of syphilis and gonorrhœa might well be considered desirable functions to be fulfilled by a Red Cross society. From the broader international point of view, it seems desirable to urge the development of a common basis for the prosecution in various countries of an active venereal campaign. As is well known, the outlook upon the venereal diseases varies greatly in different nationalities, and there appears to be a necessity for the exchange of views and opinions as to the practicability or otherwise of methods adopted in different countries for the combating of venereal diseases. For example, the outcome of the controversy in England as to immediate self-disinfection will be a valuable contribution to the campaign against venereal diseases in other parts of the world. The institution of such an organisation for international coördination and coöperation in measures against venereal diseases appears to be imminently desirable. The nucleus of such an international bureau exists in the League of Red Cross Societies, whose Division for Combating Venereal Diseases has been organised to act as a clearing-house for information and which is in communication with national societies and leaders in every part of the world.

AN INQUIRY INTO THE SALE OF DISINFECTANTS.

IT is extremely unfortunate that the views of the general public on the scientific uses of disinfectants are not so sound as they should be. In only too many illnesses the public thinks that disinfectants ought to be used to kill germs in their own body, or to prevent disease in others by the killing of germs in surrounding patients. Fortunately, the vast majority of patients are prepared to accept their doctor's advice before they start trying to kill the germs in their own body. The magic word "poison," which the Poison and Pharmacy Act, 1908, requires should be placed on receptacles of most poisonous substances, suffices to prevent the public from drugging themselves to the extent of harming their persons. Disinfection of the surroundings of patients is, of course, a wise procedure in the case of some illnesses, although disinfectants have been overdone. It is almost needless to point out that we are greatly handicapped in dealing with infectious disease, since we know so few of the germs causing infectious disease, and so little of the factors concerned in their spread.

Public Ignorance of the Function of Disinfectants.

Dr. T. W. Naylor Barlow some ten years ago published a valuable paper in *Public Health*, part of which dealt with the dangers of disinfectants. Quoting the medical officer of health of the county of Roxburgh of that time he stated that disinfection should be applied after cleaning and not in the place of cleaning. Dr. Barlow held that many housewives, especially those among the less intelligent classes, think that if they scatter plenty of disinfectant about no other precautions are necessary to prevent the spread of infectious disease, and he gave chapter and verse for his opinion. He also complained of the condition of ashbins and ashpits which were wrongly used, and pointed out that it was impossible to educate the public in the correct use of ashpits and ashbins if a health or cleansing department served out to the public some deodorising powder, not a disinfectant, to cloak their own carelessness. Quoting Dr. Meredith Richards, he agreed that the time had come when hygienists should free their minds from cant and teach both their authorities and the public that chemical disinfectants are of strictly limited utility, and that by far the greater part of the money now spent thereon would be better expended on soap, soda, and scrubbing-brushes. Dr. Barlow holds that disinfection of bedding in a steam disinfector is all that is necessary; he does not believe in the spraying of walls and gaseous disinfection for the reason that the organism cannot be brought into contact with a sufficient strength of the liquid or gas for a sufficiently long time. Although it is, perhaps, no longer the fashion nowadays to disinfect everything and everybody, yet we have not yet reached the position of complete sanity with regard to disinfection. Is it only in towns whose modes of thought are early Victorian, not to say pre-scientific, that disinfection is carried out after measles, for instance? Bleaching powder was used in the army to disinfect the ground around camp kitchens, stand-pipes, &c. At a recent large Boy Scouts Camp the ground near the urine pails was liberally bestrewn with a dark reddish-brown powder, which a local shopkeeper prominently advertised, basing his recommendation on the fact that it was used by the camp authorities.

But municipal authorities themselves are at times at fault. A well-known seaside resort used till recently to sprinkle its streets with sea-water. Although economy was one reason for its employment, a second aim was to disinfect the road surfaces. The salt water proved to be harmful to the wheels and tyres of vehicles, and the experiment was in consequence abandoned. Disinfectants are, however, thought to be of such importance in at least one town that a special subcommittee meeting is held annually to consider the tenders for disinfectant solutions and powders. To this meeting the sanitary inspector is invited, but not the medical officer of health. The result is the expenditure of a sum of money, admittedly small, which could be saved with no detriment to the public health.

Nevertheless, disinfectants have rational uses. Probably the majority of public health workers hold that micro-organisms are the main cause of infectious diseases, and would agree that disinfectants are of use in connexion with certain infectious fevers. Whether disinfection is necessary after cancer must remain a moot point until the question of the infectivity of cancer, a question which many consider is definitely settled in the negative, has been as finally decided as such a problem can be decided.

At the conference at the Royal Sanitary Institute held the summer of last year, Professor Henry Kenwood's proposal was adopted, that the Government should take up the control of the sale of disinfectants and that the sale of any liquid as a disinfectant in the public interest and on public health grounds be controlled by legislation, which should demand that any liquid "disinfectant" should have a carbolic acid coefficient (as tested by an approved method) of at least one. Penalty should be imposed for any false or misleading statements as to the germicidal value of a disinfectant, and for any misleading instructions with reference to the effective use of a disinfectant. Already the navy, army, and Government departments, and many local sanitary authorities protect themselves by the stipulation of their tender, and it is only the private purchaser who is left unprotected.

Nature of Disinfectants Stocked at Oilshops.

Inquiry has been made at some oilshops as to the nature of the disinfectants stocked and the approximate quantity sold, with the following result in two urban areas :—

I.

Shop No. 1.—Jeyes' fluid (8 oz. bottles), 3 weekly; Sanitas fluid, 1 weekly; carbolic fluid (loose), ½ gal. weekly; carbolic powder (packets and tins), 6 weekly.

No. 2.—Jeyes' fluid (bottles), ½ to 1 gal. weekly; Sanitas fluid (bottles), 2 or 3 pints weekly; carbolic fluid (loose), 2 gal.; Sanitas powder, 2 or 3 lb. weekly; Jeyes' powder, 3 lb. weekly.

No. 3.—Carbolic fluid (loose), pint weekly; Jeyes' fluid and Sanitas fluid (bottles), each 1 per 3 weeks; carbolic powder, 2 lb. per annum.

No. 4.—Jeyes' fluid (bottles), 2 to 3 gal. weekly; carbolic powder and Sanitas powder, each six tins weekly.

No. 5.—Jeyes' fluid, Sanitas, Milton, and carbolic (loose) (bottles), each ½ gal. weekly; Jeyes' powder and Sanitas powder (tins and packets), each 3 to 4 lb. weekly.

No. 6.—Jeyes' fluid (bottles), carbolic fluid (loose), Sanitas fluid (bottles), each 1½ gal. weekly. Condy's fluid (bottles), 2 monthly; carbolic powder (tins), 6 weekly.

No. 7.—Jeyes' fluid (bottles), Sanitas fluid (loose and bottles), carbolic fluid (loose and bottles), each ½ gal. weekly.

No. 8.—Jeyes' fluid; Sanitas fluid; Smith's fluid (bottles); carbolic fluid (loose); Smith's powder (packets).

No. 9.—Sanitas fluid (loose); Jeyes' fluid (bottles); Sanitas powder and carbolic powder (packets).

II.

Shop No. 1.—Liquid carbolic, about a gallon weekly.

No. 2.—Liquid carbolic, about half a gallon weekly.

No. 3.—No. 2 disinfecting fluid (under 3 per cent. carbolic), Jeyes' fluid, and Sanitas.

No. 4.—Dussek's fluid, Jeyes', Milton, and Sanitas.

No. 5.—Carbolic fluid, Jeyes', and Sanitas. The carbolic fluid on sale is of ordinary commercial standard and the sale is small, varying according to the weather conditions.

No. 6.—Disinfectant fluid.

No. 7.—Sanitary fluid in 5 gal. drums. No strength stated.

No. 8.—Wholesaler. Best carbolic disinfecting fluid. No strength stated.

No. 9.—Bought as soluble disinfectant fluid from wholesaler. No strength stated.

No. 10.—Bought from wholesaler as best carbolic disinfectant fluid. No strength stated.

In a provincial town inquiry at the oil shops elicited the following approximate sales:—

III.

Shop No. 1.—C.D. fluid, 1 gal. weekly.

No. 2.—Cresol, 1 gal. in summer time weekly.

No. 3.—Cresol, said to be 16 per cent. solution, 1-2 gal. weekly.

No. 4.—Sanitas, 2 gal. weekly.

No. 5.—Sanitas, only a small quantity weekly.

No. 6.—Cresol, 2 or 3 gal. weekly.

All the shopkeepers sell in pennyworths and twopennyworths, and customers bring their own bottles.

Poisoning by Disinfectants Unusual.

The phenoloid class of disinfectant is as a whole relatively not poisonous. The physical consistence of most of these disinfectants is such that it is not easy to drink a large quantity of them. Small quantities even of the undiluted solution are obviously harmless. For some considerable time, in more than one fever hospital, it was the practice to apply undiluted izal to the throat and no harmful results accrued from the quantity which must necessarily be swallowed. Although cases of poisoning with lysol are recorded, accidental poisoning with this class of compound is very unusual, the colour, appearance, viscidity, odour, and taste are very manifest, and, for the reason cited above, a small quantity, possibly even a mouthful, taken accidentally would in all probability not do much harm. As regards exhibition with criminal intent, to be effective the substance would have to be present in such strength that its taste and smell would at once be apparent. If a person wishes to commit suicide by poison the facilities which already exist for obtaining poison—e.g., weed-killer, hydrochloric acid, sulphuric acid, nitric acid, soluble salts of oxalic acid, copper sulphate, turpentine, lead salts, especially lead arsenate, are so abundant that a determined man or woman would certainly be able to get one of them. A leaflet issued by the Board of Agriculture informs the public how to get weed-killer and lead arsenate.

It has been the aim of manufacturers of disinfectants to produce substances with a high coefficient. Much of the money that has been wasted on so-called disinfectants has been wasted by the public being persuaded to purchase a well-advertised substance of low coefficient value. It would seem that the time has come to allow the wider sale of these phenoloid compounds. Apparently there is no valid objection to their sale by oil-shops or ironmongers, although it would obviously be futile to limit the strength of disinfectants sold at these shops to a point at which they are quite ineffective. Such disinfectants are diluted more for the profit of the vendor than to render them less poisonous. A difficulty may, however, be found in a recent legal decision which, we are informed, makes it necessary to label these substances as poisonous.

Obligation to Label Disinfectants as Poisons.

This legal decision would appear to be based on the word homologues in the text of the Pharmacy and Poison Act, 1908, which regulates the sale of certain poisonous substances. The list of these, enumerated in the schedule, includes carbolic acid and liquid preparations of carbolic acid and its homologues containing more than 3 per cent. of these substances, except preparations for use as sheep-wash or for any other purpose in connexion with agriculture or horticulture contained in a closed vessel distinctly labelled with the word "poisonous," the name and address of the seller, and a notice of the special purposes for which the preparations are intended. Part 2 of the schedule also specifies the articles to be deemed poisonous within the meaning of the Act. "All preparations or admixtures which are not included in Part 1 of this schedule, and contain a poison within the meaning of the Pharmacy Acts, except preparations or admixtures the exclusion of which from this schedule is *indicated by the words* therein relating to carbolic acid, chloroform and coca, and except such substances as come within the provisions of Section 5 of this *Act*." Section 5 (1) states that:

> "It shall not be lawful to sell any substance to which this section applies by retail, unless the box, bottle, vessel, wrapper, or cover in which the substance is contained is distinctly labelled with the name of the substance and the word 'Poisonous,' and with the name and address of the seller of the substance, and unless such other regulations as may be prescribed under this section by Order in Council are complied with; and if any person sells any such substance otherwise than in *accordance with the provisions* of this section or of any Order in Council made thereunder, he shall, on conviction under the Summary Jurisdiction Acts, be liable for each offence to a fine *not exceeding* £5.
>
> (2) The substances to which this section applies are sulphuric acid, nitric acid, hydrochloric acid, soluble salts of oxalic acid, and such other substances as may *for the time* being be prescribed by Order in Council under this section."

It is doubtful whether, as a matter of policy, it is advisable to label these phenoloid disinfectants as "poisonous." Such a label focuses attention on this quality; possibly the community would be best served by labelling them "Not to be drunk." A fundamental principle is that a disinfectant should be applied in sufficient strength—the public, however, often think they are buying true disinfectants, whereas they receive deodorants. It would seem probable that an assistant in an oil-shop would not be so likely as a qualified pharmaceutical chemist to know the scientific value of a commodity he sells. The assistant or proprietor of a retail Italian warehouse might be liable to judge a disinfectant by its æsthetic properties, such as its smell or colour when mixed with water. The chemist, with his association with the medical profession, would be more willing to give credibility to the statements of members of the medical profession, the eminence and scientific qualifications of whom he would be more or less able to judge. Possibly, however, these disadvantages could be removed in time, at any rate, if the public is educated by disinterested scientists, including medical officers of health, who should be able to do much by enlightening those members of their health committees who desire information.

MEDICINE AND THE LAW.

Evidence as to the Time of Death in Murder Trials.

A CORRESPONDENT invites our attention to the important nature of the evidence expected from medical men in cases of death involving criminal charges, where the witness is asked to describe the condition of a dead body when he first saw it, and to state his conclusions as to how long previously death had taken place. Our correspondent further suggests that the text-books are less informing than they might be on the subject, and that an authoritative pronouncement could usefully be made upon the matter. He also points out the necessity for taking into account circumstances which vary in each particular case, but which are generally capable of being definitely ascertained. The subject is no doubt one of considerable interest owing to the fact that the evidence referred to is very frequently required in order to establish the guilt or innocence of a person accused of murder. To establish the time of death where a body has been found within a few hours is one thing, but it is quite another, and often even more important, where a long time has elapsed. The murderer Crippen would not have been convicted if the remains found under the kitchen floor of the house, which he had occupied, had been in a condition inconsistent with their having been placed there during his tenancy. The cases range, therefore, from such as his, to others of the nature of the Eastbourne murder referred to by our correspondent, where death had taken place within a few hours and the vital question was within how many. With regard, at all events, to occasions where the shorter time is involved, the collection of information of an authoritative description need not be difficult, and its publication would be of distinct service. It would imply that competent observers should avail themselves of such opportunities as many general hospitals could supply for watching the development of the various phenomena observable in dead bodies where violent or unnatural death has taken place. Record of surrounding conditions would be made, and would include the mode of death, physical details likely to affect post-mortem developments, and conditions of exposure, atmosphere, and temperature, to which the body was subjected. Contribution might further be made by those who have had such vast recent experience of the phenomena accompanying death upon the battlefield. The whole would have to be carefully collated and scrutinised, when it is quite possible that a monograph dealing with the subject suggested might prove a valuable contribution to forensic medicine, one of practical use to those who on rare occasions may be confronted by a duty lying outside the path of their daily experience.

Property in Bodily Organs.

In a recent number[1] of a Berlin medical paper Dr. Arthur Weil deals with certain practical and legal difficulties arising from the transplanting of sex glands according to Steinach's teaching of rejuvenation. The article suggests as the ideal the transplantation of healthy glands from normal relatives, if that were possible, and if not, the use of glands removed by operation on account of various morbid conditions, the difficulties of obtaining material being overcome by having a sort of exchange and mart in the surgical department of a large hospital. Apparently legal difficulty might arise in Germany in regard to the transplantation of a healthy testis, even with the consent of the donor, although not in the case of a gland removed on account of any medical reason. The proprietary right of the donor to any organ removed from him can in Germany pass over to the recipient by a mutual agreement, although no agreement is legally binding in regard to parts of the human body so long as they are still in organic continuity with it. The author suggests that the time-honoured practice of castration would be found to have some bearing on the legal position. In this country we are not aware that anything in the existing law would prevent a man agreeing to part with any portion of his body to another with or without consideration for so doing, or would prevent a surgeon from performing the required operation. The transfusion of blood affords a tolerably close parallel so far as questions of principle are involved. This, however, is not to be taken as any decision that public opinion would endorse such transfers as those suggested, either on the part of transferrer or transferee, or of the surgeon. We have here in mind the possibility that a wealthy man might desire to acquire the desired organ from a poor one. It is in such a case that odium would readily attach to the proceeding; where the transference was an act of self-sacrifice on the part of the transferrer it might be different. In any event the bargain to transfer would probably be held to be contrary to public policy, and could not be enforced in a court of law. Where the carrying out of such a bargain had for its result any injury not contemplated by one of the parties to it, the surgeon would find every effort made to attach responsibility to him, and a heavy weight of prejudice in the scales against him. In the second class of cases referred to, that of glands removed by operation on account of morbid conditions, it is suggested that transfer might take place through arrangements made by the surgeon and that in a hospital there might be organised a system by which the removed gland would be used for the benefit of another patient. Through such an exchange department in any large institution, the transferee would gain without the transferrer being aware of it, or at any rate without his knowing to whose welfare he had contributed. At the first glance this may appear practicable and not difficult to arrange. In such a system there would be no question of a man allowing himself to be mutilated for the sake of pecuniary gain, but the carrying of the transaction out would have to be subject to precautions in order to prevent serious scandal. There would always be a danger that the patient, whom we have called for convenience the transferrer, would complain that he had been operated on unnecessarily in order that someone else might gain thereby, or to enable the surgeon to enlarge his knowledge by an interesting experiment. Surgery does not indulge in secret remedies, so that the fact of such measures as those involved being in use would be generally known, and such trouble as might arise would find its way with every kind of exaggeration into the lay press. Accusations would be easy to make that would be difficult to disprove, and a charge of malpraxis might at any time be launched against a surgeon or a hospital to the serious detriment of either. There are occasions where the prudent are justified in waiting to profit by the experience of others.

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[1] Berliner klin. Wochenschr., March 28th, 1921.

A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

METEOROLOGICAL OFFICE: ADVISORY COMMITTEE ON ATMOSPHERIC POLLUTION: SUMMARY OF REPORTS FOR APRIL, MAY, JUNE, JULY, 1920.

April.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre.								
		Insoluble matter.			Soluble matter.		Total solids.	Included in soluble matter.		
		Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition.	Ash.		Sulphate as (SO_3).	Chlorine (Cl).	Ammonia (NH_3).
ENGLAND.										
London—										
Meteorological Office	56	0·27	3·57	6·77	2·46	1·79	14·86	0·67	0·99	0·05
Archbishop's Park	67	0·15	1·96	2·32	1·94	4·52	10·88	2·47	0·75	0·15
Finsbury Park ...	76	0·14	1·41	3·76	1·52	4·78	11·62	0·99	0·81	0·11
Ravenscourt Pk.	74	0·28	2·48	6·05	2·52	5·17	16·52	2·39	0·99	0·29
Southwark Park	48	0·18	2·07	5·40	1·44	2·53	11·63	1·28	0·50	0·10
Victoria Park ...	75	0·15	1·70	3·59	0·90	2·60	8·94	0·96	0·99	0·12
Wandsworth Com.	55	0·12	0·84	2·29	1·36	2·87	7·48	1·31	0·65	0·14
Golden Lane ...	69	0·03	2·81	3·98	0·83	3·85	11·68	1·21	0·57	0·11
Birmingham—										
Central	100	0·18	3·39	10·12	1·64	4·99	20·32	2·68	0·66	0·15
Aston	106	0·12	2·19	5·16	1·69	5·35	14·51	1·96	0·53	0·08
South-Western ...	125	0·02	0·75	1·82	1·24	4·15	7·98	1·79	0·38	0·13
Kingston-upon-Hull	89	0·12	1·91	4·52	2·86	5·82	15·23	3·06	1·02	0·09
Malvern	115	—	0·20	0·23	0·33	0·77	1·56	0·33	0·07	0·02
Newcastle-on-Tyne..	75	0·14	2·65	5·54	2·56	2·41	13·30	1·70	0·67	0·15
Rochdale	150	—	—	—	—	—	26·93	—	—	—
Rothamsted	88	—	0·45	0·54	1·76	1·03	3·77	—	—	—
St. Helens...	109	0·33	6·12	12·12	1·91	3·56	24·04	1·61	1·31	0·02
Southport—										
Hesketh Park ...	102	0·05	0·44	0·44	2·55	3·19	6·67	0·70	1·42	0·04
Woodvale Moss...	93	—	—	—	—	—	5·49	—	—	—
SCOTLAND.										
Glasgow—										
Alexandra Park ...	32	0·02	1·27	2·41	1·01	1·27	5·98	0·53	0·44	0·05
Bellahouston Pk..	20	0·06	1·47	2·11	0·39	0·47	4·50	0·21	0·26	0·02
Blythswood Sq. ...	32	0·13	4·56	13·51	0·99	1·82	21·01	0·77	0·50	0·11
Botanic Gdns. ...	21	0·11	1·60	3·60	0·63	0·90	6·84	0·42	0·33	0·03
Queen's Park ...	34	0·04	0·90	2·12	0·68	0·84	4·58	0·41	0·39	0·12
Richmond Park...	19	0·10	1·48	3·31	0·29	0·77	6·95	0·29	0·24	0·03
Ruchill Park ...	33	0·07	1·14	3·32	0·39	1·47	6·39	0·49	0·39	0·05
Tollcross Park ...	26	0·08	1·68	4·59	0·87	1·65	8·87	0·76	0·43	0·09
Victoria Park ...	34	0·08	3·67	2·13	0·56	1·18	7·62	0·43	0·46	0·07
Stirling	58	0·05	0·81	1·08	1·13	1·89	4·96	0·48	0·08	0·07

May.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre.								
		Insoluble matter.			Soluble matter.		Total solids.	Included in soluble matter.		
		Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition.	Ash.		Sulphate as (SO_3).	Chlorine (Cl).	Ammonia (NH_3).
ENGLAND.										
London—										
Meteorological Office	19	0·77	4·28	4·50	2·12	1·45	13·12	0·43	1·18	0·03
Archbishop's Park	14	0·16	2·79	4·88	1·20	2·29	11·32	0·77	0·67	0·05
Finsbury Park ...	19	0·10	1·28	5·62	1·14	1·55	9·69	0·45	0·77	0·05
Ravenscourt Park	50	0·22	1·30	3·92	1·09	2·11	8·64	0·79	0·71	0·11
Southwark Park	14	0·12	1·99	5·26	1·02	2·07	10·46	0·74	0·59	0·08
Victoria Park ...	12	0·07	1·11	3·83	1·02	1·32	7·31	0·30	0·74	0·03
Wandsworth Com.	13	0·13	1·10	2·97	0·84	1·64	6·69	0·58	0·65	0·05
Golden Lane ...	12	0·02	2·15	3·29	0·79	1·83	8·09	0·51	0·41	0·10
Birmingham—										
Central	65	0·11	3·94	13·23	1·45	3·41	22·14	1·59	0·30	0·19
Aston	—	—	—	—	—	—	—	—	—	—
South-Western ...	69	0·02	0·97	2·76	1·11	2·55	7·41	0·99	0·14	0·12
Kingston-upon-Hull	60	0·07	1·42	5·54	1·61	5·84	14·39	2·06	0·72	0·07
Malvern	44	—	0·18	0·23	0·36	0·59	1·36	0·36	0·05	0·01
Newcastle-on-Tyne	74	0·29	7·80	19·25	1·77	4·29	33·40	1·90	0·94	0·18
Rochdale*...	154	—	Ti.:	7·12	Ts.:	4·76	11·88	—	—	—
Rothamsted	—	—	—	—	—	—	—	—	—	—
St. Helens...	132	0·27	0·68	1·38	1·32	18·49	22·14	9·11	2·38	0·02
Southport—										
Hesketh Park ...	95	0·02	0·68	0·96	0·47	5·22	7·33	0·97	2·17	0·09
Woodvale Moss...	39	—	—	—	—	—	4·91	—	—	—
SCOTLAND.										
Glasgow—										
Alexandra Park...	114	0·05	4·72	1·73	1·02	2·73	10·25	1·04	2·18	0·16
Bellahouston Pk.	94	0·06	2·03	2·68	2·78	3·84	11·39	0·94	3·16	0·14
Blythswood Sq. ...	121	0·19	3·45	6·18	3·30	4·79	17·91	1·85	3·39	0·20
Botanic Gdns. ...	84	0·16	2·72	6·73	2·89	3·13	15·63	0·98	3·16	0·11
Queen's Park ...	114	0·08	2·57	5·01	2·53	3·88	14·07	1·17	2·41	1·82
Richmond Park...	128	0·06	1·35	2·92	1·69	3·04	9·06	0·90	2·85	0·18
Ruchill Park ...	122	0·08	2·50	4·84	1·64	2·96	12·02	1·45	2·58	0·17
Tollcross Park ...	114	0·15	2·05	5·25	1·97	3·51	12·93	1·00	3·12	1·82
Victoria Park ...	126	0·05	2·13	4·96	1·59	3·68	12·42	0·99	0·28	0·16

June.

Place.	Rainfall in millimetres.	Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition.	Ash.	Total solids.	Sulphate as (SO_3).	Chlorine (Cl).	Ammonia (NH_3).
ENGLAND.										
London—										
Meteorological Office	45	0·51	5·58	3·68	3·05	2·88	15·71	0·76	1·37	0·04
Archbishop's Park	33	0·11	2·87	6·84	2·18	3·38	15·38	0·32	1·66	0·06
Finsbury Park ..	43	0·11	1·47	4·49	2·29	2·26	10·61	0·45	1·57	0·08
Ravenscourt Pk.	42	0·10	1·50	4·30	1·70	2·65	10·25	0·39	1·55	0·08
Southwark Park	39	0·03	3·21	5·01	1·57	2·24	12·09	0·67	1·35	0·10
Victoria Park ...	36	0·05	2·05	4·25	2·10	2·40	10·86	0·39	1·70	0·09
Wandsworth Com.	38	0·06	1·79	1·81	1·49	1·65	6·80	0·38	1·07	0·06
Golden Lane ...	40	0·04	2·82	3·66	1·61	2·73	10·86	0·70	1·65	0·22
Birmingham—										
Central	74	0·24	5·20	13·95	1·32	4·16	21·87	2·93	0·37	0·16
Aston	—	—	—	—	—	—	—	—	—	—
South-Western ...	64	0·02	0·83	2·22	0·97	2·43	6·47	1·32	0·06	0·09
Kingston-upon-Hull	30	0·03	1·19	5·75	1·35	3·36	11·68	1·45	0·55	0·04
Malvern	72	—	0·20	0·36	0·35	1·23	2·15	0·33	0·15	0·01
Newcastle-on-Tyne	18	0·27	4·45	9·72	1·60	2·32	18·36	0·75	0·73	0·05
Rochdale*	71	—	Ti.:	7·12	Ts.:	4·76	11·88	—	—	—
Rothamsted	48	—	0·58	0·79	1·05	1·60	4·02	—	—	—
St. Helens	90	0·08	1·39	1·81	1·35	3·63	8·25	1·66	0·83	0·06
Southport—										
Hesketh Park ...	68	0·04	0·82	0·95	2·05	3·58	7·45	0·81	2·05	0·07
Woodvale Moss...	78	—	—	—	—	—	8·51	—	—	—
SCOTLAND.										
Glasgow—										
Alexandra Park .	31	0·31	2·61	8·29	1·18	1·49	13·88	0·79	0·66	0·11
Bellahouston Pk.	56	0·07	0·78	1·29	1·62	2·75	6·51	0·66	1·13	0·10
Blythswood Sq. . .	46	0·31	3·01	6·27	2·62	3·34	15·45	1·13	1·21	0·18
Botanic Gdns. ...	50	0·30	1·93	5·32	2·10	3·40	13·05	0·93	1·18	0·19
Queen's Park ..	58	0·27	1·12	2·73	0·55	2·61	7·33	0·87	1·31	0·11
Richmond Park	33	0·30	2·06	4·28	1·32	1·72	9·68	0·58	0·75	0·13
Ruchill Park ..	45	0·04	1·69	3·49	1·65	2·05	8·92	0·89	5·89	0·14
Tollcross Park	34	0·20	1·85	4·84	1·95	1·88	10·72	0·57	1·13	0·13
Victoria Park .	70	0·11	1·29	3·48	1·05	3·15	9·03	0·81	1·16	0·11

July.

Place.	Rainfall in millimetres.	Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition.	Ash.	Total solids.	Sulphate as (SO_3).	Chlorine (Cl).	Ammonia (NH_3).
ENGLAND.										
London—										
Meteorological Office	94	0·26	1·98	2·93	5·64	7·52	18·33	2·72	2·00	nil.
Archbishop's Park	88	0·18	3·46	4·98	0·93	3·37	12·93	1·23	1·80	0·11
Finsbury Park† ...	—	—	—	—	—	—	—	—	—	—
Ravenscourt Pk.	91	0·20	1·60	2·96	2·33	2·45	9·55	0·60	2·21	0·16
Southwark Park	85	0·06	2·11	5·51	2·00	3·67	13·04	0·93	2·21	0·12
Victoria Park ...	85	0·10	1·96	3·45	3·07	3·65	12·23	0·69	2·07	0·17
Wandsworth Com.	72	0·28	1·87	2·64	3·39	4·42	12·60	1·16	2·47	0·15
Golden Lane ...	79	0·04	3·51	4·30	1·26	4·73	13·82	1·41	2·07	0·22
Birmingham—										
Central	90	0·13	5·26	13·43	2·11	4·22	25·15	2·40	0·45	0·14
Aston	94	0·10	2·82	10·74	1·60	3·58	18·84	1·90	0·38	0·06
South-Western ...	102	0·02	0·78	1·35	0·93	2·54	5·62	1·32	0·41	0·10
Kingston-upon-Hull	79	0·03	2·04	4·72	2·30	6·75	15·89	2·62	0·85	0·13
Malvern	105	—	0·18	0·25	0·43	1·75	2·61	0·46	0·12	0·02
Newcastle-on-Tyne	79	0·50	2·82	6·14	1·58	3·01	14·05	1·17	0·76	0·16
Rochdale*	244	—	Ti.:	24·38	Ts.:	12·59	36·97	—	—	—
Rothampsted... ...	117	—	0·65	1·52	1·41	2·09	5·67	—	—	—
St. Helens...	114	0·03	1·75	4·46	2·28	3·42	11·94	1·96	0·68	0·09
Southport—										
Hesketh Park ...	124	0·08	0·51	0·59	3·41	6·50	11·09	0·98	2·23	0·05
Woodvale Moss...	115	—	—	—	—	—	9·52	—	—	—
Liverpool	168	0·18	2·82	6·05	2·41	6·91	18·37	4·78	0·59	0·20
SCOTLAND.										
Glasgow—										
Alexandra Park...	74	0·03	1·87	3·09	1·77	2·88	9·64	0·81	3·04	0·14
Bellahouston Pk..	73	0·10	0·85	1·22	2·03	4·15	8·35	1·02	3·08	0·05
Blythswood Sq....	112	0·17	2·76	5·22	2·69	5·38	16·22	1·61	3·59	0·23
Botanic Gdns. ...	86	0·29	2·85	7·04	3·61	4·21	18·00	1·00	3·06	0·05
Queen's Park ...	67	0·27	1·59	2·67	2·40	3·53	10·46	0·82	2·98	0·11
Richmond Park ..	70	0·13	1·88	3·62	1·89	3·36	10·88	0·72	4·32	0·17
Ruchill Park ..	93	0·09	1·81	2·26	1·95	3·80	8·91	0·89	5·89	0·14
Tollcross Park ...	80	0·63	2·97	6·99	1·75	5·52	17·86	1·05	2·91	0·11
Victoria Park ..	31	0·05	1·03	1·95	0·84	1·86	5·74	0·53	1·19	0·06

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* Rochdale figures are average for May and June. Ti. = Total insoluble. Ts. = Total soluble. † Bottle broken.

"Tar" includes all matter insoluble in water but soluble in CS_2. "Carbonaceous" includes all combustible matter insoluble in water and in CS_2. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (a) Approx. 9lb. per acre; (b) 2·56 English tons per sq. mile; (c) 1 g. per sq. metre; (d) 1/1000 mm. of rainfall.

The personnel of public health authorities concerned in the supervision of these examinations and of the analytical work involved remains the same as published in previous tables. The analyses of the rain and deposit caught in the gauge at the Meteorological Office were made in THE LANCET Laboratory.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Reciprocity of Medical Diplomas Between Austria and Czecho-Slovakia.

AFTER protracted negotiations an understanding has been arrived at between the Governments of Austria and Czecho-Slovakia which settles some of the numerous misunderstandings arising out of the disruption of former university links. There is now mutual recognition, between the republics, of the validity of medical degrees and diplomas obtained before Nov. 1st, 1918, at any of the universities now belonging to either State. These diplomas entitle their holder to practise in the numerous health resorts of the two countries (Carlsbad, Marienbad, Franzensbad, Hall, Baden Pistyan, Ischl, &c.). Furthermore, such diplomas are necessary for doctors who wish to practise in the hospitals and medical institutes of either country, but are not valid for regular medical practice outside these institutions or in other places than health resorts. Holders of diplomas obtained after that date must apply for permission if they wish to practise outside their own country, but this permission will be granted on very liberal conditions. In the frontier districts, where the population is very much mixed, doctors of either nationality may be consulted.

Increase of the Numbers of Out-patients in Hospitals.

Although the reports of the Board of Health show the health of Vienna to be improving, the numbers of out-patients in the ambulatories is constantly increasing. It is true that during the last few months of the war the conditions were still worse, but even so they are now most appalling. The lack of beds in hospitals prompts many patients to turn to the out-patient departments for help, where they are admitted only if they produce a certificate proving them to be paupers. Hundreds of such persons flock daily to the clinics. Labourers and factory hands were formerly the most frequent attenders in these crowds, but now they have disappeared, and the former middle-classes predominate, as they cannot afford to pay the private doctor's fee, and do not belong to a sick club. The ambulatories most frequented are those for diseases of women and children and for venereal diseases; the ophthalmologic clinics are also overcrowded at present; in the departments for children's diseases the number of babies and infants is markedly less than a few years ago—the result of war and the time of so-called peace.

Serious Position of Dental Practitioners: Medical Strike in Styria.

Within the last few weeks the medical profession has been considerably alarmed by the attitude of the Government towards a problem which was thought to have been definitely settled some time ago. As pointed out in a previous letter (vide THE LANCET, March 26th, p. 664) relations between the dental surgeons and the dental mechanics had become very strained; the mechanics demanded the right to perform minor surgical operations, including extraction of teeth. Whilst the doctors refused to admit such a right, the Government offered its services as mediator, and an understanding was arrived at. A Bill was drafted, to be brought before the National Assembly, which permitted the present practising mechanics to perform minor operations—e.g., lancing an abscess or filling teeth, but not extraction or other more highly technical procedures. In future, however, no new licence for the practise of dentistry was to be granted to the dental mechanic. But the matter has now assumed a different aspect; the leaders of the dental mechanics' union refused to accept this undertaking, and bought about a strike of mechanics employed by dental surgeons, whilst they themselves continued working for the public as formerly. They succeeded in bringing the present Government over to their side, and in spite of all protests from the medical profession a Bill was carried in the National Assembly giving dental mechanics practically the same rights as those pertaining to fully qualified doctors of medicine. It is true that the Bill provides for an examination to be passed by future mechanics before they may practise on human beings; the examination is to comprise anatomy, biology, pathology, and physiology of the mouth and teeth; but this measure of protection is regarded by dental surgeons as a farce. There will thus be two kinds of dentists in Austria—fully qualified doctors of medicine with six to eight years of hard scientific study behind them, and mechanics uneducated in general medicine, the latter having equal rights with the former, and being permitted by law to meddle in surgical contingencies with which they may not be competent to deal. This breach of the hitherto strictly observed law that no lay person shall be permitted to treat pathological conditions of the human body has naturally aroused great indignation amongst medical men; many suggestions have been made as to means of rendering protest effective, including the unpopular proposal of a medical strike. In Styria the doctors at once refused to coöperate with the local boards and Government officers in all public health affairs. Notification of disease, coroners' work, and inspection of meat and cattle have been refused. In Vienna, the medical organisation has taken up the challenge too; and the Medical Council is acting on the same lines, having, for instance, refused to give its opinion on the draft of the new law now under consideration, dealing with hospitals and charity institutions. All circles of the profession are unanimous in opposing the attitude of the Government, which is regarded as promoting a revival of medical quackery. The profession is not opposed to legislative reforms to improve the present relations between the hostile groups, but it refuses to be excluded in the process of settling such vital problems, especially after an agreement had been arrived at previously.

Contract Practice for Persons Employed by the State.

An experiment, conducted on a large scale from the outset, which may now be stated to have proved successful, has shown that the needs of the profession and the public may be easily reconciled with each other. In an agreement signed at the end of January, the State and the medical organisation have established a compulsory sick club for all State officials throughout the country. These officials number about 150,000; their wives and children are accorded the same rights in the club, together with the 25,000 State pensioners; the number of persons thus insured against illness amounts in all to over 400,000. The difference between this sick club and the other krankenkassen is the rate of payment. Members of the latter pay a certain monthly salary to their doctor, whatever his work be. The State sick club pays a fixed fee for each consultation or call. Any practitioner desiring to work under this contract is admitted to the test of doctors; the patient may select any one from this list he likes. If he chooses a man living away from his district he must pay an excess or "distance" fee, but gets refunded so much, as the doctor is entitled to charge in his own district only, according to the contract. As a rule the doctor gets 34 kronen for a first examination and for the subsequent consultations half that fee. For a call at the patient's home twice as much is charged; for a night call 100 per cent. more is added. Special services are paid at the rate of one to four points extra, each point being 10 kronen; for instance, the application of an extensive bandage, a hypodermic injection, a splint, a catheter, &c. Specialists can be consulted only if the general practitioner so desires. Their fees are much higher—100 kronen first examination, 50 kronen for subsequent consultations. Here, also, calls at the patient's house are 100 per cent. higher, night calls and extra work not involved in the regular examination are paid in addition. The doctor is entitled to charge an extra "distance" fee if called to a patient outside of his district, but this the patient must find out of his own pocket. As regards the funds of the State sick clubs, these are raised by regular contributions by the insured persons and the State. The State officials pay 1½ per cent. of their salary towards this fund, and an equal sum is paid by the

State. The result of these payments is calculated at 60,000,000 kronen a year, sufficient to pay 400 kronen a year for the illness of 150,000 members—figures obtained from the experiences of other sickness insurance clubs. The understanding was arrived at for a period of three months, subject to rearrangements as general conditions might require. It was found to be working very satisfactorily for both parties; it was therefore renewed on May 1st, the fees being increased by mutual understanding, for the period of the next three months, thus reaching about 50-60 per cent. of the fees of general private practice.

Discovery of a Warm Iodine Spring in Austria.

Thermal water, highly charged with iodine, has recently been discovered in Upper Austria, not far from Linz, coming up a shaft more than 1500 feet deep. The temperature of the water is 36° C. (97° F.), this being by far the hottest of all thermal iodine waters in Europe. The owner of the springs did not know the value of the waters, and refused to hand his well over for public use. Thereupon the Local Government Board applied to the Ministry of Public Health, and the existence of this valuable spa only then became known to the latter body. Expropriation has been contemplated, as the owner will not admit that the community is entitled to the benefits of this rare natural gift. Hitherto the strongest iodine waters were those at Hall, also in Upper Austria; the latter have a temperature of only 11° C. (52° F.), and are extensively used both in the drinking cure and in the shape of "Hall iodine salt." Since the war the combined treatment with salvarsan and iodine baths in Hall has been very much recommended in this country for syphilitic disease of the tertiary stage, and medical circles expect even better results from the new thermal waters, the capacity of which is over 60 litres (15 gallons) per second.

May 4th.

ROUMANIA.

(FROM OUR OWN CORRESPONDENT.)

Food Adulteration and Preservation.

Dr. Constantinescu, chemical analyst at the Department of Agriculture, read a paper at the Medical Club of Cluj on the above subject. He said that the necessity of preserving food in some way had been recognised since man emerged from his uncultured state. The development of the science of chemistry had placed in the hands of the manufacturer means before unknown of preserving foods, but also of matching them in colours simulating quality. He believed the education of the public in the artificial colouring of foods to be quite as effective as legislation. After April 20th he said the food law would require that all food products entering or leaving this country (meat conserves, vegetable conserves for the army), should, if artificially coloured, bear a label with a statement to that effect. No colouring material need be declared, excepting only sulphate of copper. His advice to food makers was to cease using colours, especially if the colouring matter is under suspicion of any kind. He considered that antiseptics should never be put into foods, except when absolutely necessary, unless the consumer orders them himself, but in his opinion it is legitimate to use salicylic, boric, and sulphurous acid (the last in infinitesimal doses), as employed in the fumigation of dried fruits, and the burning of the sulphur linen in wine barrels, a method which has come down from antiquity. When, as at the present time, it is employed in enormous quantities for preserving a poor vintage and for placing wine on the market before it is properly matured, he declared its use to be unpardonable.

Medical Sociology.

A society for the study of questions of social medicine and hygiene and medical statistics was formally constituted in Bucharest on April 9th at a meeting attended by a number of medical practitioners, political economists, and sociologists. The membership of the new society amounts to 31, and includes medical practitioners, official statisticians, and persons interested in social welfare.

Neglected Physical Signs in Diseases of the Chest.

Dr. Riemer calls attention to several physical signs first described by Dr. A. Grober in Germany, the presence of which he considers to be of some importance, in the diagnosis of intrathoracic diseases, with information gained by fluoroscopy. It is but little known, for instance, that difference in the size of the pupils is a common symptom of apex tuberculosis. The pupil of the affected side is generally wider, since the sympathetic nerve is irritated by the inflamed pleura. Another valuable sign is the behaviour of the veins of the chest if an expiratory effort is made with closed glottis as in Valsalva's method. Normally the vessels on both sides swell equally, but with tumours, aneurysms, &c., the veins affected by the compression will be more prominent. Normally, the pupils contract somewhat during expiration and dilate slightly with inspiration; with Valsalva's method there is a gradual, slight dilatation during the deep inspiration preceding the expiratory effort, and a gradual slight contraction during the latter. In disease the following variations occur: (1) Only one pupil will show normal contraction; the other will dilate, and on the side of the latter pathological lesions of definite localisation will be found in the thorax. (2) If both pupils dilate instead of contracting during forced expiration, the disease is bilateral. (3) If there is a difference in the size of the pupils during normal respiration and the dilated pupil widens still more during Valsalva's experiment, while the contracted one becomes normal, intrathoracic disease on the side of the wide pupil is probable. (4) If the pupils differ in size with quiet respiration, but dilate with Valsalva's method, bilateral intrathoracic affection is probable. If the smaller pupil becomes equal to or larger than the other one, the disease probably also affects both sides, if local disease or organic disease of the nervous system can be excluded. Absence of all these phenomena does not argue against intrathoracic disease; the percussion note obtained over the manubrium sterni is here of the greatest value. In new growth or inflammatory tumour of the mediastinum there will often be dullness with closed mouth and tympanitic resonance with open mouth, or tympanitic resonance with closed mouth and Wintrich's change of percussion with open mouth.

New Regulations to Prevent the Spread of Infectious Diseases.

For the Bill recently introduced by the Sanitary Board of Roumania the chief sanitarian has now substituted another, which not only gives authorities power to control persons suffering from acute infectious diseases, but also gives them sanitary control of the premises where such diseases exist. The Bill also confers powers for the regulation of burial of bodies of persons who have died of acute infectious diseases, and fixes fines and penalties for non-compliance with the rules made. It stipulates that the rules shall cover the following: (1) Reports from physicians; (2) quarantine and disinfection; (3) treatment of infected bedding and clothing; (4) care and burial of the dead in cases of contagious disease; (5) disinfection of conveyances; (6) admission and attendance of persons at public or private schools, asylums, hospitals, and compulsory vaccination and revaccination; (7) erection of a typhoid station, where patients convalescent after typhoid (typhoid-carriers) will be examined fortnightly for three months.

Death-rate in 1920.

The State Statistical Bureau, in its annual report, finds that, estimated by the death-rate from all causes, the sanitary condition of the Roumanian State (old Kingdom) for 1920 was unsatisfactory. There were 128,564 deaths reported, which is largely in excess of previous records. The annual average mortality for the past 20 years, including 1920, is 120,000. Of epidemic diseases, cerebro-spinal fever and measles alone have shown any material increase. There was an outbreak of the latter disease in several parts of the kingdom, beginning in March and continuing for several months. Typhoid was also responsible for many deaths; in Moldavia, the eastern part of the Old Roumania, the mortality from this cause was nearly double that of 1919. The chief cause for increase in mortality of 1920, however, has been pneumonia, with 13,500 deaths, against 11,470 in the preceding year. These figures were nearly reached in the worst influenza years (1917-18 and 1891-93). There were over 11,000 deaths from consumption; this figure also exceeds that of any previous year.

COUNCIL OF BRITISH OPHTHALMOLOGISTS: ANNUAL REPORT.

THE Council of British Ophthalmologists presented its annual report for 1920-21 to a meeting of ophthalmologists held on May 7th at the Royal Society of Medicine. The report opened with a record of appointments made at the first meeting of the session. Mr. J. B. Lawford was elected President in place of Sir Anderson Critchett; Sir George Berry and Mr. E. Treacher Collins were elected Vice-Presidents; Mr. J. Herbert Fisher, hon. treasurer; and Mr. Leslie Paton, hon. secretary. The following members were elected on the Executive Committee: Messrs. Fisher, Collins, Parsons, and Mayou, with the President and Secretary ex officiis.

In 1919 the Council issued a report dealing with the training and examination of ophthalmic surgeons; it was noted with approval that the following special examinations in ophthalmology have recently been established: M.S. London (Ophthalmology); M.S. Victoria University, Manchester (Ophthalmology); D.O.M.S. Conjoint Board, R.C.P. Lond. and R.C.S. Eng.; also that at the present time a committee of the Royal College of Surgeons of England is considering the question of creating a higher form of diploma in connexion with the Fellowship of the College. During the session the Council issued a report on the need for institutional treatment of children with contagious eye disease, which was forwarded to the Ministry of Health. As a result of this action beds are now available at the Metropolitan Asylums Board Ophthalmia School at Swanley for the treatment of London school children suffering from ophthalmia or other contagious diseases of the eye.

The Council has considered the question of sight-testing by opticians, and has prepared and approved a report on the subject. It is not proposed to publish this report at present. The Council has also prepared a report on the notation of cylinder axes, and still has under consideration the question of the standardisation of test types. A member of the Council has been appointed to serve on a joint committee consisting of representatives from the Illuminating Engineering Society, the Research Association of British and Allied Manufacturers, the British Scientific Instrument Research Association, the Institution of Automobile Engineers, the Commercial Motor Users Association, and the Electric Lamp Manufacturers Association of Great Britain, Ltd., on "Glare from Motor Car Head-lights."

The Council agreed to appoint a committee to consider the question of injuries to eyesight resulting from the use of strong lights in cinema studios, but as the Minister of Health referred the matter to the Departmental Committee on the "Causes and Prevention of Blindness," it was decided not to take any immediate action. An interim report of the Committee on "Eyestrain in Cinemas," on which the Council has four representatives serving, has been issued.[1] A committee has been appointed to consider the report of the Consultative Council of the Ministry of Health, in so far as it is likely to affect ophthalmic surgeons. This committee has already gathered a considerable amount of information as to the work done by ophthalmic surgeons for various public and State authorities. Another committee is considering the question of examination, treatment, and report of cases referred by public authorities to ophthalmic surgeons in voluntary hospitals.

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[1] THE LANCET, 1920, ii., p. 565.

Obituary.

GEORGE BLUNDELL LONGSTAFF, M.D., D.P.H. OXON., F.R.C.P. LOND., F.G.S., F.L.S.

DR. G. B. Longstaff died at his residence, Putney Heath, on May 7th, aged 72. The son of the late Dr. George Dixon Longstaff, of Wandsworth, he was educated at Rugby, at New College, Oxford, where he took a first-class in natural science, and at St. Thomas's Hospital, London, where he won the Mead medal. Graduating at Oxford in 1872, he proceeded to the M.A., M.B. in 1876, and to the M.D. in 1891. He became a Member of the Royal College of Physicians of London in 1877, the Fellowship being conferred on him in 1888. Dr. Longstaff devoted much time to municipal and philanthropic work. He represented Wandsworth on the London County Council from 1889 to 1903, and as chairman of the Building Act Committee took an active part in promoting and passing through Parliament the London Building Act of 1894. He was a Vice-President of the Royal Entomological Society and of the Royal Statistical Society, and was the author of "Butterfly Hunting in Many Lands." His smaller publications included articles on "The Geographical Distribution of Diphtheria"; Studies in Statistics: Social, Political, and Medical"; "Rural Depopulation"; and "A Contribution to the Ætiology of Rheumatic Fever." Dr. Longstaff was a born traveller, and his medical training added greatly to his interest in life and to his public usefulness. He never practised.

EDWARD WARD, M.B., CH.B. CAMB., F.R.C.S. ENG. (HON. CAUSÂ.),

CONSULTING SURGEON, LEEDS GENERAL INFIRMARY.

MR. Edward Ward, who was very well known as a surgeon in the North of England, died at Leeds on April 30th. He received his early education in Leeds, afterwards entering Trinity College, Cambridge, with the intention of studying for the law. He graduated B.A. in 1876, but on the death of his father decided to take up a medical career, and became a student at the Leeds Medical School, from which he qualified in 1881, following this up with the M.B., B.Ch. three years later. He then became resident surgical officer at Leeds General Infirmary, ascending the scale until he finally became consulting surgeon. The Royal College of Surgeons of England conferred upon him the honorary diploma of Fellow in 1904. Five years after he asked to be relieved from active duties at the Infirmary, the board putting on record their appreciation of a service extending over nearly 20 years. Mr. Ward occupied for a time the chair of surgery at Leeds University, and examined in surgery at the University of Cambridge. He also presided over the Leeds and West Riding Medico-Chirurgical Society. His sympathy and gentleness earned him abundantly the confidence and esteem of patients, and his professional colleagues knew the real worth behind a singularly unassuming manner. He had been in failing health for some years before his death.

THOMAS EDWARD HONEY, M.D. DURH., M.R.C.S., L.R.C.P. LOND.

Thomas Edward Honey, who died at his residence, Shutta, East Looe, on April 30th, was born in Devonport and received his medical education at St. Mary's, from which he took the M.R.C.S., L.R.C.P. Lond. in 1886 and the M.D. Durh. He practised for a short time in Devonport and became surgeon of the Provident Dispensary, Royal Albert Hospital; he subsequently entered the navy and retired as staff surgeon. During the war he offered his services to the Marylebone Infirmary, which, owing to the neighbouring infirmaries being reserved for the wounded, took in also the patients from Hampstead, Paddington, and Hammersmith. Dr. Basil Hood, medical superintendent to the infirmary, writes of him: "Dr. Honey volunteered to replace one of our younger medical officers who was joining up. He was then over 50 and had for some years retired to the country, which his soul loved. He stayed with us just over three years, much longer that he should have done had he considered his own health, in order to allow a colleague a rest. He was a model of conscientious care and attention, besides finding time to spend many an hour in kindly yarning with the old bedrid and helpless patients. But the strenuous work under difficult conditions undoubtedly aged him. The visiting committee, staff and patients all parted from him with keen regret." His death followed ten days after an attack of hemiplegia.

The Services.

THE MEDICAL SERVICE OF THE DEFENCE FORCE.

THE threat of a general strike with the possibility of lawlessness and disorder finding their opportunity in those affected by unemployment and privation called into existence a Defence Force of Loyal Citizens, and for the time this force remains in being, mobilised and equipped for the defence of the community. For any such body of men a medical service is necessary from the beginning, to deal with the sick and with the minor accidents and injuries resulting from training, while should the Force unfortunately be called on to act, an organised medical service will be valuable, not only for the Force and those with whom it comes in conflict, but for such civilians as involuntarily become involved in the area of strife. The Force is organised on the basis of army divisions and each division has the usual medical services, though on a modified scale. In addition to the regimental medical officers each division has three field ambulances (of two sections instead of three) and a sanitary section. The field ambulance is a mobile unit with mechanical transport and motor ambulances; and its two sections are equipped for the first aid, feeding, and temporary nursing of 100 men and for any necessary urgent operations. It has tentage on a small scale, but in this country suitable buildings of some kind would usually be available and would be used—their advantages are no longer outweighed, as in the war, by their conspicuous attractiveness for high explosives.

The Royal Army Medical Corps on many occasions in the past has provided equipment for 100 cases, and has attended to many times that number of sick. In any grave emergency in this country the personnel of the bearer squads would certainly be augmented by willing and expert helpers, in gathering patients from dangerous localities, and in evacuating buildings on fire, carrying the injured into safety or to receiving posts and dressing stations. As regards the medical establishments of the rear—casualty clearing stations and base hospitals—the Defence Force will depend on the excellent military and civil hospitals of the country. In some areas the military hospitals are at present acting as field ambulance hospitals for minor sick, and as clearing stations for more serious cases which are transferred to the nearest suitable civil hospitals. In other areas where no military hospital is available the divisional medical services evacuate the sick direct to the civil hospitals. No doubt in case of emergency the great voluntary and public hospitals would be able to expand their services as far as required, while their staffs include many with expert knowledge, both of the immediate and late surgery of military injuries. Many civil hospitals at the present moment have lessened their activities to conserve their coal and other supplies to enable them to continue, in case of a long-drawn-out struggle, to deal with urgent medical and surgical cases among the civil population in their areas, and in consequence a fair proportion of normal accommodation is vacant. Should this unfortunately be inadequate in any locality, most civil hospitals are generous in their allotment of floor space per patient, when judged from the standpoint of a casualty clearing station, and the accommodation would, no doubt, be expanded in crisis by obtaining beds and bedding from local resources, and by enlarging their staffs from the medical practitioners and volunteers, male or female, of the neighbourhood who have served in hospitals during the war. These from previous training could at once—and adequately—fill gaps in the organisation.

The personnel of the existing field ambulances of the Defence Force is composed very largely of ex-members of the R.A.M.C. with war experience. With these there are others, who have training in first aid and R.A.M.C. duties in the Territorial Army, and some medical students; some business men and shopkeepers, though without any experience, have come forward, and while learning their stretcher drill and first aid will probably in the end find employment as clerks or storemen. Others have experience of active service as fighting troops, and give the impression that they would prefer to be with their old arm, but that they might come into collision with some whom they know and like (though deploring their lack of clear vision in the present crisis). These men, I think, would be foremost to rescue in a real place of danger. With experienced N.C.O.'s and with so large a proportion of trained men the administrative sections have been efficient from the start (and their technical equipment, medical and nursing stores, and cookhouse requisites were available almost at once), while the new men rapidly grasped the principles of drill, stretcher duties, and first aid, aided by the examples and instructions of the veterans of France, Far East, and Russia.

At first the men, unless in possession of their old uniforms, wore civilian dress with brassards, but after technical stores were issued, uniform and necessaries were soon provided, and now all are complete down to cap badges and shoulder titles. To a large number of men the opportunity is welcome from their individual point of view, however much they must regret the general troubles which have led to the institution of the Force. Medical officers who served abroad have had a sad chance of realising how many of the old men whom they led in far-off campaigns have never been able to gain regular employment. Regular food, decent clothes, and freedom from worry about their families, even for a time, have done wonders for many of these men in the short time implied. But officers for the Force may be a difficulty. In many cases assiduous attention since their return has restored to practitioners their livelihood and removed the blight sustained in 1914 to 1919, but another absence, even short, might be serious; still less are they inclined to leave who have had to plant afresh. In consequence the Defence Force in some cases will be very short of medical officers. Under present circumstances local practitioners on a part-time basis are looking after the men of the battalions and in a large measure compensate for the deficiency; while in the medical units there is at present no call for the full staff, though lectures by medical men would supply finishing touches to the instructions of N.C.O.'s in nursing and first aid. In many units, however, a number of ex-Service officers who cannot at present see their way clear to leave their practices, pensions board, and other appointments, have registered their names as willing to be called up should any crisis develop, and no doubt have overhauled their uniform and their valises and made arrangements for neighbours to carry on their work should the call come. There are still vacancies, and any medical man able to register as willing to be called up if grave developments ensue should approach the nearest military depôt (Territorial or Regular) and make inquiries. If the unit approached does not require a medical officer they would direct him to the headquarters of the Assistant Director of Medical Services of the division or the nearest field ambulance, which would be able to give all particulars. His services might be utilised at first as civilian medical practitioner on a part-time basis attending the sick of a combatant unit in his neighbourhood.

Medical officers with previous service as such as a rule receive a temporary commission to the rank they received on retirement; those who have not previously served are gazetted as lieutenant. While employed they receive pay and allowances of their rank. Civil medical practitioners on a part-time basis are paid pro rata. At present recruiting, both of officers and men, is suspended, but future developments might lead to its reopening.

AUXILIARY ROYAL ARMY MEDICAL CORPS FUNDS.

The annual general meeting of the above Funds was held on April 29th at 11, Chandos-street, Cavendish-square, London, Sir John Goodwin in the chair. The hon. secretary, Sir William Hale-White, submitted the annual report, which showed that grants had been made in the benevolent branch to 27 widows and in the relief branch to 76 widows. The amount distributed in the benevolent branch was £1778 and in the relief branch £2613. Two new trustees were appointed, Col. Ewen Maclean and Mr. Martin Holt. The hon. treasurer submitted a satisfactory financial statement. £2064 was received in subscriptions and donations for the benevolent branch and interest amounted to £631; for the relief branch £2617 was received in subscriptions and donations and £815 from interest. Sir John Goodwin was re-elected President, Sir John Bland-Sutton was appointed to fill the vacancy among Vice-Presidents, and the following were elected members of the council: Col. W. H. Willcox, Col. C. R. Evans, Col. Donald Armour, Col. Joseph Griffiths. These Funds were instituted by Lieut.-Gen. Sir Alfred Keogh, G.C.B., late Director-General of the Army Medical Service, for the benefit of the orphans of the commissioned officers and the children of those severely disabled who served during the Great War and to give relief to the widows and orphans of the rank and file who were killed in action or died of wounds or illness contracted in the service of the three auxiliary branches of the R.A.M.C.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Lieut. A. McCallum is transferred to Royal Canadian Navy.

ROYAL ARMY MEDICAL CORPS.

To be temporary Majors: J. E. Bates and P. McK. Terry. To be temporary Captains: W. R Watt and E. E. Elliott. To be temporary Lieutenant: G. J. Scale.

Officers relinquishing their commissions:—Temp. Capt. (acting Major) A. G. Macdonald is granted the rank of Major. Temporary Captains retaining the rank of Captain: W. B. Gourlay and R. W. Collum. Temp. Hon. Capt. B. D. Brooker retains the honorary rank of Captain.

ARMY DENTAL CORPS.

Capt. T. K. Place, Dental Surgeon, late Special List, to be Captain.

DEFENCE FORCE.

To be temporary Majors: A. G. Reid, A. Robertson, and F. Ward. To be temporary Captains: W. A. Jackman, H. Mather, J. A. Mathers, G. M. Campbell, C. H. Vernon, K. Pretty, and H. G. Greaves.

2nd East Anglian Field Ambulance (D.F.).—To be temporary Major: S. J. Fielding.

1st (West Lancs.) Field Ambulance (D.F.).—To be temporary Major: F. W. B. Young.

1st (Highland) Field Ambulance (D.F.).—To be temporary Captain: F. M. Rorie.

3rd (Northumberland) Field Ambulance (D.F.).—To be temporary Lieutenant-Colonel: W. A. Thompson.

1st (West Riding) Field Ambulance (D.F.).—To be temporary Major: L. A. Mackenzie. To be temporary Captains: J. H. Blackburn, A. Ellison, W. S. Sykes, and A. A. Roberts.

TERRITORIAL FORCE.

Major G. B. Robinson to be D.A.D.M.S., 44th (Home Counties) Division.

Capt. E. A. Houchin resigns his commission, and is granted the rank of Lieutenant-Colonel.

Capt. T. A. Hindmarsh to be Major.

Capt. T. A. Hindmarsh (late R.A.M.C.) to be Captain.

ROYAL AIR FORCE.

C. A. E. I. Brownlee is granted a temporary commission as a Flight Lieutenant.

Capt. C. E. Lowe is transferred to the Unemployed List.

INDIAN MEDICAL SERVICE.

The King has approved the grant of the temporary rank of Major to Capt. J. Findlay whilst D.A.D.M.S.

Temporary Lieutenants to be temporary Captains: Vijaya Shankar Rao Pandit, Joti Prasad Rosha, Perry Prain Tabit, Mohan Lal Kalra, Jyoti Prasad Ganguly, Ramanath Singh, Chandres Charan Das Gupta, Sachindranath Chatterji, Gokal Chand Sood, Annada Persad Sinha, Laiq Chand Datt, Faiyaz Anwar Khan, Jotindra Mohan Banerjee, Ben Phillip Athaide, Prahlad Das Kapur, Kashinath Dattatraya Bhave, Raghunath Bapuji Khave, Sardari Lal Chopra, Narendra Nath Ray, Bhupes Chandra Das Gupta, Nilkanth Vinayak Pandit, Dattatraya Ganeshkotibhaskar, Narayandas Datta, Evelyn Samarasinghe, William Arthur Nason Chanmugam, Gamalathge Don Daniel Wijesekere, St. John Puvirajasinghe, Eric Stanley Brohier, Appu Hennedige Theodoré de Silva, Frederick Nicholas Jayewardene, John Edward Felix, John Oswald Perera, Edward Wilford Arndt, Vairamuttu Kathirgamatamby, Gour Lal Sen, Mysore Puttanna Sambamurti Rau, Mohamed Yacob, Bhupendra Nath Basu, Vaman Anant Belsare, Bajirao Moreshwar Vaidya, Satchit Kumar Sarkar, Joseph Sebastian Pinto, Dhirendra Nath Chakravarti, Beni Madhava Roy, Anantabandhu Roy Chowdhury, Madhav Krishna Kelavkar, Ardhachandra Banerjee, Ram Chand Mahajan, Balchandra Gangadhar Marathe (since resigned), Dodaballapur Hari Rau, Jagan Nath Piplani, Parmanand Harumal Jhangiani, Phanindra Mohan Lahiri, Tula Ram Birmani, Mangharam Rochiram Lelvani, Jamsetji Ruttonji Mirza, Bharron Dayal, Herbert McKenzie Strickland, Ardeshir Ratanji Wadhia, Pritam Varialsing Karamchandani, Shankar Rau Pandit, Cecil Gerald Sedgeley Corner (since deceased), Chinnamanoor Subbaroya Narayanswami Aiyar, Annada Charan Sen, Kakkadan Nandanath Krishnan, John Michael Pereira (since resigned), Charu Chandra Protihar, Harry Basil Rosair, Purushottam Gopal Gune, Amulya Dhan Sen Gupta, Jnanendranath Das Gupta, Neni Gopal Chandra, Ganapathi Sreekanta Kuppusamy Iyer, Jiwanda Ram Katariya, Paranji Ramchandra Rao, Kathira Vellu Muttu Kumaru.

DEATHS IN THE SERVICES.

Fleet-Surgeon Anthony Kidd, R.N. (retired), died on April 22nd, aged 62 years. He entered the Royal Navy in 1881, became staff-surgeon in 1893, and fleet-surgeon four years later. He saw considerable foreign service, chiefly in China, receiving the medal for service during the Boxer rebellion, in North America, and Bermuda. His last appointment was at Pembroke Dockyard, where he was from 1904 to 1914. In 1916 he went to Bath. He did valuable work at the Bath War Hospital and was also anæsthetist at the Bath Ear, Nose, and Throat Hospital.

GENERAL HOSPITAL, BIRMINGHAM.—At a meeting of the governors on May 6th Mr. H. Beckwith Whitehouse was elected honorary obstetric officer to the hospital, thus filling the vacancy caused by the retirement of Dr. Thomas Wilson on the conclusion of his term of office. Mr. Whitehouse has held the post of assistant obstetric officer and assistant clinical lecturer on diseases of women in the University of Birmingham. In 1913-14 he was Hunterian Professor in the Royal College of Surgeons and he has also been Ingleby lecturer at Birmingham.

Correspondence.

"Audi alteram partem."

SAFE CONDUCT OF LABOUR.

To the Editor of THE LANCET.

SIR,—Your leading article in THE LANCET for May 7th under this heading opens up no less important a subject than the total abolition of private practice in midwifery and in every grade of society as I shall attempt to show. The article, I assume, has been written by an obstetric surgeon attached to one of the large obstetric departments either in a special or general hospital and is engaged in actual midwifery private practice and incidentally earning his living, or at least adding to his income thereby. This hypothetical obstetrician goes through a long and arduous training until he reaches the goal of a position on the staff and then he does, or expects to do, what we all do—namely, begins to get a dividend on his investment. His dividend ranges from 40 to 100 guineas for a confinement. Mine averages a fraction over 2 guineas—it used to be a fraction over 1 guinea, the fraction being derived from the occasional 3 or 5-guinea case. If your leading article expresses the situation I should certainly be wiped out of existence as a practitioner of obstetrics in my private practice, as I make no secret of the fact that I cannot conduct a case of labour and make the necessary subsequent visits as well as the antecedent pelvimetry, &c., and with the necessary surgical ritual and sterile appliances incidental to a surgical operation, simply because my usual environment in a case of labour does not permit of it, and 2 guineas has its own limitations in purchasing capacity. But if I am to disappear as a private practitioner so should my more fortunate and perhaps capable colleague. We have both gained our experience on patients of the same social class, and I have no hesitation in asserting that we were no better when we started as students than I am in practising among the same social class in private as I gained my experience from as a student. Both of us, therefore, were as students the same potential sources of evil as I am to-day, and the only certain way to obviate this in the future is to prevent our homologous successors in the obstetric art from ever engaging in private obstetric practice, for there can be no certainty as to who will be a 40-guinea and who a 2-guinea man.

The assumption that I am such a danger to the community, as I infer from your leading article I am, has fortunately been made by the medical advisers of the Kent County Council, and doubtless by all other county councils as well, and steps have been taken to establish midwifery nurses throughout the county who are now attending a proportion of the midwifery cases formerly attended by medical practitioners and at a much lower figure than the exorbitant 2 guineas. This latter fee is only considered necessary in cases of obstetric emergency, requiring all the above-cited ritual and appliances necessary for a surgical operation, and is the amount offered to the general practitioner who consents to enrol himself to accept such fee when summoned by a maternity nurse in difficulties. As, however, the midwife is replacing the practitioner in normal labour the latter in time will have no experience of any form of labour other than what the midwife judges to be an abnormality. If this arrangement is going to improve the existing state of affairs I hope I shall not be here to experience the wholesale justifiable homicide of the general practitioner of my own generation.

The statement as to puerperal sepsis and deaths from the accidents of childbirth is certainly a great surprise to me, and it is in no pharisaical spirit that I say that I have never had either a case of puerperal sepsis or death of a mother at, or attributable to, childbirth during a period of 20 years' private general and midwifery practice, and there must be numbers of practitioners who can say the same. I have had most of the difficulties of labour and incomplete abortions to contend with under adverse environmental conditions, and before I wore gloves, and besides always having carried a boiler and thoroughly scrubbing my hands and the patient's vulva and buttocks with soap and water and corrosive, and never using anything to dry my hands or the patient with I have taken no other precautions. I was brought up on the douche for post-partum hæmorrhage as a student and extern assistant in the Rotunda, Dublin, but Leopold Landau and Strassmann in Berlin pretty effectually convinced me of its dangers. You state that "the morbidity of childbirth in private practice amounts to something like 15-20 per cent. of all cases." I am not sure that I know what the standard of morbidity is, and so my cases can never have been included in the "all." What verification have you of this statement, even assuming that everyone else knows the standard of morbidity? It seems a very bold assertion to make unless a big percentage of all confinements attended in England, say, can show at least a continuous twice daily temperature chart for ten days after confinement. "Meddlesome midwifery" is another expression that I think can be abused. Would, for instance, the turning of an occipito-posterior presentation into an anterior one, as I practise early in labour, and which, if I remember right, is advocated by Berkeley and Bonney in their midwifery, be regarded as meddlesome? The gentleman who lived up to "keeping his hands in his pockets" would most probably regard it as such.

If my practice is exceptional, and it does not differ in essentials from that of many men whom I have spoken to, the only alternative is the lying-in hospital for all cases, and that will gradually bring with it, in my opinion, the whole-time and State service, which I can see no alternative for in midwifery, if not in general practice altogether. One thing is certain, and that is that the public are demanding more and more freedom from pain in labour which almost necessitates the artificial termination of labour under anæsthesia in some form or other. Twilight sleep I have no experience of, but with the State hospital in being for all classes of patients it looks like becoming the routine treatment of normal and abnormal labour, supplemented, if necessary, by some other form of anæsthesia. The statement, "the incidence of septic infection in lying-in hospitals is extremely small" seems to me to contravert the alleged danger of vaginal examination; for operative procedure, such as forceps and version, &c., must be much commoner in such institutions than in private practice owing to the fact that actual and potential difficult cases are sent into hospital where vaginal manipulation becomes a necessity—unless Cæsarean section is going to replace all other procedure, as one would imagine from the practice of some specialists.

I am, Sir, yours faithfully,

Charing, Kent, May 9th, 1921. H. E. LITTLEDALE, M.D.

*** Our correspondent's deductions seem to us extreme. He is an experienced obstetrician, and so far from being eliminated, as he suggests, would become automatically the guide and counsellor to others less well equipped.—ED. L.

THE SEVEREST ANÆMIAS.

To the Editor of THE LANCET.

SIR,—The admirable summary of the difficulties of the above subject in an annotation in THE LANCET of May 7th and the attention now being given to the production of these anæmias by X rays impel me to draw your attention to an explanation published some ten years ago.[1] It was then suggested that pernicious anæmia, though of mixed intrinsic and extrinsic origin, is more intrinsic than extrinsic, and that the most satisfactory way of accounting for it is to regard it as a vice of development. The key to the situation consists in the recognition of the nature of development. Development is regarded as coincident with life and as divided into phases, first of progression, then of regression. It is, in short, best represented as a circular movement, which begins with the integration of the cell, continues with ever-increasing complexity and diminishing impetus up to middle age, and then merges into its declining or regressive phases, in which this process is reversed, until an ever-increasing simplification ends in the disintegration of death. This, at any rate, is the direction or tendency of the cycle, for the different organs differ so widely in the amplitude of their cycles that while one organ or one system of organs (e.g., the female reproductive organs) may practically run its course and be completed in about 35 years, another may not finish its revolution within double that period. Among these long-lived organs is the chromocytic. Its life-cycle is, indeed, so long or so slow that in the natural course of events it outlasts the cardio-vascular, and perhaps all other vital organs. But let us suppose that from any reason the cycle of the chromocytic organ is shortened, or hastened, so that the red marrow enters upon the last stages of its degeneration while other organs are still vigorous. It will begin, roughly speaking, to repeat the earlier stages of its developmental cycle.

Now these earlier stages are characterised by an abundant proliferation of embryonic cells. And when the cycle is so quickened that its senescent stages are anticipated, then again must we expect to meet with nucleated forms, with evidence of juvenility of the bone-marrow and of the manufacture of a copious supply of young cells. But these new cells are of no use, for they are not young, only spuriously young. They are in their second childhood, not embryonic but embryonoid, and are evidences of decrepitude. And being regressive and senile they cannot do the work of normal blood-discs, but can only pass on to their next phase of regression, which is molecular disintegration. As a matter of fact, they are useless, apart from their incompetence, if only for the reason that they are to all intents foreigners in the blood stream, and as the leucocytic organs are still comparatively young and vigorous they make short work of these nucleated strangers; indeed, they are equivalent to the blood-discs of some lower animals, as was long ago pointed out by Woods Hutchinson. They are therefore promptly destroyed, and the overgrowth of the spleen and the increased pigment in the liver and elsewhere are evidences of their wholesale slaughter.

As for the cause of this premature senescence of the red-blood organ, evidently anything which can unduly and profoundly accelerate its developmental cycle is a potential cause. Among such stimulants or irritants are some bacterial toxins. Arsenic, too, in its more intimate and potent forms has the same effect. But nothing seems better calculated to quicken the revolution of the cycle to its culmination in the breakdown of pernicious anæmia than the X rays. These, like arsenic, stimulate in small dose, irritate in large, and disintegrate if used still more excessively. They are capable of inducing senility of the skin and of the testes and ovaries, as well as senile disorders elsewhere, including pernicious anæmia and cancer. Probably even prolonged exposure to X rays would not cause pernicious anæmia were it not that there is already some inherent weakness or susceptibility of the bone-marrow. And nothing seems more likely to assist in the breakdown as some prior developmental incompetency. Such an inborn defect of development implies a short life-cycle and an undue readiness to undergo the changes of regression and senescence. It is especially in such circumstances that we account for the pernicious anæmia of early life, and, above all, for aplastic anæmia and for its peculiar features.

Apart from the way in which this theory fits in with and explains the phenomena of the severest anæmias there is plenty of evidence in its favour, some of which can be found in the book I have mentioned.

I am, Sir, yours faithfully,

Reading, May 8th, 1921. HASTINGS GILFORD.

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[1] Gilford, H.: The Disorders of Post-natal Growth and Development, 1911, p. 373.

RAT DESTRUCTION: A SUGGESTION.

To the Editor of THE LANCET.

SIR,—A recent voyage on a cargo steamer from Durban to Port Louis, Mauritius, has suggested the idea that vessels of this type might well prove to be very suitable for testing the efficacy of the Rodier method for rat destruction. In this method the rodents are trapped, the females killed, and the males set free. Males accordingly predominate in the long run, and the deficiency of females leads to a warfare of extermination amongst the males, the females also suffering in the strife. Many believe that this method is the best yet devised for reducing the numbers of rats, but it is difficult to obtain conclusive proof on the subject when the experiment is conducted under ordinary shore conditions.

On board a ship, however, it seems to me that valuable data could be collected. It is not difficult to ascertain with some degree of accuracy the normal average rat population of any vessel, though, it is true, this population varies, for, even if rats are prevented from boarding ships as free agents, many are conveyed aboard in cargo, especially in the case of merchantmen loading grain. Still, even taking into account this drawback, a cargo-carrier on a long voyage to Eastern ports would appear to offer special facilities for the investigation indicated, and I would suggest that the *Society for the Destruction of Vermin might* use its influence and see if anything can be done in this direction. If reliable statistics could be obtained from a ship-board experiment on a considerable scale they would be distinctly helpful to those entrusted with the duty of dealing with the rat menace either from an economic or a sanitary standpoint.

I am, Sir, yours faithfully,
ANDREW BALFOUR,
Director-in-Chief, Wellcome Bureau of Scientific Research.
Port Louis, Mauritius, April, 1921.

THE STATUS OF THE DISTRICT MEDICAL OFFICER OF HEALTH.

To the Editor of THE LANCET.

SIR,—In the correspondence columns of your issue of April 23rd a point was raised as to the relative official position of the county medical officer and the medical officer of health of a district within the county. To those outside the public health service it is commonly and erroneously accepted that as the county includes the district, so, in some similar kind of way, the county medical officer is superior to the medical officer of health of a district. The editorial note to Dr. Herbert Jones's letter (p. 879) in reference to this matter does not clear up the point at all, but rather confirms the error. It should be observed that by Art. 16 of the Sanitary Officers (Outside London) Order, dated Dec. 13th, 1910, the copy of the annual report which the medical officer of health of a district is required to transmit goes to the county *council* and *not to the county medical officer*. It is therefore properly to be addressed not to the latter, but to the clerk of the county council or to the chairman. In your expression "the county officer is suzerain to the district officer," the word "suzerain," which means "lord paramount," is certainly not applicable, for in the House of Commons on Nov. 18th last Dr. Addison, in reply to General Sir Ivor Phillips, stated quite frankly and definitely that a county medical officer of health did *not* supervise the district medical officer of health. There is, in fact, nothing in the whole of the statutory rules and orders relating to public health which gives the least support to this claim of "superiority."

I am, Sir, yours faithfully,
JAMES J. PATERSON, M.D.
Guildhall, Maidenhead, May 3rd, 1921.

*** Our correspondent differs from us only on a definition. The word "suzerain" implies no more than a nominal sovereignty over autonomous States, and we carefully qualified our expression with the words "to this extent."—ED. L.

SALICIN AS A REMEDY FOR RHEUMATISM.

To the Editor of THE LANCET.

SIR,—I understand that Buchner of Germany, Fontana and Rigotelli of Italy, and Le Roux of France, all claim as their work the first accurate investigation of the properties of salicin. In 1862, whilst surgeon in charge of H.M.S. wooden paddle-sloop *Salamander*, on surveying service in the coral sea off North Australia, I had a case of rheumatic fever; quinine had run out, and there was no drug store within a thousand miles. I happened to have a bottle of salicin, then hardly used in medicine, and not supplied by the Admiralty; I employed it with success, and may therefore fairly claim the discovery of the efficacy of the salicylic treatment of rheumatism.

I am, Sir, yours faithfully,
RICHARD CANNON, M.D.
Viña del Mor, Chili, March 20th, 1921.

A PROJECT OF GENERAL REPRESENTATION.

To the Editor of THE LANCET.

SIR,—On Saturday, May 28th, the annual dinner of the National Medical Union will be held at the Monico Restaurant, Piccadilly-circus, London, at 7.15 P.M. The price of tickets for admission will be 10*s.* 6*d.*, excluding wine. The London President of the Union, Dr. Alexander] Blackhall-Morison, will make a communication on "a project for the formation of a General Medical Council representative of the whole profession as a body, related on the one hand to the public and on the other to the government of the country and empire."

The Council of the Union invite all medical men to attend the dinner and hear the statement, which has received their approval as a practical scheme in the interests of both the public and the profession and one calculated to heal divisions in our ranks.

An early intimation to be present at the dinner will be welcomed and may be sent to either Dr. J. Wilson, 25, Larkhall-rise, Clapham, S.W.; Dr. A. Bousfield, *Tudor Lodge, Hornsey-lane, N.; or to myself at this* address.—I am, Sir, yours faithfully,
E. H. WORTH,
Hon. Secretary to the National Medical Union.
2, Aldrington-road, Streatham, S.W., May 8th, 1921.

THE HYGIENE OF THE SAILOR.

To the Editor of THE LANCET.

SIR,—Sixteen years ago I went for some voyages for my health as ship's surgeon, and in many instances can support Dr. Leonard Burton in his remarks in THE LANCET of May 7th under this heading. On being appointed to one of the newest ships of the Royal Mail S.S. Co. I drew their attention to the inadequacy of the hospital cabins and facilities for isolating cases of infectious disease. I drew up to scale plans for two four-berth hospital cabins, with bath-rooms and w.c.'s attached, and an attachment on the doors for connecting the Clayton apparatus for disinfection with SO_2. These cabins, together with a cabin for an attendant and one for myself for investigating materies, &c., to be on the raised poop deck aft, so that all infection should be left behind. I was not popular at first, but subsequently Sir Owen Phillips, with his capacity for seeing what was best for his ships, adopted my plans on all his new ships, with the result that for three and a half years I was able to prevent at once the spread of any infectious disease, of which I had to handle many varieties. In addition to these there were other hospital cabins with a very complete dispensary for'ard, besides one attached to my own consulting-room, and the company never hesitated to provide me with anything in reason. It is up to the doctor to insist on being provided with what is necessary, and if he does not do so he has himself to blame very often.

I am, Sir, yours faithfully,
REGINALD POLLARD, M.B., D.P.H., M.R.C.S.
Egerton-crescent, South Kensington, May 7th, 1921.

THE DIET OF THE WEANLING.

To the Editor of The Lancet.

Sir,—Work at infant clinics would lead to the view that the tendency at the present time to discourage giving milk in any quantity to the weanling is deplorable.

Anyone wishing to study the result in the children of the poor and less affluent middle-class should examine the five-year-olds about to start school. It has been my duty to do so for the last three years, and I have been appalled at their poor physique. The only bright spots have been usually in those cases where the children have had milk to drink. Rarely does one see a child of normal growth who is not getting milk. Indeed, to my mind, the one advantage of artificial feeding over breast-feeding is that the parents have been in the habit of buying milk for the baby and often keep it up; whereas the breast-fed baby gets a "bit of what we have ourselves," and little or no cow's milk. Certainly the worst cases of rickets that I have seen have been in breast-fed babies who have had no milk after weaning. At one time most babies got butter, now most babies get margarine made from vegetable oil, so have not even that protection. Given "food of a suitable kind," one might scrap the milk, but the point is so few get it, and incalculable harm may come from advising parents to do so (parents, moreover, who are not the least likely to overdo it). With regard to the children's dislike for it, one often sees an infant who will greedily suck a bottle full of milk with the greatest gusto, but refuses to take it from a cup or spoon. Is this dislike?

One might just as well say that the human mother had lost her function of lactation because she could not supply milk for butter as to argue that she has lost it because cow's milk is necessary for most babies.

I am, Sir, yours faithfully,

Leeds, May 9th, 1921. Marion E. Mackenzie.

THE DANGER OF ATHLETICS FOR GIRLS AND WOMEN.

To the Editor of The Lancet.

Sir,—Being one of those who maintained that women had a right to the vote and that their advice was most valuable and desirable on public matters, I also held, as most feminists do still, that sex was more or less incidental and that a well-trained woman could do anything a man could, unless, perhaps, when it was a case of exerting sheer physical force. I was a keen advocate of all forms of physical culture for girls, the more so as I suffered from neglect in that way myself as a child. Girls were encouraged by me to take up the work of a drill and games mistress, it appearing almost an ideal occupation. The more, however, I came in contact with women who had trained for it the more was I disappointed with the effect of that training upon them. The girls, also, who took up what had been regarded as boys' games, hockey, and even cricket, seemed to deteriorate. They seemed more selfish, more concentrated upon material things and material advantages. The girl of 15 appeared less a budding woman than an enlarged and accentuated copy of herself at 10 years old. She had not risen in the scale of being. There might be an affectation of being "sporting" about her, but actually the girl whose utmost achievement in physical work was to dance or perhaps to fence was quite as honourable and played the game of life at least as well.

But it was the grown women who made me decide finally against the present system of strenuous sports for girls and realise that the difference between men and women, boys and girls, was not one of education, environment, and opportunity, but was a vital and fundamental one. I knew many women who were physical experts and who prided themselves upon the fact. Few of them had not had at some time a more or less serious breakdown. I inquired into the after-careers of many and the results were not encouraging. This made me keep a very careful check on any girls I had to do with, though still I was most unwilling to acknowledge that girls could not do what boys could, forgetting that difference need not mean inferiority, but might even imply the opposite. Yet I saw that the young women joining in strenuous games became possessed of hard muscles, a set jaw, flat chest, and often a hard aggressive manner and an ungainly carriage. A girl's body is more elastic, more variable, and more easily altered than that of a boy. Nor should it be forgotten that the organs are more easily displaced. The attempt to make a boy of the girl has led to the cult of the "boyish" figure with undeveloped breasts. Broad elastic bandages are now worn round the chest to produce an unnatural flatness, while drugs are also taken, I am told, for the same purpose. It is unnecessary to say how dangerous are such practices, while a flat chest is really a deformity in a well-grown and developed young woman.

So much for their appearance. But the health of these athletic women is often more apparent than real. They frequently suffer from nerves (manifested in irritable tempers), from heart trouble, from some form of rheumatism, or from displacement of some kind. Sometimes the monthly disability that should prove them women stops for long periods. When there is any unaccustomed strain upon them they do not seem able to meet it. Their marriages are often childless, and I have many times heard, when a woman has lost a child or had a particularly difficult confinement surprise expressed. "She was such a fine strong girl," or "One would think an athletic girl such as she would be up and out almost at once, like a savage woman." I have been sorry to see the physical inferiority of children of sporting mothers, they often being nervous, and the mother becoming so as well sometimes. They compare badly with the stalwart sons many a slight feminine woman produced in Victorian days.

The attitude of these women to life is frequently not a normal one. Their mentality is not healthy. Many who decry marriage and affect to despise the opposite sex (while imitating them) are yet inordinately occupied with the discussion of sexual matters. Allied to this aspect is the curious influence exerted by some of these women on girls, neurotic girls seeming obsessed by them. Most of them seem to have stifled what is finest in woman—love, sympathy, tact, and intuitive understanding. When we object to girls joining in the games of boys we are answered that girls learn a lesson they much need—not to play selfishly for themselves, but to play for their side. I deny this. At adolescence girls are often almost dangerously altruistic, and a girl will exert herself far beyond her powers for her side, if not most carefully watched. She needs very delicate handling in her 'teens, for her feelings are subtle and elusive and her affections at full flood.

Unwillingly I have been convinced by the logic of experience. Strenuous games I believe bad for the woman and worse for the girl. And the sooner it is realised that the differences between the sexes are profound and vital and that these differences are accentuated and not lessened by evolution, the better for humanity. Let it be recognised that the present cult is a retrogression, and the young girl have placed before her the ideal of true womanhood, of all the qualities that make for motherhood; so that, whether she has her own family or finds happiness in some other sphere, she may realise it is her gift of "mothering" that makes her of value in the world.

I am, Sir, yours faithfully,

C. Cowdroy.

Crouch End High School and College, London, N.,
May 9th, 1921.

Bognor War Memorial Hospital.—In only two years this hospital has become a fully equipped institution, and already the provision of a new block is being talked about. One hundred and fifty-two patients were admitted during the year, and 67 operations were performed. The out-patients are constantly increasing; the number during the month of April this year was 222. The hospital is also becoming firmly established financially, and it is hoped to keep it free from debt. It is receiving good local support, and patients are invited to contribute to the cost of treatment. From this source £231 7*s*. has been obtained. It is hoped to provide wards for paying patients and a maternity ward in the future.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Dentists Bill.

THE Dentists Bill, which gives effect to the recommendations contained in the Report of the Departmental Committee on the Dentists Act, 1878, has now been printed. It is identical with the Bill which was introduced at the end of last session, except for a few alterations of minor importance for the purpose of meeting criticisms urged against the former measure, and a few other alterations of a purely drafting character. It is understood that the measure is now practically an agreed one. The Bill provides for the establishment of a Dental Board, consisting partly of dentists and partly of medical practitioners, together with a non-professional element. The first Board is to be entirely nominated, but in succeeding Boards 6 out of the 13 members will be elected by and from the dentists on the register. Clause 1 (which will take effect not earlier than one year or later than three years from the commencement of the Act) prohibits the practice of dentistry by unregistered dentists. Existing unregistered dentists are given the right of admission to the register, subject to evidence of good character, if they satisfy the Board that they have for five out of the seven years immediately preceding the commencement of the Act been engaged in the practice of dentistry as their principal means of livelihood. Existing unregistered dentists who have been in practice for less than five years will be required to pass an examination before being admitted to the register. The Board are given a dispensing power to deal with cases of persons who cannot meet the requirements of the Bill by reason of military service. Special provisions are included to deal with limited companies carrying on the business of dentistry. Existing rights are safeguarded, but in future all the directors and managers of such companies and the operating staff employed by them will be required to be registered dentists. The powers of the General Medical Council, so far as they relate to the maintenance of the Dentists Register, will be transferred to the Dental Board, but any regulations made by the Board under the Bill must be approved by the General Medical Council and the Privy Council.

HOUSE OF LORDS.

TUESDAY, MAY 10TH.

Public Health (Tuberculosis) Bill.

The Public Health (Tuberculosis) Bill was considered on Report and agreed to.

HOUSE OF COMMONS.

WEDNESDAY, MAY 4TH.

Internment of a Heart Disease Patient.

Mr. MYERS asked the Chief Secretary to the Lord Lieutenant of Ireland whether his attention had been drawn to the case of Frederick Schweppe, who was arrested on Good Friday morning and was still imprisoned at Arbour Hill; whether he was aware that on Nov. 29th, shortly after a period of treatment for valvular disease of the heart at the Mater Hospital, Mr. Schweppe was arrested and detained until Dec. 7th, when he was discharged, the military doctor at Arbour Hill having certified that he was a very bad case and not fit for internment and ought to be released immediately; that from then until Good Friday Mr. Schweppe attended the doctor; that when he was arrested on Good Friday he was roughly handled by men of the auxiliaries; that he was at present suffering from sleeplessness and his health was generally very weak; that Dr. F. H. Moore, of the Mater Hospital, had certified that Schweppe had been attending the dispensary for months past and been treated for serious and apparently progressive heart disease; and whether, in view of the fact that nothing of an incriminating nature was found in Mr. Schweppe's house, and in view also of the man's state of health as certified previously by the military doctor of Arbour Hill, he would give instructions for his immediate release.—Sir H. GREENWOOD replied: In the workshop in rear of the house occupied by this man a number of revolvers and automatic pistols were found, in addition to explosives and detonators, and there was good ground for believing that he was concerned in the distribution of these munitions. An internment order has been made against him, but he is at present in hospital suffering from dilated heart and hernia, and not in Arbour Hill as stated. It is true that he was previously arrested on Nov. 29th, but there is no record of any such medical certificate as is referred to in the question. No allegation that he was ill-treated on arrest has previously been brought to my notice, but I will have inquiries made. Careful attention will be paid to this man's health, and he will not be transferred to an internment camp unless he is fitted for such transfer; but in view of the circumstances in which he was arrested I am not prepared to order his release.

War Casualty Return.

Sir WILLIAM DAVISON asked the Prime Minister if he would state what were the total casualties in killed and wounded suffered by Great Britain, the Dominions, by each of the Allies, and by Germany during the late war.—Mr. CHAMBERLAIN (Leader of the House) circulated the following printed return:—

Return Showing Approximate Casualties Suffered by Great Britain, India, the Dominions, by each of the Allies, America, and Germany During the late War.

Country.	Deaths from all causes.			Wounded.			Total deaths and wounded.			—
	Officers.	O.R.	Total.	Officers.	O.R.	Total.	Officers.	O.R.	Total.	
Great Britain	43,480	701,222	743,702	85,117	1,608,145	1,693,262	128,597	2,309,367	2,437,964	
Canada	2,887	53,738	56,625	6,347	143,385	149,732	9,234	197,123	206,357	
Australia...	2,862	56,468	59,330	6,304	145,867	152,171	9,166	202,335	211,501	
New Zealand	735	15,401	16,136	1,668	39,061	40,729	2,403	55,002	57,405	
South Africa, Newfoundland, other Colonies ...	481	8,351	8,832	792	14,361	15,153	1,273	12,712	113,985	
Total Dominions and Colonies	6,965	133,958	140,923	15,111	342,674	357,785	22,076	467,272	489,218	
India	868	60,530	61,398	1,675	69,184	70,859	2,543	69,714	72,257	
Allied and Associated Countries.										Reported casualties to—
France	—	—	1,385,300	—	No record.	—	—	—	—	Nov. 1st, 1920.
Belgium	—	—	38,172	—	—	44,686	—	—	82,858	.. 11th, 1918.
Italy	—	—	460,000	—	—	947,000	—	—	1,407,000	.. 11th, 1918.
Portugal	—	—	7,222	—	—	13,751	—	—	20,973	Jan. 1st, 1920.
Roumania	—	—	335,706	—	No record.	—	—	—	335,706	.. 6th, 1919
Serbia	—	—	127,535	—	—	133,148	—	—	260,683	Dec. 4th, 1918.
Greece	—	—	5,000	—	—	21,000	—	—	26,000	
United States of America	—	—	115,660	—	—	205,690	—	—	321,350	April 1st, 1920.
Germany...	—	—	2,050,466	—	—	4,202,028	—	—	6,252,494	Approximate.
Austria ... ... Hungary	—	—	1,200,000	—	—	3,620,000	—	—	4,820,000	..
Bulgaria	—	—	101,224	—	—	152,400	—	—	253,624	..
Turkey	—	—	300,000	—	—	570,000	—	—	870,000	..

Note.—The figures given in this Return include British naval casualties between August 4th, 1914, and Nov. 11th, 1918, and British military casualties during the period August 4th, 1914, to April 30th, 1920, and excludes casualties to Chinese Labour Corps recruits locally in Salonica and Mesopotamia, and camp followers in East Africa.

Note.—The figures in regard to Bulgaria were furnished by the Bulgarian General Staff in 1919, and were considered by them under-estimate, as many archives were lost in the debacle of 1918.

Report of Committee on Dangerous Drugs.

Mr. GILBERT asked the Secretary for the Home Department when the Report of the Committee on the Regulations under The Dangerous Drugs Act, 1920, might be expected; and whether, and when, it would be published.—Mr. SHORTT replied: The Committee have, I understand, nearly completed their inquiry, but I hope to have their Report shortly. The Report will be published.

Finance of Voluntary Hospitals.

Mr. GILBERT asked the Minister of Health when the report of the Departmental Committee on the finances of the voluntary hospitals might be expected; and whether and when it would be published.—Sir ALFRED MOND replied: I am informed that the Committee will finish hearing evidence this week, and hope to be in a position to present their report by the end of the month.

Military and Naval Cases of Small-pox.

Mr. RAFFAN asked the Minister of Health in which hospitals the four naval and 13 military cases of small-pox, which were reported in 1919, were treated.—Sir ALFRED MOND replied: The names of the hospitals and the number of cases treated in each are as follows: Colchester Borough Small-pox Hospital (1); Evan Fraser Hospital, Hull (3); Falking Grange Hospital (1); Lincoln City Small-pox Hospital (2); Liverpool Port Sanitary Hospital (2); Military Hospital, Cambridge (1); Military Hospital, Nell-lane, Manchester (1); Prees Heath Military Hospital (2); Royal Naval Hospital, Portsmouth (1); 3rd London General Hospital (1); West Suffolk County Hospital (1). One of the military cases was not removed to hospital.

Treatment of Probationer Nurses.

Mr. DENNIS HERBERT asked the Minister of Health if his attention had been called to the alleged unfair treatment of probationer nurses at the West Middlesex Hospital, under the Brentford Board of Guardians; if he was aware of the serious discontent thus caused amongst the nursing staff; and what steps he proposed to take in the matter.—Sir ALFRED MOND replied: I have been in communication both with the board of guardians and with various associations which have taken this matter up on behalf of the nursing staff, and I have offered, if they so desire, to arrange a meeting between these associations and officers of my Department, at which the case can be further considered in the light of the explanation which I have received from the guardians.

Diagnosis and Treatment of Venereal Disease.

Mr. WATERSON asked the Minister of Health whether he could produce any evidence to show to what extent cures were being effected as a consequence of the large expenditure of public money which was now taking place in connexion with the diagnosis and treatment of venereal diseases; and, if so, would he arrange for such evidence to appear in the annual reports of his department.—Sir ALFRED MOND replied: The value of the work done at venereal disease centres cannot be measured solely on the basis of the proportion of cures effected. I am advised that in the case of these diseases prolonged treatment followed by a period of observation is frequently necessary before a cure can be pronounced, and in some cases it is difficult to arrive at a conclusion as to cure. There are, however, many cases which, although they fail to continue treatment or to remain under observation until a cure can be pronounced, are nevertheless rendered non-infective before ceasing attendance at the clinic. As the honourable Member is aware, the system of clinics has not been long in operation. The results are under careful observation, and the report of the chief medical officer of the Ministry for this year will contain a statement on the subject.

THURSDAY, MAY 5TH.

Appeal Tribunals.

Replying to questions by Mr. HURD and Captain FOXCROFT regarding the expediting of the work of the Pension Appeal Tribunals, Captain H. D. KING (for the Lord Chancellor) stated that five additional Pension Appeal Tribunals would commence to sit this month, and further tribunals were in course of formation. The average period which elapsed between the date an appeal was received by the Pensions Appeal Tribunals and the date it was heard was at present 10 weeks. In Somerset all appeals received up to the beginning of February last had been dealt with or would be heard within the next two weeks.

Treatment of Shell Shock.

Mr. HURD asked the Minister of Pensions what special arrangements were made for ex-soldiers who were suffering from shell shock and were detained in public asylums; how their treatment was differentiated from that of ordinary inmates; and what steps were taken, or were in contemplation, for treatment especially suited to their malady, and for independent examination at intervals by military doctors with a view to their earliest possible recovery.—Mr. JAMES PARKER replied: Ex-Service men are not medically treated in public asylums unless certified under the Lunacy Acts to be insane. Men suffering only from shell shock are not so certified. Treatment is in such cases provided in an institution of the Ministry of Pensions, the men being under the care of experienced medical officers who have special knowledge of the particular disability and of the appropriate treatment.—Mr. HURD: Is it not a fact that ex-soldiers in these public asylums are treated as though they were ordinary lunatics, and is that not a state of things that ought to be changed?—Mr. PARKER: I do not think that is true, but I cannot speak with authority on the matter.—Mr. HURD: Will the honourable gentleman raise this question with the Minister so that a specific answer to the question may be obtained?—Mr. PARKER: Certainly.

Unemployment and Sickness Benefit.

Sir WALTER DE FRECE asked the Minister of Labour whether his attention had been called to the fact that during the time an insured person was in receipt of unemployment benefit his health card was not stamped and he was consequently falling into arrears with his contributions under this section; whether unless such arrears were paid up his sickness benefit would be reduced accordingly; whether under sickness benefit the contrary practice was observed; and whether the practice in the two cases could be made identical.—Sir A. MOND (Minister of Health) replied: It is the case that during periods of unemployment insured persons fall into arrears in respect of their health insurance contributions. There is, however, an allowance of four weeks of unemployment in any year before any penalty is imposed in the form of reduction of sickness benefit, and even if the arrears exceed this amount no reduction in sickness benefit can take place until the following year, and this reduction can be avoided by the payment of a comparatively trifling sum in the autumn preceding. Although the scheme of unemployment insurance differs materially from that of health insurance, it is not the case, as the honourable Member would appear to think, that an insured person is credited with a contribution for unemployment insurance in respect of any week for which he received sickness benefit.

Indian Medical Service Statistics.

Major GLYN asked the Secretary for India what was the present total establishment of the Indian Medical Service; what proportion of the officers in that Service were British born or natives of India in the following years: 1910, 1914, 1918, and 1921; what steps were being taken to safeguard the position of British-born officers in that Service who joined before the war; what steps, if any, were being taken to encourage British-born students to enter the Indian Medical Service; and what were the proportions of candidates to enter the Service, British and Indian, in 1910, 1914, 1918, and 1920.—Mr. MONTAGU replied: The number of officers holding permanent commissions in the Indian Medical Service on Jan. 1st, 1921, was 767. The following table gives the numbers of permanent officers in the Indian Medical Service on Jan. 1st, 1910, 1914, 1918, and 1921:—

	British born.	Indians.	Total.
1910	694	37	731
1914	722	48	770
1918	712	71	783
1921	638	129	767

The distribution as between British born officers and Indians has been arrived at after an examination of the names in the Army list and must therefore be regarded as only approximately correct. I am not sure that I understand what is meant by that part of the question regarding British born officers who joined the Service before the war. The position of such officers is in no way jeopardised by the admission of officers, European or Indian, during the war. Every effort is being made to fill up existing vacancies available for Europeans, and the conditions as regards pay, leave, and pension have recently be considerably improved. I am advised, however, in view of the great shortage of medical men caused by the war, that it will be a year before the medical schools of this country are in a position to turn out qualified men of the standard required for the Service in anything like the normal numbers. The following are the numbers of candidates who entered the Service in 1910, 1914, 1918, and 1920:—

	Europeans.	Indians.	Total.
1910 (Examination) ...	22	6	28
1914 (Examination) ...	18	15	33
1918 (Selection)	9	9	18
1920 (Selection)	23	52	75

Dentists Bill.

Sir A. MOND presented a Bill "to amend the Dentists Act, 1878, and the provisions of the Medical Act, 1886, amending that Act." The Bill was read a first time and ordered to be printed.

MONDAY, MAY 9TH.

The Bastardy Bill.

Captain BOWYER asked the Prime Minister whether he was aware of the great volume of support that existed in the country for the Bastardy Bill; whether he realised that the Bill was identical in its clauses with the Bill which left the Standing Committee last session; and whether, in view of its simplicity and of the urgent needs of its reforms, he would facilitate the passage of the Bill into law.—Mr. LLOYD GEORGE replied: It is premature until we see what time is available at the end of the session to make any fresh promises as to the allocation of the time of the House.

The Necessity of Cheap Milk.

Captain Viscount CURZON asked the President of the Board of Trade whether he was aware that the price of milk in the Metropolitan area had been fixed at 8*d*. per quart for the summer months; and whether, in view of the vital necessity of cheap milk to the working population, he would immediately appoint a committee to inquire into and report on the cost of production and distribution with the view to determining what was a fair price to the consumer.—Sir W. MITCHELL-THOMSON (Parliamentary Secretary to the Board of Trade) replied: I understand that the price of 8*d*. is that recommended by the National Federation of Dairymen's Associations. The retail price of milk depends not only on the cost of production and distribution of such milk as is consumed directly, but also upon the loss which has to be incurred by the conversion of large quantities of milk at this season into butter and cheese, the prices of which are governed by those of imported supplies. The report on milk prepared by the subcommittee appointed by the Standing Committee on Trusts (Cmd. 1102) indicated that combinations of distributors had not dealt unfairly with either producer or consumer down to the autumn of last year, and I see no reason to think that circumstances are different at the present time. To reimpose control of milk prices would involve the re-engagement of a considerable and costly staff, and it is not clear that the consumer would ultimately benefit.

Medical Students and Defence Force.

Mr. BRIANT asked the Secretary for War if, as many members of the Defence Corps were being retained with no special duties to perform who left their medical and other studies in order to meet a national emergency, consideration would be given to application for leave on the undertaking that they would immediately rejoin if their services were required.—Lieutenant-Colonel Sir R. A. SANDERS (Under Secretary for War) replied: Instructions have already been issued authorising officers commanding units to grant leave to soldiers of the Defence Force up to a maximum of 10 per cent. of a unit at any one time. These instructions provide for preference being given to cases of hardship, including teachers, students, apprentices, and those undergoing training under the Board of Education and Ministry of Labour, especially those about to undergo examination, and those employed in one-man businesses or in similar positions, the remainder being chosen by ballot.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BULLEN, H., F.R.C.S., has been appointed head of the Department of Orthopædics, including Remedial Exercises and Massage, at Charing Cross Hospital.

CORBETT, W. V., M.R.C.S., L.R.C.P., Pathologist to the London Lock Hospital.

FISHER, A. G. T., M.C., F.R.C.S., Assistant Surgeon to the Seamen's (Dreadnought) Hospital, Greenwich.

HERBERT, J. F. J., M.B., B.Ch., First Assistant Medical Officer to the Marylebone Infirmary.

Royal Alexandra Hospital for Sick Children, Brighton: EDMONDS, FLORENCE M., M.D., B.S. Lond., Honorary Physician: FITZMAURICE-KELLY, M., M.B., B.S. Lond., Honorary Assistant Surgeon.

Vacancies.

For further information refer to the advertisement columns.

Adelaide University.—Professor of Zoology. £1100.
Barrow-in-Furness County Borough.—Asst. Sch. M.O. £500.
Bath, Royal Mineral Water Hospital.—Res. M.O. £250.
Bedford County Hospital.—Asst. H.S. £150.
Birmingham, Queen's Hospital.—Hon. Obst. O.
Bootle Borough Hospital.—H.S. £150. Also Hon. S.
Cardiff City and Port Education Authority.—M.O.H. and Chief M.O. £1200.
Cardiff, King Edward VII. Welsh National Memorial Association.—Asst. Tuberc. P. £300.
Cardiff, King Edward VII. Hospital.—H.S. £200.
Cardiff, University College of South Wales and Monmouthshire, Welsh National School of Medicine.—Prof. of Med. and Prof. of Surg. £1500 each.
Chester Royal Infirmary.—Asst. H.S. £175.
Colchester, Essex County Hospital.—H.S. £200.
Dublin University.—Chair of Zoology. £800.
Dumfries, Crichton Royal Mental Hospital.—Clin. Path. £400.
Dundee Royal Infirmary.—Hon. Asst. Gynæcol. and Obstet. Dept.
East Sussex County Council Education Committee.—Asst. Sch. M.O. £500.
Exeter, Royal Devon and Exeter Hospital.—Hon. Asst. S. and Hon. Surg. Reg.
General Post Office, Headquarters Medical Department.—Asst. M.O. £300.
Great Northern Central Hospital, Holloway, N.—H.S. £150.
Harrogate Infirmary.—H.S. £150.
Hellingly, East Sussex County Mental Hospital.—Sec. Asst. M.O. £450.
Hospital for Sick Children, Great Ormond-street, W.C.—Radiographer. Also Clin. Asst. in Venereal Dept. £1 1s. per visit. H.S. £100.
Hull Royal Infirmary.—Asst. H.S. £150.
Ipswich, East Suffolk and Ipswich Hospital.—H.P.
Kingussie, N.B., Grampian Sanatorium.—Locum.
London Temperance Hospital, Hampstead-road, N.W.—Ophth. S. and Asst. S. Also Res Cas. O. £125.
Manchester Royal Infirmary.—Res. Surg. O. £250.
Manchester, St. Mary's Hospitals for Women and Children.—Asst. M.O. £100.
Manchester, Whitworth Park Hospital.—H.S. £100.
Metropolitan Asylums Board Tuberculosis Service.—Jun. Asst. M.O. at High Wood, Brentwood, Essex. £515 6s.
Middlesbrough Education Committee.—Asst. School M.O. (Female). £500.
Miller General Hospital for South-East London, Greenwich-road, S.E.—Res. Cas. O. £150.
National Hospital for the Paralysed and Epileptic, Queen-square, Bloomsbury, W.C.—Res. M.O. £200.
Nottingham City Education Committee.—Jun. Asst. Sch. M.O. £537 10s.
Orkney, Eday Parish Council.—M.O. £5 per week.
Preston and County of Lancaster Royal Infirmary.—H.S. £200.
Prince of Wales's General Hospital, Tottenham, N.—Hon. P. and Hon. Asst. P.
Queen Mary's Hospital for East End, Stratford, E.—Cas. O.
Rochdale Infirmary and Dispensary.—Jun. H.S. £200.
Royal College of Surgeons of England.—Election to Court of Examiners. Also Election of Professors and Lecturers.
Royal Naval Dental Service.—Appointments.
Royal Naval Medical Service.—Surg.-Lieuts. 26s 6d. per diem.
Royal Waterloo Hospital for Children and Women, S.E.—Hon. P. and Hon. Gynæcol.
St. Bartholomew's Hospital.—Asst. M.O.'s to X Ray Dept.
S. George's Home, Milman's-street, Chelsea, S.W.—Part-time Visit. Asst. M.O. £200.
Scottish Board of Health.—Part-time Local Referees. £2 2s. per session.
Sheffield City.—Asst. Tuberc. O. £350.
South London Hospital for Women, South Side, Clapham Common, S.W.—Temp. (Female) Asst. S.
South Shields County Borough.—Ven. Dis. M.O. £750.
Staffordshire General Infirmary.—H.S. £250.
Swinton and Pendlebury Urban District.—M.O.H. and Sch. M.O. £800.
Taunton and Somerset Hospital.—Sen. and Jun. H.S.'s. £200 and £150.
Weir Hospital, Grove-road, Balham, S.W.—Res. M.O. £200.
Worcester County and City Mental Hospital, Powick.—Sen. Asst. M.O. £450 Also Jun. Asst. M.O. £350.
York County Hospital.—Third Res. O. £150.

Births, Marriages, and Deaths.

BIRTHS.

FARR.—On May 3rd, at Pembroke-road, Kensington, W., the wife of Dr. Arthur Farr, of a son, prematurely (lived for a few hours).

MILTON.—On May 5th, at "High Lea," Hendon, the wife of Wallis Milton, L.D.S.R.C.S. Eng., of a son.

MARRIAGES.

MOLLAN—DES VŒUX.—On April 7th, at Christ Church, Rawalpindi, India, Captain Mollan, M.C., R.A.M.C., to Violet Samana, youngest daughter of the late Lieutenant-General Sir Charles Hamilton Des Vœux and Lady Des Vœux, Palace Mansions, Kensington, W.

WILSON—BOYD.—On May 3rd, at Glasgow, Kenneth John Talbot Wilson, M.B., Ch.B., of Blandford, Dorsetshire, to Agnes Mitchell, second daughter of Mr. David M. Boyd, of Giffnock, Glasgow.

DEATHS.

BROGDEN.—On May 4th, suddenly, at Ashdown Lodge, Bathurst-road, Folkestone, Richard William Brogden, M.B., B.S., aged 6[illegible]

HOLLINGS.—On May 3rd, at Gordon-street, W.C., Edwin Hollings, M.D., in his 79th year.

HOYSTED.—On May 3rd, at Geeta, Sidcup, Kent, Isaac Hoysted, Colonel, R.A.M.C., retired, aged 83.

LONGSTAFF.—On May 7th, at Putney, George Blundell Longstaff, M.A., M.D.Oxon., F.R.C.P., F.S.A., F.L.S., F.G.S., in his 73rd year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At the congregation held on May 7th the following degrees were conferred:—

M.D.—A. T. Edwards, St. John's.
M.B. and B.Ch.—J. B. Hunter, St. John's; W. E. H. Banks, Clare; H. Gainsborough, Downing.
M.B.—H. A. Whyte-Venables, Queen's.
B.Ch.—W. N. Goldschmidt, Pembroke.

UNIVERSITY OF OXFORD: *Wilde Readership in Mental Philosophy.*—The electors to this readership will shortly proceed to the election of a reader. The emoluments of the readership amount at present to £400 a year. Candidates are requested to send in their applications, with evidence of their qualifications, to reach the registrar of the University not later than June 1st, 1921. An extract from the regulations is published in the University Gazette (Clarendon Press), April 21st.

Diploma in Public Health.—The Board of the Faculty of Medicine has issued the new syllabus of examination, which will come into force in Michaelmus term, 1921. The examination in "General Pathology with Special Relation to Infectious Diseases" (paper, practical work, and viva voce) is transferred to Part I.; a practical and viva voce examination in pathology and bacteriology is retained in Part II.

Rolleston Memorial Prize, 1922.—The next award of this prize, which is of the value of about £100, will be made in the summer term of 1922. The prize is awarded for original research in any subject comprised in the following list: animal and vegetable morphology, physiology and pathology, anthropology. Candidates must forward their memoirs to the registrar before March 31st, 1922. The conditions of eligibility are published in the University Gazette of April 27th.

UNIVERSITY OF LONDON.—A course of eight lectures on Metabolism of Cholesterol and the Sterols will be given by Mr. J. A. Gardner at the London (R.F.H.) School of Medicine for Women (8, Hunter-street, Brunswick-square, London, W.C.), at 5 P.M. on Tuesdays, beginning on May 17th.—A course of eight lectures on Experimental Studies in Vegetable Physiology and Vegetable Electricity will be given by Professor A. D. Waller, F.R.S., and Mr. J. C. Waller in the Physiological Laboratory of the University, South Kensington, London, S.W., at 5.15 P.M. on Wednesdays, beginning on May 18th. Attendance at the courses is recognised in connexion with the B.Sc. (honours) degree in physiology.—A course of four lectures on the Interpretation of the Structure of the Brain is now being given in the Department of Anatomy, University College, Gower-street, W.C., by Dr. C. U. Ariens Kappers (Director of the Central Institute for Brain Research, Amsterdam) at 5 P.M. The first took place on May 13th, and the other lectures are being held to-day, Friday, and on May 19th and 20th. All these courses of lectures are addressed to advanced students of the University and to others interested in the subjects. Admission is free, without ticket.

UNIVERSITY OF MANCHESTER.—At a meeting of the governors of the University Court on May 4th Sir H. Miers, the Vice-Chancellor, reviewing the work during the past half year, stated that the number of students was 2895, including 508 at the College of Technology, 654 women, and 9000 ex-Service students. He said that in carrying out ordinary duties the University was faced by a large annual deficit. The appeal fund had so far only yielded £220,000, a sum far short of the half-million asked for. A good lead had been given by Oldham (£8353) and Stalybridge (£3607). Some of the grants from local authorities had been increased. Comparing the responses at Liverpool with those at Manchester, the Vice-Chancellor said that Manchester had been badly beaten by Liverpool, whose appeal fund had reached £300,000. It was resolved to confer the honorary degree of D.Sc. on Professor C. S. Sherrington.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—Licences to practise Physic have been granted to the following candidates:—

*Dulcie S. Adkins, Royal Free; Samuel E. Amos, St. Thomas's; Lyon H. Appleby, London; George Armitage, Leeds; Frederick Back, St. Thomas's; Edward T. Bailey, Middlesex; Francis G. L. Barnes, St. Bart.'s; Geoffrey M. F. Barnett, New Zealand and Middlesex; Sydney H. Barnett, Cambridge and St. Thomas's, Davis E. Bedford, Middlesex; Kaikhushroo Maneckji Bharucha, Bombay and London; Frank A. Bryning, King's College; *Mary Barfield, St. Mary's; Samuel B. Chambers, Charing Cross; Philippe Conacaud, Guy's; Frederick C. Cozens, Cambridge and St. Bart.'s; Herbert A. Crowther, Cambridge and Guy's; Carl K. Cullen, London; Charles R. Dansie, King's College; Fernand Edouard Camille Deveney, Geneva; Irving G. de Zilva, Madras; Charles F. T. East, Oxford and King's Coll.; *Keridwen St. Valentine Edwards, Cardiff and Univ. Coll.; Guy W. Elkington, Guy's; Ralph W. Fairfax, Charing Cross; Sadik Farris, Liverpool; *Katherine M. L. Gamgee and Arthur J. Gardham, and *Janet K. Gatty, Univ. Coll.; Werner Göthe, Middlesex; John B. Gregor, Guy's; Simon Grossman, Edinburgh and Middlesex; Alan B. Hacking, Middlesex; William B. Hargreaves, Manchester; *Eleanor Harse, Royal Free; William E. Hayes, Oxford and St. Bart.'s; Strafford S. Hewitt, St. Mary's; Joseph W. Hirst, Cambridge and King's Coll.; Reginald W. P. Hosford, St. Bart.'s; *Margaret O. Howell, Cardiff and Univ. Coll.; Bryan L. Jeaffreson, St. Bart.'s; William D. Jenkins, Middlesex; David E. Jones, Cardiff and St. Bart.'s; James T. Jones, Guy's; Mohammed Kamil, Middlesex; George W. Karunaratna, Cambridge and Middlesex; *Mary E. Kennedy, Cambridge and London; Morris Korn, London; John H. Le Brasseur, Cambridge and St. Bart.'s; Robert Lee-Michell, McGill and Middlesex; *Bessie Levin, Univ. Coll.; Charles G. Lewis, Birmingham and Univ. Coll.; Edmund O. Lewis, Cambridge and Univ. Coll.; William B. A. Lewis, Cambridge and St. Bart.'s; Evan T. Lloyd, Guy's; John R. Lund, Cambridge and St. Thomas's; Christopher H. Macklin, Middlesex; *Dorothy McNair, Royal Free; *Henrietta A. C. Main, St. Mary's; Sytze E. J. Miedema, Amsterdam and St. Bart.'s; *Sybil G. Mocatta, St. Mary's; John C. R. Morgan, Westminster; Bertram S. Nissé, London; Geoffrey Noott, Guy's; Montague M. Ostrowick, Edinburgh; Rupert J. Parry, Univ. Coll.; Eric F. Peck, Liverpool and St. Bart.'s; Frederick A. Phillipps, St. Thomas's; *Marjorie Pierce and *Cassie Ethel Pratt, Royal Free; William S. Ratnavale, Calcutta and London; Howard L. Rayner, Oxford and King's Coll.; Andrew McKie Reid, Liverpool; John Reith, Oregon and Univ. Coll.; *Edith M. Rooke, Royal Free; Frederick M. Rossiter, Michigan, Rush, Penn., and Univ. Coll.; Charles I. Schiff, London; Carl G. Schoneboom, Groningen and St. Bart.'s; *Margaret Scott-Moncrieff, Univ. Coll.; George Selvaratnam Sinnatamby, Ceylon; Henry L. Slaughter, St. Thomas's; *Elfrida E. A. Spencer, Charing Cross; Harold E. Suter, St. Mary's; Edward Tagoe, Cambridge and Univ. Coll.; Harold B. Taylor, St. Mary's; Horace W. Taylor, Manchester; Clement P. Thomas, Westminster; Eric W. C. Thomas, St. Bart.'s; Bernard W. Thompson, Cambridge and St. Bart.'s; Frederick H. W. Tozer and John P. Traylen, London; Frances I. G. Tweedie, Cambridge and St. Thomas's; William G. D. H. Urwick, St. Bart.'s; *Mary G. Vaughan, King's Coll.; Horace S. Ward, Leeds; *Mildred Warde and Joan M. R. Warwick, Royal Free; Joseph F. Weakley, Univ. Coll.; Robert A. Webb, Johns Hopkins and Middlesex; *Agnes E. Westwood, St. Mary's; Henry L. Willey, Cambridge and St. Thomas's; David C. Williams, London; and *Constance M. Willis, St. Mary's.

* Under the Medical Act, 1876.

LITERARY INTELLIGENCE.—Messrs. William Hodge and Co. will shortly publish in the well-known series of Notable British Trials a volume dealing with the case of Burke and Hare, edited by Mr. William Loughead.

LONDON HOSPITAL MEDICAL COLLEGE.—The Schorstein memorial lecture will be delivered by Dr. A. G. Gibson on Friday, June 3rd, at 4 P.M., in the anatomical theatre of the College. The subject will be Chronic Inflammatory Diseases of the Spleen. Members of the profession are invited to attend.

ROYAL INSTITUTION.—A general meeting of the members of the Royal Institution was held on May 9th, Sir James Crichton-Browne, treasurer and vice-president, in the chair. Sir J. J. Thomson was elected honorary professor of natural philosophy, and Sir Ernest Rutherford professor of natural philosophy. The Friday evening discourse on May 20th will be delivered by Professor E. H. Starling, F.R.S., on the Law of the Heart.

QUEEN'S HOSPITAL FOR CHILDREN.—A course of post-graduate lectures, free to practitioners and students of medicine, has been arranged for May and June and will be held in the board room of the hospital, Hackney-road, Bethnal Green, London, E. The first lecture will be given on Thursday, May 19th, at 4 P.M., by Mr. B. Whitchurch Howell, the subject being the Principles of Orthopædic Surgery (illustrated by cases). Subsequent lectures will be announced in our Medical Diary.

FEDERATION OF MEDICAL AND ALLIED SOCIETIES.—A large number of acceptances have been received for the annual dinner of the Federation at the Café Royal on Thursday, May 26th. Dr. Addison, the first Minister of Health, and his successor, Sir Alfred Mond, have both accepted invitations to be present. As Monday, May 23rd, is the last day on which applications for tickets, price 12*s.* 6*d.*, exclusive of wine, can be received, members of the medical profession are asked to make early application, stating whether they wish to bring any guests and enclosing a remittance.

DONATIONS AND BEQUESTS.—Sir John O. S. Thursby, of Burnley, left £5000 to the Burnley District Nursing Association and £2500 to the Victoria Hospital, Burnley.—Under the will of the late Mrs. Julia Norman, of Brunswick-terrace, Hove, who has left an estate of the value of £36,147, with net personalty £17,396, the testatrix divides the bulk of her property between the Putney Hospital, Lower Common, Putney, and the Royal Hospital for Incurables, Putney Heath.

GENERAL MEDICAL COUNCIL.—The summer session of the Council will commence at 2 P.M. on Tuesday, May 24th, when the President, Sir Donald MacAlister, will take the chair and give an address. The Council will continue to sit from day to day until the termination of its business.

MEDICAL SOCIETY OF LONDON.—Lord Dawson of Penn will deliver the annual oration on Monday, May 23rd, at 9 P.M., on "The Colon and Colitis." A conversazione will follow the oration.

ABERDEEN UNIVERSITY CLUB, LONDON—The bi-annual dinner of the club is to be held on Thursday, May 19th, at 7.30 P.M., at the Criterion Restaurant, Professor J. A. MacWilliam in the chair. The secretary, Dr. W. A. Milligan, 11, Upper Brook-street, W. 1, will be glad to hear from any Aberdeen graduates who would like to be present.

LIVERPOOL MEDICAL INSTITUTION WAR MEMORIAL. On May 11th the Bishop of Liverpool unveiled a tablet, the gift of the ex-President, Mr. W. Thelwall Thomas, in memory of members and associates of the Liverpool Medical Institution who gave their lives in the Great War.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—It is proposed to resume the annual dinner of the Society this year in June, but the dinner will not be held unless at least 20 members signify their intention to be present. Members who would like to attend are asked to communicate not later than May 27th with the hon. secretary, Dr. C. J. B. Buchan, 326, Brownhill-road, Catford, London, S.E. 6.

THE RETREAT (MENTAL HOSPITAL), YORK.—Dr. Bedford Pierce is resigning his position as medical superintendent of this hospital at the end of the year, after nearly 30 years' service. The committee of management have appointed as his successor Dr. Henry Yellowlees, at present the senior physician and deputy physician-superintendent of the Royal Edinburgh Asylum, Morningside.

FRIENDS' EMERGENCY AND WAR VICTIMS' RELIEF COMMITTEE.—The seventh report, just issued, covers the period from April 1st, 1920, to the end of March, 1921. In Austria, Poland, Germany, and Russia distress has been helped by the distribution of clothing and food, grants in kind to children's institutions, the importation of cows to increase the milk-supply for under-nourished children, by the feeding of students and the sale of clothing at reduced prices to impoverished middle-class people, and in other ways. In France the work has been closed down, but the Maison Maternelle de la Marne, the only institution in France devoted to the health and convalescence of mothers and babies, remains as a memento of the Committee's work. The total expenditure of the Committee for the year 1920–1921 was £700,000, the expenses for administration amounting to £18,500, or 2·67 per cent., a very modest figure. The address of the Relief Committee is 27, Chancery-lane, London, W.C. 2.

URBAN VITAL STATISTICS.

Irish Towns (Week ended April 30th).—The 141 deaths in Dublin corresponded to an annual rate of 17·4, or 1·0 per 1000 below that recorded in the previous week, and included 4 from infantile diarrhœa, and 1 each from measles and scarlet fever. The 133 deaths in Belfast were equal to a rate of 16·5 per 1000, and included 10 from whooping-cough.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, London.
A Practical Medical Dictionary. By T. L. Stedman, M.D. 6th revised ed. xii. + 1144. 42*s.*
Indispensable Orthopædics. By F. Calot. 2nd English ed Translated from the French by A. H. Robinson, M.D. Pp. xii. + 1108. 42*s.*
Aids to Chemistry. By W. Partridge, F.I.C. Pp. 280. 6*s.*
Barrier Charts for Health Officers. By S. H. Dukes, M.B. 3*s.* 6*d.*

BELL, G., AND SONS, London.
The Acquisitive Society: An Analysis of the Deeper Causes of Social and Industrial Unrest. By R. H. Tawney. Pp. 242. 4*s.* 6*d.*
Laboratories: Their Plannings and Fittings. By Alan E. Munby, F.R.I.B.A. With Historical Introduction by Sir A. E. Shipley. Pp. 220. 25*s.*

CAMBRIDGE UNIVERSITY PRESS, London.
Side Lights on the Evolution of Man. By Karl Pearson, F.R.S. Pp. 27 and Plates. (Eugenics Lecture Series XIII.) 3*s.*

CHURCHILL, J. AND A., London.
Critical Microscopy: How to Get the Best out of the Microscope. By A. E. Coles, M.D. Pp. 98. 7*s.* 6*d.*
Regional Anatomy. By T. B. Johnston, M.B., Ch.B. Pp. 438. 12*s.* 6*d.*
The Formation of Colloids. By Prof. The Svedberg. Pp. 127. 7*s.*
Notes on Diseases Treated by Medical Gymnastics and Massage. By Dr. J. Arvedson. Translated by Mina L. Dobbie, M.D. Pp. 230. 8*s.* 6*d.*
A Text-book of Botany for Medical and Pharmaceutical Students. By J. Small, D.Sc. Pp. 681. 25*s.*

HOEPLI, ULRICO, Milan.
Come Prolungare la Vita: Studio dei Mezzi per Combattere la Vecchiaia Precoce. Per Prof. G. Galli. Pp. xvi.-310. Legato L.12.50.

KARGER, S., Berlin.
Die Geschlechtskrankheiten und ihre Folgen. Allgemeinverständliches Taschenbuch für Jedermann. Von Dr. med. Hans Burkhard. Pp. 87.
Die Therapie der Placenta Prævia. Von Prof. Dr. F. Hitschmann. Pp. 174.
Ueber die Entwicklung und den Ausbau der suprasymphysären Schnittentbindung an der Universitäts-Frauenklinik Tübingen. Von Dr. Emil Vogt. Pp. 115.
Syphilis und Nervensystem: Ein Handbuch in Zwanzig Vorlesungen für Praktische Ärzte, Neurologen und Syphilidologen. Von Dr. Max Nonne. Pp. 1019.

KIMPTON, HENRY, London.
Roentgen Interpretation: A Manual for Students and Practitioners. By G. W. Holmes, M.D., and H. E. Ruggles, M.D. 2nd ed., revised. Pp. 228. 18*s.*

LA NOUVELLE REVUE, Paris.
L'Example de Florence Nightingale. By M. C. D. Morris. Pp. 14.

LEWIS, H. K., London.
Types of Mental Defectives. By M. W. Barr, M.D., and E. F. Maloney, A.B. Pp. x. + 180. 16*s.*

LIPPINCOTT, J. B., COMPANY, London and Philadelphia.
International Clinics. Edited by H. R. M. Landis, M.D., and Others. Vol. IV., Thirteenth Series, 1920. Pp. 309.
Publications from the Dermatological Research Laboratories of Philadelphia. Vol. II., 1920. (Collected Reprints.)

LIVINGSTONE, E. AND S., Edinburgh.
A Text-book of Medical Jurisprudence and Toxicology. By J. Glaister, M.D. 4th ed. Pp. 902. 30*s.*
A Manual of Surgical Anatomy. By C. R. Whittaker, F.R.C.S. Ed. 3rd ed. Pp. 430. 15*s.*

LONGMANS, GREEN, AND CO., London, New York, and India.
Relativity: The Electron Theory and Gravitation. By E. Cunningham, M.A. 2nd ed. Pp. 148. 10*s.* 6*d.*
The Rhythmic Dance Book. By Margaret Einert. Pp. 96. 4*s.* 6*d.*

Communications, Letters, &c., to the Editor have *been received from*—

A.—Adelaide, Central Board of Health, Chairman of; Dr. E. E. Atkin, Lond.; Auxiliary Royal Army Medical Corps Funds, Lond., Sec. of.

B.—Lt.-Col. Sir J. Barrett, Melbourne; Dr. A. Balfour, Port Louis, Mauritius; Mr. W. V. Ball, Lond.; Dr. H. Barwell, Lond.; Messrs. P. Blakiston's Son and Co., Philadelphia; Mrs. B. S. Barnes, Barnard Castle; Mr. P. Braybrooke, Surbiton.

C.—Dr. C. Coombs, Bristol; Mr. C. H. Carroll, Lond.; Mrs. A. B. Cunning, Lond.; Mr. W. F. Cooper, Lond.; Dr. P. J. Cammidge, Lond.; Miss C. M. Cowdroy, Lond.; Chadwick Trust, Lond.; Central Midwives Board, Lond., Sec. of; Dr. H. P. Cholmeley, Forest Row; Dr. F. J. H. Coutts, Lond.

D.—Dr. V. Dickinson, Lond.; Dr. M. L. Dave, Botad, India; Mr. J. Douglas, Glasgow; Dorland Agency, Lond.

E.—Lt.-Col. R. H. Elliot, Lond.

F.—Federation of Medical and Allied Societies, Lond., Sec. of; Friends' Emergency and War Victims Relief Committee, Lond.; Dr. J. G. Forbes, Lond.

G.—Dr. G. Graham, Lond.; Lord Gorell, Lond.; Mr. J. Galt, Hull; Dr. P. Gully, Leysin; Mr. H. Gilford, Reading.

H.—Mr. H. W. Hardy, Lond.; Mr. C. E. Hecht, Lond.; Messrs. William Heinemann (Medical Books), Ltd., Lond.; Dr. A. F. Hurst, Windsor Forest; Dr. B. Hood, Lond.; Harveian Society, Lond.; Dr. W. J. Howarth, Lond.; Mrs. A. E. Hornibrook, Lond.; Mr. A. H. Hutton, Cookridge; Dr. J. I. Halstead, Burnley; Messrs. W. Hodge and Co., Edinburgh.

I.—Indian Medical Service, Officers of, Lond.; *Illuminating Engineer*, Lond.

J.—*Journal of the American Medical Association*, Chicago.

K.—Dr. T. R. Kenworthy, Shipley; Dr. W. H. Kesteven, Kingston Hill.

L.—Dr. C. Lillingston, Gorleston; Dr. H. E. Littledale, Charing; London Lock Hospital, Sec. of; London Hospital Medical College, Sec. of; Dr. A. Lama, Bologna.

M.—Dr. J. A. Murray, Lond.; Mr. A. S. Matthews, Bath; Ministry of Health, Lond.; Medical Institution, Liverpool; Dr. J. Manoukhine, Paris; Dr. H. E. Mackenzie, Leeds; Meteorological Office, Lond.

N.—National Housing and Town Planning Council, Lond.; New York Academy of Medicine, Health Committee of; National Council for Combating Venereal Diseases, Lond.; Marquess of Northampton, Lond.

P.—Dr. J. J. Paterson, Maidenhead; Mr. C. Payne, Nottingham; Dr. V. Pauchet, Paris; Dr. B. T. Parsons-Smith, Lond.

Q.—*Queen's Hospital for Children*, Lond.

R.—Mr. F. Robertson, Nuneaton; Royal Society, Lond.; Dr. J. D. Rolleston, Lond.; Royal Society of Tropical Medicine and Hygiene, Lond., Sec. of; Royal Free Hospital, Lond., Royal Institution of Great Britain, Lond.; Prof. S Russ, Lond.

S.—Mrs. Scharlieb, Lond.; Prof. J. S. B. Stopford, Manchester; Savoy Hotel Laundry, Lond., Manager of; Messrs. Sharland and Co., Lond.; Prof. W. Stirling, Manchester.

T.—Mr. C. L. Tweedale, Weston; Dr. F. Thomson, Lond.; Dr. J. M. Taylor, Philadelphia.

U.—University of London, Principal Officer of; University of Bristol.

V.—Dr. S. G. Vinter, Torpoint.

W.—Mr. A. J. Walton, Lond.; Dr. H. M. Woolcock, Walton-on-Thames; Dr. W. H. Wynn, Birmingham; West London Hospital Post-Graduate College; West Kent Medico-Chirurgical Society, Lond., Hon. Sec. of; Dr. J. Walker, Lond.; Mrs. I. Watson, Shere; Dr. E. W. A. Walker, Oxford; Dr. R. R Walker, Lochgilphead; Dr. G. Ward, Sevenoaks; Dr. E. H. Worth, Lond.; Messrs. Watson and Sons, Lond.; Mr. C. H. Whiteford, Plymouth.

Y.—Mr. C. Yeomans, Sheffield.

Communications relating to the editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Wednesday, May 18th.

SECTION OF HISTORY OF MEDICINE: at 5 P.M.
Annual General Meeting—Election of Officers and Council for 1921-1922.
Paper:
Dr. Charles G. Cumston (Geneva): A Brief Historical Summary of the Treatment of Trachoma, with Special Reference to the Arabian School and the Writings of Ali-Ibu-el-Aissa.

SECTION OF SURGERY: at 5.30 P.M.
Annual General Meeting—Election of Officers and Council for 1921-1922.
Exhibition:
There will be an exhibition of Specimens of Interesting Diseases and Tumours of Bone.

Thursday, May 19th.

SECTION OF DERMATOLOGY: at 5 P.M. (Cases at 4.30 P.M.)
Annual General Meeting—Election of Officers and Council for 1921-1922.
Cases: The following will be shown by—
Dr. Stowers: Effect of Brass Paste in the Treatment of a Case of Tuberculosis of the Skin.
Dr. H. W. Barber: (1) Epidermolysis Bullosa; (2) Multiple Rodent Ulcer; (3) Diphtheroid Infection of the Skin.

Friday, May 20th.

SECTION OF OTOLOGY: at 5 P.M.
Annual General Meeting—Election of Officers and Council for 1921-1922.
Demonstration:
Mr. J. S. Fraser: Demonstration on the Pathology of Deaf-Mutism.
Paper:
Mr. F. J. Cleminson: Sinusitis in Children.
Specimens:
Mr. Harry Brook: Exhibition of Casts of Congenital Malformations of the Ear and Artificial Ears.

SECTION OF ELECTRO-THERAPEUTICS: at 8.30 P.M.
Annual General Meeting—Election of Officers and Council for 1921-1922.

In consequence of the present industrial unrest the Council has decided not to hold the usual dinner this year. Instead of this there will be a clinical evening of an informal nature. The subject for discussion will be "The Stomach," opened by the President and Dr. Knox. There will also be a demonstration of the *Potter-Bucky Diaphragm.*

Any Member desirous of taking part in the discussion or who wishes to show skiagrams, &c., is requested to give notice to the honorary secretary, Dr. Stanley Melville, 9, Chandos-street, W. 1, at as early a date as possible.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, at 11, Chandos-street, Cavendish-square, W.
FRIDAY, May 20th.—7.45 P.M., Microscopic Demonstrations. 8.15 P.M., Papers:—Lieut.-Col. H. Kirkpatrick, I.M.S. (retd.): Some Points on Trachoma. Dr. C. H. Marshall: A New Method of Treatment of Human Trypanosomiasis. Mr. C. França: An Early Portuguese Contribution to Tropical Medicine.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
TUESDAY, May 17th.—10 A.M., Dr. Robinson: Gynæcological Operations and Visit to Wards. 2 P.M., Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Morton: X Ray Department. Dr. Pernet: Skin Department. 5 P.M., Lecture:—*Dr. Burnford: Infective Endocarditis.*
WEDNESDAY.—11 A.M., Mr. MacDonald: Demonstration of Cystoscopy. 2 P.M., Mr. Gibb: Eye Department. Mr. D. Armour: Visit to Surgical Wards. 5 P.M., Lecture:—Dr. Owen: The Treatment of Nephritis. (II.)
THURSDAY.—10.30 A.M., Dr. Simson: Gynæcological Demonstration. 12 noon, Dr. S. Pinchin: Disease of the Heart. 2 P.M., Mr. B. Harman: Eye Department. Mr. Baldwin: Orthopædic Department. 5 P.M., Special Lecture:—Sir R. Armstrong-Jones: The Analysis of Mind and the Value of Psychotherapy (open to all medical practitioners).
FRIDAY.—10 A.M., Dr. G. Stewart: Neurological Demonstration. 12.15 P.M., Dr. Burnford: Applied Pathology. 2.30 P.M., Mr. Addison: Visit to Surgical Wards. Dr. Pritchard: Visit to Medical Wards. 5 P.M., Lecture:—Mr. MacDonald: Sexual Disabilities in the Male.
SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 2 P.M., Dr. Owen: Medical Out-patients. Mr. Sinclair: Surgical Out-patients.
Daily:—10 A.M. Ward Visits. 2 P.M., *In-patient, Out-patient* Clinics and Operations.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, W.C. 1.
MEDICAL SCHOOL.
TUESDAY, May 17th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Dr. Risien Russell (Lecture Room): Demonstration of Cases.
THURSDAY, May 19th.—2 P.M., Out-patient Clinic: Dr. Farquhar Buzzard. 3.30 P.M., Lecture:—Mr. Scott: Investigation of Cases of Vertigo.
FRIDAY, May 20th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Lecture:—Dr. Grainger Stewart: Spinal Caries.
Fee for Post-Graduate Course £7 7s. C. M. HINDS HOWELL, Dean.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON), Turner-street, Mile End, E.
Courses of Lectures:—
A Course of Fourteen Lectures on Psycho-Neuroses, to be given by Dr. M. Culpin in the Clinical Theatre of the Hospital. Open *to Students of the Hospital and to* Members of the Profession.
TUESDAY, May 17th.—5.15 P.M., Lecture V.:—Conflict and Repression.
FRIDAY.—5.15 P.M., Lecture VI.:—Symbolism; Displacement of Affect.
Advanced Lectures in Physiology, to Students of the University and to others interested in the subject.
A *Course of Eight Lectures on Reception of Sensory Stimuli*, to be given by Prof. H. E. Roaf in the Physiology Theatre.
THURSDAY.—4.30 P.M., Lecture II.

ST. BARTHOLOMEW'S HOSPITAL (UNIVERSITY OF LONDON), West Smithfield, E.C.
A Course of Eight Advanced Lectures in Physiology, to be given in the Physiological Laboratory, to Students of the University and others interested in the subject.
TUESDAY, May 17th.—4.30 P.M., Lecture III.:—Dr. J. Barcroft: Alpinism.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN (UNIVERSITY OF LONDON), Hunter-street, W.C.
Post-Graduate Course of Instruction in Treatment of Venereal Diseases.
A Course arranged by the London (Royal Free *Hospital*) School of Medicine for Women, the Royal Free Hospital, the Elizabeth Garrett Anderson Hospital and the London Lock Hospital, for the instruction of qualified medical women in the Treatment *of Venereal Diseases. The Course* will extend over two weeks.
TUESDAY, May 17th.—10 A.M., Introductory Lecture—Mr. J. E. R. McDonagh: Some Aspects of the Venereal Problem (at 8, Hunter-street, W.C.) 2 P.M., Mr. C. Gibbs: Clinical Demonstration and Visit to Wards (at the Female Lock Hospital, Harrow-road). 6.30 P.M., Dr. Ruth Balmer: Out-patient Cliniques for Women and Children (at the Elizabeth Garrett Anderson Hospital, 144, Euston-road, N.W.)
WEDNESDAY.—11 A.M., Dr. D. Thomson: Pathological Lecture and Demonstration (at the London Lock Hospital, 91, Dean-street, W.) 3.30 P.M., Mr. J. E. Lane: Clinical Demonstration by *and Visit to Wards and Out-patient Department* (at the London Lock Hospital, Harrow-road).
THURSDAY.—2 P.M., Mr. J. E. R. McDonagh: Clinical Demonstration by and Visit to Wards (at the London Lock Hospital, *Harrow*-road). 5 P.M., Mrs. Rorke, M.B.: Injections (at the Royal Free Hospital, Gray's Inn-road).
FRIDAY.—10 A.M., Mrs. Rorke, M.B.: Treatment Ante-natal Cases (at the Royal Free Hospital). 5 P.M., Mr. J. J. Abraham: Clinical Demonstration, Injections, and Out-patient Clinique for Women and Children (at the London Lock Hospital, 91, Dean-street, W.). 6.30 P.M., Dr. Ruth Balmer: Out-patient Cliniques for Women and *Children* (at the Elizabeth Garrett Anderson Hospital).

TAVISTOCK CLINIC FOR FUNCTIONAL NERVE CASES, 51, Tavistock-square, W.C.
A Course of Ten Lectures on Elementary Psychotherapy, to be given by Dr. H. C. Miller, at the Kingsway Hall, Kingsway, W.C.
FRIDAY, May 20th.—5.15 P.M., Lecture III.: Conscious Mental Methods; Persuasion; Suggestion; Hypnosis; Faith-healing; Quackery.

INSTITUTE OF PATHOLOGY AND RESEARCH, St. Mary's Hospital, in the Lecture-room of the Bacteriological Department.
A *Course of Lectures on Pathological* Research in its Relation *to* Medicine, open to all Members of the Profession and Students.
THURSDAY, May 19th.—4.30 P.M., Dr. H. H. Dale: Anaphylaxis and Immunity.

CHADWICK PUBLIC LECTURE, in the Lecture Room, Medical Society of London, 11, Chandos-street, Cavendish-square, W.
THURSDAY, May 19th.—5.15 P.M., Dr. W. Hunter: Fevers in England—their Prevention and Control, with Special Reference to the Effects of Public Health Acts (1848-1918). Lecture III., Period 1891-1920—Compulsory Notification and Isolation.

ROYAL INSTITUTION *OF* GREAT BRITAIN, Albemarle-street, Piccadilly, W.
FRIDAY, May 20th.—9 P.M., Discourse:—Prof. E. H. Starling: The Law of the Heart.

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.
Special Course of Lectures in Gynæcology.
WEDNESDAY, May 18th.—11 A.M., *Demonstration Operations.*
THURSDAY.—4.30 P.M., Lecture VI.:—Dr. A. C. Magian: Parasites of the Genital Tract.

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OUTLINE OF A SCHEME TO FINANCE THE VOLUNTARY HOSPITALS OF LONDON.

BY W. MCADAM ECCLES, M.S., M.B., F.R.C.S.

THE committee appointed by Dr. Addison to look into and report on the finances of the voluntary hospitals strongly urged[1] the retention of the voluntary system of finance and management. King Edward's Hospital Fund for London has come to the same conclusion,[2] and with this two-fold decision most of the lay authorities and medical staffs of the hospitals concerned agree. The problem, therefore, is how to maintain voluntary contributions so that voluntary management may remain.

In 1920, 113 London general and special voluntary hospitals spent nearly £3,000,000, while their income fell short of this by some £500,000. With this deficit unchecked the road to bankruptcy is sure. Since 1911 these voluntary hospitals have been treating without payment as in-patients persons insured under the National Health Insurance Acts. Meanwhile the approved societies have been accumulating funds, possibly amounting to £7,000,000. Lord Cave's Committee suggested that some of this accumulation should be disbursed in grants to the voluntary hospitals, but it is doubtful whether the approved societies could or would part with the money in this manner. The societies are, however, desirous of providing extra "benefits" for their members.

Wider Application of the Sussex Scheme.

In January of this year a scheme devised by Dr. Gordon Dill of Brighton was started in Sussex and is proving remarkably successful. Its application to London, and possibly to the whole of England, is now under consideration. In brief, it is as follows: All those whose incomes do not exceed £250 a year can become members by subscribing £1 per annum (equivalent to 4·6*d.* per week); a married couple without children, whose combined income does not exceed £400 a year, can both be members for the subscription of £1 10*s.* for the two; and married persons with children under 16 years of age, whose combined income does not exceed £500, can themselves and their children all become members for an inclusive subscription of £2. For this yearly voluntary subscription the following facilities are to be arranged:—

1. Consultations in the patients' own homes, when too ill to leave them. Consultations separate from other patients at the coöperating hospitals.
2. A motor ambulance service.
3. In-patient hospital maintenance and treatment.
4. Dental treatment.
5. Laboratory investigations, X ray, electrical, and massage treatment.
6. Nurses' services in the homes.

Access to all the facilities will be available only on the application of the patient's own general practitioner, and with the approval of the members of the hospital staff concerned.

Budget as Applied to London.

It is estimated that in the area of the Metropolitan and City Police districts there are some 5,000,000 persons, men, women, and children to whom the scheme applies. If all these joined as individuals, married persons, or families, the resulting income would be about £3,000,000 per annum. If as a basis for calculation it is assumed that sufficient persons join to produce an income of £1,200,000 this might be allotted as follows:—

	£		£
Hospitals, 52/80 (including 25 per cent. to medical staff fund, £195,000) ...	780,000	Visiting consultants, 8/80	120,000
500 nurses, 6/80	90,000	Administration, 3/80 ...	45,000
30 ambulances, 2/80	30,000	Reserve, 9/80	135,000
			£1,200,000

From these figures it will be seen that—

(1) The hospitals would receive £585,000 net, or £85,000 over and above their deficit in 1920.

(2) The medical staff fund would amount to £195,000, which would be administered in any way the staffs attached to the hospitals determined. From part of this comparatively large fund a really well-organised post-graduate medical school in London might be financed.

(3) 500 nurses at £180 each per annum could be provided.

(4) 30 motor ambulances, each provided with two skilled men and costing £1000 per annum, could be at the service of the general practitioner and the hospitals.

(5) 38,000 consultations in the patients' own homes at £3 3*s.* could be provided for.

(6) The cost of administration and reserve contingencies are well covered.

The Advantages of the Scheme.

Great advantages lie in the scheme, some of which may be mentioned—namely, (*a*) to the *prospective patient*: (1) Provision made during health; (2) free consultations at home; (3) no payment for hospital maintenance or treatment during illness; (4) freedom for almoner's investigation; (5) dental treatment; (6) ambulance service; (7) the feeling of satisfaction that his subscription is of help to others less fortunate.

(*b*) To the *hospital*: (1) Maintenance of the voluntary system, both of income and management; (2) an adequate income; (2) freedom from necessity of making appeals.

(*c*) To the *general practitioner*: (1) All the arranged facilities will be obtainable only through the general practitioner; (2) much saving of anxiety by being able to arrange a consultation free of charge; (3) can maintain more direct contact with his patient; (4) can obtain promptly many facilities hitherto difficult or costly to procure.

(*d*) To the *consultant members* of the medical staff of the voluntary hospitals: (1) A medical staff fund of 25 per cent. of the money received by the hospital; (2) a fund from which consultants will be paid for consultations at patients' own homes; (3) more direct relationship with general practitioners.

(*e*) To the *nation*: (1) The maintenance of the voluntary system; (2) the prompter treatment of cases of serious illness needing in-patient hospital treatment, with corresponding saving of life and shortening of convalescence; (3) the maintenance of a supply of clinical material for medical and nursing education in the schools.

Some Objections to be Met.

Some cogent objections have been levelled at the scheme. The *first* is that it would not be successful because there is not enough inducement to make a sufficient number join to produce at least £1,200,000 a year. This may be answered by stating that the facilities offered are greater than those at present obtainable, and all these facilities will be obtained free at the time required. Further, the voluntary hospitals may have to say in the future that they can only treat without payment the really necessitous poor and members of the scheme.

Secondly, it may be thought that if the scheme is successful it would greatly diminish the number of the ordinary voluntary and other subscriptions. This would probably be true, but the gain in income would completely counterbalance this loss, and the more so the greater the success of the scheme. If £3,000,000 came in from subscribers to the scheme this would cover the whole of the yearly cost of the hospitals in London. Again, it is stated that if the scheme is successful it would necessitate additional beds, but if successful to this extent there would be money enough to provide the extra accommodation.

And, *lastly*, it is argued that the cost of running the scheme would be great. This is true, but not a penny of it would fall upon the hospitals, and the greater the success of the scheme the less proportionately would be the cost of administration.

No scheme put forward appears to have all the merits of this particular one conceived by Dr. Gordon Dill. If a success, it would be a tremendous boon; *if a failure*, it can hardly leave the voluntary hospitals worse off than they are. The approval and coöperation of the lay authorities of the hospitals, the medical staffs, the general practitioners, the approved societies, and the persons who may need the facilities should ensure the abundant success of the scheme.

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[1] Interim Report, March 8th, 1921.

[2] Interim Report of the King's Fund Policy Committee, April 12th, 1921.

PUBLIC HEALTH OF SEYCHELLES.

IN his report for 1919 the Governor, Sir Eustace Fiennes, states that the population of the colony is now estimated at 24,653. The birth-rate for the year was 25·19 and the death-rate 16·84 per 1000. There was an epidemic of influenza which affected the majority of the population and caused 115 deaths. There was also an epidemic of dengue fever. It was noticed that the number of cases of lobar pneumonia had considerably increased. During the year the lepers were brought from Round Island, Praslin, 35 miles away, to Round Island, Mahe, where they are now comfortably housed in good quarters and are well cared for, the doctor making regular visits to the island. The in-patients treated at Victoria Hospital in 1919 numbered 723, and 4739 persons were treated at the dispensaries. The rainfall was considerably higher than in 1918, being 101·03 inches; rain fell on 135 days.

THE STABILITY AND INFLUENCE OF THE ANTI-SCORBUTIC VITAMIN.

THE vulnerability of the anti-scorbutic vitamin has been the subject of many researches, and recently this question has attracted considerable attention in the United States. In 1918 M. H. Givens and H. B. McGlugage showed that the raw tomato is an efficient antiscorbutic agent, that this fruit can be subjected to a temperature of 55°-60° C. for 14-24 hours, or 35-40° C. for 36-44 hours and still retain a considerable content of its antiscorbutic vitamin, and that this treated material is still potent after three months ageing. A. F. Hess at the same time proved that canned tomatoes are effective as antiscorbutic agents for children and guinea-pigs even if canned for a year, so that their antiscorbutic value does not diminish appreciably by ageing. Feeding experiments on guinea-pigs determined the effect of heat and age upon the antiscorbutic accessory. It was found that guinea-pigs are protected against scurvy by daily doses of 2·5 g. of fresh raw tomatoes; by 10 g. of fresh raw tomatoes heated one hour at 100° C.; by 2 g. of dried tomatoes heated 15 minutes at 100° C.; by 10 g. of tomatoes canned at 15 pounds pressure for 30 minutes; by 3 c.cm. of commercial canned tomatoes three years old; and by 10 g. of commercial canned tomatoes, three years old, cooked 15 minutes at 100° C. The same observers, with E. G. van Horne, investigated at the University of Rochester the antiscorbutic property of raw, dried, and cooked apples and bananas, the two fruits most generally consumed in the United States by healthy adults, children, and, indeed, by the sick. An attempt to determine quantitatively their antiscorbutic potency in the raw and in the cooked form was made by feeding guinea-pigs on a basal diet adequate in all respects except the antiscorbutic vitamin, with the result that a dose of 10 g. per diem of raw apples or of bananas was found to protect a guinea-pig against scurvy for three months. On the other hand, an equivalent amount of these foods cooked at 100° C. for 15 minutes or dried at 55°-60° C. (with the exception of dried apples, which showed some antiscorbutic potency) or dried at 55°-60° C. and cooked for 15 minutes at 100° C., will not protect the animals against scurvy. The researches of A. F. Hess and L. J. Unger on the destruction of the antiscorbutic vitamins by oxidation were recalled in THE LANCET of last week.

The pathogenesis of deficiency disease opens up a very wide subject, and the relation of the scorbutic condition to certain of the endocrine glands has been the subject of various investigations. We have already referred[1] to certain observations of V. La Mer and H. L. Campbell on changes in organ weight produced by diets deficient in antiscorbutic vitamin, more especially a pronounced increase in weight of the adrenal glands. These observers do not appear to have paid special attention to the histo-pathological changes occurring in guinea-pigs fed on a scorbutic dietary, but they confirm the earlier observations of R. McCarrison, who has published several papers on the pathogenesis of deficiency disease, not the least interesting of which is No. IV., on the Influence of a Scorbutic Diet on the Adrenal Glands, illustrated with several plates.[2] McCarrison showed that a scorbutic diet gives rise in guinea-pigs to (1) an increase in size and weight of these glands; (2) a marked diminution in their adrenalin content, causing pronounced depreciation in their functional capacity; (3) hæmorrhagic infiltration around the periphery of the adrenal cortex; (4) degenerative changes in the cellular elements of the cortex and medulla. The impairment of adrenal function occurs before clinical evidence of scurvy becomes manifest. It is clear that we are still far from a full knowledge of the far-reaching effects of any one single vitamin in metabolic activity, and much spade-work will have to be done before the relation of vitamins to endocrine glands are laid bare.

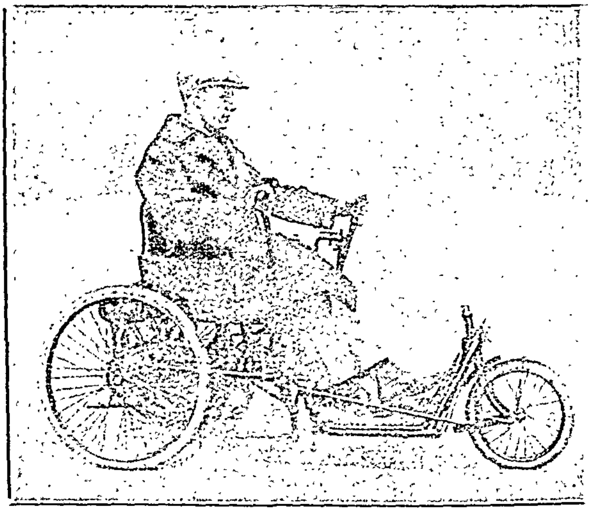
CAMBRIDGE MICROTOMES AND RECORDING THERMOMETERS.

List No. 182 of the Cambridge and Paul Instrument Company, Ltd. (45, Grosvenor-place, London, S.W. 1), describes three types of Cambridge microtomes manufactured to meet the requirements of many different classes of work. A new universal microtome offers the advantages of ease of manipulation, rigidity, and continued accuracy, even after considerable wear, which are characteristic of the "rocker," with the additional advantage that it cuts flat sections. It is capable of cutting sections from objects embedded in paraffin or celloidin, or from certain non-embedded objects. Ribbons of sections can be obtained from paraffin-embedded objects. The rocking microtome differs only in minor details from the patterns of previous years. It remains a favourite instrument for cutting sections of paraffin-embedded objects, and with it long ribbons of uniform sections can be produced with ease and rapidity. The freezing microtome is designed for cutting sections of tissues during the progress of surgical operations.

List No. 183 describes instruments designed for the continuous registration of body temperatures, developed as a result of the work of Sir G. Sims Woodhead and Mr. P. C. Varrier-Jones, recorded in our columns ("Investigations on Clinical Thermometry," THE LANCET, 1916, i., 173, 281, 338, 450, and 495). The instruments have proved reliable and easy to manipulate, and of ample sensitivity for the requirements of ordinary practice. The thermometers are of the electrical resistance type, and consist essentially of a bulb containing a coil of platinum wire joined by connecting wires to a recorder which may, if desired, be placed at a considerable distance from the patient.

MOTOR-ESEGO TRICYCLE.

THE machine here illustrated is primarily a standard model hand-propelled tricycle, but fitted with a petrol motor auxiliary unit, giving a speed of 2-15 miles per hour, and an invalid is able to climb hills of any gradient. The engine is easily started by two or three motions of the hand levers, the hand clutch is then released, the propelling levers remain stationary, and the machine is under perfect control. One important feature of this machine is that in the event of the motor not functioning for any reason the rider is able to propel the machine home by means of the hand levers.


The Motor-Esego tricycle in use.

The machine is manufactured by Carters Ltd., of 125-9, Great Portland-street, London, W. 1.

THE HOMELESS CHILD FOR THE CHILDLESS HOME.

MEDICAL men are occasionally asked by those wishing to adopt children if they know of a suitable orphan or homeless child, and more frequently about the chances of finding foster-parents for an infant whose mother cannot make a home for it. The responsibility of direct introduction of principals is often shirked, while a recommendation to either side of a reputable society who will make the necessary inquiries is an easy and safe procedure. The National Adoption Society (registered as a benevolent society under the Friendly Societies Act) was founded before the war by Rev. W. F. Buttle. The committee includes Lady Dawson of Penn, Dr. Charles Porter, and Lady Ryall, and the honorary medical administrator is Dr. Margaret Rorke. Applications are constantly being received from both parties; those from adopters who require payment or premium are refused. Every home to which a child is sent is visited by a member of the Society. The following general summary for one year gives an idea of the numbers dealt with:—

Applications for adoption	1975
Applications for babies	734
Adoptions completed	204

Further information and application forms are obtainable from the Secretary, National Adoption Society, 2 Baker-street, London, W. 1.

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[1] THE LANCET, Feb. 12th, 1921, p. 335.

[2] The Indian Journal of Medical Research, vii., 1919.

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The Goulstonian Lectures

ON

GLYCÆMIA AND GLYCOSURIA.

Delivered before the Royal College of Physicians of London

BY GEORGE GRAHAM, M.A., M.D. CANTAB., F.R.C.P. LOND.,

SECOND ASSISTANT, MEDICAL CLINIC, ST. BARTHOLOMEW'S HOSPITAL; ASSISTANT PHYSICIAN, GREAT NORTHERN CENTRAL HOSPITAL.

LECTURE III.*

(Delivered on March 8th, 1921.)

IN my first two lectures I have spoken about the fate of the sugar in the blood and the types of diabetes mellitus which are already recognised. In this lecture I shall briefly discuss the hypotheses for the cause of diabetes, and then go on to discuss the principles and details of the modern treatment.

CAUSATION AND TREATMENT OF DIABETES.

The association of the pancreas with the disturbance of sugar metabolism has been completely established by the work on the extirpation of the pancreas. The original observations of Minnowski and von Mering have been greatly extended by Allen's work. Further, the islands of Langerhans are recognised as distinct entities, mainly as the result of the work of Bensley[1] and Homans,[2] and the pancreas is therefore a double gland with its external secretion into the intestine and internal secretion into the portal vein. It is also believed that the islands are concerned with the metabolism of sugar, as definite changes occur when the surviving remnant of the pancreas of a dog is overworked. It would seem therefore that the association is one which could easily be confirmed by post-mortem examination. The state of the islands in dogs in whom diabetes has been produced by removal of a large fragment of the pancreas coupled with excessive carbohydrate feeding does suggest it. These cases show hydrops of the cell, and the characteristic granules are absent; the cells have an exhausted appearance. In long-standing cases, however, it is difficult to make out changes, as the cells gradually die and there may be no sign of hydropic degeneration (Allen[3]). In man the evidence is by no means so good. This is partly due to the long-standing nature of the disease and partly to the fact that the pancreas undergoes very rapid changes after death. By its position in the body it is kept very warm, and is usually invaded early by bacteria. Unfortunately, it cannot often be examined soon after death. Further, the staining reactions of the ordinary acini are usually very poor in comparison with those obtained from a fresh specimen. Consequently it is not really surprising that the finer details, such as the presence or absence of granules in the cells of the islands, cannot readily be made out.

Opie[4] observed that the fibrosis which is seen in the pancreas may involve the islands of Langerhans, but these may escape if the changes are chiefly around the acini. Weichselbaum and Stangl[5] have greatly extended Opie's work; they pointed out that there was also a change in the cells of the islands, which they called hydrops of the cells. The discovery of the specific granules by Bensley has added a further test of the functional activity of the cells. If the pancreas of diabetic patients is examined fairly early it is possible to form some idea whether the islands are affected or not. One of the difficulties is that changes of this kind do occur in the island cells of patients who have never had diabetes. It is therefore necessary to examine many portions of the pancreas so as to form some idea of how many of the islands are affected. Allen[6] has recently stated that working under these conditions he has been able to make a correct diagnosis in nearly 100 per cent. of the cases of diabetes and non-diabetics that he examined. If the pancreas was badly preserved it was not possible to give an opinion.

This work establishes the hypothesis that the islands of Langerhans are intimately related to diabetes, but the cause of the damage to the islands remains obscure.

Hypothetical Causation of Glycosuria.

Extensive involvement with a neoplasm very rarely causes glycosuria. General diseases of the pancreas, such as acute and chronic pancreatitis, rarely cause more than a transient glycosuria. This is probably due to the fact that the islands are little affected by the disease which has affected the acini. Thirloix[7] has completely destroyed the acini of the pancreas of a dog by injecting into the duct a mixture of oil and lampblack without causing any glycosuria. Also the amount of pancreas which is necessary in the dog to prevent glycosuria is small; the survival of a one-eighth to one-ninth of the gland is sufficient (Allen[8]).

Syphilis of the pancreas may be a factor in causing glycosuria in some cases.

Warthin[9] found definite changes in the pancreas which he regarded as characteristic of syphilis in 13 out of 14 cases of diabetes. In 2 cases the *Spirochæta pallida* was found in the pancreas and in 5 cases in the myocardium. Fibrosis of the islands was well marked in 11 out of 13 cases. Warthin did not assert that syphilis was the cause of diabetes, but only that it was a common cause of interstitial pancreatitis, and that if interstitial pancreatitis is the cause of diabetes syphilis must play a large part in its causation. Whether or no syphilis is the prime cause of the diabetes it may well be a contributing factor in causing a gradual destruction of the islands, and so of the gradual decrease of sugar tolerance with which the clinician is so familiar.

Since the general diseases to which the pancreas is liable do not seem to produce marked changes in the sugar tolerance it is permissible to speculate whether the islands can be affected by a specific agent which affects them without damaging the rest of the pancreas.

The evidence in favour of this hypothesis is slight at present. The instances of sudden onset of very severe diabetes which I mentioned in my last lecture suggest that a very widespread damage may be done to the islands throughout the pancreas. It is difficult to conceive on our present knowledge how this damage can be done. There is no evidence of any infecting organism, and only one of my cases had any other symptoms besides thirst. In this case malaise was complained of and the boy was kept in bed for three days, and then returned to school for three days before being admitted to hospital. We do not know any real parallel to such an infection. It is true that the pancreas is damaged in acute pancreatitis—a disease of which we do not know the cause. Mumps affect the salivary glands, but may also affect the pancreas (Feiling[10]) and the testicles.

The evidence for a specific toxin or chemical poison is very little stronger.

It is true that the tetanus toxin is specific for the motor neurons and for no other part of the nervous system. But even if there is a specific toxin for the islands, there is no evidence where or how it arises. The evidence, therefore, for any specific agent which could damage the islands is very slight.

If, however, the islands are affected by such a specific agent it is much easier to explain the different grades of severity of diabetes which occur. In the mild cases comparatively few islands would be damaged, but in severe cases the number of islands destroyed would be very great. The gradual decrease of tolerance can be explained as being due to the destruction of more islands.

It has been suggested that stimulation of the sympathetic nervous system may play a considerable part in the causation of diabetes, and this view has recently been put forward by Langdon Brown in the Croonian lectures, 1918.[11]

It is accepted, as I pointed out in my first lecture, that stimulation of the splanchnic nerves produces glycosuria by causing an increased output of adrenalin. This may well play a part in the causation of the mild type of diabetes which occurs in elderly people with many business worries. It can also increase the amount of sugar excreted in other cases, but it does not seem probable that it can be a cause of severe diabetes. Allen's[12] criticism that stimulation of the sympathetic system can only produce glycosuria if the pancreas is already damaged does not agree with the observations of McLeod[13] on the healthy football players who passed sugar while watching a football match. But it is obvious that if the pancreas is damaged sugar will be more readily excreted after splanchnic stimulation.

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* Lectures I. and II. appeared in THE LANCET of May 7th (p. 951) and 14th (p. 1003), respectively.

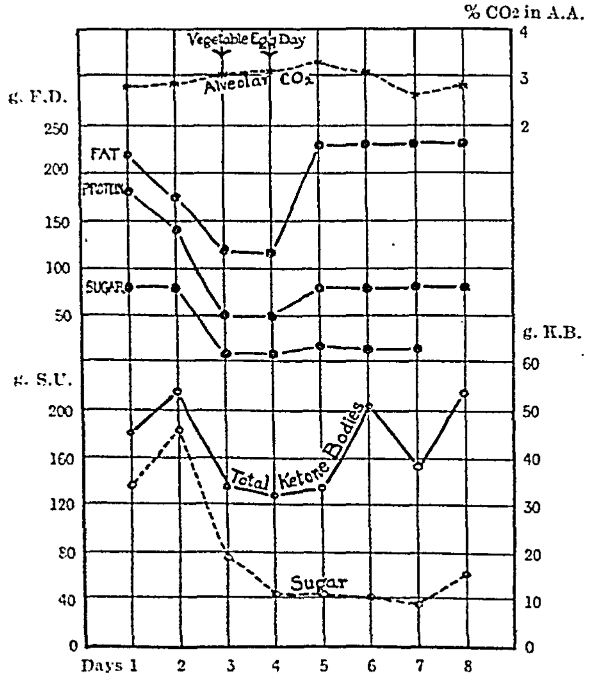
No. 5099.

Treatment with Extracts of Pancreas.

Since we are still in ignorance of the cause of diabetes there is no chance yet of any preventive treatment. As the disease is probably due to the damage of the islands of Langerhans, I must first of all consider the question of treatment with extracts of pancreas. Many attempts have been made to treat cases with extracts of the gland on the line of the successful treatment of myxœdema with thyroid extract. These, however, have all been failures, and no improvement has resulted.[14] The attempt to graft a portion of a healthy pancreas into a patient is likely to fail for the following reasons:—

> In order to make a successful transplant of a gland it is essential that the graft be taken from a member of the same species. Fresh human pancreas is exceedingly difficult to obtain, but I have been told of one unpublished case (Grant) where the graft was made from the pancreas of a man who had just died of a head injury. It is possible to obtain a pancreas in this way a few minutes after death. It is also essential that the donor should belong to the same blood group as the patient.
>
> Further, the gland must be placed in a position in which the internal secretion can pass to the liver via the portal vein, as Hedon[15] showed that it was only efficacious under these conditions. This fact adds considerably to the difficulty, and it would be necessary to open the abdomen in order to place the graft in the portal circulation, and diabetics stand an operation badly in any case. Pratt[16] has succeeded in one case in making a graft in a dog by burying the gland in the spleen. Most cases of transplantation cannot be said to be successful.

The attempt to influence the sugar metabolism directly by means of drugs has now been given up as useless.



g. F.D. = grammes food in diet. g. S.U. = grammes sugar in urine.
A.A. = alveolar air.
g. K.B. = grammes ketone bodies in urine.

FIG. 1.—Showing effect of a vegetable and egg day on output of sugar, total ketone bodies, and alveolar CO2.

Codein, which had a great vogue at one time, is of little value except in the later stages of the disease, when it makes the patient's life more tolerable by its sedative action. By soothing the patient's temper sympathetic stimulation may perhaps be diminished and the glycosuria may decrease. Two kinds of drugs are, however, of use for other reasons: (1) One of the complications of diabetes is the severe constipation which almost always occurs. This can be treated with a mechanical adjuvant such as liquid paraffin, or better still by agar-agar. The drugs which are of most use are the saline purgatives to which tr. jalapæ in ʒss. or ʒi. doses may be added. Large doses of aloes are of great assistance. The successful treatment of the constipation will be of great benefit to the patient. (2) It is important to maintain the general health of the patient as far as possible, and tonics like strychnine which do not contain any sugar are of some assistance.

As there are no specifics for the treatment of diabetes we are reduced to attempting to correct chemical errors which result from the absence of the internal secretion.

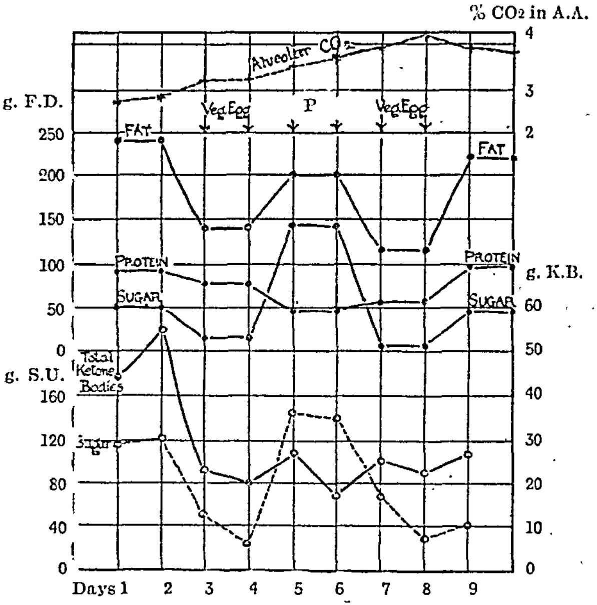


FIG. 2.—Showing effect of a vegetable and egg day followed by potato days on output of sugar, total ketone bodies, and alveolar CO2. P = potato day.

Tests on Animals.

An exhaustive survey of the modes of treatment has recently been given by Allen, Stillman, and Fitz, of the Rockefeller Institute, and I need only refer in passing to work of different men.

The admirable work of the German schools of Naunyn and von Noorden did not really advance treatment very much, although it paved the way for it. The brilliant but ill-balanced work of Guelpa was largely overlooked because of the exaggerated claim which he made for the treatment of other diseases by starvation and purgation, and also because he neglected the after-treatment. The work of Allen and his school on animals has very greatly advanced the treatment.

The advantages of testing different kinds of treatment on animals, which cannot resist to anything like the same extent as patients, are very great. The difficulty which Allen surmounted was that although diabetes does occur naturally in dogs it is very rare. Further, the diabetes which was produced by complete removal of the pancreas was so fatal that no treatment was of any avail in prolonging life more than a few days. Partial removal of the pancreas, on the other hand, did not produce diabetes. Allen, however, overcame this difficulty by removing more and more of the gland in successive operations until the animal became a diabetic of the grade which he required. He found that he could cause a mild diabetes if the remnant of the gland was one-eighth to one-ninth of the whole gland.[8] The diabetes was severe if the remnant was less than one-ninth of the whole gland. These results were liable to variation, as the presence of a local inflammation rendered the diabetes more severe. On the other hand, some hypertrophy of the gland sometimes occurred. The dogs with the varying grades of diabetes were then treated in different ways and the results observed.

Tests on Human Beings.

The treatment, which was of value, was then tested on patients under the charge of Stillman at the Rockefeller Institute and of Joslin at Boston.

The general principle on which Allen's diet[17] is based is that of under-nutrition of the patient. Starvation is enforced until the patient ceases to pass sugar in the urine. Carbohydrates are then added to the diet in the form of vegetables, and the amount is increased until sugar is excreted. Then the carbohydrate is decreased, and amounts of protein are added until 1·5 g. of protein per kilo is given. Thirdly, fat is added until the caloric value of the diet is sufficient. The essential point is that sugar should never be excreted in the urine, and further, that the fasting value of the blood sugar should be within normal limits. It is important to note that Allen makes no exaggerated claim for his treatment, as he makes it quite clear that a cure in the true sense of the word cannot be expected.

Conversion of Mild into Severe Type.

More recently Allen[18] has been studying the different methods by which a mild diabetic animal may be converted into a severe diabetic.

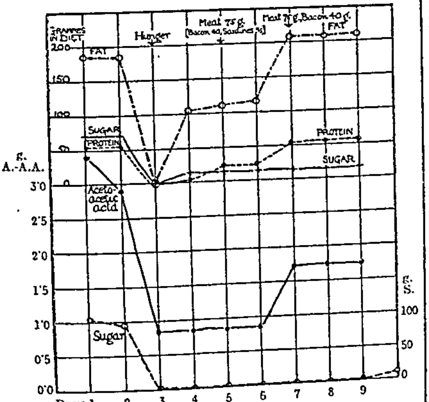
He found that overfeeding with sugar was the best way of converting the mild case into a severe one. The continual overfeeding led to a steady decrease in the sugar tolerance, and the islands of Langerhans showed absence of granules and hydrops of the cell. Similarly, overfeeding with starch converted the mild case into a severe one. Overfeeding with proteins also produced the same effect, but more slowly than in the case of sugar or starch. I will consider the significance of these experiments later on.

As so often happens, other workers had independently and for very different reasons arrived at a somewhat similar plan of treatment. In 1915 Williamson[19] had advocated the use of small quantities of casein and cream, but he did not apply it to very severe cases.

Personal Experiments.

I will now describe some of the experiments which led me independently in 1915 to arrive at a line of treatment which, although it differs from the Allen diet in its details, is based on the same general principle of under-nutrition. The work was interrupted in 1915, and although it has been referred to[20 21 22] it has never been published. My interest in diabetes really dates from 1913, when Hurtley gave a communication to the Biochemical Society on the problems of ketosis.

Hurtley had been working at these problems with the coöperation of Sir Archibald Garrod since 1907, and his work on the four carbon atom acids of diabetic urine is a most valuable contribution to our knowledge of the problems of ketosis.[23] Hurtley realised quite early that it was essential to estimate the acetone bodies in the urine when the carbohydrate of the diet was being reduced. If the carbohydrate was reduced below a certain amount there was a sudden rise in the excretion of the acetone bodies which was very difficult to control by the giving of more carbohydrate. The acetone bodies could be reduced, however, if the patient was given the diet of vegetables and eggs, which was part of the régime of von Noorden's oatmeal cure. This sudden decrease in the acetone bodies interested us greatly, and it was to try to elucidate this point that I first joined Hurtley in making the estimations of the alveolar CO_2 and of the ammonia output, in addition to the other estimations. The second patient we examined had a very severe form of diabetes, and had at one time been treated by a prolonged fast after the Guelpa idea. (Fig. 1.)



g. A.-A.A. = grammes aceto-acetic acid. g. S. = grammes sugar.

FIG. 3.—Showing effect of a hunger-day, followed by a gradual increase of diet, on output of sugar and aceto-acetic acid.

The sugar output was high, as 189 g. were excreted, although only 80 g. of sugar were eaten. The total acetone bodies were very high, as 54 g. were excreted. When the vegetable and egg diet was given there was a decrease in the sugar output to 47 g. on the second day; of the acetone bodies to 32 g. The alveolar CO_2 rose from the very low figure of 2·8 per cent. to 3·3 per cent., but then declined again. In this experiment the fat in the diet was decreased from 220 g. to 117 g., the protein from 180 g. to 50 g., and the sugar from 80 g. to 12 g. As both the fat and the protein were decreased the reduction in the acetone bodies might have been due to the reduction of either the fat or the protein or both. (Fig. 2.) In the next experiment on the same patient the fat was diminished from 240 g. to 140 g., while the protein was only decreased from 94 g. to 78 g., and the sugar from 50 g. to 10 g. In this case the total acetone bodies decreased from 55 g. to 20·5 g.—that is, the decrease was rather more than in the previous experiment. This experiment strongly suggested what is now well recognised, that the acetone bodies are almost entirely formed from fat. On the next two days 135 g. of potatoes were given and 200 g. of butter. The output of total acetone bodies at first rose to 27 g., but then fell to 17 g. The sugar output was slightly more than the intake—i.e., 142 g. The alveolar CO_2, which was very low at 2·8 per cent., rose steadily through the experiment and reached its maximum at 4·2 per cent. on the fourth vegetable and egg day, but then began to fall.

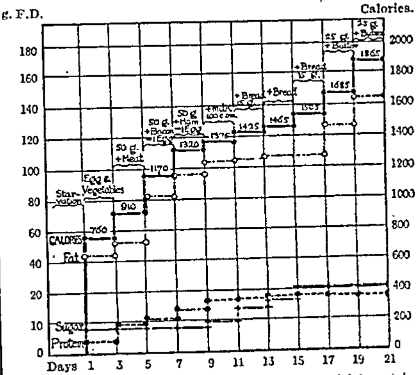


FIG. 4.—Showing total caloric values, and grammes of fat, protein, and sugar, in the "ladder diet."

This is the typical result in a very severe case of the complete régime of von Noorden with the two vegetable and egg days, two potato days, and two more vegetable and egg days. This régime always produced a great temporary improvement, but on the return to the original diet there was an immediate increase in the sugar and acetone bodies in severe cases. We treated several other cases in a similar way and not until April, 1915, was any real advance made. This patient had a severe type of diabetes, but much less severe than the previous patient. Gradual reduction of the carbohydrate in the orthodox manner had failed to reduce the sugar output below 100 g. of sugar on an intake of 70 g. The aceto-acetic acid output was 3·4 g. and in this experiment, as I was working alone, no estimations of the β-oxybutyric acid were made. On two occasions two vegetable and egg days had been tried with temporary benefit only.

On this occasion I decided to try the effect of a complete starvation day (Fig. 6, Lecture II.), but I did not give the abundant purgatives which Guelpa recommended. (Fig. 3.) 1 g. of sugar was excreted and only 0·84 g. of aceto-acetic acid. On the next day vegetable and eggs were eaten, and as he was not passing any sugar and as the aceto-acetic acid output was so low, 0·84 g., I decided that I would not return to the original diet, but increase the food gradually. Therefore, 75 g. of meat were added to the diet on one day. On the next day 40 g. of bacon and 35 g. of sardines were added. One day later the meat was increased to 150 g. and the bacon to 80 g. During this period no sugar was excreted and the aceto-acetic acid output was 1·7 g. At this point some diabetic bread was added and sugar was excreted.

This was the first time that I had tried to increase the diet slowly, although I now regard the increase as a very rapid one. The starvation and gradual increase of the diet was repeated, and the man went out of hospital passing no sugar.

This plan of diet with considerable modifications was tried on eight other patients in 1915 with considerable success, as four of them were on the verge of coma on admission to the hospital. At this stage the work had to be left unfinished, and could not be resumed again until early in 1919, although Dr. Langdon Brown continued to use the ladder diet with success on his patients.

Routine Now Followed.

The diet which we now use remains the same in its general plan, but has been modified in various ways as the result of reading Allen's work and further experience of treating patients. The general routine which we now use is as follows (Fig. 4):—

The patient is allowed his ordinary diet on the first day on which he enters hospital with the addition of 600 c.cm. milk and 50 g. bread unless he is on the verge of coma. The amount of sugar which is passed in this portion of the day is estimated and gives a rough idea of the severity of the disease. Two days' starvation are then given, tea, coffee, meat extract, and as much water as is desired being allowed. Whether the urine is sugar-free or not, the patient is not allowed to fast more than two days at a time. On the third and fourth days the egg and vegetable diet of 5 eggs, 50 g. butter, and 300 g. greens is given. If the patient is still passing sugar two more fast days are given, and this is alternated, as a rule, until the urine is sugar-free or the attempt to get it sugar-free has to be abandoned. If the patient is sugar-free 50 g. of meat are added to the midday meal for two days. On the seventh and eighth days 50 g. of ham are added for tea and one egg is taken away. On the ninth and tenth days 50 g. of bacon are given at breakfast and one egg is taken away. If the patient passes traces of sugar on two successive days he is put back to the bottom of the ladder and made to climb up again. If no sugar is passed 100 c.cm. of milk are given on the eleventh and twelfth days—that is, 4 g. of sugar. This makes the tea and coffee more palatable. If no sugar is passed 15 g. of bread—i.e., 8 g. of sugar, are given in two doses. On the thirteenth and fourteenth days another 15 g. of bread are added, so that the patient gets four doses of 8 g. of bread at four meals. It is most important to divide the carbohydrate among as many meals as possible so as to spread the effect of the dose of sugar on the level of the blood sugar as much as possible. If the patient is doing well the bread is increased to 45 g., which is enough to keep most patients comfortable. If the amount of aceto-acetic acid is quite small, a mere trace, the butter is then increased in two doses of 25 g., watching the effect on the aceto-acetic acid reaction and sugar.

This makes a diet of: carbohydrates, 41; protein, 35·5; fats, 167·5; total calories, 1865, which for a man of 60 kilos is 31 per kilo. The protein is 0·57 per kilo. It is quite true that this represents a considerable degree of under-nutrition, but it seems to be quite enough to enable weight to be maintained and life to be enjoyed. I think that it is wiser not to try to test the tolerance any further at this stage, but at the end of each month, if all is well, the amount of bread can be increased by another 15 or 30 g. if it can be tolerated. This diet is enough to live on and do light work. If, as often happens, the patient passes sugar when he is tested with 15 or 30 g. of bread, he is put back and kept at a lower level for a further period.

Variations of the Routine Diet.

The addition of alcohol to the diet in these severe cases, as recommended by Leyton,[24] is worth a trial, as he has found that alcohol can be given without causing the excretion of sugar. Two ounces of absolute alcohol can be used in this way. The agar-agar and bran biscuits recommended by Allen are of great assistance to the patient, as they provide a medium for eating the butter.

The ladder diet which has developed from the original egg and vegetable day of von Noorden differs from Allen's diet in certain important details. The fast is not continued until the patient ceases to pass sugar, as we find that the patient stands the alternations of egg and vegetable days and fast days better than the prolonged fast. Allen has occasionally found that elderly people are upset by the fast and may have to be fed on the third and fourth days. The routine alternation which we use may explain why we have not noticed y ill-effects. Allen breaks the fast with increasing nts of vegetables and tests the carbohydrate tolerance a diet which contains very little protein and fat. Later increases the protein to 1·5 g. per kilo, and last of all the fat. This scheme is more elaborate than the ladder plan, but it is more complicated for ordinary people to carry out.

The question as to whether it is right to add carbohydrates first and thus test the carbohydrate tolerance, and then add protein, is a very important one and is opposed to our plan. Allen's recent work[18] on the conversion of a mild diabetes into a severe one is very important, as he found that it was much easier to lower the sugar tolerance of a dog by overfeeding with sugar than with starch, and with starch than with protein. Thus the recent work is opposed to the principle of adding carbohydrate first. The ladder plan, which was based on the old idea of avoidance of carbohydrates, appears therefore to be more scientific than Allen's plan. The danger of giving fat is two-fold: (1) It may cause an increased formation of acetone bodies, and the fat intake must be kept low, especially in severe cases; (2) fat has a very high caloric value, and by increasing the fat too much it is easy to break the first principle of the treatment and overfeed the patient. It is very difficult to determine whether the results are better with one plan or the other.

It has been suggested that one reason why the period of starvation produced such good results was that the absence of food allowed the pancreas to rest its external secretion and so improved the internal secretion. Allen[25] supported this suggestion, as he found that ligature of the pancreatic duct of a partially depancreatised dog who was excreting sugar caused the cessation or diminution of glycosuria. This evidence was very suggestive, but it has been shown by Homans[26] that the exclusion of the pancreatic juice from the intestines rendered it difficult for the animal to digest its food properly and it lost weight. Thus tying the pancreatic duct causes under-nutrition, and it is the under-nutrition, not the resting of the pancreas, which prevents the glycosuria.

The treatment of the patient who passes sugar as soon as food is given, in spite of repeated fasts, is very difficult. Unless all hope is abandoned of improving the condition it is better to persevere with a very small amount of vegetables, protein, and fat, adding a certain amount of alcohol. The outlook in a long-standing case of this severity is very bad, but in an early acute case the treatment should be persevered with for a considerable time, as the acute case sometimes makes a surprisingly good recovery.

Exercise in Treatment.

The question of the effect of exercise on the diabetic is a very important one, and Allen[27] has devoted a good deal of attention to it. It has been shown that exercise causes a diminution of glycosuria and hyperglycæmia in mild and perhaps moderately severe cases. In more severe cases, however, this is not the case, and sometimes an increase of glycosuria and hyperglycæmia occurs. Allen is strongly of the opinion that exercise is of great benefit to the general health of the patient.

My experience has caused me to express myself rather differently, and to draw a very sharp distinction between the treatment of the acute stage and of the convalescent stage. Our practice at St. Bartholomew's for some years has been to keep the patient strictly in bed so long as the sugar tolerance was being tested. This procedure was started originally by the sister of the ward, Miss Powell, as she realised that it was impossible to keep a watch over the patients when they were up and about in a general ward. Even when they are in bed they still occasionally acquire carbohydrate surreptitiously. Although the practice was started for this reason, it was soon realised that when the patient was on a diet of very low caloric value it was much better that he should be at rest in bed. The work of Joffe, Poulton and Ryffel[28] on the metabolism of a man who only took 2000 calories per day, or 34 calories per kilo, showed that if the man was taking exercise his energy consumption was just as great as that of a well-fed man, but when he was lying still his basal metabolism was very much less than that of a well-fed man.

If the diabetic learns to lie still in bed he will have a much lower basal metabolism than if he is up, and therefore will be able to live in comparative comfort on a low caloric diet. Last autumn, as a result of seeing the three acute cases which I described in Lecture II., I was more firmly convinced of the value of the method for another reason. If the hypothesis is correct that in an acute case serious damage has been done to the islands of Langerhans, it seems reasonable to suggest that the patient should be treated as if he had had a severe illness. Whether it is possible to influence the course of the disease in any way by keeping the patient at rest no one can yet say, but the practice is justifiable on general principles.

Therefore, if the patient is seen soon after the onset of symptoms he should be kept in bed for a considerable time.

My practice now is to keep the patient in bed for four weeks after he is able to take a diet of reasonable caloric value with about 40 g. of sugar, if that result can be attained. During these four weeks no attempt is made to increase the diet at all. If he is not able to take so high a diet he should be kept at a level at which he does not have to pass sugar for the same period. After that time has elapsed he is allowed to get up by degrees. If he remains sugar-free he should gradually take on more exercise, but should avoid hard work. This advice is easy to give, but very difficult for the labouring classes to carry out. It is important to impress on the patients who have to live on a diet of low caloric value that they must rest properly whenever they are able. When they are convalescent, exercise and fresh air is good for them, as for ordinary people, and a general improvement in health may improve the sugar tolerance.

Determinations of the blood sugar have added a great deal to our knowledge of diabetes and the question arises as to their value in the treatment of diabetes. In the diagnosis of the doubtful cases the estimation of a number of points on the curve after a dose of sugar has been given is of very great importance. By that means, as I have shown in Lecture II., it is possible to settle whether a patient belongs to the class of diabetes innocens or to that of mild true diabetes.

The estimation of an isolated point is, however, of very little value unless special precautions are taken. The figure for the blood sugar of the patient who has fasted some hours is of some assistance in determining the progress of the case, but may mislead the physician entirely unless precautions are taken. If the level of the blood sugar is between 0·15 and 0·18 in the fasting patient it is evidence that the blood sugar is not yet normal and that the islands of Langerhans are still overworked. If, however, the figure lies within normal limits the only information gained is the knowledge that the level of the blood sugar has sunk to normal 12 hours after the meal. It can tell the observer nothing about the response to sugar. In order to do this a dose of sugar must be given and the blood examined at intervals through the next two and three hours. The information gained by such a curve is often of value, but hardly compensates for the great amount of time taken in collecting the samples even though the time taken in estimating the samples is small. Moreover, if it is known that the patient is a true diabetic useful information can be gained by analysing the urine after a dose of sugar to see its effect.

Isolated blood sugar determination can never replace urine examination, for it is very important to know whether sugar is passed or not. When the patient goes out of hospital he should always be taught to examine his own urine. The old teaching was that it was unwise to allow him to test his own urine, as he would be frightened by the discovery of sugar. The modern view is that he should learn as much about his disease as possible and know whether he is taking too much carbohydrate or not. It is better to teach the patient to use Benedict's solution rather than Fehling's solution, as it is easier for him to learn.

When he leaves hospital it often becomes difficult for him to collect his urine. He is apt to test the urine which is passed on getting up in the morning; this urine is usually free from sugar and may mislead him. It is better to tell him to test his urine after the evening meal in which some carbohydrates have been eaten. Testing one sample after a meal is a much more delicate test than testing a mixed specimen.

After-treatment.

The after-treatment of the patient is most important, as it is very easy for the patient to lapse almost unconsciously, and he should be seen at regular intervals.

The treatment of minor or serious illness is a very difficult matter. The usual effect of illness is to make the patient pass sugar and the usual diet for a sick person contains a great deal of sugar. If much carbohydrate is given the islands will be much overworked, and even if the islands escape any damage from the nature of the illness the sugar tolerance may be seriously depressed. The diet should be of a low caloric value, but milk may have to be given, as the ordinary diet is repugnant to the patient. Alcohol should be of use in supplying caloric value. As soon as the illness is over starvation days should be resorted to and the diet gradually increased. Unfortunately, an illness often produces a permanent decrease in tolerance. Great attention should be paid to all minor ailments; boils and pyorrhœa and all sources of infection should be dealt with.

Causation and Treatment of Diabetic Coma.

I will pass now to consideration of the cause of diabetic coma and its treatment. Coma was one of the most dreaded complications of diabetes, but under modern conditions it should be very rarely seen. However, there will always be some diabetics who will die in coma, either because the disease is so acute or because the patient has refused to follow the treatment advised, or in those very advanced and severe cases when the choice lies between allowing the patient to die of under-nutrition or of coma. In the treatment of cases of diabetes it is necessary that the doctor should be able to make estimations of the amount of CO_2 in the alveolar air of the patient.

The most accurate methods are either Haldane and Priestley's[29] or Hasselbach's[30] method. For the clinician Fridericia's apparatus[31] is sufficient and by its use the observer can form some idea of the severity of the case. The usual figures for the alveolar CO_2 is 5·0 per cent. to 5·5 per cent. for men. In a severe diabetic it will fall to less than 3·0 per cent. In my experience this does not mean that the patient is going into coma at once, but that he is in a dangerous state. The man whom I have already mentioned had an alveolar CO_2 of 2·6 to 2·8 per cent. for many days. If the alveolar CO_2 falls below 2·0 per cent. the patient is very unlikely to recover. I have once seen a boy with only 1·8 per cent. who recovered. If the alveolar CO_2 was less than that figure death always ensued.

The determination of the amount of alveoli reserve in the blood by van Slyke's method is of great value, but is not so easily done as the alveolar CO_2.

Acetone, aceto-acetic acid, β-oxybutyric acid are excreted in the urine as a result of the incomplete combustion of fat, and all three substances have been considered at one time or another to be the cause of coma. There are still many misconceptions about these substances. Thus acetone is either absent from, or only present in very small amount in, freshly passed urine, and is formed as a break-down product of aceto-acetic acid—Embden and Schlich[32] and Folin.[33] The nitro-prusside test which Rothera made more sensitive by the addition of ammonium sulphate is a test for acetone in a dilution of 1 in 20,000, but is a much better test for aceto-acetic acid, as the latter can be detected in a dilution of 1 in 400,000. The ferric chloride test has a delicacy of 1 in 14,000, and Hurtley's test[34] has a delicacy of 1 in 50,000 for aceto-acetic acid. As acetone is only present in urine as a decomposition product of aceto-acetic acid it can hardly be the cause of coma. The evidence for and against aceto-acetic acid and β-oxybutyric acid must therefore be considered.

It was pointed out by Neubauer[35] that when the amounts of acetone bodies excreted were small, more aceto-acetic acid is present than β-oxybutyric acid, but as the total acetone bodies increased the percentage of the β-oxybutyric acid also increased until it formed 70 per cent. of the total. Kennaway[36] was able to confirm this from his results. Hurtley[23] also confirmed it, but preferred to express the results rather differently. He plotted on a table the percentage amount of aceto-acetic acid, which corresponded to each increase of 5 g. of β-oxybutyric acid in 7 cases. As the total acetone bodies increased the percentage of the aceto-acetic acid gradually fell to 30 per cent. or lower, but if the patient was near coma or in coma there was a rise in the percentage amount—in Joslin's case to 54-67 per cent. This point was one of several which led Hurtley to regard the aceto-acetic acid as the important factor.

Kennaway[37] has estimated the amount of aceto-acetic acid and β-oxybutyric acid in the blood of 13 patients who had died of coma. The amounts of aceto-acetic acid varied between 53 and 109 mgm. per cent., while the amount of β-oxybutyric acid varied between much wider limits—40 and 215 mgm. per cent.

These results suggest that the aceto-acetic acid is a much more poisonous substance than the β-oxybutyric acid, as the variations in the amount of aceto-acetic acid in the blood are so much smaller than those of the β-oxybutyric acid. Further, Geelmuyden[38] has shown that the liver contains much less acetone and much more β-oxybutyric acid than do the muscles, blood, brain, lung, and kidney. These results certainly suggest, as Hurtley pointed out, that the aceto-acetic acid is converted into β-oxybutyric acid in the liver.

The work of Hurtley and Trevan[39] has done much to establish the view that aceto-acetic acid is the cause of coma. They pointed out that sodium aceto-acetate and the allied compounds, ethyl aceto-acetate, acetyl acetone, and sodium salicylate, all contain the so-called enolic group. (Fig. 5.)

When acetyl acetone was injected into a cat the animal died within 40 minutes with all the symptoms of coma, deep breathing, &c. When any of the above substances were injected into a decerebrate cat with the posterior corpora quadrigemina intact hyperpnœa was produced. They suggested that the aceto-acetic acid did not produce any symptoms in virtue of its H-ion group, but because of the enolic group $\begin{matrix}\mathrm{COH}\\ \mathrm{CH}\end{matrix}$. β-oxybutyric acid has no enolic group and does not produce this effect. Trevan has continued this work and has shown that when an aceto-acetate is injected into a cat in neutral solution hyperpnœa (or air-hunger), coma, and a fall of blood pressure take place. These results occur, although the reaction of the blood is on the alkaline side of normal. The injection of an acid, such as hydrochloric acid, which will produce hyperpnœa, shifts the reaction of the blood slightly to the acid side. In Trevan's cats there was no decrease in the alkali reserve of the plasma, whereas that is always a marked feature of coma in man. He explains this difference by suggesting that whereas he injected a neutral solution the patient with severe diabetes forms aceto-acetic acid, which has to be neutralised. This work of Hurtley and Trevan, and its extension by Trevan, shows fairly conclusively that the chemical substance which causes diabetic coma is not β-oxybutyric acid, but aceto-acetic acid, and that it produces its effects not by its acid properties, but by virtue of the enolic grouping $\begin{matrix}\mathrm{COH}\\ \mathrm{CH}\end{matrix}$. This work explains why the injection of sodium bicarbonate is very unsatisfactory in the treatment of coma. The addition of the sodium bicarbonate adds to the alkali reserve of the plasma, and thus supplies an alkali which will be available to neutralise the aceto-acetic acid. But it cannot influence the poisonous action of the aceto-acetic acid. *This* is confirmed by an observation of Allen[40] who raised the alkali reserve of the plasma above normal without preventing the death of the patient in coma. It may well be asked whether administration of sodium bicarbonate to such patients is of any use if it cannot neutralise the poisonous effect of the aceto-acetic acid.

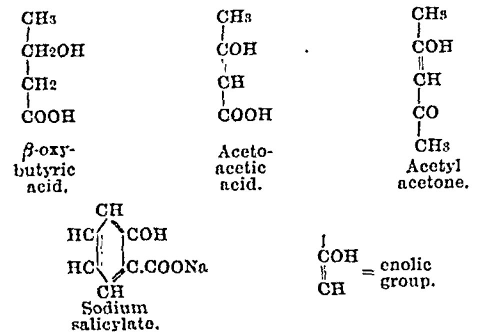


Fig. 5 shows the graphic formulæ of β-oxybutyric acid, aceto-acetic acid, acetyl acetone, and sodium salicylate.

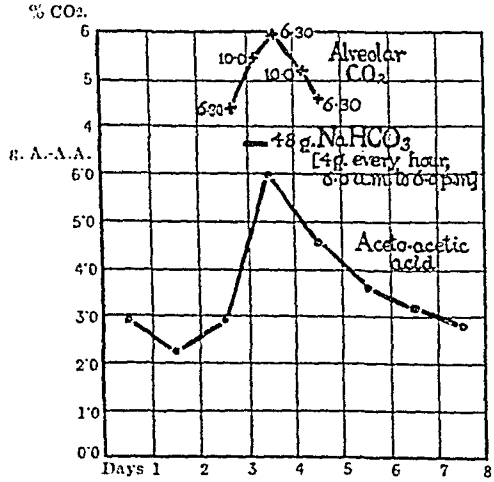


FIG. 6.—Showing effect of 48 g. $NaHCO_3$ on output of aceto-acetic acid and alveolar CO_2.

I think that it is correct treatment to give sodium bicarbonate to patients who are either on the verge of coma or in coma for two reasons: (1) to raise the alkali reserve of the blood if possible, so as to provide plenty alkali to neutralise the aceto-acetic acid which is constantly being formed; (2) to enable the neutralised aceto-acetic acid to be excreted more easily. I have made two experiments which bear on this last point. (Fig. 6.)

The first was made in 1915 on a case of severe diabetes who was doing fairly well at that time, as he was only passing 10 g. of sugar a day. The diet was constant throughout the experiment. The aceto-acetic acid output was between 2 and 3 g. a day. On the experimental day 4 g. of $NaHCO_3$ were given every hour from 6.0 A.M. to 6.0 P.M., making 48 g. in all. The aceto-acetic acid output was 6·0 g. on that day and did not return to its original level for another three days. The amount of CO_2 in the alveolar air was determined at 6.30 P.M. on the previous day and was 4·4 per cent.; at 10 A.M. on the experimental day it was 5·5 per cent.; at 6.30 P.M. it was 5·9 per cent. At 10 A.M. on the day after it was 5·2 per cent., but had fallen to 4·6 per cent. by 6.30 P.M. of that day. If no determinations of the alveolar CO_2 had been made it would have been possible to argue that there was an increased formation of the aceto-acetic acid, but, as there was a rise in the alveolar CO_2, it is fairly certain that more aceto-acetic acid was excreted in the urine.

I have repeated this on one other severe diabetic in a different manner. (Fig. 7.)

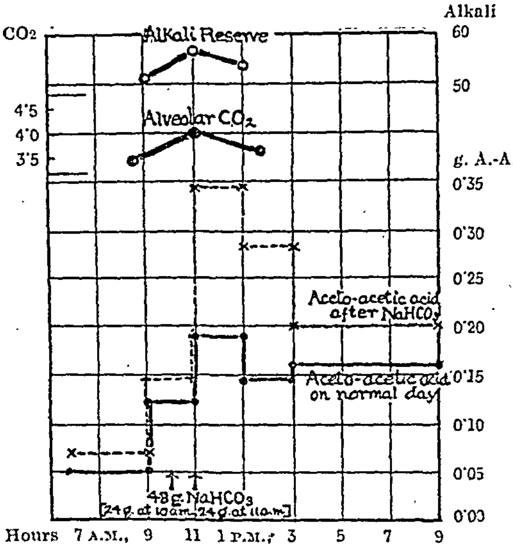


FIG. 7.—Showing effect of 48 g. $NaHCO_3$ on the excretion of aceto-acetic acid, alveolar CO_2, and alkali reserve.

The urine was collected in separate portions from 6 A.M. to 3 P.M. on two successive days. The diet given was identical, but the patient chose to add carbohydrate himself in the middle of the second day. He passed 1·5 *g.* and 2·6 *g.* of sugar per hour in the critical periods. The amount of aceto-acetic acid excreted per hour varied from hour to hour on the control day. On the experimental day 24 g. of $NaHCO_3$ was given at 10 A.M. and again at 11 A.M. The amount of aceto-acetic acid excreted was slightly greater, 0·125 to 0·145 between 9 and 11. Between 11 and 1 P.M. there was a much greater output, 0·19 to 0·345 g. From 1 to 3 the output of aceto-acetic acid was rather less, 0·155 to 0·28 g. During the four hours after the sodium bicarbonate, therefore, an extra 0·29 g. of aceto-acetic acid was excreted. The alveolar CO_2 rose from 3·4 at 9 A.M. to 4·0 per cent. at 11 P.M. and had fallen to 3·7 per cent. at 1.30 P.M. The alkali reserve rose from 51 vols. per cent. to 57 vols. per cent. at 11 P.M. and fell to 54 vols. per cent. at 1.30 P.M. The breaking of the diet on this day by the patient was peculiarly annoying, but the addition of carbohydrate is always thought to reduce the acetone bodies and can hardly increase them. The effect in this case is similar to that in the other, but whereas the extra aceto-acetic acid excreted in Case 1 was 3·0 g. on this occasion it was 0·6 g. The alkali reserve was not estimated in the first case but was within normal limits in the second case, and there was no real necessity for the giving of any alkali.

Whether the sodium bicarbonate acts by virtue of its alkaline action or by the fact that it supplies more base is uncertain. Patients have recovered from coma temporarily after normal saline solutions, just as well as after bicarbonate solutions. Allen makes a practice of giving plenty of sodium chloride to his ill patients and it may well be that the base is the important factor which is required. Therefore either sodium bicarbonate or sodium chloride should be given to cases in coma or on the verge of coma. If the patient is admitted on the verge of coma special attention must be paid to getting the bowels open. The patient should be made to drink plenty of fluid, beginning with one pint every hour, with or without 4 g. of sodium bicarbonate. No food should be given. If the patient is already in coma bleeding should be resorted to, and a big intravenous infusion of sodium bicarbonate or sodium chloride. Estimations of the alveolar CO_2 should be made two or three times a day, preferably by the Hesselbach method, as the patient is often too ill to assist the observer. These estimations enable the observer to form some idea of the severity of the disease and to watch the effect of treatment. If the coma has developed quite early in the disease great efforts should be made to keep the patient alive, as the very acute cases sometimes recover in a surprising manner. Nevertheless, patients in coma usually die.

CONCLUSION.

The account of the ætiology of diabetes which I have given shows how little we really know in spite of the great advance which has been made. Similarly, the treatment has been improved out of all knowledge since 1915, but the disease remains a dread disease. It is true that we prolong the life of the severe cases for several years, and during most of that time the patient feels comparatively well. Yet the treatment is in no sense of the word a real cure. The most that we hope to do at present is to arrest the disease, and in order to do that the dietetic restrictions must be severe and carried out with the coöperation of the patient.

In conclusion, I wish to express my thanks to all those who have helped me, especially to Sir Archibald Garrod for permission to investigate his patients and for much real assistance; to Dr. Hurtley for originally interesting me in this subject and for much assistance with the chemistry of the disease; and to Miss N. Powell, for many years the sister-in-charge of Sir Archibald Garrod's male ward, for her supervision of the patients and the assistance with the details of the diets.

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A MENTAL HYGIENE LEAGUE.—There has recently been formed in France (99, Av. de la Bourdonnais, Paris vii.) a League for Mental Prophylaxis and Hygiene. The League proposes to study problems relating to the prevention of mental disorders and the preservation of a "psychic equilibrium" both in individuals and in groups. The care of mentally deficient children is receiving attention, and the League is also advocating the provision of early treatment clinics. At present these are designed as a part of the organisation of the existing asylums. It may well be that experience will show that they will be more successfully developed in connexion with general hospitals. The League is anxious to be brought into contact with organisations having similar aims in other lands.

THE NON-OPERATIVE TREATMENT OF SURGICAL TUBERCULOSIS.*

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THE following remarks will be confined to tuberculous disease of the bones, joints, and glands, in which conditions non-operative treatment may now be adopted with confidence and a reasonable assurance of success. In certain other non-pulmonary tuberculous lesions—e.g., of the kidney—operative interference still has an essential field, while in such situations as the meninges of the brain treatment of any sort remains almost futile. Operative treatment of an active tuberculous lesion is based on a false pathology, except in cases where the lesion occurs in a situation where its presence is incompatible with life. It is the logical sequence to the "tuberculome" theory of surgical tuberculosis.

Lannelongue showed that the progressive extension of a tuberculous abscess towards the skin was not a mechanical phenomenon, but was the result of primary infection and subsequent excentric destruction of tissues by tuberculous elements advancing much as does a neoplasm. Hence there was evolved a radical treatment which arrived at the total extirpation of tuberculous tissues. This practice, possible and efficacious with small tuberculous foci, exposed the patient to serious danger when applied to extensive bony lesions. The mortality, both immediate and indirect, after major operations was appallingly high, and in the survivors, especially growing children, the extensive mutilations involved produced deplorable orthopædic results. Resection of the hip-joint and excision of the knee often left children sadly crippled, while in spinal caries the situation of the lesions made it usually impossible to excise all the bony tissues invaded by tuberculous disease. Improvements in surgical technique and in asepsis did much to reduce mortality, but even in the latest apology for radical treatment which I have seen, a paper read by Sir Harold Stiles at the annual meeting of the British Medical Association in 1912, the results compare most unfavourably—in spite of the writer's acknowledged pre-eminence as a surgeon—with those obtained by less daring but much safer conservative measures.

To the "tuberculome" theory just referred to the conservative surgeon opposes a theory based on the defensive resources of the patient. A tuberculous lesion provokes a reaction. There is the formation of a zone of resistance about the focus of the disease by the formation of fibrous tissue which encysts, limits, and tends to prevent the progress of invasion. Thus the issue is the result of two opposing forces—the disease which attacks the organism and the reaction which this attack provokes. It appears reasonable to reinforce this natural defence and diminish the virulence of the attack of the bacillus, limiting in this way its progress.

Spread of Conservative Treatment.

Fully to appreciate the change which has arisen in surgical opinion and policy, it would be desirable to sketch the evolution of ideas prevailing during the last 50 years, and such a study is indispensable for a correct appreciation of our views to-day. Time, unfortunately, does not permit that review, desirable though it undoubtedly is. Two reports, however, must be mentioned.

In 1903 Sir Anthony Bowlby demonstrated in the clearest possible manner the undesirability of radical treatment in tuberculous disease of the hip-joint when he delivered an address at Nottingham on 900 cases of tuberculous disease of the hip-joint, treated at the Alexandra Hospital, with a mortality of less than 4 per cent. This paper constitutes a landmark of the highest importance in the history of the treatment of surgical tuberculosis, and I would urge its careful perusal by all interested in the subject. His brilliant record was only possible by abstention from major operations in active tuberculous disease of the hip-joint and aseptic technique in such minor operations as were indicated. The other report to which I would refer is that of a discussion opened by Mr. A. H. Tubby in 1912 at the

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* The opening paper delivered before the Medical Society of London on March 14th, 1921.

Royal Society of Medicine, which admirably expressed the more enlightened views lately prevailing, and made it clear that the leanings of surgeons generally were towards conservative as opposed to radical treatment. The value of treatment in the country was emphasised, though even as recently as 1912 the speeches reported at that discussion show that all that is implied by conservative treatment as I conceive it was still ill-understood. One speaker summarised the position in a sentence: "I look forward to the time when all these cases will be treated until they are well in convalescent homes in the country." I may here be permitted to interpose, that it is just these ill-equipped, inadequately staffed, and inefficient country homes which have done so much to discredit conservatism in treatment. Much more is required than they can supply, as I hope to show presently, and the hope for these patients in the future lies in up-to-date, well-equipped, properly staffed, efficient country hospitals as part of the scheme for the treatment of sufferers from surgical tuberculosis. It may not be without interest to recall that no inconsiderable part of the discussion was devoted to tuberculin treatment. Clinicians were then by no means greatly convinced of its value, nor does there appear to be an appreciable change in their attitude towards tuberculin to-day.

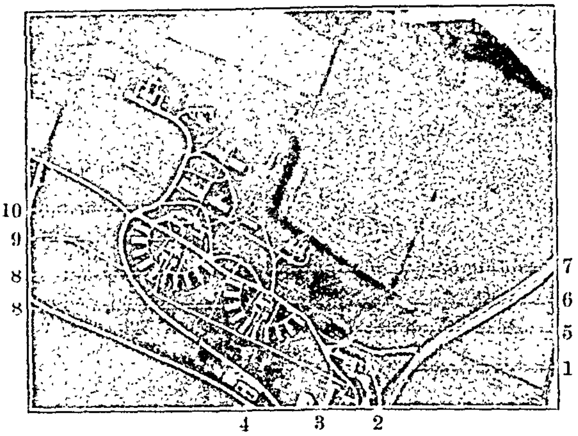

FIG. 1.—Treloar Cripples' Hospital, Alton, from the air. Photograph taken from an aeroplane flying at a height of 4500 feet above the hospital.

1. Hospital private railway station. 2. Power house, workshops, and laundry. 3. Part of college for training of crippled boys. 4. Garage and coach-house. 5. Isolation hospital. 6. Offices. 7. Queen Alexandra Nurses' Home. 8, 8. The 20 wards. 9. Outpatient department and treatment block. 10. The central kitchen.

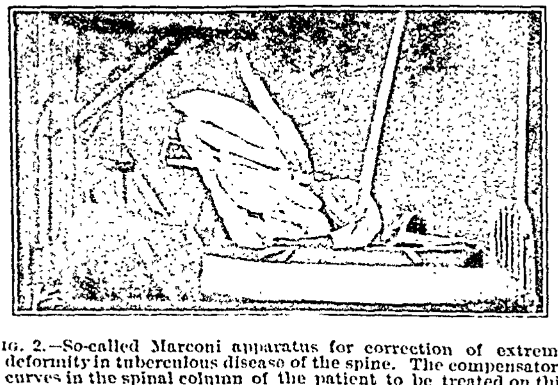

FIG. 2.—So-called Marconi apparatus for correction of extreme deformity in tuberculous disease of the spine. The compensatory curves in the spinal column of the patient to be treated on this apparatus are first straightened; the angular curvature can then be most effectively treated mechanically by traction on the head and pelvis and pressure on the deformity. Great care must be exercised, but extreme deformity is correctible or reducible by this method unless too firm ankylosis has taken place.

One point of great importance came out clearly: "tuberculous joint disease is arthritis occurring in a tuberculous patient, and is not merely a joint affection." This is the keynote of, and justification for, non-operative treatment of surgical tuberculosis. It needs the greatest possible emphasis, for even to this day there is too great a tendency to concentrate unduly on the local lesion and disregard the fact that the patient himself has contracted a general disease, of which any particular lesion or lesions are merely local manifestations.

Present Uses of Pure Surgery in Bone, Joint, and Gland Tubercle.

The title of this paper is perhaps hardly a satisfactory one. Pure surgery still plays a part in the treatment of bone, joint, and gland tubercle, though in cases of active disease a continually diminishing part.

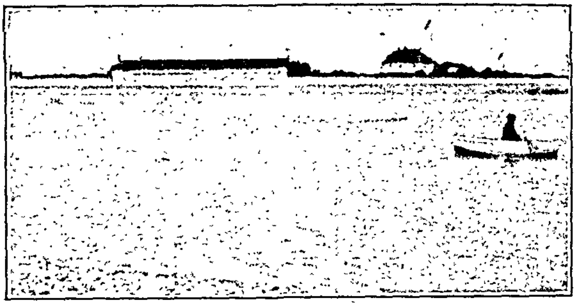

FIG. 1A.—Treloar Cripples' Hospital, Hayling, from the sea. Note the flat littoral, extensive beach, the proximity of the Pavilion to the sea, the absence of anything which could interfere with marine treatment. In addition, the situation has been carefully selected because of the bracing but equable marine climate, clearness of atmosphere and absence of mist, remoteness from rivers, abundant sunshine of high actinic value aided by the reflected light from the sea, protection from cold winds by the South Downs on the north, peculiarly low rainfall owing to physiographical conditions, sandy absorbent soil, remoteness from towns and absence of interference by seaside visitors, extensive beach in relation to area of land purchased, &c.

It is often justifiable in the extirpation of the smaller tuberculous lesions; it is occasionally permissible in such conditions as tuberculous disease of the knee-joint in adults where progress by conservative measures is slow and the time factor is of importance; it may be essential for the saving of life under increasingly rare circumstances in almost any situation of the body. It is again indispensable in the correction of ankylosed or other deformities where faulty initial treatment has permitted such deformities to arise—e.g., a hip-joint ankylosed in a bad position. It may be called for where faulty technique has resulted in secondary infection. But no striking advance has been made in the operative treatment of acute tuberculous bone and joint disease unless bone grafting of the carious spine be considered as such. That operation is, however, essentially a conservative measure. No attempt is made to deal with the lesion which calls for such an operation. It is simply an internal method of splinting the spine, designed as a substitute for the instrument maker's skill. In the majority of cases it is an unnecessary operation provided reasonable facilities are available for treating the patient; in certain cases it has distinct and considerable dangers; in a limited number of cases it presents certain advantages. It possesses one point in its favour in that it is a conservative operation; it is a tangible if tardy recognition of the fact that to immobilise a tuberculous lesion is a better way of promoting healing than to attempt its extirpation; but with increasing appreciation of the value and utilisation of properly applied conservative treatment the indications

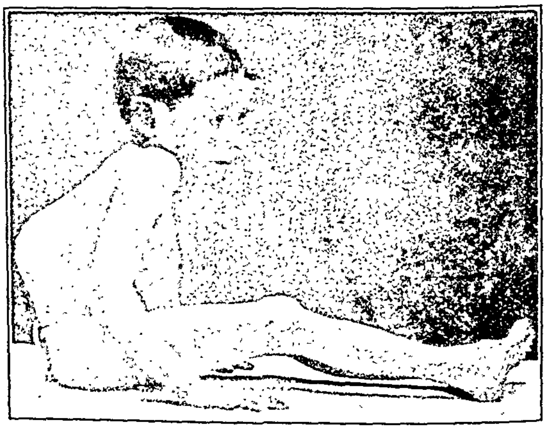

FIG. 3.—Patient suffering from extreme angular curvature of the spine, the result of tuberculous disease.

or the performance of this operation should be greatly educed, to the advantage of the patient. I would appreciate he operation more if it made cure certain where a purely non-operative method of treatment would have failed; but I cannot conceive that it would have saved the life of any one of my spinal caries cases who have died. It would have ncreased my mortality if generally adopted, and I think I can demonstrate that it would have made little appreciable difference in the length of treatment required.

Definition of Conservative Treatment.

The title "non-operative treatment" of surgical tuberculosis conveys no suggestion as to what the treatment if non-operative may be. Treatment, where operation is avoided in these conditions, is usually termed conservative. This term again is open to criticism. What is the conservative treatment of surgical tuberculosis?

As usually understood it conveys no very exact meaning. By some it has been confused with convalescent treatment, but there is a period of convalescence in the natural history of the disease in a patient whether he be treated conservatively or radically. Others regard conservative treatment as treatment without operation, but have no very clear ideas of what should be substituted for operation. May I explain what I understand by conservative treatment? I would define conservative treatment in surgical tuberculosis as the adoption of all measures which tend to improve the patient's general health, increase his powers of resistance to tuberculous disease, and preserve or restore the part or parts attacked, in contradistinction to radical treatment, which aims at the cure of the disease by the removal of the local lesion. It will be evident that such a definition is the very antithesis to lack of treatment, that it necessitates the employment of very active, numerous, and complicated methods, that it by no means necessarily implies exclusion of surgical interference, although surgery from being the one treatment becomes relegated to a very inferior but still useful position, as a possible aid to cure or amelioration under certain conditions. Moreover, I would give it a wider meaning than mere institutional treatment, and would not confine conservative treatment even solely to the application of merely medical or surgical care. There are means of improving the patient's condition, additional to those directly derived from the arts and science we practise, which possess an importance we have been slow to recognise. Chronic disease, which must of necessity involve lengthy treatment, has for too long been regarded from the purely pathological point of view. For this error blame must be ascribed to both the practitioner and the public. The former has narrowly concentrated on his own particular duties and disregarded the wider issues. The public has been content to leave the matter to the practitioner, and the intellectual and industrial aspect of the problem has been utterly ignored. The psychology and future well-being of the patient have been neglected, yet no one would deny their importance. A normal, healthy, well-cared-for, suitably occupied child is a happy child. He is given full play for natural healthy mental and physical activities. Conversely, it is of obvious assistance to the patient to make him happy and normal, and all means to that end should be encouraged and utilised. The monotony of immobilisation, of long-enforced recumbency, of fixation in unnatural attitudes cries for alleviation. Consider what such unnatural restrictions would mean to us, who have so many resources of our own to fall back upon, and what they must be when uncompensated. This state of affairs should have been remedied long ago.

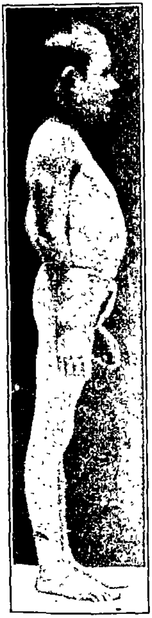

FIG. 4.—Same patient as Fig. 3, with the deformity largely reduced after treatment on the "Marconi." Further reduction of the deformity can now be obtained by using the "swinging back-door splint." (See THE LANCET, 1911, i., p. 568. Mechanical Treatment of Tuberculous Disease of the Spine.)

I may not pause to explain in detail how, but shortly, all child patients should be educated, and manual instruction should play a large part in the scheme, adolescents trained in work suited to their limitations, and adults occupied. In addition, all should be amused and entertained, and shown how to amuse and entertain themselves. The institutions at Alton and Hayling have been called the "happy hospitals." The secret of that happiness lies in the fact that the patients are as busy, as occupied, and therefore as happy and as contented as the staff. To assist in carrying out this part of the work we employ, on the educational side 14 trained teachers, and on the technical 5 trained instructors. This should be an essential branch of conservative treatment in every special institution for surgical tuberculosis.

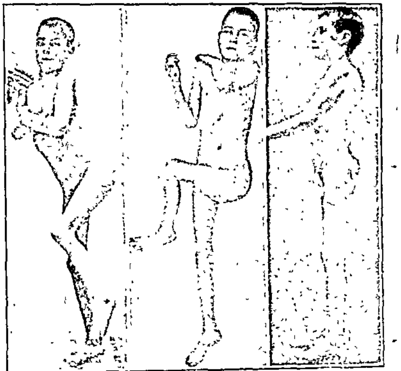

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FIG. 5.—Tuberculous disease of the hip-joint with marked flexion and adduction.

FIG. 6.—Same patient photographed from above. This is a case of right-angled adduction, the most difficult deformity to correct in tuberculous disease of the hip-joint.

FIG. 7.—Same patient; treatment completed and deformity corrected.

Need for Prevention.

In any comprehensive scheme for the treatment of surgical tuberculosis prevention should play a much greater part than hitherto.

Much more should be done than is being done for the child with the stigmata of tuberculosis, the pre-tuberculous child, the offspring of tuberculous stock. I would advocate the establishment of properly equipped preventoriums where such children could have the benefit of preventive treatment under the best climatic, hygienic, dietetic, and educational conditions, and under skilled supervision. Such a preventorium is in contemplation at Alton, where it is anticipated it will be of especial value as demonstrating what may be accomplished on these lines. Non-residential open-air schools meet these needs to some extent, but they are necessarily imperfect, for the child returns nightly to unfavourable conditions.

Conservative Treatment of Tuberculous Abscesses of Bony Origin.

Conservative treatment includes consideration of general treatment, involving climatic, hygienic, dietetic, drug, educational, and other methods which it is desirable to employ, and local treatment, which is concerned with the correction or prevention of deformity and is largely orthopædic in character, but subject to those limitations enjoined by the fact that the patient is tuberculous. Under this heading may also be included those surgical measures which have still a place in treatment. To only one shall I here allude, and that is to the conservative treatment of tuberculous abscesses of bony origin.

I would state as a rule, to which there need scarcely be any exception, that tuberculous abscesses secondary to disease of the spine, hip, or, indeed, any of the larger bones or joints, should never be opened. Neither should they be left in the hope that they will be absorbed. As soon as

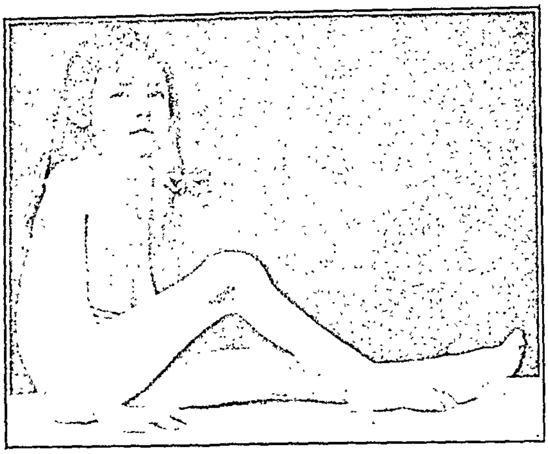

FIG. 8.—Tuberculous disease of the knee-joint, with subluxation of the tibia and sinus formation.

possible after their formation and as early in their evolution as the skill of the surgeon permits they should be aspirated. Occasionally their aspiration may be assisted by the employment of modifying fluids. The technique and arguments for the selection of this form of treatment, I, with my friend Dr. Jacques Calvé, have already fully detailed.

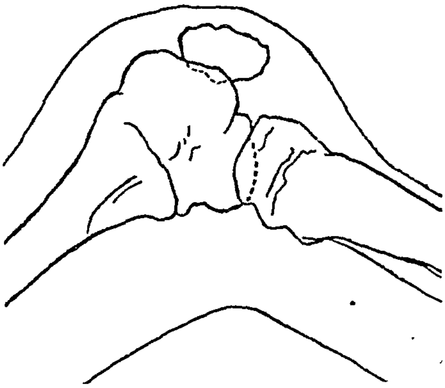

FIG. 10.—Tracing of skiagram of knee-joint of patient (Figs. 8 and 9 before treatment.

One point, often disregarded, is that the method of healing of a tuberculous abscess successfully aspirated is essentially different from that of a similar abscess which has been incised and has proceeded, as so often it does, to sinus formation. In the former case healing is centripetal, in the latter centrifugal. In the abscess skilfully aspirated the fluid contents are withdrawn, the abscess wall collapses, becomes denser, shrinks towards the causative lesion, continues to protect the organism from further spread of the disease, and becomes in time a mass of protective tissue, which gradually absorbs when no longer required. Incision of an abscess, on the other hand, necessarily increases the risk of dissemination of disease, and leaves a comparatively weak cicatrice probably infected with tubercle bacilli, which often tends to break down, perhaps years afterwards. Sinus formation then ensues, secondary infection frequently follows, healing is delayed and occurs in the reverse order to that succeeding aspiration—viz., from the causative lesion to

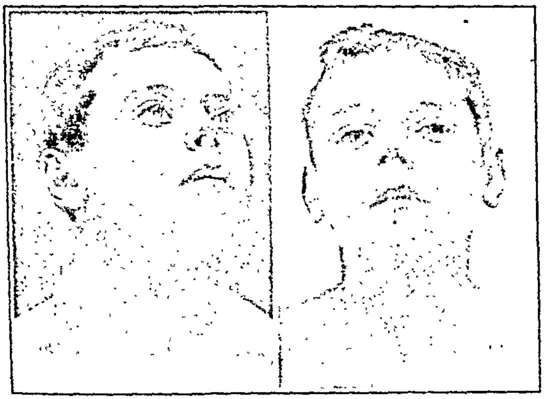

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FIG. 12.—Tuberculous gland of the neck.
FIG. 13.—Same patient after aspiration.

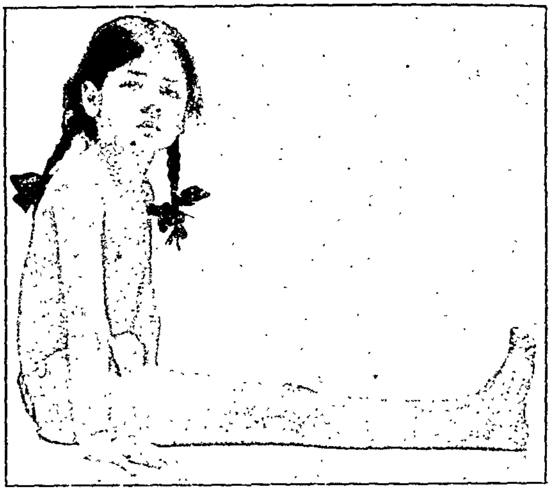

FIG. 9.—Same patient as Fig. 8 after treatment. Deformity corrected, sinus healed, movement returned to joint.

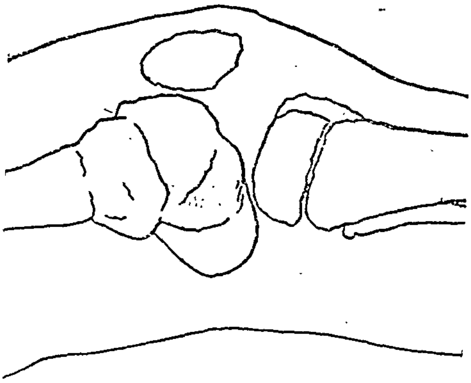

FIG. 11.—Tracing of skiagram of same patient (Figs. 8, 9, 10) after treatment.

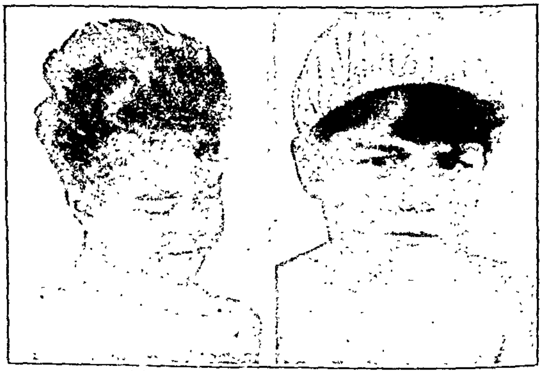

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FIG. 14.—Patient suffering from multiple tuberculous lesions with much toxæmia. The lesions included cervical adenitis, tuberculous iritis with photophobia, tuberculous disease of hip-joint and lupus.

FIG. 15.—Same patient after treatment. All lesions healed, general condition good, movement has returned at hip-joint; there is no deformity.

the surface. I do not think that anyone who has acquired skill and any considerable experience in the aspiration of tuberculous abscesses would ever willingly revert to their evacuation by incision. (See Figs. 21, 22.)

Adjuvant Treatment and Auxiliary Methods.

Adjuvant methods of treatment have largely increased in relative importance and scope of application in recent years, and represent perhaps the most interesting advances made in the non-operative treatment of surgical tuberculosis.

Amongst such aids are heliotherapy, balneotherapy, chemotherapy, vaccine treatment, and the therapeutic employment of X rays and other electrical agents. Auxiliary methods are of importance for the patient's general well-being, and are also often directly concerned with his disease; they comprise attention to the teeth, skin, throat, nose, ears, and eyes. These matters are frequently neglected, but demand attention and skilled care. I should also include under auxiliary methods of treatment a branch institution such as we are fortunate in being able to make use of, where chronic cases not requiring any special treatment may be detained indefinitely, and thus give room at the hospital for more acute patients urgently needing specialised care.

After-Care.

Lastly, I would touch on the all-important matter of after-care.

All patients who have suffered from surgical tuberculosis should have the continued advantage of occasional skilled supervision. No special hospital for the treatment of these conditions can be considered complete unless it possesses an out-patient department where discharged patients may be periodically examined, advised, and assisted. Not only is medical help required, but advice in the choice of occupation and assistance in obtaining suitable employment should be forthcoming. Associated with this department facilities are necessary for sending patients to open-air camps and holiday homes working in conjunction with, and under the management of, the parent institution. Many discharged patients at some time or other need such "toning-up" as these offshoots from the hospital can supply. Some cachectic cases, indeed, though not suffering from active tubercle, urgently require prolonged detention in residential open-air institutions, with the possibly ultimate transference to a residential technical school, such as the college for permanently crippled boys we maintain at Alton. Here lads between the age of 14 and 18 are admitted, detained for three years, trained in a trade suited to their limitations, and continue their general education during this period of training.

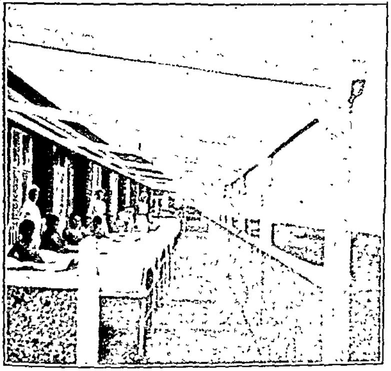

FIG. 18.—Sun balcony at Sandy Point, Hayling Island. Canvas blinds can be pulled down over the patients to protect them from showers or excessive sun, and canvas weather screens can be lashed to the uprights shown, to afford shelter from too strong winds.

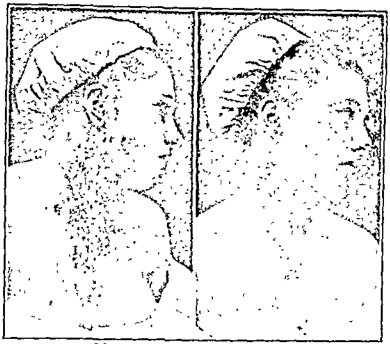

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FIG. 16.—Extensive lupus which had resisted treatment for seven years.

FIG. 17.—Same patient after chemotherapeutic and heliotherapeutic treatment. The scars remaining are the result of scraping operations performed previous to admission.

Conclusion.

All the methods of treatment I have just indicated are undertaken at the Treloar Cripples' Hospital and College at Alton and Hayling Island, and it is on experience gained there that I base my remarks. There is great hope for the future. The treatment of surgical tuberculosis has now aroused lay as well as medical interest. Active Government measures are being taken to combat the disease. Municipalities are devising schemes of their own under expert advise and with Government subsidy. If the spirit of the voluntary institutions can be maintained this is all to the good. Many medical men are exerting their powerful influence to promote reform. Prominent amongst these I would mention Sir Robert Jones, long a distinguished practitioner of conservative treatment, who advocates orthopædic centres in every locality. The desirability of associating cases of surgical tuberculosis with general orthopædic work may be criticised, but every medical man will support and sympathise with the efforts he is making. My experience is that it is quite fallacious to suppose that adults do not respond well to conservative treatment. It is of equal importance in adult cases of tuberculous disease, and yields equally gratifying results, although with adults there may be a more frequent necessity for operative aid.

FIG. 19.—Ambulant patients at Hayling Island enjoying sun, sea and sand—valuable adjuncts to the cure.

I have contented myself by referring simply to the general principles underlying the conservative treatment of surgical tuberculous affections. It is a method involving minute attention to detail. Any individual case may require the application of numerous measures appropriate to its peculiar requirements and varying according to the stage of the disease or even to the idiosyncrasies of the patient. To discuss these various forms of non-operative treatment summed up in the word conservative, the indications for their individual or combined employment, the extent to which they may

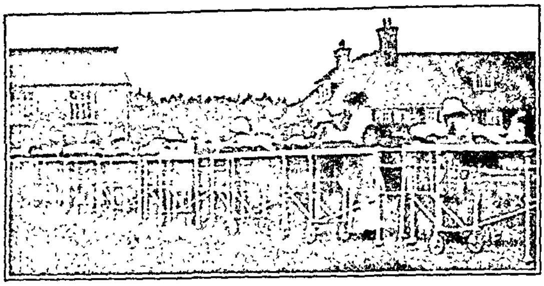

FIG. 20.—Patients suffering from spinal caries on specially designed spinal stands receiving sun treatment at Alton. All patients are educated while receiving treatment, and the illustration shows a teacher giving instruction while insolation is proceeding.

be usefully adopted, the effects which they separately or in combination produce, and the ultimate results which may be reasonably anticipated, is obviously impossible. The final judgment to be passed on any method of treatment must depend on the end-results achieved. Accordingly, I would refer the reader to the accompanying illustrations and tables of results, which will convey more graphically than any words the significance and value of conservatism in the treatment of surgical tuberculosis.

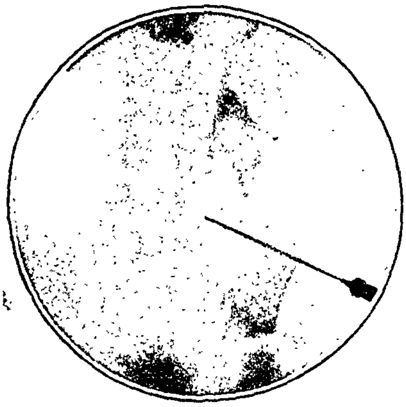

FIG. 21.—Skiagram (taken from below) of a spinal abscess containing liquid, caseous and calcareous pus, taken whilst being aspirated. The pus was liquefied by the injection of modifying fluids. Note the cannula in the abscess cavity.

TABLE I.—*Results of Treatment.*

Lesion.	Admissions.	Discharged.	Disease arrested.	Improved.	Unimproved.	Removed or transferred.	Died.	Average stay in days.	Mortality percentage.
Spine	920	810	674	22	24	68	27	503·2	3·39
Hip	880	768	710	18	2	25	13	403·1	1·71
Knee	333	304	282	6	—	11	7	334·7	2·3
Other	354	315	265	16	5	19	9	259·8	2·8
	2487	2197	1931	62	31	123	56	416	2·54

Table I. gives an analysis of results of treatment of patients suffering from surgical tuberculosis at the Lord Mayor Treloar Cripples' Hospital, Alton, Hants, from the opening of the hospital in September, 1908, to Jan. 31st, 1921. Cases sent in as tuberculous but ascertained after admission not to be suffering from tuberculous disease—e.g., pseudo-coxalgia sent in as tuberculous disease of the hip-joint—are not included in Table I. Patients are classified according to their principal lesion. A very large number were suffering from, and in some cases developed during treatment, other or multiple lesions. In these statistics no mention is made of septic cases. The proportion of septic cases admitted is, unfortunately, a high one. The majority of those discharged unimproved were septic cases. By "disease arrested" is meant that the disease appears to be cured, abscesses are absent, sinuses healed, and the patient fit to return home and resume ordinary life, not under continuous supervision, but advised, where feasible, to report to our London out-patient department periodically for observation. Patients removed are those withdrawn by parents or guardians before the disease is arrested. Patients transferred include boys transferred direct to the College for technical training, or to an auxiliary home for protracted treatment. No death has occurred in the College. A certain number of patients have also been transferred to other institutions who required treatment of other conditions more urgently than continued treatment for surgical tuberculosis.

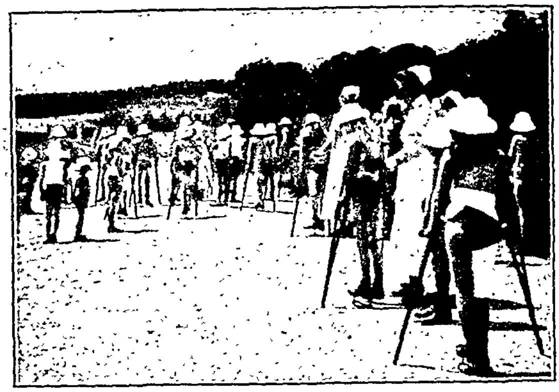

FIG. 20A.—Ambulant patients leaving the wards for nature study and sun treatment at Alton.

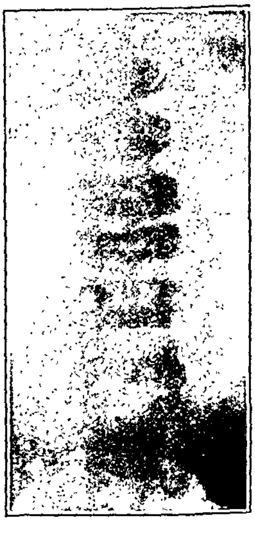

FIG. 22.—The same case later. All that is left of the abscess is the small particle of calcareous pus indicated by the white line at A. (Skiagram taken from above.)

TABLE II.—*Analysis of Mortality Statistics.*

Cause of death.	Spine	Hip	Knee.	Ankle.	Multiple.	Other.	Total
Meningitis.	13	6	4	2	—	1	26
Sepsis	8	6	1	—	2	1	18
Miliary tubercle...	1	—	—	—	1	—	2
Cerebral abscess	1	—	—	—	—	—	1
Intercurrent ...	4	—	3	—	1	1	9
—	27	12	8	2	4	3	55

It will be seen from Table II. that if we exclude patients who died from intercurrent disease the number of deaths directly due to tuberculous disease is reduced to 47, or barely over 2 per cent. of patients discharged. While meningitis is the commonest terminal cause of death, a certain number of these cases were septic as well as tuberculous, and I would regard secondary infection as the most serious complication which may arise. It may almost always be avoided if non-operative treatment is undertaken. Spinal caries is not only the commonest, but also the most fatal form of surgical tubercle admitted. It is noteworthy that 10 of the 13 patients suffering from spinal caries who died of meningitis were under the age of 5 years, and in many cases death occurred within a comparatively short time after admission. Contrary to what is frequently assumed by the public, surgical tuberculosis is more difficult to treat, more likely to produce considerable physical disability, and undoubtedly more fatal in the very young than in older children. Of all bony lesions the one I regard as most dangerous is tuberculous disease involving the flat bones of the skull.

SPINAL CARIES IN CHILDREN.

A METHOD OF FIXATION.

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THE appliances most generally used in this country in the treatment of spinal caries in an active stage are, so far as one can judge from the cases admitted to Queen Mary's Hospital, Carshalton, the Whitman stretcher, the double Thomas splint, the Berck tray, the plaster bed and the recumbent plaster jacket, and less commonly the spinal board, the Bradford frame, and the Phelps box. All these have features which recommend them, and all have imperfections the importance of which is more readily realised when the disease is treated on a large scale, as it is at Carshalton.

Drawbacks common to all are that the straps and buckles which restrain the patient are within his reach; thus recumbency is often by no means complete, and supervision may become a constant strain. While the spine is being treated other parts of the body are apt to suffer from the immobilisation; the chest often becomes flattened, and if the patient is long recumbent considerable wasting of the muscles of the lower limbs occurs from disuse, and the knee-joints may become lax and over-extended. In some cases there is slight contracture of the tendo Achillis owing to dropping of the feet, even though a cradle has been used to take away the weight of the bedclothes. The resulting inability to dorsiflex the ankles beyond the right angle produces for a time an awkward gait, and may lead to some degree of talipes valgus. Another drawback met with in some appliances is that there is no satisfactory arrangement for the use of the bedpan; further, portability is often limited, and even the more portable appliances are not very convenient to move more than a short distance.

Apparatus Used at Carshalton.

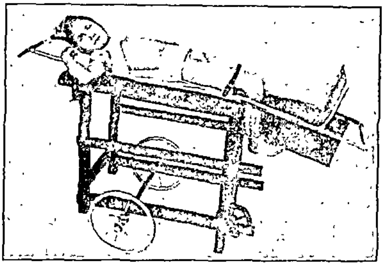
The apparatus which I use at Carshalton is a frame which rests on a carriage of simple design; the latter is not essential to the frame, which with its head end resting on a block acts equally well on a bed.

The frame, like the Whitman stretcher, is made of gaspipe and is generally eight or ten inches longer than the patient; it has a flat transverse bar opposite the shoulders and a padded one just above the knees. It is slightly narrower than the distance between the iliac crests, but from the lower part of the thighs is cranked out an inch and a half on each side to allow of more freedom of movement for the legs. It may be conveniently described from the foot upwards. An adjustable felt-lined foot-rest prevents the feet from dropping, and a bend in the frame at the level of the knees allows the latter to assume their natural position of rest in slight flexion. The thighs at their lower end rest on the padded crossbar to which knee-straps are attached by means of a saddler's D. (Fig. 2.) The legs lie on a felt-covered wooden flap, which can be dropped at suitable intervals to allow of active exercise of the thigh and leg muscles, the separate strap over each knee ensuring that this movement takes place without disturbance of the spine by the psoas. (Fig. 1.) To avoid the foot-rest when raising the legs the child has to dorsiflex his feet and thus a full range of movement at the ankle-joint is maintained. A flap beneath the buttocks allows of the use of an enamelled tray, 10" × 7" × 3," as a bedpan; if the frame is on a carriage the tray is suspended from the tubing by a special holder, otherwise it rests on the bed. (Fig. 2.) This flap, three or four inches wide, is made of duralumin; one border is curled closely round the tubing and serves as a hinge; the free end rests on a flat catch inserted in the tubing, and has a slot through which the catch slips if rotated, and thus the flap can be made to drop. If a child has enuresis the enamelled tray may be left under him with the flap in position to support the buttocks, and wetting of the bedding may in this way be avoided.

The "apron" consists of two transverse pieces of crash towelling connected by a duralumin rod on each side. The chest-piece is shaped to avoid the neck and sends a process over each shoulder, which ends in a webbing loop; at the side it passes beneath the armpit to end in a narrow pocket or hem in which the rod fits. The pelvis-piece which ends in similar pockets runs across the lower abdomen not extending lower than the level of the top of the intergluteal fold, which is the upper limit of the duralumin flap beneath the buttocks. Through slots in the shoulder bar and three holes in each connecting rod the apron is laced behind the frame with blind cord, the ends of which are tied to the foot of the frame out of the patient's reach. Compression of the front of the chest is thus avoided, although some flattening of the ribs behind may occur when a child is kept lying for a prolonged period.

If the prominence is moderate and not sharp the child can, as a rule, lie on a crash or leather cover, conveniently made taut by inserting duralumin rods in the side hems and drawing these together with a couple of webbing straps beneath the frame, which is bent at the hump to secure hyperextension. If the prominence is marked or so sharp that the skin is likely to be injured the child is made to lie on a thin plaster bed instead of a cover. The plaster bed is readily made by placing the child on his face in the hyperextended position and running plaster bandages up and down over the back between the scapular spines and lower sacrum, subsequently strengthening the bed with celluloid solution. Several inspections of the back are advisable during the first week, but after that it is unnecessary to remove the patient more often than once a month, when the opportunity is taken of placing a few squares of Gamgee tissue beneath the prominence with a view to a gradual correction of the deformity. As the correction obtained calls for it a new plaster bed is made

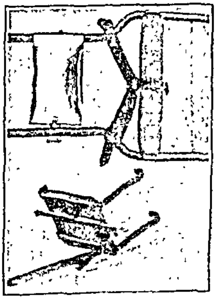
FIG. 1.



In high dorsal caries the frame is bent backward instead of forward at its upper end and the plate on which the head rests is domed downwards to allow of hyperextension; in cervical caries a leather collar is added to prevent rotation of the head. The children are provided with hand mirrors so that they can observe what is going on around them. Between head-plate and shoulder-bar there is a clear interval through which crumbs can fall.

The carriage is short, extending only from the shoulders to the knees; it is 30 inches high and consists of four deal uprights joined by side and end rails; it is supported by wheels, and hinged to it on each side is a narrow table on which the child rests his arms and places his toys, school books, or eating utensils. The clothing consists of vest and nightgown open at the back along their whole length, and between them a jersey open behind to within 3 inches of the neck. In mild weather stockings are worn, but in winter the legs are enclosed in a bag made of old blanket material; a broad binder is wrapped round the pelvis and thighs and a waistcoat shaped to enclose the shoulders round the chest, both being made of the blanketing and enclosing the frame. A cot sheet, blankets, and counterpane complete the bedding. No difficulty has been experienced in keeping patients thus equipped out in the open air on their carriages day and night throughout the winter months. The frame can be readily unclamped from the carriage for transference to a bed..

FIG. 2.



Showing buttock-flap, knee-bar, and pan-holder (from below).

Although somewhat complicated for purposes of description the apparatus is not difficult to measure for, make, or apply. It is made in the hospital workshop at a cost which compares favourably with that of several less effective appliances. With slight modification it is used in the treatment of hip disease.

THE ACTION OF
DIGITALIS AND ATROPINE ON THE PERIPHERAL BLOOD PRESSURE.

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IN this paper the action of digitalis and atropine on the peripheral circulation has been studied, and from the relation between blood pressure and pulse frequency certain deductions have been made with regard to the influence of these drugs on the general circulation. The leading idea of the paper is to make the output of the single contraction a sort of criterion by which the effects of these drugs are to be gauged. It is assumed that a large systolic output will give rise to a correspondingly large pulse-pressure reading and vice versa. (The duration of the systole is taken into consideration.) The observation was conducted at the heart clinic of the Northern Hospital, Liverpool. Digitalis was prescribed, and blood pressure and pulse tracings were taken before the administration of the drug and once weekly whilst the patient was under its influence.

Procedure with Atropine.

With atropine the following procedure was adopted. The drug was administered hypodermically, the blood pressure and a cardiogram being taken before and half-hourly after administration. In some cases continuous polygraphic tracings were taken for from an hour and a half to two hours while the patient was under the influence of the drug.

Method of observation.—The combined palpation and auditory method was used to determine the systolic pressure, whilst for the diastolic I depended on the auditory method alone.

Systolic pressure.—Until a few years ago, it was generally assumed that digitalis increased the arterial blood pressure even if administered in therapeutic doses. More recently it has been observed that digitalis given in therapeutic doses does not increase the pressure. My experience was as follows: Soon after digitalis was administered an increase of pressure took place in the majority of cases, lasting a comparatively short period, after which it gradually fell, reaching a level considerably lower than before the administration of this drug. In some instances the declining curve does not show a straight downward line, but here and there a sudden rise is observable. This is often found in cases where digitalis has been administered for a lengthy period.

Diastolic pressure.—The gradual fall of the diastolic pressure owing to the action of the drug is far more pronounced than has been the case with the systolic. Now and then a slight increase is observable immediately after the administration of digitalis, or even in the latter stages, in cases where the systolic increase is pronounced. As a rule, however, digitalis effects a gradual decline in the diastolic pressure from the very commencement.

Pulse pressure.—The pulse-pressure curves show in the majority of cases a tendency towards an upward movement for a considerable time, after which they begin to decline.

The pulse pressure continues to increase at a time when both the systolic and diastolic pressure are on the decrease; the two latter pressures may fall considerably below the level at which they have been before the administration of the drug, yet the pulse pressure may continue to rise.

Pulse-rate.—Soon after the administration of digitalis the pulse rate often becomes lower, but later on for a longer or shorter period it keeps on very much the same level as before the administration of the drug, after which it becomes accelerated. Whilst it is true that soon after the administration of digitalis the systolic pressure is often raised and the pulse frequency diminished, no absolute interdependence between these two factors is demonstrable. In some instances a slowing of the pulse-rate is observable without any corresponding increase in blood pressure, and vice versa.

Relation of pulse pressure to systolic pressure and pulse frequency in hearts unaffected by drugs and those under the influence of digitalis.—In hearts unaffected by drugs the pulse pressure and pulse frequency stand, as a rule, in a definite relation to the systolic pressure. The higher the systolic pressure the higher the pulse pressure and vice versa. Thus in a typical case of senile heart the systolic pressure is raised and pulse pressure is correspondingly high, whilst in the normal heart, or in uncomplicated mitral disease, the systolic pressure is not raised and the pulse pressure is small. The pulse-rate, too, more often than not bears a certain relation to the systolic pressure in hearts unaffected by drugs. As a rule, a low pulse frequency is accompanied by a high pulse and systolic pressure, and the duration of the systole bears a certain relation to the pulse pressure, a long systole being generally correlated to a high pulse pressure and vice versa. The systole in a senile heart or in heart-block is distinctly longer than in a normally beating heart, and the pulse pressure is correspondingly high in these instances. These relations are completely altered by the action of digitalis. Under digitalis we often find a high pulse pressure in conjunction with a high pulse frequency, a short systole and a low systolic pressure.

Atropine: Action of atropine on cases unaffected by other drugs.—Within half an hour after the hypodermic injection of 1/100-1/75 of a grain of atropine, in the majority of cases under observation, the systolic pressure fell and the pulse pressure became diminished; the diastolic pressure, too, fell, but to a lesser degree than the systolic, and the pulse-rate became lower. Usually, as we have seen, a low pulse-frequency is correlated to a high systolic and pulse pressure. Under the influence of this drug, in doses indicated above, both these pressures became low.

Action of atropine on cases previously under the influence of digitalis.—In all essentials the effect of atropine in doses indicated above is the same whether the patient has been under the influence of digitalis or not. The systolic and pulse pressure become lower and the pulse frequency also becomes lower. If the pulse frequency has increased owing to the action of digitalis, the administration of atropine will considerably lower the pulse-rate. Similarly under atropine any cardiographic evidence of digitalis poisoning which may be present will disappear.

Action of atropine in doses of 1/50 gr.—Atropine in doses of 1/50 gr. increases the pulse frequency, the systolic pressure becomes lower under its influence and the pulse pressure diminished.

Contrast in effect of digitalis and atropine action.—Under digitalis a high pulse pressure is found in conjunction with a high pulse frequency, a short systole, and a low systolic pressure. Under atropine in doses of 1/100-1/75 gr. a low pulse pressure is correlated to a slow pulse with a relatively long diastole and a low systolic pressure.

Discussion.

We have seen how, after a comparatively short period, the systolic pressure falls and the pulse pressure increases. The fall of the former is obviously due to the low diastolic tension, which we have seen is one of the characteristic features of digitalis action. Now, the pulse pressure represents the output of a single systole; a high pulse pressure therefore means a correspondingly large output (the duration of the systole being taken into account). As the pulse frequency is not diminished but often increased, it follows that the total output of the heart per a given time is increased under digitalis. Even where the pulse pressure is not increased, since the pulse-rate is often increased, the total output would still be greater than normal.

Abnormal Lowering of Systolic and Diastolic Pressures.

The question now arises, Why are the systolic and diastolic pressures lower than normal when they ought to be higher, since the arteries receive more blood into them from the ventricles per given time than before the action of digitalis becomes effective? There are two possible explanations of this apparently paradoxical phenomenon. It is conceivable that dilatation of the arteries might cause a fall in the systolic pressure, although the total amount of blood they contain is increased. This does not seem a very plausible explanation. First of all, there is no evidence that under the influence of digitalis dilatation of the vessels takes place; on the contrary, all evidence points the other way. Digitoxin contracts all vessels, whilst digitalin contracts the vessels of the abdominal organs and dilates the vessels of the extremities[1]; the action of digitalis accordingly cannot result in fall of pressure, owing to dilatation of the arteries. Moreover, if dilatation of the vessels were the correct explanation of the fall of pressure under digitalis, it would still have to be assumed that with the increased output which the drug effects the blood accumulates on the side of the arterial circulation. This is an improbable assumption. Whence does the heart derive the blood for an increased output? From the reserve volume which remains normally in the ventricles after systole? This would soon be exhausted. From the veins? On the one hand we are supposed to have a piling up of blood on the arterial side; on the other hand, we have an ever-increasing output of the heart, the supply of which can only be derived from the veins. In other words, the veins, relatively at any rate, would receive less blood from arteries and give up more than is normally the case. Such double factors acting even in inconsiderable quantities would in a very short time completely empty the veins of their contents, when one considers the number of beats per 24 hours, and the fixed quantity of blood contained in the circulation. The theory that digitalis takes blood from the veins and piles it up on the arterial side seems to be accordingly untenable; it is extremely unlikely that the fall of pressure under digitalis is due to dilatation of vessels.

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[1] Cushny: The Action of Drugs.

There is only one alternative explanation. The flow of blood in the vessels might take place at an accelerated rate owing to the influence of digitalis. Under these circumstances it is conceivable that the blood might leave the arterial system at a quicker rate than is normally the case. The increase of the output of the single contraction might not compensate adequately the accelerated rate of outflow of the fluid from the arteries. The total amount of blood contained in the arterial system per given time would accordingly be less than normal. The diastolic pressure would become low under such conditions, and incidentally also the systolic.

Increased Heart Content of Blood Caused by Administration of Digitalis.

That the flow of blood under the influence of digitalis is accelerated has long been proven.[2] But now comes the most interesting feature of the whole problem. A given volume of fluid which circulates in a closed system at the same rate at every part will contain exactly the same amount of fluid in all its parts per given time, whether the rate of flow is slow or quick, since the volume of fluid which leaves one side of the system is replaced by exactly the same amount of an inflow from the other. If the total quantity of blood per given time is to be diminished in the arterial system owing to the accelerated rate by which the outflow takes place, it must be assumed that the inflow takes place at a slower rate or in a decreased volume. This would presuppose that at another part of the circulatory system the quantity of blood is greater and the pressure higher than normal.

Which part of the circulation is thus affected? Not the venous side of the circulation to be sure. A cursory glance at the veins of a patient who is under digitalis is sufficient to convince oneself that the pressure in them is not increased and that the quantity of blood they contain is not larger than normally. We are driven to the conclusion that the only part of the circulatory system which could possibly contain a greater quantity of blood than normal owing to the influence of digitalis is the heart. As a matter of fact, the following consideration will show that it could not be otherwise. Supposing that under the influence of digitalis the pulse-rate, as it often does, remains the same as before the drug has been administered, the duration of diastole, to put it at the lowest—indeed, the duration of all phases of the heart—is the same under digitalis as before. But the flow of blood is accelerated. In the same time unit the heart will receive a greater quantity of blood than before the action of the drug. On the other hand, the outflow from the heart is not accelerated, since, as we have seen, the diastole in this instance remains of the same duration. The heart, therefore, will contain at the beginning of the systole a larger quantity of blood than under normal conditions. It is true, too, the output per single contraction is increased. It is also possible that soon after the administration the total amount of blood on the arterial side is increased. It is more probable, however, that the total amount of blood in the arteries is at no time augmented, and the increase in the systolic pressure, often observable soon after the administration of digitalis, is generally assumed to be due to contraction of the blood-vessels. But as the rate of the blood stream quickens under the influence of the drug the vessels give a greater volume of blood to the heart than they receive from it; the result is a fall of the arterial pressure and a rise in the intracardiac pressure. The angina-like pain from which patients suffer who are under the influence of an overdose of this drug and the fatal issue which sometimes, though rarely, attends its use, is to be attributed to high intracardiac pressure.

We see the action of digitalis does not effect, as is generally held, a diminution of blood on the venous side and a piling up of the fluid on the arterial side of the circulation. The true facts are different. The action of digitalis brings about a diminution of the quantity of blood in the peripheral circulation and a piling up of the fluid in the heart's cavities.

TABLE I.—*Digitalis.*

Av. = About average duration of a single beat in seconds.

Case.	Date.	BP S	BP D	BP P	Av.
1	22/12/20	140	98	42	0·56
	28/12/20	105	60	45	0·76
	4/1/21	115	70	45	0·56
2	17/12/20	140	100	40	0·56
	21/12/20	150	110	40	0·36
	28/12/20	118	78	40	0·64
3	22/10/20	130	100	30	0·66
	29/10/20	120	75	45	0·6
	3/11/20	145	105	40	—
	19/11/20	95	75	20	0·68
4	12/10/20	145	115	30	0·74
	26/10/20	130	86	44	—
	10/11/20	120	85	35	0·72
	26/11/20	120	78	42	0·7
5	1/10/20	105	85	20	0·54
	8/10/20	125	80	45	0·83
	15/10/20	100	85	15	—
	22/10/20	105	76	29	0·62
6	22/12/20	110	78	32	0·72
	28/12/20	125	76	49	0·72
	4/1/21	118	75	43	—
	11/1/21	140	80	60	0·6
	21/1/21	88	35	33	0·76
7	7/12/20	105	70	35	0·52
	14/12/20	105	58	47	0·52
	21/12/20	100	45	55	0·59
	28/12/20	125	55	70	0·63
	4/1/21	100	55	45	—
	11/1/21	108	70	38	—
	18/1/21	100	60	40	—

Cases 1, 2, 3, 5, 6, digitalis xv., thrice daily. Case 4, C. Case 7, digitalis xv.

BP, blood pressure. S, systole. D, diastole. P, pulse pressure.

The figures in the first line of each case represent readings taken just before digitalis was administered.

It is a common occurrence to observe a sudden rise in the systolic pressure after the patient has been for some weeks under the influence of the drug. Possibly this rise is in the nature of a reaction to the condition of the circulation, brought about by digitalis and not to the direct action of the drug.

TABLE II.—*Atropine.*

Sec. = Duration of beat in seconds.

Before injection.					Atropine‡ Time P.M.	About ½ hour after injection.					About 1 hour after injection.				
Case.	BP S	BP D	BP P	Sec.		Time P.M.	BP S	BP D	BP P	Sec.	Time P.M.	BP S	BP D	BP P	Sec.
1	155	85	70	0·72	1/75, 2.20	2.40	105	70	35	0·88	3 30	145	60	65	0·84
2	115	60	55	0·85	1/75, 2.30	3.0	105	80	25	0·9	3.15	115	78	37	0·92
3	125	78	47	0·6	1/75, 2 10	2.40	74	48	26	0·6	5.15	90	65	25	0·64
4	115	78	37	0·72	1/75, 2.15	2.45	70	52	18	0·88	3 30	115	78	37	0·96
5	108	68	40	0·6	1/75	2.50	70	50	20	0·64	3 30	100	65	35	0·85
6*†	150	65	85	—	1/75, 2.45	3.15	110	45	65	—	3.15	170	65	105	—
7*	75	50	25	0·64	1/100, 2.15	2.45	75	60	15	1·2	3.45	80	58	22	0·76
8*	125	85	40	0·72	1/100, 2.20	3.0	110	89	21	0·68	4.0	110	80	30	—
9	120	96	22	—	1/75, 2.5	2.30	80	48	32	—	3.15	50	40	10	—
10*	120	76	44	1·0	1/50, 2.5	2.35	100	68	32	0·77	4.10	55	48	7	0·72
11*	100	68	32	0·6	1/50, 2.10	2.45	85	68	17	0·48	3.18	90	64	36	0·5
12*	80	50	30	0·93	1/50, 2.30	3 0	35	54	19	0·6	4.30	100	70	30	0·6
13	115	60	55	1·08	1/50, 3 0	3 30	120	75	44	0·84	—	—	—	—	—

* These cases have been under the influence of digitalis. † A case of auricular fibrillation. ‡ Some cases did not react to atropine.

Quickening of the Pulse-rate Resulting from Action of Digitalis.

Once it is recognised that owing to the action of digitalis the volume of blood in the heart's cavities is augmented, another feature in connexion with the action of digitalis becomes comprehensible, which otherwise would remain unexplained. It is a well-known fact, to which I have already referred in this paper, that the pulse frequency increases if digitalis is pushed long enough. Paralysis of the vagus is the orthodox explanation of this phenomenon. This explanation is unsatisfactory. I pointed out somewhere else that the dose of digitalis required to bring about an acceleration of the pulse-rate stands in a definite relation to the condition of the myocardium. If the latter is affected a small dose of digitalis is sufficient to bring about a quickening of the pulse-rate. It is difficult to understand why the vagus should so much more easily be paralysed when the heart muscle is diseased. As a matter of fact, as will be seen later on, there is ample evidence to show that the vagus function is not impaired at the time when acceleration of the pulse-rate takes place. To what, then, is the frequency of the heart's action due?

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[2] Gottlieb and Magnus: Archiv für Experimentelle Pathologie und Pharmakologie, xlvii. Edmund: American Journal of Physiology, xviii.

It is generally assumed that the endocardium is endowed with an apparatus, stimulation of which is the exciting cause of the systole. The volume of blood in the heart's cavities has a good deal to do with the bringing about of a systolic contraction. It is obvious that if the cavities of the heart are filling up at an accelerated rate a volume of blood sufficient to excite a systolic contraction will accumulate in a shorter period of time than is normally the case. In other words, the pulse will become accelerated. No doubt digitalis acts also on the inhibitory apparatus, but the longer the patient has been under the influence of the drug the higher the rate of acceleration of the flow of the blood through the vessels. Soon a condition will be reached which overbalances its inhibitory effect. We see it actually happening in Case 1, Table I. Digitalis first effected an increase in pulse pressure. When the patient was kept under this drug for another week no further increase in blood pressure was recordable, but a pronounced acceleration in the pulse frequency took place instead. A further increase in pulse pressure was evidently impossible in this case, simply because as soon as the intracardiac pressure reached a certain height it excited systolic contraction.

The slowing of the pulse-rate brought about by atropine is evidently due to vagus stimulation. Apparently 1/100-1/75 gr. of atropine is not strong enough a dose to effect paralysis of the vagus endings. We know vagus stimulation lowers the output of the heart; hence the smallness of the pulse pressure. The intracardiac pressure will be diminished under these conditions, owing to the feebler contraction. The latter circumstance would explain why the cardiographic signs which are attributable to a high intracardiac pressure disappear under this drug. We have seen that in cases which, under the influence of digitalis, have exhibited an accelerated pulse frequency an injection of atropine effects a lowering of pulse frequency. Evidently the vagus function remains unimpaired, in these circumstances, as otherwise this nerve would not react to stimulation.

Atropine in doses of 1/50 gr. evidently paralyses the vagus ending, the pulse-rate is increased, the duration of the diastole being shorter than normal, the heart would not completely fill itself as is normally the case; the output per single beat would accordingly decrease, and one would get a relatively small pulse pressure under the circumstances. Evidently the total output of the heart under atropine is less than normal, otherwise we would be unable to explain the fall in the systolic pressure.

Summary and Conclusion.

Under the influence of digitalis the diastolic pressure becomes lower and incidentally the systolic, whilst pulse pressure rises. The decline of the diastolic pressure is not due to a diminished output of the heart—the contrary is the case. The low diastolic pressure is neither due to dilatation of the arteries. The conclusion is that the blood stream leaves the arterial circulation at a greater rate than under normal conditions. The corollary to this conclusion is that under digitalis the heart contains at the beginning of the systole a greater amount of blood than before. The quickening of the pulse observed in the latter stages of digitalis is due to the fact that in a shorter time than normal the intracardiac pressure is sufficiently high to excite contraction.

THE X RAY APPEARANCES OF SO-CALLED OSTEO-ARTHRITIS OF THE SPINE.

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THE excuse for publishing this short article is that it deals with certain facts in connexion with this disease which are apparent on radiographic examination, and which, to my knowledge, are either unknown or have never been published before. Excluding the question of injuries, one of the commonest conditions to be found in the routine examination of hospital patients is that of so-called osteo-arthritis of the spine. In fact, excluding tuberculous disease, the well-known appearances presented in this condition are continually cropping up, and it is interesting to note how often the clinical symptoms associated with other diseases can be proved to be due entirely to this pathological state. The commonest and most interesting of all is that in which the patient is sent to the X ray department suspected of renal calculus with typical symptoms of pain in either loin, sometimes very acute, and even (if the history is to be believed) of hæmaturia, although how the latter can be caused is a mystery.

An analysis of 196 cases sent to the department in 1913 and suspected of renal calculus resulted as follows:—

Calculi present	19	or	9·7	per cent.
Calculi not present	144	,,	73·4	,,
Cases not re-examined	12	,,	6·1	,,
Osteo-arthritis of spine	17	,,	8·7	,,
Nephroptosis	1	,,	0·5	,,
Calcareous deposits	2	,,	1	,,
Bone growth	1	,,	0·5	,,

From this it can be seen that the number of cases which prove to be osteo-arthritis of the spine and not calculus very nearly equalled the number of cases of renal calculus, the other conditions present totalling together only four.

The cases which were not re-examined were either those in which the patient did not attend again or in which the physician himself decided that the doubtful shadows, combined with the weak clinical history, did not substantiate the original diagnosis, and therefore were probably neither osteo-arthritis nor calculus. An examination of a very large number of cases, both on living subjects and dried specimens, has led to the conclusion that the disease is unequal in its distribution. The dorsal region is by far the commonest to be affected; then come the lumbar and sacral regions; and, lastly, the cervical regions. This distribution is important from the X ray point of view, because the dorsal region, being hidden by the heart, diaphragm, and liver shadows, is the most difficult to see; and it is extremely probable that numerous cases of even well-marked osteo-arthritis in this region are bound to be missed on the most careful examination when the disease is solely confined to this area of the body, as is frequently the case. Another important point is that the disease has to be very fairly advanced before any departure from the normal can be detected. These two points alone—namely, greater susceptibility of the dorsal region and inability to diagnose very early stages of the disease—lead to the conclusion that the condition is much more common than has been generally supposed.

Two Distinct Types, very rarely Combined.

There are radiographically two distinct types of osteo-arthritis of spine, though very rarely one sees them combined.

Type A.—The first type is very uncommon, but undoubtedly occurs; in this type there is no typical "lipping" of the articular edges of the vertebræ, but only an erosion of the fibro-cartilage between adjacent vertebræ, causing approximation of the bony segments of the spine. In four cases this had undoubtedly taken place, and was not caused by any caries (tuberculous or otherwise), and in all four cases the condition was limited to two adjacent segments in the lumbar region with the intervening fibro-cartilage. In one of these cases there was present also, lower down in the lumbar region, the typical "lipping" generally associated with this disease, and forming the second type.

Type B.—This second type can be met with in all stages, from slight "spikiness" of the articular margins to complete synostosis of the whole of the spine—forming the well-known poker-back spine. The gradual progress of the disease of this type is as follows: It may commence either unilaterally or bilaterally, and may be equally marked on both sides, or one side may be more involved than the other. Whichever way it is, the affected side or sides first shows this slight sharpening of the normally round lateral borders of the bony articular surfaces. This increases in extent, and as it increases the spikes so formed tends to turn slightly outwards and downwards in the case of the lower articular margin, and upwards and outwards in the case of the upper articular margins. Both these spiky prolongations then turn directly upwards and downwards, so that they eventually meet and fuse. Then if the disease progresses this band of opacity gradually thickens, so that eventually a solid shadow is seen surrounding the affected segments and hiding all details of the spine itself. The whole appearance (if both sides are involved) is then that of a spine over which plaster-of-Paris had been poured and then allowed to set.

This state of affairs is so unlike that presented in any other osteo-arthritic conditions seen elsewhere in the body that it seemed possible some other factors were present in the spine which allowed the disease to progress much more markedly and in a different manner than elsewhere. Accordingly, with the kind permission and assistance of Professor S. G. Shattock, to whom I am greatly indebted, a number of dried osteo-arthritic spines were examined at the Royal College of Surgeons of England and photographed and X rayed.

From the examination of these specimens two important facts were deduced, one of which has already been mentioned—namely, that even when the disease is quite well advanced the X ray plates of the dried skeleton show very little change. How much more, therefore, would be the difference in the living body when the faint shadows seen in the dried bones in the early stages would not be differentiated at all. The second fact is even more important. It can be seen conclusively from the appearance of these so-called osteo-arthritic deposits along the lateral borders of the "poker-back" spine produced, that the normal rounded outlines of the vertebræ are unaltered, and that these deposits are not bony in origin at all, but are due to calcareous masses surrounding the normal vertebræ—i.e., calcification in the lateral and sometimes central portions of the anterior common ligament of the spine. The actual bone itself is unaltered, the differentiation between the two shadows being quite plain. Consequently this condition is not that of an osteo-arthritis at all; it should rightly be termed a state of fibrositis ossificans, in order to differentiate it from the true osteo-arthritic condition seen in true bony "lipping" of the knee-joint, where actual proliferation of the bone itself takes place.

This fact suggests a possible explanation of the difference seen in the two types, A and B, of this condition. It is well known that one of the first effects of this disease is to cause atrophy of muscles and loosening of ligaments around the seat of the disease. This fact is taken advantage of in certain forms of treatment for osteo-arthritis of the knee, when by means of tuning up the muscles around the joint (by electricity, &c.), the joint surfaces of the femur and tibia, which before were pressing on the semilunar cartilages, and thus causing pressure erosion and pain, are now forced away from each other with consequent relief of the symptoms, although the actual bony proliferation of the articular edges still remains.

This state of affairs must exist also in the affected spine so that, owing to the relaxation of ligaments, pressure erosion takes place of the fibro-cartilage between the bony segments, but at the same time, or before this, calcification begins in the common ligament. If this latter condition is delayed erosion of the disc occurs, possibly followed later by calcareous deposits. If, however, as usually happens, calcification advances considerably before pressure erosion takes place, then, although the ligaments have weakened considerably, yet by reason of their solidity owing to deposition of salts the two segments of the spine are kept apart as if by buttresses, and consequently no pressure occurs on the fibro-cartilage.

MANIFESTATIONS OF HYSTERIA.[1]

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IT has probably seemed to some that hysteria is more important and more common of late years than in the past. For reasons which we all appreciate the patients who present hysterical manifestations are now more numerically apparent, but there is no evidence which points to a material difference in their variety. We have recently been deluged with a literature of hysteria, and on this account I must ask your indulgence for taking the subject as the text of my lecture; but the condition is of such importance and diagnostic mistakes are still so numerous that an unfailing interest in it is amply justified.

Various theories have been put forward to explain the puzzling fact that hysterical manifestations are displayed by one person and not by another; in acknowledging here the help of writers and colleagues, I should like to bear personal testimony to the excellent work of Dr. A. F. Hurst, whose conviction that hysteria consists of symptoms produced by suggestion, and therefore curable by psychotherapy has proved to be correct in what is possibly a majority of cases. In capable hands the disability has been permanently cured; but in some persons who show the manifestations of hysteria the suggesting element which results in the particular disability is amazingly difficult to discover. In the case of patients who are not cured either this definition is wrong, diagnosis is incorrect, or treatment is inadequate. The mental condition of a hysterical patient is closely connected with his special symptoms, but is not necessarily identified with them. In some patients symptoms are readily and permanently cured, leaving the individual apparently normal; in others the symptoms are perhaps cured, but the mental state fails to react to the same degree, with the result that the patient is less happy after treatment than before. The reasons for this state of affairs are thought to be fairly well known. Considerable experience is needed in order to decide correctly how much explanation of the cause of the symptom shall be given to the patient, and what proportion of the explanation shall precede or follow the cure of the symptom, but it is probable that in some cases the physician's outlook is insufficiently wide. Comparatively few possess at the same time neurological convictions adequately strong and a personality sufficiently optimistic and courageous, internally as well as externally, to carry out with constant success the treatment of hysteria. The most experienced medical man may have to deal with a nervousness lest his capacity, proved in the past, may fail him. The onlookers anticipate a cure, and if a dramatic result is not immediately forthcoming they sometimes waver audibly in opinions which a moment before seemed fixed and immovable. Many patients can be labelled hysterical at a glance. Others need diagnostic acumen. Once a case is definitely diagnosed hysterical the patient is to be regarded equally definitely as curable.

The observer, whether practitioner or friend, who first witnesses in its infancy a manifestation of hysteria is responsible if it continues, for every case can probably be strangled at the onset; but a hysterical symptom is not necessarily more difficult to cure because it has reached maturity.

A Case Illustrating Onset of Hysterical Palsy.

During a visit to a nursing home I was asked by the matron to see one of the maids who had managed to get a crotchet needle beneath the skin of her palm. "Oh, it *is* sore," she said, as I entered the room, "and I can't move any of my fingers." The needle was doing no immediate harm, but its influence was harmful, so I held its free end and ordered her to move her fingers in all directions, also her wrist, elbow, and shoulder, pain or no pain. Later the needle was removed, and she at once resumed full work. It is my custom to make a patient demonstrate the absence of hysterical sequelæ at once after every operation with a hypodermic needle, intrathecal needle, and the like. I have heard of a case of hysterical paraplegia following lumbar puncture, and I have seen severe palsy of the upper limb after vaccination, and also after a subcutaneous injection of antitoxin over the deltoid. We who sit here imagine, no doubt, that we are immune from the possibility of acquiring these manifestations, but I wonder whether we are right in so thinking. I believe that the wish is father to the thought.

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[1] A lantern lecture delivered before the West Kent Medico-Chirurgical Society on March 11th, 1921.

Psychology of Hysteria.

I am not going to trouble you with long terms and strange words in an attempt to explain the psychology of hysteria; I believe that many are dissuaded from a study of this subject by the regrettable fact that, even in English, its language is foreign. Englishmen do not readily acquire a knowledge of strange tongues. I think it must be difficult to explain in any language the exact reasons why, for instance, one of my cases lost his hair. Seven years before I saw him he was in a fire-brigade, and during the two months which followed his burial beneath the ruins of a burning house he lost permanently every hair of his body, including those of the nares, pubes, eyebrows, and lashes. My difficulty is that I have seen no case resembling this in men who were buried during the war under nearly identical circumstances, so that we might suppose the physical and mental reaction would be similar.

I have said that we can directly prevent the consolidation of a hysterical disability without any but the most superficial examination, provided that we witness its onset and appreciate its cause. If, however, we meet the case after consolidation has occurred, at a period near to or remote from the onset, we shall examine with care, bearing in mind that a minute examination may serve to increase the patient's idea of physical illness. A sufficiently accurate examination can, as a rule, be made, under cover of conversation or the like, to exclude organic disease and, at the same time, to prevent undue interest in the mind of the patient. Above all, we must not adhere too closely to the reports of former advisers, for it is easy to have the diagnosis of hysteria suggested to our own minds to the mutual disadvantage of patient and physician. But hysteria is so very common that it should be in our thoughts in every case where there is no evidence of organic disease, or where the organic lesion has healed, or where the lesion is at best inadequate to account for the disability—given at the same time a temperature and pulse-rate which do not vary materially from the normal over a period of time. An isolated temperature of 98° F. taken in the consulting-room is apt to be misleading.

The disabilities of all of us are either physical or mental both in their origin or their continuation. The population contains more physically fit than the reverse, but it is a question whether this can be said of the entirely mentally fit. I think that many of us are mentally ill at fairly frequent intervals. No doubt it is easier to recognise this in others than in ourselves; but however this may be I feel that there is always a good chance that a patient may have no primary physical lesion.

A Mistaken Diagnosis.

The following misapplication of the practice of psychotherapy occurred in my own experience. For 18 months a young officer had limped and complained of pain in the right lower limb. For three months he had required a stick, and with this he walked about every day. He did not look ill, and no evidence of disease was detected by his physician or myself. He was able to stand and hop on the affected limb, but when he lay down he could not raise the leg against gravity. He could, however, support it in the air when it had been raised passively. He was encouraged to use the limb with considerable success, and after the examination walked back to his ward by way of an extensive garden. The same evening he collapsed suddenly and died. A sarcoma of his pelvis had reduced his acetabulum to the consistency of egg-shell, and the ischium was removed with scissors. There was extensive hæmorrhage in the thigh and retroperitoneally as high as the kidney.

In the past few months diabetes, malignant endocarditis, and cerebral tumour have been referred for treatment by psychotherapy, and I have a patient who for months wore an apparatus for foot-drop which followed the removal by frost-bite of two toes.

Varieties of Hysterical Manifestations.

There is little to be gained by a recital of the varieties of hysterical manifestations or of the precise causes of their occurrence. In the treatment of hysteria the physician deals with every department of medicine. The clinical types can be grouped broadly as follows: headache; sensory disorders of skin and mucous membranes (so-called subjective and objective), whether decrease, abolition, increase or pain; disorders of muscular contraction or control, spasms either tonic or clonic, or palsy, all of which can be voluntarily imitated, which may be manifest in abnormal gait or posture; abnormalities of speech and articulation, aphonia, stammering, and the various laryngeal and respiratory tics, including cough and hiccough; disorders of the special senses; disorders of cerebral control, such as fits, sleep-walking, insomnia, or excessive sleep; gastric and intestinal disorder, with needless vomiting, constipation, diarrhœa, flatulence, and incontinence and retention of urine. We must also remember that hysteria is seen in quite young children.

Hysterical pain is of abiding interest to us all. If a patient says he has pain we must assume that he has. It is useless to tell him that he merely imagines he has pain. Our work is to discover whether the behaviour of his pulse, temperature, sweat glands, and pupils resembles that which our experience has shown to be characteristic of proved organic mischief; and if it is not we try by persuasion to get the patient himself to modify his former opinion and statement. Pain, after all, is the reaction to a stimulus, and the reaction is variable. The duty of the physician is to weigh all the evidence and then to assess the probable value of the patient's statement.

In October, 1915, a lad sustained a comminuted fracture of the proximal phalanx of his great toe. A piece of metal had dropped across his foot. In December, 1915, the toe was amputated at the site of fracture and great pain was complained of directly consciousness was regained. This persisted. In August, 1917, I found the foot held in a varus position owing to localised pain. He was unable to do much apart from drawing his compensation payment. The toe-nails on the right foot had not once required cutting since the accident. No other evidence of disease was found, but the patient's attitude towards examination was not normal. He would not tolerate the slightest touch on the affected part unless his attention was previously distracted, and said he wanted to have his foot off; nevertheless, he got about the ward with comparative ease and slept well, the limb requiring no protection from the bed clothes. I made a note that the failure of the nails to grow was evidence of injury to the peripheral nerves, and then proceeded to cure the pain. Conversational methods were useless, so I took off my coat, grasped the toe stump, and held on. Over and over we went round and round the room, the roars of the boy arousing the hospital, but in 15 minutes he had ceased his struggles and I had won. He at once put on his ordinary boots, and in a week was back at work in the dockyard. Six months later he was still full of gratitude.

Œdema or lowered local temperature, want of expression of the part, ridges on the nails, and the like are frequently seen in hysterical conditions. They may be due to the original organic lesion of which a residue has been perpetuated by hysteria, or they may be, in the case of contracture and spasm, caused by the deformity. Thus a hysterical disability may cause an organic lesion as well as the reverse. The organic signs must not, however, be allowed to dominate the picture. A man with agony of the lower limb persisting for months after a sciatic neuro-fibroma, due to shrapnel, had been removed, and who begged for amputation, was completely cured by psychotherapy. Had the abolition of the ankle-jerk on that side, due to the initial shock to the nerve trunk, been too lovingly regarded he would still be disabled from work. Hysterical wrist- and foot-drop is often diagnosed when the condition is in reality a monoplegia, flexors as well as extensors being useless.

Among gastric cases is that of a young medical man whose epigastric hunger pain persisted in the face of a laparotomy which disclosed no disease. At his second visit to me he gave me his belt and emptied his pockets of lozenges and biscuits. A great deal of constipation is, I feel sure, due to the unnecessary prescription of bedpans; unless the risks are very great patients should be let up. In every case of persistent vomiting or regurgitation of gastric contents, witness the act. A man of 23 had for two and a half years brought up a mouthful of fluid half an hour after each meal. He then swallowed it again. Gastric lavage and bismuth meals were naturally ineffective. He mentioned tea in particular, and at his first visit, after conversation, I gave him tea. Nothing abnormal occurred and he was amazed, saying that he was better than for 12 months. "My improvement is wonderful and I cannot understand my previous treatment." A man who complained that he always belched whenever he put a pipe between his teeth was cured by opening the mouth on a gag for a time and by teaching him the needlessness of the act rather than by dieting, alkalies, and carminatives.

An instance of the overflow of needless energy, destructive and painful, yet giving a moment's pleasure withal, can be observed in a man now in my ward. He has a craze for biting through his lower lip with his incisors and for a year or more has not withdrawn his protecting finger from his mouth, either for meals or for rest or during sleep. He has shown his wisdom, however, in resisting advice to have the teeth extracted. I think it probable that many tics are merely forms of hysteria.

Hysterical affections of the bladder are fairly common and are especially tragic when unrecognised. During a night retreat in France in November, 1914, a man fell into a trench. Before, during, and after his fall he was frightened, and that night he allowed a little urine to escape in his sleep. Later on he heard someone say something about a fractured pelvis and injury to bladder, and for the next three and a half years, though well in other respects, he had passed urine every hour. His clothes were soaked and so was his mattress until he was presented with a urinal for use at night. He used it for 12 months. Treatment consisted of an explanatory statement that an injured bladder would not so behave. This was news indeed to him. Then followed a demonstration in the lavatory of perfect sphincter control.

Hysterical disorders of the special senses and hysterical fits are of vast interest. The cry which may precede the epileptic attack is not to be mistaken, but the doctor rarely witnesses the initial stage of the fit.

Malingering and Hysterical Deception.

Malingering must not be diagnosed unless the patient is found in flagrante delicto or his voluntary confession elicited, and neither of these occurrences is entirely free from the possibility of error. A man with vision of less than 6/60 was allowed to hear read out at a class the remarks of a fictitious professor that in cases of blindness which followed cerebro-spinal fever the patient could invariably see and recognise a small object when it was one among others. Having persisted in failure to see a penny on a piece of white paper, and the class having been reminded in his hearing that the man's original illness was cerebro-spinal fever, his eyes were uncovered, and he promptly recognised the details of the penny placed between two other coins. Yet I doubt if he lied consciously in the first instance.

The motives which underlie the deception of the hysteric are not always apparent. The correctness of the diagnosis is proved by the cure alone, but it does not follow that failure to cure is an indication that the diagnosis should be changed to that of malingering The following is an instance of confessed malingering. A man of 20 in 1917 came in a bath chair to see me. His right leg had been comparatively useless for nearly a year. The trouble had followed a fall from a ladder, and for many weeks he had been lying at home instead of assisting his country. He arrived at the hospital in a motor ambulance. I was prepared to consider him hysterical, even when he jumped up with alacrity on seeing me prepare the battery; he admitted, however, that he was ashamed of himself, and was told to propel the steward back to the ward in the bath chair. The following day he refused further examination, although he still limped a little, saying that his certificates about paralysis were as good as mine. The sentence of the court-martial was six months' hard labour. Possibly this served his purpose.

Preventive Treatment.

There can be little doubt that if, prior to or at the immediate onset of hysterical disabilities, a personality, professional or otherwise, was at hand the vast majority of them would be killed at the onset. The instance of the girl with the needle in the hand is a case in point. The ideal is to prevent before onset by reassurance. Nothing is so remarkable as the way in which the statements of medical men to their patients settle in their minds. For years they recall and repeat them, and when they are erroneous they may defeat the object of subsequent treatment.

Treatment of Consolidated Cases.

The essentials for this are a capacity for confident recognition of the nature of the disability, sympathy, unlimited patience, plenty of time, opportunities of seeing the patient from time to time after treatment has removed the disability, and a refusal to be put off the scent by failure. Treatment is thoroughly hard work. When in the case of a palsy I have made a decision, I photograph the patient and I tell him at the same time to arrange for the photographer to come, in say two days, to make a record of the cure. In these cases sticks and crutches are broken before treatment is started. I detain a cured case for his influence on the next, and I require a voluntary signature that the cure is complete.

(1) Methods of conversation and explanation are, no doubt, the ideal forms of treatment, but failure is fairly frequent. The intelligent coöperation of the patient is sometimes wanting. In my experience the use of faradism is of little avail except to demonstrate to the patient the integrity of the muscles or to increase by suggestion the area of normal sensation, so that by degrees it includes the area which is anæsthetic. Cases of vomiting, incontinence, fits, and so on, are specially amenable to conversational methods.

(2) I have frequently had recourse to treatment by suggestion and gross-suggestion, and with considerable success, but I am not necessarily proud of the method. Should ethical reasons dissuade us from finding with the X rays an imaginary lump pressing on the nerve in a monoplegic limb and from removing it by "deep and painful massage" under anæsthesia? Does the proved success in former cases justify us in performing an operation for a lesion which is imaginary in a case of hysterical deafness? I was criticised strongly after I performed a trephining operation[2] in a case of hysterical sleeping attacks, but my critics did not say what I should have done to the patient, who was in the habit of going to sleep during conversation. I think that those who formerly relied on hypnotism are making less and less use of it. Hysteria and a capacity to be hypnotised are not synonymous terms. Neither are suggestibility and hysteria synonymous. We are all of us suggestible, but it seems that the hysterical have a peculiar susceptibility to suggestion.

When the symptoms are cured is there anything else to cure? Sometimes there is and sometimes not. As a rule, when there is something else left it will be relieved by the accompanying conversational methods, but much depends on the presence or absence of matters connected with pension and unemployment. Cures have been stabilised by the mention of punishment in the event of relapse after demonstrated relief from disability.

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[2] This case was described in THE LANCET, 1919, ii., 1125.

(3) Psycho-analysis is necessary to throw light on unconscious motives in other cases. To bring into the front line of consciousness repressed experiences we may make use of the most careful case-taking and inquiry with success. I confess myself to a wonder whether the ablest analyst would elicit anything of importance which I could not tell him at the outset, but until I have had some hysterical condition which has resisted cure by other methods perhaps I ought to keep silence about this. As regards conscious sexual motives and movements, homosexual and otherwise, I have been struck with the facility with which these are brought out in conversation. Drug habits may be cured when the underlying unhappiness or loneliness is made manifest and removed. The variety of the drug matters little. It is needed no longer by the patient, who is completely mentally happy. The importance of putting cause and effect in the correct sequence to masturbators is very considerable; in fact, for all disabilities, hysterical or otherwise, there is more in treatment by psychotherapy than we sometimes dream of.

TWO CASES OF

RETROPERITONEAL HÆMORRHAGE.

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THE two following cases may be of interest, first, because of their similarity of history and symptoms, and, secondly, on account of their difference in result and pathology.

CASE 1.—M. A., a woman aged 30, was admitted in October, 1919, complaining of abdominal pain, vomiting, and constipation of some days' standing. She was married and had had four children, all of whom were alive and well; no physical defect in them had been noticed. Her mother and father had both died from pulmonary tuberculosis, whilst she herself had suffered from anæmia and had signs of a left apicular phthisis. She gave a history of her left eye having been removed for "tuberculous trouble" some years previously, although the actual lesion we were unable to ascertain.

Her history of the present disease was as follows: Her last baby was born in December, 1918, and the day before the birth of the child she slipped and fell heavily on the pavement, but she felt no ill-effects after it. In May, 1919, she noticed dragging pains in her right loin, followed by a swelling, which moved readily when she turned from her side to her back, the swelling always falling into the most dependent position. She paid no attention to the swelling and pain, but continued with her work. Her bowels were always regular and her appetite was good. The day before her admission in October, 1919, she was suddenly seized with a violent attack of pain in her right hypochondrium, and she began to vomit incessantly a greenish-coloured fluid. She had than been constipated for the last four days.

On admission on Oct. 5th, 1919, her pulse was 98, temperature 99·2° F., and respirations 24. She looked extremely ill, had a drawn face, and was bathed in cold sweat. Her tongue was dirty, furred, and had commencing sordes. She had great pain in her right side and felt as if she wanted to vomit, although she was unable to do so. The pain travelled round from her right hypochondrium to the back of her right loin. On examination she had phthisis at her left apex and her breathing was shallow. Her abdominal wall moved well on respiration, but she was slightly rigid and tender over a small area just below her ninth and tenth ribs in her right hypochondrium. A vague swelling could be felt bimanually in the right hypochondrium and there was tenderness and swelling in her right loin. Her urine was normal; rectal and vaginal examinations revealed nothing. A turpentine enema was given, but was returned without result. After being in bed for a couple of hours she felt much easier, but five hours after admission the pain returned and was worse than before. She was now definitely tender and rigid over the whole of the upper part of her right rectus muscle. The vague tumour was still palpable, but could not be traced upwards or downwards. She was not tender under her costal arch nor for a distance of 1½ in. below it. Her pulse and temperature had both fallen, so she was given a hypodermic injection of morphine gr. 1/6th. An hour later she was much easier, and she spent a fairly comfortable night.

The next morning she again vomited large quantities of the greenish-coloured fluid. On abdominal examination she was very rigid and tender in her right hypochondrium. The previously small tender area had now increased in size, having extended as far laterally as her left rectus muscle and downwards into her right iliac fossa. By mid-day she had vomited four times, and she now was becoming distended, and peristalsis was visible on the left side of the abdomen above the level of the umbilicus.

It was decided to perform laparotomy, the diagnosis being held over. An acute cholecystitis or an appendicular abscess was suggested but the difficulty was to explain the visible peristalsis. The abdomen was opened by a right paramedian incision. On opening the peritoneal cavity the distended transverse colon forced its way out. On examining the abdominal contents the whole large gut was found to be distended, but the small intestine was not, nor was there any cause of obstruction found. The left kidney, gall-bladder, stomach, pancreas, appendix, and pelvic organs were normal. The right kidney could not be palpated definitely owing to a large retroperitoneal hæmorrhage of recent origin. The maximum amount of clot was behind the hepatic flexure of the colon, and the clot extended downwards as far as the mesentery of the appendix and to the mid-line as far as the aorta. There was no obvious cause for the hæmatoma. There was no free blood in the peritoneal cavity. The intestines were returned and the abdominal cavity sewn up.

After the operation great difficulty was experienced in getting the patient's bowels to act in spite of the frequent doses of ol. ricini, calomel, other purges, and pituitrin. After they had once begun to act no difficulty was experienced. She did very well after the operation, and at a later date she was X rayed, but no evidence of either thoracic or abdominal aneurysm was detected. She was discharged the end of October, 1919, feeling much better and looking very well.

In November, 1920—a year after her operation—she was admitted to a hospital outside London, complaining of vague pain in the right loin. On examination a large palpable right kidney was discovered. Her urine was normal and there was no history of hæmaturia, or vomiting, or polyuria. X ray examination was negative. Mr. P. Turner, surgeon to the hospital, saw her and decided that operation was necessary. She was operated on in December, 1920, and an abdominal incision was made. A tremendous amount of bleeding took place at the operation owing to the shortness of the pedicle and the slipping of a ligature. On cutting through the perirenal fat great difficulty was experienced in separating the kidney from its attachment. After freeing the kidney it was found to be swollen in its lower pole, and the outside of the kidney was coloured a deep bluish-black colour. The kidney was excised. On examining the kidney after its removal its lower pole was found to be uniformly distended and stained a black colour. On sectioning the lower pole a gelatinous black non-encapsulated mass was found to be replacing the kidney substance. A section for microscopical examination showed melanotic sarcoma. Unfortunately the woman died shortly after the operation, so that no post-mortem examination was possible to ascertain whether there were other deposits of melanotic sarcoma.

I am greatly indebted to Mr. Turner for his notes on the above case and his permission to publish it.

CASE 2.—C. B., a woman aged 44 years, was admitted to Guy's Hospital on Jan. 18th, 1903, under Dr. (now Sir) William Hale-White,[1] for pain in the back, right side, and right iliac region. Patient had been married for 20 years to a tuberculous husband and had had seven children, all of whom had died young, the cause of death in six being chest trouble and in the remaining one diphtheria. Just two years before admission patient had had an attack of severe pain in the sacral region extending to the right side. This passed off in a few days, but since then she has had numerous similar attacks at intervals varying from a week to two months. In November, 1902, patient "brought up" blood clots and fainted, but felt better afterwards.

The history of the present illness is as follows: On Jan. 10th patient had an attack of pain in her right side of such severity that she had to take to her bed. The pain subsequently extended to the sacrum and right iliac regions. Since the onset of pain there had been absolute constipation, neither flatus nor fæces being passed. Her bowels had always acted regularly until the first attack of pain, but these attacks were always associated with constipation. There had been one attack of vomiting a day or two before she was admitted.

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[1] Med. Reps., 1903, Hale-White, No. 35.

On admission patient was thin and cachectic. The abdomen was thin-walled and distended. Surface was irregular owing to protrusions of numerous coils of distended intestine. The abdomen moved well on respiration. There was visible peristalsis. On palpation the right iliac region was tender, and there was a marked resistance of the muscles on the right side of the abdomen. Occasionally it appeared possible to feel a firm mass in the right iliac region, but a minute or two later this would be impalpable. The abdomen was tympanitic on percussion. Patient also complained of a gnawing pain in the back, which was increased by movement. Various enemata and ol. ricini were given without result. Dr. Bryant and Mr. A. L. Dunn saw patient, and concluded that the diagnosis rested between appendicitis, chronic intussusception, and malignant disease of the cæcum and ascending colon. As the general condition was good it was decided that there should be a further period of observation before operation. For two days the condition remained unchanged in spite of further enemata and purgatives.

An operation was performed by Mr. Dunn on Jan. 18th, the abdomen being opened in the right semilunar line. The whole of the intestine, large and small, was examined, but no obstruction found. It was noticed that the lymphatics of the omentum was very distended with chyle. On the day following small doses of calomel were given hourly, followed by an enema, with a result that the bowels acted several times and the patient felt better. The improvement was maintained for several days, but on the 23rd, in the evening, the patient suddenly collapsed and, in spite of restoratives, died early in the morning of the 24th. At the post-mortem examination a ruptured abdominal aortic aneurysm was found. The sac, which was as large as an orange, was situated immediately below the diaphragm. The aneurysm had ruptured at its lower right-hand corner, the aperture being the size of a florin. There was extensive erosion of the last dorsal and the first two lumbar vertebræ. There was a very large amount of retroperitoneal hæmorrhage, blood being extravasated beneath the peritoneum over the whole of the right side and down into the right side of the pelvis.

Remarks.

The points of interest of the first case were:—1. Was the patient's eye removed for tuberculous trouble or was it a growth of the eye—e.g., melanotic sarcoma? I was unable to obtain any report on this subject, and had only the patient's statement for this. 2. Was the retroperitoneal hæmorrhage due to hæmorrhage in to an early growth in the right kidney with an extravasation into the retroperitoneal tissues? The right kidney at this operation was not reasonably palpable owing to the hæmorrhage. 3. At the second operation, a year after the first, the retroperitoneal hæmorrhage had been absorbed but had left adhesions around the right kidney, making the latter difficult to remove. 4. Was the melanotic sarcoma of the kidney secondary to the eye in spite of the strong tuberculous history obtained?

In the second case it is interesting to notice the following points:—1. The strong family history of tubercle. (*Cf.* the first case mentioned.) 2. The difficulty, as in the first case, in getting the patient's bowels to act; but, once opened, no further difficulty was experienced. 3. At operation, as in the first case, no cause was found to account for the visible peristalsis. 4. Both cases gave practically the same symptoms and signs clinically, and after death each had a different pathology.

THE LATE DR. THOMAS WATT.—After practising for 35 years at Paisley, where he was held in great esteem, Dr. Watt died on May 10th, aged 59. Originally intended for the teaching profession he graduated M.A. at Glasgow University in 1882, but afterwards took up the study of medicine, and in 1886 obtained the degrees of M.B., C.M., immediately entering upon general practice. In 1899, when there was a severe epidemic of enteric fever at Paisley, Dr. Watt took charge of the Infectious Diseases Hospital. Later he visited Germany, Denmark, and Holland in order to study milk-supply in connexion with tuberculosis, and on his return to Scotland was associated in a campaign to educate the public on the relation of milk in the prevention of consumption. At the time of his death he was senior visiting physician to Paisley Infirmary. He was also medical representative on the board of directors of the Royal Victoria Infirmary and medical officer to the post-office there. During the war he was actively associated with the work of the Red Cross.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF TROPICAL DISEASES AND PARASITOLOGY.

AT a meeting of this section of the Royal Society of Medicine on May 2nd, presided over by Surgeon Vice-Admiral Sir ROBERT HILL, a paper was read by Sir LEONARD ROGERS entitled—

The Mortality and Prognosis of Cholera Treated by the Author's Hypertonic Saline Method, based on 2000 Cases.

The hypertonic solution used was composed of 120 gr. of sodium chloride, 6 gr. of potassium chloride, and 4 gr. of calcium chloride to the pint of sterile water. It was administered intravenously, under strictest antiseptic precautions, at a temperature usually of 98–99° F. in amounts of one to two quarts according to the severity of the case, a period of at least 15 minutes being taken for the injection of one quart of fluid. That method of treatment introduced in 1908 to 1909 had proved a considerable advance on the use of rectal, subcutaneous, and intravenous injections of the normal isotonic salines formerly employed, and particularly so in association with the more recent administration of alkali and permanganate. A series of tables and diagrams providing a graphic record of the results of treatment by that means in the cholera wards of the Medical College Hospital at Calcutta, and of the various observations on patients suffering from the disease, together with the case-rate and mortality figures, were thrown on the screen and explained during the course of the lecture. An account was given of observations on the blood changes in cholera, including the blood pressure, specific gravity, the percentage of blood corpuscles obtained by the hæmocrite, and of the beneficial effect on the blood by means of hypertonic saline injections, which had materially improved the prognosis of cases. Indications for its use were failing pulse, blood pressure below 70 mm., and specific gravity over 1060.

Examples of the degrees of blood concentration and loss of fluid.—Taking the averages in seven fatal cases it was shown that the normal percentage ratio of the volume of blood corpuscles to serum being about 45 to 55, the percentage of corpuscles was increased to 71 and the percentage of serum reduced to 29, with a loss of fluid from the blood amounting to 64 per cent. In 12 cases recovering after transfusion the average percentage ratio of corpuscles to serum was 63 to 37 and the loss of fluid from the blood 52 per cent.; in five mild cases not transfused the average volume of corpuscles was 56 to 44 per cent. of serum and the loss of fluid 35 per cent.

Seasonal incidence.—Both before and after the introduction of the new treatment in 1908 the case-rates and death-rates tabulated month by month showed the highest mortality in the beginning of the year, and the tendency of the death-rate to fall steadily through the hot weather, attaining a minimum in the rainy season coincident with the greatest number of cases. The seasonal incidence was therefore of considerable importance, the case-rate being highest and the death-rate lowest during the rainy season.

Race and sex-incidence.—Statistics derived from the Calcutta Medical College Hospital, 1895 to 1905, had revealed no special susceptibility attaching to any one race. The Chinese, however, had proved much more resistant to the disease than Hindus. Males were attacked in greater numbers than females, probably owing to their more frequent exposure to infection. Although so pronounced a fall in the death-rate had been achieved by the new treatment, the relation of race and sex-incidence to mortality still showed no marked variation of either factor. (Table I.)

Among females exception occurred in the case of pregnancy, which considerably lessened the prospect of recovery from an attack of cholera, and therefore justified resort to premature delivery. The effect of the new treatment on the death-rate at various ages was remarkable. Under the old method of treatment in 1895 to 1905 the mortality among patients under 10 was 52·8 per cent., increasing as age advanced, to reach 73·7 per cent. among those over 50 years. With the use of hypertonic salines the reduction which had occurred in the death-rate of cases between the ages of 5 and 50 years was a very important feature, and for patients under the age of 10 it had fallen to 16·4 per cent. The influence of the duration of the disease previous to admission and treatment on the number of fatalities and cause of death was demonstrated by the striking fact that, if the attack had lasted 12 hours, collapse was the cause of death in 67·4 per cent. of fatal cases; and if admission had been delayed for 24 hours from the onset, death from uræmia occurred in 54·8 per cent.

TABLE I.

Race.	Percentage mortality.		Sex.	Percentage mortality.	
	1895–1905.	Under new treatment.		1895–1905.	Under new treatment.
Hindus	61·6	21·6	Males... ...	60·3	20·7
Mahomedans...	57·3	20·4	Females ...	60·3	19·9
Europeans ...	56·5	18·8			

The relationship of the specific gravity of the blood to the case mortality showed that the closer the blood approximated to the normal the lower was the death-rate—e.g., with a specific gravity of 1055 12·7 per cent. of cases proved fatal, but with a rise in specific gravity, 1067 to 1071, the death-rate was nearly doubled. It became evident that with specific gravity above normal more frequent saline transfusion was necessary, increasing in quantity from 1 litre if the specific gravity was 1062, to 2 litres if specific gravity rose to 1066. Study of the relation of blood pressure to cholera death-rate showed that with falling blood pressure the mortality increased, but the tendency to fall was counteracted by the treatment. In cases with blood pressure of 90 mm. or over the death-rate was 15·2 per cent., but rose to as high as 84·7 per cent. when the blood pressure fell below 70 mm. (Instances from Table I.). The effect of fall in blood pressure on the condition of collapse was also described, and examples showed that with a blood pressure of 90 mm. or over collapse occurred in 9·3 per cent. of cases, and in as many as 93·7 per cent. when the blood pressure fell to 70 mm. or under. It had been found essential to apply the treatment as soon as the blood pressure fell.

Low alkalinity of the blood in cholera.—Dr. Sellards, working in the Philippines, found that large doses of alkali could be given in cholera without increasing the alkalinity of the blood, and he had used injections of 2 per cent. sodium bicarbonate with success in overcoming anuria and relieving collapse. Colonel J. W. D. Megaw, who had seen Sellards' work, in 1911 gave injections of alkali with good effect in cases of choleraic uræmia. His own observations showed that reduction in the blood alkalinity of cholera patients was attended by an increase in the death-rate—e.g., with an alkalinity of N/45 the mortality was 12·5 per cent., if reduced to N/80–N/100 the death-rate rose to 27·3, and a still further fall in alkalinity below N/100 produced a mortality of 60 per cent. It was therefore apparent that a close relationship existed between falling blood pressure, a high specific gravity, low alkalinity of the blood and a high death-rate in cholera, and it was important that routine administration of alkalis should be carried out from the onset of the attack to avert fatal uræmia. The tabulated results showed that without alkali treatment the death-rate was 25·6 per cent., and in 11·1 per cent. the direct cause of death was uræmia, but under alkali treatment the mortality fell to 19·7 and uræmia provided only 3·95 per cent. of the deaths. Full details of four cases were quoted, showing the beneficial action of alkalis in increasing the flow of urine, raising the blood pressure, and reducing the high specific gravity of the blood, with the result that three out of the four cases recovered. Further particulars were given illustrating the relation of blood pressure and specific gravity of blood to the amount of urine secreted, and emphasis was again laid on the necessity for saline and alkali treatment in order to maintain the flow of urine. For the fall in urinary output coinciding with a low blood pressure of 75 to 80 mm. and a high specific gravity of the blood accentuated the dangerous association of blood concentration and arrested renal function, the combined result of the great drain on the tissue fluids caused by the frequent and excessive evacuation of the bowels.

The influence of the temperature on the death-rate in cholera was shown by records of rectal temperature and the corresponding case-mortality (Table II.).

TABLE II.

Temp. over.	Deaths per cent.	Temp. over.	Deaths per cent.
103° F.	5·2	95° to 96°	33·6
101°	9·1	95° and under	50·0

Owing to failing circulation and consequent increased heat loss from the body surface, it occasionally happened that axillary temperature readings were lower than the rectal.

Considerable interest attached to Table III., showing the relationship of the mortality rate to the number of hypertonic saline injections during the years 1912 to 1919.

TABLE III.

Year.	Death-rate per cent. of cholera cases.		Number of saline injections.			
			0–1	2–3	3–10	
1913 ...	24·5	Given in—	30·0	42·0	28·0	Per cent. of cases.
1915 ...	17·2		15·8	26·3	57·8	
1917 ...	14·6		20·0	16·7	63·3	
1919 ...	22·6		47·2	24·6	28·2	

Previous to 1918 the number of cases treated in hospital by the hypertonic saline method was about 200 in each year, but in 1918 this figure rose to over 300, and in 1919 to over 400. The table showed that for any given year the higher the percentage of cases receiving the larger number of injections the lower was the death-rate, particularly was this evident in the years 1915 and 1917. During 1918 and 1919 the number of cases requiring the treatment was so great that it was impossible in a large proportion of cases to administer more than one or two injections, consequently the case-mortality rose for those years.

The method of treatment by salines which had been employed during the last 25 years could be divided into periods as shown in Table IV.

TABLE IV.

Year.	Treatment.	Results in percentages.	
		Deaths.	Recoveries.
1895–1905.	Rectal and subcutaneous salines.	59·0	41·0
1906.	Normal salines intravenously.	52·0	48·0
1907.	Rectal and subcutaneous salines.	59·5	40·5
1908–1909.	Hypertonic intravenous salines.	32·6	67·4
1909–1914.	Hypertonics plus permanganates.	25·9	74·1

In subsequent years, by the addition of alkalis to the improved treatment already developed by the use of hypertonic saline and permanganates, there had resulted a still further reduction in the death-rate to 19·1 per cent. for 1915–1917.

Discussion.

Surgeon-Rear-Admiral P. W. BASSETT-SMITH said that Sir Leonard Rogers's work on cholera supplied the best example he knew of the value of the application of scientific methods of deduction to the securing of successful treatment. The large number of statistics given had rendered possible the drawing of conclusions from the results, for it was important to have figures over a range of years. He himself had had no personal experience of the use of hypertonic salines, but he recalled in his early days in China the success attending the use of isotonic saline injections by Dr. Jameson in Shanghai, which established that means as the correct line of treatment in cholera, in order to replace the loss of tissue fluids, to encourage the secretion of urine, and to counteract uræmia.

Dr. P. H. MANSON-BAHR stated that opportunities of treating cholera in Egypt during the war had been few owing to the small number of cases which had occurred. He regarded the pathology of collapse as likely to be much the same in bacillary dysentery as in cholera, and to call for the same treatment. Although Sir Leonard Rogers's apparatus and outfit for dealing with cholera had been available, official sanction for its application in cases of dysentery was refused because the patients were not suffering from cholera!

Dr. W. BROUGHTON-ALCOCK had had opportunity of applying the hypertonic saline treatment with benefit in cases of bacillary dysentery, following the line of observation of the specific gravity of the blood. He had found the method of considerable help in cases of extreme collapse due to Shiga dysentery. He asked Sir Leonard Rogers how it was possible to diagnose mild cases of cholera quickly, for rice-water stools did not occur as often as he would have expected in mild cholera.

Sir LEONARD ROGERS, in his reply, referred to the successful use of isotonic or normal salines in China, and the fact that the Chinese were more resistant and responded better to the injections than did the Hindus. Failures in the past attending the use of salines by Dr. A. J. Wall in India had been due to the fact that he had employed not isotonic but hypotonic salines of 0·6 per cent. chlorides or 0·2 per cent. chlorides and 0·4 per cent. bicarbonate, instead of the 0·9 or 0·85 per cent. chloride of the normal isotonic saline. Bacillary dysentery responded well to hypertonic saline injections, together with rectal wash of permanganate. Saline treatment, especially if the solution was above normal, was of great value also in blackwater fever. For the diagnosis of mild cases he said that Colonel Greig relied on cultures grown on Dieudonné's media and then testing for agglutination with various strains of anticholera serum. Cholera tended to appear in cycles, one year of high being followed by another of low prevalence. The larger the number of cases the lower was the mortality, and the milder cases occurred towards the end of an epidemic.

The Ankylostomiasis Campaign in Egypt, 1913–1915.

A paper on this subject by Dr. A. F. MACCALLAN was read, in the absence of the author, by Dr. W. T. PROUT, honorary secretary of the section. As the result of reports on the prevalence of ankylostomiasis in middle Egypt by Sir David Semple and Dr. Graham, Lord Kitchener in 1913 instructed Dr. MacCallan to organise a campaign to investigate and deal with the disease, which was widespread in country districts and native villages. The sum of £E.12,000 was available for the campaign and this was directed to the erection of tent hospitals of 50 beds in the various villages, and travelling dispensaries to reach the more remote parts. Efforts were also made to improve the sanitary conditions, or rather to introduce sanitation in places where it did not exist, for the proper disposal of excreta, and to erect brick latrines. Under his direction a survey of the provinces of Shargui and Assiut was made by the late Dr. Stimner and Dr. Kennedy. The two provinces were divided into several areas, each of which was visited in turn by the travelling hospitals and mobile laboratories. Under the supervision of the two medical officers systematic examinations of the blood and stools of large numbers of the male natives were carried out by trained assistants. The stools in each case were submitted to washing and centrifugation, and at least ten minutes was devoted to the microscopical examination of the deposit for the parasitic ova before a negative report was returned. As the result of these investigations it was estimated that in Shargui province, with a population of 620,000, the incidence of ankylostomiasis infection among males amounted to 56 per cent., and in Assiut province, with a population of some 450,000, the incidence was about 46 per cent. It was only possible to examine about 1 per cent. of the population, and owing to the difficulty of obtaining specimens from female natives the examinations were perforce restricted to males. Through the agency of the travelling hospitals and dispensaries treatment by thymol was carried out with considerable success, the results amounting to over 70 per cent. of cures among patients treated. Valuable information was also obtained in the course of the surveys as to pellagra and bilharzia. Owing to the interference of the war the special campaign against ankylostome infection was necessarily suspended in 1915 and much then remained to be done to cope with the problem in the affected areas.

Based on what had already been accomplished, the need for the following preventive measures was advocated by Dr. MacCallan: (1) Recognition and obliteration of the habitat of the ankylostome larvæ; (2) introduction of proper sanitary measures in the villages and provision of a suitable pail system for the disposal of excreta; (3) erection of shelters in the villages for the treatment of infected natives; (4) treatment on scientific lines of cases of anæmia in the country districts; (5) research investigations as to the nature and action of the toxins of *Ankylostoma duodenale*.

Discussion.

Sir ROBERT HILL much regretted that Dr. MacCallan had been prevented from attending the meeting to deliver his paper.

Dr. J. B. CHRISTOPHERSON stated that the problem of ankylostomiasis in Egypt opened up a large field for investigation and treatment. From his own experience there he emphasised the need for peripatetic hospitals among the villages to deal with the three principal plagues of Egypt—namely, ankylostomiasis, bilharziasis, and *Tænia nana* infection—which were diseases of the agricultural rather than the urban districts. The Egyptian native was very amenable to treatment and ready to avail himself of it when brought to him by the travelling hospital, but he was unwilling to go out of his way to obtain necessary relief.

SECTION OF LARYNGOLOGY.

EXHIBITION OF CASES AND SPECIMENS.

A MEETING of this section of the Royal Society of Medicine was held on May 6th, Dr. W. JOBSON HORNE presiding.

Abduction Paralysis in Exophthalmic Goitre.

Mr. T. B. LAYTON showed a middle-aged woman, the subject of Bilateral Abduction Paralysis associated with Exophthalmic Goitre. For the goitre she had been under observation and treatment since 1895. She had diphtheria in 1887, and she still continued to have attacks of sore-throat.—Sir JAMES DUNDAS-GRANT suggested that the symptoms may have been due to pressure exerted by the enlarged thyroid gland on the sympathetic nerve.—The PRESIDENT said that surgical interference was usually blamed for such paralyses when there had been an operation for the condition, but in this case there had been no surgery. He agreed with Mr. E. D. DAVIS and Sir WILLIAM MILLIGAN in the rarity of such paralysis in exophthalmic goitre.

Suppurative Sequelæ of Scarlet Fever.

Mr. LAYTON and Mr. J. F. O'MALLEY showed cases of this kind. Mr. Layton's case was one of frontal sinusitis in a child, aged 12, which came on in the course of scarlet fever. There was a subperiosteal abscess. The bone beneath was healthy, but a track led down to the front of the inner wall of the orbit, where the pus had escaped from the ethmoid cells through the lacrymal bone. The frontal sinus was full. An ugly scar resulted. Mr. O'Malley's case was one of bilateral subperiosteal suppuration of the orbit, due to ethmoidal suppuration, which had supervened during the scarlet fever. His operation of drainage of the ethmoidal region caused the swelling to subside, but did not quite eradicate the ethmoidal disease.—Sir WILLIAM MILLIGAN related a case which had had a number of operations done on the continent unsuccessfully, leaving gross disfigurement. After his own successful operation he greatly reduced the deformity by means of a pure gold plate, which was found by X rays to be still in situ more than 12 years subsequently.

Tumour of Pharynx.

Mr. W. H. KELSON showed a young man with a Tumour in the Pharynx. He had been operated on for enlarged tonsils and adenoids, and had had treatment for antral, ethmoidal, sphenoidal, and frontal suppuration.—Other cases were also shown.

Reviews and Notices of Books.

A PHYSICAL INTERPRETATION OF SHOCK, EXHAUSTION, AND RESTORATION.

By GEORGE W. CRILE, M.D. Edited by AMY F. ROWLAND, B.S. London: Henry Frowde and Hodder and Stoughton. (Oxford Medical Publications.) 1921. Pp. 232. 25*s*.

IN this work Dr. Crile has collected the evidence concerning shock accumulated during the last few years by himself and his fellow workers. He attempts to show that the degree of shock is proportional to the extent and duration of injury and to the richness of the nerve-supply in the injured part; that regional nerve-blocking or cocainisation of the bulb and spinal cord is effective in preventing its onset; that "trauma alone or sufficient strychnine alone causes exhaustion of the vaso-motor centre" after producing preliminary stimulation; and that this stimulation does not occur in the unshocked animal if the bulb and cord are anæsthetised with cocaine. Dr. Crile puts forward the evidence of changes in the brain cells, through a hyperchromatic stage to final disintegration, which result from trauma, but which, he says, do not occur "if the trauma is limited to territories disconnected from the brain by section of the spinal cord or by local anæsthesia." He again places on record his observations with Dr. Dolley on "Anæmia and Resuscitation," and notes the important fact that the brain-cell changes are "in certain respects identical with those in shock." The minute morbid anatomy of the brain, liver, and adrenals in experimental insomnia is described, together with the restorative effects of sleep, morphia, and nitrous oxide anæsthesia. According to Dr. Crile, similar changes occur in these organs after severe exertion, emotion, infection, hæmorrhage, starvation, asphyxia, chloroform, and ether anæsthesia, electrical stimulation, the administration of adrenalin, excessive thyroid feeding, and finally after the excision of the adrenals, thyroid, or liver. Changes in H-concentration and reserve alkalinity in these conditions are briefly mentioned, and, lastly, the results of certain observations of the electric conductivity of the brain, liver, and other organs are given.

This mass of evidence requires extremely careful and critical study, and it is unfortunate that the form in which it is put forward does not lend itself to such inquiry. For instance, Fig. 57, on p. 68, is supposed to demonstrate increase in the output of adrenalin due to the presence of foreign protein, whereas the only inference that can legitimately be drawn from the data presented is that the blood of the pregnant cat sometimes contains a demonstrable amount of adrenalin. Again, Fig. 58, on p. 69, is a tracing intended to show the effect of anaphylaxis in causing increased output of adrenalin and the influence of morphia in preventing such change. The legend refers to "the injection into a morphinised animal of beef serum, which in the normal animal would have caused a strong anaphylactic reaction." There is no reference to any previous sensitising injection, and, on the face of it, it appears that the author regards the effect of a single injection of foreign protein as equivalent to an anaphylactic reaction. Some of Dr. Crile's passing comments are also disquieting. On p. 70, for example, he says:—

> "In cases of suboxidation and asphyxia the outstanding phenomena are diminished voluntary muscular activity and diminished mental activity. In contrast, however, there is increased respiratory activity. If our explanation of these phenomena is that they are due only to the want of oxygen, then why is not the activity of the respiratory system diminished for the same reason?"

Dr. Crile seems for the moment to have forgotten the important part played by increased partial pressure of CO_2, and by changes in H-concentration, in the regulation of the respiratory centre, also that anoxæmia is not the sole factor in asphyxia. Finally, we cannot admit the validity, even as collateral evidence, of the observations made on the electrical conductivity of presumably dead tissues, in the investigation of the functional changes of living cells.

In his discussion of the ætiology of shock and exhaustion the author describes various theories put forward. He ignores the work of the Special Investigation Committee on Shock and Allied Conditions, set up by the Medical Research Council,[1] and dismisses in a few words the evidence that in shock the effective blood volume is diminished by the collection of blood in widely dilated capillaries, which are not, as far as we know, directly under the control of the central nervous system. The brain-cell changes which he describes may equally well result secondarily from anæmia. In his attempt to demonstrate the preponderating importance of a primary assault on the central nervous system in shock, Dr. Crile brings forward a great deal of evidence, some of which is highly dubious—for example, the work of Alexander and Cserna[2] on the oxygen consumption of the brain. He regards the anæsthetic action of nitrous oxide as being wholly dependent on its interference with the use of oxygen by the brain cells, and has apparently overlooked G. T. Kemp's[3] work in this regard. He refers, on p. 119, to the fact that "the brain cells have no basal metabolism except that of energy transformation, associated with work," but on the previous page he states, on the authority of Mathews, that "sugar is burned in the brain." Whether this occurs only during consciousness he does not say. It is, however, in his presentation of an "electro-chemical" hypothesis as to the method of exhaustion that Dr. Crile departs furthest from the fundamental data of physiology. His assumption that the brain cells are electric batteries and the nervous impulse neither more nor less than an electric current is untenable and can only lead to confusion.

The book contains so much interesting material that it is a matter of regret that Dr. Crile did not give more experimental details in order to permit of intelligent comment and criticism, instead of complicating this difficult subject by the presentation of hypotheses impossible to verify. The volume is excellently printed and the illustrations are satisfactory, though some of the blood-pressure tracings would be easier to analyse if the writing upon them were not too small to be decipherable without the aid of a hand-lens. A useful bibliography is appended.

CATALYSIS AND ITS INDUSTRIAL APPLICATIONS.

By E. JOBLING, M.C., A.R.C.Sc., B.Sc. London: J. and A. Churchill. 1920. Pp. 144. 7*s*. 6*d*.

THIS volume is the second edition of one of a series of text-books on Chemical Research and Engineering, edited by Mr. W. P. Dreaper. Berzelius, as long ago as 1835, defined as "catalytic" the phenomenon that many chemical reactions which proceed slowly may be accelerated by the introduction of some foreign material. Since that time great and important advances have been made in chemical industry by means of catalytic agencies. The literature on the subject is voluminous, and Mr. Jobling has rendered a service to chemists in preparing this volume, for it will appeal both to the student and to those who desire a readable account of the technical applications of catalysis. The chapters on sulphuric acid manufacture, industrial chlorine, and fixation of atmospheric nitrogen are of particular interest, as is also the one dealing with the most recent offspring of catalysis—viz., the hydrogenation of fats.

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[1] THE LANCET, 1919, ii., 159, 1153.

[2] Alexander and Cserna: Bioch. Zs., 53, 100–115.

[3] G. T. Kemp: Brit. Med. Jour., 1897, ii., p. 1480.

The style of writing is lucid. A useful feature is a list of references, including patents and bibliography, at the end of each chapter.

DISEASES OF THE STOMACH.

Diagnostik und Therapie der Magenkrankheiten. Seventh edition. Von Professor Dr. I. BOAS. Leipsic: G. Thieme. 1920. Pp. 671. M.138.5.

To any who are not familiar with Professor Boas's name as a European authority upon diseases of the alimentary canal the fact that this volume is the seventh edition of a work which first appeared 30 years ago is evidence enough of the lifelong interest and experience of the author in that province of medicine. Much progress has been made in 30 years; indeed, the student of human nutrition who has followed his subject over that period has known intellectual adventures of rare quality. He has seen the principle of the conservation of energy applied to man; has watched chemical, physical, and surgical methods transform the study of abdominal disease from a morass of inaccurate generalities to a cultured field of medical science; he has seen, most unexpected of all, the gigantic experiment of the rationing of nations; and, lastly, has looked upon the spectacle of the under-nutrition of half a continent. Most changes have their drawbacks, even changes for the better; and the disadvantage of the application of chemistry, physics, and surgery to the diagnosis and treatment of disease is that the doctor is sometimes apt to allow the test, or the photograph, or the operation to take the place, in whole or in part, of that careful study of the history, symptoms, and signs which was, is, and must be the basis of his work. Professor Boas's book will counteract any such tendency. It is full of clear common sense as well as accurate knowledge of clinical medicine and laboratory work.

The first part treats of general methods of investigation. A good account is given of the tender points which the author has described near the spine in diseases of the stomach and gall-bladder. Tenderness on deep pressure to the left of the spine between the tenth dorsal and first lumbar vertebræ, usually opposite the twelfth dorsal, suggests gastric ulcer. With pyloric and duodenal ulcers there may be a tender spot to the right of the spine. With gall-stones the tender point is two or three fingers' breadth to the right of the twelfth dorsal vertebra and may be as far out as the posterior axillary line; it may persist for weeks or months after an attack of biliary colic. The difficulty of not knowing how hard to press is got over by the use of the algesimeter, which records the pressure against a spring. A normal man bears 5 to 10 kilogrammes with this little instrument, whereas tenderness is elicited at the pressure point in a case of gastric ulcer with 3 kilos. The description of chemical methods is excellent, but that of X rays is inadequate. It is clear that, though the author makes use of X rays and shows some plates, he has not had the advantage of close coöperation with a good radiologist. For example, 2½ pages are devoted to methods of blowing up the stomach with air or other gas, 15 pages to dietetic methods of determining the motor power, and only 5 to the general description of the use of X rays; although the barium meal offers the quickest, safest, and most informing way of finding out the shape and motor power of the stomach. In the account of the various forms of gastroscope, coloured pictures are given of the appearance of the gastric mucous membrane. The author does not think that the last has been heard of this instrument, although radiology has put it in the background for the time. He agrees with most workers that the limits of gastric acidity in normal people are fairly wide, 0·15 per cent. to 0·2 per cent., also that a high figure may be obtained in those who have no symptoms, especially in heavy smokers and people who consume much meat and condiments.

The second part of the book is devoted to general methods of treatment. Of these diet occupies much space, the teaching being substantially that of the author's Special Dietetics, recently reviewed in these columns. Of other methods of treatment described baths, massage, electricity, poultices, stomach washing, and medicines are all dealt with systematically.

The last part, dealing with special diseases, contains much interesting matter. The importance of diagnosing achylia or subacidity, the symptoms of which are sometimes misleading, is referred to. 16 per cent. of 3147 chronic dyspeptics were found by Kelling to be suffering from this disorder. Such figures, however, must not receive too much attention, for an up-to-date X ray examination or an exploration would probably have shown that some of these were not the subjects of simple achylia. In writing of hyperchlorhydria, the view is put forward that some cases with symptoms but without ulceration are suffering from small erosions. The author notes that treatment commonly leads to disappearance of symptoms, although the hyperacidity as shown by test meals is unaffected. This is in complete accord with the best experience; we should look upon the presence of hyperchlorhydria as a valuable guide to treatment rather than as a condition which can be altered in a short time. Professor Boas would exclude salt from the diet, but regards the measure as of temporary benefit only. Sodium bicarbonate has been found to lessen secretion when given in small doses on an empty stomach, though, when given with food, secretion is increased, probably because of the production of sodium chloride and carbon dioxide. He is, on these grounds, against the taking of bicarbonate at the height of secretion, saying, however, that it may be useful during the healing of an ulcer. Alkali should, as a rule, be taken in small doses before food, though he does not think that it can systematically diminish the secretion of HCl. The form recommended is a mixture of bicarbonate of soda and magnesia, with reduction of salt in the food. He is doubtful about atropin, but recommends Merck's magnesium perhydrol in ½-g. doses, which in the acid stomach forms magnesium chloride and peroxide of hydrogen, the latter decomposing to water and oxygen. In gastric ulcer a distinction is drawn between the treatment of a simple ulcer and of the general liability to ulceration, the "ulcer disease." The treatment of the latter must be over a long period, and is needed whether the simple ulcer is operated upon or not. In about half the cases medical treatment does not lead to a permanent cure. It should always be tried first, except in patients who cannot afford the necessary time or money, or who cannot get suitable diet. Gastro-enterostomy is recommended for pyloric ulcer, and resection, if the technical difficulties are not too great, for ulcer of the body of the stomach. The author says occult blood is commonly present after gastro-enterostomy.

The X ray diagnosis of cancer of the stomach is inadequately described; for example, the characteristic rapid emptying with a gaping pylorus in cancer of the body is not mentioned. In the chapter on gastrocoloptosis the relation of this condition to a general asthenia is given prominence, and wise and sound rules are laid down for treatment. The author does not recommend operation by stitching up the stomach or the bowel—first, because in nearly all cases suitable treatment by appropriate feeding, rest, massage, &c., leads to relief; and, secondly, because dropping of these organs is, as above mentioned, frequently part of a general condition which operation does not benefit. Even after stitching is done the same general treatment has to be carried out for the same length of time as if the operation had not been done, if a good result is to be secured. The diagnosis and treatment of numerous forms of gastric neurosis are described carefully, a useful classification being adopted into neuroses with one symptom—such as anorexia, nausea, pain, rumination, excessive peristalsis—and neuroses with more than one symptom.

This book is written from a broad and sensible standpoint and contains an unusual amount of close observation and wise advice. The author refers to several French authors, but appears to be almost unacquainted with contemporary British and American work, a neglect which may be due in whole or part to the inaccessibility of foreign books.

Gynæcological and Obstetrical Tuberculosis.

Gynæcological and Obstetrical Monographs. By Charles C. Norris, M.D., Associate in Gynæcology, University of Pennsylvania Medical School, &c. London and New York: D. Appleton and Co. 1921. Pp. 356. 21*s*.

Dr. Norris believes that tuberculosis of the female genital tract and peritoneum is of frequent occurrence, but that it is usually secondary to tuberculosis elsewhere. After a short historical sketch he considers the diagnosis by laboratory methods, and concludes that histological examination is usually sufficient, but that in doubtful cases animal inoculation should be carried out. A chapter is then devoted to the pathology of the chief forms of tuberculosis in the various parts of the genital tract, followed by a very interesting survey of congenital and placental tuberculosis. The conclusion is come to that these are very rare conditions, and that, for a congenital hæmogenic infection to occur, a maternal bacillæmia and a permeability of the placenta must be present. The disease is believed to arise in four ways: (1) by direct infection through the blood stream, (2) by direct infection from without, (3) by extension of a near-by focus, or (4) by a lymphatic infection. Tuberculosis affecting the various parts of the genital tract is considered in detail, and a large number of useful case-histories from the literature and from Dr. Norris's own experience are given. There is an instructive chapter on the important subject of pregnancy and tuberculosis. The writer maintains that in the presence of an extensive lesion, even in the quiescent stage prior to the fifth month of pregnancy, the uterus should be emptied. After the fifth month, however, little can be accomplished other than general hygienic and dietary treatment. As a general rule it is best to hasten the labour by applying forceps when the cervix is fully dilated.

The final chapters deal with the menstrual disturbances in pulmonary tuberculosis, the dangers of operations in this disease, tuberculous disease of the breast, and tuberculosis of the peritoneum. An analysis of 2356 cases of the latter condition treated surgically show some 31 per cent. permanently cured, 30 per cent. definitely improved, and 36 per cent. with recurrence, the development of tubercle elsewhere, or death from intercurrent disease. The book is a valuable contribution to the literature of this important subject.

Margarine.

Monographs of Industrial Chemistry. By William Clayton. London: Longmans, Green, and Co. 1920. Pp. 187. 14*s*.

In this volume the author has given a clear account of the modern processes involved in the manufacture of margarine. The methods of analysing the finished product and its constituents and the chemical properties of these are described, and butter, renovated butter, and lard compounds are also dealt with. A chapter on nutritional chemistry will doubtless be perused with considerable interest by our readers, as in it the results the investigations on vitamins so far as they affect ter and its substitutes are discussed. Butter pre-inently is the source of the essential "fat-soluble vitamin. The oleomargarines, containing 50 per cent. of beef fats, are good substitutes for butter, and their value in this respect is improved by admixture with butter itself to the legal limit of 10 per cent. Most oleomargarines contain lard, which is known to be devoid of "fat-soluble A," and it follows, therefore, that the animal fat portion of an oleomargarine should not contain lard. Vegetable oils and fats, and hydrogenated oils are lacking in this vitamin, so that the "vegetable" or "nuts and milk" margarines are not substitutes for butter from the true dietary point of view.

The author has rendered a service to technology in preparing this volume. Margarine has come to stay and its cheapness and ease of manufacture render it a formidable rival to butter. The product is capable of considerable improvement, particularly in the matter of texture and flavour, but in view of the great amount of technical investigation, which, to judge from this volume, is being directed to these points, there is every hope that margarine in the near future will be indistinguishable by the palate from butter. Mr. Wilson has included a number of good illustrations and a useful bibliography.

The Things which are Seen.

A Revaluation of the Visual Arts. By A. Trystan Edwards, M.A. London; Philip Allan and Co. 1921. Pp. 354. 18*s*.

This is a very interesting book, and one which gives occasion for much thinking, even though we may not always agree with the author's ideas. He deals, as is clear from the title, only with the *visual* arts, music and literature being excluded. He arranges the visual arts in the following order: first, the cultivation of human beauty; second, the art of manners; third, the art of dress; fourth, architecture; and fifth and sixth, the minor arts of painting and sculpture. This order, though it may give offence, he admits, "to many who are accustomed to arrogate to themselves the title of artists, can be shown to be in complete accord with the judgment of mankind, with that mature judgment which best finds its reflection in the opinions of the average man." The reader will ask himself who is the average man intended in the quotation, and Mr. Edwards does not tell us definitely. But he makes obvious who he is not: he is not the representative of public opinion. We endorse this view that the real preferences of the vast majority of people are shown, not by what they say or are taught to say, but by what they do; whence it follows that, by examining the deeds which men perform and the conventions established among them, we can obtain a more accurate idea of our fellow-men than can be obtained from any attention to the expressions of sentiment heard on all sides. Mr. Edwards's thesis is that the value of the arts is in direct relation to their benefit to society, and he places the cultivation of human beauty in the first place, because a high general standard of beauty will not be achieved unless the social virtues are practised.

In a general review in the first portion of the book Mr. Edwards refers to his omission of literature and music, and with regard to the latter art makes a statement with which we cannot agree: "Rhythm and melody can never give complete satisfaction to the average man unless they are brought into direct relation with human life by being associated with a song or a dance, a theatrical or operatic display, or some form of ceremonial." We own that it is difficult for any one of us to say what may completely satisfy his neighbour, but we have seen a packed audience standing in the area of Queen's Hall on a hot August night listening with delight to Bach's concerto for two pianos in C major, and demanding the repetition of the brilliant fugue with which the work concludes; the performance did not come under any of the heads mentioned by Mr. Edwards. Such artistic triumph can have no relation to successful effort; and as the art of music was definitely left out of the scope of the work, it might have been better not to drag it in with any comment.

The second part of the book deals with form and subject and the grammar of design, the latter involving number, punctuation, and inflection; and this section will be found by many of our readers the most interesting part of the work. Mr. Edwards's remarks upon duality and plurality will make many persons realise what they have probably not realised—namely, that where pairs exist in the human body the duality has been resolved—e.g., the two hands are really each of them one-half of unity. Humpty Dumpty discoursed to Alice about her face, saying, "Your face is the same as everybody has—the two eyes so (marking their place in the air with his thumb), nose in the middle, mouth under. It's always the same. Now if you had the eyes on the same side of the nose, for instance, or the mouth at the top—that would be some help." "It wouldn't look nice," Alice objected, but Humpty Dumpty merely shut his eyes and said, "Wait till you've tried." Few of us could say offhand why it would not look nice, but having read Mr. Edwards's book we know that such an arrangement would violate the canons of number, punctuation, and inflection.

Mr. Edwards shows less than his usual acumen when he refers to "doctrinaires, according to whose view it is wrong to adopt in England the architectural forms indigenous to ancient Greece or Rome," who "show the same kind of affectation as do those literary purists who go out of their way to avoid all words of Latin origin." To our mind, the architectural forms of Greece and Rome are unsuitable for England on account of climatic differences. Windows are a monstrosity in a classical building, and so is a high-pitched roof, both of which are necessary in a northern climate. It is just as bad to transport northern architecture to a southern climate, as may be learned in Seville Cathedral.

Although we cannot always see eye to eye with Mr. Edwards, we have found his book capital reading. It is well written, widely informed, and often original in a stimulating and pleasing way. Those who study it will find their personal powers of observation quickened and their desire to see things correctly made more keen. In many directions the book will be of particular interest to medical men.

SYPHILIS AND VENEREAL DISEASES.

Fourth edition. By C. F. MARSHALL, M.D., and E. G. FFRENCH, M.D. London: Baillière, Tindall, and Cox. 1921. Pp. 434. 25s.

THIS fourth edition has been revised throughout and a considerable amount of new matter added. The result is a valuable book, for not only does it contain excellent descriptions of venereal diseases and the routine methods of their treatment, but the teaching is practical and should help the practitioner to deal with all the stages of the diseases and their complications. Special emphasis is laid on the necessity of a clinical diagnosis as opposed to a pathological one; the tendency to rely on the pathologist in these days is great, and it is refreshing to find responsible writers who urge the medical man in charge of a case to begin by using his own powers of observation. The pathology, however, is not neglected.

The authors hold, and we agree with them, that a case of syphilis should not be submitted to a routine treatment, but that more attention should be paid to each individual, whose temperament, amongst other things, requires to be fully studied. A long course of mercurial treatment is strongly advocated; reliance on the arsenical preparations has been carried too far. The advantages and disadvantages of the various methods of treatment are fully discussed. The desirability of using potassium iodide in preference to any of its substitutes is emphasised; at the present stage of our knowledge there can be little doubt as to the wisdom of this advice. In common with most syphilologists the authors believe that the harmful effects of salvarsan have been much exaggerated. They attribute the ill-effects to the improper surroundings of the patients, and especially to a cold atmosphere; but as in most large clinics salvarsan treatment is used on out-patients at all times of the year, while the cases of poisoning are not numerous, we do not find this idea quite probable. Intramine is found to be a useful drug in the treatment of salvarsan poisoning.

Congenital syphilis receives adequate consideration; the diagnosis and treatment of gonorrhœa in all its stages are thoughtfully set out, but the tests for establishing the fact of cure are not very clearly described and might in future editions be elaborated. This book is deservedly popular. It is well got up and the illustrations are adequate.

ESSENTIALS OF MEDICAL ELECTRICITY.

Fifth edition. By ELKIN P. CUMBERBATCH, M.A., B.M., B.Ch. Oxon., M.R.C.P., Medical Officer i/c of the Electrical Department, St. Bartholomew's Hospital, &c. London: Henry Kimpton and Co. 1921. Pp. 388. 10s. 6d.

WE welcome a new edition of Dr. Cumberbatch's excellent book on medical electricity. Since its modest beginning in 1905, when the whole subject was in a state of flux, each succeeding edition of this work has steadily progressed in value. During this period the theory and practice of electrical work in medicine have undergone modifications, to an extent appreciable when we compare the present edition of Dr. Cumberbatch's treatise with the first edition—indeed, the development of medical electricity can be traced through the series.

This last volume differs in no essential particular from those that have gone before. The necessary additions have been made. Treatment of deep-lying organs has been reconsidered in view of the growing belief that it is not possible to introduce ions far below the surface by the galvanic current. It is far more probable that the good effects of such applications are due to a shifting of the ions within the tissues than to any introduced from without. Reference is made to the use of slowly varying currents, including the variety known as three-phase, where the variations between three electrodes follow a regular progression. The author's valuable work on diathermy is here brought up to date, with the addition of notes on the treatment of gonococcal infection by raising the temperature of the affected parts.

The book in its present form remains a handy and safe guide to the medical application of electric current.

DIE CHIRURGIE DER PERIPHEREN NERVENVERLETZUNGEN.

Mit besonderer Berücksichtigung der Kriegs-Nervenverletzungen. Von Privatdozent Dr. WALTER LEHMANN. Berlin: Urban and Schwarzenberg. 1921. Pp. 270. M.81.

THIS monograph combines the author's own experience of injuries of the peripheral nerves during the war, with a critical review of the methods and results of other surgeons in Germany. In size it is comparable with Tinel's well-known "Les Blessures des Nerves," but, as is natural in a work written after rather than at the beginning of the war, it devotes a larger space to treatment and results than to clinical syndromes. The book contains three parts, which are divided into 11 sections and 38 chapters. The first part deals with the pathological and clinical sides of nerve injuries, the second with prognosis, treatment, and results, and the third with ætiology, symptoms, and treatment of injuries to special nerves. A list of 660 references arranged under the number of the chapter to which they belong occupies 30 pages at the end of the book. The literature quoted is almost entirely German, only nine foreign contributions being included. Although 319 of the papers referred to were written during the war, no reference is made to any foreign journal later than 1910.

On the whole, the problems of this chapter of war surgery seem to have been dealt with on the same lines as in this country, and with very similar results. In the section on Prognosis and Treatment of Nerve Injuries and their Results a chapter is devoted to the various materials and methods used for protecting nerves suture or freeing. Calf's artery, prepared by the formalin method of Foramitti, is spoken of favourably, and seems to have been widely used in Germany. One section is devoted to the operative methods for bridging large gaps in nerves and their results. Gradual lengthening and suture by means of a two-stage operation is praised, but no ultimate results are quoted. As in this country, there have been only a few successful end results from nerve grafting and similar procedures. An extraordinary implement called a nerve winder, designed by Bethe, for gradually stretching a nerve is depicted on p. 130; the obvious defects of this apparatus are pointed out by Dr. Lehmann.

This work does little to advance our knowledge, but should nevertheless be read by those who wish to know what has been done in Germany in this branch of surgery during the war.

INTRODUCTION TO PHYSICAL CHEMISTRY.

Einführung in die Physikalische Chemie für Biochemiker, Mediziner, Pharmazeuten und Naturwissenschaftler. Von Dr. WALTHER DIETRICH. Berlin: Julius Springer. 1921. Mit 6 Abbildungen. Pp. vi. + 106. M.20.

IN this volume the subjects of osmosis, dissociation, equilibrium, hydrogen-ion concentration, surface phenomena, and colloids are discussed in a very elementary fashion, evidently as introductory to a fuller study at a later date in the student's course. The subject-matter is usually adequately treated in our text-books of physiology and biochemistry, and medical students at least will hardly need another account. The chapter on hydrogen-ion concentration may, however, be of assistance, for students generally find it difficult to get a clear understanding of this very important part in the life processes. The chapter on surface phenomena may also be read with advantage. Otherwise we may say that the description of osmosis is far too long and of colloids far too short.

CHEMISTRY OF ENZYME ACTIONS.

By K. GEORGE FALK, Harriman Research Laboratory, Roosevelt Hospital, New York. American Chemical Society Monograph Series. New York: Chemical Catalog Company, Inc. 1921. Pp. 136.

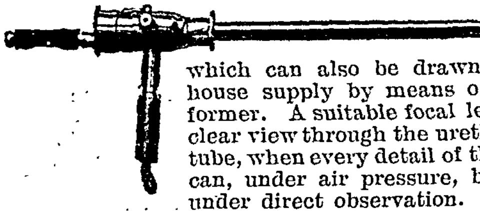
IN this monograph the author discusses enzyme action from a chemical rather than the more usual physical standpoint. As enzymes are catalysts produced by living matter, they should, of course, be studied from both aspects. Special emphasis is laid upon the chemical nature of enzymes themselves. The purest preparations have always been found to contain nitrogen: most enzyme preparations contain about 15 per cent. of nitrogen, but sucrase is an exception in its content of about 2 per cent. only. Horse radish peroxidase appears to be a nitrogenous glucoside. Even though we cannot as yet locate enzymes amongst a definite group of organic compounds, an idea may perhaps be gained of the chemical structure of that part of their molecule which is effective in producing the catalytic action. In this connexion special study has been made of the action of lipase, and we can locate its action in the $CO-NH$ grouping of proteins and its tautomeric form of $C(OH)=N-$. The chief factor in enzyme action is adsorption with the substrate or products of the reaction. Instead of adsorption being a purely physical process, the author regards it as being primarily a chemical one, corresponding to the addition process of general chemistry. Combination only occurs if the chemical groups can interact to form the adsorption compound.

These are the chief points in the book, though other chemical analogies are mentioned as of some possible importance. They might with advantage have been veloped at greater length, and less space devoted to e pure physical chemistry. The long preamble to ery chapter with constant repetition of contents of evious chapters is quite unnecessary.

New Inventions.

THE G.P. URETHRAL AURORASCOPE.

THE instrument here illustrated is not original, as similar instruments in the main are fairly well known to specialists. The head of the instrument contains an electrical circuit leading to an internal lighting bulb. The light is obtained by means of a simple dry battery of 3 to 4 volts power, which can also be drawn from the house supply by means of a transformer. A suitable focal lens gives a clear view through the urethral metal tube, when every detail of the urethra can, under air pressure, be brought under direct observation. The head is also fitted with a stop-cock through which the urethra is inflated by means of rubber bellows. By interchanging the eye-piece for one of my own design a probe of cotton-wool can be moistened with any caustic and passed through the opening in the lower segment of the operating optical eye-piece. The exact location of the disease being in view, direct pressure is made on the proximal end of the probe, which allows sufficient play for the distal end to protrude through the urethral tube and touch the diseased area. Various sizes of urethral tubes are supplied.



The instrument will do the work of the most expensive urethroscope, and has been made for me by the Aurorascope Co., Ltd., Fulwood House, Fulwood-place, Holborn, W.C., where it can be seen and tested. The price is £4 4*s.*, operating optical eye-piece 10*s.* 6*d.* extra, and it is fitted in a leather pocket-case measuring 9 × 4¾ × 1 inches.

HENRY DUTCH, M.D.

CARNEGIE UNITED KINGDOM TRUST.

THE seventh annual report of the Carnegie United Kingdom Trust has recently been issued, dealing with the year ending Dec. 31st, 1920. During this period the work of the Trust was considerable, for although conditions were still very different from those of pre-war days (notably as regards building operations), there was an improvement on the stagnation obtaining in 1919. The section of the report devoted to physical welfare deals with the subject under four headings—central institutes, play centres, model centres, and published reports. With reference to the trustees' offer to provide £40,000 each for two central institutes for infant and child welfare, the report states that local difficulties have prevented action in Edinburgh, but that preliminary steps had been taken towards the establishment of the London institute; the only practical alternative to abandonment of the whole project was found to be the securing of a leasehold property (No. 117, Piccadilly), a building suitable for the purpose and conveniently situated, to house the Central Institute proper, together with its constituent child-welfare societies, and probably also the Incorporated Institute of Midwives. The grant of £40,000 will cover the whole cost of lease, equipment, and sinking-fund charges. Grants have been promised for six model centres, one of which—the Motherwell centre—is now in course of erection. Plans have been passed for the Shoreditch, Birmingham, and Liverpool centres, and it is hoped that building will soon be possible in these places. The plans of the Rhondda centre will probably shortly be submitted, the difficulty of obtaining a site having now been overcome; political and social conditions have prevented any movement to establish the Dublin centre, and the corporation of the city may invite the trustees to modify the project or abandon it altogether—a course which would be particularly unfortunate, since child-welfare work is very urgently required in Dublin. Very few applications have been received for the establishment of play-centres, and some of them when received had to be refused, as the centres were to be administered by voluntary bodies and not by competent local authorities. A considerably increased grant has been approved for the Blackrock centre, and a provisional grant has been promised to the Borough of Norwich. At Chester it has been decided to acquire a new site for the projected centre. It has been decided that two further reports might usefully be published—one, a summary of laws dealing with powers of local authorities regarding physical welfare; the other, a report on the ideals to be aimed at in setting up child-welfare centres—and their preparation is under consideration.

THE LANCET.

LONDON: SATURDAY, MAY 21, 1921.

The Ministry of Health.

AT the end of last week Sir ALFRED MOND, on the vote to meet expenses in connexion with the Ministry of Health, made a statement in respect of the present position and future intentions of his department, which has produced an excellent effect both within and without the House of Commons. For although the sum asked for was a very large one, the explanation of huge work ahead of the Ministry of Health led to an agreement to the vote without any damaging criticism, while the public learned that the Ministry has been, and is, working along definite lines to promote and correlate efforts in behalf of the public health. Considering the vague and various attacks that have been made on the Ministry of Health for political purposes from its quite early days, this may be regarded as a very healthy state of affairs; as the public ignorance, which has been exploited by irresponsible public statements, disappears, the real economy of spending money in the prevention of disease will become clear.

The Minister of Health began by pointing out the perfect absurdity of drawing any comparison between the estimates in connexion with the Local Government Board in and before 1914 and those of the Ministry of Health at the present moment. All such comparisons have been transparent nonsense to those who know, and remember, how the Ministry of Health came into being, and what numerous activities it represents other than those of the old Local Government Board. Nor is this the whole story. New programmes of work, considered by neither the old Local Government Board nor by any of the departments whose functions have been transferred to the Ministry of Health, have been added to the designs of the Ministry, while the administration of the National Insurance Commission, which was dislocated by the war before it had received proper trial of its possibilities, has called for large reconsideration. And if comparisons between the numbers and spheres of work of the medical staff of the old Local Government Board and that of the new Ministry of Health cannot be drawn, it becomes waste of time to debate whether that medical staff, when alluded to as "medical officers," implies only "medical officers" as distinct from "medical inspectors," or implies the medical staff as a whole. In the House of Commons Dr. ADDISON stated, during the debate, that under the Local Government Board in 1918 there were already 38 medical officers. The statement was perfectly true, and not a person ought to have been deceived into thinking that he meant 38 heads of groups and sub-groups, under whom medical inspectors worked. He was clearly including the "medical inspectors" under the term "medical officers," as is always done in conversation.

The actual figures, which can be fairly compared in order to show the relative position of the headquarters staff of the Ministry of Health in 1918 and to-day, are as follows:—

1918.		*1921.*		
Medical Officer	1	Chief Medical Officer ...		1
Assistant Medical Officers	5	Senior Medical Officers...		6
Medical Inspectors	23	Medical Officers—		
		General	43	50
Med. Inspectors of Food	5	Food...	5	
Med. Inspectors Poor-law	2	Poor-law	2	
Med. Bacteriologists ...	2	Med. Bacteriologists ...		2
	38			
Insurance Medical Officers	8			
	46			59

Here is Sir ALFRED MOND'S statement on the matter, and it will be seen that it tallies both with the facts and with Dr. ADDISON'S figures:—

> On April 1st, 1919, the number of pensionable medical men in the Local Government Board and the Insurance Commission of England and Wales was 46; the number at present in the Ministry is 59, or a difference of 13, distributed as follows: Maternity and child welfare, 2; tuberculosis, 2; venereal disease, 2; port isolation hospitals, 3; statutory medical services and intelligence work, 3; and work taken over from the Home Office, 1. These are additional functions to the work which is being looked after by the medical staff of the Ministry of Health, apart from the newly established regional officers. There are no less than 1800 sanitary authorities which look to the Ministry for guidance, 114 port authorities, 646 Poor-law unions, 1029 isolation hospitals for infectious diseases, and 4220 public vaccination districts which have to be inspected. There are a vast number of maternity centres and tuberculosis sanatoriums to which the Ministry give grants and which also have to be inspected.

This statement, which will be found in our Parliamentary Correspondent's report, should be remembered, when, in the future, the wholesale cutting down of the members of the medical staff of the Ministry of Health is under discussion on the score of economy. Colonel FREMANTLE, during the debate in the House of Commons, alluded to "a canard going round the press that the Ministry of Health inherited from the Local Government Board a staff of only four medical officers." He has since written to the *Times*, where the unfortunate announcement was made editorially in the course of a plea for economy, giving much the same comparative figures as those we print above. All advocacy of economy is welcome to-day, but its basis should be correct.

Three expressions of opinion and intention came from the Minister of Health, which revealed to the House of Commons a story of strenuous industry. He claimed that in spite of difficulties the department had succeeded in making a reduction of over £3,000,000 in the estimates of this year as compared with last year, while considerable progress had been made with housing schemes. And here he pointed out—what is now well known—that some local authorities have exaggerated local wants. The national need is grave enough without such troublesome errors. Secondly, in reply to points raised principally by Sir WATSON CHEYNE, Sir ALFRED MOND stated that there was no intention on the part of the Government to start a State Medical Service, although an endeavour was being made to improve the existing panel systems in certain directions. We may hope that one of these directions will be the encouragement of all movements on the part of the Approved Societies to assist in the support of the voluntary hospitals. It was announced, on the very afternoon that the Minister of Health was speaking, that a number of beds in the London Hospital would have to be closed, and the Minister allowed that the position of these great charities was giving his department cause for anxiety; but recent action by the Approved Societies should have an encouraging influence here. These Societies have discussed with the British Hospitals Association the possibility of providing *institutional treatment for their members*, who form so large a section of the panel patients, in return for contributions on an agreed percentage basis, and if the voluntary system can be supported in this way on any general plan the relief to the charities should be great and promptly felt. Lastly, Sir ALFRED MOND defended the policy of the Government in respect to venereal disease, a policy directed towards official propaganda, but also towards the promotion of treatment. While he stated that he refused to accede to any demand to regard the question from a merely medical point of view, it is well known that a comprehensible policy in respect of the control of venereal disease, *taking note of* the therapeutic side, will shortly claim public attention. There is nothing new about such a policy, but for various reasons it has not been pressed forward by the Ministry, and medical men will agree that it is difficult, dangerous, and sometimes wrong for a Government department to lay down from the centre rules which cover therapeutic details. Indeed, it can be argued that a Government department acting along such lines would be "prescribing by correspondence," the mischief of which has been sufficiently illustrated by countless charlatans. Further, the Ministry of Health is bound to take into consideration the freedom of opinion of the local authorities working beneath its ægis. For this reason the Ministry can hardly go further in the definite treatment of venereal disease than to acquiesce in freedom of action on the part of those who represent the ratepayers. But medical men have learnt with pleasure that, in view of the prevalence of venereal disease, the Ministry proposes to offer public advice, pointing out the duty which lies on all individuals infected to take measures to purify themselves. It need hardly be added that those measures must be sufficient and must be prompt, or they will only constitute an imitation of protection. The duty of the Ministry is to help those who desire to help themselves; and the duty of the local authorities is to come promptly to a decision as to the methods which can be employed to such an end.

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Prague as a Health Focus.

HEALTH conditions in Prague under imperial rule left much to be desired. It was difficult to obtain a trained nurse. In the large part of the town the drainage was inadequate, and the rough stone-paved streets in the older quarters were not kept free from garbage. Things are apparently improving. Set in the very midst of the European storm circle, the Czecho-Slovak Republic enjoys none the less some measure of the peace essential for any organised health effort. A number of voluntary health and social organisations have long existed in the Republic without any contact between each other, and now, at a meeting called by the Czecho-Slovak Red Cross, representatives of nine of the most active of these organisations have arranged to meet on a council in whose deliberations public health and social effort shall have their fitting place. Each organisation will preserve its independence, the council meeting four times a year for joint deliberation. A central office with a part-time secretary in the building of the Red Cross provides for the collection and circulation of information. The generosity of the International Health Board of the Rockefeller Foundation has made it possible to open this office at once on an experimental basis.

At the same time the Ministry of Public Health and Physical Education is making every effort to mobilise all forces against the spread of infectious diseases. This is a measure of wise precaution, although the general situation in Slovakia itself is not alarming. Neither the typhus epidemic nor the small-pox epidemic which were anticipated for the spring fulfilled the gloomy promise, and of the latter only scattered foci persist in Slovakia. No cholera has been reported. The Ministry has at its disposal a *mobile column to fight epidemics*, consisting of four motor-cars, one containing a laboratory, a second to accommodate personnel, a third for transport of patients, and a fourth containing disinfecting plant. Four nurses are attached to the unit, the chauffeurs are trained disinfectors, and a physician is in charge of the whole. The unit will at first operate in Slovakia along with a sanitary train lent by the American Red Cross to the Government. Proceedings will be made easier later by the passage into law of a Bill now before the Assembly for the administration of local health under a national service of officers. The measure was deemed necessary in order to secure an adequate medical and public health service for Slovakia, where the peasants are ignorant and greatly in need of medical and health services although unable to support their health officer locally. The nationalisation of some two thousand part-time health officers will increase the budget of the Ministry of Health by about 50 million crowns, but it will make it possible for the Ministry to send to Slovakia young Czech doctors who otherwise would not go there because they could not support themselves by private practice.

At the Ministry itself a new section has been organised for the study and reform of public health activities. The first task of this section will be to demonstrate the value of statistics and public health education in the programme of a would-be modern State. The section has two chiefs, one of them being Prof. SELSKAR M. GUNN, technical adviser to the Ministry, who represents the Rockefeller Board; the other Mr. KOLÍNSKY, who returned recently from a study trip to England and the United States under the auspices of the same Foundation. The personnel of this section will chiefly consist of doctors who have spent a year studying public health administration in the United States. An advisory board consisting of prominent men in the field of public health in Czecho-Slovakia has been attached to the section. The whole movement will be watched with sympathetic interest by the neighbours of the Republic, near or remote, who would like to see at Prague a health centre from which the infection of true hygiene may radiate out into lands where plague centres are the rule. We hope the Little Entente, as the understanding between Roumania, Hungary, and Czecho-Slovakia has been termed, has included in its understanding a concerted campaign against epidemic disease.

Rickets and Vitamins.

IN the April number of the *British Journal of Experimental Pathology* Professor D. NOËL PATON and Mr. A. WATSON, after a brief recapitulation of their previous work on the subject, give a detailed account of further experimental investigations into the ætiology of rickets in pups. They use throughout pups from the same litters for comparative tests, as, in their opinion, the susceptibility of different strains is so varied as to invalidate statistics collected except on this principle.

The object of the first of the new series of experiments recorded has been to test the possibility of rearing dogs free from rickets, when confined in a laboratory, on diets: (1) rich in milk-fats, and (2) poor in fats supposed to contain an antirachitic factor. Both sets of pups developed rickets, but those on an abundant diet less rapidly. In order to ascertain whether this delay could be attributed to a decrease in susceptibility due to more ample energy intake, apart from the influence of any accessory food factor associated with milk-fat, a second series of experiments was undertaken. Pups from three litters were divided into four classes, in each of which the energy intake was kept ample throughout the whole period of growth mainly from one of the following sources: (A) Whole fresh milk and bread (2 pups); (B) whole dried milk and bread (3 pups); (C) separated milk, bread and lard (4 pups); (D) separated milk and bread (9 pups). Two of the pups in Class D were kept in a large kennel with an open yard, and were freely exercised every day; and in order to try and hasten the onset of rickets two others, also in Class D, were kept in a rabbit hutch from the age of 12 weeks to the age of 16 weeks. The rest were kept in a laboratory, a large sunny room with a concrete floor, in movable pens measuring 5½ ft. square. Very special precautions were taken to ensure cleanliness. Of these pups, one, in Class B, died at the end of the ninth week of the diet, not from rickets. One only, in Class D, of the remainder developed rickets. The conclusions drawn from these experiments by the authors are as follows:—

(1) In young dogs under ordinary laboratory conditions a liberal allowance of milk-fat, up to even 14 g. daily per kilo of body-weight, does not prevent the onset of rickets.

(2) Pups kept largely in the open air may escape the development of rickets on an intake of less than 1 g. of milk-fat per kilo of body-weight.

(3) With scrupulous care as to cleanliness it is, at least sometimes, possible to rear pups free of rickets in the laboratory on an intake of only about 0·5 g. of milk-fat per kilo of body-weight, along with bread, provided that the diet affords an adequate supply of energy.

(4) The energy value of the diet, however supplied, quite apart from the presence of any hypothetical antirachitic factor in milk-fat, would seem to play a part in controlling the development of rickets; but that it is only a contributory part is shown by the development of rickets in pups with a high energy intake if confined in the laboratory without scrupulous care as to cleanliness.

(5) Milk-fat may be reduced to about 0·3 g. per kilo of body-weight, if its place is taken by an equal amount of lard, without the onset of rickets.

(6) The results of these observations give no support to the conclusion of the Accessory Food Factors Committee of the Medical Research Council that rickets is a deficiency disease due to a lack of an antirachitic factor in the diet.

Much work on accessory food factors has been done since the publication in 1919 of the report referred to. With more knowledge distinctions have become less absolute. For example, Professor E. MELLANBY,[1] referring to the observations of HESS and UNGER, emphasises the difference in distribution of the fat-soluble factor and the so-called antirachitic factor in vegetable fats. He says that though cotton-seed oil is generally accepted as containing no fat-soluble A, in his experience it is one of the better vegetable oils in preventing rickets. And investigators are by no means agreed even on the presence or absence of fat-soluble A in any given foodstuff. Professor PATON, following most authorities, assumes that lard is considered vitamin-free, while quite recent work by Dr. J. C. DRUMMOND[2] differentiates between lard derived from grass-fed pigs and those fed on a diet deficient in vitamins. In the former he has found fat soluble A. Incidentally Professor PATON deduces from the first experiment quoted above that for experimental purposes "dried milk may safely be substituted for fresh milk." Dr. DRUMMOND classes their relative content of fat-soluble A as ++ and +++. Since quantitative results that cannot be expressed numerically are of doubtful value, not even the firmest adherents of the vitamin hypothesis could regard this as an important contribution to the question of the form in which milk ought to be supplied to children. We only mention it as a further sign of what an enormous mass of work yet remains to be done before the presence or absence of a vitamin from any foodstuffs, still less the ætiology of rickets, can be proved. In fact, those who are inclined to be quite bewildered by the conflicting results of different eminent observers in the same field can derive some help from a critical essay by T. B. OSBORNE and L. B. MENDEL.[3] These authors draw attention to the contradictions existing in the literature as to the presence or absence of a fat-soluble vitamin in a given experimental diet, and are inclined to attribute the discordant results of various workers to traces of this vitamin in certain diets generally considered free from them. However, they agree with Professor PATON in emphasising that the crucial experiment in which nutritive failure ensues immediately upon giving a diet deficient in this respect has not yet been done. They might have gone even further. Until a more accurate quantitative basis of estimating vitamin content can be attained the question must remain unsolved.

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[1] THE LANCET, 1920, i., 257.

[2] Maternity and Child Welfare, May, 1921.

[3] Jour. Biol. Chem., 1921, 45, 277.

LONDON INTER-COLLEGIATE SCHOLARSHIPS BOARD.—Seventeen medical entrance scholarships and exhibitions of an aggregate total value of about £1590 will be offered for competition on Tuesday, June 28th. These are tenable in the faculty of medical sciences of University College and King's College, and in the medical schools of Westminster Hospital, King's College Hospital, University College Hospital, the London (Royal Free Hospital) School of Medicine for Women, and the London Hospital. Particulars may be obtained from the secretary of the Board, S. C. Ranner, M.A., the Medical School, King's College Hospital, Denmark Hill, London, S.E. 5.

Annotations.

"Ne quid nimis."

PURE AIR ON COMPULSION.

WE print in this issue a further instalment of monthly records of atmospheric pollution taking the risk of being convicted of a certain grim humour, for, with the disappearance from our cellars of the last fragment of bituminous coal, atmospheric pollution has become as extinct as jail fever or the black death or any such avoidable mediæval nuisance. The records show that in May of last year ten tons or more of solid matter descended on each square kilometre of the industrious metropolis, half a ton of this material consisting of tar and a further two or three tons of other carbonaceous matter. This present month of May, what dust there is in London has become clean like country dust, the rain descends without flecking with soot every white object on which it falls, and the famous vista along Park-street—Portman-street—Gloucester-place ends with a glimpse of the northern heights of almost Italian clearness. At the Meteorological Office the newest instrument has been rendered useless. This constrains London air to make its own dirty record, two litres of it being drawn through each of a number of small circles in a disc of blotting paper, which revolves once in 24 hours, the tint of the resulting stain being read off on a scale. The last week or two the stain is not there to estimate. In Manchester, where smoke is alleged to cost the citizens each year a million pounds in laundry alone, the whole aspect of the place has changed and cheers some of the oldest inhabitants with views unseen for half a century. These are the evidences which must needs bring conviction to the great public whom figures do not touch. The right place for products of incomplete combustion is in our chemical and dye works, where they are badly required. There is no sense in polluting with them the air we breathe, and now that city dwellers have been obliged by dire necessity to breathe pure air for a few weeks we may hope that they have acquired a taste for it which will survive the momentary crisis.

THE LOST ART.

IN his special pharmacopœia for medical men Sir James Mackenzie carries some stimulating drugs and some useful tonics, which though they may be a little bitter to the taste are certainly good "strengthening medicine." It is not pleasant hearing that during the last 100 years practically no progress has been made in the recognition of the origin of common diseases, nor that the art of prognosis, so important to the patient, has actually retrogressed; but these implications as expounded by Sir James Mackenzie are not easy to refute. The description of a specialist as an expert only in the treatment of the later stages of his speciality is hardly unfair, while the cherished belief of the public that accurate prognosis is within the power of the average medical man is belied not only by life insurance practice but in everyone's daily experience.

In his recent lecture at the Institute of Pathology and Research at St. Mary's Hospital. Sir James Mackenzie disclaimed at the outset any desire to belittle laboratory methods, of which he appreciated both the value and the limitations—and, indeed, his indictment of the laboratory worker was less severe than his censure of the training and the habits of the modern clinician. The training of the latter for his special work has, in truth, suffered grievously with the alteration of the medical curriculum during the last 10 or 15 years. The final years are almost intolerably crowded. Whereas in years gone by the student could spend, and was encouraged to spend, long hours in the wards studying his cases, he has now to pass in hectic progression from one class room to another. Every specialist, with the laudable fanaticism of his kind, insists on the importance of his subject, and demands that special courses of instruction should be made compulsory. In the sacred name of progress fresh claims are constantly being made on the remnants of the students' eight-hour day, and it is not difficult to visualise a future in which the medical graduate shall be so fully trained in every ancillary science pertaining to his art as to be able to do everything except apply his knowledge to the treatment of a patient. The thoughtful clinician is fully alive to the dangerous possibilities of such a state of affairs and from time to time complains that his art has been relegated to a position of secondary importance. But he himself cannot be absolved from blame. Fascinated by the new knowledge he has attempted to teach and practise it, not always with complete success, and in doing so has lowered his own calling. He has failed to maintain the paramount importance of clinical work, and to assume the position of interpreter of information supplied him in different languages by his colleagues. He has been prone to regard the laboratory worker as a machine who is there merely to give him a plain Yes or No to a plain question, seldom as a colleague consultant in the sick room. The consequence is that the clinician has lost or is losing his art, while the specialists are not placed in a position collectively to supplant him, even if that were possible or desirable. Sir James Mackenzie spoke somewhat slightingly of team-work, but real team-work should certainly have a trial, at least in teaching hospitals, before being condemned. Men who work in the laboratory must be encouraged to the bedside, since medicine cannot be divorced from the patient. We suspect that Sir James Mackenzie is not interested in experimental team-work mainly because he considers that the general practitioner, who cannot as yet obtain the advantages of proper collaboration, is being wrongly trained. He is asked to study physical signs instead of symptoms, to keep records of little value, to take meaningless histories. He cannot be taught what symptoms mean, which records are important, and how to take a valuable history. But this want of knowledge Sir James Mackenzie has set himself to supply, at least in part. In describing his efforts in this direction he delighted his audience with anecdotes at the expense indiscriminately of himself, of his guests at St. Andrews, and of his hosts at St. Mary's. In more serious vein he demonstrated the ways in which modern medical research had, in his opinion, taken a wrong turning, and this was the main theme of his discourse. Shrewd and yet kindly were his attacks on modern methods of medical education, their essential message appearing to us to be that the student requires more general and sympathetic shepherding along the course than he receives to-day.

ABRUPTIO PLACENTÆ.

ACCORDING to Dr. Edgar Snowden,[1] assistant obstetrician at the Columbia Hospital, Washington, who records an illustrative case, abruptio placentæ, or hæmorrhage occurring from premature separation of a normally implanted placenta, is one of the most serious complications of pregnancy. It was first described as long ago as 1776 by the elder Rigby, but it is only recently that its pathology has been studied with any degree of scientific exactness. The condition probably occurs more frequently than is generally supposed, as many mild cases pass unrecognised. According to statistics at various maternity hospitals its frequency varies from 1 in 92 (Rotunda, Dublin) to 1 in 600 (Chicago Lying-in Hospital). The most recent investigations show that toxæmia is the primary cause of the condition, the toxin being possibly of placental origin as suggested by Willson. The hæmorrhage may be apparent, the blood escaping under the edge of the placenta or through the cervix into the vagina, or it may be concealed, the blood accumulating in the retro-peritoneal space and infiltrating the muscle fibres, thus causing uterine atony, or it may rupture into the amniotic sac. The hæmorrhages which are small at first coalesce and extend to the tubes, ovaries, and out into the broad ligaments. Bloody fluid may be found in the peritoneal cavity probably coming from small fissures in the surface of the uterus. In a typical case the onset is sudden and violent, the severity of the symptoms depending on the degree of the separation. The patient who is in the last three weeks of pregnancy complains of a sudden abdominal pain of a colicky nature and soon shows signs of acute anæmia, followed by shock. A bloody vaginal discharge may or may not appear. On examination the uterus is found to be larger than usual, very tender, and of a peculiar wooden consistency. No placenta can be felt per vaginam. Treatment consists in emptying the uterus as soon as possible by forceps, version or Cæsarean section, stopping the hæmorrhage, and combating the anæmia. In some cases hysterectomy may be required. The prognosis is very grave, the maternal mortality being about 60 per cent. and the fœtal mortality about 90 per cent. Cases which survive require the utmost care and attention.

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[1] Journal of the American Medical Association, April 16th, 1921.

SURGERY OF THE THYROID GLAND.

IN the April number of the *British Journal of Surgery* Mr. James Berry gives an account of a series of 500 operations for goitre, with special reference to the after-results. The youngest patients were five girls of 14 years of age, who had parenchymatous goitres. Operations on children under puberty were only undertaken when urgent, for in the young there is danger of interfering with growth and normal development. The oldest patients were seven males between 70 and 75 years of age. The two commonest forms of goitre operated on were the non-encapsuled adenoparenchymatous, 137 cases, and the encapsuled cystic adenomatous, 109 cases. Seventy-nine operations were for true exophthalmic goitre as distinguished from "false" exophthalmic goitre. In the latter there is tachycardia, tremor, &c., without exophthalmos, mostly with unilateral goitre. Sometimes true exophthalmic goitre develops in a patient who has previously had an ordinary goitre for a more or less long period. Twelve cases of malignant disease were operated on, these being selected from a large number of cases of malignant disease which were seen. Of the cases operated on, two were sarcomata, one undetermined, and the others carcinomata of various types. The indications for operation were chiefly dyspnœa (274), discomfort and deformity (99), and exophthalmic goitre (79). Tracheotomy was never performed for innocent goitre, and is considered to be much more dangerous than thyroidectomy. But when dyspnœa is urgent a long tracheotomy tube, such as Koenig's, should be at hand. With bilateral goitre and severe dyspnœa it is often dangerous to rely on a unilateral operation. If only one lobe is removed, the other may bend the trachea to the opposite side and increase the dyspnœa. An important practical point is that often it is not the most obvious and prominent part of the goitre which is the cause of the dyspnœa. The real offending part is not unlikely to be the opposite lobe lying more deeply, perhaps wholly unsuspected, behind the sternum. An X ray examination is often useful in showing which part of the trachea, appearing as a band of light, is most deflected. In the young with bilateral goitres it is usually the least prominent lobe which causes the dyspnœa. The lower the situation of a goitre, the more liable it is to produce dyspnœa. Discussing the methods of operating, the writer remarks that he has never performed total removal of the gland and that he considers it unjustifiable and never necessary even for malignant disease. He rarely performs total removal of even one lobe. A portion of gland is nearly always left at the hilus, or "dangerous area," for various reasons, one being to safeguard the recurrent laryngeal nerve. Seven patients died from operation: two of them had simple goitre and succumbed some days later to pneumonia; three had exophthalmic goitre and died from cardiac failure; two had malignant goitre. Recurrent laryngeal nerve paralysis is known to have occurred three times. It is sometimes unavoidable in large, deep-seated tumours. The nerve lies in front of the groove between the trachea and œsophagus. It may be pulled forward with the gland when operating and is most likely to be injured at a level a little below that of the lower border of the pharynx.

An important table given is that showing the late results in 406 cases. The patients with simple goitre are nearly all well and in much better health than before operation. Of the 78 patients with exophthalmic goitre 53 are practically well, 18 much improved, 1 improved, 2 not improved, 1 worse, and 3 died. All were operated on before Dec. 31st, 1919, and 24 of them in 1913. Complete cure in this disease, with no trace of the previous symptoms remaining, is rare. Often a considerable amount of exophthalmos remains in patients who consider themselves otherwise well, and they may have palpitation on exertion. The operations are considered to be much more dangerous than most operations for simple goitre. The patients are often quite unsuitable for operation when brought to the surgeon. In some ligation of one or both superior thyroid arteries will give great relief. The condition of the myocardium is a very important factor in prognosis. Relapse may occur after a long period of good health. Of the 12 patients operated on for malignant goitres, 5 are living and well after periods of 1¼ to 7½ years. One is fairly well but with recurrence 1½ years after operation. Four have died from recurrence within a year, and 2 died from the operation. There has been no marked myxœdema in any of the author's cases. In a few, chiefly of extensive bilateral removals, there have been slight transient symptoms of thyroid insufficiency and the patients have benefited from taking thyroid extract. Tetany has never been seen by the author to follow operation for goitre, though he has operated 1338 times, and he is sceptical as to the separate function of the parathyroids.

We have closely followed Mr. Berry's own account of his experience, which adds a new and useful chapter to the literature on the practice and principles of this branch of surgery.

THE ROYAL SOCIETY EXHIBITS.

THE annual conversazione of the Royal Society was held at Burlington House, London, on May 11th, when Fellow demonstrated to Fellow such portions of new and original work as lent themselves readily to isolated treatment, the interest centring round the light thrown upon natural law rather than upon its application to human need. Medicine as the most highly specialised of sciences was consequently little represented. Mr. J. E. Barnard showed how certain animal tissues reveal marked differentiation of structure when illuminated by means of ultra-violet light. The image obtained is a fluorescent one and the resulting colours or tints depend on differences of chemical constitution. Apart from the biological interest of the method the image so formed is of considerable value for testing the optical qualities of microscopic objectives as the object so illuminated is a perfectly self-luminous one. Dr. Leonard Hill exhibited a recording kata-thermometer. This instrument gives a continuous record of the cooling power of the environment exerted on the surface of the bulb of the kata-thermometer, which is automatically kept at skin temperature. Introduced into the bulb of the "kata," which is filled with alcohol, is a coil of wire with a large temperature coefficient of resistance. This coil forms one arm of a Wheatstone bridge, which is balanced when the coil is at a temperature of 36·5° C. An automatic device is used by which the current sent through the coil varies according to atmospheric conditions, so that the coil is kept at 36·5° C. The ammeter placed in series with the coil indicates the variations of current and so the cooling power. Mr. L. T. Hogben, from the Zoological Laboratory of the Imperial College of Science, illustrated the effect of pineal gland administration on the pigment cells of tadpoles. Within half an hour the melanophores retract to such an extent as to turn the brown opaque tad into a grey translucent one. No other organic extract has been found to produce this result. Of more practical importance was a demonstration by Mr. Franklin Kidd on the application of cold-storage and gas-storage to English apples. The Food Investigation Board recognises that improved methods of apple storage are required in order to bring the home grown apple into successful competition with imported apples throughout the winter season. In cold-storage the apples are kept just above freezing point. The method is costly. In gas-storage the apples are held in a gas mixture, created and maintained by their own respiratory activity, no machinery being required. The optimum CO_2 pressure has been determined and by its means the life of the apple is prolonged at a lower level of metabolism to twice its normal span. The specimens shown fully bore out this contention.

INTERNATIONAL TEAM-WORK.

COÖPERATIVE effort in medical research has of recent years been productive of so much good and its value is now so widely recognised that no one can doubt that team-work will continue to contribute to the advance of medical science. Yet when all due respect has been paid to the advantages of such coöperation one is forced to admit its limitations. Brilliant as are the results published from that most admirably equipped of all local teams captained by the Mayo brothers in America, it is doubtful whether anything they have produced can rank in practical importance beside the discoveries of such individuals as Koch, Pasteur, or Noguchi. The truth is that local team-work must be compared, not always to its advantage, with individual exploits. For this reason it is well to remember that for many years there have been widely scattered international teams working together with magnificent harmony in the various fields of physical disease. This would not have been possible but for the fine medical tradition that has always prevailed among physicians of every race and creed. It would be inaccurate to speak of the captain of an international team. The inspiration of genius is its sole directing force. But such a team is handicapped unless it possesses at least one member endowed with such critical insight and deductive imagination that he is able to sift the work of his colleagues and rearrange their variously coloured contributions into a comprehensive and cohesive pattern—in short, the value of a captain is as obvious in an international as in a local team. A brilliant example of this will be found in a recent paper on the course of the tubercle bacillus from sputum to the child by Dr. Allen K. Krause, of Baltimore.[1] Dr. Krause first restates the three main theories of the ætiology of pulmonary tuberculosis which may shortly be described as "the dust," the "droplet," and "the ingestion" theories. He argues that from the absence of direct evidence to confirm any one of these theories it is necessary to seek for correlative evidence. Here another group of observers, statisticians rather than pathologists, furnish their contribution. A composite infection chart is built from the charts of Moro (Munich), Mantoux (Paris), Petruschky (Danzig), Gaughofner (Prague), Pirquet and Hamburger (Vienna), Nottiman (Düsseldorf), Veeder (St. Louis), and Armstrong (Framingham). The evidence so collected shows that 10 per cent. of children are infected by the end of their second year of life, by 3 years 15 to 20 per cent., by 6 years 50 to 60 per cent., by 15 about 75 per cent.—i.e., only about one-seventh of all infected receive their first infection during the first two years. If the "droplet" method of infection accounts for all infections, then children must be confined indoors more between the ages of 4 and 7 than between birth and the age of 3. The argument is that infection is most rife at the age when children play amongst the dust both of the house and of the street. The hands of the normal child "are dirty most of the time" and "few children have developed a consciousness about putting their hands in their mouths." Here is a practical moral drawn from the work of two generations of the members of the tuberculosis team scattered across the world. It is a moral that deserves attention.

ACUTE NITROBENZOL POISONING.

ACCORDING to Dr. Robert F. Loeb, Dr. Arlie V. Bock and Dr. Reginald Fitz,[1] of the Medical Clinic of the Massachusetts General Hospital, Boston, who are engaged in a series of studies on the physiology and pathology of the blood, nitrobenzol or oil of mirbane, a coal-tar derivative resulting from the action of strong nitric acid on benzol, was first discovered by Mitscherlich in 1834, but it was not until 1859 that Caspar described it as a new poison with toxic properties. It is employed in the manufacture of high explosives, and is used to a limited extent in perfumery, soap, confectionery, cookery, in making dyes, and in pharmaceutical laboratories. Grandhomme, in 1883, collected 43 cases of nitrobenzol poisoning, the majority of which had occurred a comparatively short time after nitrobenzol had been used commercially. After the appearance of Grandhomme's work only a few new cases were published until two years ago, when Stifel reported 17 cases which were poisoned by nitrobenzol in shoe polish. Subsequently Scott and Hanzlik, Donovan, and Dr. Loeb and his colleagues met with cases in which intoxication was due to nitrobenzol being consumed as a substitute for alcohol. The toxic action of nitrobenzol, as shown by Filehne's experiments in 1878, is due to the fact that it renders the blood unable to transport oxygen. Experiments on dogs showed that hæmoglobin was changed into another form with a characteristic spectroscopic absorption line which did not correspond to any of the ordinary hæmoglobin products. Whether nitrobenzol hæmoglobin, meth-hæmoglobin, or both are produced is uncertain. The clinical picture consists in a gradual onset of nervous and digestive symptoms going on to coma and death, the skin assuming a characteristic blue-black colour. The urine is almost black and contains para-amido-phenol. In cases which recover, the changed hæmoglobin returns to normal hæmoglobin quickly, so that oxygen can again be carried to the body cells in a short time. Although the majority of the recent cases in America have been mild, nitrobenzol may often be a fatal poison, as is shown by the fact that the mortality among Grandhomme's cases was 32 per cent. There is no specific antidote, but treatment consists in as complete and rapid removal as possible from the body of any nitrobenzol which has not been absorbed. Bleeding and transfusion are indicated in the severest cases.

THE "STABILITARY" REACTION OF THE BLOOD.

EVERY laboratory worker who has to collect from patients each week large numbers of blood specimens for fixation of complement tests is acquainted with those curious phenomena which occasionally occur during clotting. Sometimes a blood sample will clot almost as soon as it is withdrawn from the syringe, occasionally it will remain fluid for several hours, occasionally also it shows hæmolysis, and every now and then a specimen is found which produces an almost opalescent serum. Some of these phenomena are doubtless due to mechanical factors of manipulation; but apart from these it seems clear that we are presented with inexplicable stages in that colloidal reaction, coagulation of protein, which is probably due in a large measure to the reduction in the surface energy at the interface of the colloid, and is known biochemically as the adsorption phenomenon. These colloid changes give rise to outward and visible signs such as agglutination and precipitation, altered rate of coagulation, increased or decreased viscosity, and the like; and every one of them has been made the basis of a clinical laboratory test. In the current number of the *British Journal of Tuberculosis* Dr. A. Westergren, of Stockholm, describes briefly the "stabilitary" reaction of blood which depends on the rate of sedimentation of red blood corpuscles in a column of withdrawn citrated blood. Briefly, the test is as follows. The blood is withdrawn from the patient's vein by means of a syringe having one-fifth of the barrel filled with 3·8 per cent. sodium citrate solution. When the remaining four-fifths have been filled with patient's blood the contents are immediately emptied into a small test-tube and well mixed. The mixed blood is then drawn into a pipette-tube 30 cm. long (with an inner diameter of 2·5 mm.) up to a height of 20 cm. and placed in a rack. The time is noted, and the tube allowed to stand for 1, 2, and 24 hours, when the test is read off by measuring the height of the layer of plasma in millimetres from the lower meniscus of the free surface to the upper border of the deposited blood corpuscles. In blood drawn from healthy men the top layer of clear plasma at the end of one hour is said to be 2 mm. and in women 5–10 mm. An increased sedimentation (i.e., a reduced suspension stability of the blood) is found in pregnancy and in acute infectious diseases, especially when associated with much pyrexia. Dr. Westergren finds that this increased sedimentation is markedly shown in cases of acute pulmonary tuberculosis. He says: "No single test of an active or probably active case has given a normal value, and no case which must be considered quite benign, and certainly shows no signs of activity, has given a high, even a middle-high, figure." He therefore considers the reaction to be a more reliable measure of activity than is a temperature record. The reaction is, of course, in no way specific, and can only have a relative value in estimating activity as an aid to diagnosis and prognosis. A full account of this reaction is given in English in *Acta. Med. Scandinavia*, Vol. LIV., pp. 247–281.

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[1] New York State Journal of Medicine, March, 1921, p. 83.

[1] The American Journal of the Medical Sciences, April, 1921.

SO-CALLED SNOW-BLINDNESS.

SOME interesting notes regarding the pathological effects of the visible and invisible spectrum on the eye, more especially in relation to snow-blindness, are contributed by Mr. Arthur W. Ormond in the April number of Guy's Hospital Reports. These make it plain that both visible and invisible rays can produce definite pathological effects on the ocular tissues, but further inquiry is required to prove the exact wave-lengths which set up these changes. The heavy incidence of cataract in glass-workers—exposed as they are to the intense heat and brilliant illumination of molten glass—led to the suggestion that the heat rays are the cause of the injury in these cases, and the balance of opinion appears to be in favour of this hypothesis. However, more recent experiments suggest that lenticular changes may be produced by ultra-violet radiations. The effects of sunburn are probably due not to visible but to ultra-violet rays. Meantime, we have some interesting first-hand observations by a young officer, a member of a Canadian Arctic expedition, who visited Parry Archipelago and its neighbourhood. To begin with, it is suggested that snow-blindness is "a bad term, as the victim is not blind." The condition was never experienced in extremely low temperatures and seldom at freezing point, but generally in a condition of mist or fog, a fog-haze or "white-darkness" in snow-covered regions when all sense of perspective and stereoscopic vision is lost. Bright sunlight affected the eyes in a different manner, and real blindness was never the result of bright glaring sunlight and shadow. The symptoms of severe conjunctivitis and superficial ulceration of the cornea were pronounced, "grittiness," discharge from eyes and nose, in 24 hours intense local pain—lasting sometimes for 10 or 12 hours—the pain being described as the sensation of thousands of red-hot needles being forced through the eyes to the sockets. The eyeballs and lining of the lids are covered by a greyish film, through which the iris and pupils are just discernible. The sufferer can see nothing, even with the eyes held open. If the eyes are protected by bandages at the first noticeable symptoms, after three days the eyes are practically normal, but there is a tendency to relapse if unfavourable conditions recur. The use of dark or coloured glasses is sufficient protection, but the leader of a party cannot always keep glasses before his eyes; the glasses become dimmed with hoar-frost and have to be removed to be cleaned. The native Eskimos are not immune from attacks of snow-blindness, and Scott and Shackleton observed that dogs and ponies manifested characteristic symptoms. The Eskimo has learned to recognise weather conditions which are dangerous from this point of view and arranges his travels accordingly. When he does travel—rarely more than five miles a day—he protects his eyes with horizontally slotted wooden spectacles cut from soft drift timber; even these are not absolutely preventive. Nansen records that in his Polar expedition only two of his party, who had neglected the necessary precautions, suffered from snow-blindness.

As to the part of the spectrum responsible for the sensations experienced by the victim, we may exclude the infra-red rays; nor is the visible spectrum entirely responsible, for in the tropics, where light is very intense, symptoms such as these are not experienced, and in summer there is no complaint of "snow-blindness" amongst ordinary Swiss tourists. Fuchs, of Vienna, records that some visitors to the Alps after exposure to the snowfields "see red," especially in a dimly illuminated room. The question remains whether snow-blindness can be due to ultra-violet rays alone. During the war an acute condition of the eyes similar to snow-blindness was set up in persons working with a searchlight device elaborated for signalling at sea, whereby all parts of the spectrum except the ultra-violet and a few red rays were filtered out. The effects seem to be due not so much to the quality as to the quantity of these rays. A few of the short rays may penetrate to the lens, but experiment shows that very few ultra-violet rays reach as far as the retina. Retinal symptoms are not amongst those caused by snow-blindness. The glass made by Sir William Crookes for "goggles" to prevent blindness, which transmits the greatest amount of light and the smallest proportion of ultra-violet rays, effectively combats the source of irritation. But the luminous rays of the spectrum under certain conditions may also produce pathological effects; in the slighter cases there is recovery, but in some cases the scotoma is permanent. Some thoughtless people found this out to their cost during the recent partial eclipse of the sun.

SOME CONDITIONS AFFECTING THYROID ACTIVITY.

ACCORDING to W. B. Cannon and P. E. Smith, of the Harvard Medical School,[1] gentle massage of the thyroid of a cat for two or three minutes causes an increased rate of the denervated heart, amounting in some instances to 33 per cent. over the basal rate. The development of the maximal increase of rate is usually slow, requiring 30 to 60 minutes, and its diminution is also slow. This augmentation of heart-rate caused by thyroid massage occurs in the absence of the adrenal glands. Stimulation of the cervical sympathetic trunk as it leaves the ganglion stellatum induces a similar augmentation of the denervated heart, but this does not occur if the thyroid gland has been previously removed. If the cardiac fibres from the stellate ganglia are severed, as well as the vagus nerves and an afferent nerve, such as the sciatic or brachial, is stimulated under a degree of anæsthesia which will permit of reflex contraction of the nictitating membrane and dilatation of the pupils, there is a primary increase of rate due to adrenal secretion.

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[1] Endocrinology, iv., 1920.

followed by the slowly developing increase characteristic of thyroid stimulation. If the vagi and the cardiac fibres of the stellate ganglia are cut, and the animal is asphyxiated under conditions which permit the eye changes already described, there is a similar primary rise due to adrenal secretion, followed by the secondary thyroid effect. If the thyroid glands have been previously removed, sensory stimulation and asphyxia induce only the increase of rate due to adrenal discharge.

Some interesting observations on hyperplasia and hypersecretion of the thyroid glands in children and adolescents are recorded by E. Schlesinger.[2] In goitrous regions the thyroid is larger in new-born children than in non-goitrous districts. This hypertrophy, however, disappears in a few months, and the follicles of such children later on are smaller in diameter (100–150μ) than normal (200–250μ). In boys there begins at about the ninth and in girls at the sixth–seventh year a new enlargement of the thyroid gland, which diminishes just before puberty. The hyperplasia which occurs in about one-third of the girls and in one-sixth of the boys from 10–17 years of age is accompanied by tachycardia, which in the majority of the cases is not neuropathic in origin, but is a sign of hyperthyroidism. Exophthalmos and thyroid heart were only occasionally observed. An interesting feature was the mental activity and quick comprehension in these cases of thyroid hyperplasia. Growth was accelerated, and in girls the sexual development more pronounced than in the other girls of the same age. Sometimes curvature of the spine and marked myopia were observed. The use of thyreoidin proved very useful and caused the cardio-vascular symptoms to disappear.

THE Croonian Lectures to the Royal College of Physicians of London will be delivered by Dr. F. L. Golla on June 9th, 14th, 16th, and 21st, at 5 P.M. The subject will be the Objective Study of Neurosis.

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[2] Zeitschrift f. Kinderheilk., vol. xxvii., 1920.

URBAN VITAL STATISTICS.

(Week ended May 7th, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18½ million persons, the annual rate of mortality, which had been 12·5 in each of the four preceding weeks, fell to 12·4 per 1000. In London, with a population of 4½ million persons, the annual rate was 11·5, or 0·6 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 6·0 in Enfield, 6·8 in Ealing, and 6·9 in Gillingham, to 19·2 in Halifax, 19·3 in Liverpool, and 19·8 in Stockton-on-Tees. The principal epidemic diseases caused 238 deaths, which corresponded to an annual rate of 0·7 per 1000, and comprised 76 from whooping-cough, 57 from infantile diarrhœa, 55 from diphtheria, 31 from measles, 16 from scarlet fever, and 3 from enteric fever. Whooping-cough caused a mortality of 1·6 in Derby and diphtheria of 2·4 in Acton. There were 3195 cases of scarlet fever, 2343 of diphtheria, and 1 of small-pox under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 3255, 2453, and 1 respectively at the end of the previous week. During the week ended April 30th 4 cases of encephalitis lethargica were notified in the County of London, from Bethnal Green, Camberwell, St. Marylebone, and Woolwich respectively. The causes of 31 of the 4427 deaths in the 96 towns were uncertified, of which 10 were registered in Birmingham.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 14·6, 14·6, and 15·0 in the three preceding weeks, fell to 14·7 per 1000. The 343 deaths in Glasgow corresponded to an annual rate of 16·3 per 1000, and included 29 from whooping-cough, 6 from infantile diarrhœa, 3 from diphtheria, and 1 from measles. The 124 deaths in Edinburgh were equal to a rate of 14·5 per 1000, and included 5 from whooping-cough and 4 each from measles and diphtheria.

Irish Towns.—The 152 deaths in Dublin corresponded to an annual rate of 18·7, or 1·3 per 1000 above that recorded in the previous week, and included 3 from diphtheria, 2 from infantile diarrhœa, and 1 from whooping-cough. The 125 deaths in Belfast were equal to a rate of 15·5 per 1000, and included 9 from whooping-cough, 3 from infantile diarrhœa, and 2 from scarlet fever.

TUBERCULOSIS.

Results of Proper Sanatorium Treatment.

THE twenty-fourth annual report of the Loomis Sanatorium, New York, must be rather disconcerting to the arm-chair pessimist. This 95-page report is so full of information that it is possible not only to learn the results achieved, but also—and this is far more important—to learn something of the ways and means yielding these results. The Loomis Sanatorium has a capacity for 183 patients "presenting a fair prospect of recovery." In practice this standard means that about 10 per cent. of the cases are incipient, 50 per cent. are moderately advanced, and 40 per cent. are far advanced on admission. To judge by the list of occupations of the patients, they belonged for the most part to the class for which King Edward VII. Sanatorium, Midhurst, caters. After nearly a quarter of a century's work, inquiries were addressed to 1582 former patients. In 1350 cases information as to the fate of these patients was obtained. In 91 per cent. of these replies it was stated that the patient was still alive, and of the 1225 survivors 85 per cent. were "leading normal lives, and, in most instances, pursuing their vocations."

So much for the results. How were they obtained, and why are they so much better than the results obtained elsewhere? The average duration of treatment was from 30 to 45 weeks. How many public sanatoriums in this country keep their patients so long? A resident, fully qualified dentist was employed, and during the past year radiographic dental studies were part of the routine examination of every new patient. "It seems unquestionable that even unrecognised dental disease exerts an unfavourable influence upon the recovery of tuberculous patients." How many public sanatoriums in this country provide their patients with adequate dental treatment? The resident medical staff of the Loomis Sanatorium consists of five. How does this ratio of five doctors to 183 patients compare with the staffing of public sanatoriums in this country? Constantly increasing use has been made of the X rays, not only in diagnosis, but also in controlling treatment. Of serial stereograms the report says: "Such studies will often enable the clinician immediately to make a readjustment of the patient's regime which checks further retrogression, but which, if delayed until the development of more significant symptoms, may not be availing." A few months ago in this country a medical superintendent, in charge of a sanatorium with more than 100 beds, and carrying out treatment by artificial pneumothorax, was refused an application for an X ray apparatus. Not only is the treatment varied greatly at the Loomis Sanatorium, but there is a widely ramified system of research in the laboratory and at the bedside. In how many public sanatoriums in this country are facilities provided for research or even for checking the researches of others? In 17 per cent. of the cases resident in the sanatorium when the report was issued treatment by artificial pneumothorax was being practised. How many sanatoriums in this country still refuse to give any of their patients the benefit of this treatment? With regard to occupational therapy, the report expresses no doubt as to its benefits to the mind, but it does not attempt to decide how far it is beneficial to the body. The occupational therapy practised at Loomis appears to consist of light, skilled work, such as basketry and typewriting, and the exercise prescribed is graduated walking. Conspicuous by its absence is the unskilled heavy labour of trenching and tree-felling meted out to consumptives in some English sanatoriums. Many other distinctive features of sanatorium treatment, as practised at Loomis, might be noted, but the résumé just given should suffice to show that a high percentage of permanent sanatorium cures is not the result of fortuitous circumstances, but of prolonged and skilled treatment.

King Edward VII. Sanatorium: Fourteenth Annual Report.

This report, which covers the period July, 1919–July, 1920, shows that a considerable amount of research work is being carried out in addition to the ordinary routine of treatment. This is all to the good, and it is almost a truism that patients and physicians alike prosper most in institutions in which research follows hand in hand with routine work. Studies have been undertaken into the relation of Pfeiffer's bacillus to tuberculosis, and among 85 cases investigated 8 were found harbouring this bacillus. But only in one case was there evidence to suggest that it might play an important part in the genesis of the patient's symptoms. Other research concerned the acid-fastness of tubercle bacilli and complement-fixation. A large proportion of the staff was given prophylactic vaccine treatment against influenza, and since this vaccination there have been no further indications of influenzal infection among them. The treatment adopted was that of graduated labour, punctuated by adequate rest. In April, 1920, an up-to-date and thoroughly efficient X ray department was opened, and this has proved useful for artificial pneumothorax treatment, which has now been taken up in this institution. A case is referred to in which the physical signs were confined to one side of the chest, but in which an artificial pneumothorax was not induced because the X rays showed both lungs to be involved.

Light on Mixed Infection in Pulmonary Tuberculosis.

Two recent papers illuminate the problem of mixed infection in pulmonary tuberculosis from a hitherto comparatively obscure quarter. Dr. Arthur L. Bloomfield[1] has studied the mechanism of the bacillus carrier state, with special reference to the Friedländer bacillus. He believes that the survival of important pathogenic organisms in the body may depend on the existence of a focus of diseased tissue in the upper air passages, where these organisms multiply and whence they are discharged to other parts of the body. He attempted to produce artificially a carrier state by frequent reinoculations of a person whose tongue was swabbed with a freshly isolated strain of *B. Friedländer*. Cultures were taken at various intervals for a week, but it was found that within 24 hours of the last inoculation *B. Friedländer* could no longer be found. Of 85 unselected persons, 5·8 per cent. proved to be carriers of *B. Friedländer*, and this carrier state persisted throughout the period of observation. But there was no tendency for contacts to acquire the carrier state, and differential cultures showed the breeding-place of the *B. Friedländer* to be in the tonsil. The carrier's own strain or a foreign strain of *B. Friedländer* implanted upon the free surfaces of the mucous membranes disappeared as quickly as in a non-carrier.

The second paper is by E. Schulz,[2] who records, at considerable length, the case of an officer, aged 40, who had suffered from pulmonary tuberculosis since 1908. The most instructive features of his chequered career were these: his sputum contained numerous staphylococci and influenza bacilli as well as tubercle bacilli. The tonsils were not enlarged and gave rise to no symptoms, but their bacteriological examination revealed numerous staphylococci as well as diplococci, Friedländer's pneumococci, and a few granular rods. He was subject to acute exacerbations of fever, which were not permanently controlled by antiseptic treatment of the tonsils. The last bacteriological examination of the tonsils showing an almost pure culture of staphylococci and diplococci pneumococci being conspicuous by their absence, tonsillectomy was performed. Soon afterwards examination of the sputum revealed total absence of cocci, tubercle bacilli alone being found in great quantities. The operation was followed by the disappearance of clinical signs of mixed infection, the temperature being normal, and the sputum sterile except for tubercle bacilli.

In 1913 Brauer drew attention to the relation of "exercise fever" in pulmonary tuberculosis to slight chronic inflammatory changes in the upper respiratory passages, and he focussed attention on the tonsils. More recently John[3] has pointed out that in some cases suspected of pulmonary tuberculosis treatment of the tonsils restores the patient to complete health. Still more recently Kraus[4] has discussed the relation of apical catarrh of the lungs to chronic tonsillitis.

The Framingham Tuberculosis Demonstration.

It may be remembered from earlier accounts[5] that Framingham, Massachusetts, a representative community of approximately 16,000 souls, was chosen as the subject for a gigantic experiment in hygiene, with tuberculosis as the central problem. This demonstration began early in 1917, and was financed by a special gift from the Metropolitan Life Insurance Company to the National Tuberculosis Association. In a recent report Dr. D. B. Armstrong[6] has given a bird's-eye view of the results already achieved. They are, indeed, imposing. His review may be discussed under the following headings:—

Incidence.—Approximately 1 per cent. of the population was found to suffer from active tuberculosis, and another 1 per cent. from inactive tuberculosis. When the search for tuberculosis was started there were only 27 known cases of tuberculosis under care, and there had never been more than 40 known cases at one time, the ratio of known cases to annual deaths being about three to one. An intensive search soon revealed several hundred cases, and the ratio of known active cases to annual deaths was found to be nine or ten to one. As Dr. Armstrong very pertinently remarks, this first step—i.e., discovery of the disease—is essential, for it is of relatively little use to provide adequate machinery for the care of one-third of the active cases in a community if the other two-thirds are undetected.

Machinery for detection of tuberculosis.—Before the demonstration was instituted the detection of tuberculosis largely depended on nurses and other non-medical persons. The examination by medical men disclosed approximately nine times as much tuberculosis as was found by the nurses in their search for the disease. Consequently, though no reflection is cast on the utility of the nurse in the anti-tuberculosis campaign, it is now admitted that the full quota of tuberculosis cannot be found *without proper medical* examination. The routine medical examination of three-fourths of the population of Framingham yielded many discoveries of tuberculosis.

Percentage of cases to be diagnosed at an early stage.—Before the demonstration only 45 per cent. of all the cases were detected at an early stage. Since the beginning of the demonstration this ratio has been raised to 83 per cent. The calculation is made that the remaining 17 *per cent., found* to be advanced when first detected, could be further reduced by 3 per cent., but that at least 14 per cent. of all cases will escape early detection however effective the machinery for early diagnosis may be.

The proportion of inevitable deaths.—To the question, How many patients will die in spite of adequate treatment? the answer is given that, in spite of all measures, the irreducible mortality is probably about 16 *per cent.* This estimate is based on the fact that 21 per cent. of the 356 early and late cases under observation during the four years of the demonstration had terminated fatally. A careful study of these cases suggested that, *with proper machinery*, 5 per cent. could have been saved, and by the subtraction of this 5 per cent. the irreducible minimum of the 16 per cent. mortality is obtained.

Number of beds necessary for the treatment of tuberculosis.—At least one bed should be provided for every annual death.

Cost of a tuberculosis campaign.—Dr. Armstrong finds that it is impossible to separate the cost of tuberculosis work from that of general health work, as the two are closely interwoven. At the beginning of the demonstration Framingham was spending approximately 40 cents per year per head on all kinds of health work. *It is now spending* about $2 per year per head from public and private funds. He proceeds: "This amount of money will buy reasonably adequate pre-natal, infant, and pre-school work; satisfactory school health work; *industrial* health work; special tuberculosis work along many lines; and general community sanitation."

Results.—Tuberculosis as a cause of illness in Framingham is apparently being brought under control. The mortality per 100,000 for the decade preceding the demonstration was 121·5. The corresponding ratio for the period of the demonstration was 84·2—i.e., a reduction of about one-third. For 1920 the corresponding ratio was 64·5 per 100,000—i.e., a reduction of about one-half of the pre-demonstration rate. Should the U.S.A. as a whole follow Framingham's lead, it is estimated that 75,000 lives could be saved annually.

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[1] American Review of Tuberculosis, January, 1921.

[2] Beiträge zur Klinik der Tuberkulose, March 15th, 1921.

[3] Münch Med. Woch, 1915, Nr. 34.

[4] Therap. d. Gegenw., 1920, Nr. 1.

[5] THE LANCET, 1921, i., 344.

[6] The American Review of Tuberculosis, February, 1921

Norfolk Tuberculosis Farm Colony.

The inauguration of this colony was due to the initiative of the Norfolk Branch of the British Red Cross Society, who in 1919 offered to contribute the sum of £25,000 towards the establishment and equipment of a farm colony for patients in whom tuberculosis had been arrested by sanatorium treatment. The offer was conditional on the maintenance and further development of the project being undertaken by the Norfolk County Council, the Norwich City Council, and the Yarmouth Borough Council, who accepted the offer and obtained from the Ministry of Health the appointment of a Statutory Joint Committee to manage the undertaking. A property of over 700 acres was purchased, with good farm buildings, at Stanninghall, five miles from Norwich. The site of the colony is in a very open situation, on high ground, close to the picturesque ruins of an ancient abbey. Existing farm buildings have been utilised as an administrative block, containing committee-rooms and offices and apartments for a resident superintendent, matron, and nurse. There are also good kitchens and a dining-room for the patients. The colony was opened in April, 1920. There are at present 30 inmates, all men. The first patients were housed in a small number of shelters, but a large army hut was purchased later and divided into cubicles for 20 men. These cubicles are open to the south, and each accommodates two patients; they can be closed by curtains when the weather conditions do not admit of their being left open. Another large hut is now being adapted for the reception of 20 more patients. There is a well-equipped carpenter's shop on the premises, built by the inmates, and the men are being trained in carpentering, also in poultry and pig-keeping, making their own fowl-houses and pig-styes, as well as in market gardening, fruit farming, and forestry, under the supervision of experts who give their services voluntarily. A bowling-green is now being laid down, and a large hut has been fitted up as a recreation-room open after 6 P.M. for billiards and other amusements. The colony is under the medical supervision of Dr. W. B. Christopherson, tuberculosis officer for Norfolk, Dr. F. W. Burton-Fanning acting as medical adviser. Mr. H. R. Orr, formerly games master at Elston school, is resident superintendent, and the matron is Miss Bobby, for many years at Kelling Sanatorium. In regard to admissions, preference is given to ex-Service men, who are examined prior to admission in order to exclude acute cases. Beds are allotted in the proportion of three-eighths for Norfolk, three-eighths for Norwich, and two-eighths for Yarmouth. Up to the present the Insurance Committees pay £2 11*s.* for each inmate, but financial support now passes into the hands of the county council. The farm is being carried on as a separate undertaking under the management of Mr. Charles Gowing. The Red Cross Society spent over £9000 on stocking the farm, and it is hoped that as the colony grows the inmates will be able to take over from the farm such land as they can work. In the meantime the farm pays rent to the Joint Committee. The immediate need of the colony is the provision of cottages where married men can have their wives and families to live with them.

DONATIONS AND BEQUESTS.—By the will of the late Mr. Henry John Milbourne the testator left £5000 to Dr. Barnardo's Homes, and £200 each to Middlesex Hospital, King's College Hospital, Guy's Hospital, University College Hospital, East London Hospital for Children, Surgical Aid Society, Great Northern Hospital, and St. Mary's Hospital.—Subject to his wife's life interest, the late Mr. E. A. Eades, of Birmingham, has left, among other bequests, £1250 each to the Women's Hospital, Birmingham, and the Children's Hospital, Birmingham.

MEDICINE AND THE LAW.

What Constitutes "Breach of Agreement" by a Panel Doctor.

REPORTS of Inquiries and Appeals under the National Health Insurance (Medical Benefit) Regulations (England), 1913, which are published from time to time, contains a large amount of information which is of considerable interest to the panel doctor. The first volume, which was published in August, 1917 (Cd. 8549), includes notes of inquiries held upon medical practitioners and persons supplying drugs, reports of appeals against deductions on the ground of excessive prescribing, and of cases relating to questions of "competence and skill." A second volume, published in January, 1919 (Cd. 18), contains reported decisions down to June, 1918. All these reports are anonymous in the sense that the name of the practitioner whose conduct is called in question is not published. Under Section 15 (2) (*b*) of the National Insurance Act, 1911, any duly qualified medical practitioner who is desirous of being included in the medical list of an Insurance Committee is entitled to be so included, but, "where the Insurance Commissioners, after such inquiry as may be prescribed, are satisfied that his continuance in the list would be prejudicial to the efficiency of the medical service of the insured they may remove his name from the list."

The form of the inquiry is prescribed in Part VI. of the National Health Insurance (Medical Benefit) Regulations (England), 1913. These Regulations provide that if any representation is made by an Insurance, Local Medical, or Panel Committee to the effect that the continuance of a practitioner upon the panel is prejudicial to the efficiency of the medical service of the insured, the Commissioners shall thereupon institute an inquiry. If similar representations are made by any other person or body the Commissioners have a discretionary power to institute an inquiry, and they have a further power to do so, in cases where they think fit, in the absence of any representation. For the purpose of each inquiry the Commissioners constitute an Inquiry Committee consisting of three persons, one of whom must be a barrister-at-law or a solicitor in actual practice and the other two medical practitioners. It is the duty of the Inquiry Committee to draw up a report stating such relevant facts as appear to them to be established by evidence and the inferences which may properly be drawn. After consideration of this report the Commissioners take such action, if any, as they think fit. It should be mentioned that it was decided in one case (September, 1917, vol. ii., p. 21) that evidence on affidavit will not be received. A witness must attend and submit to cross-examination. Parties may be represented by solicitor or counsel. By the National Health Insurance Act, 1918, the provisions of the Arbitration Act, 1889, have been applied to these inquiries. The effect of this is that witnesses may be compelled to attend, and costs may be awarded to the unsuccessful party.

It will be useful to deal with some of the cases in which practitioners have appealed to the Commissioners on questions relating to alleged negligence or breach of agreement. Article 45 (16) of the National Health Insurance (Medical Benefit) Regulations (England), 1913, requires an Insurance Committee to inform a medical practitioner of the decision arrived at on any case dealt with by the Medical Service Subcommittee to which he has been a party, and entitles the practitioner to appeal from the decision to the Insurance Commissioners within 14 days after receiving such notice. Article 51 of the same Regulations deals with the procedure on appeal, and empowers the Commissioners either to decide the case without a hearing or, if they think that a hearing is required, to authorise any two or more of their number to hear and determine the appeal. It is important to notice that the Insurance Committee is bound by the agreement with the practitioner, and has no power to go outside it. Thus an Insurance Committee's power to withhold money from a doctor on the panel must be exercised strictly in accordance with the terms of the agreement and regulations conferring the power, which require that the case shall first be investigated by the Medical Service Subcommittee or Joint Services Subcommittee. So a decision to withhold money from a doctor, at which the Committee purported to arrive after the matter had been considered by the Medical Benefit Subcommittee only and without notice being given to the doctor, was held to be invalid.

Again, a charge must be strictly proved by proper evidence. For example, where there was a complaint made by an insured person against a practitioner on the ground that he had failed to attend her, the question turned on the nature of a verbal message alleged to have been sent to the practitioner and of his reply to the messenger. Neither the complainant nor the messenger attended before the Medical Service Subcommittee, nor was any written statement by the messenger put in evidence. It was held that there was not sufficient evidence before the Committee to support the complainant's case.

If a panel doctor appoints a deputy the effect of Clause 8 of the common form of agreement is that the practitioner is responsible in all respects for the acts and omissions of the deputy. The Commissioners have thus interpreted the clause:—

> "This clause does more than impose an obligation on the practitioner to supply a competent deputy. It requires the practitioner, when he is prevented from giving attendance personally, to provide that another practitioner will attend his patients as his deputy on his behalf; and we cannot doubt that in these circumstances the deputy attends the patient as the agent of the other practitioner, who is responsible in all respects for the acts and omissions of the deputy."

In the case, however, of any complaints being made against a practitioner acting as deputy for a practitioner on the panel, the Commissioners have said that notice of the charge and hearing should be sent to both practitioners concerned.

The panel doctor is under a statutory duty to the panel patient. It has been held that a practitioner on the panel and an insured person on his list cannot, by mutual arrangement and without reference to the Insurance Committee, release the former from the obligation to treat the latter imposed by Clause 2 (ii.) of the agreement. Unless and until the insured person is transferred from the doctor's list in accordance with one of the methods provided by the medical benefit regulations the doctor's obligations remain unchanged, and the acceptance of a fee in respect of services within the scope of the agreement involves a breach of the agreement. In the course of a decision the Commissioners made the following observations of a general nature:—

> "It is obvious that it is within the power of a doctor on the panel to adopt an attitude towards his panel patients which will inspire them with misgivings as to the efficacy of the treatment and drugs provided under the panel system. Apart from open disparagement of the system, a feeling of distrust may be created in the minds of his patients, and in particular those who, for whatever reasons, are predisposed to view with suspicion the arrangements made for medical benefit. If it comes to the notice of an Insurance Committee that in more than one instance the patients of a panel doctor have expressed their intention of foregoing their right to medical benefit and of obtaining treatment from the *same* doctor as private patients, the conduct of the doctor is clearly liable to misconstruction."

The Commissioners pointed out that there was nothing in the case before them to lead them to suppose that the practitioner whose conduct was under notice had erred in this respect.

A marked distinction is drawn by the Commissioners between mere error of judgment and negligence. In one case the appellant, who had treated a patient for neurosis, chronic rheumatism, and biliousness from September, 1913, to Jan. 31st, 1914, visited the patient in response to a message from the latter's wife on Feb. 1st, 1914, and examined him without taking his temperature. In the afternoon the patient called in another practitioner who diagnosed rheumatic fever. The Insurance Committee found that the allegation of neglect on the part of the appellant had been substantiated. It was held that, while the failure of the appellant to take the patient's temperature might have been an error of judgment, it did not constitute a breach of his agreement. In another case the Medical Service Subcommittee held that a charge of one guinea for attending a consultation was not justified. The practitioner appealed. It appeared that the appellant while attending a patient for typhoid fever was asked by the patient's mother, who was acting as his nurse, to meet another practitioner in consultation. The appellant consented to do so, but charged a fee on the ground that the consultation was unnecessary and that in attending it he was acting on behalf of the patient's mother. On a complaint by the insured person, the Insurance Committee decided that the charge was a breach of the appellant's agreement. It was held that as the appellant had in fact attended the consultation his action was for the general benefit of the patient, and in view of the mother's anxiety the consultation was not unnecessary. In giving their decision the Commissioners pointed out that it was open to the practitioner to refuse to attend the consultation if he believed that no benefit to his patient would result therefrom, directly or indirectly.

The procedure to be adopted by a practitioner who declines to accept a particular patient is laid down in the regulations. Arrangements made under Article 21 (4) of the Medical Benefit Regulations, 1913, required an insurance practitioner, who refused to accept an insured person for treatment, to give him a form containing instructions as to the steps to be taken to obtain treatment. In one case appellant, to whom an insured person applied for treatment, having refused treatment under the medical benefit arrangements and omitted to give the patient the form referred to, accepted the insured person as a private patient and subsequently charged him £5. It was held that the practitioner had committed a breach of his agreement with the Insurance Committee. It was also decided in this case that the fact that the doctor might, if he had put in motion the proper procedure, have had it established that some of the services rendered by him to the patient were of a specialist character, and therefore outside the scope of his agreement, did not justify his action.

In issuing certificates of "incapacity" the practitioner cannot divest himself of his responsibility by calling in a medical referee. In one case an insurance practitioner, being doubtful as to the continued incapacity for work of an insured person attended by him, suggested to the patient's Approved Society that an examination by a medical referee was advisable. The referee having stated that in his opinion incapacity still existed, the practitioner continued, notwithstanding his personal opinion to the contrary, to issue certificates of incapacity, some of which were given without examining the patient. It was held that the practitioner could not evade his personal responsibility for the issue of medical certificates by pleading that he acted on the opinion of a medical referee. His proper course was to have refused to issue certificates.

In one case the appellant, while attending an insured person on his list who was seriously ill, stated in the presence of her mother and herself that she required a drug which was very expensive and which he could not order owing to her being on the panel. In consequence of this statement the patient's mother engaged another doctor and paid for his services. It was held that the doctor's action was not consistent with the professional obligations which he had undertaken by the terms of his agreement with the Insurance Committee, and that the expense of employing another doctor was reasonably incurred in consequence of the appellant's breach of the agreement. The referee in giving his opinion said:—

> "The appellant on the occasion in question made use, without justification, of language which gave his patient and her mother reasonable ground for believing that the patient could not receive adequate treatment as an insured person, and that such action is not consistent with the professional obligations which the doctor by the terms of his agreement had undertaken to discharge."

The doctor should not make any attempt to disparage the panel system or panel treatment.

Arsenic in Borax.

A summons under the Sale of Food and Drugs Act was heard at Salford on April 27th against a pharmacist for selling borax not of the nature or substance demanded. Borax sold to a health inspector contained arsenic equal to 3 gr. per pound of borax, instead of 1/28 gr., as required by the British Pharmacopœia. The defence relied on a warranty obtained from the supplying firm. The pharmacist ordered B.P. borax, but apparently received a bag of commercial borax intended for another customer. The stipendiary upheld the view that the defendant had a warranty within the meaning of the Act and dismissed the summons. In another case the sample of borax contained arsenic equal to $1\frac{1}{2}$ gr. per pound of borax. In neither case was it suggested that the defendants had caused the adulteration. The defendant bought borax from two firms, but did not know from which he received the consignment from which the inepector's sample was taken. He always ordered B.P. borax. No question of warranty was raised. The Stipendiary in this case said there was 42 times more arsenic in the sample than there should be. A fine of one guinea was imposed.

It will be noted that in both the above cases the defence was that of "warranty," the defendant being entitled to have the charge dismissed on proving that he "purchased the article in question as the same in nature, substance, and quality as that demanded of him by the prosecutor, and with a written warranty to that effect"; also that he had no reason to believe it to be otherwise, and that he sold it in the same state as when he purchased it. A very large number of cases have turned upon the question as to what constitutes a written warranty within the above section (§ 25 of the Food and Drugs Act, 1875). Invoices have been rejected as such in the past when not quite distinct in their terms. But an invoice stating that the sale was one of B.P. borax was presumably deemed sufficient in the first of the above examples, and in the second it is clear that a defendant, who could not say on oath from which of two consignments from different firms he had taken the sample sold, could not connect with it anything in the nature of a written warranty. For his own protection, as well as for that of the public, a druggist should insist on his wholesale supplier warranting distinctly on his invoices the nature and quality of the goods that he delivers. It is to the public interest that strict proof of a warranty should be insisted upon.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Syndicates of Medical Men.

SINCE you have recently discussed in your columns the ethics and the practicability of some form of combined action on the part of medical men or allied professions, the position in France may be of interest to your readers. There are several syndicates of medical practitioners in France. Their members are practitioners who live in the same district. These syndicates are nearly all grouped in a union: "Union des Syndicats Médicaux de France," the members of which are chiefly general practitioners. Few consultants have so far joined the existing syndicates and there is no independent syndicate of consultants. A syndicate of hospital attendants (orderlies) as well as a syndicate of nurses had originally been set up by those employed in State hospitals; these syndicates later amalgamated in one under the heading: "Syndicat Général du Personnel des Hôpitaux, Hospices et Maisons de Santé de l'Assistance Publique." This syndicate and similar ones in the French Provinces and colonies are grouped in a federation: "Fédération des Services de Santé de France et des Colonies." One of these syndicates is even now fighting a battle against the State on behalf of its members. As reported in a previous letter the decision of the Ministry of Pensions concerning the remuneration of practitioners treating pensioners has been opposed by the Union des Syndicats Médicaux de France, who have decided not to consider the decree of the Ministry of Pensions. The committee of the Syndicat Médical de Paris have urged its members to uphold the decision arrived at by the Union des Syndicats Médicaux de France, and more especially to refuse to fill in and sign forms issued by the Ministry of Pensions. Members of syndicates were asked by the committee to continue to give medical attendance to pensioners, but to treat them as ordinary patients. It has now been proposed by the Union Fédérale des Associations des Mutilés et Réformés de Guerre to refer the decision to a committee consisting of delegates from the Ministry of Pensions, the Associations of Pensioners, and the Medical Syndicates.

Analysis of Water in War Zone.

At a recent meeting of the Société de Médecine Publique et de Génie Sanitaire Mr. R. Wibaux submitted a report on the present organisation of the laboratories exclusively devoted to analysis of waters in the French counties which were invaded during the war. They were set up for this special purpose soon after the war by the Ministère des Régions Libérées. In his report Mr. Wibaux pointed out that originally laboratory lorries were used, but were ultimately replaced by laboratories installed temporarily on any available premises. A motor-car is attached to each temporary laboratory, and it is the duty of a bacteriologist to drive to the various wells in the district to procure the specimens of water to be tested. Mr. Wibaux expressed the wish that such services should remain permanent, and that they should be extended to the whole of the country on a large scale.

Reorganisation of Sanitary Services.

It has been proposed to revise the Medical Act of Feb. 15th, 1902, which deals with the organisation of the sanitary services in France. The French Government has been seeking the opinion of the members of the Académie de Médecine on this matter, and they have been officially asked to express their views. A special committee has been appointed to that effect, and the last meetings of the Academy of Medicine have been largely devoted to debates on the committee's report. In the course of one of these meetings Mr. Léon Bernard emphasised the opinion that sanitary conditions in any area should not be regulated by the local authorities, but should be under the immediate control of a chief medical officer of health, who would superintend an extensive area.

Franco-Anglo-American League against Cancer.

The annual meeting of the Franco-Anglo-American League against Cancer was held at the Faculté de Médecine de Paris on April 19th, Mr. Lerédu, Minister of Hygiene, in the chair. At the opening of the meeting Professor H. Hartmann expressed a vote of thanks to those who had given grants to the League. A report of the managing committee was read by Mr. R. Le Bret, general secretary. Mr. J. Worth, the treasurer, submitted a financial report. Professor C. Regaud suggested that great benefit to the population might ensue if pamphlets were distributed under the joint auspices of the League, the Academy of Medicine, and the Pasteur Institute, pointing out the necessity of early surgical treatment of cancer.

War Memorial for Internes Killed in the War.

A war memorial was unveiled a few days ago at the Hôpital de l'Hôtel-Dieu in memory of the internes who were killed in action. Speeches were made by Mr. Bérard, Minister of Education; Mr. P. Mourier, Director of the Administration de l'Assistance Publique; Mr. H. Roger, Dean of the Faculté de Médecine de Paris; and General Buat, representing the Minister of War. The President of the Republic, the President of the Senate, the Minister of Hygiene, Marshal Foch, Marshal Petain, and the Rector of the Academy were also represented at the ceremony.

May 11th.

A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

METEOROLOGICAL OFFICE: ADVISORY COMMITTEE ON ATMOSPHERIC POLLUTION: SUMMARY OF REPORTS FOR AUGUST, SEPTEMBER, OCTOBER, NOVEMBER, 1920.

August.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre.								
		Insoluble matter.			Soluble matter.			Included in soluble matter.		
		Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition.	Ash.	Total solids.	Sulphate as (SO_3).	Chlorine (Cl).	Ammonia (NH_3).
ENGLAND.										
London—										
Meteorological Office	44	0·59	3·79	3·01	0·88	2·65	10·91	0·57	0·91	—
Archbishop's Park	46	0·12	1·34	1·62	1·19	1·21	5·47	0·51	0·79	0·04
Finsbury Park ...	44	0·04	0·85	2·40	1·22	1·50	6·01	0·04	0·94	0·03
Ravenscourt Pk.	35	0·15	1·20	2·31	1·08	1·20	5·95	0·30	0·90	0·06
Southwark Park	48	0·10	1·28	2·71	0·99	1·40	7·50	0·52	0·90	0·07
Victoria Park ...	44	0·06	0·84	1·58	1·12	1·69	5·28	0·40	1·05	0·08
Wandsworth Com.	45	0·05	0·77	1·45	1·19	1·60	5·04	0·38	0·97	0·14
Golden Lane ...	44	0·01	1·95	3·51	1·05	2·27	7·79	0·57	1·02	0·09
Birmingham—										
Central	50	0·13	6·42	13·76	1·46	3·48	25·25	1·73	0·26	0·05
Aston	42	0·11	2·60	9·49	1·04	2·41	15·35	1·15	0·14	0·05
South-Western ...	46	0·03	0·89	0·73	0·84	1·79	5·28	0·74	0·14	0·04
Kingston-upon-Hull	37	0·07	2·33	5·77	1·30	3·91	13·38	1·61	0·61	0·07
Liverpool	55	0·09	2·85	5·03	3·04	4·49	15·50	2·72	0·54	0·17
Malvern	18	—	0·10	0·15	0·36	0·61	1·22	0·30	0·07	0·03
Newcastle-on-Tyne	47	0·23	4·32	6·44	0·75	2·43	14·17	0·74	0·56	0·08
Rochdale	73		Ti.:	19·40	Ts.:	6·51	25·61	—	—	—
Rothamsted	32		0·40	0·68	0·39	1·65	3·12	—	—	—
St. Helens	62	0·14	3·66	8·42	1·23	3·54	16·99	1·29	0·69	0·01
Southport—										
Hesketh Park ...	41	0·03	0·29	0·35	1·42	3·45	5·54	0·26	1·42	0·02
Woodvale Moss ...	39	—	—	—	—	—	3·83	—	—	—
SCOTLAND.										
Glasgow—										
Alexandra Park...	120	0·14	1·50	2·56	2·28	2·52	9·00	1·39	1·29	0·10
Bellahouston Pk.	130	0·47	1·35	1·72	7·63	8·42	19·59	2·23	1·54	0·08
Blythswood Sq. ...	121	0·30	1·85	3·55	2·19	4·25	12·14	1·61	0·92	0·11
Botanic Gdns. ...	126	0·39	1·05	2·06	2·40	4·41	10·31	1·51	0·91	0·63
Queen's Park ...	130	0·57	1·60	2·21	2·38	4·22	10·98	1·69	0·11	0·08
Richmond Park...	131	0·24	1·82	3·59	3·66	5·50	14·81	2·04	1·33	0·15
Ruchill Park ...	126	0·10	1·19	1·85	2·26	3·90	9·30	1·55	1·13	0·07
Tolcross Park ...	126	1·06	2·90	3·87	5·87	3·66	17·36	1·69	1·03	0·16
Victoria Park ...	126	0·76	3·17	4·32	3·16	4·56	15·97	2·17	1·34	0·09

September.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre.								
		Insoluble matter.			Soluble matter.			Included in soluble matter.		
		Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition.	Ash.	Total solids.	Sulphate as (SO_3).	Chlorine (Cl).	Ammonia (NH_3).
ENGLAND.										
London—										
Meteorological Office	81	0·21	2·35	2·77	2·27	4·54	12·14	1·34	1·15	—
Archbishop's Park	83	0·36	5·48	12·55	1·66	3·06	23·11	1·36	1·20	0·12
Finsbury Park ...	78	0·04	0·35	1·32	1·89	1·63	5·22	0·85	1·66	0·09
Southwark Park	79	0·31	3·84	5·91	1·72	2·83	14·63	1·08	1·39	0·13
Ravenscourt Pk.	62	0·34	2·18	4·12	1·49	2·65	10·77	0·88	1·23	0·12
Victoria Park ...	65	0·08	0·83	1·08	1·79	2·04	5·82	0·95	1·02	0·11
Wandsworth Com.	86	0·13	1·89	2·89	3·17	2·63	10·71	6·10	1·68	0·13
Golden Lane ...	65	0·08	4·53	4·43	2·32	6·97	18·33	3·04	2·60	0·34
Birmingham—										
Central	52	0·18	4·99	15·85	1·86	4·40	27·28	2·18	0·31	0·10
Aston	46	0·08	2·93	5·14	1·23	2·82	12·20	1·26	0·16	0·05
South-Western ...	54	0·03	0·85	1·73	0·97	2·11	5·69	0·87	0·16	0·05
Kingston-upon-Hull	45	0·07	2·41	5·03	1·78	5·02	14·31	2·34	0·71	0·08
Liverpool	64	0·18	2·50	5·67	1·36	4·06	13·77	1·97	0·36	0·10
Malvern	62	—	0·10	0·28	0·41	1·64	2·43	0·67	0·12	0·01
Newcastle-on-Tyne	37	0·30	3·22	7·33	1·40	2·95	15·20	1·39	0·44	0·11
Rochdale	71		Ti.:	19·40	Ts.:	6·21	25·61			
Rothamsted	61	—	0·53	0·85	1·08	1·64	4·10	—	—	—
St. Helens...	72	0·03	1·32	1·88	1·80	2·34	7·37	1·43	0·88	0·01
Southport—										
Hesketh Park ...	78	0·04	0·65	0·65	1·17	3·31	5·82	0·59	1·10	0·05
Woodvale Moss ...	86	—	—	—	—	—	6·98	—	—	—
SCOTLAND.										
Glasgow—										
Alexandra Park...	67	0·09	1·87	2·90	2·14	1·98	9·07	1·39	0·88	0·16
Bellahouston Pk.	80	0·17	2·47	2·79	1·23	4·00	10·66	1·00	0·87	0·17
Blythswood Sq. ...	68	0·17	2·09	3·11	5·04	5·64	16·05	1·58	1·23	0·58
Botanic Gdns. ..	67	0·24	2·46	4·46	1·46	4·08	12·70	1·34	0·61	—
Qneen's Park ...	70	0·07	1·19	1·57	1·15	3·80	7·78	0·92	0·76	—
Richmond Park...	63	0·26	3·40	7·25	1·39	3·90	16·20	1·51	0·52	0·06
Ruchill Park ..	108	0·12	1·49	3·02	0·68	2·66	7·97	0·88	0·65	0·12
Tolcross Park ...	68	0·18	2·34	4·04	1·22	3·70	11·48	1·29	1·32	0·10
Victoria Park ..	80	0·11	1·75	2·45	1·22	3·44	8·97	1·77	0·53	0·16

October.

ENGLAND.										
London—										
Meteorological Office	29	0·22	1·89	2·63	2·07	3·22	10·03	1·06	0·79	0·03
Archbishop's Park	26	0·09	9·23	1·42	1·38	3·28	15·40	1·55	0·72	0·12
Finsbury Park ...	28	0·11	1·01	3·16	0·95	2·31	7·54	1·10	0·55	0·04
Ravenscourt Pk.	31	0·20	1·78	3·81	1·02	2·06	8·87	0·90	0·73	0·08
Southwark Park	26	0·12	2·59	3·23	1·16	2·52	9·62	1·20	0·76	0·07
Victoria Park ...	33	0·14	2·15	4·33	1·05	2·04	9·71	0·90	0·68	0·06
Wandsworth Com.	19	0·23	3·07	6·32	1·12	1·66	12·40	0·63	0·76	0·04
Golden Lane ...	31	0·09	3·07	4·21	1·42	3·68	12·22	1·56	0·73	0·13
Birmingham—										
Central	67	0·19	6·18	16·60	1·74	4·22	28·93	2·31	0·34	0·13
Aston	70	0·06	1·61	3·11	1·34	3·18	9·30	1·60	0·28	0·07
South-Western ...	70	0·03	0·92	1·91	0·84	2·21	5·91	1·01	0·35	0·04
Kingston-upon-Hull	35	0·06	3·33	4·15	1·87	5·06	14·47	2·50	0·57	0·07
Liverpool	51	0·15	2·31	5·49	2·44	3·77	14·14	2·23	0·39	0·10
Malvern	62	Tr.	0·15	0·38	0·64	1·90	3·07	0·61	0·12	0·02
Newcastle-on-Tyne	36	0·43	4·44	12·30	3·12	4·36	24·65	2·41	0·52	0·09
Rochdale	29	—	—	—	—	—	20·89	—	—	—
Rothamsted	37	—	0·40	0·67	1·40	2·11	4·58	—	—	—
St. Helens	27	0·03	0·87	0·08	1·54	2·04	5·46	0·97	0·77	0·03
Southport—										
Hesketh Park ...	24	0·04	0·53	0·43	0·60	1·07	2·67	0·34	0·33	0·02
Woodvale Moss...	28	—	—	—	—	—	3·53	—	—	—
SCOTLAND.										
Glasgow—										
Alexandra Park...	34	0·06	0·91	1·26	0·44	0·63	3·30	0·57	0·38	0·08
Bellahouston Pk.	29	0·26	2·12	3·02	0·92	1·50	7·86	0·45	0·30	0·16
Blythswood Sq....	34	0·31	2·12	3·29	1·80	2·83	10·35	1·00	0·64	0·18
Botanic Gdns. ...	39	0·11	1·49	1·94	0·93	1·46	5·93	0·88	0·26	0·05
Queen's Park ...	36	0·17	1·30	1·73	1·45	1·97	6·62	0·81	0·34	0·07
Richmond Park...	32	0·25	3·09	3·86	1·54	3·06	11·80	1·66	0·36	0·12
Ruchill Park ...	42	0·07	0·99	1·47	0·81	1·76	5·10	0·70	0·42	0·10
Tolcross Park ...	30	0·19	1·73	1·83	1·21	1·62	6·60	0·82	0·29	0·06
Victoria Park ...	44	0·24	1·47	2·34	0·66	1·41	6·12	1·00	0·28	0·11

November.

ENGLAND.										
London—										
Meteorological Office	26	0·21	2·23	0·44	0·97	1·89	9·67	0·89	0·62	0·59
Archbishop's Park	23	0·12	1·97	3·26	2·32	4·07	11·74	2·22	0·69	0·13
Finsbury Park ...	25	0·15	1·73	4·10	0·86	1·84	8·73	0·96	0·40	0·07
Ravenscourt Pk.	28	0·27	2·69	4·05	1·22	1·91	10·14	1·25	0·43	0·10
Southwark Park	21	0·34	3·86	5·31	1·06	1·95	12·52	1·06	0·43	0·08
Victoria Park ..	23	0·13	2·71	3·48	0·97	1·79	9·08	0·95	0·39	0·07
Wandsworth Com.	25	0·14	1·92	2·42	1·18	1·38	7·04	0·73	0·49	0·07
Golden Lane ...	25	0·09	2·63	3·74	1·29	3·69	11·41	1·66	0·70	0·18
Birmingham—										
Central	18	0·15	3·99	9·09	1·63	3·38	18·24	1·91	0·18	0·04
Aston	17	0·06	1·90	5·15	0·90	2·31	10·32	1·18	0·14	0·01
South-Western ...	21	0·02	0·68	1·46	0·43	1·37	3·96	0·63	0·11	0·01
Kingston-upon-Hull	15	0·34	2·89	4·37	1·81	4·81	14·22	2·48	0·24	0·05
Liverpool	25	0·24	2·69	7·14	1·58	3·23	14·94	1·61	0·27	0·09
Malvern	22	—	0·18	1·00	0·64	1·87	3·69	0·77	0·25	0·02
Newcastle-on-Tyne	22	0·42	2·95	5·39	0·88	2·74	12·38	1·15	0·45	0·05
Rochdale...	47* 44† 51‡		—	—	—		14·47 6·49 14·62		—	—
Rothamsted	41	—	0·48	0·76	1·24	1·95	4·43	—	—	—
St. Helens	30	0·16	3·53	5·09	0·96	3·34	13·08	1·72	1·11	—
Southport—										
Hesketh Park ...	34	0·10	0·68	0·77	0·51	2·40	4·46	0·53	0·83	0·02
Woodvale Moss...	28	—	—	—	—	—	3·29	—	—	—
SCOTLAND.										
Glasgow—	—	—	—	—	—	—	—	—	—	—
Alexandra Park ..	50	0·18	1·47	1·75	1·68	2·78	7·86	1·08	2·50	0·19
Bellahouston Pk.	104	0·23	1·52	2·35	3·72	5·32	13·14	2·05	2·51	0·21
Blythswood Sq....	91	0·16	2·98	4·14	3·67	7·49	18·44	2·41	2·59	0·15
Botanic Gdns. ...	90	0·15	1·80	3·30	2·12	6·03	13·40	1·90	2·11	0·14
Queen's Park ...	66	0·19	1·70	3·18	1·07	4·19	10·33	1·20	1·08	0·06
Richmond Park. .	64	0·39	3·33	5·27	2·77	7·67	19·42	2·94	1·73	0·09
Ruchill Park ...	112	0·17	1·58	2·29	0·74	6·54	11·32	2·35	2·49	0·11
Tolcross Park ...	83	0·18	3·34	3·24	1·94	5·78	14·48	2·21	2·05	0·15
Victoria Park ...	117	0·09	1·73	2·47	2·36	7·62	14·27	2·06	2·73	0·22
Stirling	77	0·13	1·82	2·00	2·77	3·98	10·70	0·86	2·00	0·13

Ti. = Total insoluble. Ts. = Total soluble. Tr. = trace. * East side of town. † West side of town. ‡ Town.

"Tar" includes all matter insoluble in water but soluble in CS_2. "Carbonaceous" includes all combustible matter insoluble in water and in CS_2. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (a) Approx. 9lb. per acre; (b) 2·56 English tons per sq. mile; (c) 1 g. per sq. metre; (d) 1·000 mm. of rainfall.

The personnel of public health authorities concerned in the supervision of these examinations and of the analytical work involved remains the same as published in previous tables. The analyses of the rain and deposit caught in the gauge at the Meteorological O were made in THE LANCET Laboratory.

Correspondence.

"Audi alteram partem."

EARLY DIAGNOSIS IN DIPHTHERIA.

To the Editor of The Lancet.

Sir,—For the past two years it has been impressed upon me that sufferers from diphtheria have been arriving at my hospital, on the whole, rather later in the disease than was the case for a good many years previously. The death-rate in 1919 was 13·6 per cent., and I have to go back to 1901 to find a death-rate either exceeding or equalling it. In 1920 the death-rate was 11·2, and I have to go back to 1903 to find that exceeded or equalled. Certainly the death-rates of 1919 and 1920 were higher than one would have expected, and naturally one looks for some explanation. A simple one would be that the disease was more severe in type, but though I am not prepared to deny that the type may have been somewhat more severe I am satisfied it was not the main cause, if, indeed, it affected it at all materially. The real explanation appears to be what I have just called attention to—the fact of so many patients arriving at the hospital after the disease was well advanced and without previous antitoxin treatment.

This slower recognition of diphtheria of late has puzzled my mind, and I have striven to find the explanation, but evidently no one reason by itself gives a satisfactory explanation. It is not to be assumed that only the milder forms come in late; it is any kind of diphtheria, and quite commonly the most severe. This cannot all be laid at the door of the practitioner, for it is quite clear that on many occasions he is not called in at the commencement of the disease, but for what proportion this accounts he would naturally be a better judge than I. There can be no doubt, however, that delay is greatly attributable to awaiting the result of a bacteriological examination. At first sight it seems curious that this should have increased, but it may be that so many practitioners were not in civil practice during the war, and consequently had not the opportunity to study diphtheria clinically.

Yet I do not think that is the sole cause of the tendency to wait for bacteriological examination, for some scientific books lay too much stress on the finding of the bacillus, and I have even been told by a medical man that the medical officer of health expected it. I do not know how far the medical officer of health may be considered responsible, but an excellent scientific text-book states that examination of the membranous exudation with the demonstration of the presence of the diphtheria bacillus is the only reliable method of diagnosis. This kind of erroneous statement might best be met by the epigrammatic remark of an authority on diphtheria: "Were it not that the diphtheria bacillus had given us antitoxin, it would have been well had it never been discovered." I have no wish to discourage bacteriological examination; indeed, I always carry it out, but to let treatment wait upon the result of the examination means delay, and delay in diphtheria often means death. For 15 years MacCombie kept records of the diphtheria death-rates according to the day on which the disease was treated with antitoxin, and as these results were founded on over 7000 cases they may be taken as conclusive. The death-rate when antitoxin was given on the first day was 0·5 per cent.; on the second day 4 per cent.; on the third day 10 per cent.; on the fourth day 15 per cent.; and on the fifth and succeeding days 16 per cent.

My own experience of treatment on the first day has not been quite so good as MacCombie's, but his figures demonstrate what waiting without treatment for a bacteriological examination means. Moreover, it must be remembered that the bacteriologist, at all events at first, may fail to find the bacillus in well-marked diphtheria, and maybe another swab is taken with further delay. As a matter of fact, failure to find the bacillus in a culture taken early in the disease is not uncommon. It may not be found even in a second or third culture, and rarely not at all. Failure to find the bacillus in purely laryngeal diphtheria is common and well known, but perhaps it is not so well known that in the severest form of faucial diphtheria cultures taken on the first day are not uncommonly negative. On the other hand, the case for examination may be a carrier and the finding of the bacillus of no value. Nevertheless, a culture should always be taken, and care should be exercised in the choice of examiner, the dabbler in bacteriology being avoided.

However, in milder forms of faucial disease with a suspicion of diphtheria, sometimes the question will arise whether one ought to let treatment wait for the culture result. The difficulty is often great, for the point one has to decide in such a case is whether the disease will continue mild or develop into a severe attack. In my experience this is difficult to do without occasional error, and I think there can be no doubt that if the clinical evidence favours diphtheria the patient should be treated for that disease at once. In practice it comes to this: if one is sufficiently experienced to say that a given patient will certainly recover if treatment is postponed to the second or third day, then one may wait, but if one cannot say so then it is one's duty to give antitoxin.—I am, Sir, yours faithfully,

Frederic Thomson.

North-Eastern Hospital, Tottenham, N., May 12th, 1921.

THE INTERNECINE VENEREAL CAMPAIGN.

To the Editor of The Lancet.

Sir,—Lord Gorell states in his letter which you printed in your issue of May 7th that there is now admitted to be but one point of difference between the two societies. In order that your readers may appreciate the extent of the difference it is necessary for them to read our letter to Lord Gorell of April 22nd, which was not published in full in The Lancet. We adhere to the position defined in that letter, and are still ready to meet the National Council for Combating Venereal Diseases according to our letter to the Bishop of Birmingham of Feb. 25th, accepting his invitation to a round table conference, on the understanding that the National Council for Combating Venereal Diseases were prepared to take action forthwith on the terms of the report of the Bishop's committee.

The National Council for Combating Venereal Diseases did not accept this invitation, therefore the conference did not take place.—We are, Sir, yours faithfully,

Willoughby de Broke,
President of the Society for the Prevention of Venereal Disease.
H. Bryan Donkin,
Vice-Chairman. Executive Committee, S.P.V.D.
H. Wansey Bayly,
Honorary Secretary, S.P.V.D.

Harley-street, W., May 13th, 1921.

A LEARNED LAYMAN ON VENEREAL DISEASE.

To the Editor of The Lancet.

Sir,—Many of your readers have read the recent series of articles in the *Morning Post* by Mr. Harold Cox, entitled "The Path to Pauperism." They are written with interest and power, and deservedly arrest attention. The skill which has enabled their author to exercise such influence is to be envied; but, unfortunately, we possess in these articles a striking example of how one, who possesses ability both as a publicist and a literary man, can become by deficient knowledge lacking in accuracy. This is all the more regrettable as the subject of venereal disease is so clearly a public and not only a professional matter.

In the *Morning Post* of April 28th Mr. Cox treats of the Ministry of Health under the three headings of (1) Departmental Rivalries, (2) Venereal Disease, (3) Maternal and Child Welfare; and it is the second of these sections—viz., that dealing with venereal disease

—on which I desire to comment. The problem of venereal disease in relation to the nation's welfare is an extremely complex one, in respect to both its medical and sociological aspects; and Mr. Cox exhibits a degree of knowledge which is superficial, and therefore dangerous, especially in view of the prestige conferred on his statements by his own position and that of the journal in which his words appeared.

Mr. Cox, having previously indicted the Ministry of Health on the charge of being indifferent "to the true interests of the health of the nation," proceeds to level a similar charge against that body with regard to its attitude towards venereal disease. He attracts our attention by stating that syphilis and gonorrhœa are "the most easily preventable of all diseases." He fails, however, to indicate the nature of those preventive measures which so easily secure success. He then considers the attitude of "two private societies." His description of the Society for the Prevention of Venereal Disease is imperfect and substantially fails to do justice to that body. He writes that it "adopts the common-sense view that the prevention of venereal disease is an obligation resting upon the individual and also a matter of immense importance to the nation. It, therefore, demands that facilities should be provided for individuals to obtain the knowledge and the means by which venereal disease can be prevented." The Society for the Prevention of Venereal Disease, in addition to zeal for the adoption of medical measures, also recognises the importance of the ethical and religious factors in the prevention of venereal disease, and Mr. Cox fails as a critic by omitting so important a fact in relation to this Society.

He then proceeds to deal with the National Council for Combating Venereal Diseases, saying:—

> "The other Society takes the view that nothing should be done to help in the prevention of the disease, but that as soon as the disease has been acquired public money should be spent in trying to cure it. The latter Society receives large subsidies provided out of the taxpayers' money to enable it to advertise itself. For this purpose, as Dr. Addison confessed in the House of Commons, the country has had to pay about £13,000 a year for the last three years. How much is to be spent in the current year on advertising this futile Society has not yet been announced, but the total sum asked for by the Ministry of Health and similar bodies in Scotland and Ireland on account of venereal disease is £512,550. None of this money is to be spent on effective methods of prevention. The so-called Ministry of Health prefers that people should first run the risk of getting the disease, and that the Department should then try to cure them. This policy is apparently due to theological as well as departmental considerations. Dr. Addison and his staff seem to have held the view that venereal disease is an affliction designed by Providence as a penalty for sin. Historically that is a curious view, because syphilis, at any rate, did not appear in this country till late in the Middle Ages, and it may be presumed that there was sin before that time. Apart from this historical fact, the Addisonian theory is still difficult to understand. In effect Dr. Addison and his theological and medical advisers have been saying, "Since disease is a punishment for sin, we will not allow people to know how they can prevent it. Nevertheless, we will do our best to cure them at the taxpayers' expense when they have acquired it."

Mr. Cox thus accuses both the Ministry of Health and the N.C.C.V.D. of refusing to take steps in respect to the prevention of venereal disease, while spending public money in attempting to cure those who have fallen victims. He has not thought it worth while to inquire what views are held on this matter by either the Ministry or the National Council. Now both the Ministry and the Council realise that the fundamental cause of venereal disease is the indulgence in promiscuous sexual intercourse, and also that it is their duty to diminish causes rather than treat symptoms. They know that much of the promiscuous sexual intercourse which gives rise to venereal disease is due to the lack of efficient education of the young, of adolescents, and even of adults in sexual matters. They rightly devote, therefore, a substantial portion of their attention towards dissemination of such instruction as will tend to prevent the occurrence of those conditions, which experience has shown to be provocative of promiscuous sexual intercourse, and therefore of venereal disease. The Ministry and the Council are not irrational idealists, nor do they confine their efforts to educational methods. They also advocate efficient cleansing by those who will wilfully or carelessly persist in placing themselves in danger. Mr. Cox's statement as to the N.C.C.V.D. taking the view "that nothing should be done to help in the prevention of the disease" is untrue.

Turning to the financial aspect of the question, Mr. Cox has no idea as to the cost to the country of venereal disease. The sums spent by the adoption of far-seeing and rational methods for reducing the cause of these diseases will prove the means of saving the country a vast expense. The propaganda work carried out by the National Council is of estimable value, for it is directed to the very root of the evil. To regard this money as being spent "in advertising this futile Society" merely because an important branch of their work is carried out through the channels of the press is childish in the extreme. The remarks as to venereal disease being regarded by the N.C.C.V.D. as a punishment for sin, have as far as I can find, no basis, and their humour becomes malicious. Mr. Cox has, I think, trustfully accepted statements concerning the bodies which he abuses without understanding their activities. His articles produced under the ægis of so respected a journal, and signed by so respected a publicist are capable of doing great damage to the nation.

I enclose my card, from which you will see that I ought to know my subject.

I am, Sir, yours faithfully,

May 14th, 1921. A MORPHOLOGIST.

SURGICAL SHOCK.

To the Editor of THE LANCET.

SIR,—In THE LANCET of May 7th a review of "Principles of General Physiology" by Professor W. M. Bayliss mentions the theory that in surgical shock a widespread dilatation of capillaries leads to a pooling of blood. I believe that surgeons who have seen many cases of shock have failed to find pooling of blood in capillaries. Would Professor Bayliss or your reviewer state where, in a human subject suffering from surgical shock, these dilated capillaries are to be found?

I am, Sir, yours faithfully,

Plymouth, May 8th, 1921. C. HAMILTON WHITEFORD.

Professor Bayliss, to whom we referred Mr. Whiteford's inquiry, replies as follows:—

I thank you for giving me the opportunity of making a few remarks on Mr. Whiteford's letter. He does not tell us what evidence of pooling in capillaries surgeons have looked for and failed to obtain. Since the effect in question is not confined to the capillaries of any particular region and the total volume of these vessels, compared with the rest of the vascular system, is enormous, it is clear that a dilatation too small to be detected by direct observation may produce a large increase in the total volume. The evidence, in the nature of things, must be more or less indirect. It would be impossible to give it adequately in a brief account, and those interested may be referred to the special reports of the Medical Research Council, Nos. 25, 26, and 27, especially the two latter. In summary, it may be given thus. Observations during the war on shock unaccompanied by hæmorrhage showed that the low blood pressure was not due to any heart effect, nor to pooling of blood in arteries or veins. But it was found by the vital red method that the blood in actual circulation was greatly reduced. The dilatation of arteries and veins having been ruled out, it could only be in the capillaries. Other confirmatory evidence was obtained and the conclusion was greatly strengthened by the discovery of toxic substances having the required action. In addition to the literature quoted in the reports mentioned, Mr. Quénu's book, "Toxémie Traumatique," deals with this aspect of wound shock.

West Heath-road, N.W., May 12th, 1921.

THE DANGER OF ATHLETICS FOR GIRLS AND WOMEN.

To the Editor of THE LANCET.

SIR,—I have read with great pleasure Miss C. Cowdroy's letter in THE LANCET of May 14th under this title. My experience leads me to agree with her entirely. I have seen a number of girls and young women whose health has been permanently damaged by indulgence in strenuous athletics, and even if they escape physical injury I find they have degenerated into beings of neutral sex who are unfitted for either the work of men or women. Whilst writing on this subject I should like to mention another harmful and dangerous craze. Physical jerks for the middle-aged has done a great deal of harm to many people. The average man or woman of 50 can keep perfectly fit if he or she does not over-eat or drink too much and takes a good amount of walking exercise daily. If they do this there will be no need for "physical jerks." If they do not they may easily "jerk" themselves into their graves.

I am, Sir, yours faithfully,
LESLIE THORNE THORNE, M.D.

Harley-street, W., May 14th, 1921.

INTRAVENOUS INJECTION OF STIBENYL IN KALA-AZAR.

To the Editor of THE LANCET.

SIR,—With reference to the dosage of stibenyl in the treatment of kala-azar and other tropical diseases raised in Dr. P. Manson-Bahr's letter in your issue of May 7th, it ought to be made clear that each batch is tested for toxicity by the Medical Research Council, and all material issued for use conforms with their standard. Stibenyl is tested on mice, as in the case of salvarsan, and the dose that must be tolerated is 0·15 mg. per gramme body-weight used intravenously in a concentration of 1 per cent. The maximum dose that has been suggested for an adult person is 0·6 g., which should allow a very large margin of safety.

We are, Sir, yours faithfully,
ALLEN AND HANBURYS, LTD.

Bethnal Green, London, E., May 12th, 1921.

The Services.

ARMY MEDICAL SERVICE.

Cols. H. N. Dunn (late R.A.M.C.) and H. J. M. Buist retire on retired pay.

ROYAL ARMY MEDICAL CORPS.

Major S. McK. Saunders is restored to the establishment.

Capts. G. K. Maurice and W. Pailthorpe are seconded for service with the Egyptian Army.

Capt. A. W. Bevis retires, receiving a gratuity.

Temp. Capts. T. M. Richardson and V. H. L. MacSwiney relinquish their commissions and retain the rank of Captain.

TERRITORIAL FORCE.

Major J. G. McCutcheon (late R.A.M.C., Special Reserve) to be Captain, and relinquishes the rank of Major.

Captains to be Majors: J. G. McCutcheon, G. E. J. A. Robinson, F. R. M. Heggs, and E. L. D. Dewdney.

Major F. W. Kendle, T.D. resigns his commission and retains the rank of Major with permission to wear the prescribed uniform.

Supernumerary for Service with O.T.C.—Major W. D. Sturrock, from General List, to be Major, and to command the Field Ambulance Section, Oxford University Contingent, Senior Division, O.T.C.

TERRITORIAL FORCE RESERVE.

Capt. A. Coleridge to be Major.

DEFENCE FORCE.

To be temporary Majors: J. M. Cowan and W. Haig. To be temporary Captains: J. M. Chrystie, A. H. D. Smith, R. Morshead, A. G. Williams, A. E. H. Reid, D. C. Graham, and V. T. W. Eagles. To be temporary Lieutenants: E. H. Mayhew, J. E. Sinclare, and A. N. Rushworth.

2nd Highland Field Ambulance (D.F.).—To be temporary Lieutenant-Colonel: J. W. Tocher. To be temporary Major: W. F. T. Haultain. To be temporary Captain: H. J. Rae. To be temporary Lieutenant. H. J. Dawson.

1st London Field Ambulance (D.F.).—O. W. McSheehy (Major, R.A.M.C.) is granted the rank of temporary Lieutenant-Colonel while commanding a Field Ambulance. To be temporary Major: E. Knight. To be temporary Captains: A B. Mount, A. L. Robinson, and R. J. Arundel.

1st London Sanitary Section (D.F.).—To be temporary Captain: H. C. Sands.

2nd London Field Ambulance (D.F.).—To be temporary Lieutenant-Colonel: H. G. Haynes. To be temporary Captains: M. Coughlan and W. Hassard. To be temporary Lieutenant: G. W. Almeyde. To be temporary Quartermaster with the rank of Captain: A. J. H. Knight.

3rd London Field Ambulance (D.F.).—To be temporary Lieutenant-Colonel: M. H. Allen. To be temporary Captain: L. J. G. Carre.

4th London Field Ambulance (D.F.).—To be temporary Captain: C. H. Welch.

5th London Field Ambulance (D.F.).—To be temporary Lieutenants: J. R. K. Flemming and H. W. Collins.

6th London Field Ambulance (D.F.).—To be temporary Captain: E. H. Bingley.

2nd (London) Divisional Sanitary Section (D.F.).—To be temporary Captain; H. Brian-Pearson.

1st (Lowland) Field Ambulance (D.F.).—To be temporary Lieutenant-Colonel: E. S. Forde. To be temporary Major: E. P. Cathcart. To be temporary Captain: J. K. Rennie. To be temporary Lieutenants: A. H. Jacobs and N. M. D. Fox.

2nd (Lowland) Field Ambulance (D.F.).—To be temporary Lieutenant-Colonel: G. B. Fleming. To be temporary Major: J. R. C. Greenlees.

3rd South Midland Field Ambulance (D.F.).—To be temporary Lieutenant-Colonel: T. A. Green. To be temporary Major: D. S. A. O'Keeffe. To be temporary Captains: A. D. Symons and J. C. Brasher. To be temporary Lieutenant: B. A. Astley-Weston.

1st East Anglian Field Ambulance (D.F.).—To be temporary Captains: A. G. Atkinson and H. F. Gilmour.

2nd East Anglian Field Ambulance (D.F.).—To be temporary Captain: W. T. G. Boul.

3rd (Highland) Field Ambulance (D.F.).—To be temporary Lieutenant-Colonel: G. W. Miller. To be temporary Major: W. A. Robertson. To be temporary Captain: J. Kinnear.

1st (Home Counties) Field Ambulance (D.F.).—To be temporary Captain: E. A. Houchin.

2nd (Home Counties) Field Ambulance (D.F.).—To be temporary Captain: R. A. Freeman.

3rd (Home Counties) Field Ambulance (D.F.).—To be temporary Captain: V. E. Negus.

3rd (Welsh) Field Ambulance (D.F.).—To be temporary Lieutenant-Colonel: C. L. Isaac.

1st Wessex Field Ambulance (D.F.).—To be temporary Lieutenant-Colonel: A. Cary. To be temporary Major: R. Ward.

ROYAL AIR FORCE.

T. P. Harpur is granted a temporary commission as Flying Officer.

INDIAN MEDICAL SERVICE.

The King has approved the grant of the rank of Captain to the undermentioned on relinquishing their temporary commissions: Moses Solomon, Jamna Das, Jitendra Kumar Banerji, Ullah Anantthaya, and Ram Chandra. And the honorary rank of Lieutenant-Colonel to the undermentioned on relinquishing his temporary and honorary commission: Raghavendra Row.

The King has approved the retirement of the following officers: Brevet Col. C. M. Goodbody and Lieut.-Col. S. E. Prall.

DEATHS IN THE SERVICES.

Sir Robert William Jackson, C.B., Deputy Surgeon-General, retired, died on May 12th at Dublin in his ninety-fourth year. He entered the Army Medical Department in 1854, served in the Crimea, and was present at the fall of Sevastopol. He served throughout the Indian Mutiny, and was present at the relief of Lucknow and at the Battle of Cawnpore (medal with three clasps). He also took part in the Ashanti war (mentioned in despatches), and saw service in South Africa. In Egypt he was present at the Battle of Tel-el-Kebir (medal with clasp and bronze star). He retired in 1882, in which year he was knighted.

NORTH EUROPEAN CONFERENCE ON VENEREAL DISEASES.—This Conference opens at Copenhagen to-day (May 20th) with an address by Sir David Henderson, Director-General of the League of Red Cross Societies. The following special problems are to be presented: 1. The supply and cost of arsenical compounds for the treatment of syphilis; the possibility of establishing an international standard for the export and import of such compounds. Discussion to be opened by Dr. Kristian Grön for the Norwegian Red Cross Society. 2. The provision in important ports, by international agreement, for the treatment of cases of venereal diseases among sailors, and measures to be taken in connexion therewith. Discussion to be opened by Lieutenant-Colonel L. W. Harrison for the British Red Cross Society. 3. The part of the Red Cross in combating venereal disease, its relation to Government and voluntary agencies. Discussion to be opened by Professor C. E. A. Winslow for the League of Red Cross Societies. 4. Medical measures for the prevention of venereal diseases. Discussion to be opened by Dr. Jersild for the Danish Red Cross Society. The British delegates to the Conference are Colonel Harrison, Dr. F. N. Kaye Menzies, and Mrs. Neville Rolfe. The German Red Cross is represented by Professor J. Jadassohn, Professor Galewsky, and Professor F. Pinkus.

Parliamentary Intelligence.

HOUSE OF LORDS.

WEDNESDAY, MAY 11TH.

Public Health (Tuberculosis) Bill.

THE Public Health (Tuberculosis) Bill was read a third time and passed. (The measure received the Royal Assent on the following day.)

THURSDAY, MAY 12TH.

Criminal Law Amendment Bill.

The Earl of CRAWFORD, replying to the Bishop of London, who asked whether the Government would be able to grant facilities for the passing of the Criminal Law Amendment Bill this session, said that if the measure continued to maintain the non-controversial character with which it left their lordship's House the Government would be glad to do its best at a later stage of the session to pass it into law. No more definite indication than this could be given owing to the fact that there was considerable pressure on the time of the House of Commons.

HOUSE OF COMMONS.

TUESDAY, MAY 10TH.

Rabies in England.

Mr. HUGH MORRISON asked the Minister of Agriculture whether there had been at least 18 cases of rabies in England since January last as against only three cases for the same period in the previous year; whether a dog infected from rabies had been found 70 miles from its home; whether dogs who had developed the disease after being watched were in confinement for seven and a half months; and, if so, was he satisfied that the present regulations were sufficiently stringent to stamp out the disease.—Sir A. GRIFFITH-BOSCAWEN replied: (1) The number of cases of rabies confirmed in Great Britain since Jan. 1st last is 17, but 3 of these refer to dogs which had died in the previous year. The actual number of cases this year is therefore 14 compared with 4 during the corresponding period of last year. (2) Dogs suffering from rabies have been known to wander for 70 miles from their homes, but the longest distance which a mad dog has wandered recently in this country is approximately 50 miles. (3) In one case only in this country in recent outbreaks has the disease taken seven and a half months to develop. The average period of incubation for the series has been two and a half months, and no case has arisen in a dog after its release from quarantine for the prescribed period of six months. The Ministry is satisfied that the existing regulations are adequate.

WEDNESDAY, MAY 11TH.

Orthopædic Hospital at Hammersmith.

Sir WILLIAM BULL asked the Minister of Pensions whether, in view of the difficulty experienced by the Hammersmith board of guardians in finding suitable accommodation for the sick poor of that borough, due to the exclusive occupation of the workhouse and infirmary in Ducane-road by the Ministry of Pensions for use as an orthopædic hospital, and in view of the fact that the full accommodation of this establishment, 800 cases, did not now appear to be required, the greatest number accommodated at any one time since Jan. 1st, 1921, having been 686 cases, he could give a definite assurance that these premises would be restored to the Hammersmith board of guardians on Jan. 1st, 1922, as indicated in conferences which had taken place between representatives of the Ministry and of the local authorities held variously since June, 1918.—Major TRYON (Parliamentary Secretary to the Ministry of Pensions) replied: The matter is under consideration and I am unable to make a definite statement at the present moment. I am communicating with my honourable friend.

Food for Children Under Five.

Mr. TYSON WILSON asked the Minister of Health whether, in view of the widespread distress in the country, he would cancel Circular M. and C. W. 185, issued March 31st, 1921, and re-issue Circular M. and C. W. 4, of August 9th, 1918, so that maternity and child welfare committees might provide children under 5 years of age with food.—Sir ALFRED MOND replied: Circular 185 does not alter the conditions previously prescribed on which food may be supplied to children under 5, except in regard to the supply of milk, which under the Circular is to be supplied free, or at less than cost price, only in necessitous cases. In the circumstances no purpose would be served by cancellation of the Circular.

Hydrophobia and the Pasteur Treatment.

Mr. FREDERICK GREEN asked the Minister of Health how many persons bitten by alleged or suspected mad dogs since the first case of rabies was notified in this country after the war had refused the Pasteur treatment, and if any of those persons had contracted hydrophobia.—Sir ALFRED MOND replied: So far as I am aware there have been only two cases in this country since the armistice in which persons bitten by dogs which were reasonably suspected to be rabid have refused the Pasteur treatment. Neither of these persons developed hydrophobia.

Superannuation of Local Government Officials.

Mr. MYERS asked the Minister of Health whether he would be able at an early date to give effect to the promise made by his predecessor and introduce a Bill making provision for a national scheme of superannuation for Local Government officials.—Sir ALFRED MOND replied: As I have previously stated in reply to questions, the Government regret that they cannot proceed with this matter at the present time in view of the charges which the scheme would impose upon the rates.

Suffering of Mothers and Children in Ireland.

Viscountess ASTOR asked the Chief Secretary to the Lord Lieutenant of Ireland whether he had received representations as to unnecessary suffering caused to expectant mothers and to women with new-born children through certain police and military regulations in Ireland; and whether he would consider the appointment of a committee of medical and infant-welfare experts to consult with the military authorities as to the best methods of obviating or minimising such suffering.—Mr. HENRY (Attorney General for Ireland) replied: My right honourable friend the Chief Secretary has received no representations of this nature and has no reason to think that there are any grounds on which the appointment of a committee such as is suggested would be justified. He will be glad, however, to consider any representations] that may be made to him on the matter. All doctors and nurses who choose to apply for curfew permits can obtain them. Doctors and nurses are also expressly exempted from motor restrictions and can use motor vehicles without restriction as to distance or time.

Maternity Welfare.

Captain WEDGWOOD BENN asked the Prime Minister the amount which would be involved by the State annually by the ratification of the maternity convention, as estimated by the Government; upon what weekly sum the Government had based the full and healthy maintenance grant for mother and child; and whether the annual estimate had been worked on a contributory or non-contributory basis.—Sir ALFRED MOND (Minister of Health) replied: I am having laid as a White Paper a Memorandum by the Government Actuary on the Washington Draft Convention concerning the employment of women before and after childbirth. The Memorandum deals with the points raised by the honourable Member.

Captain WEDGWOOD BENN asked the Minister of Health the number of women industrially employed who received maternity benefits under the Health Insurance Act for the last year for which returns were available; and the total amount paid out in maternity benefits for industrially employed women in that year.—Sir ALFRED MOND replied: The information as to numbers is not available, and could only be obtained by calling for a special return from all societies and branches. The amount paid as maternity benefit to employed women in England and Wales for the year 1920 in respect of their own insurance was approximately £230,000. In addition, £160,000 was paid as maternity benefit to women who were entitled to special benefits on cessation of employment on or after marriage.

Dentists Bill.

The Dentists Bill was read a second time and committed to a Standing Committee.

Scottish Midwives Order.

The House approved the Scottish Board of Health (Midwives (Scotland) Act, Transfer of Powers from Secretary of Scotland) Order, 1921.

THURSDAY, MAY 12TH.

MINISTRY OF HEALTH VOTE.

The House went into Committee of Supply on a vote of £15,245,093 for the expenses of the Ministry of Health, Mr. JAMES HOPE in the chair.

Sir ALFRED MOND (Minister of Health) said the activities of the Ministry spread over a wide field, and, dealing with very novel propositions under difficult conditions, naturally afforded room for legitimate criticism. But a great deal of the criticism had neither been constructive nor well informed, nor had it made any endeavour to deal with the difficulties of the situation with which his predecessor and he had been faced. In spite of their difficulties they had succeeded in making a substantial reduction in the estimates this year of over £3,000,000. He was applying himself to the task of seeing whether still further economies could be made. Considerable progress had been made in housing. They were now trying to limit the present scheme, cutting down in outlying districts where the housing need was not so great, and concentrating on the great industrial centres in which the housing need was greatest. He would give 300,000 as the gross figure of houses of different classes. If, however, fewer could be done with he would be prepared to cut it down to the minimum requirements. A subject which had aroused a good deal of criticism and comment in the press was the medical establishment of the Ministry. Whereas the old Local Government Board had a relatively small medical staff and relatively little to do in the way of medical duties, the National Health Insurance had a much larger staff, and when the two were joined together that automatically increased the staff of the Ministry of Health. On April 1st, 1919, the number of pensionable medical men in the Local Government Board and the Insurance Commission of England and Wales was 46. The number at present in the Ministry was 59, or a difference of 13, distributed as follows: Maternity and Child Welfare, 2; Tuberculosis, 2; Venereal Disease, 2; Port Isolation Hospitals, 3; Statutory Medical Services and Intelligence Work, 3; and work taken over from the Home Office, 1. These were additional functions to the work which was being looked after by the medical staff of the Ministry of Health, apart from the newly established regional officers. There were no less than 1800 sanitary authorities which looked to the Ministry for guidance, 114 port authorities, 646 Poor-law unions, 1029 isolation hospitals for infectious diseases, and 4220 public vaccination districts which had to be inspected. There were a vast number of maternity centres and tuberculosis sanatoriums to which the Ministry gave grants, and which also had to be inspected. It might be considered cheaper to hand out money without seeing how it was spent in order to save a little in administration, but if this money which the taxpayer handed over to these various institutions was spent badly they might lose a great deal more than the cost of a few inspectors who went round to see that the money was properly expended. They were not up to their full establishment on the medical services; there were two vacancies, but he did not intend to fill them at the present time. There were also some six temporary appointments, the work of which had lapsed and which it was intended to discontinue for the present. There was also the possibility of the reduction of two more of the permanent established staff, making a total reduction on establishment and non-establishment of between nine and ten. That was as far as they could wisely go at the moment. The health-rate of the country was good. The birth-rate was rising and the death-rate declining. Infantile mortality showed a continued steady decline. The work at the maternity welfare centres with its concomitants, which would require development of pre-natal and post-natal care of mothers, was one of the most beneficent reforms any country could undertake. The number of health visitors had gone up from 1400 to 1700, the number of non-resident centres had risen from 1400 to 1900, the number of maternity homes from 740 to 1200, and the infant hospitals for children under 5 years from 50 to 367. He hoped that they would not economise on the infant life of the country.

Progress in Treatment of Tuberculosis.

They were making very good progress with tuberculosis. They could not build up perhaps in a day, and they might achieve relatively little at a time, but they could be confident that with all the difficulties and all the scepticism that one encountered, if they proceeded on sound lines of sanitation and on reasonable lines of care and treatment, if they proceeded on the lines of teaching people more about hygiene and how to avoid the disease, they could produce great improvement still in the physical, moral, and mental standard of our people. The venereal disease work so far as it had gone was making good progress. It was a very difficult but a very important piece of work. Although he did not believe in covering the country with nothing but posters drawing attention to this matter, and over-emphasising it, he was quite convinced that they must steadily proceed both with propaganda and with treatment. He was considering the issue of a new circular explaining the policy of the Department, which consisted in a sane and moderate view of this complex and difficult problem, which had a moral and a social as well as a medical side. Whilst he was prepared to assist in protecting the health of the nation against this dangerous illness he was not prepared to accede to the demands of those who seemed to regard the question with perfect sincerity and great enthusiasm merely from the medical aspect without taking the wider view. The appointment of some 33 medical referees whose duties were largely connected with the examination of members of Approved Societies for National Health Insurance had received a very considerable amount of criticism in the press. These appointments were really made as long ago as 1914 by that House. It was very difficult sometimes to determine whether a man was malingering, or whether he was fit to go back to his work. There was always a danger, he would not say of a bias on the part of his own medical attendant to give him the benefit of a doubt, but it was in the interests of the Approved Societies, of the State and the community, and really of the man himself, that he should go back to his normal life as quickly as possible. That was the work which the medical referees were largely occupied in doing. He had some doubt as to their utility when he came to his present office, and not being in the habit of merely accepting statements presented to him by other people, he went into the question himself. He asked over six medical referees in different parts of the country to come and see him, and he was very much impressed with the value of their work and with the way in which it was appreciated both by Approved Societies and the most intelligent of the ordinary general practitioners in the districts in which they worked. They acted also to a considerable extent as consultants, and were ready to act in that capacity to panel doctors when they had more than ordinary difficulty. He did not believe that their presence was resented by members of the general medical profession. They had not been acting very long, and they were only engaged as an experiment for a certain number of years; but as far as he could see at present they were doing good and useful work, and it would be a very great mistake under the pressure of clamour or prejudice now to do away with a very fruitful source of development of this work, by men very carefully chosen and very able, before anyone had had time to judge how far the work was really going to be of utility to the people. He believed that there was a great future before the Ministry of Health, which was only in its infancy. He hoped that one day research would be associated with the Ministry, for research was going to be one of the most fruitful of developments. He felt very greatly the responsibility of the position in which he was placed. There was a great work to be done, and if they could assist to put up a few small stones of the great building of national wealth and national health, and so endeavour to make disease a thing of the past, when illness will be a forgotten tradition and when people would wonder how they endured the present sanitary surroundings, the time spent would not be in vain.

Improvement of the Panel Service.

Sir **WATSON CHEYNE** asked what alteration, if any, was to be made in the medical services? He presumed that something would be done, because they knew that the panel service could be improved, and it would lie between improving it and introducing some new service—a form of State medical service. Personally he favoured finding out what the defects of the panel service were and trying to improve it rather than scrapping it and introducing a new service which certainly would not be at all favourable to the medical profession. Various things were required to bring the panel system more into the condition in which it ought to be. Much assistance was required in helping the medical men to diagnose their cases and also in regard to certain other matters. Various accusations had been made against panel doctors—chiefly of negligence, imperfect diagnosis, and so forth. His practice had been almost entirely in consultation with other doctors, and he had never come across any evidence of the kind in private practice. At the same time he could quite believe that it might be possible in a few cases that the statements might be more or less justified. When the Insurance Act was first under consideration he was always very doubtful about the question of medical benefit. He welcomed the idea of insuring against sickness. so as to provide money to tide over the sickness and so forth; but he very much questioned the advisability of the panel system as regarded the services of doctors. His belief was that the panel service could be very much improved in various ways. He believed that the one thing wanted to put things right was to increase the free choice of doctors. He wished to call attention to the question of research. He understood that the Medical Research Committee was ready to assist the Ministry of Health in any way it could. It was up to the Ministry to help any of their staff who wished to do research, and not to have to go to another body and ask leave. The existence of a proper research department was extremely necessary for the future of the Ministry. At present very little was being done. He mentioned these matters in the hope that the Minister would tell him that something was contemplated in that direction.

Mr. **IRVING**, a Socialist Member, protested against the Circular No. 185 issued by the Ministry containing the official declaration of policy in regard to maternity and child welfare. The circular, he said, was an attempt to save money, but if money could be saved along these pettifogging lines it would be quite infinitesimal, and the inevitable result would be that they would damage infant life and infant welfare. He objected to the provisions with regard to inquiries as to the necessity of families applying for milk for their children, or for expectant and nursing mothers. The inquisitorial methods adopted were too stringent.

Mr. STEWART raised the question of the insanitary conditions arising in connexion with caravan encampments, and urged that the Ministry should do more than they had done to safeguard the community against the possibilities of disease and epidemic from this source.

Too Much Economy.

Lieutenant-Colonel FREMANTLE said that what they had to aim at was a satisfactory blend between the attitude of those who limited themselves to their enthusiasms for public health, and of those who looked only at the side of economy. Zeal for economy had become a craze and had gone too far. It might result in the loss of a very large amount of life. He hoped that the Minister with his fresh eye and business-like mind would review not only the medical staff—as already he seemed to have done very thoroughly—but also the administrative staff at his office. He did not say that it was necessarily excessive, but when they saw a general clerical staff numbering 1593, including 477 assistant clerks, 301 women clerks, 276 writing assistants, with quite an unusual proportion of senior officers on the administrative side, one was bound to gain a certain impression, especially if one had experience of the local administration of public health. The only strong criticism against the Ministry was that there was too much red tape, too much letter writing, and too much clerical and filing work. There should be a checking committee in each office composed of members of the existing staff, whose duty it should be to decide the particular returns that were absolutely necessary. He could not understand the canard that was going round the press that the Ministry of Health inherited from the Local Government Board a staff of only four medical officers. During the 15 years that he was a county medical officer of health he had frequently to go to the Local Government Board, and he was aware of at least 15 different medical officers.

Dr. ADDISON (Minister without Portfolio): In 1918 there were 46—namely, 38 in the Local Government Board and 8 in the Insurance Department—not 4 as stated.—Lieutenant-Colonel FREMANTLE, continuing, said he agreed that the Medical Research Department of the Privy Council should be in touch with the Ministry of Health; if it was not it was a scandal. Although the improvement in vital statistics was due to a very large number of causes which they could not describe definitely as part of the health administration, there was no question that they were all centred round and stimulated, if not actually initiated and carried through, by the work of the whole organisation which had its pivot and centre in the Ministry of Health. The death-rate itself had been reduced very largely since the Ministry came into operation. It was about 13 or 14 per 1000 before the war and went up during the war to about 15 per 1000, and it had gone down in the last two years to 13·8 and 12·4, the figure for last year. Still more the infantile mortality figures must be very largely attributed to the work of the maternity and child welfare centres. The mortality had gone down to 80 per 1000.

Major FARQUHARSON said his candid opinion was that the housing notion had been overdone from the first. It was greatly due to a mixture of politics and sentiment. It was one of the most unfortunate positions that housing schemes should have been part of the work of the Ministry of Health. The medical staff of the Ministry doing expert scientific work, men of trained experience and sound education, many of whom had given their lives to the work, were getting collectively a sum rather less than one-third of what was being paid to this mushroom growth in connexion with housing. Instead of the medical staff being paid more money for 1921–22 it was actually getting less. Last year they were paid £106,907, and it was proposed to pay them this year £99,571. These 80 or 90 medical officers, who had recently been appointed to supervise and superintend the services rendered to something like 6,000,000 or 7,000,000 insured persons, had to bring themselves in liaison with something like 12,000 or 13,000 doctors. They had the spending of something like £9,000,000 per annum, and yet the paltry sum of something like £100,000 was being spent on the whole medical staff of the Ministry, while a sum of £300,000 was spent upon this excrescent mushroom growth in connexion with housing. He appealed to the Minister without portfolio not to cheese-pare in the direction of cutting down the medical staff of the Ministry. These men were very eminent men who had acquired a reputation in the profession before they entered the portals of the Ministry. If they compared the expenditure on research in this country with that of the continental nations it was perfectly ludicrous. He thought no line of public health offered a greater hope of magnificent and early results than infant welfare and maternity. As regards tuberculosis, the question was entirely an uncertain one. It was entirely experimental, and the whole question of sanatorium treatment had broken down. He appealed to the Minister to introduce a limit in this connexion. The most recent scientific inquiries went to show that in this country, at all events, it would be absolutely impossible to have a tubercular-free population. He believed that the trend of thought, experiment, and scientific inquiry was how far tuberculosis, instead of being the horrible scourge that many people regarded it, was in essence part of our equipment to withstand the severity of our climate.

Major MOLSON thought that the medical referees were very necessary for panel practice, and that the expenditure on them was very economical. He urged that much more should be spent on research.

The Minister's Reply.

Sir ALFRED MOND, replying to the debate, said that the new medical service of providing milk for expectant mothers and infants had been grossly misused. All that Circular 185 did was to require strict control of milk supplied to nursing and expectant mothers, and to place under medical supervision the distribution of this milk, which was given as a medicine. As regards the dangers arising from caravans, those vehicles at present numbered about 1100, of which 25 per cent. were occupied throughout the year. The Department had made two medical inspections of them during the past 10 years. But it was the duty of the local authorities to deal with this matter. All that the Ministry could do at present they were doing. There was no intention, except in the imagination of some people who seemed to belong to the psycho-analyst school and who discovered quite non-existent intentions in the minds of other people, of starting a vast system of State Medical Service. They were working on the lines of endeavouring to improve the panel system where it was capable of improvement, and steps were being taken in that direction. The panel had been lessened. There had been too many people on some panels. They were making improved regulations in regard to surgeries, bringing them in harmony with the best of the practitioners on the panel system. The system might be subject to criticism, but on the whole it had not worked so badly, and the medical profession had a great desire to do their best. He thought there was a good deal to be said for associating the Ministry with medical research in a more direct manner. The question of voluntary hospitals had been giving him very grave anxiety as well as to his predecessor. He expected the Cave Report towards the end of this month. He was extremely sorry that certain of the large hospitals had considered it necessary, in view of the fact that report of this committee was very closely impending, and that the Government were bound to take action on that Report speedily, to close these large numbers of beds, whereas perhaps in a few weeks' time the crisis might be past. He did not think anyone could reasonably ask him or the Cabinet to bring forward a scheme during the next few days. On the other hand, the Approved Societies had already set aside £250,000 to be paid during five years out of their surplus. He should have thought it would have been possible for the hospitals to have got their bankers to continue to advance the relatively small sum that might be necessary to carry them over the last few weeks. He still wondered whether something could not be done in that direction before final steps were taken. He hoped the directors of the hospitals would hold on a little longer until the Government had had an opportunity of studying the Cave Report and acting on it.

The vote was agreed to.

Accommodation at St. Dunstan's.

Mr. FREDERICK HALL asked the Minister of Pensions how many men blinded in the war had been refused admission to St. Dunstan's in the last two months, and whether, in view of the fact that the accommodation for blinded soldiers at St. Dunstan's was being seriously curtailed, the Government was making any provision for the training of these men in new occupations suitable to their condition.—Mr. IAN MACPHERSON replied: I am informed that accommodation at St. Dunstan's is being curtailed only because the requirements are diminishing, and that no man whose blindness is due to his war service has been refused admission.

Treatment of Bilharziasis.

Mr. GRATTAN DOYLE asked the Minister of Pensions if he was aware that Dr. Christopherson's antimony treatment was now accepted as a certain cure for bilharziasis; that the Australian Government, after segregating all returned soldiers infected in Egypt, had completely stamped it out by this method of treatment; that there were still a number of men in this country who were infected during the South African war, and were still sufferers, but who were debarred from treatment by the Ministry because they had not served, in many cases because of this disease, in the recent war; and if there was any valid reason why these men should not have an exception made in their particular favour and receive treatment.—Mr. IAN MACPHERSON replied: I am fully in sympathy with my honourable friend's suggestion, concerning which I am in communication with my right honourable friend the Secretary of State for War.

Liquor Control.

Replying to questions by Sir J. BUTCHER, Mr. LLOYD GEORGE (Prime Minister) stated that the Government had decided that the Liquor Control Board should be placed under the Parliamentary control of the Parliamentary Under Secretary to the Home Office (Sir J. Baird) who would be chairman.

Opium Traffic Advisory Committee.

Mr. GILBERT asked the Lord President of the Council whether he would give the names of the international advisory committee appointed by the Council of the League of Nations to advise on the execution of the agreements in regard to the traffic in opium and other dangerous drugs, and also the names and qualifications of the three medical and technical experts appointed to assist the committee.—Mr. BALFOUR replied: The composition of the Advisory Committee on the Traffic in Opium is as follows:—

Representatives of Governments.—Monsieur W. G. Van Wettum, ex-Director of the Opium Traffic Service in Dutch Indies (Netherlands); Sir Malcolm Delevingne, of Home Office (Great Britain); Monsieur Kahn, formerly French Minister in Siam (France); Mr. J. Campbell, of India Office (India); His Excellency A. Ariyoshi, Japanese Minister at Berne (Japan); His Excellency Tang Tsai-Fou, Chinese Minister at Rome (China); His Excellency Prince Charoon, Siamese Minister at Paris (Siam); His Excellency Bartholomeu Ferreira, Portuguese Minister at Berne (Portugal).

Assessors.—Sir John Jordan, formerly British Minister at Peking; Monsieur Brenier, French Delegate to the International Opium Conference at The Hague in 1912, and at present Director-General of the Services of the Chamber of Commerce at Marseilles; Mrs. Hamilton Wright, widow of Dr. Hamilton Wright, American Delegate to the International Opium Conference at The Hague.

Sir J. D. REES: When the Council of the League of Nations has received this advice, and, if it accepts the advice, will it then become binding upon anybody; and, if so, upon whom?—Mr. BALFOUR: What will happen if and when the advice is accepted will be a matter for the consideration of the Council.

Arsenobenzol Treatment of Venereal Diseases.

Mr. ROBERT RICHARDSON asked the Minister of Health if he would grant a return of all the cases of death arising from ill-effects of the arsenobenzol treatment of venereal diseases which had been reported to his department since the commencement of the public treatment of these diseases; and if in future he would arrange for such particulars to be recorded in his annual report, or in that of his chief medical officer.—Sir ALFRED MOND replied: Twenty-one deaths have been reported to my department as following the administration of arsenobenzol compounds in treatment centres of venereal diseases. Further inquiries show that in three of these cases death was not due to the administration of the drug, and that in five other cases it was doubtful how far the drug had contributed to the fatal result. In the last complete year for which figures are available the number of deaths in which the administration of the drug may have been a contributing cause represents 1 in approximately every 4300 patients treated for syphilis, and 1 in approximately 30,000 injections of these drugs. I will consider the suggestion in the last part of the question.

Lock-up Medical Practices.

Mr. GRATTAN DOYLE asked the Minister of Health whether his attention had been drawn to the increasing numbers of what were known as lock-up medical practices, where panel medical practitioners saw panel patients at fixed hours only, as they (the doctors) only had consulting-rooms there, while they resided it might be miles away, out of reach of a panel patient in an emergency; and whether, in view of the hardship thereby incurred by the patient, he would consider the taking of necessary action in this matter of urgent public interest.—Sir ALFRED MOND replied: My attention has been drawn to one or two cases of the kind referred to in the question which are under investigation. If my honourable friend is aware of any case of the kind I should be obliged if he would furnish me with particulars, as the regulations make adequate provision for dealing with such cases.

Public Health (Tuberculosis) Bill.

The House considered the Lords Amendments to the Public Health (Tuberculosis) Bill.—Sir ALFRED MOND explained that the only amendment of any real substance was a new Clause with respect to the institutional treatment of seamen. He was glad to say that they had come to a satisfactory arrangement which would be of great benefit to the seamen of this country in the future. The amendments were agreed to.

Supplies of Petrol.

Mr. CLOUGH asked the Minister of Transport what supplies of petrol existed in this country; and whether they were adequate for all the immediate needs of the country, assuming that due care in use was taken.—Sir P. LLOYD-GREAME (Parliamentary Secretary to the Board of Trade) replied: The supplies of petrol in this country are at present unusually high. The answer to the second part of the question is in the affirmative.

Protection of Women and Young Persons Bill.

Mr. WIGNALL introduced a Bill "to make further provision for the protection of women and of young persons of both sexes from sexual immorality, and from conduct akin thereto, or connected therewith, and with respect to prostitution and brothels, and to amend Sections 58 and 59 of the Children Act, 1908." The measure was read a first time.

FRIDAY, MAY 13TH.

Inoculation Laboratories at Beckenham.

Mr. HOOD asked the Minister of Health whether he was aware that a private firm proposed to use Langley Court, Beckenham, as laboratories for the purpose of the cultivation of germs and the inoculation of horses and other animals in order to make diphtheria and other serum; whether over 60 animals had already been assembled on the premises for the purpose; whether these operations would constitute a danger to the inhabitants of the district; and what action he proposed to take in the matter.—Sir ALFRED MOND replied: I am aware of this case. A local inquiry has been held by one of my inspectors and his report is now under my consideration.

Bastardy Bill.

The Bastardy Bill was read a second time and committed to a Standing Committee.

BOOKS, ETC., RECEIVED.

ALLAN, PHILIP, AND CO., London.
  The Purple Sapphire and other Posthumous Papers Selected from the Unofficial Records of the University of Cosmopoli. By C. Blayre, sometime Registrar of the University. Pp. 210.

ALLEN, GEORGE, AND UNWIN, London.
  An Introduction to the Psychological Problems of Industry. By F. Watts, M.A. Pp. 240. 12*s.* 6*d.*

ARNOLD, EDWARD, London.
  A Guide to Diseases of the Nose and Throat and their Treatment. By C. A. Parker, F.R.C.S. Edin., and L. Colledge, M.B., F.R.C.S. Pp. 583. 25*s.*

BALE, JOHN, SONS, AND DANIELSSON, London.
  Letters to a Nurse by a Midland Doctor. Pp. 99. 5*s.*

HARVARD UNIVERSITY PRESS, Cambridge, Mass.
  Typhus Fever, with Particular Reference to the Serbian Epidemic By R. P. Strong, M.D., and Others. Pp. 273.

HIRSCHWALD, AUGUST, Berlin.
  Grundriss der Augenheilkunde. Von Dr. C. H. May und Dr. E. H. Oppenheimer. Zweite von Dr. Oppenheimer völlig umgearbeitete deutsche Auflage. Pp. 427. M. 60.

LOTHIAN BOOK PUBLISHING CO., Melbourne and Sydney.
  The Diary of an Australian Soldier (Captain K. J. Barrett). Pp. iii. + xxiii. 7*s.* 6*d.*

MACMILLAN AND CO., London.
  Human Physiology. By Prof. Luigi Luciani, with preface by Prof. J. N. Langley, F.R.S. Vol. V., edited by Prof. M. S. Pembrey (Metabolism, Temperature, Reproduction, &c.). Pp. 422. 30*s.*

MALOINE, A., ET FILS, Paris.
  La Blennorragie son Évolution. By M. Bordier. Pp. 192.

MASSON ET CIE, Paris.
  De l'Anaphylaxie à l'Immunité. Anaphylaxie—Protéotoxies, Envenimations, Anaphylaxie-Immunité, Sérums Antivenimeux. Par Prof. Maurice Arthus. Pp. 361. Fr.20.

MILFORD, HUMPHREY (OXFORD CLARENDON PRESS), London.
  Studies in the History and Method of Science. Edited by Charles Singer. Vol. II. Pp. 559.
  Counsels and Ideals from the Writings of William Osler. Selected and edited by C. N. B. Camac. With Extracts from Articles appearing since 1904. 2nd ed. Pp. 355. 8*s.* 6*d.*

OLIVER AND BOYD, London and Edinburgh.
  University of Edinburgh Roll of Honour, 1914–1919. Pp. 785. 40*s.*

PITMAN, Sir ISAAC, AND SONS, London.
  Drugs in Commerce. By J. Humphrey, Ph.C., F.J.I. Pp. 116. 3*s.*

PUTNAM'S, G. P., SONS, London and New York.
  Teeth and Health. By T. J. Ryan, D.D.S., and E. F. Bowers, M.D. Pp. 264. 7*s.* 6*d.*

ROUTLEDGE, GEORGE, AND SONS, London.
  A Handbook of Laboratory Glass Blowing. By Bernard D. Bolas. Pp. 106. 3*s.* 6*d.*

THIEME, GEORG, Leipzig.
  Die Bedeutung der verschiedenartigen Strahlen für die Diagnose und Behandlung der Tuberkulose. Von Dr. R. Gassul. Pp. 72.

UNIVERSITY OF CALIFORNIA, DEPARTMENT OF RESEARCH MEDICINE
  Collected Reprints from the George Williams Hooper Foundation. Pp. 282.

UNIVERSITY OF LONDON PRESS, London.
  Intrinsic Cancer of the Larynx and the Operation of Laryngo-Fissure. By I. Moore, M.B., C.M. Edin. Pp. 147. 20*s.*
  Psychanalysis in the Class-room. By George H. Green. B.Sc., B.Litt. Pp. 276. 7*s.* 6*d.*
  The Education of Behaviour. By I. B. Saxby, D.Sc. Pp. 218. 6*s.*

UNWIN, T. FISHER, LTD., London.
  The Diary of a Yeomanry M.O. By Captain O. Teichman, R.A.M.C., T.F. Pp. 283. 12*s.* 6*d.*
  Eminent Chemists of Our Time. By B. Harrow, Ph.D. Pp. 243. 9*s.*

WATTS AND CO., London.
  Nature's Way: A Means of Health without Medicine. By R. Mallett. Pp. 45. 1*s.*

WRIGHT, JOHN, AND SONS, Bristol. SIMPKIN, MARSHALL AND CO., London. The Medical Annual, 1921. Pp. 616 10*s.*

Medical News.

UNIVERSITY OF LONDON, UNIVERSITY COLLEGE.—Three public lectures on the History of Chemistry in the Nineteenth Century will be delivered by Sir William Tilden, F.R.S., in the Chemistry Theatre of the College, on Friday, May 27th, June 3rd and 10th, at 5 P.M.

UNIVERSITY OF MANCHESTER.—The following appointments have been made: Dr. Albert Ramsbottom as Professor of Clinical Medicine. Dr. Ramsbottom is physician to the Manchester Royal Infirmary and lecturer on clinical medicine in the Victoria University. Lecturer in Histology, Miss Ruth Fairbairn; Assistant Lecturers in Physics, Mr. J. C. M. Brentano and Mr. H. Lowery.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An extraordinary Comitia of the Royal College of Physicians of London was held on May 12th, the President, Sir Norman Moore, occupying the chair, when the following gentlemen, elected to the Fellowship at the last meeting, were formally admitted as Fellows :—Dr. C. O. Hawthorne, Dr. C. H. Melland, Dr. J. G. Emanuel, Dr. A. E. Barnes, Dr. J. P. Hedley, Dr. J. A. Torrens, Dr. A. J. Clark, Dr. A. Feiling, Dr. R. H. Steen, Dr. C. M. Wilson, and Dr. G. E. S. Ward.—The Committee of Management reported having received from Sir Charles Ballance, the visitor appointed by the Royal Colleges to inspect the examinations, a full and interesting report on the examinations of the Egyptian Medical School and Hospital at Cairo, and on the teaching at the school and hospital. The Committee expressed the opinion that the examinations and course of education justified the Royal Colleges in continuing their recognition of the school.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At a meeting of Comitia of the Royal College of Physicians on April 28th and of the Council of the Royal College of Surgeons on May 12th Diplomas in Public Health were conferred, conjointly, upon the following candidates:—

G. J. Bowen, Middlesex; I. G. de Zilva, Madras and Roy. Inst. Public Health; A. W. F. Edmunds, King's College; J. J. Gasperine, St. Bart.'s and Roy. Inst. Public Health; M. Gross, Westminster and Roy. Inst. Public Health; A. C. Hancock, Guy's and Univ. Coll.; R. H. Liscombe, J. B. Low, and J. J. MacDonnell, Univ. Coll.; E. F. W. Mackenzie, (Edinburgh and Royal Army Med. Coll.; Gladys M. Miall-Smith, Royal Free and Univ. Coll.; A. H. Patel, Bombay and Roy. Inst. Public Health; A. J. Patterson, Dublin and Haslar; G. H. Pearson, London and King's Coll.; A. L. H. Rackham, Middlesex; B. K. Ray, Calcutta and Univ. Coll.; A. C. Renwick, Edinburgh and King's Coll.; P. C. Sen, Calcutta and King's Coll.; R. J. L. Sladen, Univ. Coll.; M. Subramanyam, Bombay and King's Coll.; R. Swyer, Univ. Coll.; W. B. B. Taylor, London and Royal Army Med. Coll.; and H. J. Thomas, Univ. Coll.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At recent examinations of the Board the following candidates completed the examination, and were admitted Diplomates in Public Health:—

Thomas Pullar and Janet Bisland Higgins.

The following candidates passed in Part I.:—

Ellen D. Anderson, William Cunningham, Robert J. Peters, Andrew Davidson, Mary C. Walker, Marguerite Linck Sclanders, William H. Wallace, William D. MacKinnon, Edward M. E. Cumming, Andrew M. Davidson, Campbell L. Miller, David Heard, David Fyfe, William McKendrick, Helena E. Barrett, Samuel J. Henderson, and John Frew.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The annual provincial meeting of this Society will be held on Saturday, June 11th. Members will assemble at the house of the Society at 10.30 A.M. and proceed by motor coach to Hatfield House, which will be visited by invitation of Lord Salisbury. Afterwards the party will go on to Welwyn Garden City, where they will be entertained at luncheon by the President of the Society, Lieutenant-Colonel F. E. Fremantle, M.P. The afternoon will be spent in viewing the Welwyn housing and town-planning schemes until 4 P.M., when Mrs. Fremantle has invited members to tea at Bedwell Park. As it is necessary to make early arrangements for motor coaches, members who intend to be present should give prompt notice to the Executive Secretary, 1, Upper Montague-street, Russell-square, W.C. 1, stating if they will be accompanied by ladies. A remittance of 10s. 6d. for each motor coach ticket should be forwarded with the application.

MEDICAL SOCIETY OF LONDON.—On Monday, May 23rd, at 8 P.M., the annual general meeting will be held. At 9 P.M. the annual oration will be delivered by Lord Dawson, of Penn, K.C.V.O., on the Colon and Colitis.

MEDICO-LEGAL SOCIETY.—A meeting of this Society will be held at 11, Chandos-street, London, W., on Tuesday, May 24th, at 8.30 P.M., when a paper will be read by Mr. W. G. H. Cook on the Liability of the Insane in Respect of Civil Wrongs.

LONDON HOSPITAL MEDICAL COLLEGE: *Surgical Unit.*—A special course of ten lectures on Advanced Surgery will be given on Tuesdays and Thursdays, at 4.15 P.M., in the Unit Lecture Theatre of the hospital, beginning on June 7th, when Mr. Russell Howard will give the first of two lectures on Diseases of the Breast. Subsequent lectures will be announced in our Medical Diary. Post-graduates and senior students are invited to attend.

AN International Congress on the History of Medicine will be held at Paris on July 5th, and will be presided over by Professor E. Jeanselme and Professor W. Menetrier. There will be lectures, discussions, and excursions. All who possess documents or instruments of interest are invited to lend them to the organisers for temporary exhibition.

SUMMER POST-GRADUATE MEDICAL COURSES.—*University of Paris.*—A vacation post-graduate course will be held during July at the Clinique Médicale de l'Hôtel-Dieu under the auspices of the Faculty of Medicine. The course will deal with recent additions to our knowledge of clinical practice and the application of current laboratory methods of diagnosis. It will begin on Monday, July 4th, and will be under the direction of Professor (agrégé) Maurice Villaret, with the collaboration of Mr. Herscher, Mr. E. Guilleminot, Mr. Lippmann, Mr. Jomier, Mr. Chabrol, Mr. Brin, Mr. Henri Bénard, Mr. Dufourmentel, Mr. F. Saint-Girons, Mr. Coury, Mr. Paul Descomps, Mr. Dumont, Mr. E. Deval, Mr. H. Dausset, Mr. L. Durey, Mr. Gérard, Mr. Lagarenne, and Mr. Comandon. A week's trip to spas in the Pyrenees will be arranged, starting on July 9th, and the studies in Paris will be resumed on July 18th. Details and programme of this trip may be obtained from M. le Dr. Dausset, Clinique medicale de l'Hôtel-Dieu, Paris. A certificate will be issued to those who have taken part in the course, for which the fee is Fr.150.

St. Bartholomew's Hospital and College.—A course of instruction for qualified practitioners will be given during the summer vacation, beginning on Monday, July 18th, and ending on Saturday, July 30th, with the object of affording practitioners the opportunity of attending the practice of a large metropolitan hospital and medical school for a short period, and of receiving systematic teaching from members of the hospital staff at a time when ordinary lectures and classes are mainly in abeyance and comparatively few students are in attendance. By payment of a composition fee of £8 8*s.*, a practitioner will be entitled to attend, between the dates given above, any of the special classes, except clinical pathology and bacteriology, and the ordinary hospital practice, including wards, out-patients, special departments, operations and post mortems. Practitioners who are perpetual students of St. Bartholomew's Hospital will be admitted to the post-graduate classes, except clinical pathology and bacteriology, on payment of a fee of £6 6*s.* An extra fee of £2 2*s.* will be payable by any practitioner who attends the class in clinical pathology and bacteriology. Fees are due in advance, and cheques should be made payable to the Dean, Dr. T. W. Shore.

Glasgow Post-Graduate Medical Association.—A comprehensive course of instruction has been arranged for medical practitioners, extending from May till October, 1921. Most of the hospitals in Glasgow are taking part in the scheme, and the classes, as far as possible, have been arranged so that a practitioner who so desires may be enabled to occupy the greater part of each day attending classes. The classes are open to all qualified medical practitioners, and will be conducted independently of the undergraduate courses. A practitioner may enrol for one or several classes, and may attend for one or more months as desired. The classes are specially designed to suit the requirements of general practitioners, but in order to meet the needs of graduates and others who wish to obtain a closer acquaintance with hospital work arrangements have been made whereby a limited number may become attached to wards or out-patient departments, nominally as clinical assistants, for definite periods throughout the year. Intending students must enrol and pay their fees at the institutions in which the particular classes are held. Further information will be supplied on application to Dr. A. M. Kennedy, secretary, Post-Graduate Medical Association, University, Glasgow.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the Committee, held on May 10th, 21 cases were considered, and £308 voted. The following is a summary of the cases relieved :—

Daughter, aged 54, of M.R.C.S.Eng. who practised in Liverpool and died in 1872. Applicant had a stroke suddenly in April, 1920, which affected her left side, and was taken to Charing Cross Hospital, where she remained for four or five months; considered incurable was sent to a nursing home and the fees are being paid by three sisters whose incomes are extremely limited; she also receives £8 15s. from an uncle. Prior to her illness applicant acted as a companion and also taught music, French, and German. Her sister, aged 53, also is suffering from paralysis and is in a nursing home, she also has applied for help from the Fund. Voted £18 in 12 instalments.

Daughter, aged 73, of M.R.C.S. Eng. who practised in the R.A.M.C., and was also a Resident Medical Officer in London later, and died in 1891. Owing to a limited income and having to help towards the expenses of a bedridden brother in a nursing home applicant has asked the Fund to help her to supplement her Grice Annuity of £40 and the £4 she was paid for making fancy bags and painting little water-colour sketches. Since the war have had to pawn family things and have to pay a heavy rate of interest. Her sister applied to the Fund, and the Committee made her a grant of £10. Voted £10.

Widow, aged 25, of M.R.C.S. Eng., 1914, who acted as locum, and in 1918 he was attached to the Russian Red Cross Society and died of typhus while working on a Red Cross train in 1920. Applicant managed to escape from Russia with her little son, aged 4, and arrived in England without means and is at present being supported by friends. She is very anxious to be self-supporting, and to this end has applied to the Fund for help and to advise in placing her son in a school. Voted £10.

Widow, aged 55, of L.F.P.S. Glasg. who practised in Liverpool and was acting as surgeon on board when torpedoed and all were lost. Applicant receives a pension from the War Risk Association of £5 6s. 8d. per month. Rent 11s. per week. Her youngest son, who is in the Merchant Service, is now unfortunately out of work, and applicant finds it difficult to support two on her small pension. Voted £10 in two instalments.

Widow, aged 80, of L.R.C.S. Irel., L.R.C.P. Edin. who practised at Benfleet and died in 1918. Her sole income consists of £50 per annum derived from insurance. Applicant asks for help to supplement this amount, as her rent is £10 and her board costs 15s. per week. Voted £18 in 12 instalments and also £6.

Widow, aged 55, of L.S.A. Lond. who acted as locum and died in 1921. Owing to illness applicant's late husband was helped by the Fund, and now his widow asks for help, as she has no settled income and lets two unfurnished rooms to help to pay her way. She receives from friends about £26 per annum and 7s. 6d. for her rooms, and her rent is 17s. 6d. per week. Voted £10 in two instalments.

Subscriptions may be sent to the Hon. Treasurer, Sir Charters J. Symonds, K.B.E., C.B., F.R.C.S., at 11, Chandos-street, Cavendish-square, London, W.1.

SCOTTISH CONSULTATIVE COUNCIL AND THE MEDICAL GUILD.—Our Scottish correspondent writes: Criticism of the scheme of medical service for Scotland, presented last January to the Scottish Board of Health by the Consultative Council on Medical and Allied Services, was, as your readers already know, widespread. The Medical Guild took the opportunity of obtaining the views of the medical profession in Scotland on certain specific points. Two questions were submitted in the form of a referendum. One of these asked for approval or otherwise of the attitude of the Guild expressed thus: "Matters will be righted only when the State ceases to interfere with medical attendance on sick people other than those who belong to the necessitous classes, so long as the sick are not a danger to the community by reason of infectivity." The other ran: Do you approve of the proposed extension of National Health Insurance (Recommendation 4)? Replies favourable to the policy of the Guild required "Yes" for Question 1 and "No" for Question 2. The returns so far to hand number 1331, and are summarised by the Guild as follows: Of that number 1105, or approximately 83 per cent., voted "Yes" to Question 1 and "No" to Question 2; 165, or approximately 12½ per cent., answered both questions in the negative; the remaining 61, less than 5 per cent., voted "No" for Question 1 and "Yes" for Question 2, and thus this small minority only were in favour of the recommendations of the Consultative Council. The large majority, 1270—i.e., 1105 plus 165, over 95 per cent. of the total vote, were therefore opposed to further extension of the National Health Insurance Act, which is made the basis of the Consultative Council's scheme. In many cases replies were accompanied by emphatic protests against the nationalisation of the practice of medicine, notably from men who have had ample experience of work under a State medical service similar in outline to the scheme proposed by the Consultative Council. The statement of the Guild concludes: "It is difficult to give an accurate statement of the number of men at present serving under the National Insurance Act who voted with the above large majority, but the returns received from certain working-class districts prove that the proportion was large. The result of this referendum demonstrates that a large section of the pro-profession in Scotland is opposed to the provision for medical services recommended in the Interim Report, including the extension of the National Health Insurance Act."

LONDON DERMATOLOGICAL SOCIETY.—A meeting of this Society will be held at 4.30 P.M. on Tuesday, May 24th, at St. John's Hospital, 49, Leicester-square, London, W.C., when clinical cases will be shown.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—The next quarterly meeting will take place on Tuesday, June 7th, at the Maudsley Hospital, Denmark Hill, S.E., under the presidency of Dr. W. F. Menzies, at 3 P.M. Sir Frederick Mott will deliver the second Maudsley Lecture at 4.30 P.M.

OPHTHALMOLOGY IN RELATION TO OCCUPATION.—A course of extension lectures on Ophthalmology in Relation to Trades and Occupations has been arranged in connexion with the Post-Graduate School of the Royal London (Moorfields) Ophthalmic Hospital to be given at the Royal Society of Medicine at 5.30 P.M. Monday, Tuesday, and Wednesday, May 23rd to 25th, Illumination, by Mr. J. Herbert Parsons, F.R.S.; Thursday, May 26th, Practical Illumination, by Mr. L. Gaster, secretary of the Illuminating Engineering Society; Monday, May 30th, Miners' Nystagmus, by Dr. Lister Llewellyn; Tuesday, May 31st, Injuries due to Penetrating Foreign Bodies, by Mr. Charles Goulden, F.R.C.S.

AT this year's annual dinner of the Leeds Caledonian Society, Dr. Wardrop Griffith, the President, in the name of the Society, handed to the treasurer of the infirmary a cheque for £1200 and held out hopes of the sum being increased to £1500. This would enable three cots to be endowed in the name of the Society in the new department of the infirmary. It is hoped that this example may be followed by others.

CARE OF SICK CHILDREN IN LEEDS.—From time to time philanthropic persons in Leeds make their voices heard in the plaint that there is "no hospital for children." There is now no separate building called a Children's Hospital, but Leeds has a Children's Hospital within the walls of the General Infirmary. In connexion with the increase in the number of beds, which has been secured by the completion of the King Edward Memorial Extension, the board of this infirmary has had under consideration plans for increasing the accommodation for children and for the segregation of young patients in one department. Wards 6, 8, and 10, all of which are on the level of and communicate directly with the North Terrace, are to be allotted to the children's department. They are to be connected by bridges at their further end so as to ensure the safety of the children in the event of fire, as well as to provide open-air accommodation for patients. Certain alterations and extensions on the terrace will provide a semi-open-air ward with accommodation possibly for 20 patients. It is hoped that in the near future there will be about 120 cots in all. Of the three wards one is to be allotted to medical cases, one to surgical cases, and the third is to have 19 surgical, 8 ophthalmic, and 6 aural cases; the allocation of the 20 beds on the terrace has not as yet been considered. It is apparently the belief in well-informed medical circles in Leeds that the best way to improve the accommodation for children under prevailing conditions is not to try to create a separate institution, but to extend and improve the accommodation at the central institution, and at the same time to increase the already existing accommodation at the semi-convalescent hospitals. Provision must be made for the prolonged treatment both of surgical cases and of certain forms of medical tuberculosis. A source of strength to the Leeds Medical School and to its charitable institutions is the prevailing system of centralisation; and in the best interests of the public, the patients, and the medical school alike it is to be hoped that this will be maintained. A new development in the children's department from which good results may ensue is the rearrangement of the allocation of beds. For some time there has been an out-patient department for the nutritional diseases of children under the age of three years, controlled by one of the assistant physicians, but all children admitted to the wards have come under the charge of one of the full staff. In the future a member of the assistant staff will have two out-patient days, one for the nutritional diseases of young children and the other for children suffering from medical ailments. To him are allotted all the beds allocated to the nutritional diseases of children, and one-fourth of the remaining medical children's beds, while the remaining three-fourths of the medical children's beds are divided between the three members of the full staff. This department of the infirmary has been linked up under Dr. C. W. Vining's direction with one of the centres of the babies' welcome organisation, and thus students are getting valuable experience in a branch of practical study not as yet on the curriculum of most medical schools.

THE MORRISTOWN PHYSIATRIC INSTITUTE.—The Physiatric Institute, Morristown, New Jersey, U.S.A., has been established for the treatment of metabolic disorders, especially diabetes, obesity, Bright's disease, and high blood pressure. The purposes of the Institute are scientific and philanthropic, and treatment is offered to suitable patients whatever may be their financial circumstances. Morristown is situated about 6000 ft. above sea-level; the district is noted for its beauty and climate, the latter being healthy and agreeable all the year round. There is an excellent train service to New York City by the Delaware and Lackawanna Railroad. The site of the Institute is a former large private estate comprising about 200 acres of woodland, lawns, gardens, and farmland. The main building, standing at the highest point of the property, commands views of great charm. A private lake, an 18-hole golf course, tennis and squash-rackets courts, &c., are included in the grounds. The diet kitchen and laboratories are completely equipped and organised for study of each individual case; patients are expected to coöperate seriously in their treatment, and to adhere rigidly to the rules laid down for them.

For well-to-do patients the Institute is said to offer the advantages of a private sanatorium; "worthy" poor patients are received on proper recommendation, and can obtain treatment at lower rates or free, or when able may perform some kind of work for part payment. Scientific research is one of the main aims of the Institute; over 500,000 persons in the United States to-day have diabetes, and the numbers of those suffering from arterio-sclerosis, kidney disease, and high blood pressure are much greater. The principal appeal for funds, which are urgently needed to support and extend both the scientific and philanthropic sides of the work, is made to the patients themselves and to their relatives and friends.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BATTEN, H. E., F.R.C.S., has been appointed Head of the Department of Orthopædics, including Remedial Exercises and Massage, at Charing Cross Hospital.

COATES, V. M., M.R.C.S., L.R.C.P. Lond., Honorary Assistant Physician to the Royal United Hospital, Bath.

FIRMAN-EDWARDS, L., M.B., B.Ch. Cantab., Honorary Pathologist to the Royal Isle of Wight County Hospital, Ryde.

WEBSTER, J. H. D., M.D. Edin., Honorary Physician-in-charge of the Department of Physical Medicine at the Middlesex Hospital.

WHITEHOUSE, B., M.S. Lond., F.R.C.S. Eng., Honorary Obstetric Officer to General Hospital, Birmingham.

Paddington Green Children's Hospital: MORRIS, J. C., M.B., Ch.B. Edin., House Physician; BRUNTON, W. D., M.B., Ch.B. Edin., House Surgeon.

Certifying Surgeons under the Factory and Workshop Acts: FAULKNER, C. D., M.R.C.S., L.R.C.P. Lond. (Stanford-le-Hope); PENHALE, W. P., M.R.C.S., L.R.C.P. Lond. (West Bromwich).

Vacancies.

For further information refer to the advertisement columns.

Adelaide University.—Professor of Zoology. £1100.

Barrow-in-Furness County Borough.—Asst. Sch. M.O. £500.

Bedford County Hospital.—Asst. H.S. £150.

Birmingham, Queen's Hospital.—Hon. Obst. O.

Bootle Borough Hospital.—H.S. £150.

Bury St. Edmunds, West Suffolk General Hospital.—Res. H.S. £200.

Cardiff City and Port Education Authority.—M.O.H. and Chief M.O. £1200.

Chester Royal Infirmary.—Asst. H.S. £175.

City of London Hospital for Diseases of the Chest, Victoria Park, E.—H.P. £125.

Dumfries, Crichton Royal Mental Hospital.—Clin. Path. £400.

Dundee Royal Infirmary.—Hon. Asst. Gynæcol. and Obstet. Dept.

Durham, County Sanatorium, Holywood Hall, Wolsingham.—Asst. M.O. £400.

East Sussex County Council Education Committee.—Asst. Sch. M.O. £500.

Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Female Asst. P., Asst. Radiologist, H.P., Obstet. Asst., and H.S.'s. Each £50.

Hellingly, East Sussex County Mental Hospital.—Sec. Asst. M.O. £450.

Hospital for Sick Children, Great Ormond-street, W.C.—Clin. Asst. in Venereal Dept. £1 1s. per visit. H.S. £100.

Hull Royal Infirmary.—Asst. H.S. £150.

Hull and Sculcoates Dispensary.—M.O. £450.

Infants Hospital, Vincent-square, Westminster.—Female Res. M.O. £200.

Kensington and Fulham General Hospital, Earl's Court, S.W.—H.S. £100.

Leeds Dental Hospital.—Hon. Asst. Dent. S.

London County Council.—Seventh Asst. M.O. £300.

London Temperance Hospital, Hampstead-road, N.W.—Ophth. S. and Asst. S. Also Res Cas. O. £125.

Maidstone, West Kent General Hospital.—H.S. £220.

Manchester County Asylum, Prestwich.—Asst. M.O. £572 18s.

Manchester, University of, Department of Pathology.—Lecturers in Morbid Anatomy and Morbid Histology, Bacteriology, and Chemical Pathology. £700 each.

Manchester, Whitworth Park Hospital.—H.S. £100.

Middlesbrough Education Committee.—Female Asst. School M.O. £500.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—Hon. Asst. P.

Norwich, Norfolk and Norwich Hospital.—H.P. £200.

Nottingham City Education Committee.—Jun. Asst. Sch. M.O. £537 10s.

Oldham Royal Infirmary.—H.S.'s. £250 each.

Orkney, Eday Parish Council.—M.O. £5 per week.

Prince of Wales's General Hospital, Tottenham, N.—Hon. P. and Hon. Asst. P.

Queen Mary's Hospital for East End, Stratford, E.—Cas. O.

Rotherham Hospital.—Jun. H.S. £150.

Royal Naval Medical Service.—Surg.-Lieuts. 26s. 6d. per diem.

Royal South Hants and Southampton Hospital.—Sen. H.S. £200. Also H.P. £150.

Southampton Free Eye Hospital.—H.S. £200.

South London Hospital for Women, South Side, Clapham Common, S.W.—Temp. (Female) Asst. S.

South Shields County Borough.—Ven. Dis. M.O. £750.

Staffordshire General Infirmary.—H.S. £250.

Sunderland Royal Infirmary.—H.S. £200.

Swansea County Borough.—Asst. M.O. £500.

Taunton and Somerset Hospital.—Sen. and Jun. H.S.'s. £200 and £150.

University College Hospital.—Part-time Anæsth. £150.

Wandsworth Union, St. John's Hill Hospital.—Locum Tenens M.O. £8 8s. per week.

Winchester, Royal Hampshire County Hospital.—Sec. Res. M.O. £150.

York County Hospital.—Third Res. O. £150.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Clwt-y-Bont (Carnarvon), and at Washington (Durham).

Births, Marriages, and Deaths.

BIRTHS.

ATTWOOD.—On May 13th, at Glenfern, The Avenue, Southampton, the wife of Dr. H. C. Attwood, of a son.

LYNHAM.—On May 10th, at The Chine, Grange Park, N., the wife of Dr. J. E. A. Lynham, of a daughter.

MOORE.—On May 10th, in a nursing home, Chester, the wife of L. C. Moore, M.R.C.S., L.R.C.P., of a son.

NEVE.—On May 8th, at Barnhill, Bromley, Kent, the wife of Dr. Ernest F. Neve, of a daughter (stillborn).

SHELDON.—On May 13th, at Chepstow Villas, W., the wife of W. Sirr Sheldon, M.R.C.S. Eng., L.R.C.P. Lond., of a son.

MARRIAGES.

HICKINBOTHAM—GODFREY.—On May 10th, at St. Margaret's Church, Lee, S.E., James Ryland Hickinbotham, M.B., to Mary Irene Godfrey.

DEATHS.

KEAY.—On May 9th, at Bodmin, Cornwall, after a long and painful illness, Charles Henry Keay, M.B., B.S., L.R.C.P., M.R.C.S., aged 29 years.

MACDONALD.—On May 8th, at The Haven, Inverness, Thomas Rankin Macdonald, M.B., F.R.C.S.E., late Lieutenant-Colonel, I.M.S.

MICHIE.—On May 11th, suddenly, Dr. William Adam Michie, at 15A, Gower-street, W.C., aged 69.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.

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Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, May 31st.

GENERAL MEETING OF FELLOWS: at 5 P.M.
Ballot for Election to the Fellowship. (Names already circulated.)

MEETINGS OF SECTIONS.

Monday, May 23rd.

SECTION OF ODONTOLOGY: at 8 P.M.
Annual General Meeting—Election of Officers and Council.
Casual Communication: Mr. J. Howard Mummery and Mr. G. J. Harborow: A Composite Odontome.
Paper: Mr. A. T. Pitts: The Prophylactic Extraction of the Third Molars.

Tuesday, May 24th.

SECTION OF MEDICINE: at 5.30 P.M.
Annual General Meeting.—Election of Officers and Council.
Discussion: On "Artificial Pneumothorax," to be opened by Dr. Clive Riviere. The following will also take part:—Dr. S. Vere Pearson, Dr. Neville Cox, Dr. Donald Hall, Dr. Jane Walker, and Dr. C. S. Burrell.
Will other Members wishing to speak kindly communicate with Dr. E. P. Poulton, The Downs, Woldingham, Surrey.

Thursday, May 26th.

SECTION OF UROLOGY.
3.30 P.M., at St. Thomas's Hopital: *Operations* by Mr. Cyril Nitch.
8.30 P.M., at 1, Wimpole-street, W.
Annual General Meeting—Election of Officers and Council.
Paper: Mr. V. Zachary Cope: Genito-urinary Symptoms in Acute Appendicitis.
Demonstration: Mr. Swift Joly: Demonstration of a New Operating Cystoscope.

Friday, May 27th.

SECTION OF STUDY OF DISEASE IN CHILDREN: at 5 P.M. (Cases at 4.30 P.M.)
Annual General Meeting—Election of Officers and Council.
Cases will be shown.
Communication: Dr. Hugh Thursfield: The Diagnosis of a Case of Renal Calculus in a Child.

SECTION OF EPIDEMIOLOGY AND STATE MEDICINE: at 8.30 P.M.
Annual General Meeting—Election of Officers and Council.
Papers: Dr. R. J. Reece: Some Observations on the Occurrence of Cow-pox and Human Cases in connexion therewith.
Dr. F. R. Blaxall: Some Notes on the Preparation of Vaccine Lymph at the Government Lymph Laboratory.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
Monday, May 23rd.—8 P.M., Annual General Meeting—Election *of Officers and Council for 1921–1922. 9 P.M.,* Annual Oration:—Lord Dawson of Penn: The Colon and Colitis. Followed by a Conversazione.

MEDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendish-square, W.
Tuesday, May 24th.—8.30 P.M., *Paper:*—Dr. W. G. H. Cook: The Liability of the Insane in Respect of Civil Wrongs.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, W.C. 1.

MEDICAL SCHOOL.

Monday, May 23rd.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Lecture:—Dr. A. Turner: Neuroses.
Tuesday, May 24th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Dr. J. Taylor (Lecture Room): Demonstration of Cases.
Thursday, May 26th.—2 P.M., Out-patient Clinic: Dr. Farquhar Buzzard. 3.30 P.M., Lecture:—Mr. Scott: Investigation of Cases of Vertigo. (II.)
Friday, May 27th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Lecture:—Dr. Grainger Stewart: Sciatic Nerve Lesions.

NEUROLOGICAL OPHTHALMOLOGY.

Wednesday, May 25th.—3.30 P.M., Mr. Leslie Paton: Ocular Palsies.
Fee for Post-Graduate Course £7 7s. C. M. Hinds Howell, Dean.

LONDON HOSPITAL MEDICAL COLLEGE (University of London), Turner-street, Mile End, E.
Courses of Lectures:—
A Course of Fourteen Lectures on Psycho-Neuroses, to be given by Dr. M. Culpin in the Clinical Theatre of the Hospital. Open to Students of the Hospital and to Members of the Profession.
Tuesday, May 24th.—5.15 P.M., Lecture VII.:—Dreams.
Friday.—5.15 P.M., Lecture VIII.:—Symptomatology.

Advanced Lectures in Physiology, to Students of the University and to others interested in the subject.
A Course of Eight Lectures on Reception of Sensory Stimuli, to be given by Prof. H. E. Roaf in the Physiology Theatre.
Thursday.—4.30 P.M., Lecture III.

ST. BARTHOLOMEW'S HOSPITAL (University of London), West Smithfield, E.C.
A Course of Eight Advanced Lectures in Physiology, to be given in the Physiological Laboratory, to Students of the University and others interested in the subject.
Tuesday, May 24th.—4.30 P.M., Lecture IV.:—Prof. W. M. Bayliss: The Reaction of the Blood.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
Monday, May 23rd.—2 P.M., Dr. Simson: Diseases of Women. Dr. S. Pinchin: Medical Out-patients. Dr. Morton: X Ray Department. 5 P.M., Lecture:—Dr. A. Saunders: *Gastric* Disorders in Infants.
Tuesday.—10 A.M., Mr. Steadman: Dental Department. 12 noon, Mr. T. Gray: Demonstration of Fractures. 2 P.M., Dr. Burnford: Medical Out-patients. Dr. Pernet: Skin Department. 2.30 P.M., Mr. Addison: Visit to Surgical Wards. 5 P.M., Lecture:—Mr. B. Harman: Blind and Partly Blind Children.
Wednesday.—*10 A.M., Mr. MacDonald: Genito-Urinary* Department. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Mr. Gibb: Eye Department. 2.30 P.M., Mr. D. Armour: Demonstration of Cases (Surgical Wards). 5 P.M., Lecture:—Dr. G. Stewart: Cranial Nerve Palsies.
Thursday.—10.30 A.M., Dr. Simson: Gynæcological Demonstration. 2 P.M., Mr. B. Harman: Eye Department. Mr. Baldwin: Orthopædic Department. 5 P.M., Special Lecture-Demonstration:—Dr. L. S. Burrell: Artificial Pneumothorax (open to all medical practitioners).
Friday.—10 A.M., Dr. Robinson: Gynæcological Operations and Visit to Wards. 11 A.M., Dr. McDougal: Electrical Department. 12.15 P.M., Dr. Burnford: Applied Pathology. 2 P.M., Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Pritchard: Visit to Medical Wards. 5 P.M., Lecture:—Sir R. Armstrong-Jones: The Common Forms of Mental Disease.
Saturday.—9 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. A. Saunders: Medical Diseases of Children. 2 P.M., Dr. Owen: Medical Out-patients. Mr. Sinclair: Surgical Out-patients.
Daily:—10 A.M. Visit of Post-graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN (University of London), Hunter-street, W.C.
Post-Graduate Course of Instruction in Treatment of Venereal Diseases.
A Course arranged by the London (Royal Free Hospital) School of Medicine for Women, the Royal Free Hospital, the Elizabeth Garrett Anderson Hospital and the London Lock Hospital, for the instruction of qualified medical women in the Treatment of Venereal Diseases. The Course will extend over two weeks.
Monday, May 23rd.—2.30 P.M., Miss M. Basden: Visit to Maternity Wards and Labour Department (at the London Lock Hospital, Harrow-road). 5 P.M., Mrs. Rorke, M.B.: Out-patient Cliniques for Women and Children (at the Royal Free Hospital, Gray's Inn-road).
Tuesday.—9.30 A.M., Injections (at the London Lock Hospital, 283, Harrow-road). 2 P.M., Mr. C. Gibbs: Clinical Demonstration and Visit to Wards (at the Female Lock Hospital, Harrow-road). 6.30 P.M., Dr. Ruth Balmer: Out-patient Cliniques for Women and Children (at the Elizabeth Garrett Anderson Hospital, 144, Euston-road, N.W.)
Wednesday.—11 A.M., Dr. D. Thomson: Pathological Lecture and Demonstration (at the London Lock Hospital, 91, Dean-street, W.) 3.30 P.M., Mr. J. E. Lane: Clinical Demonstration by and Visit to Wards and *Out-patient Department* (at the London Lock Hospital, Harrow-road).
Thursday.—2 P.M., Mr. J. E. R. McDonagh: Clinical Demonstration by and Visit to Wards (at the London Lock Hospital, Harrow-road). 5 P.M., Mrs. Rorke, M.B.: Injections (at the Royal Free Hospital, Gray's Inn-road).
Friday.—10 A.M., Mrs. Rorke, M.B.: Treatment Ante-natal Cases (at the Royal Free Hospital). 5 P.M., Mr. J. J. Abraham: Clinical Demonstration, Injections, and Out-patient Clinique for Women and Children (at the London Lock Hospital, 91, Dean-street, W.). 6.30 P.M., Dr. Ruth Balmer: Out-patient Cliniques for Women and Children (at the Elizabeth Garrett Anderson Hospital).
Saturday.—9.15 A.M., Dr. Ruth Balmer: Injections (at the Elizabeth Garrett Anderson Hospital).

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, E.
A Course of Post-Graduate Clinical Lectures and Demonstrations in the Board Room of the Hospital, free to Medical Practitioners and Students of Medicine.
Monday, May 23rd.—4 P.M., Mr. M. Vlasto: Tonsils and Adenoids in Children.
Tuesday.—4 P.M., Mr. A. H. Todd: Common Disabilities of the Lower Limbs (other than Paralytic) in Children (I.).
Wednesday.—4 P.M., Dr. G. Bourne: Treatment of Heart Disease in Children.
Thursday.—12 noon, Mr. V. Nesfield: The Treatment of Corneal Opacities by Sub-conjunctival Injections of Phenolaine Solution.

TAVISTOCK CLINIC FOR FUNCTIONAL NERVE CASES, 51, Tavistock-square, W.C.
A Course of Ten Lectures on Elementary Psychotherapy, to be given by Dr. H. C. Miller, at the *Kingsway Hall, Kingsway,* W.C.
Friday, May 27th.—5.15 P.M., Lecture IV.: The Unconscious Motive; The Centre of Analytical Psychology.

INSTITUTE OF PATHOLOGY AND RESEARCH, St. Mary's Hospital, in the Lecture-room of the Bacteriological Department.
A Course of Lectures on Pathological Research in its Relation to Medicine, open to all Members of the Profession and Students.
Thursday, May 26th.—4.30 P.M., Dr. J. A. Murray: Aims and Progress of the Experimental Study of Cancer.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
Tuesday, May 24th.—4.30 P.M., Lecture:—Mr. Smith: Diagnosis of Rectal Conditions.

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.
Special Course of Lectures in Gynæcology.
Wednesday, May 25th.—11 A.M., *Demonstration Operations.*
Thursday.—4.30 P.M., Lecture VII.:—Dr. A. C. Magian: Vulvo-vaginitis.

Notes, Short Comments, and Answers to Correspondents.

PUBLIC HEALTH AND THE PLUMBER: A NATIONAL APPRENTICESHIP SCHEME.

DURING April the Master, Wardens, and Court of the Plumbers' Company gave a luncheon at Carpenters' Hall to celebrate the inauguration of the new national scheme for apprenticeship in the plumbing trade. Apprenticeship as hitherto understood has practically died out in the South of England, while surviving in the North and Midlands, and a strong body of opinion now supports a scheme of far-reaching voluntary apprenticeship; such a scheme, brought forward by the united action of the Plumbers' Company, the Institute of Plumbers, and the United Operative Plumbers' and Domestic Engineers' Association, has been approved by the Board of Education, and Mr. H. A. L. Fisher, President of the Board, was amongst those gathered at the above-mentioned function to give the scheme a cordial send-off. The Plumbers' Company is the registration authority of the trade; since 1886 a system of voluntary registration has been maintained in order to ensure a high standard of workmanship and practice, and so secure and retain the confidence of health and water authorities, medical officers of health, architects, and engineers, and also to provide for better training by technical education adapted to new conditions. The Company has now pledged itself to compulsory registration if the latter can be obtained. The question of registration is, of course, intimately bound up with that of apprenticeship; the new scheme of indenture provides for the introduction of a fourth party, independent of the trade, whose function will be to hold the balance evenly between the other parties. No previous scheme of apprenticeship has had the hearty coöperation of all the bodies connected with the plumbing trade, and it is now felt that at last a real effort is being made to establish the trade on a scientific basis. Hitherto, it has been recognised, insufficient education has resulted in defects; from very early times (the first official record of the Company's existence dates from 1365) the plumber's responsibility has been recognised, and emphasised by exhortations to him "well and truly" to perform his work, together with statements of penalties attaching to scamped labour or dishonesty.

The science of public health demands the close coöperation of the plumber—drainage, lighting, and certain processes of commerce call for skill and exactitude on his part, and so little is known, even by medical men, of the details of the technique required in his work that cooperation is not so close as it ought to be. A recent publication on this subject, entitled "Domestic Sanitary Engineering and Plumbing," by F. W. Raynes (second edition. London: Longmans, Green, and Co., 1920, pp. 474, 21*s*.), written for students of domestic sanitary engineering and plumbing, and those entrusted with the design, supervision, and execution of this branch of engineering work, is particularly rich in illustrations and makes pleasant reading for the amateur. The chapters deal in a practical way with the various sanitary considerations required in building a house, and give information of much value to the medical practitioner. The plumber is a very necessary ally in any scheme for improvement in house construction, and no one interested in public health affairs can fail to approve of the new attempt to increase the usefulness of his ancient and important craft.

COCKROACHES: THEIR HISTORY AND CONTROL.

THE life-history and control of the cockroach are the subjects of a pamphlet recently issued by the British Museum (Natural History). The pamphlet (Economic Series, No. 12) is the work of Mr. Frederick Laing, M.A., B.Sc., Assistant in the Department of Entomology of the Museum; it contains a concise description of the common cockroach (*Blatta orientalis*) and the German cockroach (*Blattella germanica*), the two species of the insect which are found commonly in houses in this country. It is observed at the outset that the popular name of "black-beetle" is inaccurate; the cockroach is one of the Orthoptera, an order more primitive than the Coleoptera. The common and German cockroaches are neither of them indigenous in England, having apparently been introduced into the country by infested shipping, the former during the sixteenth century, the latter possibly about the time of the Crimean War.

Habits of the Cockroach.

The habits of the two species are very similar; their flattened bodies enable them to gain entrance through very small cracks and crevices, and to shelter almost anywhere. The neighbourhood of a kitchen range is, of course, their favourite spot; in certain parts of London the gas companies' men frequently find the space between the oven and the top of the gas-cooker filled with a thick mass of roasted cockroaches. Basements are particularly liable to be infested; heat, damp, and a good supply of food are essential for multiplication of the insects; nothing edible is refused by them—wall-paper, whitewash, books, boots, and hair are all devoured freely, but sweetened foods, and particularly beer, form the strongest attractions. The harm done is not so much the quantity eaten as the quantity spoilt; cockroaches leave their excreta over everything, and also communicate the peculiar "roachy" flavour to tainted food by means of a waxy secretion from certain glands, and by saliva ejected from the mouth. Infestation of dwelling-houses takes place by the introduction of furniture, groceries, linen, &c., from sources already infested. Hotels and restaurants are frequently centres of dissemination. The two species of cockroach are very rarely found together; *Blatta orientalis* is the dominant species in this country, but when *Blattella germanica* occurs it is usually found in very large numbers, owing to its greater rapidity in breeding. The cockroach is normally a scavenger, and may sometimes be useful in removing dead animal matter. It also preys upon, and finally eradicates, the bed-bug—an advantage which in England does not countervail the unpleasantness of its own presence.

The Common Cockroach.—German, American, and Australian Cockroaches.

The sexes of the common cockroach differ markedly in appearance; the elytra and wings are strongly developed in the male, but rudimentary in the female; neither is black in colour, but a very dark brown. The antennæ are nearly as long as the body, and composed of many segments; they are liable to get broken, but like many other insects the cockroach has the power of regenerating lost parts provided the final adult stage of growth has not been reached, and provided a stump of the damaged organ remains. The cockroach grows in stages terminated by moults (of which the number and periodicity are not accurately known, partly because the insect eats its cast cuticle) and if injured the antennæ—or leg, as the case may be—never assume a perfect form at the next moult. The female of the common cockroach preponderates over the male in a proportion of about 3 to 1. Paring is confined to certain months—probably from April to September—and oviposition begins about a week after pairing; the eggs are laid in a capsule, arranged in two rows of about eight eggs each, and the female may carry the capsule protruding from the extremity of the abdomen for from 12 hours to four or five days, at the end of which time she deposits it in a warm sheltered spot, preferably near a food-supply. Normal hatching probably occurs within a few days; the capsule splits and the larvæ emerge to fend for themselves, as the mother takes no interest in her progeny. Each female is capable of laying a number of capsules—experiments have shown an average of eight, from each of which an average of ten larvæ were hatched; an immediate progeny of 80 may thus derive from one insect.

The German cockroach is dark yellow or light brown in colour, being only about half the size of the common species. Both sexes have fully developed wings; the proportion of females to males is apparently about 9 to 1, and pairing occurs at any time during the year. The female is sometimes said to be capable of laying only one capsule, but it is also held that two at least may be laid. *Blattella germanica*, unlike *Blatta orientalis*, assists her young to hatch. The American cockroach (*Periplaneta americana*) and the Australian cockroach (*Periplaneta australasiæ*) are not often found in dwelling-houses in this country. The former is the largest of our domestic species, reaching a length of about 35 mm.; it is mainly confined to warehouses, breweries, sugar-refineries, &c. The Australian species is similar but smaller, and is chiefly met with in glass-houses and forcing-pits, where it may do much damage by nibbling at plants, being more of a vegetarian and less of a scavenger than the other three varieties.

Cockroaches and Disease.—Methods of Control.

Cockroaches have not as yet been convicted of transmitting disease to human beings, although several attempts have been made to connect them with the dissemination of cancer. In one of these attempts[1] it was alleged that a worm in the rat passed its larval stage in the intestine of the cockroach; the rat ate the cockroach and became infested with the worm, which caused tumours found, on examination of the rat, to be of a cancerous nature. But there is as yet no very substantial evidence to go upon; the most that can be said is that the presence of the cockroach is unpleasant and its habits destructive.

To rid the house of these insects special attention should be paid to brick and tile work around fireplaces, to skirting-boards and cupboards, and to the entrances of gas- and water-pipes. The pamphlet advises cementing up of all crevices, and various insect powders are recommended for use afterwards. Of these a mixture of sodium fluoride and pyrethrum powder (in a proportion of 3 to 1) has been found very satisfactory and is harmless to pet animals. Powdered borax, sweetened or mixed with pyrethrum powder, and the well-known remedy of a mixture of one part of plaster-of-Paris with two parts of sugar, are also efficacious. Phosphorus paste is useful, but dangerous to other animals. Traps are to be bought or are easily made; stale beer and peeled bananas make the best bait. Sulphur dioxide, generated by burning brimstone, is the most efficient and least dangerous gas for fumigation; carbon bisulphide is useful, but very easily ignited, even from a distance. In places where heat can be applied a temperature of 130° F. can be relied upon to give good results, if maintained long enough to penetrate the lairs of the insects.

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[1] See reference in THE LANCET, 1913, i., p. 531.

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IN the Year Book for 1921, issued by the British Goat Society, Mr. F. J. Lloyd, F.I.C., F.C.S., has an informing paper on goats' milk, in which he marshals some of the main facts already known about it, and calls attention to various related points on which further research is desirable. It is pointed out that any attempt to appraise the milk of an animal must obviously take cognizance of quantity as well as of quality, and in both these respects the goat varies a good deal, the quantity yielded ranging from 1 to 10 lb. a day, with 5 lb. as a fair average, the quality, especially as regards the fat content, varying quite as widely. The figures given for the 1920 Dairy Show indicate a fat variation from 2·17 to 9·53 per cent., the average being under 5 per cent.; and although this marks a distinct advance on the results obtained in previous years the author is emphatically of the opinion that there is still room for improvement, and that the first desideratum is to obtain a more uniform standard in the produce of the goat. The suggestion is made that the fluctuations in quality observed depend not so much on the exceptional circumstances, which are often the causes of an abnormal milk yield in cows, as upon the fact that there are probably a far greater number of goats which naturally yield milk of poor quality than owners and breeders of goats realise. The remedy both for deficient quality and quantity is therefore careful selective breeding, with the elimination of animals yielding milk of an inferior quality, rather than an attempt at improvement by means of drugs or special feeding. Mr. Lloyd believes, however, that the amount of casein, and probably of albumin also, in goats' milk—both of which constituents are present in much greater amount than in cows' milk—depends on the presence of lime in the food; in this respect his conclusions coincide with those of Fingerling, who found that in goats fed on a diet deficient in calcium and phosphorus a fall occurred both in the amount of constituents and of the total milk secreted; both of these returned to the normal on restoring the calcium and phosphates to the diet. One point raised upon which further information is desirable, and could easily be obtained, is whether or not the fat content of goats' milk diminishes with prolonged milking, as one investigator has stated to be the case. Other points requiring elucidation are the degree of relationship, if any, between the phosphoric acid and the casein present, as well as between the calcium and the casein. With regard to the question of tuberculous infection in goats, the general opinion seems to be that the disease, if it occurs at all in this animal, is relatively rare; and Mr. Lloyd suggests that this comparative immunity may be due to the presence in the goat of an antitoxin to tuberculosis, seeing in this a rational basis for the old and widespread belief in the efficacy of goats' milk as a food for tuberculous patients. There exists undoubtedly a field for useful research in this direction, as also for the determination, quantitatively and qualitatively, of the vitamin content. Mr. Lloyd remarks truly that until recently chemical analysis has possibly concerned itself overmuch with the gross constituents of food materials at the expense of those substances to which, in spite of the minute quantities in which they are present, the main virtue of those food materials may be due.

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DATE OF THE INTRODUCTION OF ANÆSTHESIA.

IN a recent letter to the *Journal of the American Medical Association* the veteran Prof. W. W. Keen, of Philadelphia, pointed out that the article Anæsthesia in the "Encyclopædia Britannica" is incomplete as regards details given of the introduction of the process. He quotes the "Ether Day" address given by Professor W. H. Welch, of Johns Hopkins University, on Oct. 16th, 1908, to show that it was the operation (dissecting out of a tumour from the neck of one Gilbert Abbott) performed under surgical anæsthesia by Dr. John C. Warren at the Massachusetts General Hospital on Oct. 16th, 1846, in the presence of the Harvard medical students and of a number of distinguished medical men, which first demonstrated to the world at large the value of the method. The "Encyclopædia Britannica" gives Sept. 30th of the same year as the date of introduction; on that day Dr. W. T. G. Morton, a dentist of Boston, used ether to induce general anæsthesia for the purpose of extracting a tooth. This operation was done in private in Dr. Morton's office, and Dr. Morton himself is quoted[1] as referring to Warren's operation in these words: "This I consider to be the first demonstration of this new fact in science."

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[1] Trials of a Public Benefactor, by Dr. Nathan P. Rice, New York, 1859, p. 63.

ASTHMA.

LIBRARY

Delivered before the Chichester and Worthing Division of the British Medical Association on Feb. 16th, 1921,

BY ARTHUR F. HURST, M.A., M.D. OXON.,
F.R.C.P. LOND.,

PHYSICIAN AND NEUROLOGIST TO GUY'S HOSPITAL.

LIKE Sir John Floyer, who published the first book in the English language on asthma in 1698, I myself suffer from asthma, so I have the advantage, which few writers on the subject possess, of 27 years of observation on my own corpus vile. The subject is one of special interest at present, as recent research in England, America, and France, has led to the explanation of many problems connected with asthma which had previously been obscure.

DEFINITION.

I would define asthma as the reaction of an over-excitable bronchial centre to blood-borne irritants and to peripheral and psychical stimuli. One part of the vagal nucleus in the medulla controls the activity of the bronchi. Normally it is in a certain degree of tonic activity. When over-active the broncho-motor fibres of the vagus cause the bronchioles to contract and the broncho-secretory fibres cause the secretion of bronchial mucus to be excessive. This general over-activity is associated with congestion of the bronchial mucous membrane, analogous to what occurs in all other organs when in a condition of functional activity. The engorged mucous membrane adds to the bronchial obstruction caused by the spasm of the circular muscle fibres, and consequently the mucus cannot be easily expelled. It is retained so long that it undergoes a process of coagulation, similar to the change which occurs in the formation of fibrin from fibrinogen, this being due to the activity of a ferment, mucinase, which is present in the bronchial mucous membrane. As the coagulated mucous casts of the bronchioles are slowly expelled along the spiral bronchi they assume the characteristic features of the spiral mucous filaments described by Curschmann, of Leipzig, in 1883. An exactly similar process occurs in the bowel in mucomembranous colitis; mucus is secreted in excess, and owing to the associated spasm it is retained abnormally long, so that there is time for the characteristic membrane to form as a result of the action of the mucinase of the intestinal mucous membrane.

ASTHMA AND ANAPHYLAXIS.

Our knowledge of the blood-borne irritants of the bronchial centre is of recent origin, and my own interest in the subject was stimulated by a visit to America in the summer of 1919. Much important work on the subject has been carried out by Freeman,[1] of St. Mary's, and Walker,[2] of Harvard, work which has thrown light on the hitherto inexplicable individual variations in the ætiology of asthma.* The irritant is generally, but not always, a protein to which the individual is abnormally sensitive. The nature of these toxic idiopathies, as they have been called by Freeman, is obscure, but they present many analogies to experimental anaphylaxis, and it appears probable that they are really examples of anaphylaxis occurring in man owing to inherited or acquired sensitiveness to certain proteins. In guinea-pigs bronchial spasm is one of the characteristic phenomena of anaphylaxis. Whether a man who is sensitive to a certain protein will be unaffected by exposure to a moderate dose of it, or whether he will develop asthma, an urticarial or eczematous rash, or an acute gastro-intestinal attack, depends upon whether he has an irritable bronchial centre, an irritable skin, or an irritable digestive tract.

Walker found that in 52 per cent. of 400 cases of asthma the patient was specifically sensitive to one or more of his available proteins, as shown by the cutaneous tests, and that desensitisation generally prevented the development of asthma, whereas subcutaneous injection of the specific protein produced an attack of asthma. I believe that a still larger proportion of patients would give a positive reaction if they were tested whilst actually asthmatic, as the degree of sensibility varies with the state of the patient's general health, and he may fail to react to proteins during a period of freedom from attacks, although the same proteins may produce well-marked reactions during an asthmatic period.

The protein may gain access to the body by inhalation in the case of pollen, emanations from the hair and skin of animals, and the dust of cereal grains; it is ingested in the case of a great variety of foods; and, lastly, the protein may be derived from bacteria which have formed a focus of infection in the bronchi or less frequently the tonsils, nose, teeth, or intestines. The anaphylactic factor is most common in cases beginning in early life; thus 80 per cent. of those beginning in the first 2 years of life, 65 per cent. from 2 to 15, 50 per cent. from 15 to 35, 25 per cent. from 35 to 50, and none beginning after 50 were of this type (Walker). The special liability in children is most marked with food proteins, and next with animal proteins; the liability to bacterial proteins is equally distributed whatever is the age of onset up to 40.

Food.

Goodale[3] in 1916 showed that extracts of wheat foods gave positive skin reactions in asthmatics who had attacks of asthma when they ate bread. Walker has more recently investigated the question in connexion with a great variety of foods. In 68 out of his 400 cases the patient was sensitive to food protein. In more than half of them (35) the protein was derived from cereals, in most instances wheat (25), but occasionally maize (6), rice (3), rye (2), barley or oats, and sometimes from several sources in the same individual. Maize, oat, rye, and barley rarely caused symptoms before the war, as until the introduction of war bread few people ate enough of them to have any effect. Wodehouse has shown that different individuals are sensitive to different wheat proteins. In most cases the natural proteose of wheat is the most active and differs from the proteose produced artificially from the gluten of wheat. Heating, except to very high temperatures, does not affect the anaphylactogenic properties of wheat proteins.

Next to cereals come eggs among the foods which may cause asthma, and then potato, casein, and fish, especially lobster, oyster, salmon, mackerel, cod, and haddock. The proteins of beef, chicken, and other forms of meat, spinach and other vegetables, strawberries and other fruit are occasionally active, but generally in association with other food proteins. There are, indeed, few if any foods to which some individuals are not sensitive.

Only a small proportion of patients discover for themselves that the particular article of diet to which they are shown to be sensitive by the skin reaction gives them asthma, and in some cases eczema and urticaria as well. They have sometimes, however, a distaste for the food to which they are sensitive, especially in the case of eggs.

Pollen.

Freeman has found as the result of the long series of investigations on hay fever he has carried out during the last ten years that, although a patient suffering from hay fever or hay asthma may be use afterwards. Of these a mixture of sodium fluoride and pyrethrum powder (in a proportion of 3 to 1) has been found very satisfactory and is harmless to pet animals. Powdered borax, sweetened or mixed with pyrethrum powder, and the well-known remedy of a mixture of one part of plaster-of-Paris with two parts of sugar, are also efficacious. Phosphorus paste is useful, but dangerous to other animals. Traps are to be bought or are easily made; stale beer and peeled bananas make the best bait. Sulphur dioxide, generated by burning brimstone, is the most efficient and least dangerous gas for fumigation; carbon bisulphide is useful, but very easily ignited, even from a distance. In places where heat can be applied a temperature of 130° F. can be relied upon to give good results, if maintained long enough to penetrate the lairs of the insects.

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* Frank Coke's important investigations on the subject were published some weeks after the delivery of this lecture. Brit. Med. Jour., March 12th, 1921.

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THE VALUE OF ALLOTMENTS: THE KING'S LEAD.

IN THE LANCET of Feb. 15th, 1919, we expressed the hope that allotments, which the war had made a national necessity, should remain a permanent feature of English life. Social unrest, with a consequent lowering of productive efficiency, as well as the vagaries of the weather (the late frosts have damaged the potato crops in various parts of the country), still enforce the need for encouraging allotment culture, and it is in keeping with His Majesty's interest in the welfare of his subjects that he should recognise this need. After the armistice the residents of Hampton Wick and Teddington had their allotments in Bushy Park taken from them. They appealed to the Master of the Horse for the King's permission to use one of the paddocks in the park for the cultivation of vegetables, and their request has been granted. The benefits of allotments to the community are of far-reaching good from whatever point of view they may be regarded—economical, physical, mental, or moral. From the health point of view, with which we are mainly concerned, there can be no doubt that fresh vigour has been given to the town dweller, who not only finds healthy recreation in cultivating his plot after the sedentary occupations of the day, but finds also in digging the necessary physical exercise which otherwise he probably would not obtain. The incentive to early rising, the enforced intake of fresh air, and the change of mental attitude are other factors in the management of an allotment which must conduce to health.

DATE OF THE INTRODUCTION OF ANÆSTHESIA.

IN a recent letter to the *Journal of the American Medical Association* the veteran Prof. W. W. Keen, of Philadelphia, pointed out that the article Anæsthesia in the "Encyclopædia Britannica" is incomplete as regards details given of the introduction of the process. He quotes the "Ether Day" address given by Professor W. H. Welch, of Johns Hopkins University, on Oct. 16th, 1908, to show that it was the operation (dissecting out of a tumour from the neck of one Gilbert Abbott) performed under surgical anæsthesia by Dr. John C. Warren at the Massachusetts General Hospital on Oct. 16th, 1846, in the presence of the Harvard medical students and of a number of distinguished medical men, which first demonstrated to the world at large the value of the method. The "Encyclopædia Britannica" gives Sept. 30th of the same year as the date of introduction; on that day Dr. W. T. G. Morton, a dentist of Boston, used ether to induce general anæsthesia for the purpose of extracting a tooth. This operation was done in private in Dr. Morton's office, and Dr. Morton himself is quoted[1] as referring to Warren's operation in these words: "This I consider to be the first demonstration of this new fact in science."

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[1] Trials of a Public Benefactor, by Dr. Nathan P. Rice, New York, 1859, p. 63.

[illegible]

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Delivered before the Chichester and Worthing Division of the British Medical Association on Feb. 16th, 1921,

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LIKE Sir John Floyer, who published the first book in the English language on asthma in 1698, I myself suffer from asthma, so I have the advantage, which few writers on the subject possess, of 27 years of observation on my own corpus vile. The subject is one of special interest at present, as recent research in England, America, and France, has led to the explanation of many problems connected with asthma which had previously been obscure.

DEFINITION.

I would define asthma as the reaction of an over-excitable bronchial centre to blood-borne irritants and to peripheral and psychical stimuli. One part of the vagal nucleus in the medulla controls the activity of the bronchi. Normally it is in a certain degree of tonic activity. When over-active the broncho-motor fibres of the vagus cause the bronchioles to contract and the broncho-secretory fibres cause the secretion of bronchial mucus to be excessive. This general over-activity is associated with congestion of the bronchial mucous membrane, analogous to what occurs in all other organs when in a condition of functional activity. The engorged mucous membrane adds to the bronchial obstruction caused by the spasm of the circular muscle fibres, and consequently the mucus cannot be easily expelled. It is retained so long that it undergoes a process of coagulation, similar to the change which occurs in the formation of fibrin from fibrinogen, this being due to the activity of a ferment, mucinase, which is present in the bronchial mucous membrane. As the coagulated mucous casts of the bronchioles are slowly expelled along the spiral bronchi they assume the characteristic features of the spiral mucous filaments described by Curschmann, of Leipzig, in 1883. An exactly similar process occurs in the bowel in muco-membranous colitis; mucus is secreted in excess, and owing to the associated spasm it is retained abnormally long, so that there is time for the characteristic membrane to form as a result of the action of the mucinase of the intestinal mucous membrane

ASTHMA AND ANAPHYLAXIS.

Our knowledge of the blood-borne irritants of the bronchial centre is of recent origin, and my own interest in the subject was stimulated by a visit to America in the summer of 1919. Much important work on the subject has been carried out by Freeman,[1] of St. Mary's, and Walker,[2] of Harvard, work which has thrown light on the hitherto inexplicable individual variations in the ætiology of asthma.* The irritant is generally, but not always, a protein to which the individual is abnormally sensitive. The nature of these toxic idiopathies, as they have been called by Freeman, is obscure, but they present many analogies to experimental anaphylaxis, and it appears probable that they are really examples of anaphylaxis occurring in man owing to inherited or acquired sensitiveness to certain proteins. In guinea-pigs bronchial spasm is one of the characteristic phenomena of anaphylaxis. Whether a man who is sensitive to a certain protein will be unaffected by exposure to a moderate dose of it, or whether he will develop asthma, an urticarial or eczematous rash, or an acute gastro-intestinal attack, depends upon whether he has an irritable bronchial centre, an irritable skin, or an irritable digestive tract.

Walker found that in 52 per cent. of 400 cases of asthma the patient was specifically sensitive to one or more of his available proteins, as shown by the cutaneous tests, and that desensitisation generally prevented the development of asthma, whereas subcutaneous injection of the specific protein produced an attack of asthma. I believe that a still larger proportion of patients would give a positive reaction if they were tested whilst actually asthmatic, as the degree of sensibility varies with the state of the patient's general health, and he may fail to react to proteins during a period of freedom from attacks, although the same proteins may produce well-marked reactions during an asthmatic period.

The protein may gain access to the body by inhalation in the case of pollen, emanations from the hair and skin of animals, and the dust of cereal grains; it is ingested in the case of a great variety of foods; and, lastly, the protein may be derived from bacteria which have formed a focus of infection in the bronchi or less frequently the tonsils, nose, teeth, or intestines. The anaphylactic factor is most common in cases beginning in early life; thus 80 per cent. of those beginning in the first 2 years of life, 65 per cent. from 2 to 15, 50 per cent. from 15 to 35, 25 per cent. from 35 to 50, and none beginning after 50 were of this type (Walker). The special liability in children is most marked with food proteins, and next with animal proteins; the liability to bacterial proteins is equally distributed whatever is the age of onset up to 40.

Food.

Goodale[3] in 1916 showed that extracts of wheat foods gave positive skin reactions in asthmatics who had attacks of asthma when they ate bread. Walker has more recently investigated the question in connexion with a great variety of foods. In 68 out of his 400 cases the patient was sensitive to food protein. In more than half of them (35) the protein was derived from cereals, in most instances wheat (25), but occasionally maize (6), rice (3), rye (2), barley or oats, and sometimes from several sources in the same individual. Maize, oat, rye, and barley rarely caused symptoms before the war, as until the introduction of war bread few people ate enough of them to have any effect. Wodehouse has shown that different individuals are sensitive to different wheat proteins. In most cases the natural proteose of wheat is the most active and differs from the proteose produced artificially from the gluten of wheat. Heating, except to very high temperatures, does not affect the anaphylactogenic properties of wheat proteins.

Next to cereals come eggs among the foods which may cause asthma, and then potato, casein, and fish, especially lobster, oyster, salmon, mackerel, cod, and haddock. The proteins of beef, chicken, and other forms of meat, spinach and other vegetables, strawberries and other fruit are occasionally active, but generally in association with other food proteins. There are, indeed, few if any foods to which some individuals are not sensitive.

Only a small proportion of patients discover for themselves that the particular article of diet to which they are shown to be sensitive by the skin reaction gives them asthma, and in some cases eczema and urticaria as well. They have sometimes, however, a distaste for the food to which they are sensitive, especially in the case of eggs.

Pollen.

Freeman has found as the result of the long series of investigations on hay fever he has carried out during the last ten years that, although a patient suffering from hay fever or hay asthma may be shown experimentally to be sensitive to a variety of pollens, grass pollen is the only one of any importance in England. It is always present in the air during the grass-flowering season, from the middle of May to the beginning of August, except when recent rain has washed it away. It alone of English pollens is produced in sufficient amount, and is sufficiently easily disseminated by light wind, and is capable of producing a strong reaction. Daisy pollen, for example, only flies a few yards in contrast to grass pollen which can fly many miles, and trees only pollinate for a few days instead of for several weeks. In America conditions are very different, and Walker has shown the need for investigating the sensitiveness of each patient to a large variety of pollens. The majority of cases of hay asthma are associated with hay fever, which occurs, of course, still more frequently as an independent condition.

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* Frank Coke's important investigations on the subject were published some weeks after the delivery of this lecture. Brit. Med. Jour., March 12th, 1921.

Animal Emanations.

Hyde Salter[4] was the first to recognise that asthma may be caused by the emanation from animals. In 1859 he noted cases of asthma brought on by the presence of cats, horses, guinea-pigs, rabbits, hares, cattle, sheep, and deer. Cat and horse asthma are the most common, the others being comparatively rare. Many patients are at once aware of the presence of a cat in the room from the development of asthmatic symptoms, which are sometimes associated with nasal catarrh and even urticaria. Trousseau described a case of a woman who had an attack of asthma directly her feather-bed was shaken in her presence, and Salter had a patient who could not sleep upon a pillow stuffed with feathers. Freeman writes of a patient who said, "You must put your head on the pillow as upon a wasp's nest." Goodale in 1916 found that an alcoholic extract of the hair of cats produced a skin reaction in patients suffering from cat asthma, the reaction apparently indicating that the individual was anaphylactic to the proteins contained in the extract. Wodehouse[5] found that the substance in the hair of cats and other animals which gave rise to the reaction was not the keratin, which forms the main constituent of hair, nor the proteins of their blood, but various other proteins which he isolated from the dandruff of the animal's skin. Freeman has shown that a slighter reaction is also produced by the flesh, serum, fæces, and nasal mucus in individuals who are sensitive to the dandruff, and that sensitiveness to a horse is associated with a lesser degree of sensitiveness to other members of the horse-tribe, such as the zebra, but to a very slight extent, as a rule, to the donkey.

The quantity of specific protein required to cause an attack of asthma is, of course, exceedingly minute. The comparatively large quantity of foreign protein introduced into the circulation when horse serum is used therapeutically is sufficient to produce an attack in many asthmatics who are not otherwise liable to horse asthma. Anti-diphtheritic or other serum ought, therefore, never to be given to an asthmatic without preliminary desensitisation. In the absence of this precaution death from anaphylactic shock has occurred in a number of cases described by Collier, of Oxford, and others.

Bacterial Toxins.

It has long been recognised that asthma may be associated with infection of the bronchi, and less commonly of the teeth, nasal mucous membrane, tonsils, and intestines. The infection may give rise to the production of bacterial proteins to which the individual is abnormally sensitive, in which case the asthma is of anaphylactic origin, or the lesion produced may act as an irritant focus and give rise to reflex attacks of asthma. It is possible to distinguish between these two possibilities by testing the cutaneous reaction to the toxins of each organism isolated from the sputum or other infective material or to stock toxins obtained from various organisms; a positive reaction is obtained in the anaph but not in the reflex cases. Vaccination ma to improvement in both classes, but this is lik be more marked in the former. Dr. John tells me that the organism which most frequentl a specific relation with asthma is a bacillus o Friedländer group; this is often found in the sp coughed up during an attack.

Other Proteins.

Asthmatics are occasionally sensitive to ot proteins as well as those already referred to. Th in one of Walker's patients an attack was alwa produced in the presence of a flax-seed poultice, an in another the attacks were caused by tobacc smoke, as in a case described by Floyer in 1726. The patients were found by the skin reaction to be sensitive to a protein in flax-seed and tobacco respectively. In a third case a jewel polisher was found to be sensitive to protein obtained from the dust of the boxwood he used in his work. Sensitisation of this kind undoubtedly explains many of the remarkable idiosyncrasies shown by asthmatics.

Multiple Sensitisation.

Walker found that multiple sensitisation was uncommon in cases which begin later than the age of 10, but it is common if it begins in infancy. It is probable that sensitisation to one protein early in life tends to be followed by subsequent sensitisation to others. Skin reactions indicating multiple sensitisation do not necessarily indicate that the asthma is at the actual moment being produced by all the proteins, although each is a potential cause and requires separate consideration in determining what treatment should be undertaken.

REFLEX CAUSES.

The most important peripheral stimuli which may affect an irritable bronchial centre and produce asthma reflexly arise in the nose, bronchi, stomach, and bowel. There is a point on the mucous membrane of the nasal septum opposite the inferior turbinal which appears to be specially rich in afferent nerve fibres which may influence the bronchial centre. Touching this with a probe may cause an asthmatic patient to wheeze, and contact with a congested inferior turbinal may give rise to an attack of asthma. Congestion of the turbinal is most frequently caused by infection, but apart from this contact may occur in individuals with a narrow nose or deflected septum, especially when the turbinal swells as a result of gravity on assuming the horizontal position, this being one reason why sleep is much less likely to be interrupted by an attack of asthma if the patient sits in a chair instead of going to bed.

I have already pointed out that the association of bronchial infection with asthma is due to either or both of two factors—sensitiveness to the toxin of one or more of the infecting organisms, and a reflex caused by the irritation of the bronchial mucous membrane by the infection; the latter must be present alone when the cutaneous reactions are absent. but improvement results from vaccination. Distension of the stomach with food may cause asthma, especially in the evening, quite independently of the nature of the food. Similarly distension of the rectum with fæces produces reflex asthma in patients with an irritable bronchial centre immediate relief follows defæcation.

HYSTERICAL AND EMOTIONAL ASTHMA.

In an individual with an irritable bronchial centre, but never apart from this, asthma may be caused by an idea or an emotion. Thus if a patient has had an attack under certain conditions he will expect to have another if the conditions are repeated. When for any reason the conditions have altered, but without the patient's knowledge, he may yet be so convinced that an attack will occur that one is produced. Asthma caused by auto-suggestion in this way is truly hysterical, though in the absence of an abnormal bronchial centre no amount of suggestion could cause bronchial spasm and hypersecretion. Trousseau describes the case of a lady, who always had asthma in the presence of roses and had an attack when she saw some artificial roses which she thought were real. On my first visit to Salisbury in 1908 I had a very severe attack, which was repeated the following year, but I had no further attacks on numerous occasions in 1918 and 1919 when I revisited the city, as I had meanwhile become firmly convinced that my second attack was brought on solely by expectation, whatever may have been the cause of the first. Many patients who learn to rely on certain remedies are sure to become asthmatic if they discover that they have forgotten to take their powder, inhalation, or injection with them. Some asthmatics have an attack with any little excitement, business worry, or annoyance, but a severe fright is more likely to stop an attack than to cause one.

THE SUPRARENALS IN ASTHMA.

The excitability of different nerve centres shows considerable individual variations. This is shown by the variability of the pupil reflexes, skin reflexes, and deep reflexes. I believe that asthma is due to a condition which is generally, or perhaps always, inborn, and often inherited, in which the bronchomotor part of the vagus nucleus is more active than in the average man. In some cases it is very slightly so; the individual may then never have an attack of asthma in his life or, as in several of my patients, only a few attacks under very special circumstances. In other cases it is very hypersensitive and the asthma is more severe and constant. The overactivity of the broncho-constrictor fibres of the vagus is kept in check by the broncho-dilator activity of the sympathetic nerve-supply to the bronchial muscles, which is largely dependent on the constant secretion of adrenalin.

Physical and mental fatigue is a very common cause of asthma. Many asthmatics are always ill when they over-work, but recover at once on a holiday. Asthma is always worse in the evening than in the morning, and many patients can eat a large breakfast without any unpleasant symptoms resulting; but the smallest dinner, consisting perhaps of no articles of diet which cannot be taken with impunity at breakfast, is followed at once by wheeziness. And even if no food is eaten at night asthma may develop, though less severely. If the patient sleeps in the afternoon he is often less asthmatic in the evening, or if he sleeps just before dinner he may be able to eat much more than would otherwise have been possible. As asthma is caused by over-activity of the bronchial muscles, it might have been expected that fatigue would result in their relaxation, and consequently in the relief of the asthma. But physical fatigue does not seem to influence involuntary muscles, and certainly it does not lead to the relaxation of the bronchial spasm. It is well known that extreme fatigue leads to marked exhaustion changes in the suprarenal gland. It is quite possible that the fatigue of each day is sufficient to cause a slighter degree of similar changes. The smallest diminution in the secretion of adrenalin would allow the over-activity of the vagal bronchomotor centre to have greater play and asthma would result. These considerations appear to afford an adequate explanation of the production of asthma by fatigue.

A toxic idiopathy or hypersensitiveness to a certain protein, according to certain French authors, depends in part upon the fact that the protein has the effect of depressing the activity of the suprarenals. This effect may manifest itself in depression of one or all of its normal activities, the chief being in connexion with the blood-vessels, the alimentary canal, and the bronchi. Acute and severe anaphylaxis produced by large doses of serum injected into an individual sensitised by a previous injection of serum affects all three. More commonly only those functions in which the adrenal control is specially important for the particular individual are affected. Thus an asthmatic will have an attack of asthma and a man with a sensitive vaso-motor system will develop urticaria or other vaso-motor disturbances in the skin. A man who tends to have gastro-intestinal attacks owing to the abnormal irritability of his digestive tract will vomit and have diarrhœa and abdominal cramp owing to exaggerated peristalsis and relaxation of the cardiac, pyloric, and ileo-cæcal sphincters; this explains idiosyncrasies to shell-fish, eggs, and other foods which are manifested by acute digestive disturbances. In some cases an attack of asthma will be accompanied by the vaso-motor changes, or alternate with them, or will be accompanied by the abdominal attack. In one of my patients an attack of diarrhœa is always preceded by a feeling of tightness in the chest, which may develop into definite asthma whilst the diarrhœa lasts, finally disappearing with it. Lastly, in some cases the idiopathy is manifested in an attack of hay fever.

It is a familiar fact that a severe fright may relieve an attack of asthma. A man in the middle of a severe attack was driving downhill when the brake refused to act; he was in immediate danger of dashing into a wall which faced him at the bottom of the hill, but at the very last moment he succeeded in regaining control of the car; when he drew up he found that he was breathing with perfect freedom. This was probably due to the stimulation of the sympathetic and of adrenalin secretion caused by the fright. The stimulation of suprarenal secretion by asphyxia, which is perhaps the cause of second wind in runners, explains also the spontaneous relief or "second wind" which an asthmatic may experience if he continues his exercise after walking has brought on a moderate degree of dyspnœa. Finally, the extraordinarily rapid effect of adrenalin injections in bringing relief to an acute attack of asthma in many individuals can best be explained by this theory. The dose required is less than that required to produce general symptoms, such as a rise of blood pressure and a rapid pulse, because adrenalin first acts upon any organ which is too much under vagal control at the moment. If any intestinal symptoms are present these are likely to be relieved at the same time.

INHERITANCE OF ASTHMA.

All writers have noted the frequency of a family history of the disease in asthmatics, a frequency which is much too great to be accidental. Thus in 39 per cent. of Salter's 217 cases there was a clear history of inheritance. The important question arises: What is it that is inherited? I think that there is sufficient evidence to prove that it is sometimes an irritable bronchial centre, sometimes a toxic idiopathy, and sometimes both. When an individual whose father or mother is asthmatic develops asthma in the absence of any evidence of a toxic idiopathy, or has his first attack of asthma as a sequel of an infection or after he has acquired in adult life a toxic idiopathy, he must have inherited an irritable bronchial centre. For there is no doubt that a toxic idiopathy may be acquired, especially as a result of prolonged exposure to emanations in the course of a man's occupation. In half of Walker's cases which began after the age of 50 the patient was sensitive to a protein with which he came in contact as a result of his work: thus several bakers were sensitive to wheat, an ostler to horse dandruff, and a coffee-sifter to the protein of green coffee husks. Trousseau described the case of a chemist who had a violent attack of asthma when linseed, scammony, and ipecacuanha were powdered in his laboratory, and four others who were sensitive to ipecacuanha only. If no toxic idiopathy is inherited or acquired in an individual who is a potential asthmatic as a result of having inherited a sensitive bronchial centre, he may transmit the tendency to his children without ever developing asthma himself. Thus the paternal grandfather and uncle and maternal grandmother and aunt but neither parent of one of my asthmatic patients suffered from asthma.

An individual may share with some of his relations an abnormal sensitiveness to a certain protein. Coke relates the cases of a woman who was sensitive to milk, and had severe asthma throughout her two pregnancies; both children were fed on cow's milk; the first had gastric symptoms for the first 6 weeks of its life, and the second died from asthma when 6 weeks old. More frequently a general tendency to toxic idiopathies is inherited; Freeman has published numerous instances of this. This may manifest itself in different members of the family as asthma, hay fever, or digestive disturbances, depending upon the inheritance or acquisition of an irritable bronchial, nasal, or digestive system respectively.

TREATMENT.

Three things require consideration in discussing the treatment of asthma: (1) the irritable bronchial centre; (2) the chemical, reflex, and psychical stimuli which may affect the centre; and (3) the attack itself.

1. *The Irritable Bronchial Centre.*

Every asthmatic knows that the better his general health is the less liable he is to asthma. In other words, the irritability of his bronchial centre varies directly with the state of his health. For this reason he should avoid over-work and take adequate holidays. Nothing is likely to do him more good than a month in the Swiss mountains in the winter, where he will probably find that he can indulge in ski-ing, lugeing, and skating with a vigour and freedom from respiratory distress he has not known for months. He should try to take some exercise every day, and a great deal more during the week-end. Slight dyspnœa is no contra-indication, as it often disappears on persevering with the exercise. Most important of all, he should try his best to avoid all possible causes of asthma, as the longer he remains free from it the less irritable the centre will become, until finally after some years of inactivity it may cease to respond at all to stimuli which in the past invariably gave rise to attacks. The best cure of asthma is not to have it. It is almost always possible to find some place where the patient does not get asthma, and no asthmatic child should be allowed to go to a school where he is more or less constantly asthmatic.

I have found that the irritability of the bronchial centre can be to some extent reduced by giving between 3 and 5 grains of caffeine, with double the dose of phenazone, when the patient feels slightly asthmatic and fears that an attack will develop later, as, for instance, immediately after lunch and dinner or on going to bed.

2. *Chemical, Reflex, and Psychical Stimuli.*

(*a*) *Toxic idiopathies.*—When asthmatic attacks are caused by food proteins all that is generally necessary is to exclude from the diet the food to which the patient is found to be most sensitive by the cutaneous test. Long abstention probably results in desensitisation. If eczema or urticaria is present it often disappears at the same time. Desensitisation does not follow injection of the proteins or feeding in slowly increased quantities of the food. Desensitisation to pollen can almost invariably be brought about by the subcutaneous injections of progressively larger doses of the pollen extract during the weeks preceding each hay-fever and hay-asthma season.

A patient can often free himself from asthma by imply avoiding any animal to which he has been hown to be sensitive, or in the case of feathers by oiding feather pillows, mattresses, and upholstery. hen an asthmatic is sensitive to horse dandruff in ilution of 1 in 10,000 or more desensitisation is necessary, as the dust of city streets contains sufficient of the protein to cause attacks. In such cases, and whenever avoidance of the animals is impossible or does not relieve the asthma, desensitisation should be undertaken with the specific proteins. Nothing but specific treatment is of any use; thus an individual who is sensitive to horse serum can be desensitised with the serum if it is necessary to give him some antitoxin, but this has no effect on his asthma, even if he happens to be also sensitive to horse-dandruff proteins. A large proportion of cases are relieved; at the same time the skin reaction disappears or is greatly reduced in intensity.

Idiopathy to bacterial toxins can generally be overcome by vaccination in the ordinary way with organisms isolated from the patient's bronchial secretion or material obtained from other infective foci. In determining which organisms are most important the cutaneous reactions give some help, but even if no reaction is obtained an autogenous vaccine may prove very useful in curing chronic bronchitis or rhinitis which has acted as a reflex cause of asthma. The reaction is generally negligible if the injection is made at night and the patient takes 10 or 15 grains of aspirin at the same time. Lastly, the daily life of each patient should be investigated in every detail in an attempt to find some special toxic idiopathy other than the familiar ones already described, which may be in part responsible for the asthma.

(*b*) *Reflex causes.*—Bronchitis should be treated by autogenous vaccines and small doses of iodide taken for long periods. A careful examination of the nose should be made and any obvious source of irritation should be removed, but no operation should be performed unless it is very clearly indicated, as I have seen several cases aggravated by such operations, and one of the worst cases I ever saw was a man of 50 who had his first attack of asthma immediately after a hypertrophied turbinal had been removed. I have seen several cases in which mere cauterisation of a sensitive point on the septum in an apparently normal nose, as advocated by Francis, has produced marked improvement, though rarely, if ever, complete disappearance of all attacks. In many cases an autogenous vaccine prepared from the nasal secretion will do away with the need for local treatment by relieving the congestion which is secondary to infection, and in any case it is a useful preliminary measure in order to diminish the severe reaction which occasionally follows an operation. Apart from the Friedländer bacillus, already referred to, Dr. Eyre finds that the *B. septus* isolated from the nasal secretion, and pneumococci, *M. catarrhalis* and streptococci from the nasal and bronchial secretion are the organisms most frequently found in the rhinitis and bronchitis associated with asthma.

Asthma caused by a gastro-bronchial reflex can be avoided by eating hardly anything for dinner, which should be as early as possible, and nothing at all on going to bed, as the reflex only comes into play as the day advances and the patient becomes more tired. I have already pointed out how much benefit he may derive by sleeping or resting for half an hour before his evening meal. Regulation of the quantity of food is of more importance than its quality, except for any toxic idiopathies which may be present, but the food, especially in the evening, should be as digestible as possible; no better guide to a suitable diet could be found than that given in Dr. James Adam's little book on "Asthma."

The intestinal-bronchial reflex comes almost entirely from the pelvic colon and rectum, and regular habits and exercises to overcome dyschezia are generally sufficient to keep it in check. Aperients should be avoided as far as possible, but in some cases a small weekly dose of infusion of senna is needed to prevent a fæcal accumulation from forming.

(*c*) *Psychical causes.*—Psychotherapy is only useful in so far as explanation of the mechanism involved may lead an asthmatic to take a less hopeless view as to his chance of complete recovery. So long as he feels convinced that certain circumstances will inevitably cause an attack they will certainly do so. He should be persuaded to be optimistic about his condition, and hope and even expect that what has hitherto caused an attack will not necessarily do so in the future.

3. *The Attack.*

An attack of asthma can most readily be cut short by the subcutaneous injection of adrenalin. The most efficacious dose is very much smaller than that generally given. In many cases a single minim of 1 in 1000 adrenalin chloride is enough, more than two minims being rarely required. But the injection should be given at the beginning of an attack, directly a patient wakes in the night, for instance, and not half an hour or an hour later when it has reached its full development. The relief is so immediate that the patient often falls asleep within five minutes of waking in an attack. Such small doses give rise to no unpleasant sensations, such as frequently follow the injection of three or more minims, and the blood pressure does not rise at all. Consequently the treatment can be continued for long periods without any fear of ultimately causing arterio-sclerosis. It is the only form of injection which a patient should be allowed to use on himself; if he has to depend on someone else giving the injection he will rarely receive it at the right moment.

For slight attacks and for the feeling of slight dyspnœa, which may persist throughout the day when severe attacks occur at night, atropine and cocaine may be used with an atomiser.

No patient should be allowed to use any of the numerous powders which are used by inhaling the fumes produced when they are burnt, as they invariably aggravate any bronchitis which may be present, and actually give rise to bronchitis in patients who have hitherto been free from it. I have seen several patients who have only recovered from a prolonged attack of asthma, persisting for weeks or months, after they had been persuaded to spend their nights sleeping in an easy chair instead of lying down in bed. Lastly, I wish to emphasise the fact that these remarks on the treatment of the attack should not make us forget that our chief aim must be to devise such a course of action for the patient that he will eventually have no attacks to treat.

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2. I. C. Walker: Journ. Med. Research, 1917, xxxv., 497 and 509; 1917, xxxvi., 231, 237, 243, 295, and 423; 1917, xxxvii., 51, 277, and 287: Boston Med. Surg. Jour., 1918, clxxix., 288; Am. Jour. Med. Sciences, 1919, clvii., 409; and Arch. Int. Med., 1918, xxii., 466, and 1919, xxiii., 220.
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ST. BARTHOLOMEW'S HOSPITAL: TREASURER'S REPORT.—This report, dealing with the year 1920, opens with a statement regarding the policy of asking payment from both in-patients and out-patients, that policy being in accord with the principles laid down by King Edward's Hospital Fund for London. A review of the causes of the increased expenditure of the hospital and the means which have been adopted to meet it afford instructive information on hospital management generally, and is worthy of attentive perusal. During the year under notice 8401 in-patients were admitted, making, with the 507 patients who were under treatment on Jan. 1st, 1920, a total of 8071. The casualty patients (first attendance) were: medical, 30,385; surgical, 38,219. Street accident and illness cases brought to the hospital by ambulances or hand litters belonging to the Corporation of the City of London or to the County Council numbered 2203 The statistics dealing with the treatment of discharged sailors and soldiers show that 331 pensioners were admitted into the wards, the total attendance for out-patient treatment being 26,018.

A Lecture
ON
MITRAL STENOSIS.

Delivered at the National Hospital for Diseases of the Heart,

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OF the several varieties of heart disease which are valvular in origin mitral stenosis will, at all times, occupy an important and prominent position; it is an example of the progressive maladies which sooner or later in their course evince signs and symptoms of myocardial incompetence in association with some existing valvular defect; moreover, mitral stenosis occupies a position of relatively high importance, being a condition of extreme prevalence, and also for the reason that definite clinical indications invariably exist which inform us of the progress of the disease and provide all the evidence needed for accuracy in prognosis and success in treatment.

Mitral stenosis may be broadly defined as a type of those diseases which are somewhat slow to proclaim their presence with certainty; this is easily understood, for the narrowing of the valve can only be produced by gradual stages, and the cicatrising process, however originated, must inevitably proceed slowly. As regards sex-incidence, all authorities are agreed in finding this disease more common in the female than the male, probably owing to the fact that rheumatism and chorea, the two conditions which undoubtedly originate endocarditis in the majority of cases, are more prevalent in the female. The disease is essentially one of early adult life, statistics all going to prove the extreme frequency of the condition between the ages of 20 and 35 years.

ÆTIOLOGY.

The ætiological factors may be discussed under two headings: (1) acute infections; (2) degenerative processes. A third group may perhaps be mentioned to include rare types of the disease due to strain, trauma, congenital malformation, &c.; these need not detain us. Of the acute infections which initiate early changes in the tissues of the valve and its adjoining structures, the rheumatic group of diseases predominates in overwhelming fashion; but measles, scarlet fever, small-pox, erysipelas, pneumonia, septicæmia, &c., account for a considerable number of cases.

Group (2) comprises the types of the disease which are *secondary to degenerative processes*; retrograde changes which take place with advancing years, whether they be secondary to some form of toxæmia, long-continued strain, or other causes, may be responsible for valvular disturbance and disease; hence the association between degenerative processes characterising such diseases as gout, syphilis, chronic nephritis, plumbism, arterio-sclerosis, &c., and valvular lesions, in which fibrotic changes, adhesions, retractions, and other such-like malformations are gradually produced; it should, however, be remarked in passing that all the evidence at our disposal points to the factors mentioned in Group (1)—viz., acute infections, materially outweighing degenerative lesions in relative importance, so that, for practical purposes, we may regard mitral stenosis as a disease caused by the chronic inflammatory process following endocarditis which leads, sooner or later, to thickening and fusion of the valvular cusps.

The first manifest result of the stenosis will clearly be centred round the obstruction, which interferes with the even blood flow from the left auricle above to the ventricle below, and the influence it exerts upon the cardiac mechanism and output; in the early stages of the disease it is evident that the heart's main difficulty will be adequately to maintain the filling of the left ventricle, to which the inflow will be slowed by the lesion; a disturbance will therefore arise in the relative pressures, venous and arterial—pressure in the left auricle and pulmonary veins being raised at the same time as the amplitude and force of pulse diminishes in the aorta and its branches; this dislocation of the normally balanced pressures evokes rapid response on the part of the cardiac musculature, which utilises its reserve of energy by increasing the working capacity of the left auricle and right ventricle, so tending to counteract the effects of the lesion, and to maintain an efficient relation between the pressures of the systemic and lesser circulations respectively. In varying degree and for varying periods of time we find, therefore, that the reserve power of the cardiac muscle is sufficient to deal with all the altered circumstances resulting from mitral stenosis, and only when there is definite evidence of the diminution of this reserve of energy will cardiac failure be produced in recognisable form.

DIAGNOSIS.

Symptoms.—Apart from exceptional cases which by reason of their freedom from symptoms may be regarded as latent, the majority of patients with definitely diagnosable mitral stenosis are subject to sensations of discomfort causing varying degrees of physical incapacity. By reason of the interference with pulmonary circulation, and resultant deficient aeration, the patient will usually complain of breathlessness—at first produced only by strenuous effort, extreme emotion, &c., but increasing in intensity, developing under milder provocation, and, in the latter stages of the disease, disturbing the patient at rest, becoming persistent, and tending to produce acute exacerbations from time to time, for no very apparent cause; this last is true paroxysmal dyspnœa, or so-called cardiac asthma.

Linked closely with the sensation of breathlessness, and depending upon similar causes, is the cough which develops with uniform regularity and tends to persist. The sputum as a rule is very fluid, frothy, and frequently tinged with blood; in this disease, more often than in any other valvular affection, pulmonary hæmorrhage is likely to take place with free hæmoptysis; persistent attacks of bronchitis frequently result from apparently trivial causes. Præcordial pain and tenderness are often complained of, and may prove a definite and obstinate incapacity, especially in certain aggravated cases where the pain may assume all the attributes of true angina; otherwise it is customary to find varying degrees of epigastric pain and distress due to hepatic engorgement, also some amount of discomfort under the left breast secondary to disturbances of the gastro-intestinal tract. Attacks of tachycardia and palpitation, also headache and giddiness, are often annoying symptoms. As the disease progresses and cardiac failure becomes more evident the symptoms develop in intensity, and further debilities arise as a result of stasis, which depends upon the inefficiency of the myocardium to maintain the necessary balance of the circulatory mechanism.

A broad review of the symptoms of mitral stenosis shows that they differ but little from those associated with cardiac failure secondary to other varieties of valvular lesions; it is, however, important to appreciate the early appearance of pulmonary complications in this disease, the not infrequent crises which indicate arterial embolism, and the brassy cough, aphonia and hoarseness which certain cases develop as a result of damage to the left recurrent laryngeal nerve.

Physical Signs.

Turning to the question of physical signs, these ond a complicated series of phenomena which can sibly be discussed to the best advantage if we divide the disease into stages; for this purpose it is necessary to analyse the clinical picture with some care. Stage 1 deals with the disease in its undeveloped form, Stage 2 refers to the period of full development, and Stage 3 with that advanced state of the malady in which the failing heart suffers the additional strain and handicap imposed by the change of rhythm, the gross irregularity associated with fibrillation of the auricles.

Stage 1.

The value of a correct appreciation of this undeveloped stage cannot be too strongly emphasised; as the result mainly of post-mortem examinations, and for other no less definite reasons the narrowing of the valve aperture is known to be produced only by slow degrees and in the gradual manner typical of the formation of scar tissue, so that there must be a clearly defined interval between the primary invasion of the valve curtains and the ultimate development of the stenotic process. This interval of time will of necessity be elastic, depending upon the virulence of the first infection, the patient's resisting power, domestic circumstances, sex, occupation, the possibility of a secondary infection, &c.; for clinical purposes, and as a general working rule, a period of from three to six years may be taken as essential for these early changes. During this interval the early symptoms of cardiac failure, including shortness of breath with moderate effort, undue exhaustion, palpitation, general cardiac overaction, &c.—in short, the whole symptom-complex of an impaired exercise tolerance—will tend to become increasingly noticeable; physical signs are few, but by careful examination sufficient can be detected for diagnostic purposes.

The outstanding features helpful in an endeavour to spot the disease prior to its full development may be of two varieties, negative or positive; the negative indications include the following: (1) A normal general appearance with a healthy facial aspect; (2) a heart of normal size, whose resting rhythm is quiet and regular; (3) a pulse regular in time, and normal in size and pressure; (4) entire absence of venous engorgement, jugular, pulmonary and visceral.

The positive indications refer mainly to the sounds of the heart and their variations under different conditions, more especially in those patients, the recent victims of some acute infection, whose reserve of energy is beginning to manifest a restricted field of response. On auscultation, alteration in the quality and pitch of the two heart sounds is at once realised; the first sound is loud and prolonged, approaching the variety described as snapping, and a systolic murmur may or may not follow it; the second sound may be reduplicated at the apex or base, or the normal third heart sound may be audible at the former situation; under special conditions a presystolic murmur will be audible at the apex region; its evanescent appearance is noticed with the tachycardia or raised rate of beat following effort, when the maximum effect of the early valvular damage is in full operation. This fact then provides a diagnostic key of great value in clinical medicine, enabling us to recognise the presence of valvular cicatrisation in its very early form, and to understand that the developing lesion passes through a definite stage during which its ill-effect upon the heart's mechanism is manifested only when an extra demand is made upon the circulation and the heart rate, in consequence, is unduly raised.

The practical deduction we arrive at is that, before excluding mitral stenosis, we must, in doubtful cases, examine the heart's sounds both in the active and resting phases; the active stage may be rapidly produced by instructing the patient to carry out some form of muscular effort; this being completed, auscultation is at once proceeded with, preferably in the recumbent position; more often than not, probably, the typical murmur preceding and running up to the loud first sound is audible only for quite a few beats after the exercise when the lesion is an early one; later the murmur will persist for a long time after its production, and its presence will be noted following efforts very slight in character—even after simple changes of position, from back to left side when lying, &c. In certain cases physical exercise may for some reason be contraindicated, and some alternative method of acceleration of the heart must be adopted—as, for instance, inhalation of amyl nitrite or subcutaneous injection of atropine—to remove temporarily the controlling influence exerted under normal circumstances by the autonomic nervous system through the vagus nerves.

By one of these ordinary methods it is invariably possible sufficiently to raise the heart rate for diagnostic purposes; the presence of the early stage of mitral stenosis may be confidently assumed in cases which manifest the typical presystolic murmur, however fleeting the latter may be.

Stage 2.

Passing next to the period of full development of the lesion a clinical picture is recognised displaying the following complex series of physical signs. Certain striking peculiarities in the facial appearance are seen—a dusky malar flush, with a tendency to cyanosis of the lips and mucous membranes generally, is commonly but not always observed; frequently the facial aspect is one of profound anæmia in spite of the invariable abnormally deepened tint of the lips. Peripheral cyanosis is usual, and clubbing of the fingers may be present.

The præcordium is frequently unduly prominent, and a variety of abnormal signs are observable by inspection of this area; the apex beat is wavy and diffuse, involving several spaces, and extending unusually far to the left of the mid-sternum; systolic retraction of the area to the left of the sternum, which overlies the right ventricle, can be detected in many cases where cardiac overaction is present, and a systolic impulse may sometimes be seen in the second left interspace, depending upon the exaggerated pulsation of the pulmonary artery.

Palpation reveals phenomena of outstanding importance; at the apex a fine purring thrill, which terminates in a short tapping systolic shock, at once attracts notice; the duration of the thrill may occupy the whole or only a portion of the diastolic interval; in the majority of cases it is sharply localised to the immediate vicinity of the apex beat, otherwise a wider diffusion will obtain, especially in patients whose chest walls are thin and wasted. In addition to the palpable shock of the first sound at the apex region there may be present also a well marked shock, diastolic in time, at the pulmonary area, produced by the forcible closure of the pulmonary valves.

The pulse at the wrist is usually small, and, until the development of the final stage of the disease, fairly regular; premature breaks are a frequent occurrence; the systolic blood pressure differs but little from the normal; as a result of generalised vaso-constriction there is often an undue elevation of the diastolic reading, accounting for the diminished pulse volume observed with such uniformity in mitral stenosis.

In the region of the apex cardiac dullness may not exceed the normal limit, but with the progress of the malady some cardiac hypertrophy will develop, so that the left border of the dullness will extend unduly in the direction of the axilla, and the right margin will reach to, or even beyond, the right sternal edge, depending more especially upon the size and degree of engorgement of the right auricular chamber. At the base of the heart the limit of dullness extends higher and farther to the left than is ordinarily the case, indicating enlargement of the conus arteriosus and pulmonary artery.

The auscultatory signs by which mitral stenosis is recognised are admittedly complex, differing remarkably in essential detail from the phenomena which determine the diagnosis of the other varieties of valvular mischief, and also changing materially with the progress of the disease. Mindful of the presystolic murmur, which can be rendered audible by appropriate methods in the early stages of the disease, one can perhaps more readily appreciate the significant changes revealed by auscultation when the narrowing process becomes fully developed; they may be taken to include:—

1. An apical presystolic murmur whose pitch and intensity rise with extreme rapidity to terminate in a loud snapping first sound.

2. An apical diastolic rumble, which, commencing shortly after the second sound, may extend up to, and mingle with, the presystolic murmur. It therefore happens quite frequently that a long murmur occupies the whole period of diastole, commencing with the opening of the auriculo-ventricular valves and terminating at their closure; the first part of the murmur depends upon vibrations set up by the flow of blood through the constricted mitral orifice, the latter or crescendo portion being produced by the auricular contraction, which of necessity becomes an extremely forcible event in this disease.

3. A systolic murmur at the apex, indicative of mitral regurgitation, rendered inevitable by the sclerotic changes which induce varying degrees of rigidity of the valve and incidentally obviate its closure.

4. An accentuation of the second sound at the pulmonary area indicative of a rise of pressure in the lesser circulation.

5. A diminution, possibly an entire absence, of the second sound at the apex, which we may infer is the result of the lessened output of the left ventricle, and the reduction in systolic blood pressure.

6. A diastolic murmur audible at the left sternal margin, described by numerous observers, and attributed to a functional insufficiency of the pulmonary valve, but having little beyond an academic value, and calling for comment on account of its resemblance to the diastolic murmur of aortic insufficiency; several important differences will, however, guide a differential diagnosis between the two lesions; the close proximity of the aortic and pulmonary orifices, and the fact that incompetence of either occasions a similar type of murmur with maximum intensity in the region of the third left interspace at the costal margin, make it plain that the propagation of the murmurs is likely to differ; for practical purposes the pulmonary diastolic murmur is sharply localised, whilst the murmur of aortic incompetence is conducted by the blood stream not only to the region of the apex but also to the aortic area and systemic vessels; moreover, the latter murmur is accompanied by an easily recognised collapsing quality of the pulse.

Stage 3.

The third and final stage of mitral stenosis has reference to that period of the disease in which all the extreme symptoms of heart failure develop, secondary not only to the advanced degree of the valvular narrowing, and to the coexisting myocardial changes, but also to the onset of auricular fibrillation, which produces a rhythm of such gross irregularity as seriously to embarrass the heart's functional capacity; so frequently, moreover, does auricular fibrillation arise in the latter phases of mitral stenosis, that its development may be regarded as a certain indication that the malady has reached its terminal stage.

As a rule patients are fully conscious of the degree of their disease at the time of the appearance of auricular fibrillation; existing symptoms are aggravated, reserve power is further curtailed, physical signs of extreme failure tend to become increasingly evident, and complications of a serious character are likely to develop; hence it is highly important to possess an adequate supply of evidence for the recognition of auricular fibrillation.

Points Revealed by Examination.

An ordinarily careful physical examination will generally give all details necessary for diagnostic purposes, but instrumental investigation, either by means of the electrocardiograph or the clinical polygraph, may also be required.

The main points revealed by examination are the following:—

1. The gross irregularity, and usually the extreme frequency of the heart beat, the former being more evident with the higher rates.

2. The discrepancy which often obtains between the rates of heart and pulse, several of the smaller contractions of the former being apparently unable to produce an appreciable arterial pulsation.

3. An alteration in the auscultatory phenomena at the apex region; the presystolic murmur is no longer audible, the auricle being unable to execute coördinate contractions; the accentuated first sound will, however, persist, also the systolic murmur; the diastolic murmur, if previously present, will remain.

These important physical signs merit most careful consideration, as they provide ample evidence for the diagnosis of auricular fibrillation, and prove that, in the majority of cases, instrumental methods are merely confirmatory agents; the polygraph curve displays to great advantage the irregularity of the force of the heart beat and the entire absence of anything approaching a dominant rhythm, and also a venous curve of the ventricular form; the electrocardiograph will show ventricular complexes pursuing a rhythm of perpetual irregularity and varying in height from beat to beat; an entire absence of "P" waves preceding the ventricular complexes is also observed together with the presence of certain minute waves between the ventricular beats indicative of the small movements of the auricular musculature. Auricular fibrillation may thus be readily detected by ordinary examination in most cases; experience shows that this disorder will generally be permanent and largely responsible for complications, being also the underlying factor on which depends the aggravation of symptoms and signs. The latter progress with varying rapidity, differing little in detail from those which characterise the cardiac failure accompanying other forms of chronic heart disease; the heart enlarges considerably, and evidence of stasis in the pulmonary circulation becomes increasingly evident; with gradual intensification of myocardial weakness venous engorgement tends to become a conspicuous feature; serous effusions develop, and before long the following complications will appear:—

1. *Alterations in rhythm.*—Of these the most important is that which characterises auricular fibrillation considered above; mention may also be made of premature contractions, which frequently disturb the existing rhythm of the heart beat, and of intermittently occurring attacks of tachycardia—of simple type, due to temporary acceleration of the normal rate of beat, or true paroxysmal tachycardia, in which the seat of origin of the heart's contraction has shifted temporarily from the normal situation—and the irregularity of rhythm which depends upon the intermissions of heart-block, a not infrequent process in the spread of myocardial degeneration.

2. *Pulmonary.*—These include bronchitis, pulmonary congestion, and hæmoptysis; the lesser circulation being engorged, small vessels frequently rupture, and the sputum in consequence becomes blood-tinged; at times profuse and obstinate bleeding may seriously prejudice the patient's condition.

3. *Paralysis of the left recurrent laryngeal nerve.*—In a small percentage of cases this nerve becomes paralysed; in consequence the voice becomes weak and the cough brassy; the nerve injury is produced by slow and gradual compression, depending directly upon the upward pressure exerted by the enlarged left auricle on the left pulmonary artery.

4. *Cerebral embolism.*—This may occur as the result of the detachment of a small vegetation from the valve surface, or by the escape of a small fragment of clot from the cavity of the dilated auricle, where thrombus formation is a usual event after the onset of fibrillation.

5. *Attacks of angina pectoris.*—Pain and præcordial distress are quite usual in cases of mitral stenosis, but true angina pectoris is apparently comparatively rare in this disease.

Morbid Anatomy.

The mitral orifice is narrowed and distorted; the opening may be reduced to a mere slit between the rigid margins of the valve, or may take the form of a small circular orifice at the bottom of a dense sclerotic funnel extending downwards for a varying ngth from the region of the mitral ring; the margins of the valve are thick, irregular, and possibly studded h vegetations; the surface of the valve cusps is uneven, presenting a scarred and puckered appearance; dense masses of fibrous tissue extend from the bases of the valves, involve the angles where the cusps adjoin, and weld the valve structures firmly together; the chordæ tendineæ are shortened and thickened into dense white cords; the left auricle is enlarged; its wall is hypertrophied, both endocardium and musculature being involved in the process; the dilated cavity of the auricle frequently contains one or more globular thrombi; the pulmonary veins at their entrance to the auricle are considerably dilated; the condition of the left ventricle varies—in the majority of cases it i definitely hypertrophied, but sometimes there is a apparent reduction in the thickness of the chamber walls, resulting from a diminished entry of blood; the right ventricle is invariably hypertrophied; the lungs are enlarged, and their tissue is abnormally firm by reason of chronic venous stasis and of coexisting fibrotic changes.

Treatment.

With a full appreciation of the varied clinical picture presented by the disease during its progress, and of our limitations in the matter of interference with fibrotic changes and sclerosis in the structure of the valve, we know that certain forms of treatment may delay the course of the malady, and add effectually to the comfort of the patient. In the early stages all possible preventive measures should be adopted; the patient should be instructed to lead a quiet, regularly-ordered life, free from worry, anxiety, or physical strain; exercise in the open air, short of the least suspicion of fatigue or distress, is important; strenuous games and pursuits must be forbidden, but amusements such as golf, cycling on the flat, walking, light gardening, or other similar hobby may be allowed. An ordinary easily digestible diet in moderate quantities should be taken; the value of adequate mastication and the necessity of a short rest after each meal should be emphasised; smoking should be forbidden, to obviate irritation of lung tissue which is already the seat of some degree of venous engorgement. Shortness of breath, a slight cough, and others of the early symptoms are frequently associated with poor nutrition or some degree of anæmia, and will respond to dietary changes, a course of iron and arsenic or other simple measures.

Deficient exercise tolerance, undue exhaustion with moderate effort, palpitation, præcordial discomfort, &c., are common indications that the reserve power of the heart is suffering reduction; weakness of the heart muscle becomes unmistakable; small doses of digitalis should be prescribed in short courses. The most efficient method to adopt is to give a moderate dose (e.g., ℳ x. of tincture of digitalis) three times daily on two days (Saturday and Wednesday) in the week, or, as an alternative, to prescribe a larger dose (e.g., ℳ xx.-xxx. of tincture) every third day at bedtime; this line of treatment will usually be attended with much relief to the patient; bronchitis, cough, and pulmonary congestion, common complications in mitral stenosis, are more likely to be relieved by treatment of the heart than by expectorants or other agencies directed towards the lungs; if the sputum is tenacious and the cough irritable it is, however, wise to prescribe a simple expectorant mixture combined with some reliable sedative, such as tinct. camph. co.

Hæmoptysis in small amounts does not call for special treatment; if excessive the patient should be kept at rest, and morphia in small doses may be given; premature contractions and attacks of paroxysmal tachycardia are frequent events failing, as a rule, to respond to treatment; fortunately the patient is not invariably conscious of their presence, and in such cases it is advisable to disregard their occurrence. With the arrival of auricular fibrillation there is usually intense aggravation of all existing signs; the first indication is complete rest from bodily exertion and from anxiety or worry of any kind; digitalis should be prescribed in large doses until its full physiological effect is produced; it will be well, unless cardiac failure is extreme, to commence with a dose of 20 minims of the tincture every four hours: this is usually found to be sufficient to produce a satisfactory reaction in three to four days; having reduced the rate of heart beat to reasonable limits, it is advisable to diminish the dose of the digitalis, endeavouring, during the process, to maintain the rate between 70 and 80.

In certain cases the well-known toxic effects of digitalis may be produced; prescription of this drug must always be undertaken with extreme caution; the tendency to gastric disturbance may at times be obviated by giving the digitalis in ice-cold albumin water, or mixed with a small quantity of brandy; in other instances the drug may be given in pill form, the digitalin granules of Nativelle being perhaps the most satisfactory. The beneficial effect of digitalis upon the heart may so improve the whole physical state of the patient that other complications requiring special treatment may not arise; in the later stages of the disease, however, certain important debilities usually become manifest, and we must be prepared to adopt quite early all the principles of a well-judged and cautious therapy.

Diet is important; light, easily-digestible articles of food should be selected; the meals should be small in bulk and taken at frequent intervals; the amount of fluid should be considerably curtailed, especially if any tendency to dropsy be observed; gastric catarrh, if obstinate, will best be treated by stopping all food for two or three days, only ice, with possibly a small amount of stimulant, being allowed during this time; diet may be cautiously resumed later, beginning with milk and lime water, effervescing drinks, beef juice, bread and milk, egg albumin, &c., in combination with medicinal agents, such as hydrocyanic acid, oxalate of cerium, tincture of iodine, or carbolic acid. In moderation the patient may be allowed to gratify his own fancies; in the first few days jellies, custard, biscuits, toast and some variety of appetising sandwich, will be appropriate, leading later to eggs in some form, boiled fish, scraped beef, fowl, sweetbreads, &c., with a small amount of some favourite vegetable; fresh fruit in the form of grapes or oranges may be encouraged; fluid should include milk and soda, weak tea or coffee, lemonade, and barley water; a small glass of champagne with the lunch and supper may be prescribed with advantage.

Without sufficient sleep recovery will tend to be very protracted; it may be sufficient if the patient takes some warm stimulant, such as whisky or cognac, or some mild hypnotic—a small dose of ammonium bromide, sulphonal, trional or veronal—may serve to induce sleep; obstinate insomnia necessitates prescription of chloral or opium in some form; for extreme dyspnœa morphia is invaluable, and should be given without hesitation.

Palpitation is a most distressing symptom, improvement of which should come about with the diminished heart rate produced by the digitalis medication; otherwise it will be well to try the effect of an icebag to the præcordium, or counter-irritation by some one of the well-known methods; palpitation is frequently secondary to flatulent indigestion, and efficient treatment of the latter will result in its complete disappearance. For dropsy, which so often aggravates the physical condition, a mercurial purge may be all that is necessary, or some simple diuretic mixture, or the compound digitalis pill which contains both mercury and squills in addition to the digitalis powder; more obstinate cases necessitate the use of Southey's tubes or acupuncture; massage and careful bandaging frequently control the mischief and always add to the comfort of the patient. Serous fluid collecting in any of the visceral sacs should be carefully watched and removed if it interferes with the functions of the organs involved.

Extreme degrees of failure may develop at any time in patients in the final stages of mitral stenosis; in such cases *strophanthin*, administered by intravenous injection, may prove beneficial; diffusible stimulants as ammonia and ether, and other rapidly acting drugs, such as caffeine, strychnine, and camphor, may produce temporary reactions which serve to tide the patient over the critical period; in the presence of venous engorgement, with much distress in breathing, a venesection will give immediate relief; as an alternative method leeches may be applied over the hepatic area or right auricle; in either case oxygen should be simultaneously administered by inhalation.

THE DIAGNOSIS OF DYSENTERY BY THE SIGMOIDOSCOPE.*

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A SEARCH through numerous papers on dysentery which have appeared during recent years has revealed the fact that the advantages to be gained by the routine use of the sigmoidoscope in the diagnosis of, and as a guide to treatment in, chronic dysentery have hardly been appreciated, at any rate in this country. In a monograph which has recently appeared, illustrated by a series of beautiful plates,[1] Bensaude has described the main features of amœbic ulceration as seen through the sigmoidoscope, its differentiation from chronic bacillary lesions and from other diseases of the rectum which may give rise to diarrhœa or dysenteric symptoms. He maintains that the amœbic lesions as observed through this instrument differ considerably from those usually seen at autopsy in being more superficial and much paler in colour. There is a short reference to this subject by Lyons[2] in a general paper on the status of amœbic dysentery in the United States; he has noted that, apart from giving the observer a good view of the ulceration, the diagnosis may be confirmed by the presence of the *Entamœba histolytica* in scrapings obtained from the ulcers, even where the stools have been searched in vain for these organisms. This observer has further recorded his opinion that no case should be discharged as cured without a proctoscopic examination. If this rule were universally adopted, he thinks, there would be fewer relapses and fewer drugs described as specifics.

It is hardly necessary to emphasise that this subject is of very considerable importance at the present time when a very large number of war pensioners are receiving treatment in special hospitals for chronic diarrhœa or dysentery.

In the acute stages of dysentery of both the amœbic and bacillary varieties the routine use of the sigmoidoscope is hardly indicated; usually, in practised hands, a correct diagnosis can be made by laboratory methods. It is in the peculiarly chronic and intractable cases resulting from an original infection acquired three or more years ago, where the laboratory, for reasons shortly to be detailed, can afford little assistance, that familiarity with sigmoidoscopic diagnosis proves very desirable.

During the last year we have used this instrument as a routine measure in making our diagnosis of

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* An abstract of this paper was read before the Society of Tropical Medicine and Hygiene, Jan. 21st, 1921.

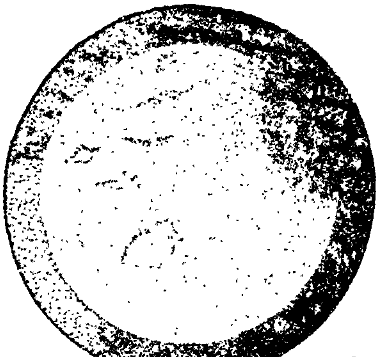

FIG. 1.—Amœbic dysentery.—Typical ulceration with hæmorrhagic margins and isolated hæmorrhages (8 ins. from anus).

Sigmoidoscopic Appearances in Dysentery.

Figs. 1-3 and 5-7, reproduced from the author's water-colour drawings, have lost some of the finer distinctions in the process. Fig. 2 is rendered the same size as the original drawing in order to give an idea of the actual image seen by means of the instrument. The others are about half scale.

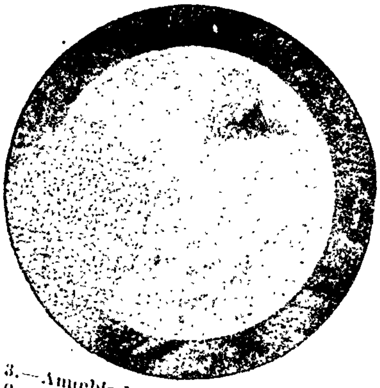

FIG. 3.—Amœbic dysentery.—Showing two superficial ulcers, dark blood clots of some considerable size. Numerous entamœbæ demonstrated in scrapings of ulcers; none found by microscopical examination (2 ins. from anus).

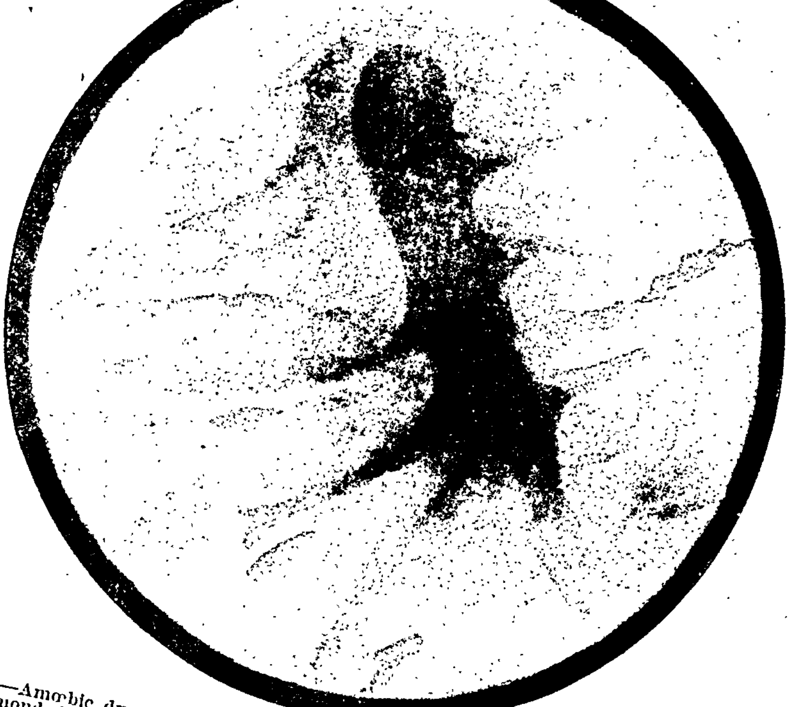

FIG. 2.—Amœbic dysentery.—Showing redundant mucous membrane, superficial diamond-shaped ulceration, and dark hæmorrhagic clots (4 ins. from anus).

dysenteric cases among war pensioners at the Hospital for Tropical Diseases, and we can confirm the statements already quoted as to its great utility. In fact, as the result of this work, we venture to qualify considerably the views already expressed.

It is hardly necessary to state that quite a number of our amœbic cases gave no history of "dysentery," as this term is generally understood—that is to say, the appearance of blood and mucus in the stools—but rather complained of attacks of recurrent diarrhœa; in fact, it would be much more appropriate to describe these cases of amœbiasis as "amœbic diarrhœa," a term which Dobell[3] has already sanctioned. The clinical history which one can obtain in these cases, the oft-repeated story of relapses of "diarrhœa" and "dysentery" alternating with periods of quiescence and the fact that the majority of these men originally contracted their dysentery in countries where *Entamœba histolytica* is widely distributed, would primarily suggest that the majority are amœbic in origin, but it is a fallacy to presume that all are due to this organism. A certain number are due to other causes, and in them the intestinal symptoms are by no means improved, it may be they are actually aggravated, by a misdirected anti-amœbic treatment. On the other hand, we have found that it is not wise always to assume that the patient's present symptoms are ue to a recurrent bacillary infection, even in cases whom the specific dysentery bacillus was primarily lated during the war, for occasionally we meet th cases who, though undoubtedly in the first instance the victims of bacillary dysentery, have subsequently contracted amœbiasis.

Unfortunately mere physical examination of these chronic dysentery cases affords but little assistance in making a definite diagnosis. As a general rule, chronic bacillary cases are more emaciated and debilitated than are the victims of chronic amœbiasis; this is probably due to the more extensive destruction of the intestinal mucosa which occurs in the former disease, and to a chronic toxæmia from secondary organisms. In amœbiasis, by abdominal palpation, areas of deep tenderness can generally be elicited over isolated portions of the large intestine such as the cæcum and the transverse and pelvic colons, whereas in post-bacillary cases the whole abdomen is very tender and sensitive to pressure. These somewhat indefinite signs, however, are by no means always reliable.

Routine Uses of the Sigmoidoscope.

Many excellent arguments can be advanced for the routine employment of the sigmoidoscope in the diagnosis of these conditions, and we wish to lay stress upon some of the more important.

In chronic bacillary dysentery of several years' standing little or no assistance may be obtained by the employment of laboratory methods; for this failure the secondary pathological changes which have taken place in the mucosa of the large gut are responsible. These changes are due to the deposition of granulomatous and fibrous tissue resulting from the destruction of the mucous membrane; in bacillary dysentery this is usually more extensive in the lower portion of the rectum than elsewhere and consequently is easily visible through the sigmoidoscope.

It is hardly necessary to state that a simple microscopic examination of the fæces is not of much value in such cases, nor can one expect any assistance from attempts to culture the dysentery bacilli, either from the excreta or from scrapings of the mucosa, as these organisms have long since disappeared; for the same reason, serological reactions are no longer diagnostic. In chronic amœbiasis there are drawbacks also in establishing a definite diagnosis by any of the well-recognised methods of laboratory examination. It is now well known that in such chronic cases histolytica cysts may be passed in the fæces in an extremely irregular manner; it may be that they are present in considerable numbers on one or two occasions, so as to be easily visible under the microscope, but that subsequent examinations, for days or even weeks on end, may be negative as regards this organism. We may instance one particular case in which 11 fæcal specimens were examined daily with negative results during the fortnight the patient was in hospital for observation, but on the twelfth occasion numerous characteristic cysts were seen; this occurred while he was being actively purged and was passing stools containing much blood and mucus. Cases of a similar nature have been cited by others who have had a large experience of this disease; the value of repeated microscopical examinations in detecting *Entamœba histolytica* carriers has been ably emphasised by Dobell in his numerous publications on this subject. In 1917[4] he recorded a case which was diagnosed on the thirty-fifth consecutive examination, and doubtless there are more extreme instances than this. In his latest publication,[5] in summarising his experiences, he has stated that a series of such cases examined once apiece may be expected to disclose about one-third of the infections actually present; in a series examined thrice per case between one-half and two-thirds of the actual number of infections will have been detected. In order to be on the safe side, as a routine measure, six consecutive microscopical examinations would be necessary in every case. Even in more acute stages of the disease, when quantities of blood and mucus are being passed in which the active vegetative entamœbæ can be easily found, it does not necessarily follow that the characteristic histolytica cysts will appear in the fæces after the subsidence of the more acute symptoms. We have recently seen three cases who passed typical motions on one occasion, but whose stools were examined on several occasions after admission to hospital with negative results. To clinicians it is becoming obvious that, as a method of excluding amœbiasis in diagnosis, many microscopical stool examinations are required for each patient, and incidentally much delay must ensue before a diagnosis can be made or a rational treatment instituted. Any aid to diagnosis which will obviate this delay should be encouraged as saving both time and money. Having ourselves been engaged for a considerable period on routine stool examinations we do not wish to make any statements which would tend to bring such a well-established method into disrepute, but it has its limitations, as every experienced microscopist will admit.

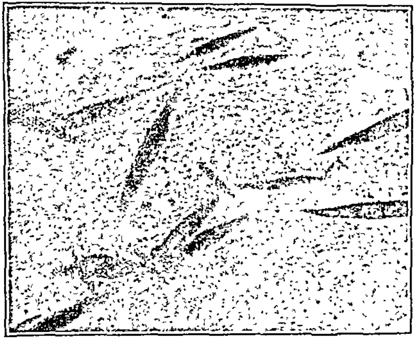

FIG. 1.—Charcot-Leyden crystals, × 1200. Preparation from scraping of amœbic ulcer through the sigmoidoscope, showing Charcot-Leyden crystals in numbers, stained by Heidenheim's hæmatoxylin (microphotograph by Dr. J. Gordon Thomson).

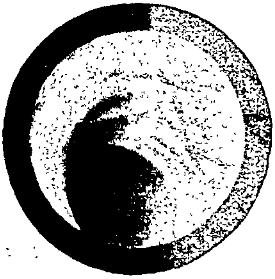

FIG. 5.—Chronic bacillary dysentery.—Grazed and granular appearance of mucosa due to formation of granulation tissues.

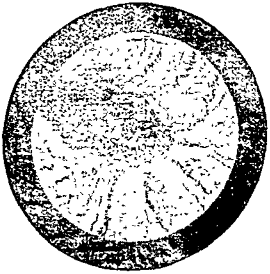

FIG. 6.—Chronic bacillary dysentery.—Deposition of granulation tissue and fibrosis.

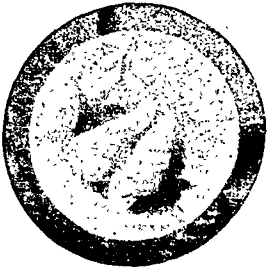

FIG. 7.—Chronic bacillary dysentery.—Showing large polypi (4 ins. from anus).

The advantages of the routine use of the sigmoidoscope may be stated as follows:—(1) A rapid and accurate diagnosis by direct inspection of the mucosa can often be made. (2) Pathological conditions other than dysentery, and often hitherto unsuspected, such as hæmorrhoids, syphilitic lesions, malignant disease or polypi are occasionally revealed. (3) The very large proportion of cases of doubtful ætiology, which by the employment of simple microscopical methods would remain undiagnosed, is reduced to a minimum.

Preparation of the Patient.

The method adopted in making a sigmoidoscopic examination is comparatively simple, but it is necessary to emphasise one or two points. The preparation of the patient requires consideration. He should be purged so that the large bowel is emptied of fæces, but at the same time it must not be rendered too irritable. We have found that the most satisfactory method consists in administering half an ounce of castor oil on the previous evening, followed in the morning by a soap-and-water enema so as completely to clear out the rectum. In order to decrease peristalsis and render the bowel less sensitive to manipulation we find it advisable to administer 15 minims of tinct. opii immediately after the enema. In cases where there is incessant diarrhœa a satisfactory method of clearing out the bowel has yet to be discovered, but, fortunately, in these cases a fleeting glimpse of a small portion of the bowel usually suffices to establish a diagnosis.

As regards the posture assumed to the patient during examination, we prefer the lithotomy position. This method allows any fluid contents of the bowel to collect in the dorsal curvature of the rectum, which acts as a sort of a trap, while the bowel, both above and below this pool, may be minutely scrutinised. It is quite unnecessary, indeed, to our minds it is disadvantageous, to administer an anæsthetic. One should be guided by the patient's sensations of pain or discomfort while the instrument is being passed; the former should not be present in examining a normal bowel. Naturally, when one intends to examine an ulcerated bowel, great care should be exercised in introducing the instrument, and when once the sphincter muscles have been passed its further passage should be guided by sight alone. The degree of pain experienced varies greatly. Generally it is much greater in the bacillary types than in the amœbic disease; it is much greater in highly-strung and nervous individuals than in less sensitive subjects. The ulceration of the bowel would seem to have little bearing upon this point, for some cases with extensive ulceration complain of little or no discomfort whilst being examined. It is wise not to disregard any sudden pain of which the patient complains, for this is generally due to too great pressure being exercised upon one particular portion of the bowel wall. The distance to which the instrument can be passed also varies considerably; in some a length of only a few inches, in others again 12 inches or so, may be reached with ease, and the point of the sigmoidoscope can be distinctly palpated in the left hypochondrium.

Sigmoidoscopic Appearances of Amœbic Lesions.

In those cases in whom the amœbic lesions extend into the rectum the appearances vary pretty considerably, but they are sufficiently characteristic to be diagnostic. As a rule discrete ulcers can be made out; they vary in shape and in size. Some are barely visible, while others are 6–8 mm. in diameter. No lesions occupying several inches in extent, such as often may be seen in the large gut at autopsy, have as yet been met with. The ulcers are usually oval or diamond-shaped; their margins are hæmorrhagic, and their bases covered with grey-coloured or greenish sloughs. In depth they also exhibit considerable differences; they may be quite superficial, or they may involve the submucosa (Fig. 1). The mucous membrane intervening between the individual lesions is healthy in appearance and of an orange-rose colour. Generally it is more redundant and reticulated than is the normal (Fig. 2).

Flame-shaped hæmorrhages are usually numerous; the smaller ones can be described as having a dark hæmorrhagic centre surrounded by an areola of a brighter hue. The larger ones may form patches of an irregular shape and may involve considerable areas of mucous membrane; others again of intermediate size lie concealed between the folds of puckered mucous membrane (Fig. 3). On the whole, the lesions resemble those seen in the large intestine at autopsy, but it has struck us that the small petechial hæmorrhages and the vivid coloration of the blood clots are much more apparent than when seen in the cadaver, which is only what one would expect from a study of living tissues.

As a further confirmation of the amœbic origin of e lesions the ulcers may be scraped and the exudate thereby obtained examined microscopically. A convenient instrument for this purpose is a wooden match affixed to a holder and introduced through the tube of the sigmoidoscope. By this means we have been able to demonstrate active entamœbæ often in considerable numbers, as well as Charcot-Leyden crystals, which are by some considered to be strongly suggestive of amœbiasis (J. Gordon Thomson[6] and H. W. Acton[7]), even in several cases in which numerous fæcal examinations failed to reveal either active entamœbæ or their cysts (Fig. 4). In a few cases of undoubted ætiology—that is to say, of microscopically diagnosed cases—the rectum and colon as seen by the sigmoidoscope were normal in appearance, and in these one has to presume that the amœbic lesions are situated in the upper portion of the large bowel beyond the range of vision through the sigmoidoscope.

Sigmoidoscopic Appearances of Post-Bacillary Lesions.

The changes seen in the lower bowel in this very serious condition consist for the most part of granulation tissue, and may be regarded as an attempt on the part of the bowel to replace, as far as is possible, the tissues originally destroyed by the toxins of the dysentery bacillus. Acute inflammatory changes, when present, are possibly due to a secondary invasion of the mucosa by other intestinal organisms. Up to the present we have not seen cases in which actual ulceration of the bacillary type was present in the rectum.

The changes observed by us may be classified according to their severity in the following manner:—

(*a*) In comparatively slight cases there is an injected and plush-like appearance of the mucosa, while the passage of the instrument is attended by considerable pain.

(*b*) In more advanced cases the mucosa is hyperæmic and has a granular or glazed appearance. The whole rectal canal may be in this condition, or definite annular zones, three or more inches in extent, may be affected (Fig. 5).

(*c*) Masses of granulation tissue, which is very friable and vascular, may be seen superimposed upon a much scarred and fibrotic membrane (Fig. 6).

(*d*) The most advanced stage represents merely an exaggerated phase of the process just described, and takes the form of vascular polypi attaining even as much as ¾ inch in length; the pathology of this curious polypoid condition was described by one of us[8] in a recent paper (Fig. 7). This polypoid condition may extend through the large intestine, for similar changes have been seen in the cæcum in two cases in whom the bowel was opened at operation. It is scarcely necessary to add that the clinical condition of these cases is one of great severity.

The table of statistics which follows will serve to illustrate the various points to which we have alluded in this paper.

DIAGNOSES IN 100 CONSECUTIVE CASES OF SUSPECTED DYSENTERY.

Diagnosis by Sigmoidoscope.

Positive amœbic ..	29	42
Suggestive of " ..	13	
Positive bacillary ..	15	28
Suggestive of " ..	13	
Other causes of symptoms:—		
Rectal polypus	1	
Hæmorrhoids	4	
Syphilitic stricture ..	1	
Ætiology undiagnosed	11	
Normal appearance	14	
	101•	

• This extra number is explained by the diagnosis of amœbic and bacillary infection in the same patient.

Diagnosis by Microscope.

Positive amœbic ..	30	31
Suggestive of amœbic (Charcot-Leyden crystals)	1	
Positive bacillary ..	0	5
Suggestive of " ..	5	
Remaining of no positive value (exams.)	211	
Total microscopical exams. done on these 100 cases ..	247	

These preliminary examinations were all performed before a diagnosis was established.

Details of Sigmoidoscope Results.

Forty-four positive diagnoses were made, and of these:—

20 were confirmed by the microscope.

15 others were confirmed by the clinical history of the patient.

In 8 the clinical history was doubtful and confirmation of the diagnosis is lacking.

In 1 the history disagreed with the diagnosis, which was subsequently proved to be correct on clinical grounds.

Twenty-six *suggested diagnoses* were given, and of these :—

6 were confirmed by microscope.
10 others were confirmed by the clinical history.
In 5 the clinical history was doubtful, and confirmation of *the diagnosis is lacking.*
In 5 our diagnosis was probably wrong.

Thus there were 52 confirmed diagnoses of amœbic or bacillary dysentery, and there were 6 cases in which the symptoms were caused by other local *conditions, such as* hæmorrhoids, &c.

Of the remaining 43 cases :—

11 were undiagnosed.
14 appeared normal, and of these :—
    In 1 the clinical history was doubtful.
    6 had no symptoms and were discharged.
    1 had *Entamœba histolytica* cysts and a liver abscess, but had never had dysentery.
    2 had *Entamœba histolytica* cysts in their stools.
    3 gave a history of amœbic dysentery.
    1 „ „ „ bacillary „
13 lack confirmation.
In 5 our diagnosis was probably wrong.

In other words, the sigmoidoscope was instrumental in giving a positive diagnosis—*that is, a confirmed diagnosis*—from a single examination in just 58 per cent. of our cases, while in the same 100 cases microscopic diagnosis, after repeated tests, gave about 30 per cent.

In conclusion, we wish to express our indebtedness to Dr. G. C. Low for generously permitting us to utilise figures obtained from cases under his care. Many of the routine microscopical examinations of fæces so frequently quoted in this paper were undertaken by Dr. J. Gordon Thomson, whom we also wish to thank *for his assistance,* as well as for his kind permission to reproduce his excellent microphotograph of Charcot-Leyden crystals (Fig. 4).

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A METHOD OF OPERATION FOR THE TREATMENT OF ECTOPIA VESICÆ.

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THE modern treatment for ectopia vesicæ is to divert the ureters into the bowel. The trigone of the bladder may be transplanted into the sigmoid colon by the intraperitoneal route (Madyl, Stiles, Coffey), or the ureters may be transplanted into the rectum by the extraperitoneal route (Peters, Moynihan). I wish to describe a method of operation which I have employed in four cases of ectopia vesicæ with very satisfactory results.

Method of Operation, Advantages, and Age at which it should be Performed.

The operation consists briefly in transplanting the ureters directly into the rectum through its anterior wall above the level of the peritoneal reflection of Douglas's pouch, the general peritoneal cavity being shut off by suture before opening the bowel.

The operation is very simple to perform and can be completed in less than 30 minutes, thus involving little or no shock. It avoids the risk of infective peritonitis, owing to occasional leakage of the intraperitoneal operation, and the danger of subsequent retraction of the ureters into the bladder wound of the extraperitoneal method.

The operation should be postponed until the child attains the age of 2 years when the anatomical structures are large enough to facilitate the necessary dissection, manipulation, and suturing, and when the after-treatment can be carried out with greater satisfaction.

Preliminary Treatment.

Hexamine and acid sodium phosphate in suitable doses are administered to minimise the risk of ascending pyelitis. Occasionally after operation the child suffers from attacks of pyrexia accompanied by vomiting, irritability, and drowsiness, probably due to infective pyelitis. These attacks are liable to recur but tend to diminish gradually and can be controlled by giving urinary antiseptics. The skin is prepared in the usual way and the rectum is cleansed by frequent irrigation. The exact position of the ureters should be determined in order to avoid delay at the time of operation, as the orifices may lie rather concealed in folds of mucous membrane.

Description of the Operation.

The pelvis is raised on a small sandbag. I prefer to stand on the left side of the patient. After passing a small probe, a No. 2 Black French catheter (the end of which has been removed to leave a terminal opening) is inserted into each ureter for a distance of from 2 to 3 *inches,* and is sutured in position by *a fine* catgut suture inserted *with a fine* straight needle which *transfixes* the catheter and the bladder *mucous* membrane at a distance of ½ inch from the summit of the *ureteral papilla.*

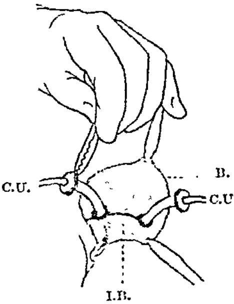

FIG. 1.—C.U., Catheter in ureter. B., bladder. I.B., Incision through bladder between ureteral pouches.

The mucous membrane is then incised circularly at a distance of 1 inch from the orifice of the ureter and the incision is carefully carried through the bladder wall until the wall of the ureter is reached. Great care must be taken not to injure the ureter and its vessels. The ureter is freed by dry gauze dissection, and by snipping a few fibrous bands with scissors or scalpel, until about 2 inches of the ureter can be drawn into the wound (Fig. 1). The assistant then inserts a finger of the right hand into the rectum and presses its anterior wall into contact with the posterior wall of the bladder at a level well above the uterus, which can be readily felt in the female, and at a corresponding distance in the male. The bladder wall lying between the ureteral *pouches* is *then* incised transversely (Fig. 1) on to the assistant's finger until the peritoneal cavity is *opened,* when the anterior rectal wall at once protrudes through the incision thus made (*Fig. 2*).

Fine catgut sutures are passed through the cut edges of the bladder *wall and* the *sero-muscular* coat of the rectum so that an area of the anterior surface of the rectum *measuring* about 2 in. by 1 in. is completely shut off from the general peritoneal cavity (*Fig. 3*). Through this area a transverse incision about 1½ inches long is made into the bowel whilst the assistant partially withdraws his finger (Fig. 3). The catheters are then passed through the opening, taken by the assistant, and carefully drawn from the anus until the ureters with their surrounding *mucous* membrane lie just within the rectum. The opening into the rectum is then closed with catgut sutures in such a manner that the ureters are fixed firmly at the angles of the wound (Fig. 4). The transverse incision in the bladder is sutured over this. No attempt is made to remove any of the bladder wall. This is better dealt with at a second operation.

After-Treatment and Results.

The ureteral catheters commence to drain within a few hours and become loosened within 5 or 7 days, when they are withdrawn. If either catheter ceases to drain before this it must be removed and can easily be loosened by twisting movements, traction being avoided. Hexamine and acid sodium phosphates are given for the reasons previously mentioned.

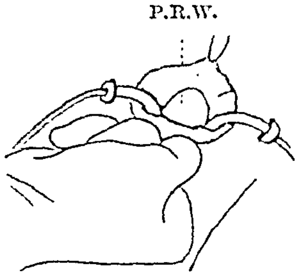

Fig. 2.—P.R.W., Pouch of anterior rectal wall pushed through bladder incision by finger in rectum.

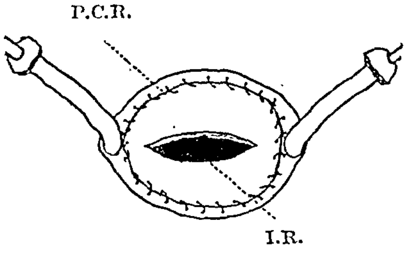

Fig. 3.—P.C.R., Peritoneum covering of rectum stitched to peritoneum covering of bladder; I.R., Incision into rectum.

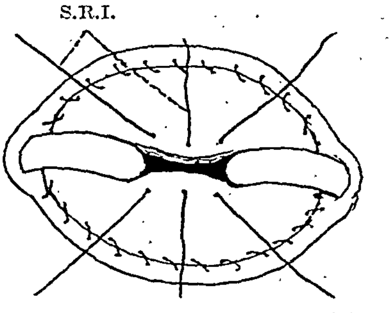

Fig. 4.—Ends of ureters inserted into rectum. S.R.I., Sutures closing rectal incision.

About six months later the mucous membrane of the bladder is excised and the raw surfaces brought together by under-running strong silkworm-gut sutures. The transplanted ureters readily accommodate themselves to their new anatomical relations, and development is not interfered with.

At the provincial meeting of the Section of Diseases of Children of the Royal Society of Medicine held in Manchester in July, 1920, I showed a patient on whom I had performed this operation in October 1908. The uterus appears normally developed and she menstruates regularly. The rectum carries out its double function independently. Fæcal evacuation usually occurs once daily and urine is voided separately, three or four times by day and not at all during the night. The diagrams have been made from photographs taken during an operation, and I am much indebted to Dr. W. E. Fothergill, who has kindly drawn them for me.

OBSERVATIONS ON THE
UREA CONCENTRATION TESTS IN THE PSYCHOSES.

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The primary objects of this investigation were to discover if there is any undue prevalence of renal inefficiency in the psychoses, as determined by the urea concentration tests in the blood and urine, and, if so, with what forms of mental disorder this condition is associated. During the progress of the investigation it was observed that several cases showed a low urea concentration in the urine with either a normal or subnormal blood concentration. It was therefore thought desirable to estimate the daily excretion of urine with the total excretion of urea and ammonia and the percentage urea concentration in the same. The urea nitrogen and ammonia nitrogen ratio was also determined.

Concentration Tests in the Blood and Urine.

The tests employed were those described by H. MacLean and A. E. Russell,[1] and their instructions as to diet, &c., prior to the tests were strictly adhered to. The urine test commenced at 10 A.M.—i.e., about 2½ hours after a breakfast consisting of bread, butter, and tea. The patient was then put to bed and no further fluid permitted until the completion of the test. Printed instructions were issued on the occasion of every test. The blood was withdrawn between 11.30 A.M. and 12 mid-day—i.e., at the corresponding time, but either on the day prior to or following the urine test. Sufficient blood was always collected to enable a duplicate examination to be made, the average of the two estimations being taken as a measure of the urea concentration. The tests were repeated in a few cases, but as the results were more or less the same it was not considered necessary to do this in all cases.

Prior to and during the collection of a 24-hour specimen each patient received a fixed diet consisting of two pints milk, two eggs, milk pudding, with bread-and-butter. The total excretion of ammonia was estimated by the formalin method. Albumin in all cases was tested for by the salicyl-sulphonic acid and heat tests. The systolic blood pressure was determined during the clinical examination of each case.

Before the results obtained in this investigation are considered, it is necessary to have a clear understanding as to what are considered the normal limits of urea-concentration in the blood and urine. In spite of the fact that W. MacAdam and Bentley Squire[2] give the maximum blood concentration of 25 mg. and 12·5 mg. per cent. respectively, I consider that MacLean's maximum of 40 mg. per cent. is none too high. In Tables I. and II. are cases with a much higher blood concentration with a urine concentration not only between the normal limits of 2 and 4 per cent. as set out by MacLean, but even greater than 4 per cent. Clinical as well as other evidence was contrary to a diagnosis of renal disease in each of those cases. The lowest and highest percentage concentration of urea in the blood found by me in cases showing no evidence of renal disease are 9 mg. and 83 mg. per cent. respectively. But basing my result on the normal standard percentages by MacLean—viz., 15 to 40 mg. per cent. in the blood and 2 to 4 per cent. in the urine, I find there is a large percentage of cases giving abnormal results in which the diagnosis of renal disease, apart from the tests referred to, is not justified.

Eighty-three cases have been investigated. Table III. gives these cases grouped according to their mental disorder with the findings in each. It is seen that 36 per cent. have a normal urea concentration in the blood and urine, according to the limits referred to above. This is a very low percentage. If the cases showing a normal blood concentration with a urine urea concentration below 2 per cent. in which the low urine concentration appears to be due to diuresis, that is, when the total urine excreted in the first and second hours together exceed 350 c.cm.—this diuresis is especially frequent in dementia præcox, and will be discussed later—are considered for the present to be consistent with a healthy condition of the kidneys, the percentage of normal cases is raised to 52. Again, if cases with a normal urine concentration and a blood concentration below 15 mg. per cent. are included for the same reason, the percentage of normal cases is raised to 57. Of the 43 per cent. of the cases remaining only four could reasonably be considered to be suffering from kidney disease (see Table IV.), and in this connexion it is worthy of note that only two of them have a blood urea concentration over 40 mg. per cent., while they all show a low urea concentration in the urine.

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[1] The Lancet, 1920, i., 1335.

[2] Brit. Med. Jour., 1921, i., 290.

Tables V. and VI. give examples of the remaining unclassified 38 per cent. of the cases. Table V. deals with the cases showing a blood concentration over 40 mg. per cent. in all of whom the urine urea concentration is below 2 per cent. Table VI. deals with the cases having a blood concentration below 15 mg. per cent. and a urine concentration below 2 per cent. The question now arises: Should this 38 per cent. be regarded as explicable by kidney disease, no evidence, clinical or otherwise, being available other than that derived from the concentration tests to warrant such a conclusion? Two explanatory hypotheses are possible in this investigation. These tests were carried out in cases where a nervous or mental element was present as an extra or complicating factor, and perhaps there is in the psychoses, and more especially in dementia præcox, melancholia, and confusional states, a greater incidence of renal disease in a degree not revealed by the ordinary clinical methods than has hitherto been realised. The second and perhaps more plausible hypothesis is that in the psychoses there may be present some factor or factors other than kidney disease to account for the anomalous results obtained. The latter theory is strengthened by three other observations made in the cases of dementia præcox examined—viz., the coexistence of diuresis, polyuria, and acidosis.

Dementia Præcox.

Table VII. deals with the cases of dementia præcox in which it has been possible to compare the results of the concentration tests with those found in the urine excreted in the 24 hours. Although it is wrong to make deductions from a small number of cases, it is worthy of notice that all cases of dementia præcox so far examined show, without exception, a moderate to a marked degree of acidosis, the ammonia nitrogen reaching as high as one-tenth of the urea nitrogen in 4 of the 8 cases. Acidosis was not found in mania, melancholia, and insanity with epilepsy, but a mild degree was found in all of the 8 cases of confusional insanity so examined, and a very severe degree in the only case of general paralysis examined, the ammonia nitrogen being as much as a fourth of the urea nitrogen.

From Table III. it will be seen that diuresis has occurred in almost half of the cases of dementia præcox. From Table VII. it is observed that a low urine urea concentration has been found not only in the concentration tests, but also in the 24-hour specimens. The low urine urea concentrations found in the cases of dementia præcox in Table VII. will confirm this observation. From Table VII. it is seen that there is a high urinary excretion in the 24 hours. In the other psychoses in which the 24-hour excretion of urine has been measured, the amount is found to be low and the urea concentration high. It is difficult to speculate as to the significance of these observations, other than that it may be more than probable that in dementia præcox there exists some general disturbance and not renal disease to account for these anomalous results, such as either a disordered protein metabolism or some form of endocrine disturbance implicating more particularly the pituitary gland.

Summary.

(1) The urea concentration in the blood in the cases examined is subject to wide variations, and therefore

TABLE I.—*Cases without Kidney Disease.*

Blood urea percentage above 40 mg., and urine urea concentration above 4 per cent.

Name.	Age and sex.	Urine conc' test. Amounts (c.cm.). 1st hour.	Urine conc' test. Amounts (c.cm.). 2nd hour.	Percentage conc. urea in 2nd hour.	Specific gravity.	Reaction.	Albumin.	Blood urea %.	Total amount urine 24 hours (c.cm.).	Urea percentage.	Total urea in grammes.	Total ammonia in grammes.	Urea nitrogen and amm. nit. ratio.	Mental state.	Physical state, &c.
J.W.P.	42, M.	70	36	4·8	1026	A	0	43	—	—	—	—	—	Confusional insanity.	Moderate health, S.B.P. 130 mm.
E.P.	21, M.	25	60	5·37	1025	A	0	50	510	2·2	11·27	0·291	21	Melancholia, dementia præcox, early stage.	Good health, S.B.P. 140 mm.
H.G.	51, F.	0	50	4·1	1015	A	0	83	360	5·0	18·0	0·547	18	Mania during excitement.	Good health, S.B.P. 150 mm.

Remarks.—The above three cases show a high blood concentration with a high urine concentration. It is noteworthy that the total urine *for the 24 hours is low*, as well as the total urea output; that the total urine excreted as a result of the ingestion of 15 g. of urea in 100 c.cm. water is low; that the blood pressure is raised in all cases; that the chief mental symptom is a combined *psychical and motor* excitement.

TABLE II.—*Cases without Kidney Disease.*

Blood urea percentage above 40 mg. and urine urea concentration between 2 and 4 per cent.

Name.	Age and sex.	Urine conc' test. Amounts (c.cm.). 1st hour.	Urine conc' test. Amounts (c.cm.). 2nd hour.	Percentage conc. urea in 2nd hour.	Specific gravity.	Reaction.	Albumin.	Blood urea %.	Total amount urine 24 hours (c.cm.).	Urea percentage.	Total urea in grammes.	Total ammonia in grammes.	Urea nitrogen and amm. nit. ratio.	Mental state.	Physical state, &c.
M. F.	52, F.	90	80	2·1	1022	A	0	73	660	3·1	20·46	0·472	25	Confusional insanity.	Fair health. Glycosuria 2·5 per cent.*
W. F.	58, M.	95	100	2·1	1020	alk.	0	50	—	—	—	—	—	" "	Fair health. S.B.P. 136 mm.
D. B. L.	35, F.	—	65	3·5	1032	A	0	57	—	—	—	—	—	Melancholia.	Moderate health; slight glycosuria. S.B.P. 102 mm.

* Optic and peripheral neuritis. Noteworthy that acidosis not present.

Remarks.—Three cases showing a *high blood urea* concentration, with a normal urine urea concentration. It is noteworthy that glycosuria is present in two cases. The explanation other than kidney disease may be that an excessive protein *metabolism* coexists with a disordered carbohydrate metabolism. The type of mental disorder predominating is confusion with a moderate degree of excitement.

TABLE III.—*Number of Cases Examined in each of the Psychoses, with the Findings.*

Mental disorder.	No. of cases examined.	Blood urea below 40% and urea in urine above 2%.	*Blood urea below 40%.*	*Urine urea above 2%.*	Urine urea concentration below 2%, with diuresis.
Mania	13	5	12	5	2
G.P.I.	3	3	3	3	0
Insanity c. epilepsy	7	5	7	5	1
Melancholia... ...	22	12	15	15	3
Dementia præcox	22	7	17	8	9
Confused states...	16	8	12	11	2
Totals	83	40	66	47	17

TABLE IV.—*Cases of Kidney Disease.*

Blood urea above 40 mg. per cent. and urine urea concentration below 2 per cent.

Name.	Age and sex.	Urine conc. test. Amount of urine (c.cm.). 1st. hour.	2nd hour.	Percentage conc. urea in 2nd hour.	Specific gravity.	Reaction.	Albumin.	Blood urea %	Total amount urine 24 hours (c.cm.).	Urea percentage.	Total amount urea in grammes.	Total ammonia in grammes.	Urea nitrogen and amm. nit. ratio.	Mental state.	Physical state, &c.
J. E.	76, F.	250	96	1·03	1010	A	0	54	—	—	—	—	—	Melancholia.	Fair health; no symptoms. S.B.P. 220 mm. Hypertrophy left ventricle
J. M.	60, M.	35	60	1·43	1017	A	Tr.	43	600	3·09	18·54	0·599	17	Melancholia with confusion.	Fair health; marked arterio-sclerosis. S. B. P. 160 mm. Slight degree of acidosis.
H. C.	58, F.	145	165	0·87	1010	alk.	0	19	—	—	—	—	—	Recurrent mania during attack of excitement.	Fair health; general arterio-sclerosis. S.B.P. 130 mm.
M. G.	62, F.	46	48	1·46	1018	A	0	11	—	—	—	—	—	Mania with confusion.	Fair health; arterio-sclerosis. S.B.P. 140 mm.

Remarks.—All cases of interstitial nephritis. It is noteworthy that only two cases show a blood concentration over 40 mg. per cent.—one a normal blood concentration and one subnormal.

TABLE V.—*Cases without Kidney Disease.*

Blood urea above 40 mg. per cent. and urine urea concentration below 2 per cent.

C. J.	28, M.	—	135	1·68	1015	A	0	48	1230	1·5	18·45	0·702	14	Dementia præcox.	Fair health. S.B.P. 108 mm.*
C. H.	17, M.	285	80	1·93	1018	A	0	59	1560	1·21	18·87	0·912	10	" "	Fair health. S.B.P. 136 mm. A marked degree of acidosis.
S. R.	25, M.	60	90	1·2	1015	A	0	46	—	—	—	—	—	Melancholia.	Good health. S.B.P. 140 mm.
T. E.	31, M.	50	70	1·14	1015	A	0	52	—	—	—	—	—	Mania with confusion.	Fair health. S.B.P. 110 mm.
J. B.	21, M.	295	185	1·85	1016	A	0	50	690	4·0	27·6	0·830	15	Melancholia. ? Dementia præcox.	Fair health. Slight degree of acidosis. S.B.P. 145 mm.
K. J.	23, M.	210	50	1·01	1015	A	0	42	—	—	—	—	—	" "	Good health. S.B.P. 135 mm.

* The U and N ratio signifies that a moderate degree of acidosis was present.

Remarks.—The above six cases should be regarded as cases of renal inefficiency according to the urea concentration tests. It is noteworthy that in three of the cases where the urea N and ammonia N ratio has been determined a condition of acidosis is found to coexist; that they are all adolescents with ages ranging from 17 to 31 years; that the total urea output is within normal limits in each case examined: that dementia præcox is well established in two cases and in the early stages in two others, in all of whom the systolic blood pressure is above normal.

TABLE VI.—*Cases without Kidney Disease.*

Blood urea below 15 per cent. and urine urea concentration below 2 per cent.

Name.	Age and sex.	Urine conc. test. Amounts. 1st hour.	2nd hour.	Urea percentage in 2nd hour.	Urine— Sp. gr.	Reaction.	Albumin	Blood urea %.	Mental state.	Physical state, &c.
M. D.	45, F.	90	190	1·06	1010	Alk.	0	15	Melancholia.	Good health. S.B.P. 130.
A. S.	30, F.	320	115	1·42	1014	A	0	11	Dementia præcox.	" " 125.
G. E.	37, F.	175	175	1·09	1010	A	0	12	Melancholia.	Fair health. S.B.P. 110.
C. G.	28, M.	415	160	1·5	1016	A	0	15	Dementia præcox.	Good health. S.B.P. 114.
E. H.	35, F.	70	30	1·6	1020	A	0	9	" "	" " 118.
W. G.	26, F.	285	130	1·2	1010	A	0	14	" "	" " 125.
W. G. N.	32, M.	150	135	1·21	1021	A	0	10	" "	Moderate health. S.B.P. 112
A. M.	31, M.	290	160	1·5	1015	A	0	12	Confusional insanity.	Fair health. Alcoholism. S.B.P. 118.

Remarks.—The cases of dementia præcox in the above table show a low blood concentration and a low urine concentration. Diuresis is present in all except one case. The low blood and urine concentrations may be due to a lower rate of metabolism, especially that of the protein moiety. This is noteworthy in connexion with dementia præcox.

TABLE VII.—*Dementia Præcox.*

The presence of kidney disease has been excluded by clinical and other available methods.

Name.	Age.	Urea in urine conc. test.	Diuresis present.	Urea percentage in blood.	Total urea output in grammes.	Urea and ammonia nitrogen ratio.	Total amount of urine in 24 hours.	Percentage urea concentration in 24 hours' specimen.
J. B.	21	1·8	No.	50	27·5	15	690	4*
L. R. J.	22	2·6	No.	25	29·5	11	1140	2·59
C. H.	17	1·93	Yes.	59	16·8	10	1560	1·21
C. J.	28	1·68	No.	48	18·4	14	1230	1·5
T. R. R.	26	1·3	Yes.	23	20·2	10	1620	1·25
D. M.	21	3·03	No.	18	17·6	12	1350	1·31
E. G. L.	[illegible]	4·5	No.	18	24·8	10	1590	1·55
C. C.	24	1·7	Yes.	17	17·5	10	1000	1·7

* An early and doubtful case of dementia præcox.

Remarks.—All the cases are adolescents. The total daily urea output is within normal limits, but there is an increase in the total mmonia excreted. The urea nitrogen and ammonia nitrogen ratio is normal and points to the presence of a state of acidosis. There is a w urine urea concentration in the urine excreted in the 24 hours as well as in that of the concentration test associated with polyuria d diuresis. The urea concentration in the blood is variable.

is an unreliable guide as to the state of health of the kidneys.

(2) The urea concentration in the urine gives more reliable information. A low concentration should be regarded only as a confirmation of other evidence.

(3) Anomalous results, both as regards urea concentration in blood and urine, apart from kidney disease, are as demonstrable by available methods common in the psychoses.

(4) In dementia præcox a low concentration of urea in the urine is found to coexist with polyuria and a state of acidosis.

A CASE OF OSTEITIS FIBROSA,

TREATED BY RESECTION OF FOUR INCHES OF HUMERUS AND INSERTION OF BOILED BEEF-BONE GRAFT.[1]

BY C. W. GORDON BRYAN, *M.C.*, F.R.C.S. ENG.,

SURGEON TO OUT-PATIENTS (ADDITIONAL) AND ORTHOPÆDIC SURGEON, ST. MARY'S HOSPITAL; SURGEON TO OUT-PATIENTS, PADDINGTON GREEN CHILDREN'S AND HAMPSTEAD GENERAL HOSPITALS.

IT is an accepted fact that for bridging wide gaps in adult bones it is necessary to make use of autogenous bone grafts, but the work of Gallie and Robertson[2] showed that for short gaps, even in healthy bones, boiled grafts might be used with the expectation of the gap being ultimately bridged by living bone. König's work[3] on the use of massive ivory grafts showed that these became firmly united to the living bone, the surface of the graft being soon pitted by ingrowth of granulation tissue. Barth[4] showed many years ago that dead bone and ivory could heal into the tissues and become incorporated with or substituted by the living bone.

In children the conditions differ from those of adult bone, especially when the gap is situated near the growing end of the diaphysis, and when proliferation of subperiosteal bone cells is already present as a result of inflammation or injury; in such cases it is reasonable to expect that a dead graft will be as efficient as a living autogenous one, for it becomes rapidly united to the living bone, and surrounded by new bone from the periosteum.

In the case described below use was made of a boiled beef-bone graft to fill a gap of four inches left by resection of the upper part of the humerus for osteitis fibrosa.

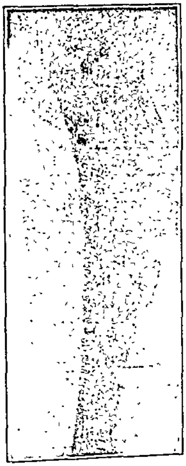

FIG. 1.—Showing localised rarefaction and expansion, with fracture. (Nov. 5th, 1920.)

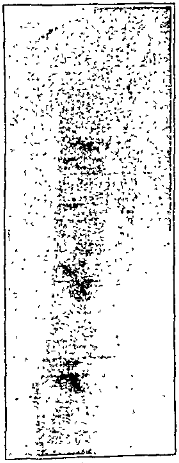

FIG. 2.—One month after operation. Beef-bone graft united to humerus; much new bone from periosteum on the inner aspect, and small areas of new bone externally. (Jan. 6th, 1921.)

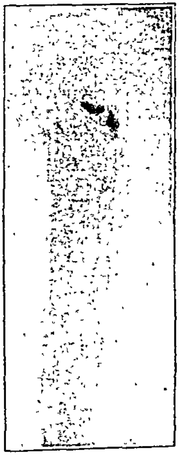

FIG. 3.—Three and a half months after operation. Showing dense new bone surrounding the graft. (March 24th, 1921

The notes of the case are as follows:—

A. C., a girl of 10 years and 9 months, admitted to Paddington Green Children's Hospital on Nov. 25th, 1920.

History.—Four days previously she fell prone, and the right arm became useless. In February, 1919, she had been admitted to another hospital for pain in the arm following a fall; X rays showed a localised area of rarefaction in the upper part of the humerus. An operation was performed, the bone being opened, and an area of soft tissue in its interior was removed by the curette. Microscopic examination showed this to be fibrous tissue.

Family history.—One child died from bronchopneumonia, another from convulsions. Two others are alive and healthy. No miscarriages. No other family illness.

Condition on admission.—Signs of fracture (pain, crepitus, slight deformity) of the upper end of the right humerus, with little displacement. X rays (Fig. 1) showed a rarefied and expanded area in upper third of humerus, with pathological fracture.

Nov. 29th, 1920: Plaster case made in two pieces, including arm, forearm, and thorax, the arm being in a position of abduction flexion and external rotation.

Operation (Dec. 7th).—Six-inch curved incision at the anterior margin of the deltoid. The bone was extensively destroyed and replaced by fibrous tissue, there being a thin shell of compact bone (fractured) postero-internally; the periosteum was absent anteriorly for one-third of the circumference of the bone, the muscles forming a pseudocapsule for the fibrous mass. The bone was divided above and below the diseased part, after the remaining periosteum had been separated, four inches of the humerus being removed. The beef-bone graft was then inserted, its lower peg extending into the medulla of the lower fragment of humerus, its upper end being wedged into the cancellous bone above. This graft had been cut from the tibia of an ox and was macerated and boiled for about 48 hours; it consisted of compact bone, and was 5 in. long, 7/8 in. wide, 1/3 in. thick; it was shaped by an Albee's saw and by filing, and drilled by multiple holes transversely, and also longitudinally at each extremity. The muscles and periosteum were sutured round the graft with catgut, and the wound closed without drainage; the plaster cast was then reapplied. On the 11th stitches removed, primary healing. From the end of the third week the plaster was removed each day to allow of careful active movements; the bone appeared to be firmly united within three weeks of the operation. The patient left hospital in the plaster on Jan. 5th, 1921.

Jan. 6th: X rays showed considerable formation of new bone on the inner aspect and small areas of new bone on the outer aspect of the graft, having apparently extended through the drill-holes (Fig. 2). On the 10th all passive movements normal; active abduction slightly diminished, other active movements normal. On the 23rd plaster case finally discarded, since which date no appliance has been used, the patient being allowed to employ the arm normally.

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[1] Shown at meeting of Clinical Section of the Royal Society of Medicine, April 8th, 1921.

[2] Brit. Journal of Surg., October, 1919, vol. vii., No. 26, p. 211.

[3] Beitr. z. klin. Chir., 1913, xlii., p. 353.

[4] Arch. f. klin. Chir., 1893, xlvi., p. 409.

Feb. 4th: From this date the condition has been as it is now, with firm union, no wasting, full abduction, full range of rotation, with slight excess of external rotation, and a similar slight degree of diminution of internal rotation. The limb was lightly massaged twice a week for five weeks, commencing on Jan. 23rd.

X ray photographs taken on Jan. 27th, Feb. 24th, and March 24th (Fig. 3) show gradual increase of new bone, of increasing density, surrounding the graft, and apparently filling the drill-holes. Histological examination of the specimen showed the typical appearances of osteitis fibrosa.

Report on Pathological Tissue Removed at Operation.

Dr. H. Perkins, pathologist to the hospital, has kindly provided a report on the specimen, which he also submitted to Dr. E. H. Kettle, of St. Mary's Hospital, for confirmation.

"The continuity of the bone shaft is lost in an irregular mass of new tissue, which is pink in colour, of great firmness, and not very vascular; this tissue occludes the medullary canal, and no cysts are present. Histologically, the mass consists chiefly of firm fibrous tissue in which there are very few blood-vessels. In some parts a more cellular growth is found, consisting chiefly of spindle-shaped cells; the transition from spindle-shaped cells to firm fibrous tissue can be observed in the section. With the spindle cells are many multinucleate giant cells, but their character does not suggest malignancy."

Summary.

The method seems to the author to present the following advantages:—

1. It was not necessary to interfere with another bone of the patient for provision of the graft; fracture of the tibia has in several cases followed long after the removal of bone for a graft.
2. The beef-bone graft was much stronger than any autogenous graft that could have been used, and the function of the arm was fully restored in seven weeks: at this time all retentive apparatus was discarded, and from that time the limb has been used normally.
3. The avoidance of prolonged immobilisation allowed the muscles to recover their size and function very rapidly, and prolonged treatment by massage, &c., was avoided also.

In fact, the patient has merely been kept under observation, and has not had treatment (except four weeks' massage) since seven weeks from the date of the operation.

PROFESSIONAL AND BUSINESS WOMEN'S HOSPITAL LEAGUE.—The annual report of this League for the year ending Dec. 31st, 1920, states that the League has steadily increased in numbers and that the general position is very satisfactory. The League, to which we have already referred (THE LANCET, 1920, ii., 1266), was founded in 1913 to make provision in severe sickness for women who earn their living in professional and business callings. On July 1st the committee concluded a contract with the St. Andrew's Hospital, Dollis Hill, on similar lines to that in force with the South London Hospital, by which accommodation is provided in a private ward for ordinary members of the League. Special grants are paid for treatment on behalf of provincial members who are unable to come to either of these hospitals for treatment, and occasionally for other cases who for some sound reason appear unable to avail themselves of the benefits arranged in the hospitals. Since the ordinary members subscription of 5s. per annum cannot entirely pay for the benefits offered, the League is still to a great extent dependent on the subscriptions of vice-presidents and hon. members, who receive no benefits. It is hoped that those who employ professional or business women will subscribe. County committees are being formed to enlist sympathisers and members, to collect money, and generally to aid the League. Owing to the enterprise of Mrs. W. S. Pedley, of Eastbourne, a branch in Sussex has already been started. The president of the ague is Lady St. Cyres. Further information can be ained from the Secretary, Miss Mildred Ransom, at the tered Office of the League, 195-197, Edgware-road, don, W. 2, to whom donations may also be sent.

A NOTE ON EXTERNAL DISLOCATION OF THE PATELLA.

BY RUSSELL F. MADDREN, M.D.

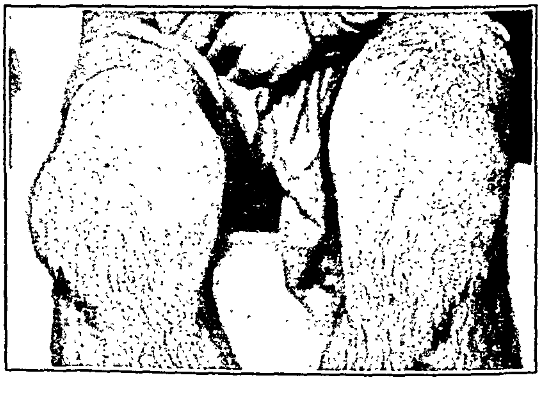
(From the Department of Experimental Surgery, New York University, U.S.A.)

THE bibliography of patella dislocation has become so extensive that the report of a single additional case would not appear justifiable unless it presented unusual features. As long ago as 1836 Malgaigne was able to collect 25 examples of patella luxations, and at present two or three cases apply every year to the average metropolitan hospital. Most of these patients, however, are adolescent females, whose patellæ occasionally slip out over the external epicondylar ridge because they suffer from genu valgum or some developmental deformity of their lower extremities. The multiplicity of operations that have been devised to correct this lesion suggests that surgical treatment is not invariably satisfactory.

Possession of a patella is "more a luxury than a necessity," as Hood demonstrated; its absence only affects an individual unfavourably if the extensor mechanism of his leg has become relaxed by disease or injury. One calls to mind that the kangaroo has no bony patellæ. In my patient the location of his right patella precluded its acting as a fulcrum, but, notwithstanding this, locomotion was perfect.

The Case Described.

In March, 1920, J. A., male, aged 34, was sent to me for physical examination preliminary to employment. Aside from the fact that his right patella was displaced externally, no abnormality was discovered. His general condition and muscular development were excellent. He demonstrated that he could run up and down the examining room doing an "about-face" when bidden without the slightest limping, hesitation, or embarrassment. He was passed as fit. During the ensuing three months, or until he left the company's service and was lost to sight, this man, whose work required him to wheel a barrow all day, was repeatedly examined by others as well as by the writer. No amount of manipulation would replace his dislocated patella in the trochlea—which was not as in Schaffer's case, the site of an exostosis. Both patellæ were apparently equal in size. The patient was quite certain that his right leg had never been injured and insisted that it had been in its present condition as long as he could remember. His mother had told him that the "lump" on the outer side of his knee had "always" been there. None of his relatives had similar deformities. His finger-nails were normal.



External dislocation of the patella.

This was not a case of the familial type described by Little and by Wirth. There was no other bony deformity of his lower extremities.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

WAR SECTION.

INFLUENZA IN THE NAVY.

A MEETING of this section of the Royal Society of Medicine was held on May 9th, Surgeon Rear-Admiral Sir ROBERT HILL, the President, in the chair.

Surgeon-Commander S. F. DUDLEY read a paper detailing his observations on the influenza pandemic of 1918 and 1919 as seen in the Navy. He attributed his occasional failures to isolate the *B. influenzæ* from influenza patients entirely to faulty technique, but considered that the reported absence of this organism from certain groups of cases may have been due to a secondary organism which had gained access as the result of a primary infection with *B. influenzæ*. He stated that during the past two years a carrier-rate of about 50 per cent. was constantly found for *B. influenzæ* among healthy sailors, and the percentage of positive results showed no relation to influenza prevalence. The three main factors relating to the nature and severity of epidemics were infectivity, virulence, and susceptibility. The greater the degree of infectivity in a parasite, the greater was its chance of infecting fresh hosts; while virulence was really a handicap to the parasite, as it limited the opportunities for multiplication and dispersal of the species beyond a single host, since corpses had few chances of disseminating diseases. On the other hand, the carrier, who was really the mildest of cases, frequently distributes his parasites. Also the less virulent strains of an organism generally stimulated less resistance on the part of the host, and therefore were more likely to succeed in adapting themselves to their environment. A parasite of sufficient infectivity might appear (possibly by the mutation of a less infective, but similar organism) and spread through a susceptible population as an epidemic. As the population gradually acquired a higher and higher degree of immunity, the more infectious strains of the parasite survived, and the more virulent strains become eliminated, ultimately resulting in a multitude of so-called carriers. The handicap of virulence, however, might not be felt as long as susceptible hosts were sufficiently numerous, and in the earliest days of an epidemic infectivity and virulence might increase together. Secondary organisms associated with the primary agent of influenza were probably the chief cause of its variable symptomatology and virulence, and were usually present from the outset of the disease, suggesting that influenza might always be a compound infection, and that mutualism and symbiosis have a share in the ætiology.

Statistics of the pandemic as it affected ships in the Royal Navy illustrated some points better than figures obtained ashore. In those ships that experienced two waves in 1918, the attack-rate in each wave was roughly 25 per cent.—that is, 50 per cent. were attacked in the year. The latter figure was the same as the attack-rate of those ships which were only attacked in the autumn, after they had completely escaped the earlier wave. The simplest explanation was that in the spring of 1918 only a quarter of a ship's company were susceptible to the prevalent strain of influenza germ. After a while it gained in infectivity, so that in the autumn, on its return, influenza was able to infect a further quarter of the men whose immunity had been good enough to withstand the spring type.

The men who had had influenza in the spring had generally acquired sufficient immunity to resist the more infectious autumn type, while in the ships attacked for the first time, where there had been no immunising previous outbreak, 50 per cent. of the crew at once fell victims. This year (1921) there was an outbreak of influenza among the ships at Portsmouth, the highest attack-rate being 7 per cent.; thus this year it seemed probable that 93 per cent. of the sailors were naturally immune, or had acquired immunity. In a ship the population was so dense and local migration so great that it might be assumed that once a ship was attacked by epidemic influenza, every susceptible on board would get the opportunity of obtaining an effective dose of the specific germ.

There were two types of epidemics in ships attacked in the autumn of 1918. In one the attack-rate was 58 per cent. with many severe pulmonary cases, and 7·5 per cent. case mortality, the predominant organism being a "Gram-positive diplococcus." The other had an attack-rate of 51 per cent. with no deaths or complications of any kind, and influenza-like bacilli were numerous in the sputa. The higher mortality in the first example was probably due to the secondary Gram-positive coccus. The intervals that elapsed between the crests of the two waves of the 1918 to 1919 pandemic was in general longer than that observed ashore in England; for example, 27 weeks elapsed in H.M.S. *Revenge*, 20 in H.M.S. *Royal Sovereign*, and only 16 in London.

Surgeon-Commander Dudley concluded by stating that naval experience and statistics had convinced him that the only sound way of preventing morbidity and mortality in a sea-going fleet was the early and thorough use of a vaccine, combined with the most absolute isolation of infected ships.

Discussion.

The PRESIDENT drew attention to the similarity of the pandemic occurring in 1889 and 1890 to that of 1918 and 1919.

Surgeon Rear-Admiral P. W. BASSETT-SMITH considered that the primary organism made the lung in such a condition as to favour secondary infections. He emphasised the fact that the first wave was mild as compared with the second wave, which was severe. He considered that the first wave conferred considerable immunity in the second wave, and that a mixed vaccine was the most efficacious one in diminishing mortality. In order to ward off an epidemic, immunisation by vaccination should be undertaken widely and early.

Lieutenant-Colonel BERNARD E. MYERS said that in New Zealand dark-skinned persons were first attacked, the native-born New Zealander was the next in the order of attack, while the home-born New Zealander appeared the least susceptible. He considered that a mixed vaccine, containing six or seven varieties of organisms produced a high degree of immunity, that two inoculations were sufficient, and that these should be repeated every six months in order to maintain the immunity.

Squadron-Leader H. E. WHITTINGHAM said that there were three types of influenza attack, as estimated by the leucocyte count. In the first type there was a primary leucopenia, followed later by a leucocytosis; in the second type a leucocytosis was found throughout, while in the third the primary leucopenia persisted. In the speaker's experience this third persistent leucopenic type almost invariably ended fatally.

SECTION OF OPHTHALMOLOGY.

A MEETING of this section of the Royal Society of Medicine was held on May 13th, Dr. JAMES TAYLOR, the President, being in the chair.

Extreme Choroidal Atrophy in High Myopia.

Dr. R. L. REA showed a case of this description in which the fundus was very well seen by Dr. Rayner Batten's instrument. There was a myopia of 30 D. Until he used this apparatus he had had great difficulty in seeing the fine changes in these high myopic fundi; he now had no such trouble.

Treatment of Lacrymal Obstruction.

Dr. D. LEIGHTON DAVIES read a paper entitled "Lacrymal Obstruction: Results of the Anastomotic Method of Treatment (Toti)." He described the operation which Toti was the first to perform for lacrymal obstruction, and set out the circumstances and conditions under which it should be carried out. He had performed the operation 56 times. In 36 patients a complete cure resulted—i.e., there was no epiphora and the canaliculus could be syringed through. In 10 it was partially successful—i.e., the patient was no longer troubled with watering in the eye, yet fluid could not be got through the channel. In 10 the procedure was a failure, for watering of the eye still occurred and there was complete obstruction of the passage. Partial failures were due to contraction of the new opening. It was remarkable that, though an opening was made large enough to admit the tip of the forefinger, this had closed again or become obstructed in three months. This subsequent contraction constituted the weak point in the operation. He had thought it might be due to his having excised too much of the wall of the sac; yet some of the obstructions were not due to the contractions which took place round the mucous membrane, but to a contraction of the inner end of the canaliculus. Every case he had dealt with by operation had been satisfactory for three or four weeks; it was only after this period that contraction began to take place. In comparing this operation with that in which the intranasal route was chosen, he said the latter could have only two features urged in its favour: (1) that it could be done without causing an external wound; (2) that it did not disturb the relations of the sac as much as did the external operation. Against these, however, were the facts that the intranasal operation had to be carried out in a very restricted space, so that it was difficult for the surgeon to see what he was doing: secondly, it often required a preliminary operation to deal with a deflected septum or an enlarged turbinal. It was, in addition, difficult to get through the nasal process of the superior maxilla. Most of the statistics published on Toti's operation gave between 60 per cent. and 70 per cent. of successes. If a case was successful at the end of four months, he felt it would be permanently so; the scar became invisible in two months.

Discussion.—Mr. A. W. ORMOND said he also had found these cases to be unsatisfactory. His experience had been that the less he did the better the result. When pressing over the sac, if there was much muco-pus present, he usually passed a somewhat small probe to ascertain if there was real organic obstruction, and if that was discovered he did no further probing. Many of these cases he regarded as due to strictures which were potential—i.e., caused by inflammation of the mucous membrane and the contiguity, possibly the adhesion, of the walls of the canaliculus to each other. He then instructed the patient to express the sac contents and instil antiseptic drops, such as chloride of mercury and sulphate of zinc. Usually at the end of six weeks of such treatment the discharge had changed from purulent to simply mucoid. If there was still watering and much complaint was made he advised removal of the sac.

Mr. MALCOLM L. HEPBURN thought that in some of these cases there was definite thickening not only of the tissues round the sac, but of bone also.

Mr. W. H. MCMULLEN said the condition in children differed from that in adults in regard to the outlook. His experience had been that the majority of cases due to congenital obstruction opened up spontaneouly in the course of a few weeks or months if the sac contents were expressed and the part was kept moderately clean. When met with in later childhood he had found the treatment of the condition very unsatisfactory: chronic lacrymal dacryo-cystitis in children aged 4 years mostly needed excision of the sac.

Dr. LEIGHTON DAVIES, in reply, said he did not advise the operation unless the patient was very much troubled by the epiphora; he first adopted the means spoken of by Mr. Ormond. Some, however, were so worried by the constant "tearing" that they were willing to submit to anything which promised relief; these he operated upon. He never pressed the operation, because he was not in a position to guarantee success. He believed the so-called "potential" strictures always became organic ones ultimately, though he did not think they became bony. He had not found one case in which this was so in over a thousand dried skull specimens; therefore he thought the stricture was always confined to the soft tissues. He did not think a surgeon was justified in doing Toti's operation on a person under 16 years of age, as it was wrong to interfere with the parts in a growing child. Neither, unless the condition was very troublesome, did he do the operation on old people, because their expectation of life was not very great, and the inconvenience should be borne with.

Aphakia in a Human Embryo.

Miss IDA C. MANN showed a series of remarkable skiagrams and diagrams of a specimen of aphakia in a human embryo of five or six weeks.

The PRESIDENT, Mr. LESLIE J. PATON, and Mr. R. AFFLECK GREEVES congratulated Miss Mann on her exhibit, and the last-named said that in all the congenitally abnormal eyes he had examined a lens or lens capsule was present; he had never seen a case without a lens.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

NAVAL, MILITARY, AND AIR FORCE HYGIENE GROUP.

DEMONSTRATION OF SANITARY APPLIANCES.

A MEETING of this group of the Society of M.O.H. was held on May 6th at the Royal Army Medical College, where a demonstration of sanitary appliances of interest to health officers had been arranged. Lieut.-Colonel H. R. KENWOOD, the President, occupied the chair.

Sir JOHN GOODWIN welcomed the group to the College and to the demonstration which had been prepared for their benefit.

The PRESIDENT spoke of the healthy and happy coöperation which the group by its existence had sustained between medical officers in the services and those in civil employ. The demonstration, organised by the professors of hygiene, tropical medicine, and pathology, was given in the theatre, museum, and laboratories of the R.A.M. College. All exhibits had printed explanatory cards attached and were, moreover, grouped in sections, each in charge of a R.A.M.C. officer, who gave a continuous series of short demonstrations. The sections covered almost the entire range of preventive medicine in its relation to military service under all climatic conditions.

Description of Exhibits.

In the first section there was shown apparatus whereby the energy expenditure of soldiers working under various conditions is estimated, in order to determine the precise food requirements for each stage of training and phase of active operations. An apparatus for ascertaining the effect of load on static equilibrium should be of great value in the prevention of unnecessary fatigue. A fabric impervious to water but freely permeable by air currents was shown as an ideal material for service dress.

The next section, of historical interest, showed all stages in the evolution of means of protection against toxic gases in the field, culminating in the production of the box-respirator.

The section illustrating the life-histories of insect vectors of disease showed the relationship of the mosquito to malaria, while specimens of mosquitoes, blood-sucking flies, lice, fleas, and ticks were so mounted as to facilitate detailed examination. A collection of photographs showed a variety of mosquito-breeding areas, each constituting an especially difficult problem of effective treatment, and each bracketed with its parallel photograph showing the result of the treatment adopted. These afforded striking evidence of the amount of work involved in malaria prophylaxis.

In the section devoted to the prophylaxis and treatment of venereal disease in the army the lethal effect of collosol on living specimens of *Spirochæta pallida* could be followed under the microscope, and the coruscations of the argentum collosol was the subject of an ultra-microscopic demonstration. Photographs from various theatres of war illustrated the clinical appearances of primary lesions of non-genital distribution. The prophylactic packets used in our own forces and those of other nationalities were on view. In other sections demonstrations illustrating the ætiology and pathology of influenza, malaria, Mediterranean fever. kala-azar, oriental sore, dysentery, plague, trypanosomiasis, schistosomiasis, &c., were given. Cultural forms of leishmania and trypanosomes were well shown by dark-ground illumination. The methods of preparation of typhoid-paratyphoid vaccine were illustrated in detail in conjunction with data of the results obtained by it during the recent war. An exhibit of microscopic projection apparatus represented the most recent developments of appliances for instructional purposes. The remaining sections of the exhibition dealt with disinfecting apparatus, the work of the chemical and physical laboratories, field sanitation and army rations.

The Sack Disinfector.

The "sack disinfector" was shown as an apparatus which disinfects and disinfests clothing rapidly and efficiently. It consists of a large steam-tight sack suspended mouth downwards. Clothing is hung from hooks on a detachable wooden disc, which is then drawn by a pulley into the interior of the inverted sack, the mouth of which is partially closed by a purse-string. Steam is generated by combustion of oil in a powerful pressure-stove beneath a small copper boiler, and is led through a flexible tube connected to the upper end of the inverted sack. When a charge of ten suits was placed in the sack, steam emerged from the down-turned mouth after 3½ minutes and thus indicated that disinfection had been completed. Lice placed amongst the articles were found to be killed, and ingenious chemical thermometers placed in the pockets of the garments all indicated that a uniform temperature of 100° C. had been reached throughout the whole charge. The disc having been removed from the sack, the clothing is shaken well and dries rapidly. A portable form of disinfecting apparatus was also shown. It can be carried by bicycle, and can safely be used in the homes of the people, the boiler being placed over the kitchen fire and the sack hung from a support wedged between the door and its frame.

A new departure in the treatment of sullage-water was seen in action and appeared to be giving most satisfactory results, clarification being effected by electrolysis. Amongst the other exhibits was also a Soxhlet for extraction of fat, modified by a device for electric heating. A collection of apparatus for recording temperatures in closed chambers, and a collection of rat poisons were on view.

In the museum were models of a large variety of sanitary appliances used in the field during the war. Another adjacent section showed the "iron rations" of many armies, and the stages of evolution of our own. Samples of various special articles of food (nut-food, anti-scorbutics, &c.) introduced into the ration carried by the members of Shackleton's antarctic expedition on their dash for the South Pole were shown.

The demonstration thus provided an interesting variety of exhibits presented in a convenient form for examination and rapid apprehension.

Intending members of this group of the Society of Medical Officers of Health are invited to communicate with the hon. secretary, Major W. N. W. Kennedy, Town Hall, Croydon.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

OBSTETRICAL SECTION.

A MEETING of this section was held on April 29th, Dr. E. HASTINGS TWEEDY, the President, being in the chair.

Dr. R. E. TOTTENHAM showed a new type of Pelvimeter.

Primary Carcinoma of the Vagina.

Dr. GIBBON FITZGIBBON (Master of the Rotunda) showed a specimen of Primary Carcinoma of the Vagina from a married woman, aged 42, a VII.-para. Last pregnancy, four years ago, was normal. Menses were regular and normal. She was quite well up to two months ago, when slight bleeding from the vagina started and continued. On examination the vulva and perineum were quite healthy. From the right lateral fornix of the vagina there was an ulceration extending slightly on to the posterior wall and down the lateral wall to about an inch and a quarter from the hymen. The ulcer looked very clean, the surface a little irregular and soft, and the edges fairly sharp. There was no evidence of rectal or bladder involvement. The ulcer ran close up to the cervix, but did not encroach on the mucous membrane of it. Per rectum a hard nodule could be felt under the ulcer extending out towards the pelvic wall but mobile. The surface of the ulcer was removed with the curette, and some pieces of the edge were cut away for examination. The pathological report revealed definite cancerous growth showing dense masses of cells.

Operation.—First by the abdomen the ordinary lines of a Wertheim's hysterectomy were carried out until the whole of the vaginal fornices were quite freed. The internal iliac vessels were cleaned and tied at their origins. The patient was then put into the lithotomy position and the vagina divided just inside the hymen all round and separated up, taking as much of the tissue in the ischio-rectal fossæ as possible until the detached upper part was reached, when the whole mass of the vagina and uterus was removed through the vulva. The edges of the vulva were fixed with a few stitches, and the rest of the operation was done by the abdomen. The pelvic peritoneum was closed over a gauze packing. The patient showed a deal of shock, but responded well to a coffee enema followed by small saline enemas during the next 24 hours, and has made an uninterrupted recovery, the abdomen healing perfectly.

A few days before operating on this case Dr. Fitzgibbon operated on another in which the cancer was also primary in the vagina and situated in the lower half, just coming down to the level of the hymen. There was a mass extending out to the ischio-rectal fossa and a hard ring round the vagina, but the ulceration was only lateral. In this case Dr. Fitzgibbon removed the whole vagina from the lesser labium, the edge of the perineum, and the external meatus of the urethra up to the vaginal fornices, and taking the vaginal portion of the cervix. Of the two operations he thought the former was the easier. There was less hæmorrhage owing to the internal iliac vessels having been tied, and the removal of parametrium above the fornices was much more complete and simpler. If he had to operate on cancer of the vagina again he would do the operation—including the removal of the uterus—in three stages, as in this case. It was surprising how little arterial bleeding occurred, only two or three small vessels requiring to be tied, but there was rather profuse venous bleeding for a time, and this was avoided in the case with hysterectomy.

Drs. BETHEL SOLOMONS, D. G. MADILL, and the PRESIDENT spoke, and Dr. FITZGIBBON replied.

Some Notes on the Fibrous and Muscular Attachments of the Vagina.

Dr. LOUIS CASSIDY read a paper on the fibrous and muscular attachments of the vagina. In the course of his communication he showed (by various lantern-slides) that the lower two-thirds of the lateral walls of the vagina are in close apposition with the levatores ani muscles. Interposed between the lateral walls of the vagina and these muscles is a distinct layer of fascia—a portion of the visceral layer of the pelvic fascia—which gains a very definite attachment to the walls of the vagina. This layer is clearly demonstrable, and is intimately blended with the fasciculi of the levatores ani muscles. When followed forwards immediately below the neck of the bladder this fascia will be found to be continuous with the pubo-vesical ligaments; whilst behind it passes into the fascia surrounding the rectum. The surface of this layer of the fascia which rests upon the levatores ani sends prolongations into the muscle to blend with its sheath, thereby indirectly supporting the vagina. The anterior and posterior fascial supports of the vagina resolve themselves into the attachments between the fibrous covering of the posterior wall of the urethra and the anterior fibrous sheath of the rectum behind. The attachment between the wall of the urethra and vagina is a very close one, the structures being morphologically continuous, and is associated with the presence of the dense mass of fibrous tissue which in this region occupies the space left by the disappearance of the female prostate. It is impossible to separate the two structures in their lower two-thirds; the knife must be used. The union of the lower three-fourths with the rectum and anal canal is much less intimate, and permits of easy separation. This relationship between the rectum and vagina is much strengthened at the junction of the rectum and anal canal by the presence of the perineal body. This structure is a wedge-shaped mass consisting of fibro-muscular tissue, and is about one inch in depth, the base of the wedge lying at the skin surface. The vagina pierces the two layers of the triangular ligament and consequently receives firm support from this structure. The muscular attachments of the vagina consist solely of the levatores ani. A transverse section, 4 mm. thick, through the pelvis of a female child, aged 19 months, and taken through the middle of the true pelvis, demonstrates the attachments of fibres of the levatores ani muscles to the lateral walls of the vagina. This relationship is denied by such eminent authorities as Halban and Cruveilher. In conclusion, Dr. Cassidy was convinced that the prevention of a hernial protrusion of the anterior and posterior walls of the vagina will depend on the lateral support it receives from the pelvic fascia and the integrity of the perineal body. He considers this latter structure of paramount importance in the mechanical support of the female pelvic diaphragm. There was one other point to which attention might be drawn—viz., the presence of the transversalis colli, or Mackenrodt's ligaments. These structures can be readily recognised in transverse section through the pelvis of a young female child. That these ligaments do very materially support the upper third of the vagina there cannot be much doubt.

Discussion.

Dr. FITZGIBBON agreed with Dr. Cassidy about the value of the pelvic fascia. Referring to the parietal and visceral layers, he thought that anatomists did not go far enough. He was of opinion that the former merely the covering of the levator ani muscle. actual supports of the vagina were well shown Dr. Cassidy. Dr. Fitzgibbon thought there was as much fascia round the parametrium as in Mackenrodt's ligaments. The parametrium was all muscular, and contained very little fascia, and this was the real support of the vagina.

Dr. BETHEL SOLOMONS was greatly struck by the fact that in Dr. Cassidy's ardent research it had been found that Mackenrodt's ligaments were not the only supports of the vagina. He believed that in further research Dr. Cassidy would find that Mackenrodt's ligaments were probably the most important but not the only supports of the pelvic viscera. The fact that when these ligaments were cut the uterus descended did not prove that they were its only supports, any more than the falling of a body when one leg is removed indicates that it has been supported entirely by the other leg. Dr. Solomons asked Dr. Cassidy what constituted the pillars which were so useful in acting as supports for the bladder in an operation for the cure of cystocele? Did he consider them to be a portion of the pubo-coccygeus muscle with or without fascia, or possibly the detrusor muscle of the bladder?

The PRESIDENT regretted that Dr. Cassidy had not gone further, and demonstrated the attachments of the uterus, but hoped he would do so on a future occasion. In his (the President's) opinion, these fibrous attachments are the supports of the uterus as well as of the vagina. The Master of the Rotunda was right in saying that the strands of fibrous tissue in the pelvis run in every direction, and different names—Mackenrodt's ligaments, utero-sacral ligaments, &c.—have been given to different bundles of these. The theory of the pelvic fascia was fascinating, but it was not "a pelvic fascia." He believed that the uterus is the origin of these strands, which grow out from it in all directions, and they might fitly be described as "uterine tendons." These tendons or ligaments contain muscle, and are under the control of the uterus and, he believed, are its sole support.

Dr. CASSIDY briefly replied.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

THE ANNUAL CONGRESS.

THE Annual Congress of the Society was held on May 5th, 6th, and 7th, at the Royal Society of Medicine, and at St. Thomas's Hospital, the event at the latter institution being a demonstration of clinical cases and of apparatus. The chair was occupied throughout by Mr. J. HERBERT FISHER.

Presidential Address: The Personal Equation.

The PRESIDENT, in the course of his address, said the complete ophthalmologist did not, and could not, exist. The subject was wide as the heavens, deep as the ocean; to comprehend ophthalmic science as it now exists it was necessary to enlist as allies the mathematician, the physicist, the chemist, the physiologist, the anatomist, the physician, the surgeon, the urologist, the rhinologist, the dentist, the gynæcologist, the neurologist, the radiologist, the pathologist, the bacteriologist; and within the specialty there was room for every man to exploit to the full the gifts and inclinations with which he was endowed. Perimetry and the examination of the central field of vision for colour defects, absolute and relative scotomata were playing larger parts in investigations, and attention in these matters must be paid to the personal equation. One investigator's charts would rarely be found to coincide with those of another on the same patient: only when a surgeon had stereotyped his own personal equation and controlled that of his patient would his results on the same patient on successive dates be reliable for clinical purposes. Tonometry was tending to replace the digital estimation of intra-ocular pressure, and it was for the younger ophthalmologists to explore its value; but it would not yet quench the older method. The indications for or against operation in a case of chronic glaucoma would never be determined by such variables as the readings on a tonometer or the fluctuations of the blind spot. Too often the ophthalmologist was confronted with the highly myopic sempstress or clerk, incapacitated in later years of their working life by failing vision. A little guidance given to the progressive myope about to embark on the serious business of life might save such a one from a life of misery, ending in shipwreck. Compared with such help the most perfect retinoscopy was of little value. He advocated a closer coöperation with colleagues in general medicine and surgery. The gain from this would be mutual, but ophthalmologists must keep their own house in order: the student must be taught that in dealing with his patients he had responsibilities which he could transfer to no other. Laboratory investigations might supplement his work, but they could not be a substitute for it. The study of disease in the eye could be undertaken only by those who had first been trained in every branch of medicine and surgery; in this there could be no compromise. Ametropia and its results could not be surrendered to the optician. A vision of 6/6 was not proof that there was no disease in the eye.

The address concluded with a sympathetic reference to the recent passing of Charles Higgens and H. E. Juler, and an appreciation of their work. On the motion of Sir ANDERSON CRITCHETT, Mr. Fisher was cordially thanked for his address.

Cyclitis with Glandular Enlargement.

Mr. A. MAITLAND RAMSAY (Glasgow) read a paper entitled: A Case of Cyclitis associated with Swelling of the Parotid Glands. The patient was an unmarried lady, aged 31, who had always enjoyed good health. Strenuous war-work produced ill-health, and one morning her lower eyelids were puffy and her ankles swollen, and the swelling later extended to the knees. The skin was hyperæsthetic, and she had severe intercostal pain. Ten days in bed led to the swelling subsiding, but not the pain, and the latter was only temporarily relieved by large doses of aspirin. The eyes subsequently watered on exposure to light and the sight became dim, and pericorneal injection was obvious, with discoloration of the iris. There were irregularity of the pupil and a deep anterior chamber. There was no impairment of colour-sense, and no gross lesion in the optic disc or retinal vessels, choroid, or retina. Under the idea that it was a deficiency disease, thyroid extract was given, and within a week the sight began to improve. Neither mumps nor diphtheria entered into the problem. Gradually the patient was restored to good health.

Lamellar Cataract with Persistent Pupillary Membrane and Birth Injury.

Mr. J. GRAY CLEGG read a paper by himself and Dr. GORDON RENWICK, entitled Partial Monocular Lamellar Cataract associated with Persistent Pupillary Membrane and Birth Injury. The patient was a boy, whose history had been good. He had an injury at birth, when instruments were used, and on the left eyebrow were three small scars. The lids were much swollen for ten days after birth. The appearances were minutely described with the aid of the epidiascope.

Mr. R. RUSTON JAMES read an interesting contribution under the title: "Sir William Read, oculist to Queen Anne and to George I., Quack, Mountebank," in which he exposed the ambitious claims of Read in the domain of eye diseases.

Flat Neoplasm of the Choroid.

Mr. D. J. WOOD sent, from Cape Town, an account of two cases of Flat Neoplasm of the Choroid. One patient had a widely-dilated pupil, unusual redness of the outer part of the sclerotic, and a detachment of the retina close to the back of the lens. Disease was discovered in the left antrum and in the back part of the lower jaw. There were enlarged glands on the right side of the neck, and a portion excised was thought to be epitheliomatous. X-rays brought about some improvement, but it was evident there was an intra-ocular tumour, as the iris began to bulge on the outer side. Excision of the eye was carried out, and a flat sarcoma was found extending from the optic nerve forward to the iris, with complete detachment of the retina. It went up to the optic nerve, but did not involve it.

Symmetrical Encroachment of the Conjunctivæ on the Corneal Margins.

Mr. WOOD also sent a paper on this subject. The man had been treated by his doctor for cellulitis at the root of the nose; the lids were closed and the eye looked red. After simple treatment, pus was evacuated from the lids, and the condition healed in two weeks, but the eye remained red. The corneal margin was found to be covered by a ring of conjunctiva 2½ mm. wide, and the conjunctival blood-vessels were continued into it. The cornea was dull and covered by a series of reticulated grooves; it was also anæsthetic to a considerable extent. There was neither ptosis nor motor failure; tension was normal. With a fine probe the conjunctiva could be separated from the cornea.

Discussion on the Psychology of Vision in Health and Disease.

Thursday afternoon was devoted to a discussion on this subject. It was opened by

Professor C. SPEARMAN, Ph.D., who dealt with the Retinal Corresponding Points. We see objects in different places, he said, and the question as to the source of this power is one of the most difficult in all psychology. There were two camps of authorities: the "empiricists" and the "nativists." The first of these regarded visual place as the outcome of experience and arising through some such process as "association" or "fusion." The nativists were chiefly physiologists, such as Galen and Johannes Müller, who maintained that this power is essentially innate. According to them, the apparent situation of any visible particle was "specific energy" of the particular nerve fibre stimulated. They claimed that the pathological cases supported their view. The sharp demarcation between the two divisions of thought was now softened down, and it no longer seemed doubtful that our spatial perception was, at any rate partly, determined by factors of a hereditary character. If the origin was to be sought in experience, it must be in some degree that of our ancestors. Wheatstone showed that the pair of images thrown on the two retinæ by a visible particle did not, in general, fall on "corresponding" points of the retinæ; it was, in fact, their very deviation from "correspondence" which furnished our chief criterion of distance and depth. Wheatstone also brought evidence that such a pair of images, though thus falling on "non-corresponding" points, could, nevertheless, be seen as a single image. Straub concluded that the binocular perception of distance must be merely derivative from the far older uniocular perception of it. The present paper offered a new figure in support of Wheatstone's view: *that two retinal points, although truly "corresponding" and normally producing the same visual situation, could nevertheless, under certain circumstances, engender different visual situations.* In fact the spectacle might be presented *of an object moving backwards and forwards, although the place of retinal stimulation remained unchanged.*

Mr. J. HERBERT PARSONS, F.R.S., read a paper on

The Evolution of Visual Perceptions, with Special Reference to the Rôle of Suppression.

Vision was, he said, one of the latest evolved of the senses; it belonged to the group which Professor Sherrington termed "projicient." The earliest evolved *sentient* response to stimuli from the outer world was of the contact order; it had many of the characteristics which had been ascribed to what Head called *protopathic sensation.* Later differentiations were of the epicritic type, leading to more accurate discriminations in various directions. Ophthalmologists were prone to regard the phenomena of binocular vision as themselves sufficient to account for judgments of distance, &c., yet these depended upon standards of posture and direction which were derived from the labyrinth and other parts of the proprioceptive system. Visual sensations could be divided into various kinds, of which the light sense was the most primitive. Peripheral vision was more rapidly fatigued than was central vision; but this rapid fatigue was more than compensated for by the acquisition of heightened mental capacity to appreciate change of local sign; in fact, it might be advantageous. Binocular vision might be regarded as primarily an adaptation in the interests of self-preservation, specially associated with the pursuit and capture of prey, and, to a less extent, in self-defence. Ophthalmology, he said, could not afford to ignore psychology; on the other hand, the only sure foundation for the science of psychology was biology and physiology.

Sir **Robert Armstrong-Jones** related a case of acute melancholia who recovered on being supplied with proper glasses. He had often noted marked hyperæsthesia of the retina accompanying exhaustion. The poison of fevers caused visual rather than any other sensory hallucinations, and the poison of syphilis more often affected the sight than the hearing. In his experience there were far fewer blind than deaf insane persons, and the blind insane were not so suspicious as the deaf, and were more amenable to discipline. He referred to the relief afforded to mental states by appropriate colour-schemes.

Dr. **S. A. Kinnier Wilson** read a communication dealing with psychological peculiarities in certain visual auras in epilepsy, which had been termed by Hughlings Jackson a "*voluminous mental state.*" There were two distinct types which were of interest to the ophthalmologist: (1) the "déjà vu" or "familiarity" type, in which the patient had a strong sense of having seen something new on a previous occasion, with its corollary the "strangeness" type; (2) the "visual memory" type. He related some interesting cases of each.

Dr. **A. S. Percival** also read a paper, in which he dealt with the mechanism of vision.

Amblyopia from Disuse.

Mr. **Frank Juler** read a paper entitled: Amblyopia from Disuse; Visual Acuity after Traumatic Cataract in Children. He said he thought that in certain cases of injury to the lens in young children a line of evidence might be obtained which would satisfy the disputators and perhaps decide whether amblyopia from disuse existed or not. In most cases of traumatic cataract the opacity was rapid, and little light reached the retina after the date of the injury. In some of his cases the lens matter had been evacuated soon afterwards, leaving only an opaque membrane, and in a few an artificial pupil had been made not much later. Even in cases where an artificial pupil had been made, the diffusion of images by the aphakic hypermetropia must be so great that the retinal impulses could not compete with or assist those transmitted from the retinæ of the sound eye, and one would expect these impulses to be neglected, with the *consequent development* of amblyopia from disuse. He had traced a number of cases of juvenile traumatic cataracts, had himself formed a new pupil in some. There was a striking line of difference between the final visual results, depending on the age at which the lens became opaque. None of the eyes which became cataractous before the age of 5 had retained a final central acuity of vision of 6/60. The series showed there is such a disease as amblyopia of disuse, that it affects the eyes of children up to 6 years, that it does not attack eyes after the age of 7 years, and that it causes a real retrogression of the effective power of retinal impulse on the consciousness after the ula has reached an age at which a central vision /8 is normally present.

(*To be concluded.*)

ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

Exhibition of Cases and Specimens.

A meeting of this Society was held in the Faculty Hall on April 15th, the **President** in the chair.

Dr. **Adam Patrick** described a case of

Renal Diabetes.

He said that in the normal person the blood sugar varies from 0·07 per cent. to about 0·15 per cent. or rather more. If the latter concentration is exceeded, sugar appears in the urine. In healthy persons it is difficult to raise the blood sugar above this level. In the diabetic the threshold concentration is habitually exceeded and readings of 0·25 per cent. or much higher may be got. A single reading of this sort is enough to establish a diagnosis of true diabetes. Sugar may also appear in the urine if the renal threshold is lowered, even if the blood sugar does not exceed the normal. In the normal subject the limit of sugar concentration is reached in about an hour, whereas, in the diabetic the maximum is not reached for two or three hours. Dr. Patrick described the case of a man, aged 38, who was found to have glycosuria on examination for life insurance; *five years before sugar had not* been present. The patient's health had been good save for an attack of hæmaturia (cause unknown) 10 years before, when there were no accompanying symptoms. Treatment on the lines suggested by Allen was instituted without great success and the urine only remained sugar-free in a diet approaching starvation. In hospital it was found that on a very restricted diet and with the blood sugar reading only 0·05 per cent., there was a trace of sugar in the urine, and that, on ordinary diet there was abundant sugar in the *urine*, although the blood sugar two and a quarter hours after dinner amounted only to 0·114 per cent. Tested by administration of 25 g. of glucose after a 16-hour starve, the blood sugar curve was normal in type. Dr. Patrick applied the name "renal diabetes" because the glycosuria appeared to be due to a defect in the kidney.

Prof. **J. M. Munro Kerr** *read notes of a case of*

Resection of a Double Uterus

followed by two full-time pregnancies. He also showed the uterus, which had been removed after Cæsarean section. The diagnosis lay between an extra-uterine pregnancy, a myoma complicating a uterine pregnancy, and a pregnancy in the form of a double uterus. The expulsion of the ovum from the right horn of a uterus bicornis settled the matter. The patient had a second miscarriage at a later date from the same horn. Both miscarriages occurred at the third month. The resection of the uterus (bicornis unicollis symmetricus) was done seven months after the last miscarriage. A V-shaped wedge was removed and the two halves of the uterus carefully stitched together. Pregnancy followed soon afterwards and a full-time living child was delivered with the help of forceps, but died owing to injuries sustained at birth. The uterine scar was found to be quite satisfactory on manual examination. Some months later the patient again became pregnant and at full time Cæsarean section was *done and the* uterus removed. Prof. Munro Kerr demonstrated the uterine scar on the anterior and posterior walls of the uterus. These, especially the one on the anterior wall, were satisfactory, but there was a gutter-shaped indenture in the posterior wall over which the placenta was attached. Microscopically much connective tissue was seen in the scars, particularly in the posterior one. The operation has been done on one or two occasions in continental cliniques, but so far as Prof. Munro Kerr knew, not before in this country. The indication for the operation was repeated miscarriages, which seemed to be common in this form of malformation.

DR. JAMES HENDRY described a case of

Amenorrhœa Following Severe Trauma.

In May, 1919, the patient reported three months amenorrhœa without other signs of pregnancy. Her appearance suggested thyroid insufficiency and there was no sign of pregnancy. The disturbances suggesting hypothyroidism were only of recent date. Health previously had been normal. Treatment with thyroid extract was prescribed and continued for a few weeks without improvement, and, in fact, the patient became stouter and stouter and more and more drowsy and apathetic. On again reviewing her history in detail it was discovered that a few weeks before the patient first missed a period she had fallen on the back of her head. Next day her sight was affected and vision was almost lost, but had almost completely returned. Dr. Hendry then thought of a possible lesion of the pituitary gland and administered, orally, tablets of pituitary (whole) gland without any success. By June, 1920, Fröhlich's syndrome had developed — dystrophia adiposo-genitalis, with lethargy and somnolence, and menstruation had returned in a scanty form, lasting one day. A skiagram of the skull to show the sella turcica was obtained and signs of a fracture were seen. The patient could inject 300 g. of glucose without glycosuria. The oral administration of extract of pituitary gland having proved unsuccessful pituitrin administered hypodermically was tried with no success. Five months ago hypodermic injections of antuitrin (Parke, Davis and Co.'s extract of anterior lobe) were commenced and weight is steadily diminishing, although food intake is normal. Regarding sugar tolerance, 120 g. of glucose now produces glycosuria. The special interest in this case is the association of amenorrhœa with hypopituitary function.

Reviews and Notices of Books.

RONTGEN DIAGNOSIS OF DISEASES OF THE ALIMENTARY CANAL.

Second edition. By RUSSELL D. CARMAN, M.D., Rontgenologist, Mayo Clinic; Professor of Rontgenology, University of Minnesota. London and Philadelphia: W. B. Saunders Company. 1920. Pp. 676. 42*s*.

THE first edition of this book appeared in 1917 and was accorded the favourable reception it well deserved, for the work is characterised by a thoroughness and accuracy well up to the high standard of the famous clinic with which Dr. Carman is associated. It has been thoroughly revised in the light of recently acquired knowledge, and new chapters have been added on the hour-glass stomach and the pneumoperitoneal method of examination of abdominal lesions. A valuable feature is the description of those small details of manipulation of the patient during the examination which will best bring out the points most useful in diagnosis. This specially applies to investigations of the stomach and duodenum. The chapter on the X ray diagnosis of gall-stones shows a considerable advance since the publication of the first edition. Throughout the work many new cases are illustrated and described in detail, and the volume is one that cannot fail to be interesting and instructive to medical men who are actively working in abdominal disease from whatever point of view.

A brief passage in the chapter on Interpretation is worth quoting: "The veteran rontgenologist, as well as the novice, is tempted to see too much rather than too little. Once the observer has acquired some familiarity with his work he will find that direct signs of lesions will be manifest quickly or not at all." This comment seems to us significant and well worth remembering.

RADIOLOGIE ET RADIUMTHERAPIE.

By BÉCLÈRE, COTTENOT, and Mme. LABORDE. Paris: A. Maloine et Fils. 1921. Pp. 520. Fr.30.

THIS is the thirty-second volume of a series being published in Paris under the direction of Drs. Sergent, Ribadeau-Dumas, and Babonneix, with the general title, "Traité de Pathologie Médicale et de Thérapeutique Appliquée." An introduction is contributed by Dr. M. Béclère, in which the history and present position of the use of the X rays and radium in medicine is reviewed. X ray diagnosis and X ray treatment are dealt with by Dr. Paul Cottenot, ancien interne des Hôpitaux de Paris, and forms a very complete yet concise treatise on the whole subject. His style is clear and his methods are practical. A number of the radiographs have suffered in reproduction, but this is compensated for by the free use of numerous diagrams, which frequently are more useful for teaching purposes. The section on X ray therapeutics is very complete, forming a sound treatise on a difficult subject, and one that will be of great value to students.

For the final section on radiumtherapie, by Mme. Laborde, we have nothing but praise. The subject is handled with scientific knowledge and thoroughness, and with a clarity that excites our admiration. The volume will be of great interest to those radiologists who like to keep in touch with the work of their French colleagues.

INFANT EDUCATION.

Second edition. By ERIC PRITCHARD, M.A., M.D.Oxon., M.R.C.P. London: Henry Kimpton. 1920. Pp. 226. 6s.

THIS little book originally consisted of lectures which were given to the health visitors of the St. Marylebone Health Society in its earlier days. Since its first edition in 1906, 15 years have elapsed, and during this period its author has seen the wide dissemination of many of the principles therein enunciated and the development of a large school by which they are accepted. Moreover, the rapid and great strides of the infant welfare movement, in which the author has played a prominent part, and the formation of numerous infant welfare centres, have augmented the value of a book which sets out to instruct the lay worker in the elements of infant education based upon considerations of physiology.

From their very nature these lectures of necessity contain a vein of dogmatism. Again, it would be idle to expect that in such a subject the author would be able to steer clear of contentious matter. There emerges, therefore, a book in which there are many statements, clear and definite enough, and admirably expressed, but for which it would be difficult to provide proof and about which there are opinions more conflicting than a perusal would lead the lay reader to suspect.

In the present edition four new chapters have been added, one on the care of the new-born infant, one on the feeding of children at and after weaning, one on the practical details of infant feeding, and one on rickets. The author is an exponent of the caloric method of infant feeding, basing his recommendations as to the total quantities of food to be given at the various months on the supposed caloric requirements of the infant.

There are many who would join issue with regard to this advice. It might reasonably be asked whether we have sufficient knowledge to decide upon the average number of calories required by an infant of a particular age; whether the physiological variations are not too great for the reasoned application of a method so precise in its nature; and whether cow's milk is a food of standard caloric value. "If we wish," writes Dr. Pritchard, "to know, for instance, how much of any particular food should be given to a baby four months old, the calculation can be made in the following manner: On reference to Table. p. 100, we see that the caloric requirements of a child of this age are 612 calories for the 24 hours; from this it is again easy to estimate how much condensed milk, dried milk, or other substitute food must be given in order to supply the required number of calories." Even the adherents of the system, we think, would qualify this statement, for the question of the weight of the baby is omitted and apparently plays no part in the calculation.

Other dicta which we think would provoke criticism from a medical audience is that the food of infants should adhere to the standard of breast milk throughout the first year of life, and that the weaned child requires rather less protein than before weaning. Also that an excessive nitrogenous diet as judged by this standard always leads to pathological results of which "intestinal toxæmia, liver attacks, migraine, neurotic conditions, sleeplessness, offensive breath, muddy complexion, eczema, and a thousand and one ailments commonly regarded as 'gouty'" are cited as typical.

The chapter on rickets includes an exposition of Dr. Pritchard's views on this disorder, long held by him but still awaiting general acceptance. It is an author's privilege to expound his own views in as decisive a manner as he desires, but these few illustrations of the more contentious statements in the lectures—and there are many more of the same category—will serve to show that the lay reader will have no little difficulty in distinguishing how much is accepted as truth and how much is hypothetical.

We hasten to say that the book serves a very useful purpose in stating in simple language and lucid style the principles which underlie infant training, hygiene, and dieting and that any reader who imbibes these principles, even to the written details of their application, will have an eminently safe outlook on the management of healthy infants.

THE GREAT RIDDLE.

The Action and Effects of Natural Forces and Conditions in The Creation. By FRANK HORRIDGE. London: Kegan Paul, Trench, Trübner and Co. 1921. Pp. 98. 3*s*. 6*d*.

WE gather from some reviews and a ballad which are quoted (as an advertisement) in this book that Mr. Horridge is favourably known as a writer of ballads, and the particular one quoted is certainly good. In the volume now before us he has made a new departure and has set about finding a solution to the origin of life, which apparently he considers as "all that we understand under the term creation." His theory is simple enough, but it does not explain the mystery. "We have only to conceive a certain mixture of the elements as having taken place and carbon derived from carbonic acid acting so to speak as the keystone of the physiological arch which constitutes the nucleus and over which the superstructure of organic life in all its various forms is raised and the problem in its initial stage is solved" (p. 25). Mr. Horridge's other thesis is that "every part and organ of the human body or that of any living creature depends for its position, its form, its function and very existence on that which one may term its dynamic environment." Mr. Horridge attributes the transparency of the stratified epithelium of the cornea to the vibratory effects of the rays of light (p. 55), but he does not explain why rays of light beating on other parts of the body do not produce transparency there. On p. 11 he seems to us to use the words "mobile" and "mobility" in the two senses of "easily moved" and, "capable of independent movement." Thus he says "Protoplasm though like air and water in being mobile differs from both in being more complicated," and his conception of the ether seems to us to be extremely hazy. The book is interesting, but we cannot think it of any value as a contribution to knowledge.

DE L'ANAPHYLAXIE À L'IMMUNITÉ.

By M. ARTHUS. Paris: Masson et Cie. 1921. Pp. 361. Fr.20.

IN 1903 Arthus announced that horse serum, harmless to a normal rabbit, causes in a rabbit previously treated with injections of the serum a series of local, general, immediate and remote ill-effects. This fundamental discovery, known since as Arthus's phenomenon, is one of the stones on which the immense superstructure of anaphylaxis has since been reared. The present volume is in no sense an attempt to survey the whole subject with its related topics of protein poisons in general and resistance; it is a synthetic account of the experiments which the author has made himself, most of which have been already described in various periodical publications. The narrative is detailed and the result is more suitable for the technical expert than for the general reader. There are no guinea-pigs with their dramatic deaths from bronchial spasm, but there is an immense amount of information about the effects of different proteins on the blood pressure and respiration of rabbits, data which do not perhaps generally receive the attention they deserve. In an interesting preface the author gives some account of his views on the methods of scientific investigation; he classes theorisers with politicians, though the rest of the book is not nearly as dull as this would lead one to expect. Noteworthy, too, is his belief in the supreme value of solitary meditation—testimony from an old and experienced worker which is of value in these days of ceaseless and restless experimentation.

VETERINARY HYGIENE.

By R. G. LINTON, M.R.C.V.S., Professor of Hygiene, Royal (Dick) Veterinary College, Edinburgh. Edinburgh: W. Green and Son, Ltd. Pp. 429. 26*s*.

HITHERTO veterinary literature has been more concerned with the cure and treatment of disease than its repression and prevention. But there has always been room and need for stressing the lessons of hygiene and for their presentation in comprehensive form. The work under consideration has been written for veterinary practitioners and students and others concerned with the well-being of animals, whilst the requirements of those studying for the Diploma of Veterinary State Medicine have not been forgotten. It may be said at once that Prof. Linton has done his work well, and has, moreover, had the assistance of collaborators who are all experts in their professions.

The book is divided into seven sections, dealing respectively with Water, Meteorology, Sanitation, Air and Ventilation, Building Construction, Preventive Medicine, and Sanitary Law.

The chapter on sanitary law will be of high practical use to the veterinary inspector, as it deals quite comprehensively with all the various Acts and Orders with which he ought to be familiar. The general practitioner will be chiefly fascinated with the chapters on building construction and preventive medicine. Too many men with very imperfect knowledge as to the hygienic requirements of horses, cows, and pigs still have the prime voice in the construction or improvement of their housing. The construction of cowsheds is well discussed in this volume. The reasons given for the adoption of a wide milking passage may be supplemented by the fact that if there is plenty of room dung is less likely to contaminate the milk pail when the attendant passes up and down behind the cows. We may add that the passage should be 3 or 4 inches below that of the cows' beds, as this enables the milker to get more readily at his cows and, moreover, where there is a shallow side to the gutter, the work of shovelling up the manure is rendered easier. We are glad to note that the author lays stress on the need for cleansing and disinfection of premises in cases of swine fever.

Professor Linton shows his knowledge of the conditions met with in practice by the sage remark that "an outbreak of disease is often the only opportunity there is to get a place clean; it is well then to make the most of it." We have not much faith in insect powders either for the prevention or eradication of fleas in dogs or cats, and there are far simpler remedies for lice in horses and cattle than those mentioned by the author, and they are quite as effective.

Professor Linton's book will convince the reader of the importance of adequate representation of veterinary surgeons at the counsels of the Ministry of Health.

HANDBOOK OF OPERATIVE SURGERY.

Second edition, revised and enlarged. By K. K. CHATTERJI, F.R.C.S.I. London: W. Thacker and Co.; Calcutta and Simla: Thacker, Spink and Co. 1921. Pp. 311. Rs.10.

THE author of this handbook does not claim more for it than its title implies. It is necessarily restricted in extent, and many of the operations are described in few words. It is, in fact, rather a summary of operative surgery for the student than a text-book for the practitioner, but to the former it should prove extremely useful. The surgical anatomy of the parts and the indications for operation are clearly and concisely given. The diagrams are good as far as they go. The operations described embody several "author's modifications," but it may be doubted whether these are all original: the methods conform on the whole to the older orthodoxy, and a number of recent modifications of operations other than the author's might have been introduced with advantage. An unusual feature, which should be particularly useful to those for whom the book is primarily intended, is a description of the operations for elephantiasis and tropical liver abscess.

MANUFACTURE OF SUGAR FROM THE CANE AND BEET.

Monographs of Industrial Chemistry. By J. H. P. HERIOT. London: Longmans, Green and Co. 1920. Pp. 426. 24*s*.

IN this interesting and readable volume Mr. Heriot has endeavoured to show that successful practice in the manufacture of sugar is now more than ever dependent on scientific principles, and that these can be studied more effectively outside than inside the factory. Attention is directed to the rather narrow outlook of the British Cane Sugar producer, and it is urged that the student of sugar technology should keep in touch with all branches of sugar production even though he may only specialise in one. This volume will enable him to study the cane and beet sugar industries side by side and to note the progress made in each.

The subject-matter is treated generally and concisely under the following heads. The extraction, composition, and treatment of juice from the cane and beet; the evaporation of water from the juice; crystallisation; extraction of sugar from molasses; by-products; and the refining of cane and beet sugars. A number of good illustrations will be found of material assistance to the reader.

Mr. Heriot has produced a useful volume and it should help in the propaganda which, it is hoped, will result in the development of a beet-sugar industry in this country.

MILK TESTING.

By C. W. WALKER-TISDALE. London: J. North. 1920. Pp. 90. 3*s*. 6*d*.

ALTHOUGH a considerable amount of data have been collected by officers of county councils and other officials bearing on the quality and quantity of milk yielded by cows in herds, it is obviously more satisfactory if the farmer can carry out systematic tests for himself. It is for those connected with the dairy industry who would not describe themselves as analysts, but to whom accurate tests are nevertheless of great importance, that this little volume is intended. The author gives a clear and concise account of the methods usually employed in the analysis of milk. A number of well-selected illustrations will doubtless be an aid to the comprehension of the working details by the non-expert. We think, however, that whilst it is quite possible for the farmer or buyer to learn or to be shown how to work mechanical processes such as the "Gerber" test, he would be wise to leave the chemical technique involved in the examination for preservatives, and in the catalase and reductase tests, to those who are experienced in such matters.

THE ART OF ATTAINING HIGH HEALTH.

Together with Aristology or The Art of Dining. By THOMAS WALKER. Also A Sure Method of Attaining a Long Life. By LEWIS CORNARO. The Pilgrim's Books, No. 5. London: Philip Allan and Co. 1921. Pp. 271. 5*s*.

THESE three essays are rightly included in a series for pilgrims. They set forth ways and means for making the best of our earthly pilgrimage through temperance and the reasoned enjoyments of the pleasures of the table. Health both of body and mind, which connotes a well-spent life and the performance of our duties both to ourselves and to our neighbour, is thus to be attained. The Walker of the nineteenth century and the Cornaro of the sixteenth had both assimilated the old Greek adage of "Nothing too much," and both brought upon themselves the ridicule of acquaintances, but they persevered, and like Bunyan's pilgrim found themselves able to say—

> "Who so beset him round
> With dismal stories
> Do but themselves confound,
>   His strength the more is;
> No foes shall stay his might,
> Though he with giants fight
> He will make good his right
>   To be a pilgrim."

Mr. Walker tells us that during childhood and adolescence, he was scarcely ever free from illness, but one day while reading Cicero's De Oratore some passage suggested to him the expediency of making a study of the improvement of his health. "I rose from my book, stood bolt upright, and determined to be well." And he succeeded to a remarkable degree. He dieted himself and made a practice of taking the air before eating anything—i.e., of going out before breakfast, although he does not seem to have adopted the simple plan of sleeping with his window open. But he attained to such a condition that even when he walked on a dusty road no dust adhered to his feet or shoes or stockings. "By way of experiment I did not wash my face for a week, nor did anyone see, nor I feel any difference. One day I took hold of the branch of a tree to raise my self from the ground, when I was astonished to feel such a buoyancy as to have scarcely any sense of weight." The famous Lord Herbert of Cherbury also attained to a purity of body such that, as he tells us in his autobiography, "the shirts, waistcoats, and other garments I wear next my body, are sweet beyond what either easily can be believed or hath been observed in any one else." Moreover, "I have weighed myself in balances often with men lower than myself by the head, and in their bodies slenderer and yet was found lighter than they." It is but a step from the stage attained by Lord Herbert and Walker to the powers of levitation enjoyed by many holy men both of the West and the East, powers which they could impart to inanimate objects, e.g., in the case of St. Piran, who sailed from Ireland to Cornwall on a millstone.

Mr. Walker having attained high health proceeded to enjoy it with the restraint which is fitting, and hence the discourse upon Dining, which is full of sound sense, although here and there we disagree with him—for instance, where he says that "port-only taken with or without a little water at dinner is excellent." But his remarks upon claret and champagne, together with his insistence on simplicity in everything at table, whether linen, plate, china, glass, or food, with the proviso that everything should be the best of its kind, are outside criticism. One of the good points which he makes is that the fire should be "one of the party," by which he means that no one should have to sit with his back to the fire and the fire screened off, but that the place opposite the fire should be left vacant. Altogether Mr. Walker's papers are well worth reading and remembering, even if the reader may sigh for the days when, in speaking of claret at a famous club, he says, "I would not wish better than that given at the —— at three and sixpence a bottle."

Cornaro's paper has been a classic for centuries, and most of the books upon diet and long life are founded thereon, but we are grateful for a handy reprint.

A Handbook for Nurses.

Sixth edition. By J. K. Watson, M.D. London: The Scientific Press, Ltd. 1921. Pp. 770. 10*s*. 6*d*.

Dr. Watson's Handbook for Nurses is well known to the nursing profession, and the revised edition will be welcomed by probationers and qualified nurses alike. It includes valuable chapters on the Symptoms of Disease, Electricity and Massage, Ear, Nose, and Throat Affections, Skin and Venereal Diseases, whilst every chapter of the former edition has been carefully revised and brought up to date. The number of illustrations has been considerably increased, and an appendix of questions based on the contents of each chapter should prove useful to student nurses.

If the worth of a general text-book may be assessed by its popularity, this book is a valuable contribution to the education of nurses.

Nursing in Eye, Ear, Nose and Throat Diseases.

By A. Edward Davis, A.M., M.D., and Beaman Douglass, M.D. Philadelphia: F. A. Davis Co. 1921. Pp. 346. $2.50.

As a guide, for nurses and students, in the care of the diseases of the eye, ear, nose, and throat, this book is a valuable supplement to a general nursing text-book, and the instruction should be of great help to many who have failed to obtain practical experience in these special branches during their general training. A brief outline of the anatomy and physiology of the special organs treated and a sound chapter on Drugs and Prescribed Treatment should increase the professional interest of the nurse in her duties.

Dr. Davis strongly advocates a general training for all nurses who intend to specialise in ophthalmic nursing.

"Wade In Sanitary."

The Story of a Division Surgeon in France. By Lieut.-Colonel Richard Derby, M.C., U.S.A. London and New York: G. P. Putnam's Sons. Pp. 260. 12*s*.

This is an interesting book, but one which has two great blemishes. First, there is no index, and secondly there is no map, and as the incidents in the book occur in a great variety of places the want of a map is much felt. However, Colonel Derby gives a most graphic account of the work of the American Medical Department, and very good work it seems to have been, especially that for which he was responsible, concerning which he is most modest. It was due to him that the plan was adopted of having a hospital as close up to the firing line as possible. This made it possible for the wounded to be dressed and cared for within some twelve hours or less of the reception of the wound, a practice which resulted in a great saving not only of suffering, but of life. The victims of mustard gas were especially benefited by rapid treatment, and the nearness of the hospital made the surgical practice of complete excision of the wound tract as a preventive of infection practicable, with the result of an enormous diminution in mortality. This plan naturally entailed very rapid evacuation of the wounded and a consequent responsibility upon stretcher-bearers and ambulance drivers, to whom Colonel Derby awards unstinted praise.

Apart from the purely medical and military details in the book, there are a number of remarks upon the social and political aspects of the war and post-war period which are well worth reading, especially in the chapter entitled "Wise in Time," taken from Roosevelt's pregnant motto, "Nine tenths of wisdom consists in being wise in time."

JOURNALS.

Journal of the Royal Naval Medical Service.—From the April issue we learn how important to the fighting service are men with normal binocular vision and binaural hearing. Surgeon Commander W. K. D. Breton tells of the ingenious machine there has been made for him in H.M.S. *Excellent* to measure the degree of stereoscopic vision possessed by men who are to be trained as stereoscopic range-takers. Three needles are arranged in a plane, six metres from the observer and at right angles to the line of sight. The central needle only moves forward or backward, and the small distances through which it can be moved without appearing to the observer to be out of that plane are measured. This may easily be 8 cm. (1·3 per cent.) either way. The smallest error noted in the paper was 5 mm., less than 1 per 1000 of the range, and this range-taker, luckily, also made the most consistent observations. Commander Breton also gives a very clear account of the evolution of stereoscopic vision in animals and in man.—Surgeon Commander E. D. Rutherford tells of the tests that were required in the selection of men to be trained as anti-submarine detectors. They were preferred of ages 18 to 25 (as they trained more quickly), and should have rapid judgment, good hearing, and capacity for localising the direction of sounds and discriminating their intensities. He mentions that of men with enlarged tonsils 90 per cent. failed to reach the required standard of hearing, but only 75 per cent. failed of those who had had their tonsils removed. This paper should be read by all who desire to realise how many and novel were the problems that pressed for immediate solution during the war.—Surgeon Commander A. R. Fisher has a paper on otitis media as it occurred among the cadets at Osborne in the ten years 1910–19. He thinks it a sequela of a "common cold," and to be avoided by the Hancock nose drill. The fauces of the patient are cleaned by a saline douche (glucose, borax, and bicarbonate of soda) at 100° F., from a Higginson's syringe. Such a faucial douche is far more effective than gargles or sprays. In the 10 years quoted there were 303 such cases, and 41 additional in which it was only a complication.—Surgeon-Lieutenant Commander H. E. R. Stephens contributes to the "Naval Medical History of the War" a paper on Immediate Surgery in Fighting Ships. There are no bullet wounds, but the casualties are often large concussions due to the men being hurled by explosions against the sides of the ships. Then there are large ragged contusions by fragments of shell, but these fragments are so often raised to a high temperature in their passing through the sides of the ship that they sear the tissues like a cautery and diminish hæmorrhage. In a pause of the action the wounded can be collected. Then the skin about the wounds can be washed with ether soap, and torn muscle handled, but very gently for fear of the secondary wound shock; this last is best relieved by Bayliss's gum acacia solution. Large vessels must be tied or Cheatle's metal tourniquet applied to the main artery. After checking hæmorrhage, it is best to put a drainage-tube to the bottom of the ragged wound, pack sterile gauze around it, and syringe in eusol every two hours. All burns require to be cleaned up thoroughly under a general anæsthetic; on the completeness of the initial cleansing depends the outcome of the case. Oily applications retard cleaning, and are not recommended for first-aid dressings. But when the burn has been cleaned the best application is carron oil, ℥i., with menthol, gr. 3, and eucalyptus oil, ♏3. Chloroform is the best anæsthetic; for one thing ether is inflammable. This article deals only with immediate surgery; the wounded should then pass to a hospital ship, whose share of the work the next article will consider.

THE LANCET.

LONDON: SATURDAY, MAY 28, 1921.

General Medical Council: The President's Address.

THE summer session of the General Medical Council was opened on Tuesday last, when the President, Sir DONALD MACALISTER, in a short address, reviewed the present position of medical affairs in relation to the special functions and activities of the Council. His address, which will be found in another column, points to the session being both short and business-like, and it is especially good hearing that the disciplinary cases to be inquired into are few and simple. Nothing incites more distrust of the medical profession as a whole, or more ill-informed criticism of the work of the Council, than the consideration of difficult and painful disciplinary cases. And when they are difficult, there must be no thought of economy of time in the desire to elicit the truth, for the marring of a whole professional life may depend on the issue. The debates in such cases produce the wrong impressions. Medical men forget that the disciplinary functions of the Council have been designed to protect the public, and are apt to feel that some of their colleagues are being punished out of all proportion to their offences; the public, assuming the general from the particular, form an unfairly low opinion of professional standards. Therefore it is always good to know that there are few penal cases to be considered by the Council.

The most important part of the President's address deals with medical reciprocity between this country, certain of our own dominions, and certain foreign countries. It is clear that much difficulty attends all laudable efforts towards free trade in medicine throughout the world. During the war this country granted to Belgian practitioners the privilege of practising within British territories, and Belgian medical graduates were made registrable in our British Foreign list. But the Belgian Government having now decided to require British practitioners to obtain a Belgian qualification as a condition of practice in Belgium, that piece of medical reciprocity has come to an end. In actual numbers of practitioners the *rapprochement* was not strong: but it was real, and we can only regret its quick cessation. On the other hand, there seems to be an opening for a professional understanding with Spain, a country which the course of modern history has probably been benefiting. The Executive Committee of the Council is making inquiries as to the position which practitioners, who are registered in the United Kingdom, would enjoy in Spain, and it will be interesting to learn what course of study or what examinations are likely to be required by the Spanish Government from our qualified medical men. Among our own dominions the question of reciprocity is to the fore in India and in South Africa, and, as on the continent, the position is alternately good and bad. For many years the diplomas of certain Indian universities have been recognised by the General Medical Council as affording registrable qualifications in this country, but it has been brought lately to the notice of the Council that at some of these universities the standards both of training and of examination in regard to midwifery have fallen below those which it is necessary to demand for registration. The Council has notified the universities that unless their curriculum in connexion with midwifery is raised to a satisfactory level, recognition in this country will be discontinued. With regard to the Union of South Africa, the story is exactly the reverse. The Union admits to its register medical practitioners who are registered in the United Kingdom, and is desirous that the degrees of its own universities should be accepted as registrable qualifications at home. Owing to the development of medical education in the Union, the Executive Committee of the Council has advised that Part 2 of the Medical Act can now properly be applied to South Africa, when the Council will be free to recognise such South African medical degrees as fulfil the prescribed conditions. The chance of real and widespread medical reciprocity between all civilised nations is as a whole growing stronger, because of the many directions where its institution is now ardently desired. The leaders of medicine will keep their eye on universal reciprocity as an ideal for the future, and we trust the practical sense of doctors to be ranged against any attempt to bolster up inadequate training, so as to secure a too previous entrance into national comity.

The third point to which we would draw attention in Sir DONALD MACALISTER's address is the prominence which he gives, and gives rightly, to dental affairs. The dental profession, though increasing in popularity with students, is still undermanned, and this fact forms one of the great arguments in the public eye why the Dentists Bill, introduced three weeks ago, should promptly become law. The Dental Committee of the Council has had under its consideration all the drafts of that Bill during its preparation in the Ministry of Health, and as a result Sir DONALD MACALISTER considers the projected legislation to constitute a great step towards the removal of dangerous abuses. The abuses are those which have attended the practice of charlatans who have filled the gaps left by the paucity of trained men. The view is one that we have taken in our columns, but the inclusion of a number of additional dentists in a professional roll will not meet the situation in a satisfactory way unless the names of those added are subjected to rigid scrutiny.

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Irradiation and Safety.

LIFE cannot be made safe, even for heroes. Youth is too adventurous and, by the time prudence has set in, the seeds of disease have often been sown or habits of body acquired which sooner or later impair health. It is an interesting speculation whether life can ever become safe, for with each new phase of culture fresh risks arise and the means devised for their avoidance, however prompt and ingenious, are necessarily a little behind the risks and never quite catch them up. So it has been with the application of X rays and other rays of short wave-length in medicine and industry. Like any other powerful therapeutic agent, irradiation may damage the healthy cells of the body while directed at diseased cells or parasitic invaders. It is for us to increase the working margin between toxic and therapeutic dose, to ensure the beneficent curative effect and eliminate the harmful by-effects. Much has already been done, and it is a mercy that the searchlight of popular interest has only been turned on the scene in the third or fourth act. The first act of unprotected X ray exposure was on a small scale something very like tragedy. Dr. IRONSIDE BRUCE's lamented death two months ago awoke such startled interest just because in the meantime the use of irradiation had become a commonplace and scores of workers in many lands were using it unscathed on thousands of patients. The public in any case has little to fear since the risk is manifold for the operator.

The time has now come for the standardisation of protective measures and their enforcement wherever X rays and radium are employed, whether in the arts or in medicine. An important committee has been formed composed of radiologists, physicists, pathologists, and others, nominated by the Electro-therapeutic Section of the Royal Society of Medicine, the British Association for the Advancement of Radiology and Physiotherapy, the Rontgen Society, the National Physical Laboratory, and the Institute of Physics, which has come into existence just in time to take its share in a field of work peculiarly its own. The membership of the Committee is as follows:—

Sir Archibald Reid, radiologist to St Thomas's Hospital, and Dr. Robert Knox, radiologist to King's College Hospital, representing the British Association for the Advancement of Radiology and Physiotherapy; Dr. S. Gilbert Scott, radiologist to the London Hospital, and Dr. Stanley Melville (hon. sec.), radiologist to St George's Hospital, representing the Electro-therapeutic Section of the Royal Society of Medicine; Dr. Harrison-Orton, radiologist to St. Mary's Hospital, and Mr. Cuthbert Andrewes, representing the Rontgen Society; Prof. S. Russ, physicist to the Middlesex Hospital, representing the Institute of Physics; Dr. G. W. C. Kaye, representing the National Physical Laboratory; and Dr. J. C. Mottram, pathologist to the Radium Institute.

A preliminary meeting of this X Ray and Radium Protection Committee was held last week at the Royal Society of Medicine, under the chairmanship of Sir HUMPHRY ROLLESTON, when it was decided to issue as soon as practicable a considered statement as to the urgency of affording adequate protection to the worker, indicating the best means whereby this may be carried out. A subcommittee has been set apart for this purpose. The Committee itself proposes the much larger task of collecting data bearing on the effect of irradiation, with particular reference to protection, of carrying out any necessary research, and of acting in a consultative capacity, issuing reports at any useful stage of its investigations.

The Committee is more particularly interested in the question of irradiation as it affects the worker, the patient not being exposed to anything approaching the same risk. It realises that there must always be individual cases in which idiosyncrasy is a danger, and occasional failure of the personal element is hardly to be avoided in a workaday world. The first instalment of information may be expected to bear on such matters as the position of X ray rooms, their cubic content and standard of ventilation, the condition of the blood of workers, and the need for regularisation of work and ample supply of fresh air. In the meantime, any institute which feels anxious as regards the standard of its own protective equipment should apply for guidance to the hon. secretary of the Committee at 9, Chandos-street, London, W.1.

Anaphylaxis and Immunity.

IT was a happy coincidence in the series of independent post-graduate lectures being held at the Institute of Pathology and Research, St. Mary's Hospital, London, that a discourse emphasising the peculiar value of the study of symptoms[1] should be followed by one illustrating the confusion to which consideration of symptoms alone may give rise. If the same protein is introduced respectively into a guinea-pig, a rabbit, and a dog, all having been sensitised by a previous injection, the actual symptoms produced are in each case severe, but differ so widely for each species that, were they not known to have been provoked experimentally by the same agent, no one would suspect their common origin. The guinea-pig dies of asphyxia—traceable to constriction of the bronchioles—after a series of deep gasps for life, which leave the lung permanently distended with air. The rabbit dies of right-heart failure, due apparently to the contraction of the muscular coat of the pulmonary arteries; while in the dog the blood pressure falls to 30 mm., the liver is greatly engorged, and the animal presents a typical picture of intense circulatory shock. Nor are these phenomena even peculiar to anaphylaxis; other substances, various cleavage-products of proteins, and even a simple base, histamine, produce similar symptom-complexes—differing in each species but constant for the same species. Dr. DALE showed that these superficially different complexes could be connected as dependent on the contraction of plain muscle fibre and the poisoning of capillary endothelium, the incidence of these effects being differently localised in the different species. He proceeded to discuss the present position of the theories of the cause and significance of anaphylaxis as derived from experimental research. While the injection of certain toxic substances gives rise to similar symptoms, the characteristic feature of anaphylaxis is its occurrence in connexion with substances not normally poisonous. Dr. DALE gave a succinct and lucid account of the theories of the production of an anaphylatoxin and of the experimental evidence for and against Friedberger's hypothesis of its production as the result of the formation of an antigen-antibody complex in the body fluids, and then explained in rather more detail his reasons for believing that the reaction between antibody and antigen takes place within the body cells in anaphylaxis, and that this location of the reaction is the cause of the symptoms.

The technique which he had devised for studying this reaction consisted in the use of isolated uterine muscle, perfused free from blood, as an indicator. Plain muscle from an anaphylactic animal gives in vitro as specific and delicate a reaction as the animal itself. If to such a preparation suspended in Ringer's solution there is added the antigen to which the animal has been sensitised, the plain muscle contracts promptly and maximally; no other antigen has this effect, nor does the addition of antigen to the muscle derived from a non-sensitised animal give rise to any contraction. The specificity of the phenomenon is thus reproduced in vitro, whereas its delicacy can be estimated by the fact that a solution of 1 in 500,000,000 gives a recognisable reaction. Dr. DALE, after describing the experiments which convinced him that the phenomenon of anaphylaxis was due to a reaction of the precipitin type produced in the living cell itself, whereas excess of the antibody in the blood and body fluids, so that the reaction occurs outside the cells, protects the sensitive structures, showed that this conception elucidates the whole subject of anaphylaxis. Far from being the opposite of immunity, anaphylaxis should be regarded as a protective phenomenon. Anaphylaxis should be regarded as a stage of immunity in which the resisting mechanism is located in the cells. When invasion of the tissues by a foreign protein takes place by natural means, as by an infecting organism penetrating the skin or mucous membrane, the local reaction to cell-injury produces protection against further invasion. When, by the artificial method of the injection needle, the antigen is brought rapidly into contact with all the cells of the body the anaphylactic reaction is the result. Anaphylaxis is thus not only compatible with but may even be a factor in resistance to infection. Dr. DALE pointed out that the only important chemical difference between species lies in the composition of their proteins. Organisms resent the artificial introduction of a protein of molecular pattern alien to their own; this is fundamental, because incorporation of an alien protein cannot be conceived without vitiation of type. To resist this vitiation the cell will die for the individual, or, if all the cells are affected simultaneously, the individual itself has to die in order that the purity of the species may be maintained.

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[1] THE LANCET, May 21st, p. 1090.

MEDICAL INSURANCE AGENCY.

AT a meeting of the Committee of Management, held at 429, Strand, on May 12th, the chairman, Dr. G. E. Haslip, presented a report on the working of the Medical Insurance Agency for the year 1920. Substantial progress had, he said, been made in all classes of insurances. A gratifying feature was the large increase in life business. The special booklet prepared last May and circulated to non-members of the British Medical Association had brought in good business, many life, motor-car, and other policies being negotiated, on which the commissions earned by the Agency from this source alone amounted to over £250, practically the whole of the cost of printing and circulating the booklet being borne by the companies. The scope of the Agency is being extended and policies have been negotiated for medical men resident in British Guiana, India, and Mesopotamia. During the year 107 policies in all were taken out, the sums assured under them representing £99,138. A total of £1453 was returned to those insured through the Agency by way of rebates, or £493 more than in 1919. After allowing for rebates and agency expenses the surplus carried to the Medical Benevolent Account amounted to £1959. On this favourable financial situation the committee resolved to make grants of £315 each to the Royal Medical Benevolent Fund, the Royal Medical Benevolent Fund Guild, and the Epsom College Benevolent Fund. Mr. W. E. Warne, the retiring agent and secretary of the Agency, was thanked for his services, and Mr. P. N. Adamthwaite was appointed in his stead.

ROYAL NATIONAL HOSPITAL FOR CONSUMPTION, VENTNOR.—The report of this institution for the year ending December, 1920, was presented to the annual meeting of governors on March 17th, and has just been printed. The number of patients under treatment during the year was 700, as compared with 879 in the previous year, and the medical statement shows that 84 per cent. of the cases treated gained an average of 7 lb. in weight. The number of cases improved averaged from 80 to 90 per cent. according to the severity of the disease, and of 301 cases selected for treatment by graduated labour 231 were discharged fit for work. Subscriptions to the institution amounted to £1118 17s. 6d., or £375 in excess of any sum received in previous years. The annual expenditure per occupied bed was £177 12s. 3d., as compared with £147 2s. 8d. in 1919.

Annotations.

"Ne quid nimis."

TWO DEVELOPMENTAL ANOMALIES.

AMONG the interesting exhibits at a recent meeting of the Anatomical Society, held at St. Thomas's Hospital, were two which, while their embryological interest was probably unique, may be considered also to possess some import from clinical and pathological standpoints.

A Remarkable Vitelline Duct.—The first was a specimen of persistent vitelline duct continuous with the side of the appendix. It was removed by operation by Dr. P. T. Crymble, of Belfast, from an otherwise seemingly normal and healthy child. The vitello-intestinal duct has been seen and recorded as attached to various abnormal sites, but we believe this to be the first time it has been reported found arising in this way from the appendix. The duct normally loses its connexion with the gut about the fourth to fifth week of embryonic life and quickly disappears, but cases of Meckel's diverticulum, representing its persisting proximal end, are not of very rare occurrence. The cæcum and appendix are developed in the extra-abdominal loop of gut behind the site of attachment of the duct, so that the condition in the case under consideration could not be referred to want of growth of the intervening portion of the loop; it would almost seem as if the first conical cæcal outgrowth had arisen on the proximal side of the duct. There does not appear to be any insuperable reason why the area of continuity between duct and gut should not remain anywhere in that part of the intestine formed outside the abdomen, and in this case the microscopic examination negatived the explanation that the end of a separated duct might have contracted secondary attachments to the appendix lying near it in the umbilical sac. The fact that the conditions in this case, as in many of the other cases of a somewhat similar nature recorded, came under observation because the clinical state called for surgical activities, is an indication that the surgeon has some interest in the embryological conditions which underlie the occurrence of such rare abnormalities.

True Developmental Aphakia.—The other condition exhibited at this meeting was that of aphakia in an embryonic eye, reported by Miss I. C. Mann. Many authorities have doubted the occurrence of true absence of the lens apart from other gross abnormalities, and the very few clinical reports of cases claimed as coming under the definition are mainly unsatisfactory, or worse. There is no doubt, however, about the case we are now considering. The embryo, somewhat shrunk, had been placed developmentally in the "13 mm. stage" by Professor Frazer, to whose collection it belongs. The histological condition is not good, the result apparently of faulty preservation, but no other abnormalities were detected in it. There is total absence of the lens on each side, and nothing to suggest that there ever had been any lens formation. A minute depression of the deep layer of the surface ectoderm represents, possibly, the abortive effort to form a fovea. The eyeball is the same size as that of a normal 13 mm. embryo, but it has a persistent choroidal fissure, not involving the optic stalk; there is thus no indication of microphthalmos, but a possibility of coloboma if maturity had been reached. Normally there is ectodermal thickening at about 4 months, a definite fovea or pit about 5, and a closed vesicle at 7, while at 13 months the elongated cells of the definite lens are well shown, and the whole structure is in the optic cup, separated by a considerable interval from the surface layer. It has been known for several years, on experimental grounds, that the invagination of the optic cup is not due to the formation of the lens, and this case is an interesting demonstration of the fact by Nature herself. Miss Mann's report puts the occurrence of true congenital aphakia, want of development, among the list of undoubted possibilities in ætiological pathology of absence of lens in living patients, for there would seem to have been nothing in the embryo itself to interfere with its survival.

HOOKWORM INFECTION IN BRAZIL.

WE have on former occasions called attention in these columns to the admirable work which has been done, and is still being done, by the International Health Board of the Rockefeller Foundation, more especially in connexion with their world-wide campaign against hookworm disease. In THE LANCET of Jan. 29th of the present year we commented on a report of this International Health Board, which dealt with the prevalence of ankylostomiasis in Egypt, the Malaya Peninsula, and the Dutch East Indies. Another report has now been issued (No. 14 of the series of Monographs of the Rockefeller Institute for Medical Research) giving the results of the investigations of two American experts, Drs. S. T. Darling and W. G. Smillie, sent to inquire into the prevalence of hookworm infection in Brazil. Their work was carried out in 1919 and was primarily directed to ascertaining the degree of infection of the native Brazilians by this helminth, its incidence on various occupations, the influence of race, and the effects of immigration on the introduction from without of fresh infection into Brazil. Efforts were also made to discover a routine method of treatment for hookworms that could be safely applied on a large scale to groups of persons, on plantations, for example, without the necessity of immediate medical supervision. The prevailing kind of hookworm in Brazil is *Necator americanus*, but *Ankylostoma duodenale* was found in every district that was visited by Drs. Darling and Smillie. It is interesting to note that the infection by this latter worm, though slight, is increasing, especially in places which have a changing population and where there is much immigration. The degree of hookworm infection in Brazil varies directly with the proximity of the individual to excrementally polluted soil. It is a disease of the rural districts, and more than 99 per cent. of the rural population of Brazil above the age of 6 years are infected with hookworms. The average number of worms per case in highly-infected districts was 136, though in some instances it was as high as 200 per case. Various remedies were tried with the view of finding a safe method of treatment that could be applied by unskilled subordinate officers on the plantations. The two principal drugs that were tested were beta-naphthol and oil of chenopodium. As a result of experiments the opinion was formed that the standard treatment with 1½ c.cm. of oil of chenopodium, given in two equally divided doses, with an interval between them of two hours, and the repetition of this dosage, after an interval of 10 days, is the best treatment of the disease; it is superior to treatment by 6 grammes of beta-naphthol administered on three successive days, because of greater efficiency in the removal of hookworms and other parasites such as ascaris and of its less toxic effects. The oil of chenopodium is administered in freshly-prepared gelatin capsules; care is necessary in measuring the dose of chenopodium, and this should always be done by means of a pipette and in terms of cubic centimetres. The use of this remedy for children, it is stated, needs careful medical supervision. The following are the details given by Drs. Darling and Smillie of the procedure with the treatment of hookworm patients on plantations in Brazil. The patient receives a light supper but no urge, and on the following morning 1½ c.cm. of oil of enopodium is given, on a fasting stomach, in two ses, with an interval of two hours between them, followed about two hours later by a saline purge of magnesium sulphate in a glassful of water. When the bowels have acted the patient may take his breakfast. As has been said the treatment should be repeated 10 days later. This is generally sufficient to remove the worms; in severe cases, however, a third treatment may be necessary after a further interval, but more than three treatments need never be given. For patients who can be treated in hospital under medical supervision a modification of the above method is used, the patient getting a preliminary purge in the evening and next morning receiving 2 c.cm. of oil of chenopodium, followed by a second purge two hours later. This is reported to be slightly more efficient and gives rise to less discomfort than the first-mentioned method.

THE MECHANICS OF MICTURITION.

THE urinary bladder resembles the heart in being an enlargement of a muscular tube with fluid contents. An interesting comparison of the mechanical functions of the two organs is set forth by O. Schwarz[1] Just as in a cardiogram so in a micturition curve there are three phases: (1) The phase of getting up pressure; (2) the expulsion-time; and (3) the relaxation period. The first phase lasts until the opening of the sphincter, and during this time the bladder executes an isometric contraction. The expulsion-time begins with the opening of the sphincter and ends with its closure, and this phase represents an almost characteristic isotonic contraction. The relaxation period is introduced with the closure of the sphincter, the change of tension taking place under constant volume, the contraction again becomes isometric. In micturition as in systole of the ventricle there is an after-loaded contraction. In the heart the rise of intra-ventricular pressure in the phase of getting up pressure depends on (*a*) the filling of the ventricle (load), (*b*) the muscle tonus, and (*c*) the peripheral resistance (after-load). The same factors obtain in contraction of the bladder. In the bladder the period of getting up pressure depends on the muscle tonus and the fullness (load) of the viscus. The contractile capacity of the bladder can be altered by influencing one or other of the factors—the detrusor urinæ or the fullness of the bladder. The micturition reflex can be favoured by increasing the tonus—e.g., after injection of pilocarpine, or by increased fullness of the bladder. The occurrence of residual urine can, from this point of view, be regarded as a compensatory process; if the fullness of the bladder is greater, the necessary initial tension is more easily arrived at. Besides these analogies there are differences between the heart and the activity of the bladder. The resistance, the after-load, in the case of the heart is represented by the pressure in the circulation; in the bladder, however, by the tonus of the sphincter. The contraction of the heart is first isometric, but after the aortic valves are opened the systole is what is called auxotonic—that is, it contracts against an increasing resistance, as the arterial pressure rises. The intra-ventricular pressure overcomes the peripheral blood resistance purely mechanically, but in the bladder the opening of the sphincter is a reflex phenomenon—a physiological instead of a physical event. The author sets forth his theory of micturition somewhat as follows. The filling of the bladder discharges reflexly a certain detrusor tension. When this tension has reached a certain value, it on its part liberates a higher pre-micturition increase of pressure. The sphincter is opened reflexly (opening pressure), whereby after the beginning of micturition the pressure rises still higher (maximal pressure). These three reflexes associated with the emptying of the bladder have a causal relation one to the other. If all three reflexes act and are unimpeded or not inhibited, then there is automatic micturition.

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[1] Wiener Arch. f. Klin. Med. 1920.

In voluntary emptying of the bladder the course of each one of the reflexes is inhibited by cerebral influences. The most important inhibition results in relaxation of the detrusor. If the stimulus is stronger than the inhibition there results an involuntary micturition and discharge of urine.

THE PHENOLIPOIDS.

IN THE LANCET of March 27th, 1920, we drew attention to these compounds of carbolic acid, which, according to their discoverer, possess both antibacterial and antitoxic properties. Dr. V. C. Piazza, of the University of Palermo,[1] has now made further researches on these bodies and has produced 13 different compounds of phenol with yolk of egg (lecithin) cholesterin cerebral substance and camphor. He has worked out their chemical relations and biological properties when injected into the veins or peritoneal cavity of rabbits. The most suitable of them for medical purposes are Phenolipoids H, J, and N, composed of phenol cholesterin and camphor, phenol and the ether soluble lipoid of egg yolk with camphor, and phenol and alcohol soluble lipoid of egg yolk with camphor, respectively. They present several characteristics in common, being at ordinary temperatures, mostly of semi-fluid consistence and soluble in ethylic ether, benzol, chloroform, xylol, olive and essential oils. Solutions in chloroform give an emerald-green colour reaction with concentrated sulphuric acid, changing to a more or less intense red. They are all stable compounds, and exhibit a parasitotropic action by inhibiting the development of bacteria after a certain period of contact, and an antitoxic action by neutralising typhoid anaphylotoxin and the toxins of tetanus and diphtheria. The clinical application of these compounds has been taken up by Dr. F. Aliquo,[2] who has made experiments on 46 rabbits by producing septicæmia with injections of virulent cultures of *Staphylococcus pyogenes aureus*, and then observing the action of the phenolipoids on the morbid process produced. The phenolipoid was administered subcutaneously and in some cases by intravenous injection either at the height of the infection, or simultaneously with the inoculation of the staphylococcus, or else as a preventive measure. These experiments were rigorously controlled and hæmocultures made from blood were taken direct from the heart; thus 9 of the rabbits were controls, and of the remaining 37 there were 14 deaths and 23 recoveries. From a purely clinical point of view Dr. V. Guercio[3] administered Phenolipoids H and N by subcutaneous or intramuscular injection in many cases of influenza with pulmonary complications, and claims that the results obtained were much superior to those of other methods and in severe and prolonged cases were not only brilliant, but unexpected. It appears to us that these new compounds deserve considerable further investigation, both from an experimental and clinical standpoint; apparently, in this country, they have failed to attract the attention they seem worthy of.

AN EXPERIMENT IN POOLING SURGICAL RECORDS.

IN the last issue of *Acta Chirurgica Scandinavica* (1921, Vol. LIII., Fasc. V.) there is an editorial notice which marks a departure from the familiar paths of medical journalism. The notice begins with reflections on the present state of affairs, which permits of much waste of good material. Valuable observations often fail to get further than the surgeon's note-book or case papers. He may realise that to publish an interesting case it is desirable for him to study the literature of the subject, and for this he may have no time. Or he may defer publication of an interesting case in the hope that a similar case may turn up; this hope may never be realised, and the oblivion to which the first case was temporarily condemned becomes permanent. There are also innumerable isolated observations over which it hardly seems worth while to rush into print, although when grouped with other observations they may be of incalculable importance. With a view to drawing on these hitherto unexplored sources of knowledge the editorial staff of *Acta* proposes to constitute itself as a clearing house for odds and ends of surgical information, and once a year to publish a résumé in which the names, addresses, and nationality of the authors of this information will be given. Their contributions will be sorted out into anatomical or clinical groups, and will be reproduced in extenso or edited so as to fit in with similar observations from other quarters. It is hoped that the result of these labours will be a concise as well as a comprehensive digest, and that authors will gain rather than lose by pooling their knowledge. This yearly digest is to be published in English and will be supervised by Gunnar Nyström, surgeon to the Sabbatsberg Hospital in Stockholm. All three Scandinavian countries, as well as Finland, are represented on the staff of *Acta*, and this notice is addressed to surgeons of all four countries. It will be interesting to follow the evolution of this scheme, which, if successful, will doubtless be copied in other countries. Obviously much depends on the tact and judgment with which this surgical pool is stirred, and the sponsors of the scheme are to be congratulated on securing the services of Dr. Nyström for a very delicate task.

OPERATION FOR STRANGULATED HERNIA IN THE AGED UNDER LOCAL ANÆSTHESIA.

Dr. Martin T. Field[1] has recently made a strong plea for local anæsthesia in operations for strangulated hernia in the aged, as it eliminates many of the dangers incurred under general anæsthesia. Statistics from the larger American hospitals show that the operative mortality incident to acute intestinal obstruction, excluding strangulated hernia, has not been greatly reduced in the last 10 or 15 years, while that of strangulated hernia has. This Dr. Field attributes to earlier diagnosis, less manipulation, and operation under local anæsthesia. The last condition is particularly suitable for local anæsthesia, as, unlike other forms of obstruction, there is no need to search for the point of obstruction and it is readily accessible. In cases of inguinal hernia Dr. Field infiltrates the skin and subcutaneous tissue along the line of incision with 0·5 per cent. of novocaine and then plunges the needle down until it overcomes the resistance of the external oblique aponeurosis. About ½ oz. of solution is deposited beneath this structure in the position of the ilio-inguinal nerve. A little is also injected in the region of the external ring. After waiting a few minutes the incision is carried down to the external oblique. This structure is carefully opened near the internal ring and the flaps raised, exposing the ilio-inguinal nerve which lies on the internal oblique muscle. The nerve, which controls nine-tenths of the sensation in this region, is at once blocked by injecting it. The aponeurosis is now cut down through the external ring and also above the internal ring, exposing the ilio-hypogastric nerve, which is also blocked. The only nerve which can then convey sensation is the genital branch of the genito-crural, which lies in the posterior part of the cord. It can be blocked later, or the same result can be attained by injecting the upper part of the cord, care being taken not to puncture a vein. No more novocaine is required, except a little to render the parietal peritoneum insensitive when tying the sac. The radical operation is then performed, with or without removal of the testicle. In old persons, especially with recurrent hernia, the removal of the testicle

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Atti della R. Acad. delle Sc. Med. in Palermo, 1920.

[2] Annali di Clinica Medica, Anno x., Fasc. iv.

[3] Riv. Sanitaria Siciliana, Anno ix., 1921, No. 2.

[1] Boston Medical and Surgical Journal, April 21st.

helps to prevent recurrence. In femoral hernia there are so many branches of nerves from all sides that the infiltration method is necessary. Gimbernat's ligament is cut or stretched with a small retractor, and when the tissues about the neck of the sac are freed the hernia can generally be reduced. After injecting a little solution about the neck the sac is tied off and resected. It is allowed to retract within the abdominal cavity, and Poupart's ligament is sutured to the pectineus muscle and fascia, including in the bite of the needle all the tissues down to the pubic bone. The wound is closed without drainage. Dr. Field reports eight consecutive cases of strangulated hernia in patients of ages varying from 67 to 90 years which he operated on with success by this method. He is certain that he could not have obtained this result with general anæsthesia. In none of the cases was resection of the bowel performed, which Dr. Field thinks should not be done unless urgently needed, as statistics show that nearly all primary resections in old people are fatal. If the bowel is hopelessly damaged it is better to drain and repair later. In some of the cases in this series there was considerable doubt as to the viability of the bowel, but in all convalescence was uneventful.

DIRECT COLOUR PHOTOGRAPHY IN MEDICINE.

THE demonstration of coloured lantern-slides at the Section of Dermatology of the Royal Society of Medicine showed the possibilities of this new method for purposes of illustration and teaching. Uvachrome diapositive lantern-slides are made from the original films employed in a new process of natural colour-photography in which no screen is employed; the minutest details can thus be projected upon the sheet without the loss in accuracy caused by disintegration of the colours. The dyes used in the preparation of the films reproduce the original colours with remarkable accuracy. The process does not lend itself to mass production, but it is found to be of the greatest value for scientific purposes.

The slides are at present prepared by the Austrian State Institute of Photography, which keeps expert photographers at the disposal of the Viennese hospitals and clinics, so enabling accurate colour photographs to be made of cases of special interest. The negatives provide a record for the hospital archives, and furnish medical lecturers with the slides of individual subjects which they need. It is proposed to carry out the same work in England for the benefit of medical authorities in the hospitals and universities. If, as the makers claim, the films can be satisfactorily reproduced on paper, they should prove very valuable for use in text-books and in original articles on rare diseases.

THE DIAGNOSIS OF TUBERCULOSIS IN CHILDHOOD.

IN a paper read on April 12th at a meeting of the London Association of the Medical Women's Federation on the subject of Tuberculosis in Children of School Age, Dr. Jane Walker gave instructive figures and interesting comments thereon. In a report on these figures in THE LANCET of April 23rd a clerical slip occurred, and it should be noted that of the 807 children referred to 8·4 per cent. (not 62 per cent.) were sputum-positive. Even more important than her statistics was the broad and philosophical spirit in which she approached her subject. In science, as in religion, the best guarantee of fitness to advance is a broken and contrite spirit. Dr. Walker tempered her candid agnosticism with shrewd hints on how to emerge from this healthy but barren state. As her survey showed, the incidence of tuberculosis among school children has been variously estimated at 0·7 per cent. to 96 per cent. An intermediate calculation is that made by Sir Robert Philip, who considered that not less than per cent. of school children bear the stigmata of erculosis. We may to a certain extent whittle this glaring disparity by regarding the lowest figures as indicating actual disease, and the highest as referring only to infection without great morbid change. But such an arbitrary expedient for conciliating contradictory statistics is plausible only on the surface; it soothes too much and stimulates too little. If we accept the outside figure of 96 per cent. as being the measure of tubercle infection among school children at the age of 12, we are still as much in the dark as ever in forecasting the ultimate fate of these children. All we can say for certain is that the majority will not succumb to tuberculosis. Even for the remaining 4 per cent. who, at the age of 12, are, biologically speaking, "virgin soil" we can cast no accurate tuberculosis horoscope. The next generation will be better off in this respect, for in a few decades valuable information should be available as to the expectation of fatal tuberculosis for each person who has been periodically tuberculin-tested since infancy. Meanwhile it is the obvious duty of all concerned with the medical supervision of children to make and preserve careful tuberculin records, so that in due time we may clearly read into the tuberculin tests diagnostic, therapeutic, and prognostic knowledge which is at present withheld from us. Even now there are aids to diagnosis which can be interpreted with considerable clearness, and in emphasising the importance of the X rays, Dr. Walker consciously or unconsciously censured the many large institutions in this country which are satisfied to continue dispensing with this important weapon.

BENIGN GASTRIC ULCER IN SYPHILIS.

Dr. W. Frank Fowler,[1] of Rochester, New York, remarks that in spite of the publication of numerous papers on the various phases of gastric syphilis no case has hitherto been recorded of non-specific ulceration in the stomach of a syphilitic, although several writers such as Einhorn, Niles, Eusterman, and Morgan have indicated the possibility of this occurrence. The gross lesions of gastric syphilis have been classified by Eusterman into (1) gummata in various forms, (2) diffuse syphilitic infiltration. The degeneration of gummata gives rise to specific ulceration, the symptoms of which differ from those of benign ulcers, chiefly in the absence of relief of pain by food and alkalis, less periodicity, anacidity, vomiting with good appetite, excessive loss of weight, and improvement in the gastric function under specific treatment. Apart from operation the diagnosis usually rests on a past history of syphilis, the presence of signs of late syphilis, a positive Wassermann reaction, and the therapeutic test. On the other hand, it must be borne in mind that a negative Wassermann reaction does not exclude syphilis, and that a positive reaction does not prove that a gastric lesion is specific. The therapeutic test though usually reliable is not infallible, as antisyphilitic drugs sometimes favourably influence non-specific conditions. X ray evidence is not conclusive, as we may have close simulation of carcinoma. Even exploratory operation may not be decisive, and cases are on record where gastro-enterostomy has been performed for the relief of syphilitic gastric ulcer. Microscopical evidence consists in characteristic syphilitic obliterative endarteritis and perithelial lymphocytic infiltration with atrophy of the mucous membrane, and hypertrophy of the submucosa and muscularis. Dr. Fowler's case was that of a woman aged 26, who had been suffering from symptoms of gastric ulcer for eight years and presented evidence of secondary syphilis. The Wassermann reaction was 4 +, and she was given a course of specific treatment. No improvement, however, followed, and gastro-jejunostomy was performed with the result that relief was obtained for seven months. The symptoms then recurred and laparotomy was again performed. A large callous ulcer of the usual benign type was found on the posterior wall of the stomach adherent to the pancreas. The pyloric half of the stomach was removed, and the old opening in the jejunum was anastomosed to the gastric stump. Uncomplicated recovery took place.

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[1] Surgery, Gynecology, and Obstetrics, May, 1921.

EARLY DIAGNOSIS IN DIPHTHERIA.

THE importance of early diagnosis in diphtheria and of the administration of effective doses of antitoxin as soon as possible is generally recognised. It comes, therefore, as a surprise to find that Dr. Frederic Thomson, of the North-Eastern Hospital, Tottenham, in the interesting letter published in THE LANCET last week, has noticed that for the past two years many patients have been arriving at his hospital rather later in the disease than was formerly the rule and often without antitoxin treatment. He suggests that this delay in sending patients to the special hospital is largely due to practitioners waiting for the results of bacteriological examination, and he strongly deprecates this being done. He urges that antitoxin should be given without delay if the clinical evidence favours diphtheria. He points out that failure to find the bacillus in cultures taken early is not uncommon, that cultures taken on the first day even from cases of the several faucial diphtheria are frequently negative, also many of those from purely laryngeal cases. On the other hand, a positive result may be due to the case investigated being a diphtheria bacillus carrier. Dr. Thomson's letter is worthy of the special attention of our readers, since the advice he gives is of practical importance, and the point he raises in regard to the bacteriological evidence is one of great interest. There is a tendency in the minds of some practitioners to regard the evidence afforded by laboratory investigation as incontrovertible and infallible, whereas it should be assessed in the light of the other evidence and its indications placed in their true perspective. The importance of Dr. Thomson's suggestion is emphasised by his statement that the death-rate among his cases in 1919 and 1920 was higher than it had been for many years, while he is not prepared to admit that the type of the disease had been much more severe.

MATCH-BOX DERMATITIS.

THE substitution products employed in Germany during the war and still in use have given rise to a number of hitherto unknown skin diseases to which must now be added match-box dermatitis. This condition, of which Dr. Herbert Stranz,[1] of Breslau, has seen sixteen examples during the last six years, is most frequent in the male sex. His cases occurred exclusively in heavy smokers who were in the habit of carrying a match-box in their trouser pocket. In typical cases the eruption begins on the upper third of the front of the left thigh, occasionally on the right thigh or both thighs at once, as well as on the adjacent part of the hypogastrium and hips, and then attacks the backs of both hands and the face. Experiments made by Frei, in Jadassohn's clinic at Breslau, showed that the dermatitis was due to the presence of the sesquisulphide of phosphorus, which has been used as a substitution product on the striking surface of the match-boxes since the beginning of the war. The warmth of the body sets free the irritating substance in the form of a vapour which attacks the skin lying beneath the trouser pocket, and the backs of the hands and the face subsequently become affected. The clinical picture of match-box dermatitis varies with the extent and age of the lesions and the special sensitiveness of the individual. Occasionally only a slight circumscribed erythema is seen resembling erysipelas. But in many cases an exudation takes place with the formation of crusts. In one of Dr. Stranz's cases the œdema was very pronounced. In long-standing cases the condition resembles chronic lichen. Even in mild cases there is very severe itching and burning pain, and the patient suffers generally owing to loss of sleep. Unless the cause is recognised the condition is liable to last for years. Treatment consists in applying compresses of 1–2 per cent. boric or resorcin solution. Dr. Stranz has also obtained good results from the use of X rays owing to their anti-pruriginous action.

HOSPITAL PHYSICIAN AS SANITARIAN.

THE retirement of Dr. William Hunter from the active honorary staff of Charing Cross Hospital gave his colleagues and friends opportunity to express, not only their warm personal regard, but their ungrudging admiration for his services to his hospital and medical school, to medicine, and to the public health. The occasion was a complimentary dinner given at the Imperial Restaurant on Friday, May 20th, at which Mr. George Verity, chairman of Charing Cross Hospital, presided. Dr. Hunter's association with the hospital covers the period during which financial difficulties were met and overcome, and his term of office as dean initiated a similar period of prosperity in the medical school attached to the hospital. His work on oral sepsis established its importance as a forerunner of chronic ill-health, an association now generally recognised. Fortunately it has been given to many hospital physicians to combine fruitful clinical and experimental work with administrative achievement, but to Dr. Hunter's credit is a third exploit in a larger field, when within a few months he was instrumental in ridding the Serbian army in the field of typhus and relapsing fever, and this by means of simple appliances of universal application. The recent exhibit of sanitary appliances at the Royal Army Medical College (see page 1133), it may be noted, included a sack disinfector which carries the principles of Hunter's Serbian barrel into the home. Medicine is one and indivisible, and the equipment of a successful clinician, medical administrator, and sanitarian is not dissimilar in essentials.

URBAN VITAL STATISTICS.

(Week ended May 14th, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18½ million persons, the annual rate of mortality, which had been 12·5, 12·5, and 12·1 in the three preceding weeks, was 12·5 per 1000. In London, with a population of 4½ million persons, the annual rate was 11·6, against 11·5 per 1000 in the previous week, while among the remaining towns the rates ranged from 4·7 in Dewsbury, 5·7 in Grimsby, and 5·9 in Walthamstow, to 20·0 in Oldham, 21·2 in Exeter, and 21·9 in Barnsley. The principal epidemic diseases caused 227 deaths, which corresponded to an annual rate of 0·6 per 1000, and comprised 71 from whooping-cough, 50 from diphtheria, 48 from infantile diarrhœa, 13 from measles, 11 from scarlet fever, and 1 from enteric fever. Measles caused a death-rate of 1·3 in Sunderland and in South Shields, and 1·4 in Barrow-in-Furness, and whooping-cough of 1·1 in Liverpool and in Oldham, and 1·5 in Burnley. There were 3238 cases of scarlet fever, 2281 of diphtheria, and 1 of small-pox under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 3195, 2313, and 1 respectively at the end of the previous week. During the week ended May 7th 6 cases of encephalitis lethargica were notified in the County of London, from Camberwell, Chelsea, Hammersmith, Southwark, Stepney, and Wandsworth respectively. The causes of 28 of the 4434 deaths in the 96 towns were uncertified, of which 10 were registered in Birmingham and 3 in Gateshead.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 14·6, 15·0 and 14·7 in the three preceding weeks, fell to 14·3 per 1000. The 339 deaths in Glasgow corresponded to an annual rate of 16·1 per 1000, and included 25 from whooping-cough, 3 from measles, 2 each from diphtheria and infantile diarrhœa, and 1 from scarlet fever. The 101 deaths in Edinburgh were equal to a rate of 11·8 per 1000, and included 3 each from whooping-cough and diphtheria, 2 from infantile diarrhœa, and 1 from measles.

Irish Towns.—The 137 deaths in Dublin corresponded to an annual rate of 16·9, or 1·8 per 1000 below that recorded in the previous week, and included 1 from infantile diarrhœa and 1 from diphtheria. The 121 deaths in Belfast were equal to a rate of 15·0 per 1000, and included 9 from whooping-cough, 2 from infantile diarrhœa, and 1 from diphtheria.

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[1] Münchener Medizinische Wochenschrift, May 6th, 1921.

SOME EFFECTS OF ALTITUDE ON THE HUMAN BODY.

By A. REEVE HEBER, M.D., CH.B. BRISTOL.

SINCE the year 1800 a good deal of work has been done on testing the effects of altitude on the human body, and during the war the choice of men for the Flying Corps has made such work most important. The writer having lived for about six years at an altitude of 11,500 ft. in Leh, the capital of Ladak, one of the provinces of Kashmir, found himself able to test the chronic effects of residence in altitudes.

The country in which I worked is situated in the Himalayas, and is very cold during the winter and very hot during the summer, but both cold and heat are less felt on account of the extreme dryness of the atmosphere. During the summer the power of the sun is immense; an ordinary thermometer exposed to the sun on an ordinary day (30/7/20) at 12.15 P.M. registered 108° F. The report of the Meteorological Department of India gives the following temperatures for the year 1914:—

Mean temp. of year	37·5° F.
Mean maximum temp.	54·5° ,,
Departure from normal of year	0·9° ,,
Mean minimum	29·8° ,,
Departure from normal	0
Yearly mean of mean between max. and min.	42·2° ,,
Departure from normal of year	0·4° ,,
Mean daily range of temp.	24·7° ,,
Highest temp. observed during year	86·3° ,,
Lowest temp. observed during year	1·2° ,,
Absolute range during year	87·5° ,,
Mean monthly absolute range	42·4° ,,

With regard to the extraordinary dryness, the Indian Meteorological Report for 1914 gives the following figures:—

Mean humidity of year	0·53
Departure from normal	0·1
Rainfall for year	3·84 inches
Normal rainfall for year	3·26 ,,

There is very little wind in the winter and the air is very calm, but during the spring we get what are called the "Spitlung," which, coming from the snow regions, are bitingly cold. The prevailing wind is from the south, and has a comparatively great average speed.

The barometric pressure is the most important factor in determining the effects of altitude on the human body. The figures for Leh for 1914 are as follows:—

Elevation of bar system above sea-level	11,503 ft.
Highest pressure recorded during year	19·984 in. Hg.
Lowest pressure recorded during year	19·340 in.
Absolute range during year	0·644 in.
Mean monthly range of pressure	0·579 in.

It will be noticed that in Leh the glass is fairly stable. The boiling-point is lowered proportionately, and for Leh is 183·6° F., a fact soon realised when trying to make a good cup of tea. By comparison with Major J. L. Birley's second Goulstonian lecture,* the proportion of oxygen at this altitude should work out at about 13 per cent., and shows its effects chiefly as one would expect, in the respiratory, circulatory, and nervous systems.

The people among whom I worked were mostly Ladakis, who are really Tibetans, but I was also able to test a fair number of Yarkandis, down-country Indians, and about four English men and women (two of each), all of whom were resident in Leh for longer or shorter periods. The religions of these various people were almost equally diverse, as they belonged to the Buddhist, Mahommedan, Hindu, Christian, and Sikh persuasions.

It is most difficult to arrive at merely an approximate figure for the population of Ladak as no census has been taken for many years. There would be about 8000 inhabitants in Leh and about 150,000 inhabitants in the whole of Ladak. The greater number of these are Buddhists, but about 300 are Mahomedans, which enumeration closely adheres to the Mahomedan custom of not counting their women. Most Ladakis are farmers, though in Leh itself one finds a few traders and a small number of artisans.

General Considerations.

During short stays in altitudes the European seems to be fairly healthy, but it seems to me that the "altitude of happiness" varies for each individual. I am quite comfortable at 11,000 ft., a good deal less so at 14,000 ft., but on going higher feel fitter again. In 1913 Sir Filippo de Filippi brought a scientific expedition to Leh. His second-in-command never felt well in Leh, but on getting higher was quite fit. This fact was also noticed by Barcroft, who says, "Why did I become acclimatised at once on Monte Rosa when I did not at Teneriffe? and, secondly, why did Douglas acclimatise at Teneriffe when I did not do so?" This fact is rather difficult to explain, for although acclimatisation may have a good deal to do with it, yet in the second instance quoted above there was ill-health, even after several weeks' time in Leh, during which acclimatisation should have taken place, yet immediately on going higher, when such adaptation had not been obtained, improvement occurred. Europeans living in Ladak are usually very fit physically, and even after prolonged residence would be quite healthy, if only their nervous systems were equal to the strain, but this is the weak link in the chain. It has also been noted that the longer the European stays in Leh the more he feels the cold.

The natives are generally very healthy, but when serious disease of any kind does supervene collapse and death occur very rapidly and suddenly. They are not quite as long-lived as the lower-living races. The infant mortality is appalling, and the writer found that of 848 children born 310 died, a mortality of over 36·5 per cent.; but this is due mainly to neglect and not primarily to altitude, for among the few European children who have lived in Leh the mortality is a good deal less. It is simply impossible to establish the cause of death, which is generally stated to be "fever." The heights of about 160 Ladaki men and women was measured, and it was found that they are on the whole shorter than English men and women of the same ages, but it takes the Ladaki about the same time to attain his full stature, and while the Englishwoman's height tends to decrease after the age of 22 years, her Ladaki sister steadily increases in height until she reaches her fortieth year.

Respiratory and Circulatory Systems.

The power of "holding one's breath" is seriously curtailed, and in 52 cases this was found to vary between 40 and 19·7 seconds, the former figure being for the writer himself, and the average for all working out at only 27 seconds. This is all the more surprising when Major Birley found that at an altitude of 10,000 ft. a man should be able to hold his breath for 71 seconds.[1] One wonders whether this is directly due to prolonged residence in altitudes. It was further found that the European who has lived for some time in Ladak, and the native born there, find breathing distinctly easier than those who have just arrived in the country. It is also interesting that the statement "all men are mouth-breathers above 12,000 ft." is not true of people who have spent some time in the heights. I have crossed the Kardong Pass, which is 17,400 ft., and, except during and immediately after exertion, breathed through the nose. This is due, no doubt, to the fact that the lungs themselves expand to meet the altered physical conditions. I heard that a former doctor in Leh had definitely stated that his chest had enlarged during his stay in the country. Dr. Kathleen Heber found that during her first two years there her thoracic outlet had expanded 2 in., although her actual body was thinner. The same kind of statement is made by almost every European who has lived there. During 1920 I accompanied a lady from Srinagar (5000 ft.) to Leh and took measurements of her chest just under the axillæ, immediately below the nipples, and at the thoracic outlet, and again five weeks later after a three weeks' stay in Leh (11,500 ft.) and found that during this time her chest had expanded ½ cm. in each position. Although one cannot base any conclusions on this one case, yet it does show the tendency. In this connexion it is of interest that the chests of the natives measured (over 150 cases) were on the average smaller than those of the Europeans. This expansion of the chest is evidently consequent on an expansion of the lungs, for in the 160 cases examined it was found that the area of superficial cardiac dullness is distinctly lessened—viz., the upper border is shifted down to the fourth intercostal space or even the fifth rib, its left border moves in to 2½ and 2 inches from midsternum, and although the right border is found at the left border of the sternum, yet even here there is a tendency to overlapping of the heart. In the examination of hearts in Ladak, it is striking that in so comparatively few cases the apex beat of the heart is seen, which would also be accounted for by increase of lung tissue. The liver, too, seems to be pushed down a little; in the greater number of cases examined the upper anterior border was found at about the sixth rib. The rate of respiration is increased, and for corresponding ages in England varied from a quarter to three and a quarter breaths per minute, whilst the proportion of respiration- to pulse-rate is a little higher than 1 : 4—i.e., the respiration-rate has increased slightly more than the pulse-rate.

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* THE LANCET, 1920, i., 1205.

The fact that anoxæmia causes periodic breathing has long been known, and is found to exist even when Europeans have lived in the country for some years, especially when ascending the mountains. My little hill pony, which was born in Zankskar, the most highly situated province in Ladak, exhibits it when going up steep hills. The pulse-rate also tends to be a little higher than in England, varying from 2–12 beats per minute. Dr. Kathleen Heber noticed that her own pulse averaged ten beats quicker in Leh than in Srinagar, which is over 5000 ft. lower. It had often seemed to the writer that the pulse-rate increased much more rapidly with increase of the temperature than in England, and he therefore investigated his temperature charts, but found that for every rise in temperature of 1° he got on an average an increase in the pulse-rate of 7·2 beats per minute, which is about normal even for England.

In respect to blood pressure, tests made on about 200 patients gave the interesting result that between the ages of 22 and 65 years the average blood pressure is even lower (118·9 mm. Hg) than the minimum (120 mm. Hg) which is usually given for Englishmen. At other ages the figure is somewhat higher, but as these only represent about 15 per cent. of the subjects tested, they are not nearly so reliable as the figures for the ages 22–65 years. This fact harmonises well with the findings on airmen that prolonged flying in altitudes tended to lower blood pressure. The pulse pressures obtained in Leh showed a definite increase, and this was more marked in the women than the men, this increase being 8·6 higher for men, to 12 mm. Hg for women, as compared with those in England. This is chiefly due to a fall in diastolic pressure, and again agrees with conditions found in our airmen in France.

The heart itself is not enlarged upwards nor to the left, but there were quite a number of cases in which the heart had enlarged to the right (of the 160 cases tested 27 per cent. had enlarged to half an inch to the right of the right sternal border), which is not surprising. As the atmosphere contains less oxygen the heart has to pump more blood into the lungs, but the blood pressure being lower in Ladak the left heart does not need to enlarge in order to eject a larger blood stream. Red blood counts were done on over 50 people, consisting of Ladakis, Downcountry Indians, and five Europeans. The average blood count for all the men of these is 6,816,454 per c.mm., which is somewhat below the figure at which Major R. W. G. Hingston arrived in his investigations in the Pamirs. The Ladak figure is slightly smaller than his on account of the striking fact that the men born in the country had a lower count than the Downcountry Indians and Europeans. Among the women the same is true, and in both male and female there were over a million more red cells per c.mm. than in those born in the country. We can state, therefore, that altitude raises the blood count, but to a lesser degree in those born in the country than those from lower altitudes. Leucocyte and differential leucocyte counts did not show much variation from the normal for England. When, however, the investigations on the hæmoglobin percentage were begun, it was thought that the results would prove a good deal higher than in England, and it was all the more surprising to find that the percentage was well below 100. This was true of all sorts and conditions of men and women in the country, and, whether born there or in the lowlands, the figures approximated very nearly to 90 per cent., the former being just over and the latter just under. It is difficult to account for this, and it may be suggested that a *prolonged* stay in altitudes tends to destroy hæmoglobin.

The human body, therefore, seems to respond to decreased oxygen-tension in the atmospheric air of altitudes by a small increase in the rate of both respiration and pulse, whilst the lungs and, in consequence, the chest, expand; further, the heart tends to enlarge to the right, the work of the left ventricle being made lighter by a decreased blood pressure. An increase in the oxygen-carrying powers of the blood is made possible by an increase in red blood corpuscles, which is greater in the downcountry man than in the native inhabitant. Finally, the first response to a rapidly decreasing oxygen pressure consists in periodic breathing.

Nervous System.

The European on first arriving in Ladak feels most extraordinarily fit—he sleeps well, he eats well, and feels himself equal to almost anything. The journey itself, which is accomplished in 16 short stages, either on horseback or on foot, tends to cause this exhilaration. But, sooner or later, it gives place to a terrible weariness of the brain, sleep becomes difficult to obtain, interest in food is lost, and even a short day's work produces great weariness, especially if that work is mental, and in spite of the fact that the rest of the system is in good order. But even when this condition has been reached, there is still a short period during the morning in which the brain is keenly active, and during which work is a real pleasure. This deterioration is, however, not as serious as that in one's temper and all the other subjective functions of the brain. It is astonishing how even the most decisive man slowly and insidiously loses the power of decision and becomes unwilling to bear responsibility. Things are not improved by the fact that the memory suffers also, and sometimes it almost seems as if morals were affected too. Peripherally, altitude showed its effect on the nervous system of Europeans by causing numbness and tingling of the limbs much more rapidly than at home.

Alimentary System.

That the human body needs more sugar and butter when in altitudes is a well-established fact, and even the native needs and obtains these by drinking endless butter tea and eating cereals. All Europeans suffer from the most appalling intestinal flatulence which it is difficult to explain, unless the decreased oxygen pressure stops the intestines from breaking up the foodstuffs into their end-products. One of the commonest of native maladies is sthenic dyspepsia, which must in great part be due to the fact that the boiling-point of water (183·6° F.) is insufficient properly to break down the starch granules.

Reproductive System and Special Organs.

The European birth-rate does not seem to be much affected. In passing, the writer would like to remark upon the rapidity with which delivery occurred. He had to conduct three confinements of Englishwomen up there, and found that the two primiparæ took three and a quarter and four hours, whilst one multipara took five hours. The native women marry early in life, the average age in 730 women being 14·1 years. The Ladaki birth-rate is extremely low; thus, 828 women between them only had 848 children. This is, in the author's opinion, not primarily due to altitude, but to syphilis. One would think that early marriage would lead to early menstruation, but, as a matter of fact, the average age at which 799 girls began to menstruate was 15 years, whilst with 195 women the menopause set in at 39·2 years, thus greatly shortening the bearing age of Ladaki women.

The Ladaki is, on the whole, very hairless, although actual alopecia is practically unknown. On account of the extreme dryness of the air, the skin desiccates badly and cracks, especially during the winter months. The hair becomes straight and lustreless and tremendously electrical. Eczema and chilblains, on the other hand, are very rare.

Notes on the Incidence of Disease.

Although "rheumaticky" pains are very abundant, yet true rheumatism or rheumatic fever is practically unknown. Again, coughs and colds have to be treated almost continually, and yet accute lung disease is comparatively rare, whilst tuberculosis hardly ever occurs. This can be accounted for by the fact that the air is so dry and free from micro-organisms. The manifestations of syphilis are peculiar, for, whilst the first stage is common, and also the skin manifestations of the second, it does not go further, and the later secondary and tertiary symptoms do not occur. Since the writer first went to Leh he has never seen a case of gumma there. One wonders whether the lowered blood pressure has anything to do with this. It was noticed that almost always those who registered merely relatively high pressures had suffered from syphilis. Furthermore, the parasyphilitic manifestations practically never occur. Similarly one sees a good deal of gonorrhœa, but strictures do not often result. In Kashmir, osteomalacia is very common, but in Ladak it does not occur.

Conclusions.

1. High altitude makes for health in both native and European, until in the latter the nervous system begins to break down. 2. The most serious effects of a long stay in altitudes are felt by the nervous system, and correspond with the acute effects observed in airmen. 3. Altitude has a tendency to enlarge the right but not the left side of the heart. 4. Altitude decreases the blood pressure, but increases the pulse pressure. 5. In altitudes the thorax expands and the lung tissue increases. Breathing is somewhat accelerated, whilst the power of holding one's breath is much curtailed. 6. In altitudes an increase of red blood corpuscles occurs, but this is more marked in those who have come from lower altitudes than in the indigenous population. The white blood count and the differential blood count remain much the same as in England. 7. Prolonged residence in altitudes does not increase, but rather decreases, the hæmoglobin percentage. 8. In Leh human fertility is decreased, whilst menstruation begins later and ends earlier.

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IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Government Grants and the Health Services.

LAST summer, in view of the refusal of many local authorities in Ireland to strike rates for the purpose of meeting claims made on account of malicious injuries, the Government obtained power from Parliament to withhold Government grants ordinarily payable to local authorities, and to devote the funds thus held to meeting the claims for malicious injuries. At the same time many of the local authorities had debarred themselves from receiving grants by refusing to submit their books to audit by the Local Government Board. It was hoped that if they consented to the audit the grants would be forthcoming, and only last month the Vice-President of the Local Government Board assured a medical deputation that, so far as he knew, the refusal of audit was the only obstacle in the way of local bodies receiving their grants. Last autumn both the Irish Public Health Council and the delegates' meeting of the medical profession had put forward the suggestion to the Government that in any dispute which might arise with local authorities the health services should be immune and that grants ordinarily devoted to care of health should not be diverted to other purposes. The suggestion was treated with scanty consideration by the Chief Secretary, and last week the Government carried its threat into effect. By an Order made under the Restoration of Order in Ireland Act, it is directed that "with a view to making provision for the immediate payment of amounts recovered by decrees" against certain local authorities, no payment is to be made to these local authorities out of the Local Taxation (Ireland) Account, or out of any Parliamentary grant, or out of any fund administered by any Government department or public body. The names of over 250 local authorities of various classes are included in the Order.

This Order makes it clear that the funds are no longer merely held up pending an audit, but that they are to be definitely diverted to other than their customary purposes. The position as regards many of the health services becomes at once precarious. Out of the Local Taxation Account comes a State subvention toward the salaries of Poor-law officers including dispensary doctors. The subvention was originally supposed to pay half the salaries of the dispensary doctors, but as the Local Taxation Account has dwindled, and the salaries have increased, of recent years it only paid about one-fifth. The deprivation of even a fifth of his salary is, however, a serious blow to an already ill-paid doctor, who is entirely blameless as regards the genesis of the present state of disorder. It will be interesting to see whether, now that the Government has repudiated any responsibility for the payment of Poor-law officials over the greater part of the country, the Local Government Board will continue to attempt to exercise control over their performance of duty. Up to the present it has, regardless of the personal danger to which obedience would expose a dispensary doctor, continued to press him to make the usual formal returns to the Board.

The National Relief Fund and Irish Hospitals.

Out of the residue of the National Relief Fund granted to hospitals in the United Kingdom, £63,000 have been allotted to Ireland. Its distribution was in the hands of an influential committee of eight, presided over by the Rt. Hon. the Master of the Rolls. After deliberation the committee decided to adopt as a principle of distribution the relative number of "free beds" maintained by the several hospitals. The principle appears fair, but there must be considerable difficulty nowadays in defining a "free bed," since all patients are expected, as far as they are able, to contribute to the cost of their maintenance.

Dublin University Election.

The nomination of candidates to represent Dublin University in the Parliament of Southern Ireland took place on May 13th, and, four candidates only being nominated, they were declared elected. They are Mr. E. H. Alton, a Fellow of Trinity College and a classical scholar of distinction; Sir James Craig, King's Professor of the Practice of Medicine and President of the Royal College of Physicians; Mr. G. FitzGibbon, K.C., of the Irish Bar; and Mr. W. E. Thrift, a Fellow of the College and Professor of Natural and Experimental Philosophy. These four gentlemen had been requested by the teaching staff of the College and University to permit themselves to be nominated and electors will probably feel grateful to them for their willingness to serve their university in a difficult position. At the same time, electors are likely to hope that in future the teaching staff will not by any collective action attempt to influence the freedom of choice of the constituency.

Students at Irish Universities.

A Blue-book issued last week gives some information as to the number of students attending the National and Belfast Universities. The total number of students is 3130, distributed as follows: Belfast, 995; Cork, 608; Dublin, 1268; and Galway, 250. Of this total more than half—1752—are studying medicine or dentistry.

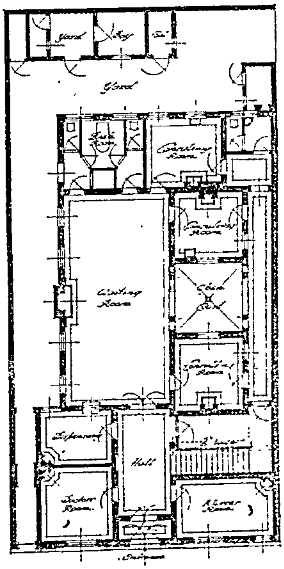
THE JOHANNESBURG SCHOOL CLINIC.

SINCE the inception of medical inspection of schools in the Transvaal in April, 1914, the necessity for an up-to-date school clinic for the largest urban area in the Province has been recognised by the Education Department. Sanction for the establishment of such a clinic was given early in 1915, but the interruption caused by war conditions and the excessive increase in the cost of building material, added to the fact that it was exceedingly difficult to obtain a satisfactory central site, necessitated the postponement of the original scheme. In 1918, however, a suitable site was obtained, within easy access of the schools and yet centrally situate, and plans were drawn for the building by Mr. Cleland, of the Public Works Department. Owing to the limitations of the site—100 by 50 feet only—the design had to be carefully considered in order to obtain the maximum working accommodation and amount of light and air. The clinic is claimed to be the finest of its kind in existence, and is probably the only one in Africa. The building, now completed, is a double-story block, of brick and reinforced concrete, with stone facings and a simple but dignified Georgian façade facing Jepe-street. The roof is of tiles, with square tiled chimneys at both ends; the flooring in all consulting- and work-rooms is of magnesite composition; in the corridors and hall it is of tiles, and the operating room has a floor of cement. The inside walls and ceilings are painted throughout with non-absorbent porcelain white, and the building is fireproof.

On the ground floor a small entrance porch gives access to a lobby which opens into the large waiting-room, which will also be used as a lecture and demonstration room. On the right of the entrance lobby are a nurses' common room (also to be used as a work-room), a fireproof record room, and the open staircase leading to the first floor. On the left are a doctors' sitting-room and a small dispensary. On the right of the waiting-room are three large consulting-rooms, each with a door opening on to the outside corridor, so as to give separate entrance and exit to patients. At the end of the waiting-room are lavatories and bathroom for patients and a private lavatory for the staff. Separate from the main building, in the small yard behind the block, are the native servants' quarters, with bed- and bathroom, the store room, coal shed and boiler room. On the first floor are large and exceedingly well-lighted operating rooms. one for the dental inspectors and the other for nose and throat operations. Between them is a small anæsthetist's room. Next to the main operating room is the eye room, which is flanked by a small linen room. A main corridor, terminated at the north end by a safety staircase, runs the length of this floor. On its right are two consulting-rooms, a kitchen, scullery and larder; on the left are a nurses' bedroom, and a small four-bedded ward for emergency cases, with bathroom and lavatory accommodation. The attached plan shows the general design of the building.

As the latter is flanked on the right by a three-storied block of residential flats, which cuts off much of the light, it was somewhat difficult to obtain adequate lighting and ventilation in the large waiting-room. The difficulty has been largely overcome by converting half of the available space on the right, between the two consulting-rooms, into an open porch. Ample window space has been provided in all rooms, the austral type of window being used, and additional light has been obtained by whitening all walls. The building is heated by open fireplaces in all rooms, but provision is also made for central heating if necessary. Furniture for the clinic is being made locally, and as teakwood has been exclusively used in the building, all wooden furniture will be of teak. Equipment has been ordered from Europe, and the Education Department is indebted to Dr. J. A. H. Brincker, of the Public Health Department of the London County Council, and to Mr. N. Bishop Harman and Mr. G. F. C. Wallis for help in selecting such equipment.

It is intended that the clinic shall be the staff headquarters of the school medical inspection service, and, as such, a central bureau for inspection and treatment. Dr. Anne F. Cleaver, assistant medical inspector, will be in charge of the clinic, and Nurse Hassall, assisted by 10 school nurses, will have charge of the nursing arrangements. A psychological clinic has been arranged for under the direction of Dr. J. M. Moll, the departmental psychiatrist, and other branches of clinic work will be a maternity department (prenatal clinic), a baby clinic, and a department for advising leavers and dealing with physically defective children. The treatment clinic will, in the terms of the arrangement made with the profession in 1915, be staffed by a panel selected by the practitioners on the Rand, the dentists selecting a similar panel. Treatment will be given free to all necessitous patients for defects of the eyes, teeth, nose and throat, and for minor ailments, practitioners being paid a nominal honorarium calculated on the basis of one guinea per hour of work. These arrangements are, however, subject to modification if the profession prefers that part-timers—as is at present the case—should be employed. The clinic will be open during vacations as well as during term, and it is hoped to make it a propaganda centre for social and public hygiene. For that purpose the waiting-room has been specially fitted up to enable the kinematograph to be used for lectures.



Johannesburg School Clinic: Ground-floor plan.

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

THE opening of the summer session of the General Medical Council took place on May 24th, under the presidency of Sir Donald MacAlister.

The President's Address.

Sir DONALD MACALISTER commenced his address by referring to the deaths since the last session of two former members of the Council, Sir Frederick Taylor and Dr. R. J. Pye-Smith, the lives of both having been shortened by the sorrows and labours of the great war. He continued:—

Medical Reciprocity.—Through the Privy Council we have been in correspondence with certain foreign countries and dominions of the Crown on this subject. *Belgium*, which, during the war, granted to British practitioners the privilege of practising within its territories, was by Order in Council accorded corresponding privileges under Part II. of the Medical Act, 1886. Its medical graduates were accordingly made registrable in the British Foreign List, and some 101 were duly registered. The Belgian Government has now decided to reinstate its former medical regulations, which require our practitioners to obtain a Belgian qualification as a condition of practice. The conditions of reciprocity being therefore no longer maintained, His Majesty in Council has issued an Order revoking the application of Part II. to Belgium, and Belgian practitioners will in future be registrable only in respect of British qualifications. Those already registered will, however, retain their status in this country.

In *Spain*, the law has hitherto provided that individual foreign practitioners may, under certain conditions, obtain special permission to practise in that country. A change in the law is, however, in contemplation, and the British Ambassador has suggested that His Majesty's Government may see its way to granting reciprocity. The Executive Committee has requested that inquiries may be made as to the privileges which would be granted in Spain to practitioners registered in the United Kingdom, and as to the course of study and examinations prescribed for obtaining medical degrees and diplomas in Spain. We await the result with interest.

The *Union of South Africa*, which admits to its Medical Register practitioners registered in the United Kingdom, has within the last few years made much progress in developing its own system of medical education. Its universities have obtained power to confer degrees in medicine and surgery, and the Union is desirous that these degrees should, in due course, be recognised as registrable qualifications at home. The Executive Committee, to which the Council has delegated the supervision of such matters, has had no difficulty in advising the Lord President that Part II. of the Medical Act may properly be applied to South Africa, and it is probable that before long the necessary Order in Council will be issued. The Council will then be free to recognise South African medical degrees which fulfil the prescribed conditions.

For many years the medical diplomas of the *Indian Universities* have been recognised by the Council as conferring a registrable qualification to practise medicine, surgery, and midwifery in this country. Recent inquiries by the Executive Committee have, however, caused the Committee to raise the question of their present sufficiency in respect of midwifery. The information received from India has satisfied the Committee that in most, if not all, of the Indian Universities the prescribed courses of study and examinations in this important branch do not now furnish (in the words of the Medical Act, 1886) "a sufficient guarantee of the possession of the requisite knowledge and skill for the efficient practice" of midwifery in the United Kingdom. The Committee has communicated its opinion to the Indian Universities, and intimated that unless within a year the standard of their requirements in midwifery is raised to a satisfactory level, recognition must be discontinued. The Council is charged under the Act with ascertaining, not the sufficiency of Indian qualifications for the needs of practice in India, but their sufficiency as conferring a registrable title to practise all three branches of the profession in this and other non-Indian parts of the Empire.

Work of Special Committees.

The Pharmacopœia Committee has had under consideration the Draft Regulations proposed by the Home Office for giving effect to the recent Dangerous Drugs Act. The Committee pointed out to the authorities various particulars, suggested by its members and by other members of the Council, in which amendment of the Draft was necessary in the public interest. The Chairman and Secretary, on behalf of the Committee, have had interviews with the officials concerned, and have by request given information on the subject to a special committee set up by the Home Secretary for the purpose of considering the numerous amendments to the Draft Regulations that had been proposed by medical and pharmaceutical bodies. It is understood that a detailed revision of the original text has been undertaken by the Home Office, with a view to removing, so far as the Act permits, the objections urged against the Draft. We have not yet received copies of the Regulations as amended, but we understand that effect will be given to our representations.

The Departmental Committee, appointed by the Ministry of Health to consider and advise upon the administrative measures to be taken for the control of the quality of certain therapeutic substances, such as serums, vaccines, salvarsan, &c., which cannot be tested by direct chemical means, has issued its Report. The recommendations give effect, in what appears to be a satisfactory manner, to the wishes of the Council, as expressed in a communication made to the Lord President in 1909. They will be considered in detail by the Pharmacopœia Committee, and reported on by the Council at this Session.

The Dental Committee also has been active during the recess in considering and advising on the successive drafts of the Dentists Bill, during the course of its preparation by the Ministry of Health. As it was made abundantly clear that the Bill would have little prospect of passing into law unless its provisions were generally agreed to beforehand by the various bodies concerned, a number of conferences have taken place at which the views of the Council, and those of representative members of the dental profession, were discussed with the officers of the Ministry. The Bill is now before Parliament, and has been read a second time in the House of Commons. While it embodies many of the points on which the Council has from time to time laid stress, it contains one or two that have not yet been considered by the Dental Committee or endorsed by the Council. On these it is possible that the Council may have further instructions to give to its representatives. But the Bill makes so great a step towards the removal of the dangerous abuses revealed by the Departmental Committee's Report that, though we may regret its imperfections, we may be prepared to welcome it as an earnest of wider reforms. I may mention that, at the instance of the Lord President, a clause has been introduced to give effect to your resolution of Nov. 27th, 1917, whereby three additional members of the Council, who are registered graduates or licentiates in dental surgery, and members of the new Dental Board, are to coöperate with the Council when dealing with dental matters. The additional or dental members are to be appointed by the Privy Council.

Finance and Registration.

Sir Donald MacAlister, after regretting that no progress had been made in Parliament with the Bill for simplifying, with a view to economy, the procedure at the election of Direct Representatives, briefly reviewed the finances of the Council for the year 1920. These he showed to be satisfactory. There is an aggregate surplus of income over expenditure and the expenses of the regular inspections have been met out of reserve. A general increase in receipts for registration accounts for this position. He continued:—

The registration of medical students, which in 1919 rose to 3120, in 1920 fell to the more manageable number of 2531; but this number is still higher than in any year prior to 1919. In my opinion, it would be in the interest of sound professional education were the numbers still further reduced. They impose a severer strain, educational and financial, on the schools and hospitals than the necessary recruitment of the profession demands, and in present circumstances the teaching institutions are less able to meet the strain. To raise the educational standard for admission, and to increase the fees for professional tuition, would thus seem, from all points of view, to be prudent and justifiable.

In respect of dentistry, a profession which still needs a large accession of fully trained recruits, the registrations in the Dentists Register number 217, as compared with 128 in the year before. They still fall short of the annual number before the war. New dental students, however, number 560. This, though somewhat less than in 1919, is (except for that year), the highest entry yet recorded. The small addition to the ranks of qualified dentists accounts, no doubt, for the unfavourable position of the Dental Fund. Last year it showed a deficit of £517. Should the Dentists Bill become law a new position will be created, and comparison with the present statistics will no longer be practicable. It is for this reason that I have ventured to bring to your notice the figures relating to what may be the final stage of the régime which has lasted since 1878. The finances of the Dental Board will have other resources to draw upon and other charges to reckon with under the new conditions.

The Medical Curriculum.

The procedure which you authorised in November for the investigation of the medical curriculum has been duly carried into operation under the direction of the Education Committee. In connexion with each Branch Council, four subcommittees have been set up, including many men of eminence in the sciences bearing on medicine and in its practice. These have readily lent their valuable aid to the Council's inquiry, and our thanks are due to them for their helpful coöperation. A number of preliminary reports and memoranda on different branches of the subject have been prepared and circulated to members. Before long joint meetings and conferences will be arranged for the coördination of these proposals, with a view to the elaboration of considered conclusions and recommendations for presentation to the Education Committee and ultimately to the Council.

The President said that the reports of the inspectors and visitors of the qualifying examination in the United Kingdom were practically ready for consideration by the Examination Committee, and he took the opportunity of acknowledging gratefully, for the Council and himself, the valuable services which had been rendered. In this expression he particularly included the name of Dr. Bruce Low, who has inspected the Public Health examinations. This task is complete and some of the results of the inspection will be available at once for the revision of the curriculum. Sir Donald MacAlister closed his address with the welcome information that the disciplinary cases would be few and simple.

Obituary.

SIR ROBERT WILLIAM JACKSON, L.R.C.P., F.R.C.S. IREL., C.B.,

DEPUTY SURGEON-GENERAL (RETD.).

Deputy Surgeon-General Sir Robert William Jackson, whose death at the advanced age of 91 was briefly announced in our Service columns last week, was probably the oldest medical man in Ireland. He was born in 1826 and qualified for the medical profession in 1851 with the licentiateship of the Royal College of Surgeons in Ireland, and three years later obtained his first commission in the Army. In the Crimea, whither he was immediately sent, he served throughout the whole of the campaign, and was present at the siege and fall of Sevastopol, obtaining the medal with clasp and the Turkish medal. Later he went to India during the Mutiny, where he assisted at the relief of Lucknow and was present at the battle of Cawnpore. In the operations during the Ashanti War, 1873–74, he served with distinction and took part in the capture of Coomassie. For his services he was mentioned in dispatches, received the medal with clasp, and was awarded the C.B. He was also mentioned in dispatches during the South African War of 1879, and in 1882, soon after reaching the rank of Brigade Surgeon, he joined the Egyptian Expedition and was present at the battle of Tel-el-Kebir. He was again mentioned in dispatches, received the medal with clasp, the bronze star, and the third class of the Medjidie. He was knighted on retirement after nearly thirty years of active service with the rank of Deputy Surgeon-General.

After his retirement Surgeon-General Sir Robert Jackson took up his residence in his native country and occupied himself with religious, social, and municipal activities. He was a warm supporter of the Young Men's Christian Association, and a promoter of all efforts in behalf of the poor and suffering. Sir Robert Jackson was twice married and of his four children, three sons and one daughter, a son was drowned some twenty years ago through the foundering of a ship on which he was serving as surgeon. Notwithstanding his age, Sir Robert Jackson was in full possession of his faculties when he died, and he will be greatly missed by his many friends and colleagues who were attracted by his modest and charming personality.

Correspondence.

"Audi alteram partem."

THE ÆTIOLOGY OF PSEUDO-COXALGIA.

To the Editor of THE LANCET.

SIR,—In his letter in THE LANCET of Feb. 19th Sir Henry J. Gauvain says: "Sundt and Legg both consider that trauma is the cause and that the condition is not due to infection." This, as far as I am concerned, is a misunderstanding. In my work entitled "Undersoekelser over Malum Coxæ Calvé-Legg-Perthes,"[1] I have insisted that the cause of this disease is not one but several. First among the causal factors comes *trauma*. In 10 of my 75 cases—i.e., in 53·3 per cent.—there was a history of trauma, in most cases acting directly on the hip, a shorter or longer time before the appearance of the first symptoms. Frequently these appeared immediately after the trauma.

Next to trauma *infection*, principally the so-called *rheumatic* infection, apparently plays a part. Cases of mal. c. C.-L.-P. have been recorded, in which the disease has developed directly or some time after acute polyarthritis (Brandes, Taylor and Frieder, Flemming-Moeller, Elmslie), five cases in all, to which may be added my two Cases (11 and 27). In my first case, as in Elmslie's, there was chorea minor, as well as acute polyarthritis. In another case of mine (case 32) "tic convulsif" appeared when the patient grew up. In other and rarer cases a C.-L.-P. apparently can at once or later follow acute osteomyelitis of the hip. Such a case was described by Perthes,[2] and probably one described by Preiser,[3] which appeared as a result of an acute "Säuglingsarthritis" of the hip. Some cases may result from a chronic infection with weakened virus, as Borchard and Eden suppose in the case of arthritis deformans.

Syphilis.—In nine recorded cases Wassermann's reaction was carried out and was always negative. The same was the case with 30 of my patients. The only exception was a patient (Case 22) who, however, never presented any symptom of syphilis. Wassermann's reaction was negative in the mother.

Tuberculosis.—All writers seem now to agree that the disease has nothing to do with tuberculosis. In 59 of my cases, in whom v. Pirquet's reaction was carried out, it has been positive in 18 cases, negative in 41—i.e., v. Pirquet's reaction was negative in 69·5 per cent. of my cases.

Of particular interest is the case of a girl, 9 years old, who developed slight diphtheria and was injected with serum on the outside of the left hip. Fourteen days afterwards she developed a serum-exanthem, with fever, delirium, swelling, and excessive sensitiveness in the various joints, especially those of the left leg. The fever continued for three days; the swelling of the joints did not vanish till eight days afterwards. When she got about again she could not move or lift her left leg on account of pain in the hip, in which typical mal. c. C.-L.-P. developed.

Rickets.—Calvé[4] decidedly associated pseudo-coxalgia with rickets. This view is also shared by Guye and Soederlund, whilst Perthes mentions that rickets in none of his cases could be considered the cause of the disease. Among 94 published cases, including my own, there was a history of rickets only in 32 cases—i.e., in 34 per cent. Among 120 scrofulo-tuberculous children at the Coast Hospital at Fredriksvern I found one or more signs of latent rickets in 36·7 per cent. If rickets was a frequent cause of mal. c. C.-L.-P. one would expect to find it coupled with the typical form of the rachitic coxa vara. This is, however, not the fact. In my material there is only one such case (Case 65), a girl, who in infancy had been medically treated for rickets. When she was 8½ years old there was a coxa vara on both sides, combined on the left side with mal. c. C.-L.-P. The patient had never limped nor shown any symptoms till after a trauma one year earlier. Immediately afterwards she had begun limping and complaining of pain in the left knee.

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[1] Disquisitions on Malum Coxæ C.-L.-P., Christiania, 1920 (Jacob Dybwad).

[2] Deutsche Zeitschr. f. Chir., Bd. cvii.

[3] Zeitschr. f. orth. Chir. Bd. xxi.

[4] Revue de Chirurgie, 1910.

Mal. c. C.-L.-P. can appear in a previously completely normal joint, as Sinding-Larsen, among others, has maintained,[5] and as one may also find examples of in my casuistic.

Frommé's hypothesis that "Spätrachit" is the cause of the disease is not generally applicable. This does not, however, exclude the disease being in some cases an expression of "tardive rachit." This, I think, to be the case with two patients of mine, described in my work (Cases 22 and 66), as well as with two later cases. All these four patients were boys whose disease had attacked both sides. All had suffered from rickets which had put its stamp on their entire habitus.

I suppose the chances are that in all four cases the cause of the disease was founded on a rachitic basis. This I think to be the case with three other bilateral cases examined by me (Cases 18, 47, 54). Taken all in all, I suppose that bilateral disease developing either spontaneously or after a trauma in patients with a history of rickets is to be considered as determined by rickets, and when the disease does not appear till four years afterwards, it is to be considered as a "tardive rachit."

Calot has lately, on a basis of 150 observations,[6] denied the existence of any mal. c. C.-L.-P. in saying categorically, "La maladie de Perthes (ou Legg) n'existe pas. Les containes des cases cités sont autant de subluxation congenitales larvées et meconnuées." The very fact that the disease as mentioned mostly appears in a previously quite normal hip disproves sufficiently Calot's theory. The subluxation which is not rare in the course of the disease is secondary, unless it depends on alterations of the acetabulum of a rachitic nature.

Lenormant, in 1913,[7] and later Delitala,[8] maintained that the disease depends upon a dystrophia cong. The same can be said against this as against Calot's theory, but on the other side his hypothesis cannot be rejected when the symptoms of the disease have been present ever since the child began walking. Such a case is No. 57 in my material.

Though there are thus several causes of the disease all have this in common, that they bring forth a disturbance in the joint's state of nutrition. As in nearly all cases the clinical and X ray picture is the same and the course of the disease is uniform, it is likely that the causal factors mentioned are only accidental and exciting, and the actual predisposing cause is to be sought in more fundamental circumstances. Note the development of the disease at a particular age, its predilection for one sex, its at times familiar appearance, and its alternation within the same family with other diseases of the hip (one can find mal. c. C.-L.-P. on one side and luxat. c. cong. on the other in the same individual). I have thought the most fundamental cause of the disease to be disturbances of certain endocrine glands or of the interaction between them. One must in this connexion remember the relation of osteomalacia to the ovaries, particular forms of arthritis deformans to the thyroid gland, and Axhausen's interpretation of these and other diseases as "Knochendystrophie" brought about by alterations in the secretion of the intern glands. Læven, in examining a skeleton of a cretin, found a pronounced mal c. C.-L.-P. on both sides,[9] and Erkes has found the disease in a patient with a pronounced *typus adiposogenitalis*.—I am, Sir, yours faithfully,

HALFDAN SUNDT,
Medical Superintendent of Fredriksvern
Coast Hospital, Norway.

Fredriksvern, Norway.

WARMING ETHER VAPOUR FOR INHALATION.

To the Editor of THE LANCET.

SIR,—May I draw attention to what I consider a danger with regard to some intratracheal anæsthesia apparatus recently described in your columns[1]—viz., the method of heating the ether-laden air by an electric incandescent lamp? Dr. W. J. McCardie has described[2] an accident caused, almost certainly, by a minute spark in the bulb fittings which fired the ether, and it seems not to have been a unique occurrence. The temperature required for the ignition of ether is considerably higher than for coal-gas, but, once alight, the vapour burns fiercely, the flame licking up outlying streams. Mixed with a proper proportion of air it may explode with violence. Moreover, heating gases and vapours with the object of administering them warm is generally futile. Their specific heat is so extremely low that, while they can be heated with the utmost ease, passage through a foot or two of rubber tubing, even with moderate rapidity, will effectually reduce them to its own temperature, nor does the temperature of the tube become appreciably raised. For example, the temperature of air blown by a foot-bellows through 20 feet of copper tubing in hot water, appeared to be 110° F., while, blown only through a few fittings, equal to about 8 or 10 inches of the hot tubing, it was 108° F., and many experiments gave consistent results. Again, where the temperature of a room was 62° F. ether-laden air blown through a tube immersed in water at 152° F., which heated it efficiently, and then through 18 inches of rubber tubing about 9/32 inch in diameter for five minutes, registered 68° F., while five minutes after the hot water had been removed it registered 65° F.; showing, it would seem, that the temperature of the room largely controlled the result. There are fallacies in connexion with taking the temperature of gases in movement. They invalidate the reading of a thermometer placed in the space underneath a lint-covered Schimmelbusch frame, where it will act much as the wet bulb in a hygrometer.

Possibly a useful way of warming vapour for inhalation would be to pass it through a short length of rubber tubing—18 inches would suffice—placed on the patient's chest, beneath the clothing, and thence by the shortest route to his nose and mouth.—I am, Sir, yours faithfully,

K. B. PINSON,
Anæsthetist, Manchester Royal Infirmary.

May 16th.

EARLY DIAGNOSIS IN DIPHTHERIA.

To the Editor of THE LANCET.

SIR,—If in all cases of diphtheria antidiphtheritic serum could be administered sufficiently early, and in efficient dose, then the disease could be regarded as comparatively innocuous. This, I believe, is the steadily growing and considered opinion of those in the profession in a favourable position to judge. And now if this statement of opinion is granted as correct, then the continued considerable death-rate in this disease is a reproach. Ideally, serum ought to be administered at once on the first reasonable suspicion of diphtheria, then a swab should be taken from the throat. If the result of bacteriological examination of the latter is positive then valuable time in treatment has been gained, and if negative, the patient's condition has not been prejudiced. Too often it is found when the case arrives at the isolation hospital that serum has not been administered at all, or that valuable time in treatment has been lost by waiting on the result of bacteriological examination before administering serum. The important point to be noted here is that during this lost time *toxins* are rapidly becoming *fixed* in the patient's nervous tissue, with irreparable damage to the prospects of subsequent treatment and consequently also to prognosis.

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[5] Norsk Magazin for Lægevidenskapen, No. 4, 1915.
[6] Journal des Praticiens, Jan. 22nd, 1921.
[7] La Presse Médicale.
[8] American Jour. of Orthop. Surg. 1915.
[9] Deut. Zeitschr. f. Chir., Bd. cl.

[1] THE LANCET, April 2nd, p. 704, and April 30th, p. 918.
[2] Royal Soc. of Medicine, Section of Anæsthetics, Mar. 4th, 1921

The following practical steps to give the all-important earlier administration of serum suggest themselves to me:—

(1) Health visitors, under the M.O.H., should be instructed how to take swabs and administer serum.

(2) The practitioner in attendance should send, by telephone or otherwise, immediate notice to the Health Office of cases of sore throat, in which there exists a reasonable suspicion of the existence of diphtheritic infection, with a request that the health visitor be sent at once to administer an initial dose of serum in such quantity as the practitioner may order.

(3) A swab could be taken by the health visitor at the same time, and the result of bacteriological examination awaited.

(4) Free access to fresh serum and swab outfit should be given to the practitioner at all times to provide for the following contingencies: (*a*) the practitioner wishing to administer the initial dose personally, or (*b*) to allow of the practitioner giving it personally, where unnecessary delay would otherwise arise through the health offices being closed, as at night-time, week-ends, or public holidays.

It should, however, be noted that, not infrequently (and this especially applies to working-class areas), the delay in the application of serum treatment has arisen through parents not considering it necessary to seek early medical advice in cases of sore throat in their children, and this is especially dangerous in the presence in the district of diphtheria in epidemic form. Parents, and the public generally, might be made more alive to the sovereign virtue of serum administered early in diphtheria, and to the serious consequences to the patient that may arise through omission of such early administration. This could be done by educative propaganda, say by the public health authorities.

If this letter helps in any way the efforts to reduce a preventable mortality it will have accomplished its purpose.—I am, Sir, yours faithfully,

J. EWING ADAM, M.D., F.R.C.S. Edin., D.P.H.,
Medical Superintendent, Mogden Isolation Hospital, Isleworth.
May 23rd, 1921.

To the Editor of THE LANCET.

SIR,—The letter from Dr. Frederic Thomson in THE LANCET of May 21st indicates the responsibilities of directors of bacteriological laboratories.

When I had charge of the bacteriological laboratory in the borough of Southend-on-Sea, in reporting on swabs submitted I was in the habit of issuing a printed report of the result of examination, at the foot of which I warned the practitioner that a negative result did not necessarily mean that the case was not one of diphtheria. Another sentence emphasised the importance of giving antitoxin when diphtheria was suspected, without waiting for the bacteriological result.

The Norfolk County Council has recently started a County Laboratory, and naturally I am adopting the same precautions in my reports.

I am, Sir, yours faithfully,
J. T. C. NASH.

The Shire House, Norwich, May 23rd, 1921.

THE WEANLING.

To the Editor of THE LANCET.

SIR,—The babies of the poor country Arabs in Upper Egypt have no intermediate stage. They receive a slab of coarse wholemeal bread while they are still on the breast, and when weaned many of them get little or no milk because of their parents' poverty. These children, fed chiefly on the real staff of life—water, raw fruits, and raw vegetables—also with lentil soup, grow into fine men and women with good teeth and powerful jaws. In fourteen years no case of appendicitis, no case of gastric ulcer, no case of cancer either of breast or stomach was seen at the hospital. Yet the Egyptian surgeons inform me that they see a fair number of cases of appendicitis amongst the children of the rich in Cairo. The country native if promoted to be the servant of a house in Cairo loses his good teeth, though I think that the large amount of raw fruit he still eats tends to prevent their decay. The poor native takes his sugar only in the form of the fibrous cane or in other fruits. What I should like to know, Sir, is this: How many cases of appendicitis, gastric or duodenal ulcer, and cancer of the stomach arise in those favoured few of our population who have never suffered from dental caries? Surely the first thing is to concentrate on the prevention of dental caries; at any rate it is my firm belief that with the return of sound teeth the diseases above-mentioned will almost disappear.

I am, Sir, yours faithfully,
W. E. NICKOLLS DUNN.

Bath Club, Dover-street, W., May 13th, 1921.

HELIOTHERAPY IN SURGICAL TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—It is no exaggeration to state that heliotherapy is to-day, at least on the Continent, recognised as the treatment par excellence of surgical tuberculosis. The success of Rollier at Leysin and others on the Riviera testifies that the medical profession and the public at large are becoming more and more aware of the great value of a systematised sun cure. Thus no one need nowadays despair of ever bringing back to perfect health, and at times with absolute restoration to its primitive function, a chronically inflamed tuberculous joint. That eminently desperate condition, morbus coxæ, even if suppurating, and that no less discouraging affection, Pott's disease, when not too advanced, both yield to the all-powerful and healing effect of the sun. Again, chronic adenitis, whether the glands be enlarged singly or in groups, whether suppurating or not, can be and is always cured by heliotherapy.

As Rollier says, few cases of local tuberculosis are more susceptible to the treatment, and this without resorting to aspiratory methods, injection of antiseptic substances, and still less to excision. Thus a cure is obtained without reinfection, so constant after operative treatment, and without scars. On the Riviera, where we have treated a large number of cases by sun cure, we have further obtained excellent results in tuberculosis of the abdomen, in all manners of chronically inflamed conditions of bony surfaces, tuberculous or otherwise, in tuberculosis of the uro-genital tract, pleuro-pneumonia, neuritis, neuro-arthropathies, callous ulcers with varicose enlargement, staphylococcic infections, and in the convalescence from abdominal operations, especially those connected with the bowels. To sum up, heliotherapeutics not only shows itself particularly efficacious in all forms of local tuberculosis, when not too advanced, but is also the ideal form of treatment for a large variety of diseases where a general impairment of health has led to an imperfect action of the kidneys and of the skin, and where symptoms of chronic intoxication by toxins dominate the scene.—I am, Sir, yours faithfully,

G. A. CASALIS DE PURY.

Weymouth-street.

SURGICAL SHOCK.

To the Editor of THE LANCET.

SIR,—In surgical shock, uncomplicated by severe hæmorrhage, either external or internal, or by toxic substances capable of dilating capillaries, there appears to be an intense contraction of the whole vascular system, arteries, veins, and capillaries, as stated by Mr. John D. Malcolm. Granted the existence of a contracted vascular system, this becomes no longer capable of containing all the blood, and the volume of blood is reduced by migration of the blood-fluids from the vessels into the tissues, with the result that the blood in actual circulation is greatly diminished. Appropriate methods may be expected to demonstrate, if they have not already done so, the presence, in the tissues, of the missing blood-fluids. The foregoing explanation, being strictly in accord with clinical facts, is, in my opinion, far more convincing than is the assumption that the blood must be in some part of the vascular system, and therefore, "the dilatation of arteries and veins having been ruled out, it could only be in the capillaries."

I am, Sir, yours faithfully,

Plymouth, May 21st, 1921 C. HAMILTON WHITEFORD.

PUBLIC HEALTH AND THE COAL DEADLOCK.

To the Editor of THE LANCET.

SIR,—Perhaps the most remarkable thing about the coal deadlock is the good state of the mental public health. Nobody seems to be getting hysterical. We may be heading for destruction, but we seem to be doing so in a philosophical, good-humoured manner. We learned to put up with restrictions during the war, and have gone back to them quite placidly. For the ordinary public there has been no food difficulty as yet. The difficulty about domestic fuel comes at a time of the year when it is not much felt. A hot dinner once, twice, or thrice a week instead of every day is no great deprivation. Butter is cheaper, vegetables plentiful, and up till now there has been no difficulty about the delivery of milk. We can take to a simpler dietary and a simpler life with probable benefit to our health. A little discomfort on necessary railway journeys is nothing to make a fuss about. The curtailing of tram services may do some of us good, and the reduction of gas and electric lighting is more of an inconvenience than a danger to health. The use of baths is curtailed, and with it the cult of swimming. This will be a relief to those ear and nose specialists who regard the public baths as a source of much ill. The Briton is proverbially fond of his ".tub," but many millions got used to fewer tubs during the war. Many people who have been used to hot baths find the change to cold ones exhilarating. There is no evidence that the public health has suffered as yet. The air of our industrial towns is cleaner. We are conserving our supply of coal at a time when it cannot be disposed of profitably. Fortunately, the necessary sanitary services, such as the collection and disposal of refuse, are very little dependent on coal. Perhaps the deadlock will even give a fillip to the movement for recovering the millions of tons of available fuel from our dustbins.

Provided the strike funds and relief are wisely administered and spent, there is no reason why the public health should suffer, except in so far as the extension of unemployment brings fresh sections of the population below the poverty line. In London the number of necessitous children requiring meals in elementary schools was in December, 1920, double what it was in December, 1919, and the number has increased week by week ever since. It is not nutrition with which we are specially concerned at the moment. All through the trouble a spirit of cheerful optimism has prevailed. I met a man a week ago who prophesied that in three weeks the coal deadlock, the German trouble, and the Irish trouble would be practically settled. He is only typical of many. If you travel in a railway compartment crowded with reservists just called up the one thing which strikes you is their imperturbable good humour. I deduce from all this that the mental public health is in a sound state. It is not that people "don't care"; it is that they realise that they are up against trouble that has to be seen through, and they are determined to see it through cheerfully and without unnecessary "grousing." I do not want to minimise the seriousness of the situation, but as grumbling does not help its absence is all to the good.—I am, Sir, yours faithfully,

May 21st, 1921. M.O.H.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—As the result of the special and ordinary Primary Fellowship Examination held from May 3rd to 14th, for which 171 candidates presented themselves, 58 candidates were approved and 113 were rejected. The following are the names and medical schools of the successful candidates:—

L. H. Appleby, Kingston and London; D. C. G. Ballingall, Cambridge and St. Bart.'s; F. G. Beatty, Trin. Coll., Dublin; A. Blackstock, King's Coll.; C. E. Bond, Cambridge and Univ. Coll.; G. A. Brookes, Sydney and London; H. A. Brookes, Edinburgh; G. G. Bruce, Aberdeen; J. T. Burrell, Cambridge and London; G. M. Cameron, Toronto and St. Mary's; C. H. Carlton, Oxford and St. Mary's; S. M. Cohen, Cardiff and St. Bart.'s; J. R. M. Collie, Dalhousie and St. Mary's; R. S. Corbett, Cambridge and St. Bart.'s.; R. C. Davenport, St. Bart.'s; C. O. Davies, Liverpool; S. N. Deboo, Bombay and Guy's; M. R. Flynn, Sydney and Middlesex; G. N. Golden, London; L. B. Goldschmidt, King's Coll.; W. D. Hart, Otago and St. Mary's; G. T. Henderson, Cambridge and Guy's; C. A. Horder, St. Bart.'s; L. G. Housden, Guy's; M. V. Hurley, Cork and London; S. P. Jacobson, Cape Town and Guy's; J. Jemson, Guy's; A. R. Jones, Cardiff and Middlesex; N. A. Jory and N. E. Laurence, St. Bart.'s; M. A. Lautré, St. Thomas's; K. W. Leon, St. Bart.'s; A. R. Lister, Cambridge and London; C. A. Lupton, Cambridge; Gladys Helen Marchant, Calcutta and Lond. Sch. Medicine for Women; J. Maxwell, St. Bart.'s; Ruth E. Millar and W. Miller, Edinburgh; L. Morris, Manchester and Middlesex; T. D. Overend, Oxford and Middlesex; J. A. Panton, Manchester; C. M. Pearce, St. Bart.'s; N. A. M. Petersen London; J. E. Purves, Edinburgh and St. Mary's; B. T. Rose, Birmingham; J. P. Ross, St. Bart.'s; Violet Iono Russell, Lond. Sch. Med. for Women; J. R. Smith, Cambridge; M. J. Smyth, Dublin and Middlesex; W. O. Stevenson, Toronto and Univ. Coll.; Hilda North Stoessiger, Lond. Sch. Med. for Women; G. C. Swanson, Glasgow and Univ. Coll.; D. B. Walker, Otago and Royal Free; A. D. Wall, St. Bart.'s; E. C. Warner, Guy's; F. W. Watkyn-Thomas, Cambridge and St. Bart.'s; H. B. White, St. Bart.'s; and S. H. Woods, Trin. Coll., Dublin.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The following candidates having passed the requisite examinations have been admitted Diplomates in Public Health:—

Robert B. Watson, Robert B. Stewart, Cecil C. Brown John S. Elliot, John B. Primmer, Donald A. Cadman, Andrew I. Meek, Jamit Singh, John C. Simpson, Norman S. R. Lorraine, Colin Milne, George G. S. Johnston, David T. Macleod Large, George P. Taylor, and Jane Elizabeth Hay.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College held on May 18th the following candidates, having passed the requisite examinations, were admitted Fellows:—

John P. Blockley, John W. Burns, Arthur G. Clark, William A. Cochrane, Thomas Colley, Cyril C. H. Cuff, Charles W. Graham, John M. Hyde, Victor J. F. Lack, Thomas Lindsay, Helen Meldrum McMillan, Walter Mercer, Mabel Lida Ramsay, George C. Scantlebury, Stuart Scoular, George H. Stevenson, and Stanley G. Whitfeld.

The following candidates, having passed the requisite examinations, received the Higher Dental Diploma: Grantley Smith and James A. S. Wright.

At the same meeting the Bathgate memorial prize, consisting of bronze medal and set of books, was, after a competitive examination in Materia Medica, awarded to James Maitland McLintock, and the Ivison Macadam memorial prize in Chemistry, consisting of bronze medal and set of books, was awarded, after competitive examination, to John Harkness.

HARVEIAN SOCIETY.—The annual dinner will be held on Wednesday, June 22nd, at 7.30 P.M., at the Café Royal, Regent-street, London, W.

ROYAL INSTITUTION OF GREAT BRITAIN.—The Friday evening discourse on June 3rd, at 9 P.M., will be delivered by Mr. Leonard Huxley, editor of the *Cornhill Magazine*, on Chronicles of the Cornhill.

GREAT NORTHERN CENTRAL HOSPITAL.—A bazaar in aid of this hospital will be held at Crewe House on June 2nd and 3rd.

THE PEOPLE'S LEAGUE OF HEALTH.—Lady Curzon held an At Home at 1, Carlton House-terrace, on May 24th, to inaugurate her office of Appeal Director of the People's League of Health. The speakers included Viscount Burnham, the Bishop of Birmingham, Sir Bruce Bruce-Porter, and Sir Johnston Forbes-Robertson.

UNIVERSITY OF LONDON.—*Hygiene.*—A course of four advanced lectures on Recent Developments in Legislation for the Prevention of Disease will be given by Dr. Charles Porter at University College, Gower-street, London, W.C., at 5.30 P.M. on May 30th and June 3rd, 6th, and 10th.

Pharmacology.—A course of four advanced lectures on Some Actions of Foodstuffs in the Production and Treatment of Disease will be given by Prof. Edward Mellanby at the Royal College of Surgeons, Lincoln's Inn-fields, London, W.C., at 5 P.M. on June 6th, 7th, 13th, and 14th.

Embryology.—A course of three advanced lectures on Recent Advances in Experimental Embryology will be given by Prof. E. W. MacBride, F.R.S., at the Royal College of Science, Exhibition-road, London, S.W., at 5 P.M. on June 7th, 8th, and 9th.

Medicine.—An advanced lecture on Permeability in Physiology and Pathology will be given at the Royal Society of Medicine, 1, Wimpole-street, London, W., by Dr. H. J. Hamburger, at 5 P.M. on June 8th. This lecture, which will be delivered in English, is the last of a series of six arranged under the scheme for the exchange of lectures in medicine between England and Holland.

A course of four advanced lectures on the Therapeutic Use of Digitalis will be given by Prof. F. R. Fraser, in the Surgical Lecture Theatre, St. Bartholomew's Hospital Medical School, West Smithfield, London, E.C., at 5 P.M., on June 13th, 15th, 17th, and 20th.

All these lectures are addressed to advanced students of the University and to others interested in the subject Admission is free, without ticket.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—At the quarterly meeting of this Association on June 7th, Sir Frederick Mott will deliver the second Maudsley lecture, at 4.30 P.M., at the Maudsley Hospital, Denmark Hill, London, S.E.

ROYAL SOCIETY OF ARTS.—On Monday, May 30th, at 8 P.M., Sir Kenneth Goadby will read a paper on Industrial Disease and Immunity at the house of the Society, John-street, Adelphi, London, W.C. The Rt. Hon. John R. Clynes, M.P., will preside, and the paper will be followed by a discussion.

RONTGEN SOCIETY.—An exhibition of Radiographs will be held by the Rontgen Society in the Royal Photographic Society's rooms, 35, Russell-square, London, W.C., during the month of June. The exhibition will be open daily, Sundays excepted, from 10 A.M. to 5 P.M., and all who are interested are invited to attend.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—At a meeting of this society held on May 20th Dr. W. J. Howarth, medical officer of health for the City of London, was elected president of the society for the session 1921–22. Dr. Howarth will take office in October next. At the same meeting the honorary fellowship of the society was conferred on Dr. Alfred Hill, formerly medical officer of health for the City of Birmingham, "for long and distinguished services to preventive medicine and public health administration." Dr. Hill, who has just entered his 96th year, was president of the society in 1886 and 1887.

MEDICINE IN THE SOUTHERN PARLIAMENT OF IRELAND.—A large number of medical men have been returned unopposed to the Southern Parliament. The following names occur Sir James Craig, Dublin University; Mr. R. F. Hayes, East Limerick and City of Limerick; Mr. V. J. White, Waterford and East Tipperary; Mr. P. McCartan, King's and Queen's Counties; Dr. J. Ryan, Wexford; Dr. Cusack, Galway; Mr. J. Crowley, Mayo; Dr. Ferran, Sligo; Dr. J. P. McGinley, Donegal; Dr. Ada English, National University. Of these members five are in jail, three of them without any charge being preferred against them.

THE LATE MR. W. H. ELLIS.—William Henry Ellis, M.R.C.S., L.S.A., who died at Bradford on May 8th, was consulting surgeon to Sir Titus Salt's Hospital, Shipley, and well known as a medical practitioner in the West Riding. He received his medical education at Cambridge and at St. Bartholomew's Hospital and qualified in 1866. For a time he held a house appointment at the Great Northern Hospital, London, and afterwards started practice at Shipley, for which town he became M.O.H., and was later appointed certifying surgeon under the Factory and Workshop Acts, and a medical referee. He retired from practice in 1910, when he was placed on the commission of the peace for the Riding. Mr. Ellis was the chairman of the Salt Trust Board of Governors, a member of the Shipley School Board, and, in the early days of the Volunteer movement, held a commission in the Volunteer Force. The part which Mr. Ellis took in the public life of the community among which he practised will make his loss keenly felt by many.

HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET.—A course of lectures, free to medical practitioners, is being held at this hospital on Thursdays at 4 P.M. The next lecture will be delivered on June 2nd by Dr. G. Still on Some Urinary Disorders. Subsequent lectures will be announced in our Medical Diary. Clinical instruction is also given by the members of the staff at their visits. The fee to post-graduates for three months' attendance is £5 5*s.*, and for perpetual attendance, £10 10*s.* Clinical clerkships and dresserships are open to students—fee, £1 1*s.* per month.

DALRYMPLE HOUSE, RICKMANSWORTH.—We have received the thirty-seventh annual report of this institution, which is under the management of the Homes for Inebriates Association. During the year 56 persons have been admitted as private patients and 23 under the Inebriates Act; these figures do not include readmissions. The fact that culture and education do not protect a man from over-indulgence is seen clearly by the list of occupations of those who since the opening of the home have been driven to seek its help, for professors, librarians, solicitors, architects, &c., are all included. Even those whose business it is to preach against indulgence themselves sometimes fall, as 31 clerks in holy orders have been admitted; and a scientific knowledge as to the danger of taking alcohol is not a complete safeguard, for 116 medical practitioners have sought relief. The medical superintendent, Dr. F. S. D. Hogg, reports that he uses a variety of methods in the treatment of his patients, and is able to give a large measure of freedom to almost all of them after two to four weeks' residence; the most important aid to recovery he finds to lie in the strengthening of the patient's will-power and determination, and a realisation that total abstinence from alcohol (or from the drug to which he has been addicted) is an absolute necessity.

THE LATE DR. J. M. ROGERS-TILLSTONE.—John Monkhouse Rogers-Tillstone, L.R.C.P. Lond., M.R.C.S., who died at Surbiton on May 16th, at the age of 52, came of a family long associated with Brighton. He studied medicine at St. Bart.'s and qualified L.R.C.P., M.R.C.S., in 1891, practising at East Malling in Kent and later at Chalford in Gloucestershire. Dr. Rogers-Tillstone, after retiring from practice, spent some years at Maidstone. Always interested in the Volunteer movement, he took an important part in the formation of the 1st H.C. Field Ambulance, eventually commanding the unit, and went out to France in December, 1914. He went through the first battle of Ypres, and was mentioned in dispatches for the initiative he showed in evacuating a hospital installed in a ruined building in the town shortly before it was destroyed by fire. Afterwards, a shell burst in front of him and he was thrown from his horse and badly injured. Subsequently he held appointments at Canterbury, Margate, and Colchester. In 1919 he attained the rank of colonel and was transferred from the R.A.M.C. to the Army Medical Service. In 1920, Dr. Rogers-Tillstone became chief of the Home Counties Pensions Board at Guildford, and was holding the appointment at the time of his death.

DEATH OF DR MARTIN DEMPSEY, F.R.C.P.I.—Dr. Martin Dempsey, senior physician to the Mater Misericordiæ Hospital, Dublin, and professor of materia medica in University College, Dublin, died on May 19th. He had been in failing health for some time, and contracting pneumonia he succumbed. He was a little over 50 years of age. Dr. Dempsey, after a distinguished course in the Royal University, took his medical degrees in 1890, and his M.D. degree with gold medal in 1893. He had the reputation of being a sound and wise physician, and a clear and attractive teacher. For many years he enjoyed a large practice as a consultant. Personally he was a man of much charm and wide culture, devoid of show or pretence and much esteemed by his friends.

THE LATE DR. J. S. FERRIS.—Dr. John Spencer Ferris died at Ealing on May 17th at the age of 79 years. After studying at King's College Hospital, London, and in Paris and Germany, he qualified M.R.C.S. Eng., in 1863, taking honours at the M.B.Lond. three years later. He commenced practice in Uxbridge in partnership with the late Dr. Macnamara, and lived there until his retirement in 1910. At first he visited his patients on horseback, but later adopted a high gig with red wheels, his partner's equipage having yellow wheels. He became medical officer and hon. colonel to the Uxbridge Yeomanry, and it is recorded that there was some difficulty in obtaining a horse big enough for him. He was a great friend of Linley Sambourne, who lived near him, and afforded the cartoonist material for some of his inimitable sketches of the yeomanry. At one time Dr. Ferris was an active member of the Uxbridge urban district council, easily heading the poll at the election. Dr. Ferris, who was buried at Great Malvern, is survived by one son, who is in the Navy, and a daughter, his wife having predeceased him.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surgeon Lieutenant-Commanders to be Surgeon Commanders: H. F. Briggs, A. G. Malcolm, H. C. Devas, and H. Burns.

Surg.-Lieut. G. W. Woodhouse to be Surgeon Lieutenant-Commander.

A. C. Esmonde to be Surgeon Lieutenant.

ARMY MEDICAL SERVICE.

Lieut. Col. R. J. W. Mawhinny, from R.A.M.C., to be *Colonel.*

ROYAL ARMY MEDICAL CORPS.

Temp. Capt. (acting Major) H. G. Hobson to be Captain.

Lieut. (Temp. Capt.) T. B. H. Tabuteau to be Captain.

Temporary Captains relinquishing their commissions: Acting Major C. C. Chance (granted the rank of Major), and H. Stanger (retains the rank of Captain).

TERRITORIAL FORCE.

Capt. F. J Morris to be Captain.

Capt. H. B. Logan (late 1st South Middlesex Brigade, (R.F.A.) to be Lieutenant, and relinquishes the rank of Captain.

Lieut. R. Price (late R.A.M.C.) to be Lieutenant.

DEFENCE FORCE.

The following temporary appointments have been made:—

Assistant Directors of Medical Services: Temp. Cols. F. W. Higgs (D.F.) and J. G. Martin (D.F).

Deputy Assistant Directors of Medical Services: Capts. O. Teichman (D.F) and S. S. Greaves (D.F.).

To be temporary Colonels: F. W. Higgs and J. G. Martin.

To be temporary Major: C. V. Bulstrode.

To be temporary Captains: H. Drummond, O. Teichman, and J. D. G. Stewart.

1st East Lancs Field Ambulance (D.F.)—To be temporary Lieutenant-Colonel: T. B. Wolstenholme.

To be temporary Captains: J. F. O'Grady and T. Hamilton.

1st Highland Field Ambulance (D.F.)—To be temporary Lieutenant-Colonel: A. S. K. Anderson. To be temporary Lieutenants: I. S. Thomson, J. I. Moir, G. Burnett, and D. R. Macdonald.

3rd Highland Field Ambulance (D.F.)—To be temporary Captains: D. Roger and W. E. A. Buchanan.

3rd Lowland Field Ambulance (D.F.)—To be temporary Lieutenant-Colonel: F. A. E. Crew. To be temporary Captains: J. A. L. Loudon and C. G. Lambie. To be temporary Lieutenants: O. H. Wild, E. H. Ponder, and R. K. S. Lim.

52nd Lowland Division Sanitary Section (D.F.).—To be temporary Captain: M. Wilson.

1st East Anglian Field Ambulance (D.F.)—To be temporary Major: W. S. Forbes.

1st South Midland Field Ambulance (D.F.).—To be temporary Major: F. G. Hobson. To be temporary Captain: W. D. Gardner.

2nd South Midland Field Ambulance (D.F.).—Temp. Capt. W. W. Newton to be temporary Major. To be temporary Captains: W. W. Newton and Temp. Lieut. N. C. Cooper.

2nd Northumberland Field Ambulance (D.F.).—To be temporary Lieutenant-Colonel: D. L. Fisher.

To be temporary Major: V. Wardle. To be temporary Captains: D. Roberts, F. C. Pridham, and W. McK. Wilson.

49th West Riding Division Sanitary Section (D.F.).—To be temporary Captain: H. L. Robinson.

INDIAN MEDICAL SERVICE.

Lieutenant-Colonel to be Colonel: (Bt.-Col.) R. Heard.

The King has approved the retirement of Lieut.-Col. S. Evans. The King has approved the relinquishment of their commissions by Temp. Capt. Banwari Lal Gupta, Temp. Capt. Shapoor Dinshaw Vania, and Jamshedji Nasarwanji Duggan.

DONATIONS AND BEQUESTS.—The Chelsea Hospital for Women has received £250 from the Trustees of Smith's (Kensington) Charity and £166 1*s.* 7*d.* from the Estate of the late R. I. Campbell.—The British Home and Hospital for Incurables, Crown-lane, Streatham, has received £10 from the Surrey County Football Association.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Wednesday, June 1st.

SECTION OF SURGERY: at 5.30 P.M.

Papers: Mr. Charles A. Pannett: The Treatment of the Imperfectly Descended Testicle.

Dr. A. Goodman Levy: Cardiac Massage.

Thursday, Friday, and Saturday, June 2nd, 3rd, and 4th.

SECTION OF LARYNGOLOGY: Summer Meeting.

THURSDAY.—Papers, 2.30–6 P.M.

FRIDAY.—Papers, 10 A.M.–1 P.M.
Demonstrations, 2.30–4 P.M.
Clinical Meeting, 4 P.M.
Dinner, 7.30 P.M.

SATURDAY.—Visits to Hospitals.

Friday and Saturday, June 3rd and 4th.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

The Council desires to call the special attention of Members of the Section to the British Congress of Gynæcology and Obstetrics to be held at the Queen's Hotel, Birmingham, on June 3rd and 4th.

FRIDAY, June 3rd: at 9.30 A.M.

Papers: Dr. W. E. Fothergill and Dr. F. H. Lacey: The Results of Plastic Vaginal Operations for Genital Prolapse.

Dr. A. Donald: The History and Technique of Colporrhaphy.

The following Resolution will be moved by Dr. Fothergill, seconded by Dr. Lacey:—

That in the opinion of the Meeting, operations by the abdominal route are quite unnecessary for the treatment of genital prolapse.

At 2.30 P.M.

Specimens will be shown by—Dr. Clifford White, Dr. Ewan Maclean, Dr. H. Chapple, Dr. G. I. Strachan, and Professor H. Briggs.

Short Communications will be given by—Dr. F. J. Browne, Mr. Gordon Luker, Dr. Walter Swayne.

SATURDAY, June 4th: at 9.30 P.M.

Operations at Birmingham Hospitals.

N.B.—Members desiring further information should apply to Mr. Beckwith Whitehouse, 52, Newhall-street, Birmingham.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

FRIDAY, June 3rd.—Adjourned Meeting. Papers:—Lt.-Col. H. Kirkpatrick, I.M.S. (retd.): Some Points on Trachoma. Dr. Carlo Franca: An Early Portuguese Contribution to Tropical Medicine.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

MONDAY, May 30th.—8 P.M., Paper:—Sir Kenneth Goadby: Industrial Disease and Immunity.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, May 30th.—12.15 P.M., Dr. Burnford: Pathological Demonstration. 2 P.M., Dr. Simson: Diseases of Women. 2.30 P.M., Mr. Baldwin: Visit to Surgical Wards. 5 P.M., Lecture:—Dr. Arthur Saunders: Gastric Disorders in Children.

TUESDAY.—10 A.M., Mr. Steadman: Dental Department. 11 A.M., Dr. McDougal: Electrical Department. 12 noon, Mr. Tyrrell Gray: Demonstration of Fractures. 2 P.M., Dr. Pernet: Skin Department. 2.30 P.M., Mr. Addison: Demonstration of Cases, Surgical Wards. 5 P.M., Mr. Banks Davis: Clinical Lecture:—Throat, Nose, and Ear.

WEDNESDAY.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Dr. Morton: X Ray Department. 2 P.M., Mr. Gibb: Eye Department. 2 P.M., Dr. Owen: Medical Out-Patients.

THURSDAY.—10.30 A.M., Dr. Simson: Gynæcological Demonstration. 12 noon, Dr. Scott Pinchin: Diseases of the Heart. 2 P.M., Mr. Bishop Harman: Eye Department. 2 P.M., Mr. Baldwin: Orthopædic Department. 5 P.M., Special Lecture:—Dr. W. H. Willcox: Toxic Conditions of the Liver (open to all medical practitioners).

FRIDAY.—10 A.M., Dr. Grainger Stewart: Neurological Demonstration. 10 A.M., Mr. Dudley Buxton: Dental Department. 2 P.M., Dr. Burnford: Medical Out-Patients. 2 P.M., Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Mr. Addison: Demonstration of Surgical Cases, Surgical Wards. 5 P.M., Lecture:—Mr. MacDonald: Retention of Urine.

SATURDAY.—9 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Arthur Saunders: Medical Diseases of Children. 2 P.M., Dr. Sinclair: Surgical Out-Patients.

Daily:—10 A.M. Visit of Post-graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, June 2nd.—Lecture:—Dr. Still: Some Urinary Disorders.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, W.C. 1.

MEDICAL SCHOOL.

MONDAY, May 30th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Lecture:—Dr. Aldren Turner: Psycho-neuroses.

TUESDAY, May 31st.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Dr. Risien Russell: Myelitis.

THURSDAY, June 2nd.—2 P.M., Out-patient Clinic: Dr. Farquhar Buzzard. 3.30 P.M., Lecture:—Dr. Kinnier Wilson: Tumours of Spinal Cord (I.).

FRIDAY, June 3rd.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Lecture:—Mr. Sargent: Surgical Treatment of Cerebral Compression.

NEUROLOGICAL OPHTHALMOLOGY.

WEDNESDAY, June 1st.—3.30 P.M., Mr. Leslie Paton: Optic Atrophy.

Fee for Post-Graduate Course £7 7s.

C. M. HINDS HOWELL, Dean.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON), Turner-street, Mile End, E.

Courses of Lectures:—

A Course of Fourteen Lectures on Psycho-Neuroses, to be given by Dr. M. Culpin in the Clinical Theatre of the Hospital. Open to Students of the Hospital and to Members of the Profession.

TUESDAY, May 31st.—5.15 P.M., Lecture IX.:—Symptomatology.

Advanced Lectures in Physiology, to Students of the University and to others interested in the subject.

A Course of Eight Lectures on Reception of Sensory Stimuli, to be given by Prof. H. E. Roaf in the Physiology Theatre.

THURSDAY, June 2nd.—4.30 P.M., Lecture IV.

A Course of Lectures on Child Physiology, to be given by Dr. W. M. Feldman, in the Physiological Theatre.

MONDAY, May 30th.—5 P.M., Lecture.

The Schorstein Memorial Lecture in the Anatomical Theatre of the College.

FRIDAY, June 3rd.—4 P.M., Dr. A. G. Gibson: Chronic Inflammatory Diseases of the Spleen.

ST. BARTHOLOMEW'S HOSPITAL (UNIVERSITY OF LONDON), West Smithfield, E.C.

A Course of Eight Advanced Lectures in Physiology, to be given in the Physiological Laboratory, to Students of the University and others interested in the subject.

TUESDAY, May 31st.—4.30 P.M., Lecture V.:—Prof. J. B. Leathes: Tyrosine.

UNIVERSITY COLLEGE (UNIVERSITY OF LONDON), Gower-street, W.C.

A Course of Four Advanced Lectures in Hygiene to Students of the University and to others interested in the subject.

MONDAY, May 30th, and FRIDAY.—5.30 P.M., Dr. C. Porter: Recent Developments in Legislation for the Prevention of Disease. (Lectures I. and II.)

ROYAL LONDON OPHTHALMIC HOSPITAL (Moorfields') at the Royal Society of Medicine, 1, Wimpole-street, W.

MONDAY, May 30th.—5.30 P.M., Dr. L. Llewellyn: Miners' Nystagmus.

TUESDAY.—Dr. C. G. Symon: Injuries to the Eye from Metallic Foreign Bodies.

WEDNESDAY.—Dr. T. M. L. Squire: Diseases of the Eye and the Workmen's Compensation Act.

MIDDLESEX HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON).

FRIDAY, June 3rd.—3 P.M., Dr. C. H. Bond: Psychiatry.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, E.

A Course of Post-Graduate Clinical Lectures and Demonstrations in the Board Room of the Hospital, free to Medical Practitioners and Students of Medicine.

MONDAY, May 30th.—4 P.M., Mr. N. C. Lake: Juxta-Epiphyseal Strain and its Sequelæ.

TUESDAY.—4.30 P.M., Dr. E. Pritchard: The Dietetic Treatment of Wasting Babies.

THURSDAY.—4 P.M., Dr. P. Parkinson: Demonstration of Heart and Lung Cases in the Wards.

FRIDAY.—2.30 P.M., Mr. J. Taylor: Surgical Tuberculosis other than that of Bones and Joints.

TAVISTOCK CLINIC FOR FUNCTIONAL NERVE CASES, 51, Tavistock-square, W.C.

A Course of Ten Lectures on Elementary Psychotherapy, to be given by Dr. H. C. Miller, at the Kingsway Hall, Kingsway, W.C.

FRIDAY, June 3rd.—5.15 P.M., Lecture V.:—Emotional Development; The Child and the Adult; Sex Characteristics; Adaptation.

INSTITUTE OF PATHOLOGY AND RESEARCH, St. Mary's Hospital, in the Lecture-room of the Bacteriological Department.

A Course of Lectures on Pathological Research in its Relation to Medicine, open to all Members of the Profession and Students.

THURSDAY, June 2nd.—4.30 P.M., Prof. G. Dreyer: A New Departure in the Serum Diagnosis of Syphilis.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

TUESDAY, May 31st.—4.30 P.M., Lecture:—Sir William Milligan: Endoscopic Examination of the Food and Air Passages.

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.

Special Course of Lectures in Gynæcology.

WEDNESDAY, June 1st.—11 A.M., Demonstration Operations.

THURSDAY.—4.30 P.M., Lecture VIII.:—Dr. A. C. Magian: Pelvic Peritonitis.

Appointments.

DICKSON, K., M.B., B.Ch. Cantab., M.R.C.S., L.R.C.P. Lond., Clinical Assistant to the Hospital for Sick Children, Great Ormond-street.

GOTHE, WERNER, M.R.C.S., L.R.C.P., Head of the Massage and Medical Gymnastics Department at Queen Mary's Hospital for the East End.

KENNON, R., M.D. Liverp., F.R.C.S. Eng., Honorary Assistant Surgeon to the Royal Infirmary, Liverpool.

MORRISON, M., M.B., Ch.B. Edin., D.T.M. Eng., Medical Officer, West African Medical Staff, Nigeria.

REYNOLDS, R. J., M.B., B.S. Lond., Adviser in Radiology to the Ministry of Pensions and Physician in Charge of the Department of Radiology and Electro-Therapeutics at Charing Cross Hospital.

STOCKS, P., M.D. Camb., Medical Officer in connexion with the Department of Applied Statistics and Eugenics in the University of London.

TIMBRELL FISHER, A. G., F.R.C.S., Eng., Surgeon with charge of Out-Patients at the Dreadnought Hospital, Greenwich, in succession to E. T. C. Milligan, F.R.C.S. Eng., who has been promoted to the Senior Staff.

YOUNG, W. A., M.R.C.S., L.R.C.P. Lond., Pathologist to St. John's Hospital for Diseases of the Skin.

Jessop Hospital for Women, Sheffield: KING, W. W., F.R.C.S Edin., Honorary Surgeon; STACEY, J. E., M.B., Ch.B Sheffield, Registrar.

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne District Infirmary.—Res. Surg. O. £250.

Adelaide University.—Professor of Zoology. £1100.

Bedford County Hospital.—Asst. H.S. £150.

Bethlem Royal Hospital, Lambeth-road, S.E.—Jun. Asst. Phys. £350.

Birmingham General Hospital.—H.S. £100. H.S.'s to Special Depts. £125 each.

Birmingham, Queen's Hospital.—Hon. Obst. Officer. Surg. Registrar. £100.

Birmingham University.—Demonstrator of Anatomy. £300.

Bradford Royal Infirmary.—H.S. £200.

Buxton, Derbyshire, Devonshire Hospital.—H.P. £250.

Cardiff, King Edward VII. Hospital.—H.S. £200.

Charing Cross Hospital, Agar-street, W.C.—Asst. Phys.

Chester Royal Infirmary.—Asst. H.S. £175. Also Hon. Asst. S.

City and County of Bristol.—Asst. Res. M.O. at Ham Green Isolation Hospital and Sanatorium. £300.

City of London Hospital for Diseases of the Chest, Victoria Park, E.—H.P. £125.

Colchester, Essex County Hospital.—H.S. £200.

Colchester, Severall's Mental Hospital.—Asst. M.O. 7 gs. per week.

Durham, County Sanatorium, Holywood Hall, Wolsingham.—Asst. M.O. £400.

Evelina Hospital for Children, Southwark, S.E.—Phys. to Out-patients.

Finsbury Dispensary, Brewer-street, Goswell-road, E.C.—Phys. £50.

Glasgow, Anderson College of Medicine.—Chair of Practice of Medicine.

Gloucester County Asylums.—Locum Tenens. £7 7s. weekly.

Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—H.P. H.S. Each £150.

Harrogate Infirmary.—H.S. £150.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S. £100.

Hull Royal Infirmary.—Asst. H.S. £150.

Lanarkshire Joint Committee on Venereal Diseases.—Ven. Dis. Officer. £750.

Leicester Royal Infirmary.—H.S. £200.

Leith Hospital.—Res. M.O. 50 gs.

Liverpool Royal Southern Hospital.—Two H.P.'s and three H.S.'s. Each £100.

Liverpool Stanley Hospital.—Three H.S.'s Each £120.

London Lock Hospital, 91, Dean-street, W.—Clin. Assts.

London Temperance Hospital, Hampstead-road, N.W.—Res. Cas. O. £125.

Maidstone, West Kent General Hospital.—H.S. £220.

Manchester, County Asylum, Prestwich.—Locum Tenens. £8 8s. per week.

Manchester University.—Lecturer in Morbid Anatomy and Morbid Histology. £700. Lecturer in Bacteriology. £700. Lecturer in Chemical Pathology. £700.

Miller General Hospital for South-East London, Greenwich-road, S.E.—Res. Cas. O. £150.

Newport, Royal Gwent Hospital.—Hon. Radiologist.

North Middlesex Hospital, N.—Anæsth. 75 gs.

Norwich, Norfolk and Norwich Hospital.—H.P. £200.

Oldham Royal Infirmary.—First and Second H.S.'s. £250.

Orkney, Eday Parish Council.—M.O. £5 per week.

Preston and County of Lancaster Royal Infirmary.—H.S. £200.

Prince of Wales's General Hospital, Tottenham, N.—Hon. P. and Hon. Asst. P.

Queen Mary's Hospital for East End, Stratford, E.—Cas. O.

Rotherham Hospital.—Jun. H.S. £150.

Royal Naval Medical Service.—Surg.-Lieuts. 26s. 6d. per diem.

Royal Waterloo Hospital for Children and Women.—Hon. Phys. for Out-patients.

St. Helens Hospital, Lancashire.—Res. M.O. £250.

Southampton Free Eye Hospital.—H.S. £200.

Southampton, Royal South Hants and Southampton Hospital.—Sen. H.S. £200. H.P. £150. Jun. H.S. £150.
South Uist, Parish of.—M.O. and Public Vaccinator. £170.
Staffordshire General Infirmary.—H.S. £250.
Stamford, Rutland and General Infirmary.—H.S. £250.
Sunderland Royal Infirmary.—H.S. £200.
Swansea County Borough.—Asst. M.O. £500.
Taunton and Somerset Hospital.—Sen. and Jun. H.S.'s. £200 and £150.
Throat Hospital, Golden Square, W.—Hon. Registrar.
University College Hospital.—Part-time Anæsth. £150.
Wigan Education Committee.—Female Asst. Sch. M.O. £500.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Athlone, Brecon, and Sedgeley.

Births, Marriages, and Deaths.

BIRTHS.

REYNOLDS.—On May 17th, at Palmerston-place, Edinburgh, the wife of Dr. A. O. P. Reynolds, of a son.

MARRIAGES.

FOX—WALDING.—On May 20th, at Holy Trinity Church, Plymouth, Edward Lawrence Fox, M.D., M.R.C.P., to Elizabeth Clare Walding, youngest daughter of the late Thomas Walding and Mrs. Walding, of Harrow-on-the-Hill.

IRVINE—CARR.—On May 6th, at Nairobi, Dr. Archibald Clive Irvine, Church of Scotland Mission, Tumu Tumu, Kenya, to Margaret Joyce, eldest daughter of Mr. and Mrs. Ernest Carr, Woodlands, Nairobi, late of Wigton Hall, Cumberland.

LILEY—GOOZEE.—On January 11th, at the British Consulate, Tangier, Dr. James Liley, of the North Africa Mission Hospital, Tangier, to Edith, only child of the late Mr. and Mrs. Thomas Goozee, of New Malden, Surrey.

TATHAM—BARKER.—On May 19th, Arthur Leopold Tatham, M.B., B.C., to Ellinor Gertrude, widow of Brigadier-General Randle Barnett Barker, D.S.O.

TUCKER—GEDDES.—On May 12th, at St. Marylebone Church, Donald Leslie Tucker, B.A., M.R.C.S., L.R.C.P., to Margaret Gordon, only child of the late Brigadier-General J. G. Geddes, C.B., C.M.G., R.A., and Mrs. Geddes, of North Warnborough, Hants.

DEATHS.

CAMPBELL-HORSFALL.—On May 18th, Charles Edward Campbell Horsfall, M.B., Ch.B.

CREMONINI.—On May 20th, suddenly, at Penzance, John Cremonini, M.R.C.S., L.S.A., late Medical Superintendent Hoxton House Asylum and Government Asylum, Auckland, N.Z.

FERRIS.—On May 17th, at Warwick Dene, Ealing, John Spencer Ferris, M.B., aged 79 years.

WEST.—On May 19th, at St. George's-road, S.E., William Goldsborough West, M.D., M.R.C.S., L.R.C.P., aged 55 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS RECEIVED.

ANGUS AND ROBERTSON, Sydney.
The American University: An Australian View. By Prof. E. R. Holme. Pp. 242. 7s. 6*d*.

MARLBOROUGH, E., AND CO., London.
Gujarati Self-Taught. By N. M. Dhruva. Pp. 113. 4s. 6*d*.

VOGEL, F. C. W., Leipzig.
Diagnostik und Therapie der Knochen und Gelenktuberkulose mit besonderer Berücksichtigung der Theorie und Praxis der Sonnenbehandlung. Von Dr. med. Eugen Kisch, mit einem Vorwort von Professor August Bier. Pp. 284. M. 140.

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THE AVAILABLE REMEDIES IN IMMUNE THERAPY.[1]

BY SIR THOMAS HORDER, M.D., F.R.C.P. LOND.

Specific and Non-specific Measures.

WHEN faced with a case of disease due to microbic infection we think of the employment of (1) measures for assisting the patient's general functions (nervous, circulatory, respiratory, digestive, and eliminative) during the extra strain put upon them, and (2) measures for helping the special function, or mechanism, of immunity against the particular infection. The treatment given under the first head is termed non-specific; under the second, specific.

I have recently urged the importance of non-specific measures in the treatment of many infective processes. The stimulus lately given to specific therapy by the advances made in bacteriology, and especially by the introduction and popularisation of bacterial vaccines, has led to a good deal of disregard of general measures of proved utility. It behoves us to be as prompt and thorough in maintaining a patient's general resistance to infection as in the use of any specific remedy which has experience or experiment, or both, to recommend it.

The Principles of Immune Therapy.

Let us first briefly re-state the basic principles underlying all attempts at immune therapy, without subscribing to any doctrine as to the exact nature of the immune process. In diseases of microbic origin the process is the expression of an interaction between the infecting agent and the body tissues. The immediate contributions to this interaction on the part of the micro-organism are the specific chemical poisons—*toxins*—incidental to the life of the microbe in the body. Toxins are of two kinds—exotoxins, produced in the medium in which the bacterium thrives, and endotoxins, those existing in the cell of the bacterial element itself, and set free only by the disintegration of the cell element. Microbic diseases fall into two groups, according as the poisons leading to the symptoms of the disease are chiefly exotoxins or are chiefly endotoxins. Of the first kind are tetanus and diphtheria; of the second, cholera, typhoid, and diseases due to the pyogenetic cocci (streptococcus, pneumococcus, &c.). But these two forms of toxin are not the only contributions made by the infecting agent to the interaction; there are the essential structural constituents of the bacterial cell itself, which, as soon as the cell is destroyed by the tissues of the host, become agents in the interaction.

So much for the contributions of the microbe. What are the contributions of the infected host? A protective substance termed generically *antibody* is formed in response to the stimulus of the various microbic factors already mentioned and which are generically called *antigen*. Knowledge of the various properties exercised by this hypothetical substance called antibody has led to the postulation that antibody comprises a number of different substances. If the exotoxin is neutralised we speak of antitoxin; if the endotoxin is neutralised, of anti-endotoxin; if bacteria are agglutinated, of agglutinin; if precipitated, of precipitin; if they are directly destroyed we call the specific substance, or the property of the antibody, bacteriolysin; if leucocytes are stimulated to phagocytosis, we speak of opsonin.

Experiments have shown that in the interaction an intermediary substance is necessary, without which antigen and antibody are unable to assume any very intimate chemical relations with each other. This third substance, which is present in healthy blood and tissue-fluids, is termed *complement*. Complement is certainly necessary for the neutralisation of toxin with antitoxin; to what extent, or if at all, it is essential for the complete interaction of other forms of antigen with corresponding forms of antibody we do not clearly know.

Now specific therapy has as its object the artificial increase of antibody. Incidentally, it has a secondary object—the maintenance of efficient complement. The artificial production of antibody may be attained in two very different ways: *passive immunity* may be conferred upon the patient with ready-made antibody, or *active immunity* may be produced by stimulation of the patient to manufacture his own antibody on a larger and more efficient scale than he is already doing. Immunised serum derived from animals (e.g., the horse) is most commonly used to confer passive immunity; active immunity is most commonly produced with bacterial vaccines. The two methods may be combined in certain diseases.

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[1] Abstract of address delivered before Torquay Medical Society.

Available Means of Employing Specific Therapy.

(1) The use of immune serums: (*a*) Antitoxic serums, which chiefly act by the neutralisation of exotoxin formed by bacteria in the body; (*b*) bactericidal serums, which chiefly act by destruction of the bacteria, thereby preventing the increase of endotoxin.

(2) The use of bacterial vaccines, which serve to stimulate the natural mechanism of immunity.

(3) The use of immune serums and vaccines conjointly, either as separate remedies or in the form of sensitised vaccine.

(1) Antiserums: (*a*) Antitoxic serums remain the most strikingly successful, as they are historically the earliest, of all the remedies used in specific therapy, and this applies especially to antidiphtheria serum, less so to antitetanus serum, but the more limited success of the latter remedy is undoubtedly due to the difficulty entailed by the path of infection of the virus rather than to lack of potency in the serum.

(*b*) Bactericidal serums have never yet attained anything like the same degree of success as antitoxic serums, having hitherto lacked a sufficiently rich content of antibody to lead to any uniformly good results. Another difficulty in preparing these serums is connected with the fact that most of the bacteria against which they are manufactured exist in groups, and a serum prepared against one group is by no means specific in respect of antibody for another group. The attempt made in the case of streptococci to produce "multivalent" serum has not proved successful; more hope appears to lie along the line of producing univalent serums against the different groups.

(2) Bacterial vaccines are at present the chief type of immunising substance employed in combating nearly all infections by known micro-organisms possessing powerful endotoxins.

(*a*) The earliest form of vaccine remains the one in most common use—a simple suspension of the killed microbe in normal salt solution. Most bacteriologists appear to kill the bacterial elements by heat; some prefer autolysis—allowing the micro-organism to undergo auto-digestion in the warm incubator after counting. Others, believing that heat interferes with the efficacy of the vaccine, rely upon some such antiseptic as tri-cresol. If we knew exactly what are the initial processes going on in the human body when living microbes invade it, we should be better able to decide how best to prepare the cell-element before we inject it in the form of a vaccine. It seems reasonable to suppose that undue heat and the presence of chemical agents are both to be avoided if the tissue is to digest the bacterial cell and manufacture antibody of use against the living micro-organism.

(*b*) "Sensitised" vaccines ("sero-vaccines") are made by bringing a bacterial emulsion into contact with the appropriate immune serum (e.g., a *Streptococcus pyogenes* is mixed with a univalent *S. pyogenes* serum). The specific antibody in the serum becomes "fixed" by the bacteria, and the combination is termed a "sensitised vaccine." Some authorities doubt whether this sensitisation of vaccines adds to their therapeutic value, and this question is still unsettled.

(*c*) "Live" vaccine has been used by Alcock and others in some cases of gonococcus infection, and in one or two other infections. No special results appear to have been obtained—certainly none which counterbalance the obvious risks that might be run if such a system became generally adopted.

(*d*) "Phylacogens" are prepared with special effort to render the cell-body, which constitutes an essential part of the vaccine material, easily assimilated by the tissues into which it is injected. It is very pertinently argued that valuable time may be lost during the preliminary effort of the tissues to digest or disintegrate the bacterial cell element in order to start the specific interaction resulting in the formation of antibody. An endeavour is therefore made, "partly by appropriate temperatures and partly by chemical agency," to get the bacterial cell structure into solution. During this process there is inevitably added to the solution a certain amount of the exotoxin of the bacteria—an amount depending, no doubt, upon the nature of the medium; but as this medium is invariably fluid the amount of exotoxin cannot be negligible, and it perhaps accounts for the very sharp reaction sometimes seen after the use of this class of remedy. On general principles, as the object in view is not to add more exotoxin to the patient's burden, this must be regarded as a point against the method. To what extent the endotoxin of the bacterial cell goes into solution it is not possible to say, because unfortunately we have no chemical means of measuring this substance; but it seems fairly certain that in the preparation of phylacogens a more successful effort has been made in this direction than hitherto.

(*e*) The most modern of all remedies of the bacterial vaccine type are the detoxicated vaccines. These we owe to Dr. David Thomson, who argues that it is an advantage to get rid of the endotoxin of the bacterial cell, if that were possible, partly because of the known difficulty of producing anti-endotoxin experimentally by the injection of the whole cell element and partly because, with the endotoxin removed, it would be possible to use much larger doses of the vaccine, and thus obtain proportionately larger responses in the way of cell-destroying antibody. Thomson considers that he has devised a means of removing the endotoxin without, at the same time, altering the nature of the bacterial cell substance, which is then left for purposes of inoculation. As yet it is too early to judge of the value of these detoxicated vaccines.

Choice of Remedies.

The choice of the particular remedy to be employed in any case of infective disease depends upon (*a*) the nature of the infection, (*b*) whether it is local or general, (*c*) its acuteness or chronicity, and (*d*) the stage at which the infection has arrived. Let it be noted that there are two important differences between serums and vaccines arising out of their mode of action as already outlined: (1) Immune serums act rapidly, but their action is transient; vaccines act slowly, but their action is more prolonged; (2) immune serums supply important substances that are lacking in the body, and do not require much active response on the part of the tissues in order to produce their effects; vaccines depend for their action upon a latent power in the tissues of producing antibody when specifically stimulated to do so. It may be said that the more acute and generalised the disease-process and the more ill the patient, the more likely is immune serum to prove efficacious; the more chronic and localised the disease-process and the less ill the patient, the more likely is a suitable vaccine to do good. It is often advisable to begin the treatment of a severe case of infection by immediate and liberal use of an appropriate serum, and to follow up any advantage thus gained by inoculation with a vaccine prepared in the meantime.

Results and the Future.

The fact that so many remedies are available for inducing immunity stimulation in the patient proves how far we still are from standard measures of treatment and results showing any sort of uniformity. There are difficulties in connexion with immunity research; no subject calls for greater imagination combined with meticulous technique. There are difficulties in connexion with the practical use of the substances offered for exploitation to the practitioner. What argument can be more difficult or more complex than the therapeutic argument? It is full of pitfalls and possible fallacies. Patients get well at times in spite of our treatment, and they die at other times when the remedies seem to possess the hall-mark of precision. *Post hoc* and *propter hoc* dog us wherever we go, and properly to assess the part played by any remedy in the recovery of the patient is easy only to the ignorant.

It will not be surprising if some of the present clumsy technique is shortly superseded by more exact methods of preparation of immunising substances. The war, wasteful of time and brains as well as of human life and money, has no doubt delayed development; we must now exploit the remedies that are at our disposal as well as we can—not, by the way, adding to them in an amateurish fashion of our own.

We should understand what we are trying to do, and, so far as is possible, the nature of the materials with which we work. These principles of practice are not only essential to our own development, they are part of the duty which we owe to our patients. The preservation of mental clarity is a most important asset in the practitioner's attitude towards these things. Once he loses it he no longer controls his remedies: they control him.

MEDICAL AND SANITARY REFORMS IN MESOPOTAMIA.

A "Review of the Civil Administration of Mesopotamia," is the title of the paper recently presented to Parliament, giving an account of the civil administration during the British military occupation down to the summer of 1920, when, a mandate for Mesopotamia having been accepted by Great Britain, steps were being taken for the early establishment of an Arab Government. The preparation of the Report was entrusted by the Acting Civil Commissioner to Miss Gertrude Bell, C.B.E., Assistant Political Officer, Baghdad, who speaks Arabic fluently, is noted as a traveller and explorer in Asiatic Turkey, and has by her work and writings gained the Founder's Medal of the Royal Geographical Society. Subjoined is the substance of those portions of her report which relate to medical and sanitary matters:—

> Closely connected, from one aspect, with the land—that is to say, with its capacity for production—is the provision of medical and sanitary facilities for the civil population. If man-power is the primary asset in the national economy of every community, in Mesopotamia the problems connected with its preservation and increase present themselves in an acute form. The vast development of which the country is capable waits upon a substantial addition to the number of its inhabitants. . . . The population of the 'Iraq, though scanty, is prolific, but the absence of medical

arrangements and an all-prevailing ignorance of the laws of health and sanitation have combined to keep it down. If infant mortality were arrested and the children given a better prospect of reaching adult life it might not improbably be doubled in the next 30 or 40 years.

Public Health during the Military Occupation and in the Transition to a Peace Footing.

From a military point of view care of public health and the sanitation of the towns were necessary precautions if the troops were to be kept free from disease. A civil dispensary was opened in Basrah immediately after the occupation, while the Deputy Military Governors took steps to secure the cleanliness of the town. A civil hospital was started in 1915 and additional dispensaries opened in 'Ashar. A civil surgeon superintended these establishments, and was put in charge of sanitary arrangements in Basrah, and an army medical officer controlled the sanitation of 'Ashar. The sanitation of the gaol and the health of prisoners received careful attention. Lunatics could not be provided for locally and were sent to India for treatment. The attendance at the dispensaries and hospitals was greater than had been expected. The people accepted inoculation and other precautions against plague, and were eager for vaccination. After the occupation of 'Amarah a hospital and dispensary were opened there under a British army doctor, and they proved as popular as in Basrah. Similarly at Nasiriyah the services of a military doctor were lent to the civil hospital and dispensary.

After giving credit for the zeal and tact of the medical officers and praising the Indian dispensaries and medical staff, the Report goes on to state that during 1916 there was a notable advance in the sanitation of the towns, and that infections diseases were checked. At Sug, owing to shortage of medical staff regular work was not started till 1917. The absence of a dispensary was regarded by the inhabitants as a grievance, though under the Turkish regime no such institution would have been dreamed of. Apart from their special use the hospitals made a most valuable form of propaganda work.

During the process of demobilisation it was necessary to assure the continuance of adequate health and medical services when the military authorities could no longer give assistance. By the middle of 1918 there was a civilian hospital or dispensary in each military station of any importance with either a civilian surgeon in charge or a military officer who undertook civilian work in addition to his military duties with the help of an assistant, usually an Indian subassistant surgeon. Native and Turkish doctors were also employed wherever possible, though, generally speaking, their sphere of usefulness was limited by lack of training.

Coördination of Civil Institutions.

The civil institutions had not been coördinated, owing to the absence of any central organisation, but in August, 1918, this was remedied by the appointment of a Civil Deputy Assistant Director of Medical Services, who worked in the office of the Military Director of Medical Services and acted as a liaison officer. In February, 1919, he became administrative head of the civil medical department, and in March, with the more complete organisation of the health department, he was appointed Secretary for Health. There were then in existence some 50 civil hospitals and dispensaries, three-quarters of which were run by a civil staff, though in nine of these supervision was undertaken by military medical officers. Arrangements had been made with the base medical stores before the end of 1918 to maintain sufficient supplies to meet all the requirements of the civil medical service for the year 1919, and the nucleus of a civil medical depôt had been formed in Baghdad.

By arrangement with the Red Cross Society, which demobilised in March, 1919, this depôt had the first option on all the Red Cross stock in the country. As regards sanitary work, locally trained inspectors and gangs replaced sanitary sections in the towns in which they had been employed, and the care of public health began to pass everywhere into civil charge. It includes the inspection of prisons, markets, noxious trades, and slaughter-houses, the provision of chlorinated water, measures to ensure general cleanliness, and the destruction of rats, mosquitoes, and flies. The civil surgeon of a provincial town, who is also health officer, is overwhelmed with administrative work in addition to his medical work, and it is only by unceasing labour that he can accomplish his task. The devotion shown by the officers of the Medical Service, and their tact and skill in handling the native population, have been beyond praise.

Hospitals and their Staff.

Immediate steps were taken to enlist what medical personnel was available in Mesopotamia and to recruit at home such additional staff as was required, with the result that it has been possible to supply urgent needs. There are now hospitals in Baghdad, Basrah, and Mosul, nursing sisters tend the civil hospitals, and both Baghdad and Mosul have hospitals set apart for women and children. The women's hospital in Baghdad has an interesting history. It is lodged in an excellent building, which was in Turkish times the civil hospital of the town. A small staff of French nuns had been employed by the Ottoman Government as nurses; they had endeared themselves to the people, and their community had earned our lasting gratitude by the services they had rendered to British prisoners during the war. It was decided to ask the nuns to continue to serve in the hospital under the new arrangements, and employment was offered to an additional number of trained sisters who are being brought from France. To see these admirable women carrying on their work with every advantage that the British Medical Service can supply carries conviction that all is not wrong with the world.

In Basrah, where the house used as a civil hospital is not suitable, a new building will be erected out of funds subscribed voluntarily by the inhabitants in memory of General Maude. Nasiriyah also boasts a Maude Memorial Hospital. The British and French nursing sisters undertake the training of native girls, not only to serve in the hospitals, but also with the object of creating a body of trained nurses to work among the native population. The better-class women of Baghdad readily admit the need of trained midwives, for, as they observe, the existing midwives bring disease instead of combating it. ...... Depôts for medical stores have been instituted both at Basrah and at Baghdad, and in the latter place, besides the women's hospital, there is a civil hospital for men, an isolation hospital, an X ray institute taken over from the army, a dental institute, two dispensaries, a nursing home for officers and their wives, and a venereal hospital for women. The terrible scourge of venereal disease receives special attention at other centres.

Prevention of Infectious Diseases.

The prevention of infectious diseases is being dealt with effectually, perhaps, the most gratifying achievement having been the checking of an epidemic of plague in 1919 by a whole-hearted resort on the part of the local population, male and female, to inoculation with plague vaccine. Over 80,000 people were inoculated. A vaccine lymph depôt, started by the military authorities at 'Amarah, ensures a supply of calf vaccine throughout the occupied territories. In the Mosul Wilayat the most serious problem which confronts us is the universal presence in the hills of malaria of a violent type. The condition of the villages is deplorable: some, indeed, are reported to be uninhabitable. In most areas occupied or traversed by our troops careful malarial surveys by specialist officers have been made, and it is hoped soon to preserve these records by making them available in condensed printed form so that they be accessible to all concerned.

Danger of infectious disease is notably increased by the influx of pilgrims to the Shi'ah shrines. During the war the pilgrimage was necessarily intermitted; permission to renew it was given in 1919, and exceptionally large numbers availed themselves of it. An average of 7000 pilgrims a month passed through the frontier town of Khanigin. No attempt has been made to imitate the Turkish quarantine arrangements, which were as burdensome as they were inefficient, but careful measures are taken to ensure the cleanliness of Khanigin, and a dispensary for the treatment of pilgrims will be opened at railhead. In the holy towns the pilgrims entail much additional sanitary work, but the precautions which have been taken cannot yet be considered to suffice.

Quarantine for the Dead.

The Report concludes with some account of the measures taken by the Health Department for the prevention of infection by the dead. Bodies brought for burial to Karbala and Najaf are quarantined under regulations which have been drawn up by an international commission controlled through the International Quarantine Board, but the control of both corpse and pilgrim traffic are difficult and delicate matters. It is hoped that in the future the subject may receive consideration by a committee consisting of the various interests concerned—transport, political, and medical. Finally, the Report says ;—

> It may be said with assurance that in few directions has more rapid progress been made since the occupation than in the case of public health. In Baghdad, Basrah, and Mosul the increase in the number of beds is as notable as is the increased efficiency of the present hospitals compared with those that existed in Turkish timse. But it is, perhaps, in the provinces that the greatest change has been effected. Provincial hospitals and dispensaries were rare under the Ottoman regime, and even where they were to be found they were of little value. At Nasiriyah, for example, the staff consisted of a single doctor, who frequently shut the dispensary and went away, leaving all work at a standstill. The Turks made no attempt to win the confidence of the tribesmen, and the bulk of the population was thus left without medical aid of any kind. In the villages sanitary precautions were non-existent and in the provincial towns they were grossly insufficient.

The efforts of political officers and civil surgeons have brought about improvements which are indeed remarkable.

SOCIETY FOR RELIEF OF WIDOWS AND ORPHANS OF MEDICAL MEN.

Sir Alfred Pearce Gould presided at the annual general meeting of this Society, held on May 18th, at 11, Chandos-street, London, W. The report for 1920 showed that during the year 11 new members had been elected and 6 lost owing to death and resignation. The Society consists at the present time of one honorary, 163 life, and 137 ordinary members, making a total of 301. The income from investments amounted to £4682 odd, £373 received from subscriptions and donations, and the working expenses were £299. During the year two widows came upon the funds and three died. The sum of £4584 was distributed among the annuitants, comprising 52 widows and 6 orphans. Membership of the Society, which is one of the richest of its kind in the United Kingdom, is open to any registered medical practitioner who at the time of his election is resident within a twenty-mile radius of Charing Cross. Relief is only granted to the necessitous widows and orphans of deceased members of three years' standing and of life members. At the present time the widow who has an income of not more than £100 a year receives a grant of £50 per annum, and each orphan, up to the age of 16, a grant of £43 per annum. In speaking to the report the acting treasurer drew attention to the fact that the working expenses were about 5 per cent. of the total income. The next election of members will be on July 6th.

G. Ll. J. asks for suggestions in treating a case of acute nephritis following Henoch's purpura in a boy of 13. The febrile period lasted six weeks and left the urine loaded with albumin, blood, and epithelial casts.

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The Relation of HEART DISEASE AND PREGNANCY.

By Sir JAMES MACKENZIE, M.D. Edin., F.R.S.,
DIRECTOR OF ST. ANDREWS CLINICAL INSTITUTE.

IN FOUR SECTIONS—SECTION I.

Introduction.

There are few subjects in medicine of which an accurate knowledge is more urgently required than that of a woman's fitness for child-bearing. That a great strain is thrown upon the maternal heart during pregnancy and labour is well known. It is a matter of experience, too, that the pregnant state may throw more work on the heart than it can bear, with the result that the mother's life is lost, or her health irreparably impaired. The child, too, often dies. These disastrous happenings surround a natural process with dread and mystery, for the dread is aggravated by the fact that the source of danger is not clearly realised. As a result, all sorts of signs are looked upon with suspicion—signs innocent as well as signs grave. Needless to say, this obscurity does a great deal of harm. Many women are subjected to unnecessary alarms and restrictions when pregnant; others have to suppress the natural desire of motherhood; while connubial relations are often disturbed by warnings and hints of dangers which may never arise.

Defect in Medical Knowledge.

This unsatisfactory state of affairs is entirely dependent on a defect in medical knowledge which it is quite possible to remedy. That the matter is not worse is in a measure due to the fact that the vast majority of women, especially women of the working-classes, never have their hearts examined. Were they systematically examined, abnormal signs would be discovered in many instances; the significance of these signs would not be understood; grave doubts would be aroused. Thus, many who have passed unscathed through the pregnant state would have been unnecessarily frightened and alarmed.

When we seek for an explanation of our ignorance on this subject we find that it is due to the fact that medical knowledge has not advanced far enough to enable us to understand the meaning and significance of certain physical signs. Moreover, we find a new difficulty when we come to ask ourselves in what way our lack of knowledge can be made good. Gradually it is forced on our minds that if we would understand clearly defects and their origins we must go back to the beginning and consider the way in which, at present, the subject-matter of these chapters is investigated and taught.

The teaching of disease of the heart comes within the province of the physician. When, however, one comes to estimate the opportunities the physician has for dealing with the relation of heart disease to pregnancy, one soon discovers that his practice never brings him into contact with pregnant women except when one of these latter is referred to him for an opinion. On these occasions it frequently happens that, instead of frankly recognising that his experience does not justify him in claiming a knowledge of the subject, he gives a prognosis of the "guarded" type. He says in effect: "The patient may undergo pregnancy safely; on the other hand, there is a possibility that she may not." The effect of this is that the patient is left with a vague notion that some dread fate hangs over her head. In other instances the physician "plays for safety," and forbids the pregnancy, yet these patients may be perfectly capable, in many cases, of undestaking it.

The obstetric physician, if we may judge from modern text-books, has never taken the trouble to understand the elements of cardiology; in consequence he continues to pursue his enigmatical methods. While the advances in cardiology are barely mentioned in books on general medicine, they are not dealt with in books on obstetrics. In the recent text-books on this latter subject which I have read there is not the slightest indication that any advance has been made in the study of the heart during the last forty or fifty years—the writers apparently being unconscious of the revolutionary changes which have taken place in our knowledge of this organ in this period of time.

I am emphasising this point for reasons which have only an indirect bearing on the matter in hand. I wish my reader to visualise clearly the methods peculiar to medical investigation. Pregnancy is not the only condition which is shrouded in darkness. There are a great many other questions of a similar kind which are an integral part of the practice of medicine and which await inquiry. No progress, I believe, can be made in regard to them till it is understood how medical investigations should be conducted. The matter of heart disease and pregnancy serves thus as an illustration of a wider difficulty. It shows, if we will but learn the lesson, how completely our present-day method of medical research fails of its purpose. It is my aim to indicate the nature of this failure, and to explain in what manner I conceive that success may be attained.

Personal Experiences.

My attention was early directed to the subject of Heart Disease and Pregnancy by a tragic experience which occurred soon after my entrance into general practice, about forty years ago. I attended a young woman, 35 years of age, for a miscarriage at the third month of her first pregnancy. I discovered then that she had a presystolic murmur; so far as my investigation of the condition went, there was nothing more the matter with the heart. I had a vague notion that mitral stenosis was a serious embarrassment to the heart in pregnancy, but of the source of danger and its nature I had no knowledge. The woman left my neighbourhood for a year, at the end of which time she returned to her father's house, seven months pregnant, and with a considerable œdema of the legs. This œdema increased until, when labour set in at full time, she was much swollen not only in the legs, but in the abdomen. The external genitals were so œdematous that an examination per vaginam could be carried out only with difficulty. As the labour proceeded little progress was made; the suffering was very great, and there was marked distress in breathing. The patient had to lie propped up in bed, a position which rendered the use of instruments impossible. Moreover, so profound was the sense of suffocation that attempts to give chloroform were resisted. Two practitioners of much experience saw her, but after many hours of suffering she died undelivered, from extreme exhaustion.

I had, at that time, a fairly large midwifery practice, and, on several occasions during the next few years, I had some rather trying experiences in attendance on women with heart trouble, though no other case proceeded to such a disastrous ending. I noticed, however, that in a number of patients with damaged hearts the pregnancy further impaired the functional efficiency of that organ. The importance of this being thus forced upon me, I read carefully all the available literature. This, indeed, confirmed the view I had formed as to the danger in mitral stenosis, but gave me no enlightenment about the risks in other forms of heart affection. There were many vague hints of the evils arising from valve lesions, but of sufficiently definite information to enable me to recognise which types of these lesions were to be feared there was none. Even the changes occurring in the normal heart during pregnancy were very imperfectly described.

State of Knowledge of Cardiac Phenomena.

I made a note of the results of my reading, and propose to give the gist of it here as a kind of review of the state of knowledge of cardiac abnormalities prevalent forty years ago. That this may be found strangely apposite to-day by certain of my readers will only show, I fear, that the attitude of the profession of those early times is still the attitude of the bulk of teachers and authors. Indeed it seems to me, as I turn back to these old pages, that the trend of modern medicine, both in teaching and investigation, is to render the solution of such problems as the relation of pregnancy and heart disease impossible. Before the discovery of auscultation and the use of the stethoscope, about 100 years ago, experienced physicians estimated the state of the heart by its manifest functional efficiency; and in reading the authors before that date, I find that many of the views which I have arrived at were anticipated by them. There is no doubt in my mind that the line pursued by those physicians was sounder than that which has been followed since the introduction of mechanical devices. The coming of the stethoscope was the beginning of a method in clinical research which has greatly hampered the practice of medicine, in that the introduction of mechanical methods has led to a confusion as to the kind of knowledge which these methods are capable of affording. This criticism applies not only to the stethoscope and its various modifications, but to all the other instruments which have since been employed in the examination of the patient. I need mention only the sphygmograph, polygraph, electro-cardiograph, and blood-pressure instruments.

The discovery of the sounds of the heart and the various modifications of these sounds was followed by a period in which a great deal of time was spent on auscultation and on the discussion of the phenomena revealed by it. At first the cause of the cardiac sounds was not clear; a long series of observations, experimental and clinical, was therefore undertaken, to find out the manner in which the sounds were produced. I do not dispute that a great deal of valuable knowledge was thus accumulated.

One unfortunate consequence of this concentration upon the new method, however, was to give it a preponderating importance in the examination of the heart, and to minimise the value of the study of other phenomena, with the result that unjustified conclusions were drawn from mere modifications of the sounds. This, as has been indicated, was an error inherent in the view taken, at that time, of the possibilities of the new instrument. The physician who detected an abnormal sign supposed that in detecting it he had obtained information of a sort hitherto only obtainable by a test of functional capacity. He believed that he had gained knowledge entitling him to make a prognosis without the labour of determining how far the patient's activities were already curtailed. What he failed to see was that so long as he did not know the mechanism of production of the abnormal sound, nor the after-histories of people who might have this abnormality, he could not properly base conclusions on its presence. Thus, in reading the early literature of heart affections, since the introduction of the stethoscope, we find a grave significance attached to the presence of a bruit, at a time when the cause of the bruit was unknown and the kind of information which it conveyed was not understood. I have sought for an explanation of this rather astonishing state of affairs. I find it, I think, in the probability that a physician, examining dying patients in whom a bruit was present, would attribute the failure of the heart to the cause of the bruit. That this is the correct explanation is rendered more likely because we find similar reasoning following the discovery of a sign by any new method. Thus, to-day, physicians and "heart specialists" may be observed attributing serious significance to peculiarities detected in graphic or electro-cardiographic records or in blood-pressure readings before they understand the nature of the signs on which their gloomy forebodings are based.

I dwell on this to draw attention to the fact that medical knowledge has not even yet advanced so far as to enable investigators to understand the principles which should guide them in recognising the significance of an abnormal sign. They do not know how to apply their observations in practice, nor what steps to take to obtain an estimate of their significance. This statement may seem to be an exaggeration; if, however, the reader will consider the methods, to be described later, which I was compelled to employ in order to find out the significance of a symptom, he will, I think, realise not only that a defect in knowledge existed, but also how it came to exist; and why it is still with us.

The hasty conclusions formed by the early observers in regard to the significance of murmurs have hung like a mill-stone round the necks of the profession; to-day these conclusions mislead the vast majority of doctors, and cause much unnecessary trouble and injury to people in many walks of life.

THE NORMAL CHANGES IN THE MATERNAL CIRCULATION DURING PREGNANCY, CONFINEMENT, AND THE PUERPERIUM.

Methods of Investigation.

In my endeavour to find out wherein lies the danger of pregnancy to women with heart disease, I experienced most difficulty in determining how to set about such an inquiry. The study of patients with damaged hearts proved fruitless and misleading, for I was not able to tell the significance of some of the symptoms. I had already supposed certain of these latter to be abnormal and of grave significance, on grounds which I was coming to recognise were insufficient. At last I realised that it was necessary for me to understand the phenomena which occur in healthy women if I was to form a clear idea of the changes taking place in consequence of the accommodation of the circulatory system to increased work.

I began, therefore, to observe women during their confinements, noting all the signs which I took to be departures from the normal, and also those which occurred as a consequence of the straining during the labour. I soon found quite a number of changes; for example, modification of the sounds, murmurs, irregularities, displacement of the apex beat outwards to the left, some duskiness of the countenance, and so on. Some of these signs were modified or disappeared during the puerperium. I was at a loss to explain their presence or their significance, and I saw that the subject required far more thorough investigation. I recognised that it would be necessary to watch the onset of these signs, and the conditions or factors which caused them; then, it would be necessary to watch patients for a long time after their confinements to see if the signs disappeared or remained to give rise to trouble in the future. This latter part of the problem was one of extreme difficulty. For it was not only necessary to note the progress of the patient, but also to find an intelligent method of estimating the significance of the changes which might be observed.

In the routine of my work as a general practitioner, I had opportunities of seeing women before they became pregnant. I made careful notes of the state of the heart and circulation in such of these as I expected would become pregnant. When they consulted me afterwards for early troubles, such as sickness and vomiting, I examined their hearts at intervals. Further, I examined those who bespoke my service for their confinements, and kept them under observation till labour began. As time went on, I found that one sign after another required particular observation, and so I had to adopt special methods to obtain the information I desired. Thus I found œdema of the lungs to be a very important matter in heart failure, and its relation to the pregnant state had to be specially considered. I found, too, that the embarrassment of the circulation increased during the last months of pregnancy, and that a number of new symptoms appeared then; for example, murmurs, irregularities, and pulsation of the veins of the neck. It was necessary to know exactly when such changes began; so I used to ask the patients to stay in bed on certain days till I had visited them. The different points were carefully noted. Finally, the significance of these signs, as they were related to the heart's efficiency, had to be considered. This led to an inquiry, extending over many years, which is not yet complete.

I will deal specifically with the more important symptoms in later chapters; here I propose to summarise the results of the alterations which occur in healthy people.

CHANGES DURING THE EARLY MONTHS OF PREGNANCY.

Practically no changes in the circulation could be detected in the early months of pregnancy. Sometimes sickness confused the picture, bringing in its train exhaustion, and variations of the pulse rate, but as time went on these disappeared.

Limitation of Response to Effort.

Towards the sixth month the response to effort began to be restricted, i.e. breathlessness appeared after an amount of exertion which had hitherto been accomplished in comfort. As a rule this never became extreme, and the woman was able to attend to her household duties: she felt the breathlessness chiefly on going upstairs.

Effect of Increase in Size of Uterus.

About the seventh month the uterine tumour altered the shape of the chest—widening it out so that the circumference gradually increased. The chest was measured immediately under the breasts and, as full time approached, the circumference increased considerably in some cases. Immediately after delivery the circumference diminished, and day by day it decreased till some weeks after confinement it had returned to normal.

The following are a few examples:

		Inches.
CASE 1.		
At full time	.. ..	28
Immediately after birth of child	.. ..	25¾
Four days after birth of child	.. ..	21½
CASE 2.		
At full time	.. ..	26½
Immediately after birth of child	.. ..	26
Seven days after birth of child	.. ..	26
CASE 3.		
At full time	.. ..	29
Immediately after birth of child	.. ..	28½
One day after birth of child	.. ..	25½
Three weeks after birth of child	.. ..	23½

Displacement of the Heart.

Coincident with the change in the chest circumference the heart was frequently displaced until the apex beat was pushed out one inch beyond the left nipple line, and upwards to the fourth interspace. After labour the heart gradually swung back into its normal position.

Hypertrophy of the Left Ventricle.

It is well to bear this normal displacement in mind. For a long time it has been held that the left ventricle hypertrophies during pregnancy and undergoes some sort of involution after confinement. The evidence for this view has been based chiefly on theoretic grounds, on some very imperfect post-mortem observations, and on the displacement of the apex. Further, the safety of chloroform anæsthesia during pregnancy has been attributed to the same circumstance. No evidence of hypertrophy could be perceived.

Stasis of the Lung.

Accompanying this widening of the chest, there is a tendency for stasis to occur at the bases of the lungs. This will be dealt with in speaking of the failure of the right heart. In order to estimate the factors which embarrass the right heart, the lessened effect of the movements of respiration had to be considered. I found that normally there was a tendency to stasis even in healthy women when pregnant. In the periodic examination of pregnant women I found that a few of these, after lying in bed all night, had crepitations at one or both bases. These crepitations disappeared after one or two deep breaths, and were never present during labour. They returned for a few days after the confinement. The meaning and significance of this sign will be discussed later.

Venous Stasis.

A variety of phenomena appeared on the venous side of the circulation. In a number of patients the veins of the legs became swollen and varicose—in some there was considerable swelling and varicosity of the veins of the thigh, and of the vulva. Hæmorrhoids were frequent. The cause of these changes is not clear to me. I lean to the view that they are the result of actual pressure on the veins in the pelvic or abdominal cavities. Some writers, however, say that these signs may appear at a stage so early that pressure is out of the question. I had not myself observed them at such an early stage. There is, no doubt, a marked change in the peripheral vascular system in the smaller arteries and veins, which is made evident particularly in the breasts. The mammary artery, usually imperceptible, becomes dilated, and probably the arteries generally dilate to a slight extent, though this is not capable of measurement. One can infer so much from the fact that many women become fatter during pregnancy. There is perhaps also an increase in the quantity of blood.

I find that some writers attribute the hæmorrhoids and varicosities of the vulva to back-pressure from the heart. That is an error, of little importance so far as this matter is concerned, but one which must be pointed out, as it misleads when we are dealing with heart failure. The idea that the heart fails by an engorgement affecting one chamber after another has long held the field. We are invited to picture regurgitation from one orifice after another until the right auricle and ventricle throw blood back into the venous system, causing the appearance of venous stasis, varicosities, and dropsy. While no doubt there is a little truth in the idea, it can be laid down that such an effect of heart failure has only a very slight influence and is not the cause of the phenomena attributed to it. I have seen many people die slowly of heart failure in whom none of these signs appeared. I have seen the right auricle and ventricle throw such quantities of blood back that the liver was distended and pulsated at each systole; yet there was neither venous stasis nor dropsy in the legs. Experience shows that varicose veins are frequently present in people with perfectly healthy and efficient hearts.

Pulsation in the Jugular Veins.

Another symptom usually, but erroneously, considered to be the result of this back-pressure is pulsation in the veins of the neck. During a systematic inquiry into the signs exhibited by the circulatory system my attention was arrested by the movements in the veins of the neck. At the time when I began the inquiry very little attention had been devoted to this subject. The pulsations indeed had been recognised, and graphic records of them had been obtained, but the nature of the movements taking place and their significance were not understood.

Among healthy women during pregnancy I found that these pulsations vary in an extraordinary way. They are present at one time, and absent at other times; sometimes they are small and bare' perceptible (Fig. 1), then again they become of great size (Fig. 2). The records of many patients showed that pulsations were often quite distinct before pregnancy. They might remain unaltered during the whole period till labour set in. During labour they practically always disappeared, but returned in a day or two after delivery, sometimes attaining a great size. Thus in the case from whom Figs. 1 and 2 were taken there was no jugular pulse during the labour, a faint pulse next day (Fig. 1), and a large pulse on the second day (Fig. 2). I attempted to correlate these variations with coincident changes in the heart—seeking for evidences in the size of the organ, in its sounds, or in its functional efficiency, but I failed to find any relation. I thought that the increased size of the venous pulse might indicate a dilatation of the right heart, but I found the increase taking place and the heart remaining normal in size, with no alteration of the cardiac sounds.

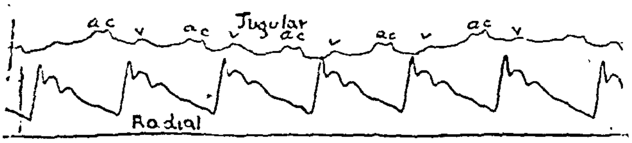

FIG. 1.—Tracings of the jugular and radial pulses the day after the confinement, showing only a faint movement in the jugular tracing.

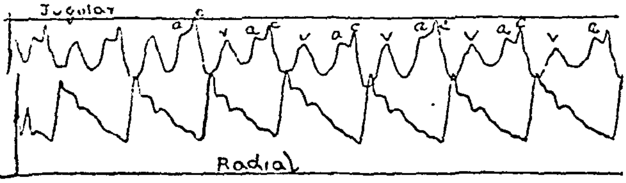

FIG. 2.—Tracings of the jugular and radial pulses the second day after confinement, showing a large movement in the jugular tracing.

The disappearance of the venous pulse during labour seemed capable of a reasonable explanation. A false view of the effect of effort upon the heart has long been held—the view that the healthy heart dilates with effort. More careful observation reveals the fact that, instead of dilating, the healthy heart actually becomes smaller on effort. It will be realised, if thought is given to the subject, that this is to be expected. When effort is made dilatation takes place in the peripheral vessels. The result is that during effort there is, in the peripheral vessels, a relatively greater amount of blood than is present in them when the body is at rest. As the size of the heart depends partly on the quantity of its blood-content, with a diminution of the blood during effort, the size naturally becomes smaller.

The right auricle and the veins leading to it act as a reservoir to the ventricle. The pressure in the veins and auricle is never of itself able to distend the ventricle and cause dilatation: so that, when there is a free return of blood from the periphery, the jugular vein is never quite empty. The emptying and filling of the auricle and ventricle cause a variation in the quantity of blood in the jugular vein, and it is this which we recognise as the pulsations referred to, and which we can graphically record (Fig. 2). When, therefore, a larger quantity of blood is contained in the peripheral vessels, the jugular vein does not receive a sufficient amount for the movements occurring in it to be perceived. After the effort has ceased, however, the returning blood increases to such an extent that the reservoir becomes filled. The movements are then again visible.

In order to comprehend the relation of these pulsations to heart failure I watched patients with a jugular pulse for many years, noting the effects of effort and illness—particularly febrile illness. In rare cases I discovered great pulsation in the veins with certain forms of heart failure—but, on the whole, I found that neither the presence nor the absence of pulsation was of any use in estimating the efficiency of the heart. In those rare cases to which I have referred there were present other signs which gave a surer indication.

Where, on the other hand, the study of the jugular pulse became of the greatest value was in unravelling the mechanism of cardiac irregularities. By observing the changes in the jugular pulse, I discovered a method of differentiating between the waves produced and of relating them to their causes in the heart itself. This matter will be referred to in dealing with Heart Irregularities.

Dropsy.

The mechanism by which dropsy is produced is still one of the most obscure matters in medicine. My notes of cases of pregnancy show that in healthy women, at this time, swelling of the legs was far from infrequent. It was usually slight, but sometimes became very considerable. As it tended to get worse towards the end of the pregnancy, and as there were no accompanying changes in the heart, I attributed it to the pressure of the uterus on the veins. At all events, the women went through their confinements quite well, lived for years afterwards, and bore other children. Even those women who also had albumin in the urine did well. (I am not referring to cases of albuminuria which ended in uræmia. I had, like every other general practitioner, experience of these. My opportunities, however, were too restricted to enable me to get a full knowledge of the significance of this sign, which, be it said, still awaits elucidation.)

Cyanosis.

During labour, in many patients, the face becomes tinged and dusky, while the lips become of a dark red. I made a great many observations on the capillary circulation in this connexion, but nothing definite was elicited.

In many women systolic murmurs and irregularities appeared and disappeared. These will be dealt with subsequently.

CHANGES IN THE DISEASED HEART IN PREGNANCY.

Abnormal Signs appearing during Pregnancy.

I had many patients who showed abnormal circulatory signs. Let me say at once that the great majority of these passed through the pregnant state, confinement, and puerperium with no trouble. Thus, some cases of mitral stenosis did not seem to suffer in the least, while others suffered severely. Cases of irregularity showed the same variation—the great majority passing safely through, a few revealing signs of heart failure. Cases, again, in which the heart was weakened from other causes, but where there were no abnormal physical signs such as murmurs or irregularity, bore the pregnancy well and seemed little the worse afterwards. These latter were usually breathless and the victims of præcordial pain.

The Interpretation of Abnormal Signs.

At the time when I was making these observations, the results seemed terribly bewildering; they did not enable me to recognise where the danger lay—which was the object of my research—and their variations seemed without principle. I had forced upon me the urgent necessity of a more thorough knowledge of the fundamental nature of abnormal signs, the mechanism of their production, and the bearing of their causes on the heart's efficiency, especially under stress. To obtain this knowledge I began a new, long investigation into the meaning of all manner of cardiac symptoms. This investigation has occupied me for many years; it took me away from the study of heart disease and pregnancy.

I missed, therefore, the opportunity of studying directly heart failure in pregnancy in large numbers of women. On the other hand, I obtained some knowledge of the fundamental principles underlying the production of heart failure. The application of these principles to the cases of heart disease complicating pregnancy which I have since encountered has, I believe, demonstrated their usefulness. It has demonstrated also the value of the type of observation of which I am speaking. I had, as a consultant in London, a great many women referred to me by doctors who were anxious to know whether they were fit for child-bearing or whether, pregnancy having been incurred, there was danger. In these instances I made use of the principles I am about to describe. They guided me to an opinion. The results fully justified the faith I had learned to repose in them.

The Differentiation of Abnormal Signs.

In order to acquire a knowledge of the source of danger in heart disease complicated by pregnancy, I had to get a clear view of the heart's work, how this organ accomplished its work, and what were the signs when it failed to perform its duties in an efficient manner. I conceived that the key to this problem was heart failure. I searched the literature of the subject, but except when heart failure had reached an extreme degree, giving rise to dropsy, dyspnœa, and enlarged liver (sometimes spoken of as the "cardinal signs of heart failure"), little attention seemed to have been devoted to it. Indeed, so confused were the descriptions that no certain differentiation appeared to have been attempted between the phenomena of heart failure and those of other accompanying, but merely incidental, states. Nor was there any clearer distinction to be found between signs which indicated disease and signs in their nature physiological, or so little pathological as to be of no prognostic significance. Thus, it was recognised that murmurs or irregularities might in many cases be indicative of nothing serious. It was stated that there were other murmurs and irregularities which were of grave significance. What was not stated was how one might differentiate the serious from the trivial, the important from the merely incidental.

In the case of irregularities matters were in worse plight. Here there was no differentiation at all. I had not gone far into this subject before I found that progress was impossible unless and until I should be able to distinguish one form of irregularity from another.

The Significance of Abnormal Signs.

Even when, at last, I had succeeded in recognising clearly the different forms of irregularity there remained the important question: "What bearing does their presence have on the patient's future?" This question applied, as I saw, with equal force to the subject of murmurs. Attempts to answer it had in this latter instance been made, but they had not succeeded, for the matter was left in a very vague and indefinite state.

The question is one of such urgent moment to the rational practice of medicine that only the slightest consideration is required to convince anyone that a solution of it must be obtained. Nevertheless, I repeat, no really systematic endeavour to find a solution had been made. The prognostic significance of such common signs as murmurs and irregularities was by no means understood. The somewhat rule-of-thumb procedure which led to the vague notions then prevalent hindered as often as it helped.

The Misunderstanding of Prognosis.

When I reflect now upon the steps I took to obtain this knowledge I can understand to some extent why it had been neglected. Prognosis, at first sight, seems an easy business as compared with diagnosis. Moreover doctors, as students, have their prognosis given to them ready-made in terms of diagnosis. They are told, for example, that a murmur means a damaged heart. As soon as they are out of school they are placed in positions which impose the necessity of making prognoses. If they enter the army or navy they are at once put to the duty of examining recruits, a matter requiring a knowledge of prognosis. If they become examiners for life insurance the same knowledge is essential to the performance of their duties. In every field of medicine indeed where an opinion as to the future of an individual is concerned, the necessity of assessing the prognostic value of signs and symptoms is necessary. Thus the young doctor begins at once to act upon what he was taught. He accepts the ready-made prognosis and gets into the habit of using it. He says that "a murmur means a damaged heart," and does not doubt that he is right. Thus prognosis seems to be a matter of the greatest simplicity once a diagnosis of signs has been arrived at. The vast and vital difference between the sign itself and the nature and significance of it is overlooked or forgotten.

It is scarcely necessary to dwell upon the importance of a true knowledge of prognosis to a doctor who has to determine whether a woman is or is not fit for child-bearing.

Method of Arriving at Prognosis.

In my own inquiry into prognosis in heart affections I made many false starts before I recognised the principles which should guide me. One day, however, and quite suddenly, I put to myself the question: "What are you afraid of?" The reply was, of course, "Heart failure." At once there came the next question: "Do these signs indicate heart failure, or do they foreshadow its occurrence?" This brought home to me my lack of knowledge.

I realised at least, clearly, the difference between the mere recognition of a sign—diagnosis—and its interpretation. I saw that prognosis hitherto had been accomplished by a process akin to jumping over an obstacle. One found a sign and called it a disease, instead of attempting to elucidate the mechanism of its appearance, or labouring to watch the responses to the calls of life of the man or woman showing it. That kind of "prognosis" was a double guess. One guessed that a murmur meant heart disease, and then one guessed again that heart disease meant an early death. Thus there was forced on me the need to watch and to follow individuals with all forms of cardiac abnormality, year in and year out. To study them in health and in periods of acute illness. To be with them during prolonged bodily exertion. To note, if possible, the very earliest signs of heart failure, and to observe every variation of these signs during the years of their development. To make myself familiar with periods of improvement and with periods of regression. Finally, to be present if patients died and to undertake post-mortem examinations. These labours I made some attempt to carry out. Their results will be detailed later.

GIFT FOR X RAY RESEARCH.—The board of management of the Royal Infirmary, Manchester, have accepted a gift of £1000 from an anonymous donor in aid of research work in connexion with "Intensive X Ray Therapy." The donor expresses the desire that a portion of this money should be expended in paying the expenses of a research scholar who is to study the methods adopted in various clinical centres—e.g., Erlangen, for the utilisation of intensive X ray therapy in relation to the treatment of cancer. The intention of the donor is to stimulate inquiry into a recently suggested means of dealing with malignant disease. Dr. Anderson, who was trained at the Liverpool Royal Infirmary under Dr. Thurstan Holland, has been appointed res scholar, and he will shortly proceed to Erlangen. board of management have also made arrangem have the necessary apparatus fitted up in their department.

A Clinical Lecture
ON THE
SURGERY OF THE PITUITARY GLAND.

Delivered at the London Hospital on March 19th, 1921.

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IT is one of the most distressing and disheartening things in life to realise how largely our appearances, our actions, our morals, and our very destinies are dependent upon our internal secretions over which we have no control. Just as gross changes in certain glands cause marked symptoms, so also is it probable that variations in character are due to smaller changes. Are we then to condemn a person as dull and uninteresting because his thyroid secretion is diminished, while we praise the greater activity and alertness that accompanies a slightly increased secretion? Are we to condemn as grossly immoral one with well-developed sexual glands and accept as an example of moral rectitude one who has suffered from parotitis in adolescence? Is a patient with a lowered pituitary output to be regarded as mentally weak and foolish, while one with an increased secretion is to be praised for his bright intelligence and keen mentality? Rather do we hope that by careful study of the effects of the internal secretions we may be enabled in the future to alter the characters of many and restore to them the power of enjoying those two things in life that are most worth having—namely, physical fitness and sunshine in the open country. Of the more gross changes our knowledge has already advanced considerably, and I propose to discuss to-day the marked changes that the pituitary gland, which is little, if any, larger than a bean, may cause in the whole body when it is the seat of disease. In order to group the symptoms in a manner easy of understanding, I must briefly consider the development and functions of the normal gland.

DEVELOPMENT OF THE NORMAL PITUITARY GLAND.

From the roof of the stomadeum immediately adjacent to the oral plate there grows upwards a small pouch known as Rathke's pouch. From the floor of the fore-brain there is a corresponding downgrowth known as the infundibulum. These two processes come into contact and together form the pituitary body. The cells of the anterior portion undergo considerable proliferation. At first they form a somewhat triangular sac known as the pituitary sac. The cavity later becomes filled up and the proliferating cells form glandular spaces containing a small amount of colloid material. This portion remains distinct in adult life and is known as the anterior lobe. The stalk corresponding to Rathke's pouch passes, in the fœtus, immediately in front of the notochord and between the trabeculæ cranii, thus later, when these structures fuse to form the basi-sphenoid, all communication is shut off from the pharynx. It is interesting, however, to note that certain squamous-celled tumours may arise in or about the pituitary and that Duffey states that they probably originate in the remnants of Rathke's pouch, which may persist in the body of the sphenoid bone or beneath the capsule of the upper surface of the anterior lobe. The anterior lobe forms about two-thirds of the total pituitary gland. The infundibulum grows downwards and enlarges at the extremity to form the posterior lobe. Although it loses its lumen the infundibulum persists and forms the stalk of the pituitary which connects the gland th the floor of the third ventricle. Between the portions, formed in part from the anterior and art from the posterior, is the pars intermedia, in which persists the cleft corresponding to the pituitary sac.

The fully developed pituitary body is a rounded structure, somewhat flattened from above downwards, which fills the pituitary fossa of the sphenoid bone. It is about half an inch in its widest diameter and is entirely surrounded by dura mater. The pituitary fossa is roofed in except for a small opening in the centre, through which passes the infundibulum. The relationships of the gland are of extreme importance surgically. Below it rests upon the portion of dura mater lying upon the basi-sphenoid. The latter is deeply hollowed out anteriorly by the sphenoidal sinus, from which cavity the pituitary gland is only separated by a thin layer of bone. The antero-inferior wall of the sphenoidal sinus is formed laterally by the cornua sphenoidalia and medially by the ethmoidal spine, to which is attached the vomer. Hence, if an instrument be driven up the sphenoidal sinus through the nose, it will pass up through the basi-sphenoid into the pituitary fossa. Anteriorly lies the olivary eminence, on which is placed the optic chiasma, so that this structure and the commencement of the two optic nerves lie immediately in front of and above the pituitary gland. Laterally the cavity is bounded by the reflection of the dura mater which forms the cavernous sinus and which contains the internal carotid artery and the third, fourth, fifth, and sixth nerves. Anteriorly the internal carotid turns upwards on the outer side of the optic nerve. The anterior cerebral and communicating arteries together form a bridge uniting the two carotids across the upper surface of the optic nerves, which may be compressed by the arteries when the pituitary enlarges. Immediately behind the internal carotid the anterior portion of the optic tract lies on the outer border of the pituitary fossa. Posteriorly is the depression at the apex of the petrous bone, forming the cavum Meckelii, in which lies the Gasserian ganglion. Posteriorly, the dorsum sellæ, with the posterior clinoid processes, sharply limits the pituitary fossa. Within the fossa and surrounding the gland is a small sinus, the circular sinus, formed by anterior and posterior transverse channels which pass from one cavernous sinus to the other. It will thus be seen that the gland is closely surrounded by most important structures and that surgical approach is associated with considerable difficulty.

STRUCTURE AND FUNCTIONS.

The anterior lobe is formed of a glandular epithelial structure, the glands being tubular in nature and the whole portion being extremely vascular. The glands have no ducts and may often contain a colloid-like material very similar to that of the thyroid gland. The pars intermedia, which surrounds the cleft, is also epithelial in nature, but less coarsely granular. The epithelial cells are arranged in vesicles which also contain colloid material. It is said, however, that the colloid of the pituitary gland never contains iodine. The posterior lobe is formed of a vascular connective tissue which has lost its original glial structure and more closely resembles true connective tissue.

There is still a certain amount of doubt as to the actual functions served by the different portions, for both experimentally and clinically it is difficult to obtain a lesion which is limited wholly to one or other lobe. There even seems to be some doubt as to the effect of total extirpation. Cushing found that complete removal was followed by the death of the animal, but Sir Victor Horsley obtained opposite results. The posterior lobe is usually grouped with the pars intermedia and it is probable that the greater part of its function is due to this latter portion, for it is difficult to see how a structure formed mainly of connective tissue, like the true posterior lobe, will have any definite function. Evidence at present obtainable indicates that the functions are as follows:

Anterior Lobe.—The secretion of this portion would appear to control calcium metabolism and the growth of the skeleton, including the bony, cartilaginous, and connective-tissue structures. Possibly it may control the deposit of fat and the growth of the sexual glands.

Posterior Lobe.—The secretion of this portion, which includes the pars intermedia, has very definite effects. Extracts which are now so largely used in clinical medicine are dependent upon the secretion of this portion. The constituents are several in number and may be grouped as follows :—

(*a*) A pressor body. Injection of the extract is often followed by a very marked rise in the blood pressure, and for this reason pituitary extract is very frequently used to combat surgical shock.

(*b*) A depressor body. There is a constituent which, after the pressor effect has died away, leads to a decrease in the blood pressure. The activity and time of onset appear to be variable, so that occasionally, when the pituitary extract is given to a normal person, or to a patient suffering from shock, the depressor effect will be the first to become evident; hence the use of pituitary extract is not wholly without danger.

(*c*) A diuretic body. There is a constituent which appears greatly to increase the secretion of urine, and leads to a very definite polyuria which is associated with dilatation of the renal vessels. In this respect the effect upon the arteries differs from that upon the arteries of the rest of the body.

(*d*) A galactagogue. When pituitary extract is administered to a lactating animal there is marked increase in the flow of milk, but this is apparently only of short duration, so that the total flow over a prolonged period does not seem to be definitely increased.

(*e*) One of the most constant effects appears to be powerful contraction of unstriped muscle. This is especially noticeable in the intestine and uterus, so that the extract is largely used in the treatment of various forms of intestinal paralysis and in some varieties of uterine inertia.

(*f*) There is a body, the presence of which appears to diminish the carbohydrate tolerance. There is some doubt as to whether this body is formed by the anterior or posterior lobes, but it is more probable that it comes from the anterior, for with all conditions of hypopituitarism the tolerance is usually increased, whereas glycosuria may be present with acromegaly. In some cases it would seem that the anterior lobe, and possibly the pars intermedia, may take the place of the thyroid or sexual glands, for there is an increase of the colloid material after a thyroidectomy, during pregnancy, and after castration.

CLINICAL DISTURBANCES.

The symptoms associated with lesions of the pituitary fall naturally into the three following groups :—(1) Disturbance of the internal secretions. (2) Local pressure effects. (3) General pressure effects. It not uncommonly happens that all three of these groups are present in the same case but in others only one or more may be found.

(1) *Disturbances of Internal Secretion.*

Just as there is considerable doubt as to what functions should be apportioned to the different parts of the gland, so there is also some doubt as to which parts of the gland are mainly at fault in different diseases. The following is, however, in the light of our present knowledge, a useful working classification :—

Anterior Lobe.—(*a*) Increase of function: (1) In young patients = gigantism; (2) in adults = acromegaly. (*b*) Decrease of function: (1) In young = lack of growth, ateliosis (Lorain's disease); (2) in adults (?).

Posterior Lobe.—(*a*) Increase of function (?); (*b*) decrease of function: (1) In young = dystrophia adiposa genitalis (Fröhlich's disease); (2) in adults = adiposa dolorosa.

Gigantism.

It is probable that not all giants have a lesion of the pituitary gland, but that there is a close association has been realised since the work of Sternberg, who showed that 20 per cent. of acromegalics are giants and 40 per cent. of giants develop acromegaly. Post-mortem examinations of giants show also that the pituitary gland and the pituitary fossa are very frequently enlarged. Brissaud was the first to point out that acromegaly was probably gigantism of adult life, or that gigantism could be regarded as acromegaly occurring during the period of growth. He also showed that examples of acromegaly and gigantism might be found in the same family. As a general rule the overgrowth is symmetrical, and beyond being of unusual size the patient may show little or no abnormality.

Acromegaly.

This condition, first completely described by Pierre Marie in 1886, appears to be definitely dependent upon an enlargement of the pituitary gland. There is nearly always an overgrowth of the anterior or glandular portion of the gland, but cases are reported in which there has been a hæmorrhage or the formation of a cyst in the anterior lobe. Males and females appear to be almost equally affected and the disease most commonly commences after the age of 30. It has been reported, however, as commencing at a much earlier age, and it is in such cases that there is more likely to be a general overgrowth leading to gigantism. The onset is as a rule slow, but when well established the changes are very characteristic and easily recognisable.

Spine.—The individual bones are thickened and there is a definite kyphosis. The patient may not notice a general increase in the height, but some will state that they have grown several inches since the onset of the symptoms. In three of my cases the height had increased from 1–3 inches.

Thorax.—The thorax is markedly enlarged, widened, and deepened. It projects more in the lower part and there is a wide subcostal angle. The pelvis is enlarged in all directions and the bones are generally thickened. This is especially noticed in the iliac bones and at the points of muscular attachment.

Head and Face.—It is in this area that very characteristic changes are seen. The cranium is but little altered, but the face as a whole shows general hypertrophy, especially in the vertical direction. The forehead appears low and narrow, but the orbits are much enlarged and thickened and an X-ray will show that to a certain extent this is due to an increase in the size of the frontal sinuses. Owing to the size of the orbital margins the temporal areas appear to be depressed. The upper jaw shows a slight overgrowth, but the lower jaw shows a very marked hypertrophy. The method of the overgrowth is unusual. It is not due, as would be expected, to a simple deposit of bone beneath the periosteum, because the individual teeth become widely separated from one another, and hence there must be an increase of the bone throughout. In the late stages the teeth are so much separated that they form an arch greater than that of the upper teeth. At the same time they may be everted by the pressure of the hypertrophied tongue. The jaw is enlarged from above downwards; the great length of the face is largely due to the hypertrophy in this area. An X-ray will show overgrowth of the bone in the orbital regions and some thickening of the tables of the skull. The pituitary fossa is generally enlarged, and there may be atrophy or erosion of the clinoid processes. The changes are not limited to the bone: the eyelids are thickened and hypertrophied and the nose is considerably enlarged, being lengthened and widened from side to side. The tissue over the cheeks is thickened and prominent. The lips are greatly swollen and thickened, being often negroid in type. The tongue is hypertrophied, so that it may project beyond the teeth and may interfere with speech. The ears are also thickened and enlarged.

Hands and Feet.—The changes in the hands and feet are even more characteristic than those in the head and face. They are much increased in size, the enlargement being due to an increase in the width rather than in the length. This is especially noticeable in the feet; patients will often state that since the onset of the disease they have had to take two sizes larger in boots, and that even then a labouring man's boots have to be used in order to gain the increase in width. The thickening in the hands is seen to consist of all the tissues, bones, muscles, connective tissue and skin, but the fingers are more or less cylindrical and much wider than normal. The nails do not share in the hypertrophy, so that they seem to be relatively small. The thenar and hypothenar eminences are increased in size, but the subcutaneous tissue does not pit and the thickening is therefore not due to œdema. The feet are affected in a similar way. There is a great increase in the width, especially at the base of the toes, and the heels may appear massive. The toes are all enlarged and more cylindrical than normal, especially the first toe. The X rays may show in the early stages little or no change in the bone, the hypertrophy being due to an increase of the soft tissues, but in more advanced cases there is always a definite deposit of new bone, especially under the periosteum of the proximal phalanges. Even when the heels appear to be very massive the X ray will often demonstrate that there is no change in the astragalus. As a rule the hypertrophy does not extend beyond the wrist and ankles, but not uncommonly there is a marked muscular hypertrophy of the arms and legs. In the later stages of the disease the muscles may atrophy. Occasionally an X ray will show that the distal extremity of the limb bones have a new deposit of bone beneath the periosteum, but as a rule they are unaffected.

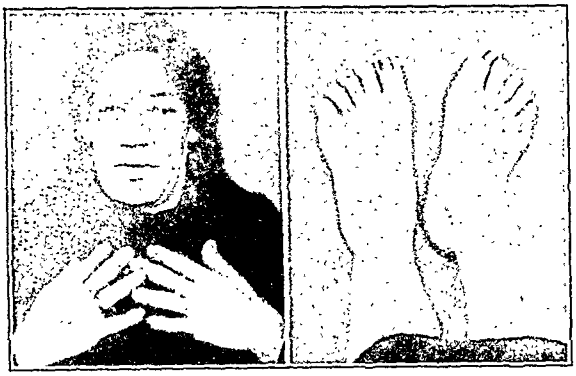

FIG. 1.—Typical case of acromegaly, showing changes in face, hands, and feet.

Sexual Glands.—These also show very constant changes. In women the breasts become smaller than normal, and amenorrhœa is one of the earliest symptoms. The external genitalia are hypertrophied, both in the male and female, but there is always a marked decrease in sexual desire.

On the vascular side the heart is often hypertrophied, the arteries are thick, and the veins varicose. The blood pressure is generally high, but often shows a marked variation. The thyroid may be small and the larynx hypertrophied, so that in women the thyroid cartilage may be as prominent as in men and with this the voice becomes deeper and stronger. The skin shows profuse sweating and pigmentation, the hair becomes very coarse and wiry, and in women its distribution becomes more of the male type. The intelligence is as a rule good, and in two of my cases the women were of unusual intelligence —were, in fact, the guiding spirits in their homes. Later there may be a general depression of the mental functions, with drowsiness, but this probably only occurs when the general symptoms of pressure are becoming more in evidence. There is often polyuria, and not uncommonly a marked glycosuria which can usually be controlled by diet. In the early stages especially, the patients will often complain of severe pain in the limbs and joints, of headache, and pain in the eyes. It will be seen therefore that in females this disease tends rather to produce the male characteristics. There is a general increase in the skeleton with muscular hypertrophy, an overgrowth the hands and feet with hypertrophy of the alanges, an alteration in the larynx with a deepening of the voice, an alteration in the distribution of the hair with atrophy of the breasts, and the development of a more masculine intelligence.

The following is a typical example of the disease.

CASE 1. *Pituitary Tumour with Acromegaly.*—J. S., a married woman, aged 42, was quite well until seven years ago, when she commenced to have pain and stiffness in the neck, so severe that she could not move her head. This has continued ever since. Shortly after she noticed her hair getting coarser and more curly. Four years ago she noticed hands and feet getting bigger, so that she had to wear boots two sizes larger; also noticed a marked but gradual change in her features. For six months her tongue has been getting bigger, and now interferes with speech. Sight has been altering for two years; she noticed that she was getting blind at the sides and now feels as though she were looking through a tube. For seven months she had severe thirst, and glycosuria was then discovered.

On examination there are characteristic changes in the face. Eyelids thickened and enlarged, orbital ridges massive and prominent; hair dark, coarse, and curly; tongue large; teeth in lower jaw are widely separated; the arch they form lies outside that of the upper teeth. Mouth large, lips thickened; lower jaw massive and prominent. Hands and feet much enlarged, chiefly from side to side; fingers thickened and cylindrical. Since the age of 21 patient has grown 2 inches. Spine is slightly kyphotic; thorax wide and massive, iliac bones enlarged. Patient is extremely intelligent, and has always been engaged in intellectual work; thinks herself that her memory and reasoning powers have been more active in the last few years. Vision very poor; she cannot read with either eye. Marked diminution in fields of vision, more so for white than for movement. Discs show distinct optic atrophy. No circulatory changes. Catamenia ceased at 39. Has had two children, 20 and 17 years ago; four miscarriages. She has never had any sexual desire. She is passing 80–90 ounces of urine a day, which contains 10 per cent. of sugar. An X ray examination shows a great increase in the width of the pituitary fossa and marked enlargement of the frontal sinuses. There is no new bone beneath the periosteum of the phalanges.

She was transferred to the care of Dr. A. W. M. Ellis, who was able with diet to eliminate the sugar from the urine, and in two weeks had raised the sugar tolerance to 100 grammes per diem.

Operation and Result.—After the lecture this patient was operated upon. A large osteo-plastic flap was turned outwards from the left frontal region. The dura was then raised as far as possible from the orbital plate and opened anteriorly. The brain was carefully elevated, and an extremely good view of the left optic nerve and the pituitary gland was obtained. The gland was enlarged and formed a swelling in front of the chiasma. Its capsule was opened and the whole of the gland removed from the dural covering. There was little or no bleeding. The brain was then replaced and the osteo-plastic flap returned.

She made an uninterrupted recovery from the operation and three weeks later was free from the severe pain. The eyesight was still poor; the vision of the left eye, much worse after the operation, has gradually improved, and she can now see nearly as well as before the operation. There has been no return of the sugar in the urine, but she is still on a modified diet.

The pathological report of the gland states that there was a solid spheroidal-celled carcinoma of the anterior lobe of the pituitary, with a greatly compressed fibrotic remnant of the anterior lobe.

Ateliosis or Lorain's Disease.

This may be regarded as the exact reverse of gigantism. The patient is small and has never grown, but the proportions of the different parts of the skeleton remain more or less normal, so that the condition is easily distinguished from achondroplasia. With the lack of growth there is a failure of the secondary sexual characteristics to develop, so that these patients appear to be much younger than they really are, and at the age of 35 or 40 may appear to be only 14 years of age. The bones are small and relatively fragile, and the muscular attachments poorly developed. The junctions of the epiphysis are greatly delayed but the formation of the bones is regular, so that there is no enlargement of the epiphyseal ends as may be seen with achondroplasia and some forms of thyroid insufficiency. The skull is small with thin bones and an X ray may show very definite changes in the pituitary fossa, which will vary with the nature of the lesion. If, as is not uncommon, there is a simple cyst, the fossa may be much dilated and the clinoid process may be absorbed. The lower jaw is badly developed and there is a poor eruption of the teeth. The muscles are ill-developed and are more of the type found at the age of puberty. The skin is soft, delicate, and white, and resembles that of a young female. The body and face remain hairless and the voice is thin, high, and piping, so that the patient, if a male, retains many of the female characteristics. The sexual glands are never developed and the intelligence is always considerably below the normal. The appetite is poor, and there is often an alteration in the secretion of urine; the latter may be increased or diminished. There is no glycosuria, and in some cases the carbohydrate tolerance appears if anything to be above the normal. Later there will be a diminution in the fields of vision owing to local pressure, or the presence of headache from the increased intracranial pressure.

There is, as far as is known at present, no definite disease due to atrophy of the anterior lobe in the adult. It would, however, be of interest to investigate a series of cases of "fragilitas ossium" from this point of view, for the changes they present are those that would be expected with a loss of function of the anterior lobe. There is a similar lack of knowledge of any symptoms associated with an increase of function of the posterior lobe, but I have often been struck by the fact that an unusual intelligence—and by intelligence is meant, not the flabby, insipid condition which to-day is spoken of as an artistic temperament, a thing which is neither an art, nor a science, nor an intelligence, but merely a conceit—is frequently associated with marked physical activity and a high blood pressure, and if minor degrees of hypertrophy of the anterior lobe are, as one is led to believe, associated with a keen intelligence, it is probable that the other factors are dependent upon hypertrophy of the posterior lobe. It will be interesting to note whether, in the future, cases of arterio-sclerosis and chronic nephritis occurring in the young will be found associated with hypertrophy of the posterior lobe.

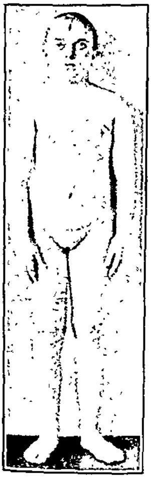

FIG. 2.—Patient, aged 14. Fröhlich's syndrome.

Dystrophia Adiposo-Genitalis (Fröhlich's Disease).

In this variety of disease the characteristic changes consist in a marked overgrowth of the subcutaneous fat. The deposit is more or less general, but has a tendency to be placed so as to exaggerate the female outline of figure, so that in the male there is a relatively greater thickening of the buttocks and thighs, and a subcutaneous deposit in the region of the breasts. At the same time the blood pressure is low, and there is a good or increased tolerance to carbohydrates. There are other changes which are possibly due to an associated diminution of the anterior lobe secretion. The patient, although generally of the normal height, shows a relatively poor development and the epiphyses are often late in joining. The skin is soft and there is no growth of axillary hair, the voice is high-pitched and squeaky, and the thyroid small. The genitalia remain small and undeveloped, and not uncommonly the intelligence is considerably below normal. The X ray often shows very marked enlargement of the sella turcica, for at operation or post-mortem the lesion is not infrequently found to be either a cyst or a tumour which has led to destruction of the pituitary gland.

CASE 2. *Pituitary Cyst with Decrease of Posterior Lobe Function.*—I. J., aged 14, was admitted to the London Hospital on June 11th, 1915. For two years she had had gradual onset of frontal headaches, chiefly noticed in the early mornings, and steadily increasing in severity. One and a half years ago there was a seizure during the night; she woke up and felt queer, and her mother states that she was stiff and unconscious and that she talked and rolled her eyes. For six months she had had occasional curious attacks in which the body shook all over so that she had to sit down. The attacks only lasted for one minute. For one and a half years the eyesight had been failing. At first she did not notice steps when walking and fell over them. Could not see people coming from the side, and was startled when she found them close to her. For seven weeks unable to read print; for six weeks occasional diplopia, and friends have noticed that she squinted; for the last ten days similar fits to the first evening. All occurred at night, and she vomited during and after the fits.

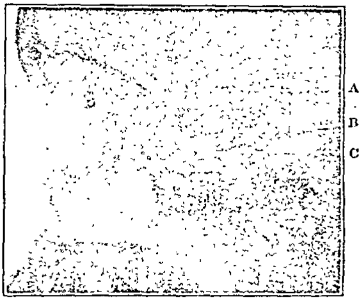

FIG. 3.—Radiogram of part of skull of girl shown in Fig. 3. A, ill-defined shadow above pituitary fossa; B, fossa much enlarged; C, posterior clinoid processes absent.

On examination noticed to be extremely fat; distribution of fat chiefly in trunk and thighs; the face was rounded and infantile. She had never menstruated; there was no pubic hair. Vision much affected; on right side could only distinguish light and darkness, on left side marked contraction of temporal field; both discs showed optic neuritis, which on the right side was passing on to atrophy. Slight incoördination of the rapid movements of right hand, otherwise no changes in the vascular system.

An X-ray examination of the skull showed a marked enlargement of the pituitary fossa, immediately above which was a blurred shadow.

On June 15th a large frontal osteoplastic flap was made on the right side and turned outwards. The dura was opened and the right frontal lobe carefully elevated until the right optic nerve and chiasma were exposed. Beneath the chiasma a large swelling was seen which, when punctured, allowed the escape of 1–5 drachms of thick fluid, which was collected into a tube and found to contain large quantities of cholesterin. A small drainage-tube was inserted and the flap replaced.

The patient made an uninterrupted recovery from the operation, and six weeks later was transferred to the medical side. She made, however, no improvement in her sight, and eight months later a letter was received to say that she remained blind, and had continued to have frequent attacks of spasm until her death at the time of the letter.

It is probable that the condition which Fearnsides has described as the "pudding-face type" is a milder degree of this same disease. There may be a slight general increase of the subcutaneous fat, the face is fat and rounded with red prominent cheeks, and the voice high and piping. The thyroid is often small and amenorrhœa is generally present. As in the

Fröhlich's type there are frequently alterations in the visual fields which may, if left, progress to complete blindness.

Adiposa Dolorosa (Dercum's Disease).

There is a considerable amount of evidence that this disease bears the same relationship to Fröhlich's disease as acromegaly does to gigantism, and that it is a change due to a diminution of the secretion of the posterior lobe which has occurred after the *normal growth of the body has been completed.* It is characterised by large irregular and generally painful deposits of fat, which may be diffuse in outline or may be more or less localised in the form of lipomata. The distribution of the fat is curious and very characteristic. The face, hands, and feet remain free and the deposit is most marked in the buttocks and thighs, so that at times the portion of the body above the waist is quite normal, while there is a very marked overgrowth in the portion below. At other times the fat is deposited in the back and shoulders and sometimes in the posterior aspects of the arms. Dercum himself noted a very marked change in the pituitary gland, but it is only right to mention that in many cases the thyroid has also been affected and that good results are claimed to follow the administration of extracts of this gland.

(2) *Local Pressure Symptoms.*

The chief local pressure symptoms are due to interference with the optic tracts or chiasma. The portion most likely to be affected is the inner part of the two tracts and the posterior portion of the chiasma—that is to say, the fibres which are passing to the two nasal halves of the retina. Therefore one of the earliest symptoms is a diminution in the temporal fields of vision, a bitemporal hemianopsia. Riddoch has shown that even in the early stages there is often a marked disassociation in the fields, not only for different colours but for fixed and moving objects. The fields may be considerably *reduced before the patient is aware of any change,* but he will shortly notice that objects disappear as they pass to one side of his visual field. In advanced cases he may state that he appears to be looking through a tube or opera glasses, or that he feels as if he were wearing blinkers. This alteration in the fields of vision may be found with any of the variations of secretion, or it may be present alone. In the latter case *a tumour is present which has not* arisen from the pituitary itself, and has not yet led to sufficient pressure upon the gland to interfere with its secretion. If the condition be allowed to progress there will be added to the heminanopsia firstly a diminution of the vision in the remaining field and later complete blindness.

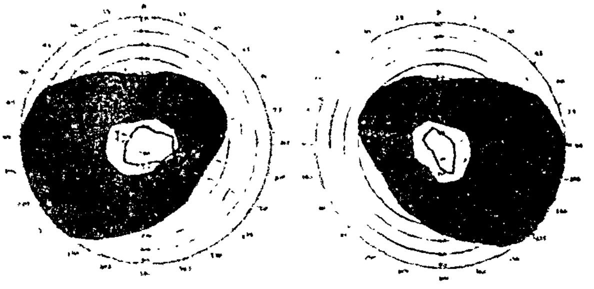

FIG. 4.—Tumour giving localised symptoms only. Field showing marked diminution of vision. Inner field is the area for red; outer field is area for blue.

The other local pressure symptom is much less frequent. It consists of severe attacks of neuralgic pain in one or other side of the face which maps out ther a part or the whole of the fifth nerve. It pears to be due to pressure either upon the serian ganglion or upon the individual branches he fifth nerve.

CASE 3. *Pituitary Tumour with Local Pressure Signs.*—S. B., a woman aged 55, was admitted to the London Hospital on Oct. 23rd, 1915. For 18 months had noticed her eyesight gradually failing; had to give up first fine needlework and later reading. For the same length of time there had been pain in the back of eyes and down left side of face. In October, 1913, examined by an oculist, who discovered bitemporal hemianopsia; in April, 1914, the nasal fields had also become restricted. Never severe headaches, and has not noticed any changes in the body structure. On examination found to be a healthy-looking woman, with a normal spine and skull. Mentally acute; no changes seen in body structure; thyroid gland normal. At this time, Oct. 23rd, 1915, marked contraction of the fields of vision; left eye almost completely blind, and could only just distinguish light and darkness; on right side complete loss of temporal field and considerable contraction of nasal field. An X ray examination showed a marked enlargement of pituitary fossa.

On Oct. 25th, 1915, an operation was performed by the frontal route. A left frontal flap was turned outwards as in the last case and the brain carefully elevated after opening the dura. A good view of the pituitary gland was seen and *it formed a round bluish-red mass with the left optic nerve stretched and flattened over its surface.* Owing to the practically complete blindness on the left side and the appearance of the optic nerve, it was decided that the vision could not be recovered, and the nerve was therefore divided. The tumour was then incised, and found *to be formed of a soft but solid material, which was easily scooped out.* This left a firm wall lying in the dilated sella turcica, from which there was little or no bleeding. Brain replaced and the wound closed.

Patient had a somewhat stormy convalescence, and for five days had aphasia and weakness of the right arm, and to a lesser extent of the right leg. This gradually improved, and six weeks later she was able to walk about the ward, her speech having completely recovered. In the first few days pituitary extract was administered, but this appeared to lead to a marked increase of the mental dullness, and it was therefore omitted. The pathological report states that the tumour was a solid acinar carcinoma of the pituitary.

Since operation patient has progressed favourably. A letter dated April 1st, 1921, states that she has marvellously recovered, and can do her own housework. The left eye is still blind, but there is a considerable improvement in the sight of the right. All pain and headache have ceased.

(3) *General Pressure Symptoms.*

A pituitary tumour, being situated within the calvarium, will sooner or later lead to an increase of the intracranial pressure. The extent of the pressure will vary considerably with the nature of the lesion. A tumour may be present which is essentially a cerebral tumour but which, growing downwards, interferes with the pituitary gland. In this case there will be *marked evidence of intracranial pressure* with slight signs of pressure upon the optic nerves and some evidence of a secondary diminution in the pituitary secretion. On the other hand, a lesion which commences in the pituitary gland will give a very marked interference with its functions, and definite local pressure signs, while it is only in the later stages that the neoplastic mass presses upwards sufficiently to give a marked increase in intracranial pressure. The first symptom is headache, and it is often difficult to determine how much of the pain is due to pressure upon the fifth nerve and how much to general increase of intracranial pressure. The early changes of optic neuritis are also often obscured by primary atrophy due to pressure upon the chiasma. The majority of cases of pituitary lesion which have been *traced to a fatal termination* present at the end definite evidence of an increase in the general intracranial pressure.

TREATMENT.

Most observers have laid stress upon the difficulty of classification of the pathological lesions found. It is now, however, generally recognised that the tumours, excepting only the rare forms of squamous carcinoma, are, as a rule, relatively benign and should be described as adenomata, in spite of the fact that microscopically they often appear to be carcinomatous. They resemble adenomata of the thyroid in so far that they frequently have a function. On the other hand, those conditions in which there is a diminution of the secretion are usually associated with a cyst or some form of tumour, which instead of giving rise to an increase of function causes pressure atrophy of the gland. A true atrophy of the gland seems to be extremely rare, and the X ray photographs, as a rule, show an expansion of the pituitary fossa. Hence, on a priori grounds satisfactory results would be expected to follow operative interference in both types of case. On the one hand it would remove the tissue which was giving an excessive secretion, and on the other it would remove the structure which was causing the pressure atrophy. It must, however, be remembered that most of the conditions associated with an alteration of secretion are very slow in their progress. They may persist for years, and some of them, especially indeed acromegaly, may regress after a prolonged period. The operation is one of very considerable severity, and is bound to be associated with a relatively high mortality. For this reason it is doubtful whether an operation will frequently be advocated simply to relieve the hypo- or hyper-pituitarism. The chief indication will therefore be the presence of local or general pressure symptoms. If the visual fields are rapidly diminishing in size and there is danger of complete blindness an operation should certainly be considered, and the same is true if there is increasing headache or vomiting. The presence of definite early optic neuritis in addition to the commencing atrophy will be sufficient to warrant surgical interference. The presence of marked glycosuria in cases of acromegaly will generally indicate rapid progress of the lesion; but since (as in the case recorded above) it may be temporarily cured by medical measures it is often an indication rather than a counter-indication to operation. A rapid increase in the symptoms due to the changes in the internal secretions may also be regarded as an evidence of rapid progress, and therefore an indication for interference.

So much has been written of late on the different methods of approach that it is unnecessary to consider them again in detail. My own experience has been that an infinitely better approach can be obtained by the cranial route, and that although this operation may be somewhat more severe than the intranasal, it gives a very much better opportunity of removing the whole growth, which, as Cope has shown, tends at an early period to enlarge upwards. The operation therefore which I favour is a modification of the Frazier method. A large frontal flap is made and turned outwards. The lower limb passes around the margin of the eyebrow and the upper lies about three and a half inches above this, parallel to it, and thus well within the area of the hairy scalp. These two incisions are connected by a vertical limb in the middle of the forehead. The flap is made on the side which shows the greater diminution in the visual field, for it may happen that removal of the tumour will necessitate some interference with the optic nerve; hence it will always be wiser to interfere with the eye which is of less value. The incisions are deepened to the bone and trephine openings made in each corner. The four openings are united with a Gigli saw; the bony flap, which is thus about three inches square, is lifted up and turned outwards while still attached to the superficial tissues. The dura is now elevated as far as possible from the orbital roof, and when the limit of this reflection has been reached, an opening is made into it parallel with the orbital ridge. The frontal lobe in the brain is carefully elevated with a broad metal retractor, and the cerebro-spinal fluid gently swabbed away. Great caution must be exercised in elevating the brain lest the retractor cut into it. After a short period of careful sponging a clear view is obtained of the optic nerve and chiasma, and the pituitary gland and any tumour may be removed from the position in which it is most prominent. This is usually in front of and below the chiasma. By performing these steps slowly and carefully I have found that it is quite unnecessary to remove the orbital ridge and plate as advocated by Frazier. The operation is thus shortened and the possibility of resulting deformity is diminished. In only one case have I found it necessary to divide the optic nerve. In the others, although the operation has occasionally been followed by a slight increase in blindness, the latter has always improved. As soon as the tumour has been removed the dura is closed and the bone replaced.

The above operation—which, based upon Frazier's method but differing from it in that the orbital ridge and plate are untouched and that the dura is opened relatively early so as to allow the elevation of the brain—has now been performed in five cases. One was a case of acromegaly, one presented Fröhlich's syndrome, two had local pressure symptoms alone, and one had local and general pressure symptoms. In every one of them an almost perfect view was obtained of the pituitary gland. The optic chiasma and the optic nerve and tract on that side were clearly visible. The extent of the tumour could be determined, a point which is especially valuable when it has grown upwards out of the fossa. In no case was it difficult in removing the tumour to reach to the bottom of the sella turcica, and in this respect it appears to give as good an approach as can be possibly obtained by the intranasal route. In the one case where the optic nerve was destroyed the division of this structure greatly increased the view and allowed of easy removal of the tumour. If performed slowly and carefully the amount of shock is very much less than would be expected and in several cases it was hardly noticeable. Of the five cases two died from the immediate effects of the operation. Of the remaining three the one with Fröhlich's syndrome died eight months later with symptoms of the disease, probably from a re-filling of the cystic cavity. It is of interest to note that in the patient who has survived for five years the pathological report stated that the condition appeared to be carcinomatous.

A NEW GENERAL ANÆSTHETIC:

ITS THEORY AND PRACTICE.*

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PART I.—BY R. L. MACKENZIE WALLIS.

THE observations recorded in this paper have been obtained by us with the use of a new anæsthetic compound. The theory and chemical details have been worked out by myself, and the application of this compound as an anæsthetic by Dr. Langton Hewer. The details of manufacture will be described in the first part of the paper, and the results obtained upon a large number of patients in the second part. The discovery of a compound possessing powerful anæsthetic properties, which has no relation chemically to either chloroform or ether, is the result of many years of work upon the subject.

Such chemical compounds as ether and chloroform were known for many years before they were applied as agents for producing general anæsthesia. The history of anæsthesia and anæsthetics is of comparatively recent origin, and it is not surprising therefore to find many gaps in our knowledge. A vast amount of work is necessary before this difficult and complex subject is elucidated; and we are at present merely working on the borderland.

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* A paper read before the Section of Anæsthetics, Royal Society of Medicine, April 1st, 1921.

The Use of Ether as a Vehicle.

For many years I have been engaged upon the problem of the purification of ether; and during my service in India had unusual opportunities of pursuing this subject. The knowledge so gained has since been extended. With pure ethyl alcohol and pure sulphuric acid it is possible, under certain conditions, to prepare ether free from alcohol and water. This ether, when fractionally distilled, yields about 50 per cent. of distillate at a temperature of 34·5° C., and practically the whole of the remainder comes over between 34·7° C. and 34·8° C. There is only a very small residue left. Pure ether obtained in this way, when freshly prepared, can be given in large quantities to animals without producing anæsthesia—in fact, the preparation exerts an intoxicating action; moreover, even were this pure product of use for producing anæsthesia, its cost would be prohibitive. Having established this point it became obvious that the anæsthetic properties were wholly due to one or other of the compounds contained in ordinary anæsthetic ether. In view of its volatility, and moderate toxicity, pure ether was evidently the best vehicle that could be used for the preparation of an anæsthetic. Attempts were therefore made to purify ordinary ether for this purpose. The problem was somewhat complicated by the fact that during the war ethyl alcohol became very costly, and available only in limited quantities. The only other source was "industrial spirit," consisting of a mixture of ethyl and methyl alcohols; and this became the sole source for the preparation of anæsthetic ethers. It appears now to have superseded ether made from rectified spirit; and from the point of view of cost alone its use is to be recommended.

Impurities Contained in Ether.

Many samples of ether prepared in this way were found to contain not only the three ethers—viz., dimethyl, diethyl, and methyl-ethyl ethers—but, in addition, abundant impurities. There is no doubt that whereas pure ethyl ether undergoes oxidation on standing, it does not do so as readily as the methylated ether. There are, therefore, much larger amounts of impurities in the latter ethers. The chief preformed impurities are alcohol, water, acetone, and mercaptans and thio-ethers. Those formed by oxidation of the ether comprise aldehydes, peroxides, and acids. Carefully prepared samples of ether naturally contain very small quantities of these impurities, but the purer the sample, the more of it is required to produce anæsthesia. It follows, therefore, that if larger quantities are used, the actual amount of impurities administered may be considerable.

Removal of Mercaptans.

The methods usually adopted for purifying ether were systematically investigated, and it was found that most of the impurities were thereby removed. The removal of the chief impurity—viz., mercaptans—proved to be a much more difficult problem. A procedure was ultimately found whereby the mercaptans are completely removed from the ether, and this appears to be the most important part of the process. By distilling ether with very finely divided permanganate it was found that oxidation of the impurities occurred, and if a special reflux condenser was adopted all the mercaptans were retained in the residue. Quantities of ether were treated in this way, and the residues collected. The residue was found to possess an evil odour, and to be extremely poisonous. A mere whiff from the bottle is sufficient to produce a feeling of nausea, and considerable irritation of the nasopharynx. Inhaling even small quantities of the residue rapidly induces a severe headache. The permanganate in a finely divided form adsorbs this most potent impurity, and thus removes it from the ether. This is evident if one separates the permanganate after distillation, and subjects it to a stream of dry air. The permanganate gives off the mercaptans completely, and may be used over and over again. Iodine also destroys mercaptans, but its use in place of permanganate is inadvisable for many reasons, chief among them being the difficulty of removing traces of iodine which distil over with the ether.

A Pure Ether Finally Obtained.

The ether so treated is quite free from aldehydes and mercaptans, and contains only traces of alcohol, water, and peroxides. To remove these remaining impurities the distilled product is treated with anhydrous copper sulphate. At first I redistilled over the copper sulphate, but ultimately this was found to be unnecessary, mere shaking and standing being quite sufficient. By this process a remarkably pure ether is obtained, which keeps well, and only slowly undergoes oxidation. The ether prepared in this way has been used as a vehicle for the anæsthetic compound.

Importance of Recognising Certain Impurities in Anæsthetic Ether.

The occurrence of impurities in ether can be best studied in such a climate as India, where ether, especially methylated ether, rapidly undergoes change. One batch of ether I tested was so impure that the evaporation of a small quantity in the laboratory was sufficient to make the place untenable. Salivation, lacrymation, and a severe headache followed the inhalation of fumes derived from evaporation of a few cubic centimetres of the sample labelled "anæsthetic ether." The peculiar odour attracted my attention, and inquiry revealed the presence of quantities of methyl and ethyl mercaptan in these samples. These compounds, in my opinion, were responsible for the unpleasant effects produced. My colleague, Dr. Langton Hewer, came up one day in April, 1920, with the residue of a bottle of anæsthetic ether which he had used on two patients, both of whom had stopped breathing soon after administration of the ether. I at once detected the same odour, and found that the chief impurity in this ether was the mercaptans. Many samples of ether were therefore tested, and the great bulk of them showed this impurity in varying quantities. It appeared obvious that such compounds with their irritating properties were of no use, and that it was highly desirable that they should be removed. Their removal was found to be effected by the use of permanganate as described above. The other impurities were easily removed, but in so doing I removed some compound or compounds which were of importance, since the highly purified product was no longer capable of producing anæsthesia.

At this juncture my attention was called to the production of an ether in America by Dr. J. H. Cotton, who used carbon dioxide and ethylene dissolved in ether. In experimenting with the use of carbon dioxide and ethylene I was struck by the differences in the amount of these gases absorbed by various samples of ether. Absolutely pure ether apparently takes up very little carbon dioxide and ethylene. The ether prepared by the process described above was found to behave quite differently. Using good samples of anæsthetic ether it was found that whereas before distillation practically no gases were absorbed, after distillation with permanganate and copper sulphate comparatively large quantities could be absorbed by the ether. This preparation was found to be extremely potent as an anæsthetic, as I had good reason to realise from personal experience.

Properties of the Pure Ether.

The pure ether was practically non-irritating, but possessed a pleasant odour and a rather stimulating effect. It was free from aldehydes, peroxides, acids, and water. When treated with carbon dioxide and ethylene its sweet pleasant odour was intensified. This preparation was made, and after being tried upon animals with success by my colleague, Dr. Philip Hamill, it was resolved to try it on human beings. Dr. Langton Hewer, whose keenness and courage I much appreciate, set to work and gave this anæsthetic to about 100 cases. All the material was prepared by myself in the laboratory with the standard process which had been evolved. I leave it to him to describe the results he has obtained. In the meantime the peculiar properties of this anæsthetic were further investigated. Ethylene prepared from ethyl alcohol and sulphuric acid possesses a very pleasant odour, but very little anæsthetic power. When prepared by means of phosphoric acid this pleasant odour is not so obvious, and the ethylene so prepared has a much reduced action when dissolved in ether. It was obvious that the carbon dioxide played little, if any, part in producing anæsthesia, since ether and carbon dioxide alone were found to be without action. It, however, exerts a stabilising effect, as pure ether, treated with dry carbon dioxide, does not undergo oxidation so readily as pure ether alone.

The Ketones as Anæsthetic Agents.

The outcome of these investigations was to show that certain ketones in the ether were largely responsible for the anæsthetic properties of the ether. Good anæsthetic ethers, free from aldehydes, mercaptans, &c., when treated with finely divided permanganate, yielded a pleasant-smelling residue instead of the evil-smelling residues previously obtained. This residue proved to contain ketones, and these compounds appeared to be the essential element in the production of a good and safe anæsthetic. The mixture of ketones proved to be very potent, and it was necessary to use a volatile solvent. In view of the readiness with which ordinary ether can be purified, this compound was selected as the solvent. Into this pure ether the mixed ketones were placed in varying proportions, and the mixtures so obtained were found to be capable of producing anæsthesia. The anæsthetic action was enhanced if the mixed ketones were first treated with carbon dioxide and ethylene. The ketones used comprise those in the middle of the series, and a loose chemical combination between these substances and the carbon dioxide and ethylene apparently results. In attempting to purify ether, therefore, the discovery was made of the importance of certain impurities—viz., the ketones. This opens up a wide field for future investigation, and much further work is necessary before it can be said that the ideal general anæsthetic has been obtained. All the material necessary for the application of this mixture as an anæsthetic was made in the laboratory, and supplied as required to my colleague, Dr. Langton Hewer. As soon as its value as an anæsthetic was established, and requests made for trial purposes by other anæsthetists, it became necessary to place its manufacture in other hands. The preparation of this anæsthetic, according to the method described above, has been undertaken by Messrs. Savory and Moore, who have now placed it on the market under the name of "Ethanesal."

PART II.—BY C. LANGTON HEWER.

I will first of all describe the observed effects of this anæsthetic, ethanesal, on the various metabolic processes.

1. *Respiratory System.*—The respiration-rate rises slightly during the induction but not to such a great extent as with ether. When fully anæsthetised the patient's respirations are usually quieter than with ether, and more closely resemble those of chloroform anæsthesia. The irritation of the mucous membrane of the respiratory passages is much less than with ether, as is shown by the ability suddenly to increase the strength of the vapour without causing coughing or spasm. The salivation is considerably less than with ether, and if atropine has been previously given, it is usually almost non-existent.

In 200 cases I have only had one with post-operative bronchitis, and this occurred in a myxœdematous girl who had to be conveyed for about 100 yards in the open air from the theatre. The temperature outside was below freezing-point at the time. On the other hand, the anæsthetic has been given to 10 patients with well-marked bronchitis, as shown by dyspnœa, cough, sputum, and sibili in the chest. None of these cases showed any aggravation of the symptoms, and two of the number appeared to be actually better after operation.

2. *Cardio-Vascular System.*—The effects of this anæsthetic on the blood pressure and pulse-rate are shown on the accompanying graphs. These were obtained by calculating the averages of a number of cases whose operations were of approximately the same severity. The actual pressures could obviously not be given, as the normal for each individual varies between wide limits. Consequently the normal has been taken as that of the patient before operation. This is probably slightly too high, owing to the psychical effect of anticipation, but the error may be neglected as it occurs in all the curves.

As the length of time of the operations varied, there is an interval of more than five minutes between the 25 minutes' time and the end of the operation. Otherwise I think the graphs explain themselves. It will be seen that as regards systolic blood pressure the anæsthetic occupies a position between chloroform and ether. It is specially noticeable that the drop in pressure at the end of the operation, and before the patient is conscious, is less than with ether.

I think that the fairest comparison between the three anæsthetics is afforded by the pulse pressure curves—that is, the difference between the systolic and diastolic pressures. It now appears to be agreed by most authorities that this figure affords a fairly reliable guide as to the condition of the patient, and it will be seen that although it does not rise so high as with ether, yet it is the highest of the three at the end of operation, and afterwards when the patient is conscious.

As regards the action of the anæsthetic on the diseased heart, I have given it to several cases of mitral regurgitation, congenital pulmonary stenosis, and to one case of advanced mitral stenosis with auricular fibrillation, with no ill-effects. I have described this latter case in greater detail below. The anæsthetic has also been given to patients suffering from marked anæmia, from hæmorrhage or other causes. The lowest red blood count was in a man with lymphadenoma, who had 2,100,000 red cells.

3. *Cerebral Processes.*—The three stages of anæsthesia, as described with ether, are observed with this anæsthetic, but can be made to follow one another with greater rapidity owing to the possibility of employing stronger vapour. The excitement stage is usually not so marked as with ether, and if given with gas and oxygen may be entirely absent. It is sometimes possible to procure perfect analgesia without anæsthesia, and if a long extra-abdominal operation is being performed, such as an extensive tendon transplantation, the patient can usually be allowed to become exceedingly light, and may even be blinking his eyes, but will remain quite motionless, breathing quietly, and not feeling pain.

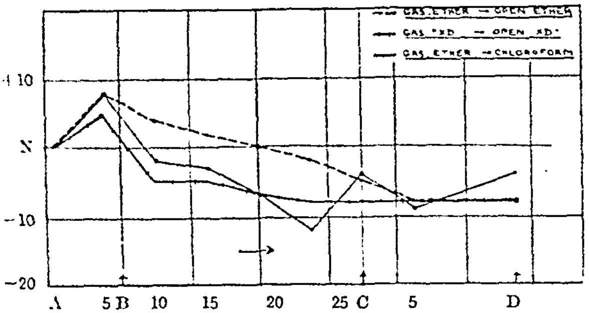
4. *Sugar Metabolism.*—No case of post-anæsthetic acidosis has yet been observed with this anæsthetic. Three patients with well-established diabetes mellitus have been anæsthetised and no ill-effects were noticed. Unfortunately the sugar tolerance of these patients was not accurately estimated beforehand, but there was no appreciable diminution observed afterwards. One child who was passing large quantities of acetone in the urine was given this anæsthetic for half an hour, with no ill-effects.

5. *Effect of the Anæsthetic on Patients with Various Toxæmias.*—Patients acutely ill with various conditions have been anæsthetised. These include neglected perforated gastric and duodenal ulcers, neglected intussusception, toxæmias of pregnancy, &c. Although two of these patients subsequently died of peritonitis, no ill-effects from the anæsthetic were observed; on the other hand, the condition of the patients nearly always improved temporarily when under the anæsthetic.

6. *After-effects:* (*a*) *Vomiting.*—48 per cent. of the patients had no vomiting whatever. 42·6 per cent. retched or vomited once before coming round, but did not remember it, and had no vomiting afterwards. 7·3 per cent. vomited up to one hour after coming round. 2·0 per cent. vomited for over one hour after coming round. No case has had prolonged vomiting extending over one day, with the exception of one thyroidectomy, which developed acute hyperthyroidism after operation.

There is, no doubt, a large mental factor involved in vomiting, and some patients will vomit even after a simple nitrous oxide anæsthesia. Further, in a children's hospital where this new anæsthetic was given, it was found to be quite exceptional for a child to vomit after it was conscious, except in the case of prolonged excision of cervical gland operations where the vagus was disturbed. The sisters of the surgical wards of this hospital were unanimous that the children were, on the average, much fitter after this anæsthetic than after chloroform or ether which had previously been used, and that the vomiting was very much less.

FIG. 1.—*Diastolic Blood Pressure.*

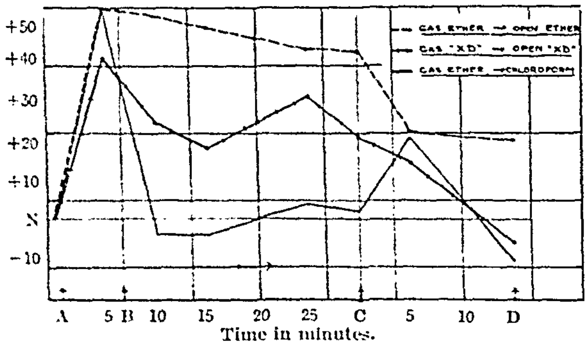


N = normal. A = induction started. B = operation started.
C = operation finished. D = patient conscious.

(*b*) *Respiratory Complications.*—None have occurred, with the exception of the one case mentioned above.

(*c*) *Taste and Smell of Anæsthetic.*—These are practically non-existent, and constitute one of the main advantages of the anæsthetic. Patients who have been previously anæsthetised with ether, and have objected to these after-effects, have invariably experienced surprise at their absence with this anæsthetic.

FIG. 3.—*Pulse Rate.*



I have quite lately anæsthetised a doctor, a hospital nurse, and an army officer, who had all previously had ether and complained of continual vomiting (in one case up to a week), and also of the unpleasant taste and smell. All three patients stated that there was no taste or smell on coming round, and none vomited after regaining consciousness.

No other complications attributable to the anæsthetic have been observed.

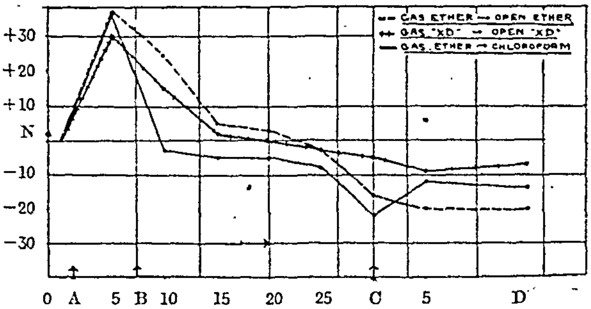
Method of Administration.

I have employed four main methods of administering this anæsthetic.

1. *Induction by a Clover's Inhaler, followed by an Open Mask.*—This method is suitable for most adult cases. Nitrous oxide gas may be used in the induction, but is almost unnecessary, as the vapour of the anæsthetic is not unpleasant to the patient. I have usually changed over to the open method just after the skin incision has been made.

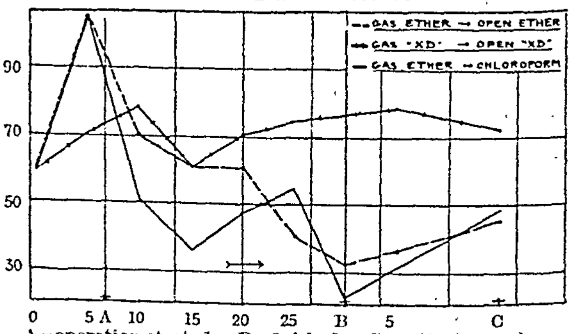
2. *Open Ethyl Chloride Induction, followed by the Anæsthetic on an Open Mask with 20 Layers of Gauze.*—This method is suitable for children up to 13 years old. I first of all put a few drops of tincture of orange on the inside of the gauze mask. When the child has got used to the smell I gradually spray on the ethyl chloride. Directly he is unconscious I change over to this anæsthetic and pour it on quite rapidly. This can be done without any coughing or salivation, such as occurs with ether. When completely anæsthetised it will be found that less anæsthetic is usually required than with ether. The time of induction is short by this method, the average being four minutes, until the patient is ready for an incision.

FIG. 2.—*Systolic Blood Pressure.*



3. *Combined with Nitrous Oxide and Oxygen.*—I have usually given this in a Boyle's machine, with the following modifications: (*a*) The two-way tap on the ether bottle is replaced by a special tap recently described by Mr. H. E. G. Boyle, which allows any percentage of the gases to pass through or over the liquid; (*b*) the bottle containing the anæsthetic is kept standing in a receptacle of warm water in order to prevent freezing taking place. Very good relaxation can be obtained with this method, and such operations as cholecystectomy, ileo-sigmoidostomy, and partial colectomy have been done with it. The time of recovery is usually very rapid, and for this reason the anæsthetic should be continued until the last suture has been inserted and tied.

FIG. 4.—*Pulse Pressure.*



A=operation started. B=finished. C=patient conscious.

4. *Intra-Tracheal Insufflation.*—I have employed this method for the following classes of operations: (*a*) Extensive thoracotomies, when both pleural cavities may be opened simultaneously; (*b*) operations on the upper abdomen, such as cholecystectomy or gastro-enterostomies, in which it is desirable to limit the respiratory movements as much as possible; (*c*) in operations on the neck where respiratory obstruction is anticipated, such as thyroidectomies, where there is a retrosternal lobe; (*d*) in plastic operations of the face.

I started by using the anæsthetic in the usual way, instead of ether by blowing pure air over it, but I found that better results were obtained by using it with gas and oxygen. I have connected the exit pipe of a Boyle's machine to the intra-tracheal apparatus, and have found that much less anæsthetic is required, and that with this method the patients appeared to be in better condition afterwards.

For all these methods the patients were given an atropine injection. Morphia was not given unless the patient was very excitable or nervous, as in my opinion it tends to mask the useful signs, such as eye reflexes, and is best given just before the patient regains consciousness, as he will then remain analgesic for a longer period.

Analysis of Results.

About 250 cases have been anæsthetised so far [at the time of going to press, this number has increased to 500], and I have detailed reports on the first 200. These were nearly all hospital patients, the majority being at St. Bartholomew's Hospital and the Queen's Hospital, Bethnal Green.

I have divided the quality of anæsthesia into three groups: (A) Anæsthesia very good, with no salivation, straining, or any other difficulties whatever. These constitute 91·3 per cent. (B) Anæsthesia satisfactory, but slight difficulty, such as some rigidity or salivation. These cases were 8 per cent. (C) Anæsthesia poor or great difficulty experienced. Only one case comes into this class, which was a child with myxœdema.

In no case has a change had to be made to another anæsthetic. In cases in which the open method has been used the time elapsing between the end of the anæsthetic and consciousness being regained is, on the average, about two-thirds of the length of time that the patient was anæsthetised. If given with gas and oxygen the time is about one-third. The average time of induction for all cases was 4·1 minutes.

The age of the patients varied between eight hours and 70 years, and the time of operation between 5 minutes and 2 hours 45 minutes. The first 100 cases were selected to give as representative a series of operations as possible. The remainder were not selected, being just routine hospital cases.

The operations performed under this anæsthetic include: Amputation through thigh (4 cases), appendicectomy (21 cases), appendicostomy, arthrodesis, astragulectomy, bone plating, *cholecystectomy* (3 cases), cholecystotomy, colectomy (partial), colostomy, cystoscopy, colopexy, excision of glands, excision of hæmorrhoids, exploration of knee-joint, exploratory laparotomy, gastrectomy (partial), gastro-enterostomy, Halsted's operation on the breast, ileo-sigmoidostomy, nephro-lithotomy, œsophagectomy (partial), osteotomy, radical operation for inguinal, femoral, and umbilical hernia (24 cases), reduction of intussusception, sequestrotomy, skin graft, sigmoidoscopy, submucous resection of nasal septum, suprapubic cystotomy, suture of perforated gastric ulcer, tarsectomy, tendon transplantation, thoracotomy, thyroidectomy (8 cases), thyroid graft, tonsillectomy, wiring of fractured patella.

None of the above cases gave rise to any anxiety during anæsthesia, with the exception of a long gastrectomy on a woman in very poor condition. At the end of two hours she became collapsed from loss of blood, but a blood transfusion was performed, and she greatly improved. This case made an uninterrupted recovery.

For the long abdominal cases in this list I have always adopted the method of getting the patients deep at the start, and then when the abdomen is opened and the anastomosis or other manipulations are being performed, of allowing them to become quite light, again giving more anæsthetic when the abdomen is being closed. The patients are in better condition at the end of operation, and much less anæsthetic is used than if a uniform depth of anæsthesia is maintained throughout.

Detailed Cases.

I will now describe some of the more striking cases in greater detail:—

CASE 4. Female, aged 69, suffering from severe chronic bronchitis, was very stout, and had a large umbilical hernia which was giving her trouble as it became semi-strangulated. She was given the anæsthetic combined with gas and oxygen. The operation lasted just an hour. Relaxation was good, and the patient recovered consciousness five minutes after cessation of the anæsthetic. The bronchitis was not apparently increased and she made a good recovery.

CASE 5. Male, aged 60, suffering from a perforated gastric ulcer. The diagnosis had not been made for some *days; when seen he was practically moribund*, and the radial pulse was not palpable. It was decided, however, that a laparotomy was justifiable to give him a chance. He was anæsthetised with gas and oxygen and this anæsthetic; breathing and colour considerably improved; a flicker was detected in the radial artery. The operation lasted 20 minutes during which time a solution of gum saline was infused intravenously. He recovered consciousness 20 minutes afterwards and lived for 24 hours, finally dying from peritonitis.

CASE 7. Male, aged 43, suffering from carcinoma of the colon, was given the anæsthetic combined with gas and oxygen, and a nearly complete colectomy and anastomosis was performed. The operation lasted 1 hour 25 minutes, and the patient was somewhat collapsed from loss of blood. A saline was given per rectum and he rapidly improved. He was conscious 20 minutes from the end of the operation, and had no vomiting or other after-effects from the anæsthetic.

CASE 25. Male, aged 14, had bilateral acute mastoiditis; was very ill, temperature 104°F., pulse 110, respirations 35; signs at both pulmonary bases. Was induced with the anæsthetic in a Clover's inhaler, and then on an open mask. Both mastoid antra were opened up; the operation was very difficult lasting 2 hours 10 minutes. The patient regained consciousness one hour after the operation, slept all night, and awoke next morning feeling quite fit and read a newspaper No vomiting or after-effects; signs at bases of lungs rapidly cleared up, and the temperature, pulse, and respiration soon fell to normal.

CASE 28. Male, aged 61, a diabetic, passing large quantities of glucose and acetone bodies in his urine. Gangrene of foot and very calcareous arteries; the femoral distinctly visible throughout its course in the skiagram. Anæsthetised with the liquid first in a Clover's inhaler and then on an open mask. The femoral artery was first ligatured, and the amputation then made through the thigh. The operation lasted 15 minutes. Half an hour afterwards patient had regained consciousness, was not sick, and felt very fit. He had no after-effects whatever.

CASE 31. Female, aged 44; ulcer in œsophagus thought to be carcinomatous. Intratracheal anæsthetic given, and portion of œsophagus containing ulcer excised through an incision in the neck; operation lasted 1 *hour 55 minutes*, and beyond one vomit of blood, which had trickled down into the stomach, the patient had no after-effects from the anæsthetic.

CASE 51. Female, aged 45, admitted to hospital with heart failure. When improving slightly cholecystitis developed and became worse in spite of treatment. It was therefore decided to operate. Patient then had auricular fibrillation, evidenced by grossly irregular pulse, dyspnœa, and some cyanosis. I gave her the anæsthetic combined with gas and oxygen, which she took very well and was completely relaxed. A cholecystectomy was rapidly performed, the operation lasting 25 minutes. The patient made a very good recovery and her heart was apparently in exactly the same condition as before operation.

CASE 118. Army officer, wounded in leg, who had had many previous operations under ether. Each time he had been very upset by the anæsthetic, had vomited for some days, and complained greatly of the taste and smell. I induced him with this anæsthetic in a Clover's inhaler, and continued by the open method. The operation lasted half an hour. As he was coming round and before he was conscious he retched and brought up some mucus. Soon after he regained consciousness he had tea and felt very fit. He had no vomiting and said he could not taste or smell anything, and expressing great surprise that this was so.

CASE 113. Male, aged 60, brought to hospital with acute cholecystitis; in a very bad condition, pulse 110, respirations 38. Much bronchitis; apex beat in sixth space well outside nipple line; also passing large quantities of sugar. Operation was imperative and it was decided to give this anæsthetic combined with gas and oxygen. He took it very well; on opening the abdomen an empyema of the gall-bladder was found; the operation lasted for three-quarters of an hour, patient regained consciousness in seven minutes, and did not vomit or suffer from any after-effects. The bronchitis was not increased, and he made a good recovery.

CASE 177. Female, aged 32, who had previously had a gastro-enterostomy for gastric ulcer; as the trouble recurred it was decided to do a gastrectomy. She was anæsthetised with this anæsthetic combined with gas and oxygen, and good relaxation was obtained; operation very difficult owing to adhesions from the previous gastro-enterostomy, and lasted 2 hours 40 minutes. At the end of two hours she was becoming slightly collapsed and a gum saline infusion was given intravenously. Her condition then greatly improved, and remained good until end of the operation. After recovering consciousness the patient vomited four times, the material being blood in each case. She had no further vomiting and made a good recovery.

Summary.

To recapitulate the advantages claimed for this anæsthetic:—

1. It is less toxic than chloroform or ether, and the safety margin is greater than with either.
2. It is less irritating to the respiratory passages than ether, and consequently there is less risk of subsequent bronchitis and pneumonia; the induction of anæsthesia is also rendered easier.
3. Post-anæsthetic vomiting is less than with chloroform or ether.
4. The taste and smell noticed afterwards by the patient are very much less than with ether, and are generally entirely absent.

In conclusion I should like to express my thanks to those surgeons who have afforded me opportunities for taking blood-pressure readings, and to Mr. B. B. Sharp, late resident anæsthetist to St. Bartholomew's Hospital, for his help in taking the readings.

CHAULMOOGRA OIL IN LEPROSY AND TUBERCULOSIS.

THE SUCCESSFUL TREATMENT OF LEPROSY BY INJECTIONS OF SOLUBLE PREPARATIONS OF THE FATTY ACIDS OF CHAULMOOGRA AND OTHER OILS AND ITS BEARING ON THE TUBERCULOSIS PROBLEM.[1]

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ALTHOUGH the disease of leprosy is mainly of historical interest in this country, it presents an important and difficult problem in the tropics, especially in India and China; so a method of treatment which brings about destruction of the leprosy bacilli in the tissues is thus of great interest apart from its possible bearing on tuberculosis. Chaulmoogra oil has long been the best known remedy for the disease, but, owing to the nausea produced by large doses, it has only an ameliorative effect in typical cases, although Hopkins of Louisiana obtained some apparent cures in incipient cases by persevering with use of the oil. In 1913 Heiser reported apparent cures of a few cases by the prolonged use of chaulmoogra oil intramuscularly, which was a distinct advance. Power and others had obtained chaulmoogric and hydnocarpic acids from chaulmoogra oil and from hydnocarpus oils, while the name of gynocardic acid had been given by Moses to a mixture of the lower melting-point acids of chaulmoogra oil.

Use of Gynocardic Acid.

I myself early used gynocardic acid orally in the place of chaulmoogra oil with promising results, one severe case having nearly cleared up on very large doses in the course of a year, and in 1912 I attempted unsuccessfully to obtain a soluble compound of it for injection; returning to the subject in 1915, after Heiser's results had been published, I began giving subcutaneous injections of sodium gynocardate, which resulted in more rapid improvement than that following the oral use of gynocardic acid. These injections, however, were rather painful and slow in their action, so I next used sodium gynocardate intravenously in small doses, which were painless, being followed in some cases with much thickening of the tissues, indicating the presence of very large numbers of acid-fast bacilli, by febrile reactions accompanied by swelling up and softening, with subsequent more rapid absorption of the lesions. Microscopical examinations in such cases showed large numbers of red dots of disintegrated bacilli with but few remaining rods, proving that the reactions resulted in rapid destruction of the bacilli in the tissues. Repeated microscopical examinations of cases not showing febrile reactions demonstrated that a similar more gradual breaking-up and absorption of bacilli occurred under the new treatment, until the lesions became bacteriologically negative.

Occasionally, in advanced cases of the disease, more severe reactions with prolonged fever occurred, followed as a rule by great improvement. Two remarkable cases were noted, in one of which extensive lesions of 20 years' duration with ulceration almost completely cleared up, with healing of all ulcers, during a period of about a year following a single small intravenous injection with prolonged febrile reaction; whilst in the other case very extensive lesions on the face and body completely disappeared, becoming bacteriologically negative after a similar reaction, although no further injections were given—a fact indicating that the extensive breaking-up of the bacilli during such reactions had led to curative formation of antigens in the body. Such reactions took place only after intravenous, and not after subcutaneous, injections of sodium gynocardate; the improvement was also much more rapid and satisfactory under the former method of administration, although it had the drawback that irritation of the vein at the site of injection sometimes caused strictly local obliterative phlebitis, producing difficulty in continuing the intravenous injections in certain patients.

Activity of Hydnocarpic Acid.

The next step in the investigation was to separate different melting-point unsaturated fatty acids of chaulmoogra oil by fractionation, and to test their sodium salts or soaps in cases of leprosy, to ascertain which were most active in the disease. As the result of prolonged observations it was found that the lower melting-point preparations, consisting mainly of gynocardate of soda, were less active than those made from fractions with melting-points of about that of hydnocarpic acid—namely, 58° C.; but that chaulmoogric acid, with a melting point of 68° C., formed sodium salts too insoluble for injection alone: the latter could be used in combination with sodium gynocardate, but without presenting any advantages. The conclusion was, therefore, arrived at that hydnocarpic acid was probably the most active constituent of the oil; it can be obtained more readily and in large quantities from hydnocarpus oils than from true chaulmoogra oil derived from the seeds of the Indian tree, *Taraxtogenos kurzii*. Later observations, however, have shown that active preparations can be made without laborious fractionation, from the whole of the fatty acids of these oils, which will simplify the production of the soluble active portions of the oil for the new injection method of treating leprosy.

Use of Sodium Morrhuate in Tuberculosis.

The successful treatment of leprosy by soluble derivatives of chaulmoogra oil led me to consider the trial of a similar line of treatment in tuberculosis, due to the other important human acid-fast bacillus, but the induration, pain, and slow effects of subcutaneous injections of gynocardates, and the severe febrile reactions sometimes produced by their intravenous injections, which might conceivably lead to a generalised infection, made me hesitate to use that preparation in tuberculosis, so I made a similar sodium salt of the unsaturated fatty acids of cod-liver oil, which I called sodium morrhuate, and first tested it in leprosy cases which had become stationary on gynocardates, or in which the latter could not be given intravenously for any reason. The preparation proved to be non-toxic, very soluble and unirritating to the tissues or veins, so was much easier to administer than the gynocardates and hydnocarpates; it soon became evident that leprosy patients who had ceased to improve on gynocardates might once more progress and completely clear up under sodium morrhuate. Moreover, even advanced cases treated by simple and almost painless subcutaneous injections of sodium morrhuate might recover completely; the very important fact was established that other oils besides chaulmoogra and hydnocarpus may be effective in leprosy.

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[1] An abstract of a paper read before the Section of Therapeutics and Pharmacology of the Royal Society of Medicine, April 19th, 1921.

Testing of Other Oils.

A wide field of investigation was thus opened up and explored; oils with a high iodine value, indicating a large content of unsaturated fatty acids, were selected for testing. One made from linseed oil proved to be irritating to the tissues, while another derived from Japanese sardine oil was very toxic to animals, but a third preparation made from soya bean oil, which is an excellent food largely used in China, was found to be very suitable for injection purposes. In a short trial before the author left India, a severe case, with a very extensive lesion on the face, cleared up and became bacteriologically negative within the exceptionally short time of six weeks; proving that yet another oil may yield active products, although further cases did not clear up so rapidly. These several preparations may be advantageously used alternately or mixed together, a change being made if progress is not satisfactory under one of them.

Duration of Treatment.

The duration of treatment required to obtain complete clearing up of typical leprosy cases is considerable, a year or more often being necessary, although comparatively early cases may show apparent recovery in a shorter time. The results of five years' investigation were summarised at the Calcutta Leprosy Conference in February, 1920, when of 51 cases treated with sodium gynocardate and hydnocarpate, 1 was not improved, 9 slightly improved, 20 greatly improved, and in 21 the lesions had completely disappeared, all cases treated as long as three months being included. Thus, 80 per cent. showed either great improvement—with a good prospect of complete clearing up after further treatment—or had already become bacteriologically negative. If cases treated for a year or longer were considered alone, 9 out of 13, or 65 per cent., showed complete disappearance of the lesions. Of 20 further cases treated with sodium morrhuate, 3 were slightly improved, 12 greatly improved, and in 5 the lesions had disappeared, none of the cases having been treated for over one year; 85 per cent. were thus classed as greatly improved, or "lesions disappeared."

After-Results.

The after-results were next discussed in the light of 26 gynocardate and 8 morrhuate cases, which had been followed up for another year subsequent to an earlier report on their condition. Of the former class, 5 had shown further improvement, in 5 the lesions had disappeared, and 10 remained well, bringing the latter class up to 65 per cent.; 5 had relapsed—all patients who had discontinued the treatment against advice as soon as their visible lesions had disappeared, although some of them subsequently cleared up again under further treatment. Stress was laid on the importance of relapses in emphasising the necessity for prolonged treatment and justifying the caution of the author in not speaking of cures. Still, four cases had remained well for two and a half years, and six more for over one year; in certain of these cases an additional year can now be added, so that some may eventually prove to be cured. Confirmatory results reported by a number of observers were quoted, the most important being a trial in 13 Indian leper asylums of hydnocarpates in 183 and morrhuate in 117 cases reported on by Dr. E. Muir (who is now carrying out much more extensive trials in connexion with the Calcutta School of Tropical Medicine) with improvement in 72 per cent. and great improvement in 32 per cent. The trials were only of from two to 12 months' duration in most of these cases; while of those treated for six months and over, 100 per cent. showed improvement and 52 per cent. great improvement, including disappearance of the lesions in some cases. Moreover, sodium morrhuate gave exactly the same results as hydnocarpate of soda. Dr. M. Carthew, in 14 cases followed up in a Siam jail, also reported 2 improved, 8 greatly improved, and 4 with lesions disappeared for from six to 18 months. Ethyl ester chaulmoogrates and morrhuates were also made, but the former was rather painful on injection, although it has the advantage that it can be given subcutaneously or intramuscularly; in the Sandwich Islands, Hollmann and Dean, in 1919, and McDonald, in 1920, have reported very good results from its use, 78 patients having been discharged on parole by a medical board by the latter date. Moreover, patients were voluntarily seeking admission to the leper hospital for treatment, which should help in the segregation of early cases. There is thus no doubt that a great advance has been made in the treatment of leprosy by the researches in Calcutta and those of more recent date in Honolulu.

Age and Susceptibility to Leprosy.

Figures were next adduced to show that there is an especial susceptibility to infection by leprosy during the first two decades of life as compared with later decades. Denny, in the Philippines, has shown that no less than 44 per cent. of children living for seven to ten years with leper parents became infected, and that no less than 73 per cent. of cases in which the source of infection was traced, were among children and young adults, as compared with 1 to 2 per cent. between husband and wife in later decades of life. The frequent infection of children with tuberculosis is closely parallel, and attention was drawn to a recently published report showing the success of the Grancher Institute in Paris, which by permanent removal of children from exposure in overcrowded families containing adults with open tuberculous lesions, has greatly lessened infection among children. The great value of such protection of early life against infection of both leprosy and tuberculosis was emphasised.

Variable Results in Tuberculosis.

The trial of sodium morrhuate and sodium gynocardate in tuberculosis was next dealt with, the use of the former by six medical men in India having been reported in 1919, when the author concluded that the treatment was harmless and worthy of further trial, in view of five out of the six observers having reported favourably. Since that time variable results have been recorded, a trial among Indian sepoys in the dry, cool climate of Quetta having been very favourable, as well as the use of sodium morrhuate in tuberculous gland cases and in four cases of lupus, in one of which a new preparation, mercury morrhuate, was applied locally. On the other hand, trials in America had not given favourable results in phthisis. Attention was next drawn to the remarkable experimental investigation of gynocardates and morrhuates on acid-fast bacilli by Walker and Sweeny, who found that the chaulmoogra-oil preparations were lethal to acid-fast bacilli as a class on long exposure to their action in fluid media in dilutions of 100,000, having an especial selective action on them, although not on other classes of bacilli: they suggested that in leprosy these soluble preparations of chaulmoogra oil might have a direct destructive effect on the leprosy bacillus. On the other hand, sodium morrhuate had no such action on a fast bacilli, and I wish to point out that the interesting American observations do not explain the undoubted value of sodium morrhuate in leprosy; and that some chemical reaction with the fatty envelopes of the acid-fast bacilli, so weakening them as to allow the body cells to deal with them, best accounts for their destruction in the body under the action of my preparations; but much more research is required in the wide field now opened up.

Conclusion.

A recent experimental investigation has been made of the three new preparations, which had proved effective in the treatment of leprosy, in animals infected with tuberculosis; but in the acute general tuberculosis produced in the very susceptible animals used the results were entirely negative, except for an early febrile reaction followed by temporary fall of temperature, in two goats, who eventually succumbed to the infection at about the same time as a control animal. It was pointed out that these animal infections were equivalent to acute general tuberculosis in man, so that the failure in such cases did not prove the drugs to be useless in the more chronic forms of tuberculosis which form the great majority of human cases. I conclude that, whilst there is doubt at present as to the advisability of treating pulmonary tuberculosis with sodium morrhuate, except in the hands of experts with control cases, these drugs are worthy of further trial in the more chronic forms of the disease, and especially in lupus and surgical tuberculosis, where any changes will be visible and easily observed.

A CASE OF JAUNDICE FROM LATE SALVARSAN POISONING.

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IN September, 1918, I was asked by a colleague to see a patient who was suffering from locomotor ataxia with severe root pains; he had previously had two intravenous injections of salvarsan with inunction of mercury administered. The second injection was followed by violent vomiting and purging and alarming general symptoms. At that time I was in the habit of administering novarsenobillon by the "deep subcutaneous" method into the fascia covering the gluteus medius. As I had seen no untoward effects from this procedure I concluded that the slower rate of absorption of the drug made for comparative safety. Accordingly I administered 0·45 g. by this method dissolved in a few minims of distilled water. It caused no pain and he went to business the same day and also on the next day. On the evening of this day, however, he was taken ill with vomiting and purging, the stools containing blood. The illness lasted two days. As the injections gave him great relief from the lightning pains I decided to repeat them, guarding (if possible) against after-effects by the administration of adrenalin chloride (1 in 1000) ♏ 25 in water twice daily, with intermediate doses of calcium lactate, gr. 20, commencing on the day of injection and continuing for three days. This procedure was completely successful; the injections caused practically no pain (no doubt due to the diminished deep sensibility from tabes), and he suffered neither discomfort nor malaise but continued his work uninterruptedly. Since that time I have given him several prolonged courses of novarsenobillon and inunction of mercury ointment, always with the accompanying medicinal treatment as above, and with marked benefit to his condition.

In the course of the three years during which I ve been connected with the venereal clinic at the ster Royal Infirmary I had seen no case which gave me the slightest anxiety from after-effects, with the exception of one very severe case of acute dermatitis, which came to us after treatment at another clinic, and the case of jaundice which I am about to describe—and this in spite of the fact that many of the patients live in the mountainous districts of Flintshire and Denbighshire, and have to travel to their homes after receiving an injection. I make it a rule never to give an injection if the patient is not in good health, from any cause other than his specific complaint. The urine is tested before each treatment, and all patients undergoing a course of salvarsan and mercury treatment take a teaspoonful of sublimed sulphur in treacle or syrup at bedtime to assist in the elimination of the mercury and thus also, indirectly, of the organic arsenic compound. They are also encouraged to drink freely of simple diuretics such as barley water or whey. I had seen no case of jaundice from delayed salvarsan poisoning, but decided that I would treat such a case with intravenous injections of normal saline (which I had found efficacious some years ago in treating a case of acute yellow atrophy), and also with adrenalin and calcium, after my experience of the effect of these drugs in the case of tabes mentioned above.

On Jan. 22nd of this year a patient attended the clinic with the following history:—

A man, aged 39, employed on a farm. Rheumatic fever in 1913; laid up 12 weeks. Joined army February, 1918; served in the R.E. in Kent; never abroad. Had a venereal sore when he joined army; slight rash on the arms, no sore-throat; had no treatment.

1919.—Glands in the neck enlarged; discharged from army on this account. May to September, 1919, in Chester Royal Infirmary. Lymphadenoma diagnosed; treated with arsenic and X rays; no improvement. July 21st, 1919, Wassermann test positive +; treatment, potass. iodid. and mercury ointment inunction; lost sight of until March, 1920, when he appeared at the venereal clinic. March 20th, 0·45 g. novarsenobillon intravenously, inunction; 27th, not well, injection omitted. April 3rd, 0·45 g.; 10th, omitted. 17th, 0·6 g.; 24th, 0·6 g.; May 8th, 0·6 g.; not well after the injections; these omitted until June 5th, 0·45 g. June 12th, 0·45 g. Injections discontinued again; 24th, Wassermann positive + +. July 28th, 0·45 g. August 4th, 0·45 g. August 11th, 0·6 g. and hyd. 1 gr. intramuscularly. 18th, 0·6 g. Sept. 1st, 0·6 g. and hyd. 1 gr. 8th, 0·6 g., hyd. 1 gr. 25th, 0·6 g. and hyd. 1 gr. Oct. 2nd, 0·6 g., hyd. 1 gr. 9th, not well. 16th, 0·6 g. 23rd, Wassermann positive + +. Nov. 20th, 0·45 g., hyd. 1 gr. 27th, 0·6 g., hyd. 1 gr. Continued to attend at the clinic, but felt unwell.

He always felt ill after the injections; shivering, giddiness, sometimes sickness, feeling of prostration and distaste for food. The specific treatment was entirely discontinued and tonics were administered from time to time. It is noteworthy that intramuscular injections had the same effect as those given intravenously.

Jan. 22nd, 1921: Came to the clinic complaining that he had been vomiting after everything he took; had noticed that he was yellow. Pain coming and going in the stomach; urine had been a deep colour. At once admitted as an in-patient; put on low, fat-free diet; sulphur, a teaspoonful at bedtime, and barley water ad lib. Did not vomit during the first two days in hospital. 24th: 4.30 P.M., one pint of normal saline given intravenously. 6 P.M., severe rigor, patient faint and collapsed; 6.30 P.M., hæmatemesis, about 5 oz. bright blood vomited; diarrhœa; severe pain in epigastrium and under right ribs, shooting to back and up right side. Temp. 103·4°F., pulse 128. 9 P.M., I saw him at the infirmary; deeply jaundiced, pulse 110; collapsed and feeling very ill; right upper rectus abdominis rigid; tenderness in epigastrium and over gall-bladder region. Gall-bladder could be felt distended; spleen not felt; liver dullness normal. (I formed the opinion that the gall-bladder was distended with blood.) Ordered liq. adrenalin chlorid. ♏ 25, and calcii chlorid. 10 gr., in alternate doses 4 tis. 25th: Much better, no further vomiting or diarrhœa; pain not so severe; 20 oz. of dark-coloured urine had been passed during the preceding 24 hours. Fæces clay-coloured. 26th: 10 oz. normal saline, given intravenously; slight shiver followed and temperature rose to 99°. Gall-bladder diminished in size, liver and spleen normal, less pain. (The distilled water used in preparation of the normal saline was not above suspicion, so I had it doubly distilled, and no further ill-effects followed the injections.) Saline administered per rectum in addition to the intravenous. 27th: 10 oz. saline intravenously; the same quantity per rectum;

amount of urine increasing; 40 oz. passed. Herpes on upper lip; pain still on and off. 28th: saline as before, pulse 62. Jaundice unaltered; patient felt drowsy. Gall-bladder still palpable; urine gave iodine reaction for bile pigment for first time. No albumin at any time; urine 30 oz.; no leucin or tyrosin. 29th: vomited; no blood. Still drowsy; jaundice decreasing. On the 30th all treatment was intermitted for one day; on the 31st saline (one pint) was given intravenously; half pint per rectum, followed by increased excretion of urine: 40, 57, 45 oz. on succeeding days.

Adrenalin and calcium stopped on Feb. 1st. Jaundice gradually disappeared, drowsiness diminished, urine and fæces became normal, and patient completely recovered. Nothing could be felt of liver, gall-bladder, or spleen. I may mention that the enlarged glands in the neck, which had begun to decrease in 1919, had disappeared when he returned to the clinic in 1920. Wassermann test, March 22nd, 1921, positive + +. I was somewhat disappointed to find that the severe experience through which he had passed had left the blood reaction unaltered. In the face of such a marked positive reaction as this it would be wrong entirely to discontinue active specific treatment, and I propose to order thorough treatment by inunction of mercury, combined with the dose of sulphur each day, send him into the country for a month to re-establish his general health, and then admit him to hospital for a complete course of salvarsan and mercury treatment under observation, guarded by the adrenalin and calcium dosage as in the case of tabes recorded above. *Under these circumstances it will be possible to* keep under observation the effect of the injections and the efficient working of the kidneys.

Remarks.

There can be no doubt that this was a case of late jaundice from salvarsan poisoning, the interval between the last injection and the onset of symptoms having been about 42 days. The symptoms are identical with those recently recorded in similar cases by Major A. T. Todd.[1] I have seen no record, however, of a distended gall-bladder such as existed in this case, my surmise that the distension was caused by effused blood, with blocking of the cystic duct by clot, being probably correct. Had I carried out my original intention of commencing the treatment with adrenalin and calcium the alarming collapse of the *evening of Jan.* 24th would almost certainly have been avoided. The hæmorrhagic symptoms showed that the effect of arsenic on the capillaries, and probably also on the blood, had been reinforced by the dilution of the blood with the normal saline injected. My confidence that administration of adrenalin and calcium would render the subsequent intravenous use of saline a safe procedure was abundantly justified by the further course of the case. The diuretic effect of the saline was very evident, and there can be no doubt that it assisted materially in the elimination of the poisonous toxins. A marked feature of the case was the reaction which followed each injection of salvarsan, and the feeling of malaise and illness which induced us to intermit the treatment from time to time, and, fortunately, to discontinue it between Nov. 27th and the onset of the acute illness in January.

Major Todd,[2] from estimation of the ratio between ammonia nitrogen and urea nitrogen, concludes that "at some time during the acute stage of the illness acidosis was determined in 80 per cent. of the cases, and was present in all but the slight cases." No estimation of the urinary nitrogen was made in my case; the symptoms, however, do not seem to me to be similar to those caused by acidosis as we are familiar with it in uræmia and diabetic coma, there being no such disturbance of respiration. I am strongly of opinion that the grave symptoms are caused by the toxins set free by the destruction of the liver cells, and that, in the main, treatment should be directed towards their elimination. The intravenous administration of saline not only assists this object but also dilutes the toxins in the blood.

One of the most efficient and simple diuretics in my opinion is whey, and its use during a course of salvarsan and mercury treatment would, I think, be beneficial. The late Dr. Samuel J. Gee drew attention to its use in cases of stone in the kidney, and I have frequently had opportunities of verifying his observations.

In conclusion, I wish to thank Dr. W. J. A. Russell, house physician at the Chester Royal Infirmary, for the careful notes which he took of the case.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF PULSATING EMPYEMA.

BY SIR JOHN BROADBENT, BART., M.D.OXON., F.R.C.P.LOND.,
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THIS condition is so rare that I think the following case worthy of record.

M. S., aged 9, was admitted to St. Mary's Hospital on March 6th, 1921, on account of pulsating swelling in the præcordial area.

History.—She was well and attending school till Jan. 20th, when she had her tonsils removed at a local hospital. On her return home there was pyrexia, and she was kept in bed and attended by a doctor. A pulsating swelling was noticed on March 5th, and she was sent into hospital. No history of pneumonia was obtained.

Condition on admission.—Child looks very ill. Temperature 102° F., pulse 140, respirations 40. A pulsating swelling is seen in the præcordial area about 2 inches in diameter; its upper margin is at the left nipple, the lower at the sixth rib, its outer margin ¾ inch beyond vertical nipple line, the inner margin just at the left border of the sternum. The swelling projects about ½ inch from the chest and pulsates forcibly and synchronously with the heart. The apex beat of the heart cannot be felt, but the heart is not displaced to the right as the area of cardiac dullness does not extend beyond the mid-sternal line.

Lungs.—The whole of the left side of the chest is dull back and front. There is well-marked bronchial breathing back and front over the whole of the dull area, most intense over the upper lobe in front, where a few sharp crepitations are heard.

A diagnosis of pulsating empyema was made. An exploring needle was inserted below the angle of the scapula and pus withdrawn. An aspirator was then used, but only about 3 oz. of pus could be withdrawn as the child complained of great pain. The next day, the 7th, Mr. V. W. Low removed a piece of the eighth rib below the angle of the scapula and evacuated a small empyema, only about 4 oz. of pus escaping. The abscess cavity was small, and on its inner aspect the heart could be felt pulsating. The evacuation of this empyema had no effect on the pulsating swelling in the præcordial area. The next day the temperature fell to 99°, and the child seemed better, but there was still absolute dullness over the upper part of the left lung, with intense bronchial breathing and a few sharp crepitations. On the 12th, as the pulsating swelling still persisted, Mr. Low incised it and about 3 oz. of pus escaped. It was found to be an empyema pointing through the fifth intercostal space and encapsuled between the heart and chest wall. At the bottom of the wound the heart could be seen pulsating violently. This cavity was entirely shut off by firm adhesions from the abscess cavity of the empyema previously opened. A small rubber drain was put into the cavity, and was discontinued after three days as there was little discharge. The temperature after a few days settled down. The upper lobe of the left lung above the empyema became less dull and gradually expanded and the bronchial breathing was no longer heard. Both wounds healed rapidly and the child made an excellent recovery and was discharged from hospital April 22nd.

Dr. Joseph Sailer[1] in 1904 published a paper on "Pulsation of the Wall of the Thorax," in which he states that he has collected records of 97 cases in which effusion of fluid in the pleural cavity was associated with pulsation of the thoracic wall. He divides these into two main groups: (1) General diffuse pulsation of the wall of the thorax; (2) localised pulsating tumours. These he classified as follows:—

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[1] THE LANCET, 1921, i., 632.

[2] Loc cit.

[1] Sailer: Journal of American Science, vol. cxxviii., 225.

Pointing empyemata	34	Localised pulsation.
Pyopneumothorax	4	
Diffuse general pulsation of thoracic wall	25	Diffuse pulsation.
Pyopneumothorax	8	
Circumscribed encapsuled empyemata ..	5	
Extrapleural abscess	5	
Serous or hæmorrhagic effusion ..	12	

In 53 cases of left-sided effusions the heart was displaced to the right.

In 58 out of 62 cases when locality of pulsation was mentioned it was on the left side.

Of the 97 cases 37 recovered, 27 died, and 16 improved; the history of the others was not known.

Explanation of Local Pulsation.

As Sailer states, it is clear (1) that the source of pulsation must be the heart, (2) that the pulsations must be transmitted through the collection of fluid to the surface.

Normally the pulsations of the heart are absorbed by the lung, and even if one side of the chest is full of fluid the pulsations of the heart are absorbed by the other lung, which is resilient, and are not transmitted through the fluid.

For pulsation to be transmitted through the fluid to the chest wall two factors appear to be essential: (1) The fluid must be shut off by adhesions and brought into close contact with the heart under a certain degree of tension; and (2) the heart and pericardium must also be fixed by adhesions, and thus kept in apposition with the fluid under tension.

In the case under consideration these conditions were fulfilled, as there was an empyema shut in between the heart and the chest wall pointing to the fifth intercostal space and pulsating, and the heart was fixed by adhesions, as it was not pushed over to the right in spite of the fact that there was another separate empyema at the left base. It is remarkable that the pericardium, being in such close contact with two purulent effusions, should not have been infected.

A CASE OF
WEBBING OF THE LEFT ARM.

BY J. S. MANSON, M.D.EDIN., D.P.H.,

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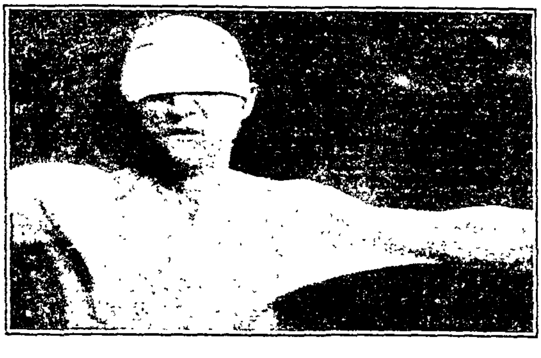
THIS rare condition is illustrated by the accompanying photograph. The skin fold on the left side extends from the nipple to the internal condyle of the humerus. The depth of the anterior axillary fold measured from the acromion process is 8¼ inches compared to 5 inches on the right side. The left humerus is 1 inch shorter than the right. The left pectoralis major is very poorly developed if not altogether absent. The pectoralis minor is also small. The scapular muscles seem less in size than those on the right, but are otherwise well developed. The arm cannot be raised quite to the level of the shoulder. The left side of the chest bulges in front at the junction of the costal cartilages with the ribs. There are no other abnormalities.



Warrington.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF MEDICINE.

ARTIFICIAL PNEUMOTHORAX.

A MEETING of this Section of the Royal Society of Medicine was held on May 24th, Dr. A. F. VOELCKER, the President, being in the chair, when Dr. CLIVE RIVIERE opened a discussion on Artificial Pneumothorax. Pneumothorax treatment of pulmonary tuberculosis, he said, had now been practised for over 30 years and its value was more and more widely recognised. The treatment was indicated, according to Forlanini, its most notable exponent, "every time that life is threatened by the extension of a local lesion." To achieve success with it, it was necessary to follow very closely its indications and contra-indications, the most important being concerned with the condition of the opposite or "better" lung. Disease in this might be fairly widespread, but must not be of decided activity. The condition of this lung could only be gauged after the deep parts had been revealed to X-ray examination. Râles on the "better" side were often conducted from the bad side, and would disappear when the bad lung was collapsed—care must be taken that this conduction did lead to error and the refusal of suitable cases. Refills of gas must not be too large, and hence must not be at too long intervals. 1000 c.cm. or more, often given in this country, were too large; 700–800 c.cm. should be the limit, and 500 c.cm. were safer. The intervals would be governed by the rate of absorption and vary considerably for different cases—no "standard" interval could be laid down. With the course of time a pleural sclerosis occurred and the gas pressure had to be raised or the lung would expand. This necessitated X-ray examinations at intervals during the course of a case. On the other hand, too high pressures would lead to mediastinal over-displacement, accompanied by unpleasant symptoms. A condition which tended to the undue raising of intrapleural pressure was the onset of pleurisy—very small quantities of gas raised the pressure very high. But no such gas should be introduced, nor the chest punctured till the acute stage was past.

The surgical treatment of adhesions preventing efficient collapse of the lung was an important line of progress. If few they might be divided, without opening the chest, by galvanocautery or tenotome. If more numerous the chest might be opened without rib resection and the adhesions divided. Separation of widely adherent lung had also been tried, but was not a hopeful operation. More hopeful, under such conditions, was a stripping of the costal pleura, and the packing of the space with fat or paraffin, or in some cases, the establishment of a pneumothorax between the costal pleura and the endothoracic fascia. There remained also extrapleural thoracoplasty, but for all these operations the case must be very carefully picked, particularly with relation to the condition of the "better" lung. The point to be specially insisted on in the treatment of pulmonary tuberculosis by pneumothorax or by surgery was the narrowness of the indications, but the striking hopefulness of the treatment within these limits.

Sir JAMES FOWLER described a case which had come under his notice in 1885, when artificial pneumothorax was induced in a youth aged 21 for hæmoptysis. The patient had been in hospital for 31 days, and during severe attacks of hæmoptysis 196 ounces of blood were brought up. After the pneumothorax the patient had two attacks of hæmoptysis during the five days he lived, during which 4 and 2 ounces of blood were coughed up. Post-mortem examination showed the presence of an old cavity at the apex of the left lung from which the blood had come, the upper lobe and the right lung being infiltrated with miliary tubercle. Sir James Fowler considered that pneumothorax was one of the two great advances which had been seen in the treatment of tuberculosis.

Dr. S. VERE PEARSON said that the more experience he gained the more he felt that too much diffidence was shown in resorting to artificial pneumothorax. He did not advocate it in early cases. After quoting two cases illustrating its value, he said that he agreed with other writers as to the impossibility of ascertaining by any means short of puncture with a hollow needle connected with a manometer, whether or not adhesions were present. The form of needle used for an initial operation was unimportant, and he believed in trying the simplest kind first. He had abandoned a great number of punctures when met by failure to find free pleural surfaces, and persistent endeavour by ordinary means when initially only a very incomplete pneumothorax could be produced on account of adhesions. He did not usually try again after two séances with about three punctures each. It was in the days, now several years ago, when he used to try to tear adherent pleural surfaces apart in cases with extensive adhesions by repeated doses of gas at high pressure, that he met with the only suggestion of gas embolism he had come across in his own practice. The patient became semi-conscious for a few minutes, and afterwards for several hours presented partial hemianopia and hemiparesis. With regard to pleural reflex, twice he had encountered alarming symptoms, which perhaps ought to be ascribed to this reaction, but the effects produced by a very small initial dose of gas, given with all the manometric readings favourable, hardly accorded with those usually ascribed to pleural reflex. The dose immediately set up most distressing dyspnœa of the asthmatic type. In the first case this subsided in a few hours. The hopelessness of the outlook unless compression treatment was successful induced him to make a second effort, but again the same symptom arose and took many hours to subside. In the second case the dyspnœa increased progressively unto death within an hour and a half after a dose of only about 100 c.cm. of oxygen. The gas was introduced on the advice of a consultant into the side containing the lung with least extensive disease, in the belief that this disease was that which was active, and that the outlook in any case was very bad.

In his series of cases of effective compression fluid occurred about as frequently on one side as the other, and in partial as in complete pneumothoraces. Of 56 cases, 23 had been right-sided and 33 left. Of the former, 8 were partial; 2 of these and 10 of the remainder had fluid. Of the latter, 7 were partial. Four of these partial ones and 14 of the complete pneumothoraces developed fluid at some time or other. A striking thing about the cases with fluid, if they were properly handled, was that the ultimate results were but little worse than those following dry pneumothorax. There were several points connected with fluid which might profitably be discussed. The fluid was generally at least a nuisance and often added a good many extra problems and difficulties in the management of the case. What were the circumstances which called for aspiration? Did replacement by oxygen instead of by nitrogen or air lead to quicker absorption? He had come to no final conclusions in either case. A chest full of fluid should be aspirated if possible. Such a cavity should be treated conservatively as long as it was purely tuberculous; this was almost invariable in these cases; it should not be opened by any cutting operation. When any fever, other than the slightest, persisted for many weeks and seemed to be caused by the pleuritis and the effusion aspiration should be resorted to, especially if malaise, anorexia, and indigestion were severe. If re-expansion of the lung was difficult to control and new adhesions seemed imminent, it was best to empty the chest as completely as possible and replace the fluid by gas. Under these circumstances one should not wait long, say only until the cavity was about one-third or one-half full, before repeating the procedure. Apart from the foregoing considerations he could see no advantages in aspirating the fluid. Whenever he aspirated he tried to get all the fluid off and replaced by gas. Fluid cases required more frequent reference to the X ray room than dry cases.

In England we were behind the continental workers in dealing with patients who presented all the indications of successful treatment by pneumothorax, but whose adhesions prevented success. He had been much impressed by Jacobaen's paper on the cauterisation of adhesions by the aid of the thoracoscope and a galvano-cautery. This author had operated by these puncture methods on 40 patients with partial adhesions. In 30 of the 40 he was able to accomplish what he had set out to do. In 26 he produced a more effective pneumothorax and thereby benefited the patient. With over 100 cauterisations he had never met with secondary infection and only once did hæmorrhage arise. There was incompetence from which patients suffered because of the hiatus between the physician and surgery—this must be bridged. For the division of partial adhesions, because purely tuberculous lesions were being dealt with, he favoured on theoretical grounds those methods which avoided, as far as possible, cutting operations.

Dr. NEVILLE COX referred to the danger of using a pointed needle for the first operation, and to the risks of tuberculin injections in the after-treatment. He thought that a matter of paramount importance to tuberculosis officers and others dealing with large numbers of phthisis cases, especially among the industrial classes, was the indications for the treatment, and whether it was justifiable to use it in some of the so-called early cases, pointing out the notoriously bad prognosis in such cases, where bacilli were persistently present, treated on ordinary lines. He also referred to the need of competent surgical assistance in some of the complications of pneumothorax, and thought that the larger sanatoriums should have properly equipped operating theatres, with surgeons attached, to deal with such cases.

Dr. DONALD HALL had been employing the treatment for two years—his only regret was that he had not employed it earlier, for he was absolutely convinced of its great merit. He thought that by the profession as a whole the treatment had not received the recognition which was its due. He urged that great care ought to be taken in the selection of cases, for although the patient might have nothing to lose, the treatment had, and therefore, until artificial pneumothorax was more widely adopted and approved, each avoidable unsuccessful case was an error in tactics on the part of its exponents. He now used air in preference to nitrogen. On four occasions he had made his first puncture with a Lillingston needle, but for first puncture he preferred the Riviere trocar. All his cases had been X rayed before and during treatment. He had found skiagrams of great help in determining the extent of collapse, but he would not be deterred by an adverse X ray report from undertaking a case the clinical physical signs of which were favourable. He had kept to low pressures, aiming at obtaining -5. His only unfavourable results had been cases in which. owing to adhesions. it had been impossible to produce more than partial collapse. So far he had met with no serious complications, such as perforation of lung, pleural shock, or air embolism.

Dr. JANE WALKER said that at the East Anglian Sanatorium patients had been treated by the method since 1912. The number of patients treated was 117, in 12 of which there had been failure to produce a pneumothorax. Those selected had been advanced cases in patients in whom there was little prospect of recovery, so that the percentage of "cures" was necessarily small. Artificial pneumothorax had been induced when there was evidence of general toxæmia, and when one lung only was extensively diseased, with a possible small lesion limited to about a fourth of the other lung. The treatment would not be employed if there were extensive disease in the other lung, if there were albuminuria, or if the patient were of a very nervous temperament. A small amount of disease in the other lung was certainly not a contraindication, and in a large number of cases, with the general improvement in the patient's condition, a diminution in the signs over the other lung had taken place. Of the 117 cases, 73 were of females and 44 of males. Their ages varied from 8 to 60. Sixteen under 16 years of age, 12 girls and 4 boys, and of them 11 had bacilli in the sputum, 4 sputum without bacilli, and 1 had no sputum. Nine of the 16 were alive, 1 treated in 1912, 4 in 1915, 1 in 1917, 1 in 1918, 1 in 1920, and 1 was now under treatment at the children's sanatorium. Of the remaining 101 cases, 37 were alive as far as was known; of these 16 had been treated by this method since the middle of 1920, and 11 of them had a very good prospect of recovery; 64 were known to have died, so that roughly two-thirds had died already, and a good many more were likely to follow.

So far there had been no serious accidents connected with the treatment; occasionally a vein had been punctured. The simplest possible form of apparatus was used, the only modification since 1912 being that for some years past air had been used rather than nitrogen. Oxygen had not been used for the initial operation. The patients were prepared by giving them omnopon a couple of hours or so before, and novocain or locæsthetic was used as a local anæsthetic, care being taken to anæsthetise the deeper tissues as well as the skin. On the first occasion 200–250 c.cm. were usually inserted, next day 300 c.cm., and then after a day's interval 350 c.cm., and so on, gradually lengthening the intervals. It had been the practice lately to give smaller doses at more frequent intervals, so that a patient was rarely allowed to go for longer than three weeks without a refill, and rarely as much as 1000 c.cm. were given for the first six months or so. The first few refills were usually finished with a negative pressure, and a pressure of + 10 was seldom exceeded later on. During the last four years X ray examinations had been made on all cases, and the presence of fluid had been detected in a large proportion. Prof. Saugman's estimate of 50 per cent. was not far from the mark. The disadvantages of a large quantity of gas were breathlessness, too great strain on the other lung, and digestive disturbances. It was a curious fact how difficult it was to make patients gain weight during treatment by this method. Dr. Walker felt very strongly that the time had come to consider whether this treatment should not be applied to cases before the patients became so seriously ill. On all the cases under consideration artificial pneumothorax was induced as a last hope, and although the percentage of recoveries was so comparatively low, still life for these people had been made far more tolerable. Distressing symptoms had been greatly alleviated and life prolonged, so that the procedure had been well worth while.

Dr. L. S. **BURRELL** said that he proposed to refer to two conditions which might arise during the treatment—one gradual obliteration of the pneumothorax cavity, the other the formation of pleural effusion. Out of 77 cases in which he had produced an artificial pneumothorax and had kept it up for a month or more, in five the air space had gradually become smaller until eventually it had closed. In one of these the parietal pleura became much thickened, so that the needle had to be introduced far to reach the air space, but in the other four there was no great thickening of the pleura. Having described these cases he said that in all of them the disease was on the left side, and each patient was over 30 years age. Treatment was started because of repeated moptysis in two cases, and because of progressive disease in spite of sanatorium treatment in the other three. The pneumothorax seemed to have hastened the formation of fibrous tissue, and all the cases had been much improved, in spite of the short time they were under treatment. He was of opinion that the treatment should be kept up for at least two years when possible, and he had seen a relapse follow four months after treatment had been stopped in a patient who had been having refills for 2½ years. Out of the 77 cases of artificial pneumothorax he had had 18 cases of pleural effusion, or 22·3 per cent., but he did not include among the 77 any case in which the treatment was not continued for at least a month. Of the 18 patients, in 11 the pleural effusion developed within the first four months of treatment, in another six it developed before the end of the eighth month, and in 1 after 19 months. Three were dead, three were very ill, but the remainder were doing well, and seven of them were at work. The fluid often became thick, and might contain tubercle bacilli, but no other organisms had been found in the series. He had noticed that patients from whom the fluid was not withdrawn often did quite well, and appeared to be unaffected by the effusion. It was his practice, however, to replace the fluid by air or oxygen about every three months.

Having demonstrated X ray prints obtained from a case of this kind, he spoke in favour of the double manometer, although he generally used the apparatus devised by Drs. C. Lillingston and S. V. Pearson. With a double manometer, as found in Dr. Parry Morgan's apparatus, the oscillations were more easily seen—a great advantage, especially at the initial operation. Moreover, with the double manometer, it was possible to know the pressure of the gas from the bottle and the intrapleural pressure at the same time. One could also discover by this manometer whether the gas was flowing into the pleural cavity.

Dr. S. **MELVILLE** said that he would plead for the collaboration of the clinician and the radiologist more in the induction of artificial pneumothorax than in most other things. (1) To determine the distribution of the disease. It was well recognised that the skiagram showed more extensive shadows of disease than were appreciable by physical examination. (2) In cases in which there was considerable disease in one lung there was speedily set up a compensatory emphysema in the more healthy lung, which unquestionably masked the physical signs. (3) To localise the position of definite adhesions with the possibility of indicating the most suitable site for inserting the needle. If a case were systematically watched during the intervals of filling, adhesions were seen which were unsuspected, and it was interesting to watch the slow but definite stretching of these adhesions. As the lung became decompressed they were seen to shorten—in other words, the lung expanded along the lines of the adhesions. In practically every case after a fair amount of gas had been introduced the other lung was seen to become less translucent. Attention had been drawn to this by Dr. G. Lucas, of Banchory. The conceivable therapeutic value of this change he ventured to emphasise, for although some of the lessened translucency might be due to compression, there was a hyperæmia set up which must have some influence upon any diseased focus in the more healthy lung.

SECTION OF OTOLOGY.

A MEETING of this Section of the Royal Society of Medicine was held on May 20th, Sir **CHARLES BALLANCE**, the President, in the chair.

The Pathology of Deaf-mutism.

Dr. J. S. **FRASER** (Edinburgh) showed a remarkable series of slides of sections of ears from deaf-mutes, demonstrating the structural defects. The contribution was based upon the examination of 130 children at a deaf and dumb school; also a number of cases at the Royal Infirmary, Edinburgh. Of the 130, 6 were instances of congenital aphasia, but they could all hear fairly well, one or two being able to obey instructions given in a whispered voice while their backs were turned. One child who could hear fairly well had deaf-mute parents. In 4 out of these 6 congenital cases the vestibular apparatus was normal. It was, he said, questionable whether a school for the deaf and dumb was the best place for educating children with congenital aphasia. Of the remaining 124 cases, 53 had congenital deafness, and in 13 others it was probably the case, too. Of the 53 definite cases the parents were blood relations in only 3. In 18 cases there was deaf-mutism in the family, but several families supplied more than one child to the institution. Ten children showed evidence of past middle-ear suppuration, 16 had a little hearing. In 23 the vestibular apparatus was normal, in 17 it was subnormal. Fifty-eight of the children were cases of acquired deafness. In 22 cases the deaf-mutism was due to the results of zymotic diseases other than epidemic cerebro-spinal fever. Of these 22, 17 had learned to speak before the onset of the deafness, but by the time they were sent to the school speech had practically disappeared. In 3 chronic middle-ear suppuration was still present; 9 had had mastoid operations, 2 had large dry perforations, 2 had retracted scars, and in only 4 was there anything like a normal drumhead. In 11 cases vestibular reactions were absent; in 8 others they were practically absent. Cerebro-spinal fever was responsible for more marked deafness than was any other condition, and it was associated with great loss of vestibular reactions. There were 17 of these cases. Congenital syphilis was present in 7; in some the Wassermann reaction failed to reveal the syphilis.

The PRESIDENT spoke highly of the value of the demonstration, and paid a tribute to Dr. Fraser for the beauty of the preparations.—Mr. A. CHEATLE asked whether Dr. Fraser had any views as to why islands of hearing occurred in these cases. With regard to the site of the malformation, it was held that the structures which were late in the evolution of the ear were more liable to malformation than those formed at an earlier epoch, and the cases now illustrated bore that out.—Dr. ALBERT A. GRAY (Glasgow) said he had found that the tensor tympani muscle had not undergone any degeneration in deaf-mutism. Very few deaf-mutes were absolutely deaf, and he suggested that the response occasionally to the loud sounds heard was sufficient to keep the tensor tympani healthy. He was not able to speak of the stapedius. And instead of the labyrinth in these cases being smaller in size than the normal, he had found it to be even larger than in the usual child.—Dr. DAN MCKENZIE expressed his satisfaction that this somewhat neglected region of aural investigation was being taken up. He thought it important to endeavour to differentiate between cases due to intra-uterine disease and those owning some hereditary defect. The precise nature of the latter was still questionable. It was interesting to note that in two of Dr. Fraser's cases there had been fracture of the cranial base. He discussed the probable mode of infection in cases of the condition having followed meningitis.—Mr. SYDNEY SCOTT congratulated the exhibitor and the Section on the beautiful sections shown by Dr. Fraser. One of the most interesting of the series was that in which in one ear there was a distended ductus cochlea, and in the other there was collpase of that structure, and he thought the following up of that subject might throw some light on the origin of the perilymph and endolymph.

Dr. FRASER, in his reply, said he believed that in congenital deaf-mutes the organ of Corti was badly formed, but not sufficiently so to preclude the hearing of very loud sounds; it was comparable to the perception of a bright light by a very defective eye. In the first case of which he showed slides, the part of the otic vesicle which normally formed the utricles and canals developed all right, but that which was going to form the saccule of the cochlea did not expand properly. There was no sign of abnormality in the vascular supply of the cochlea. He remarked on the French view that congenital deaf-mutism was not so much a question of the inner ear as of the hearing centres in the brain, and he intended to report later on the brains of these cases.

Sinusitis in Children.

Mr. F. J. CLEMINSON read a paper on this subject, based on a study of 85 cases. The sinus chiefly considered in this contribution was the maxillary antrum, but some of the cases showed ethmoiditis, and some frontal sinusitis infection also, with probably involvement of the sphenoid. The ages of the cases varied from 3 to 14 years. Among the symptoms complained of were running at the nose, nasal obstruction, constant cold, deafness, chronic cough, frontal or supra-orbital headache, mental dullness, and lethargy; very occasionally there was nose bleeding. Otorrhœa might be present in one or both ears. Diagnosis rested on the symptoms and signs, transillumination, radiography, and exploratory puncture. One case dated back to an attack of diphtheria three years before, and that raised the question of carriers during a long period. In 15 of the cases the infection was due to a single organism. Many cases of recent infection cleared up after a solitary puncture.

The paper was discussed by the PRESIDENT, Mr. SCOTT, Dr. E. WATSON-WILLIAMS (Bristol), Mr. H. D. BLASTOW, Mr. G. H. LAWSON WHALE, and Dr. J. S. FRASER, and Mr. CLEMINSON replied.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

TRYPANOSOMIASIS: NEW METHOD OF TREATMENT.

AT a meeting of this society, held on May 20th, Prof. W. J. R. SIMPSON presiding, a paper was read by Dr. CLAUDE H. MARSHALL, S.M.O., Uganda Protectorate, on this subject. He prefaced an account of the treatment, which had been originated by Dr. S. M. Vassallo, of the Uganda Medical Service, and himself, by reference to the causation of sleeping sickness and its dependence on the three factors—(1) the human host, (2) glossina tsetse-fly, and (3) the trypanosome. Any two of these were harmless in the absence of the third, therefore the disease might be dealt with either by exclusion of human beings from tsetse-fly areas, banishment of the fly by robbing it of shelter and food, or by the cure of infected persons. It was pointed out that application of the first of these measures involved surrender to the glossina and abandonment of vast tracts of country. Destruction of the fly's breeding ground and removal of its food-supply had met with only limited success. Efforts at cure of infected people had proved most discouraging, for, in spite of marked temporary benefit resulting from many drugs, no permanent cure could yet be relied on. Administration of a single dose of salvarsan, neosalvarsan, or atoxyl sufficed to sterilise the blood temporarily, but after about four months the disease recurred and was eventually fatal.

To explain this unhappy course of events two theories had been advanced—(1) that the trypanosome in a resistant form became atoxyl-fast; (2) that some of the parasites escaped the drug by seclusion in the central nervous system. The latter explanation he regarded as the correct one, and supported it by reference in detail to four cases, whose blood and gland juice proved to have been freed from parasites by intravenous injection of neo-kharsivan, but whose cerebro-spinal fluid had been found to contain trypanosomes as early after infection as three days and as late as 3½ months in each instance in two of the four cases. He suggested that the marked thickening of the cerebral meninges, found in post-mortem examinations on fatal cases of the disease, was due to the action of the trypanosome in the central nervous system in producing thickening and occlusion of the choroid plexus at an early stage of the disease, and thus preventing access of drugs from the circulation into the spinal fluid. In support of this view he quoted Prof. A. Keith as authority that infections in the basal cisterns of the brain reached the cervical glands, probably through the nerve sheaths, where some connexion existed between the cerebro-spinal and lymphatic systems. On these grounds Dr. Marshall regarded intravenous medication as useless, when once the central nervous system was invaded, as, whatever drug was employed, its effect would be confined to the general circulation. In 1918 he first attempted intrathecal treatment. He injected a patient with 0·6 gm. of neokharsivan intravenously, followed three days later by injection of 0·025 gm. of the same drug into the spinal canal. This proved a failure, for the man died on the following day. In a subsequent well-marked case of sleeping sickness, however, three hours after intravenous injection of neokharsivan, he withdrew two ounces of the patient's blood, kept it under sterile conditions for 20 hours, and then injected 20 minims of the resulting serum into the spinal canal, the same amount of spinal fluid having been previously drawn off. No further treatment was given. Examinations of the blood at intervals of three months had failed to show any parasites, and when last seen in December, 1920—i.e., 27 months after the original injection of serum—the patient was quite well. Up to the end of 1919, 13 other cases had been similarly treated, and the results had been published in the *British Medical Journal* of May 22nd, 1920. Dr. Vassallo, who had relieved him in February, 1920, had kept these cases under observation, and had dealt with a number of others on the same lines in the past year.

The results of 30 cases so treated by intravenous injection of neokharsivan, followed by intrathecal injection of serum, were recorded in a table. This showed that after intervals varying from 27 to 6½ months from the date of treatment to December, 1920, 23 cases, or 76·6 per cent., were quite well, the blood and cerebro-spinal fluid had proved negative on examination, and the enlarged glands had disappeared. In 4 cases no records of after-history existed, and 2 cases, or 6·6 per cent., in a very advanced stage at the time of treatment had died. A further series of 23 cases treated less than six months previously had been re-examined with negative results and appeared quite well. Dr. Marshall discussed the possible action of salvarsanised serum injected into the spinal canal, and did not consider the beneficial effects were attributable purely to its antiparasitic properties. It was suggested that normally the formation of some trypanolytic antibody, in response to a blood invasion by the parasite, effected a natural cure only in so far as the circulation was concerned. The cerebro-spinal fluid containing no antibodies and being cut off from the blood by pathological changes, already put forward, it followed that a natural cure could not include the central nervous system. He maintained, however, that blood serum containing trypanolysin, when injected into the spinal canal, was capable of killing the parasite there either by direct action, or, in the opinion of Dr. Abadie of Paris, by stimulating the formation of complement. Dr. Marshall related, in support of the trypanolysin theory, that in several patients, who had received no intravenous treatment at all, a quantity of blood had been drawn off from a vein and allowed to stand for three days. The serum had then been injected into the spinal canal, on the supposition that the exposure would have killed off any existing trypanosomes in the blood, and that the trypanolysins contained in the serum would dispose of the infection in the cerebro-spinal fluid, simultaneously with the destruction of the parasites in the blood stream by their own antibodies. The first case so treated had shown good results for six months up to December, 1920, when no trypanosomes were found in the blood or spinal fluid, and enlarged glands in the neck had disappeared.

He stated that Dr. Vassallo, following up this of treatment, was now trying the effect of the intrathecal injection of serum from a previously treated case into a patient with sleeping sickness, but it was too early yet to give an opinion as to the result. Great interest attached to the case of their only European patient, who was present at the meeting, and whose history Dr. Marshall described in detail. Attacks of what was thought to be malaria began on July 30th, 1920, and on August 24th abundant trypanosomes were found in the blood. When seen a month later the man had lost 2 st. in weight, and suffered from lassitude, malaise, loss of appetite, attacks of vomiting, headache, and pains in the back and limbs. Blood examination showed two or three trypanosomes per field. He was treated by intravenous injection of 0·9 gm. of neokharsivan, and half an hour later blood was withdrawn from a vein—12 c.cm. of the resulting serum were injected into the spinal canal. A severe reaction, lasting several days, was followed by uninterrupted recovery, the loss of all symptoms, and complete regain of weight. Subsequently, in November, 1920, although the blood yielded a negative examination microscopically, one of two rats which had been inoculated with the patient's blood showed trypanosomes four weeks later, while the other proved negative. At the end of 1920 examination of the patient by Prof. J. W. H. Eyre revealed one degenerate trypanosome in eight slides, but sub-inoculations of his blood into guinea-pigs gave negative results. Various possibilities were discussed to explain the course of the case, and it was regarded as probable that the presence of degenerating trypanosomes was but a feature of the normal process of cure by the new method. Subsequent examinations of this patient's blood and cerebro-spinal fluid, which were also inoculated into rats and mice in January and April, 1921, and as recently as May 2nd, had all yielded negative results, and in view also of his present robust appearance, they felt justified in presuming the case cured. It was proposed in future to treat advanced cases of sleeping sickness by injecting serum into the lateral ventricles as well as into the spinal canal, on account of possible occlusion of the foramen of Magendie by thickened membrane preventing intrathecal injections from reaching the cerebral cavity.

In conclusion, Dr. Marshall held that of the two distinct foci of infection, the central nervous system was the more important, and could be dealt with by a single dose of serum. He regarded the results of such serum treatment in over 50 cases as better than any hitherto obtained by injections of salvarsan, atoxyl, antimony, or other drug preparations, and suggested that a trypanolysin was responsible for the cure. In this belief it appeared reasonable to make use of animal serum for treatment, and to hope that in man prophylaxis and immunisation against trypanosome infection might be so attained and early diagnosis effected by complement-fixation tests—problems which Dr. Vassallo was investigating. With reference to the possible application of a similar scheme of treatment in order to check trypanosomiasis in animals, Dr. Marshall urged the coöperation of veterinary medical science in forwarding so important a line of research.

Discussion.

In opening the discussion on Dr. Marshall's paper the PRESIDENT commented particularly on the very healthy appearance of the patient exhibited, which lent justification to the belief in his cure. He referred to Prof. Warrington Yorke's paper read at a previous meeting on trypanosomiasis, which had given rise to a lively discussion on the experimental suggestions made as to the advisability of prophylactic game destruction, and as to the sum of £50,000 required for the investigation of the problems of sleeping sickness. Then both the medical and veterinary aspects had been discussed; now the question from its purely medical and therapeutic standpoints had been brought to notice, and the light thrown on the subject by Drs. Marshall and Vassallo offered a brilliant means of treating trypanosome infection. It was impossible to estimate, in coping with so great a scourge of tropical Africa, what such a solution would mean to Africa. In his opinion the paper just read was one of the most valuable yet brought before the society, and promised to deal effectively with the human form of trypanosomiasis. The group of 30 cases treated by serum showed 22, or 73 per cent., to be still alive and well; of 13 who had been treated a year or more ago, 9, or 69 per cent., were now living and in good health. He regarded these high percentages of recoveries as a great and remarkable achievement compared with the few recoveries under other methods of treatment. There remained to be seen whether the same good results would be obtained with the Rhodesian type of infection. The line of treatment by this serum-therapy rested on a thoroughly scientific basis; by allowing the patient's blood to stand, the trypanosomes contained in it were killed after yielding up their intracellular enzymes to the serum, which was used for intrathecal and intraventricular injections and obtained direct access to the most important focus of disease, the central nervous system. Prof. W. D. Halliburton in his presidential address in October, 1916, before the Physiological Society, had shown that in normal individuals injection into the cerebro-spinal canal enabled substances to reach the general circulation, whereas injections into the blood failed to gain the cerebro-spinal fluid. This fact would account for the failure of drugs, injected intravenously, to cure trypanosome infection, and justified the intrathecal method of administration of a serum, whose action was comparable to the effect produced in other diseases by the use of vaccines and sera containing specific intracellular products or bacteriolytic enzymes or antitoxins. Professor Simpson referred to the auto-serumtherapy of Dr. Senn, of Bombay, as providing a similar line of treatment. He had been impressed by the method advocated, which called for opportunity of trial on a large scale and appealed to veterinary coöperation and the wealth of a Rockefeller in order to place so important a discovery on a sound footing.

Prof. W. D. HALLIBURTON, speaking for himself, said that for many years he had been interested in cerebro-spinal fluid and the problem of its secretion and functions. He took exception to scientific workers remaining in the clouds and avoiding propositions of practical importance, and though admitting of qualification, quoted Prof. Karl Pearson's dictum that science, in its application to mankind, was the only form of science of value, whereas science for science sake was of no value. He congratulated Dr. Marshall and his colleague for their striking discovery, one which could be regarded as ranking in importance with that of Dr. Christopherson in the treatment of bilharzia by antimony tartrate.

The cerebro-spinal fluid was a secretion, not a leakage fluid like lymph. He drew comparison with the structure of the salivary gland composed of groups of cells arranged in acini and bordering a lumen through which the saliva passed to the mouth—the blood capillaries between and outside the acini leaked lymph, which was taken up by the cells and converted into saliva. In the case of the choroid plexus, or choroid gland as Prof. Mott called it, the blood-vessels lay inside and were covered by particular cells; the lymph which leaked from the blood was taken up by these choroidal cells and passed as cerebro-spinal fluid into the lateral ventricle and subarachnoid spaces. The cerebro-spinal fluid was of constant composition, an important point owing to the sensitiveness of the nerve cells which it bathed, and maintained a normal osmotic pressure beneficial to the nerve cells. The cells lining the choroid plexus afforded a barrier, preventing anything harmful—e.g., arsenic or antimony—from reaching the cerebro-spinal fluid, and so the nerve tissues, with the exception of volatile bodies—e.g., alcohol—the only substance known which could get through. By some back-door means spirochætes and trypanosomes did succeed in gaining admission to the cerebro-spinal fluid, where the only drug fatal to them was also fatal to the nerve tissues of the host, hence intrathecal injections of arsenic or antimony preparations could not be applied with safety. The fluid found means of exit through the arachnoid villi projecting into the sinuses—the sites of leakage of excessive cerebro-spinal fluid, which, therefore, passed into the blood stream and not into the lymph. He regarded Dr. Marshall's view that the trypanosome, by having obtained access to the central nervous system, was protected from the action of drugs in the circulation as the correct explanation of the failure hitherto attending efforts at treatment of sleeping sickness—that protection was afforded in part by the normal function of the choroidal cells, in part by occlusion, the result of trypanosome infection. The cells still opposed their barrier to abnormal substances, but allowed material of normal composition to pass through.

Dr. P. H. MANSON-BAHR described two Europea cases of infection by *Trypanosoma gambiense* whic he had under observation at the London School of Tropical Medicine. One was infected five years ago in the Congo district—there was no doubt as to the nature of the disease, but only once in five years had trypanosomes been found in the blood—and never in the cerebro-spinal fluid. It was now a typical case of sleeping sickness with symptoms of pachymeningitis. He asked whether in this case the disease was caused by trypanosome invasion of the central nervous system. In the second case Dr. Marshall's serum treatment had been tried, in addition to salvarsan and neokharsivan, with no effect on the regular appearance of the trypanosomes in the blood, which exhibited a large infection, amounting to a count of 16 trypanosomes to every 200 leucocytes. He asked in what way the treatment applied had gone wrong and urged the importance of treatment on a scientific basis. Natural immunity to trypanosomiasis was to be considered, comparable with that to malaria. An explanation was needed as to why some cases in which trypanosome infection was not a self-limited disease recovered by natural immunity and others resisted every form of treatment. Though not convinced as to the permanence of cure in his cases, he warmly welcomed Dr. Marshall's paper as a valuable contribution to the treatment of the disease. The recital of his own cases were a sad experience of treatment defied for over two years.

Dr. G. C. LOW thought that 21 years' experience, dating back to the Uganda epidemic, had given him a claim to know something of the treatment of sleeping sickness. He was sceptical as to the reliability of the cures which Dr. Marshall had claimed, but which time alone could guarantee. The enthusiasm attending the first use of one dose of salvarsan as the certain remedy for syphilis, when now we knew that even repeated doses, combined with mercurial inunction, did not effect a sure cure, did not incline him readily to accept Dr. Marshall's serum treatment of sleeping sickness as unquestionable. That some strains of certain parasites were extremely resistant to treatment by drugs had been proved in the case of malaria and leishmaniasis; and it was so also with trypanosomiasis, as in Dr. Manson-Bahr's cases. Out of all the Europeans who had come to England for treatment suffering from infection by *T. rhodesiense*, only one was alive, and another had lived for two years and seven months. He suggested that there were other hiding-places for the trypanosome than in the brain, and that the small-celled infiltration found in the heart muscle and other parts might be due to toxins poured out by parasites in such hidden foci of infection. He referred to latent cases of trypanosomiasis dying after four or five years' apparent freedom from the disease, and stated that no case could be regarded as cured in less than three years at earliest. It was impossible, therefore, to regard Dr. Marshall's cases as cured after only one year. He denied that a serum-therapy was essentially the method of cure, quoting cases which in Uganda as far back as 1902 had been cured by doses of liquor arsenicalis given by the mouth, by atoxyl, and others by antimony injections. Native cases of chronic infection showed the necessity for care in claiming cures. No untreated case among Europeans had recovered, although natives might survive for a considerable time. He hesitated to express an opinion in the presence of the patient attending the meeting, but candidly he did not regard his cure as certain and beyond doubt. He believed that it was premature to regard Dr. Marshall's method of treatment by one injection of serum as a so-called cure. The macroscopical evidence of infection of the central nervous system provided by pachymeningitis was not to be considered as the sole proof of cerebral invasion by the trypanosome, for it was by no means uncommon to find such evidence only after microscopical examination of the meninges. He found it difficult to understand trypanolytic action of the serum suggested by Dr. Marshall, and why the serum injected intravenously failed, but when given intrathecally succeeded in killing the trypanosomes in the cerebro-spinal fluid.

Lieut.-Colonel R. H. **Elliot** pleaded for full opportunity to be given to the trial of Dr. Marshall's new line of treatment, and suggested a movement appealing to the Colonial Office to take up the matter with a view to thorough investigation.

Sir **Hugh Clifford**, Governor of the United Provinces of Nigeria, in the course of his remarks, drew attention to the huge area covered by Nigeria, 535,000 square miles in extent, occupied by 17 million inhabitants, with only one political officer for every 64,000 population. He described the importance to be attached to the provision of a sound method of treatment as inestimable in dealing with sleeping sickness, a disease so crippling to the commercial prosperity of our African colonies. He drew a vivid picture of the insect-ridden condition which from time immemorial had dominated and moulded the character of inhabitants of the tropics, and so seriously influenced trade and productivity in tropical Africa. The tropical side of medicine was one which called for careful study by all those coming to live in the tropics, and should be encouraged in every possible way. Colonel Elliot's appeal touched him very intimately, and he would personally urge the Colonial Secretary to provide opportunity for Dr. Marshall's important discovery to be thoroughly tried and investigated.

Dr. E. T. **Jensen** referred to the financial assistance alluded to by Colonel Elliot as a substantial sum likely to be forthcoming to advance the means of treatment set on foot by Dr. Marshall's valuable work. He brought forward as a formal motion that every facility should be given to Dr. Marshall's work being carried further with a view to its being thoroughly tested in the treatment of sleeping sickness, and that representation to that effect should be submitted to the Colonial Office by the society.—This proposal was seconded by Lieut.-Colonel **Elliot**, and when put to the meeting was unanimously carried.

Dr. W. T. **Prout** hoped the new line of treatment would meet with every encouragement and trial. He laid stress on the point that Dr. Marshall had made no claim of a complete and final cure in the case of the patient present at the meeting, who certainly looked in the best of health. His results so far had been most promising, and he would avail himself of an early opportunity of representing the subject to the Colonial Office.

Dr. C. F. **Harford** avoided the technical aspect of the question of treatment, for it was 31 years since he had been in touch with sleeping sickness. He suggested that a difference existed between the cases treated in the country of origin and those treated here, which might account for points apparently at variance. In infected countries the greater opportunities, which were offered than in this country, of obtaining light on the problems of the disease might be one cause of difference in the results of observation. He much hoped the Colonial Office ould take up the matter, which on account of its great practical interest and importance should be probed to the bottom.

Dr. **Marshall** in his reply expressed his gratitude to the society for the reception given to his paper, particularly to Prof. Halliburton for his account of the choroid plexus, and to his Excellency Sir Hugh Clifford for his very kind remarks. Dr. Manson-Bahr and Dr. Low had made comparison between the uncertainty of treatment in sleeping sickness and that of malaria and syphilis. Because in some cases quinine and salvarsan respectively had no effect on either of the two latter diseases, was no reason why they should not be tried in ordinary routine cases; the same argument surely applied to trypanosomiasis and its remedy. The European had a higher resistance to trypanosome infection than the native. If cases in natives had gone on for two years without treatment and remained well, it was a sign they had improved even if they had not been cured.

A cordial vote of thanks to Dr. Marshall for his paper was unanimously carried.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

THE ANNUAL CONGRESS.

(*Concluded from p. 1136.*)

Mr. E. **Treacher Collins** delivered the Bowman Lecture, taking as his subject Changes in the Visual Organs, Correlated with the Adoption of Arboreal Life and the Assumption of the Erect Posture.

Treatment of Manifest Concomitant Strabismus.

A discussion on this subject was held on Friday morning. It was opened by Mr. **Claude Worth**. He said the matters to be considered in the treatment of convergent squint were: (1) prevention or cure of amblyopia exanopsia; (2) correction of refractive error; (3) fusion training; (4) operation. If a constant unilateral squint had lasted a considerable proportion of the child's life, in the absence of efficient treatment, the deviating eye would be found to be more or less blind; and it was the prevalent view that the amblyopia was usually the result of disuse. The younger the child the more rapid was the loss of sight; one who began to squint constantly at one year of age might lose central fixation in three to four months. The child must be forced to use the deviating eye; this was far more important than all the rest of the treatment of squint. In a case of recent squint, in order to prevent amblyopia or to cure low degrees of it, the fixing eye should be kept under atropine until it became the deviating eye. The child should then be seen again after the effect of the atropine had passed off. After this the deviation must be kept alternating, one or other eye being atropised occasionally, if necessary. If central fixation in the deviating eye was absent or unsteady, the atropine treatment was not sufficient: then the fixing eye should be continuously occluded. With regard to the correction of refractive error, he said no child was too young to wear glasses if they were required. In regard to fusion training, certain principles must apply to all methods. The child must be young, preferably under 6 years of age, and the sight of the deviating eye must be good. The most difficult step was to overcome the suppression. Most surgeons were now agreed that the essential cause of squint was a defect of the fusion sense. The object of fusion training was not to correct deviation—except in small degrees—but to enable the patient to see binocularly when the visual axes shall have been restored to approximately their normal relative directions. Discussing the question of operation, he said that if measurements showed that the angle of deviation was not decreasing, operation became necessary. If there was no hope of binocular vision, it was not his custom to operate until the seventh or eighth year. He frequently, at an earlier date in his career, performed tenotomy of the internal rectus in combination with advancement of the external in high degrees of convergent squint; but he abandoned the practice in 1905, and had since relied on advancement alone. Except in very small deviations, both externi were advanced. There were, he said, practically unavoidable failures in squint operations; the *result attained* was a measure of the skill and experience of the surgeon.

Mr. A. J. **BALLANTYNE** dealt with the subject of concomitant convergent squint, based upon his own experience. The first step should be an estimation of the refraction, and the prescription of suitable glasses to be worn constantly. In many cases the wearing of these, with training if necessary, sufficed. With one exception, his cases were aged 7 years or under. The largest degree of squint corrected was 40°, in a patient 18 months old, whose squint had lasted two weeks. In most of his cases the angle was 15° or less. In a number the eye was already amblyopic. In most cases, he thought, the amblyopia was the result of the squint, hence there was all the more encouragement to attempt to restore vision in the squinting eye. He applied atropine more or less continuously to the sound eye. He was now inclined to operate at an earlier age than formerly. Advancement alone in many cases would bring about an approximately straight position of the eyes; he had never seen over-correction caused by advancement or muscle-folding, hence he would not hesitate to operate at any age. He preferred muscle-folding in the youngest children. He rarely did tenotomy of the internal rectus, and never as the sole means of correcting the squint. In children it was wise to do too little, rather than too much; and if tenotomy was performed, it should be as a last resort. Cases in young children often suggested the existence of a state of excitability and instability of the accommodation and convergence centres, and in these cases the operative treatment of the strabismus was apt to be very disappointing. Failure in these cases was not due to slipping of the stitches, but to looking for a remedy of a mechanical kind for what was really a functional error. His results from training of fusion had been disappointing. We were, apparently, born with a certain racially-acquired degree of binocular equilibrium, but the finer coördination of the eyes necessary for binocular vision required to be learned, like the act of walking, by each individual, and the most useful line of inquiry would be along the evolution of binocular vision in the young child.

Mr. E. E. **MADDOX** referred to the numerous cases of squint in which the child was unable to fix its attention. Attention had a great effect, especially on the fusion faculty, and the defect in many children was, not the absence of the fusion faculty, but the lack of a stimulus to action. To correct hypermetropia, some occupation on near objects should be provided. Squinting children should be kept from reading early, and their parents should let them use large objects. Moreover, they should be encouraged to look upwards, as that produced a lessened tendency to convergence. He considered that the amblyoscope was very valuable in diagnosis.

Mr. T. **HARRISON BUTLER** said he could recall only one case in which he had *had* success with the fusion test; and in that, the case of a boy, he relapsed in a year. Fusion training must only be done in children under 6 years of age, but these were very difficult to educate in such a scientific procedure. He had not met with a patient who came and said he wanted binocular vision. Most operations for squint were asked for on cosmetic grounds. Eight he regarded as the most suitable age for operation, and he did not operate when the squint was no more than 25°.

Mr. M. S. **MAYOU** said that if a patient had good vision in both eyes and some attempt at fusion, he operated as early as possible, provided the patient had worn glasses a year without improvement. In convergent strabismus up to 15° he did tenotomy of the internal rectus; but in young children 20° could often be corrected by it. When the degree of convergent squint was from 15° to 45° he did an advancement—i.e., tenectomy associated with tenotomy. He preferred a shortening of the tendon and using the stump of the muscle attached to the globe for holding the sutures.

Mr. N. **BISHOP HARMAN** said the determining factors in squint could be grouped under three heads: (1) defects of the eyes, (2) defects of the muscles; (3) toxic influences. Among 368 infants in a higher-grade school, only 8 had emmetropic eyes. The others had errors of refraction, mainly hypermetropia, and in 126 the errors were considerable. Toxic causes did not claim a high place. The chief cause was defective muscle-balance, but it was not sufficiently recognised, and had not its due place in schemes of treatment. He referred to the recent establishment, in the Belgrave Hospital, of an operative clinic for squint. The method employed there was shortening of one muscle by sub-conjunctival reefing, with lengthening of the antagonist by tenoplasty.

Mr. A. L. **WHITEHEAD** (Leeds) said his experience was that squint was much more prevalent in hospital than in private practice. He attached great importance to the full correction of the squinting eye, even though it were amblyopic; and the results on the squint had been marked. The treatment should be carried on during from six to 12 months. It must not be forgotten that many cases showed a tendency to spontaneous cure. He liked tenectomy with tenotomy when operating, as Mr. Mayou did. He had never over-corrected when doing this.

Mr. **BROOKSBANK JAMES** did not regard the amblyoscope as of much use in the matter of training, but it was useful for detecting the presence or absence of the fusion faculty. He did not think squints could be wholly corrected by the reefing operation. He corrected refraction in children of the youngest age, but no adequate training could be done in a child under 4 or 5 years old. In operating, he preferred to do a central tenotomy, then wait, afterwards doing an advancement. He never did both at the same time.

Mr. **INMAN** thought none of the suggested explanations as to the cause of squint were adequate. Often the owner of the squinting eye had deliberately taken on a squint. A child worked its fusion centre, and then, at 3 or 4 years of age, a squint occurred. It had no reference to near work; and at 6 or 7 years of age it had become well developed, and its possessor was an object of sympathy. He said he had found that an amazing proportion of squinters were left-handed persons, yet among the general population the left-handed persons were from 2 to 4 per cent. Some members of neurotic families were left-handed, some had a stammer, some had a squint. A child practically never developed a divergent squint, the reason being that the convergent squint was the easier. He suggested the close watching of cases by members, and the subsequent comparison of experiences.

Mr. R. R. **CRUISE** showed a new form of amblyoscope which he had designed, in which ordinary stereoscopic pictures could be used. Those who used it could fuse at their angle and enlarge the amplitude of their fusion. In regard to operation, for many years he had not hesitated to tenotomise. The bogy of divergence, he considered, was greatly exaggerated, especially if one did an advancement first, then tenotomised, dissecting up the conjunctiva to the caruncle. He described the method in detail.

Mr. E. H. **STACK**, discussing the operations for squint, said he seldom did tenotomy of the external rectus. He advocated a routine examination of the eyes of children before 4 years of age. Proper prisms or spectacles in these early years would probably do very much to save those which could be corrected.

Mr. **WORTH** and Mr. **BALLANTYNE** replied.

Clinical Meeting.

On Friday afternoon members attended a demonstration of clinical cases and apparatus at St.

Thomas's Hospital. In the evening, at No. 1. Wimpole-street, further papers were read and discussed.

The Iris-Prolapse Operation for Glaucoma.

Lieutenant-Colonel H. HERBERT read a communication entitled, "A Justification of the Wide Iris-prolapse Operation for Glaucoma." He said the value of the treatment must be determined mainly by the two vital questions: the completeness and permanency of the relief of tension provided, and the safety in the matter of late infection. In a few of the severer chronic glaucomas full relief from abnormal tension was obtained by this method much less quickly and less easily than by some other iris-inclusion operations. But it was in the permanency of relief of tension that iris-inclusion operations in general stood out pre-eminently. This could not be said of many iris-free leaking cicatrices. In the last two years he had come across 13 instances of a late return of tension after iris-free operations. With regard to safety in the matter of late infection, subconjunctival prolapses could be divided into four grades, and these he described. The object of the paper was to remove some of the prejudice with which the operation was viewed.—Several members discussed the paper.

The Rational Treatment of Glaucoma.

Mr. T. HARRISON BUTLER read a paper on this subject. He said there was still considerable difference of opinion as to the significance of the changes discovered in the glaucomatous eye. Examination of the fields of vision both as to the periphery and the centre was of extreme importance. He now rarely operated upon patients for glaucoma in the acute stage; under suitable treatment most cases *quieted down*, and then the operation was much safer. His practice now was to do the so-called "trap-door iridectomy"—i.e., trephining with a 1·5 mm. instrument and leaving the disc with a hinge. He proceeded to discuss the *non-operative* treatment of glaucoma, remarking that his own experience overwhelmingly favoured early operation —i.e., as soon as loss of function was realised.

Mr. C. GOULDEN read a paper by himself and Mr. M. H. WHITING on Implantation Cyst of the Sclera following an Operation for Squint, in which they discussed the general subject and gave clinical and pathological particulars of cases.

Sir WILLIAM LISTER read papers on (1) Some Intra-ocular Epithelial Cysts: (2) Punctate Deposits in the Retina.

On Saturday morning there were further papers. Mr. P. G. DOYNE read one on observations with the scotometer, Sir ARNOLD LAWSON on a case of orbital tumour, which turned out to be a neuroma of the nasal branch of the fifth nerve; MR. HAROLD GRIMSDALE on the Mechanism of the Stability of the Eye.

Extract of Cataract by Suction.

Mr. A. W. ORMOND communicated a note on a Method of Extracting the Crystalline Lens in its Capsule by "Suction." The method was introduced to obviate the movement of the lens when incising the anterior surface of the lens with a sharp hook. He showed and demonstrated the apparatus used, which was on the same principle as the Bunsen-Sprengel pump.

Dr. GEORGE MACKAY (Edinburgh) sent a communication explaining a mechanical contrivance for trephining, and Mr. Traquair demonstrated it. It is actuated by clockwork, and can be employed in using Newton's colour top as devised by Mr. Percival.

During the Congress an extensive optical exhibit, by various well-known firms, was held in the building, and the optophone was demonstrated.

The members dined together on Thursday evening, the attendance at all the sittings was well ntained.

Reviews and Notices of Books.

BLOCK ANESTHESIA AND ALLIED SUBJECTS.

With Special Chapters on the Maxillary Sinus, the Tonsils, and Neuralgias of the Nervus Trigeminus. By ARTHUR E. SMITH, D.D.S., M.D. London: Henry Kimpton. 1921. Pp. 895. 90s.

THIS large volume is intended for oral surgeons, dentists, laryngologists, rhinologists, otologists, and students, but it is to practitioners and students of dentistry that it will make its chief appeal as a text-book. The book opens with a history of general and local anæsthesia and closes with a consideration of post-operative complications and their treatment. The chapters of most importance are those which describe in detail the technique of local anæsthesia of the branches of the fifth cranial nerve; the methods of nerve-blocking each branch are discussed systematically and very fully under such headings as Topography of Anatomy, Needle Employed, Technic of Injecting Structures Anæsthetised, &c., with the object of enabling the practitioner to find at once full details of the particular part on which he is working. The numerous illustrations of these sections are for the most part of considerable practical value, and a great deal of labour has been expended on their preparation. There is a detailed and accurate account of the anatomy of the nerves of the face, mouth, and neighbouring regions. with excellent photographs of dissections and diagrams which show every branch from several aspects.

The rest of the book gives a rather lengthy description of a number of matters which are nearly or remotely related to block anæsthesia, including such subjects as a classification of the nervous system, intravenous, intra-arterial, and spinal methods of anæsthesia, and the chemistry of local anæsthetic drugs. Dr. Smith's attempt to leave nothing unsaid is shown by the devotion of some 70 pages to a description of the various drugs that have been used for local anæsthesia, and by the complicated armamentarium of syringes and other instruments that are described and illustrated. The wisdom of giving so much space to allied subjects is open to question, and it may be thought that such detailed accounts as that of the surgery of the maxillary sinus are rather out of place; on the other hand, the treatment of trigeminal neuralgia seems well within the province of the book, and the technique of alcoholic injection has received a full description which should prove of real value to surgeons and neurologists. There are photographs and diagrams excellently reproduced; those which illustrate the anatomy and technique of block anæsthesia are of definite value, but the numerous pictures of simple instruments might well have been omitted.

The statement in the "Foreword" that this is not a book for the timid or for cowards is very true, for the mass of detail makes it rather difficult to read. It is the repetitions, illustrations, and minute descriptions of matters, some of which have little bearing on the main theme, that have made the volume bulky and expensive, and to some extent must counteract the real value of its more practical portions; the latter, however, should prove of great use to the oral surgeon, and the book is likely to be employed as a work of reference by those interested in the many branches of surgery on which it touches.

MANUEL DE COPROLOGIE CLINIQUE.

By R. GOIFFON. With a preface by Dr. J. CH. ROUX. Paris: Masson et Cie. 1921. With 36 figures and 2 coloured plates. Pp. 232. Fr.12.

EXAMINATION of the fæces is probably more neglected than any other aid to exact diagnosis, partly no doubt owing to the fact that the information to be gained from a systematic analysis is not yet fully appreciated. Nothnagel, some 30 years ago, laid the foundations of a scheme of fæcal analysis, but it is only within the last 10 or 15 years that our knowledge of the physiology of the gastro-intestinal tract has advanced far enough to permit of an intelligent interpretation of the fæcal abnormalities met with in disease. It is now realised that the fæces are not merely food residues which have escaped digestion, but are a complex product derived from the intestinal secretions and bacteria, mixed with derivatives of the food arising from the action of the digestive ferments, and further modified by the activities of micro-organisms and the intensity of the peristaltic movements of the bowel. The analysis of such a mixture presents many difficulties, and the interpretation of the results obtained calls for very considerable skill and experience. The author of the volume under review has had charge of a department dealing with such investigations for many years and is therefore peculiarly fitted to discuss the problem. He does not attempt an exhaustive survey, but confines his attention chiefly to the methods he has found of practical value.

The book is arranged in four parts, of which the first deals with the physiology of the alimentary tract, and although brief, this section is adequate for the purpose in view. In the second part the technique of fæcal analysis is dealt with, and this constitutes the major portion of the work, occupying 130 out of the total of 230 pages. After discussing various test-diets and their respective spheres of usefulness, the author considers the macroscopic and microscopic characters of normal and pathological stools. He then passes on to the chemical reactions, dealing first with the normal and then with the abnormal constituents, including blood. For the detection of the latter he advocates the Kastle-Meyer phenolphthalein reagent as a preliminary test, but he advises that a positive result should always be controlled by Weber's guaiacum test, which he considers shows only a quantity of blood of pathological significance. The quantitative estimations for clinical purposes he limits to determinations of the dry weight, the volatile fatty acids, the total nitrogen, the ammonia, the fats, and the bile pigments, particular stress being laid upon the measurement of volatile fatty acids and ammonia as an index of the type of intestinal flora. The commoner intestinal parasites are considered and adequately illustrated in this section, which also includes an account of the digestive ferments met with in the fæces. The bacteria of the stools are dealt with more from a general than a special point of view, but directions are given for the detection of various pathogenic organisms. The interpretation and diagnostic significance of the results obtained are discussed in the third portion of the book, which is divided into twelve sections dealing with the various secretory, bacterial, and motor affections of the alimentary tract.

The final ten pages are devoted to a condensed account of treatment. This is the least satisfactory portion of a book which, as an introduction to clinical coprology, is a work of distinct merit.

DIAGNOSIS OF PROTOZOA AND WORMS PARASITIC IN MAN.

By ROBERT W. HEGNER and WILLIAM W. CORT.
From the Department of Medical Zoology,
School of Hygiene and Public Health, the
Johns Hopkins University. Baltimore: The
Johns Hopkins Press. 1921. Pp. 72.

THIS bulletin has been prepared for the use of physicians and public health workers who are called upon to diagnose diseases caused by protozoa and worms. It has been compiled from original articles in periodicals and from standard text-books, and the aim of the authors has been to include only those parasites which are of practical importance to the medical man. It is clearly written and well illustrated, and should prove of value to those for whom it is intended. Adequate references are given to the literature of the subject.

THE POLARISED MICROSCOPE.

Die Ultra- und Polarisations-Mikroskopische Erforschung des Lebenden Auges und ihre Ergebnisse.
Von Dr. LEONHARD KOEPPE. Leipzig: E. Bircher.
1921. Pp. 270. Fr.20 (Swiss).

IT is some ten years since the application of a specially designed microscope, used as an ophthalmoscope of high power, to the examination of the tissues of the living eye was demonstrated by Allvar Gullstrand, at Heidelberg, and taken up in Germany. Among other ophthalmologists Dr. Leonhard Koeppe has specialised in the use of the instrument and has become a large contributor to the literature which has grown up around it. This literature threatens to become over-specialised, and of this tendency the present book affords a striking illustration. It is devoted, as its title suggests, to an extremely small subject—that is to say, the use of this very special instrument with particular appliances for producing dark field and utilising polarised light. That both these expedients are useful may well be believed, but a perusal of Dr. Koeppe's book in itself is not convincing. He speaks of having worked at this phase of the subject for two years past, but he brings forward no results, and, indeed, the most striking feature of the book is the complete absence of clinical demonstrations. It is written much in the style of an elaborate manufacturer's catalogue, containing a detailed and well-written description of the instrument and a full technical account of the method of its use. This is serviceable matter, although of less interest to the general medical reader than would have been an account of results obtained by its means.

The bulk of the book is increased by much irrelevant matter. Thus, a very elaborate account is given, by way of introduction to the theory of the instrument, of the researches of Fraunhofer and Fresnel upon the phenomena of diffraction exhibited by extended wave fronts. The matter so introduced is of small value where it stands; it is to be found in all elementary works on physical optics and for the optics of the microscope it has no meaning whatever. Objects viewed by means of a microscope are always viewed in the focus of the instrument, where the image forming wave fronts are all contracted to mere points and the Fraunhofer and Fresnel phenomena disappear wholly. Many years ago the late Professor Abbé, head of the Zeiss firm at Jena, propounded a theory of image formation in the microscope in forgetfulness of this distinction, and on the strength of it ventured a prediction that no optical instrument would ever yield a resolved image of an object having a diameter less than half a wave-length of the light by which it was seen. Some years afterwards details transcending this limit were photographed by means of a lens constructed by the Zeiss firm, and, still later, Lord Rayleigh showed that an ordinary telescope would resolve a grating having an angular magnitude amounting to less than a fourth of Professor Abbé's impassable limit. Of these disturbing facts the author of this work seems to be unaware, since he largely fills his pages with reiterated expositions of this exploded Abbé theory. The book, therefore, is one that needs to be read with critical discrimination, but so read it will repay the attention of readers who are interested to learn what is being done in this branch of ophthalmology.

CLINICAL BACTERIOLOGY AND HÆMATOLOGY.

For Practitioners. Sixth edition. By W. D'ESTE
EMERY, M.D., B.Sc. Lond. London: H. K.
Lewis and Co., Ltd. 1921. Pp. 310. 15s.

THE sixth edition of Dr. d'Este Emery's valuable handbook differs from the last one in only a few minor verbal alterations. It was written primarily for the general practitioner, and the author has wisely refrained from over-elaboration. All the recognised procedures for the laboratory diagnosis of disease are described, but controversial matter is rigidly excluded; and though the busy practitioner may not be in a position to carry out the actual investigations for himself, he should be able, with this book in his library, to interpret laboratory reports and to view them in their proper perspective. At the same time the scope of the work is sufficiently wide to make it of real help to those specialising in clinical pathology, and there must be few clinical laboratories in which it is not now in constant use.

THE ENDOCRINES.

By SAMUEL WYLLIS BANDLER, A.B., M.D., F.A.C.S., Professor of Gynæcology, New York Post-Graduate Medical School and Hospital. London and Philadelphia: W. B. Saunders Company. 1921. Pp. 486. 35*s*.

Professor Bandler is an enthusiast. To him the endocrine glands have an importance far beyond that up to now assigned to them, and the development and functional activity of the various structures of the body, the psychoses and neuroses, normal and abnormal, are all under their dominance. In fact, the effects of heredity and environment, racial and sexual differences, and temperamental divergences, can be appreciated only by an understanding of endocrine activity and inter-relation. The early chapters of his book are thus devoted to a general discussion of the influence of heredity and environment on the child, and of the various influences by which the activities of the dominating endocrines may be modified. As a gynæcologist Professor Bandler is particularly interested in disorders affecting women, and he devotes a large part of his book to a discussion of the normal and abnormal female constitution. His theories are the product mainly of clinical observation and of his experience of endocrine therapy, but are also supported in many cases by operative proof.

This book will appeal primarily to the gynæcologist, but it also deserves a wider circle of readers. The chapter dealing with the endocrine factors involved in puberty and the climacteric is very sound. Professor Bandler shows how early recession of thymus activity determines early puberty, while its persistence delays the onset of puberty. The influence of diminished or increased secretion of the thyroid, anterior and posterior pituitary, suprarenals, and ovaries on the mental and physical activities is elaborately discussed. In regard to the suprarenals, Professor Bandler suggests that the medulla responds to stimuli by translating them into the emotion of fear, whilst the cortex converts them into the emotion of anger, and that the medulla predominates in the female, cortex in the male. Menstruation he likens to a miniature labour, in which the unfertilised ovum is expelled by the influence of the posterior pituitary, just as in normal labour the fœtus is so expelled. He explains the amenorrhœa of pregnancy as due to the production first by the trophoblast and later by the placenta of a secretion controlling the activities of the posterior pituitary and the ovaries. During labour, with the separation of the placenta, this control is assumed to be lost.

Professor Bandler holds decided views on the effect of the placental secretion in the disorders of pregnancy. In eclampsia he believes the post-pituitary to be over-stimulated by the placental secretion, and this, combined with deficiency of thyroid, he considers to be the basic factor in the toxæmias of pregnancy. In this connexion we may note that in this country administration of large doses of thyroid extract in threatening eclampsia is stated to have proved effective in the hands of many practitioners in preventing convulsions and hastening labour. Disorders of the climacteric, sterility, dysmenorrhœa, according to Professor Bandler, are all amenable to endocrine therapy; and his optimism extends even o the view that in a few years' time there will be little mental disease, cancer, diabetes, or renal sease, for, as they are all due to endocrine aberrations, they will be corrected in their earliest stages by the administration of appropriate glands. Chapters are devoted to the psychoses, phobias, and insanity. The views here, as elsewhere, are speculative. In regard to the therapeutic use of gland extracts the author has apparently little use for parathyroid in neutralising thyroid toxæmias, though many authorities consider it of value; nor does he mention pancreatic extract as an aid in controlling thyroid and suprarenal excess. Recent investigations on the effect of vitamine deficiency in producing failure of gland function is not discussed.

The book concludes with a chapter devoted to clinical cases, illustrating the author's methods of diagnosis and treatment.

JOURNALS.

IN the *Journal of the Royal Army Medical Corps* for May Colonel S. L. Cummins has a paper on tetanus as it affected the British Army during the war, between the dates of August, 1914, and December, 1918. During this period, he tells us, this terrible complication of wounds was controlled by prophylactic inoculation for the first time on record. The cases of tetanus arising in hospitals in England between August and November, 1914, were 163; thereafter antitetanic serum became available for every wounded man, and in a later period, also of four months, January to April, 1918, when fighting was again very heavy. At the later date the British force was ten times the size it had been in the first period, and the number of wounded was greater than the whole British Expeditionary Force that landed in France in August, 1914; yet hospitals in England showed only 90 cases of tetanus. From 7 divisions in 1914, 163 cases arose; with antitetanic serum available for all in 1918, from 70 divisions there arose only 90 cases. Further, in November and December, 1916, 13 cases arose in men suffering from trench-feet. In December, 1916, antitetanic inoculation was ordered for this condition as well as for wounds, and in 1917 only one case of trench-foot was followed by tetanus. Thirteen in two months before, one case in 12 months after prophylactic inoculation had become the rule. The initial immediate dose should be 750 units, or 1500 if wounds are specially severe. Three injections should be given weekly as a following routine, and another when further operative measures are to be undertaken. The case mortality in 1914, as in the old wars, was 80 per cent.; in 1918 it was reduced to 50 per cent. Inoculation delays the onset of tetanus, the delayed cases are less deadly, and, besides, we now hear of cases of merely local tetanus, a mild form of the disease unheard of in our earlier wars. The treatment of wounds by incision and the use of smooth-running motor ambulances also helped. A better prophylactic serum may be obtained in the future, as Captain W. J. Tulloch has been able to distinguish tetanus bacilli into four classes. The serum is not yet proved to be useful in treatment, though some laboratory experiments suggest it may be. An officer writing on the "Field Ambulances," asks that the A.D.M.S. of the division should live in the General's own mess, so that he should get always the earliest hints of movements, and again begs that the transport personnel shall be drawn, not from the R.A.S.C., but from the R.A.M.C. Another letter insists that the trained soldier shall get 30 minutes physical training daily. Without it he tends to become soft and fat by comparison with the hardness and fitness of the recruit.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—The Cavendish Lecture will be delivered at the Kensington Town Hall by Dr. Addison, on Friday, June 17th, at 8.15 P.M., and will be followed by the annual conversazione. The subject of the lecture will be the Part of the State in the Prevention of Disease. Members requiring tickets for guests are requested to communicate as early as possible with the Hon. Secretary, Dr. D. G. Rice-Oxley, M.C., 22, Victoria-road, London, W.8.

THE LANCET.

LONDON: SATURDAY, JUNE 4, 1921.

The Dangerous Drugs Regulations.

THE regulations to be issued under the Dangerous Drugs Act, 1920, have been redrafted and are now themselves free from danger, for they will be administered with the willing coöperation of all parties concerned. Thirty-one professional bodies raised objections to one or other point in the original draft—the list begins with the British Medical Association and the Pharmaceutical Society of Great Britain, and ends with the Association of Unregistered Practitioners, Assistants and Animal Castrators—and the Committee appointed by the Home Secretary to consider and meet those objections have now presented the regulations in a form amended so as to cause no inconvenience to doctor, pharmacist, or public which, in the words of the report, "the seriousness of the evil they are designed to check does not justify." The drug habit does not now prevail in this country to the same extent as in the State of New York, but the Committee record their conviction that it does exist and that it might easily grow to serious proportions if not checked in time.

We print on p. 1205 the names of the Revision Committee and the text of the regulations as amended by them. The principal objections were three in number. First, the Pharmaceutical Society asked that the requirement of a prescription should be withdrawn altogether. To this the Revision Committee replied that the only legitimate use which the public can have for narcotic drugs is a medical one and in general the principle of requiring a doctor's prescription must stand. Certain familiar remedies, specified in a schedule, are, however, to be exempt from the operation of the regulations. Thus the employment of Dover's powder, of gall and opium ointment, or of the pill of mercury and chalk with opium, is admittedly unlikely to conduce to drug habit and will therefore not be subject to any new restriction. Cocaine having a more insidious effect, no relaxation is suggested, the Committee rather expressing regret that the Act itself gives no power to control the drug in dilute form. Secondly, it was urged that the loophole afforded by fraudulent copying removed "the alleged protection of what purports to be a medical prescription." To meet this source of evasion, the Committee would have all narcotic prescriptions written on special forms supplied to the doctor by the registrar of births and deaths or other official, in so far as the printed forms now supplied by tens of millions to panel practitioners do not meet the case. Thirdly, the Committee frankly recognised that an exact record of incomings and outgoings in the case of a dispensing doctor or chemist could not be required—it was not, in their view, even implied in the regulations as first drafted. The doctor's entries in his day-book and the corresponding entries in the pharmacist's poison-book or prescription-book should, they think, be accepted as giving the information required by the Act. The doctor who dispenses his own medicine will, however, be required—on the whole, not unreasonably—to keep a record similar to that already obligatory in the case of cocaine.

A number of minor concessions tend greatly to the smooth working of the Act without sacrifice of any useful principle. Personal administration by a doctor is not to be deemed to be supplying the drugs within the meaning of the regulations. The prescription, while it must contain the name and address of the person for whose use it is meant, need not state the doctor's qualifications or contain the words "Not to be repeated," and it may by special direction actually be repeated on not more than three occasions at intervals to be specified. To meet the needs of medical practice, no prescription for a human patient need be labelled by the dispenser with the amount of narcotic drug contained in it, although the same principle is not extended to veterinary practice, where it is hoped that some nauseous denaturant may be found to prevent the use of animal remedies by human beings. Hospitals and public institutions may be exempted by the Home Secretary from the operation of the regulations under conditions to be determined. The Committee may be warmly congratulated on the attainment of a high degree of unanimity among themselves and the various professional bodies with whom they negotiated. The one and only reservation appended as a rider to the report embodies the pharmacists' objection to dispensing by the prescribing doctor, an objection which the Committee were not prepared to take up at the present time, although "in strict equity" they held there was much to be said for completely separating the functions of prescribing and dispensing.

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Glands in the Neck.

THE treatment of tuberculosis of the cervical glands, in common with that of all other forms of surgical tubercle, has been the subject of profound changes of opinion during the last two or three decades. Sir ALFRED PEARCE GOULD, in his recent address at the Middlesex Hospital, describes how, when he was first taught surgery, the view of the best and wisest surgeons was that every surgical interference with tuberculous glands was to be avoided, or at any rate should be limited to the mere opening of large superficial abscesses. A few years later LISTER advocated earlier incision and antiseptic dressing of these tuberculous abscesses; then this method was shown by the Leeds school of surgery to fail because the abscess is usually secondary to a caseous focus under the deep fascia. Later, again, very complete excision was practised, and now, as Sir ALFRED PEARCE GOULD truly observes, "you see little or nothing of any of these operations, but the subjects of tuberculous glands of the neck, who a few years ago occupied a large share of the time of all surgeons to general or children's hospitals, are now sent to the throat departments of these same hospitals, and are submitted to enucleation of the tonsils and eradication of adenoids."

It appears from this and other collateral evidence that timely removal of the tonsils and adenoids in cases of cervical adenitis obviates in many cases the necessity of extensive dissecting operations. Miss E. C. LEWIS, who opened the discussion on tuberculous adenitis on May 10th before the London Association of the Medical Women's Federation, similarly urged the importance of clearing up any infective processes in the drainage area of the glands. At this discussion Dr. ESTHER CARLING cited the striking cases of two young men with masses of enlarged cervical glands which completely cleared up under an open-air régime made possible by their employment as sanatorium porters. Her experience at the Berks and Bucks Joint Sanatorium, that nearly all cases of glands there do well without surgical intervention, coincides with that of Sir Henry Gauvain, who summarised his results before the Medical Society of London on March 14th,[1] in the case of non-operative treatment of surgical tuberculosis. He has long deprecated any interference with tuberculous abscesses other than mere aspiration, when this becomes desirable on account of tension. Chronic enlargement of the lymphoid tissue of Waldeyer's ring is extremely common among children of school age in this country, about one-third of these children being affected; and of 170 cases of hypertrophied tonsils examined by Dr. Dan McKenzie, in only three cases could no enlarged glands be felt in the neck. A slight degree of cervical adenitis is therefore a very frequent occurrence, being secondary in a large proportion of cases to enlargement of the tonsils; and this enlargement is doubtless usually the result of infection. The tonsil is chiefly a lymphatic gland, and its drainage area includes the nasal passages and naso-pharynx, infection of these regions being the probable cause of its enlargement; and it is now generally agreed that enlarged tonsils are seldom found in children in the absence of adenoids, but that adenoids are often present without definite tonsillar hypertrophy.

By no means all enlarged cervical glands are tuberculous, many being cases of so-called simple inflammation, but the proportion is difficult to estimate; the majority of cases of great enlargement and of chronic suppuration are tuberculous, and it is probable that simple septic glands are liable in time to become infected by tubercle bacilli passing through the tonsils, which may or may not themselves show evidence of tuberculous deposit. A. P. Mitchell[2] found histological evidence of tuberculosis of the tonsils in 37·5 per cent. of 64 consecutive cases of tuberculous disease of the upper cervical glands, and in 6·5 per cent of 90 children who showed no evidence of tuberculosis. It is important to note that this tuberculosis of the tonsils is truly latent; the tonsils are pale, not ulcerated, and often quite small, as was pointed out by A. D. Fordyce and E. W. G. Carmichael.[3] Therefore, as it is probable that in tuberculosis of the cervical glands the portal of entry is usually through the tonsil, and as it is impossible by clinical examination to exclude tuberculosis of this organ, the wise course is to remove the tonsils in all such cases, even though they do not appear to the eye to be unhealthy. After this operation the child should be placed under the best possible hygienic conditions for several months, when in most cases the glands will have so far subsided as to render their removal unnecessary, and in other cases a much smaller dissection will be required than appeared at first to be indicated. Whether we can go back still another stage and by means of proper nasal hygiene avoid the tonsillar infection is a question that deserves attention. Nasal drill is coming to be regarded as a fundamental element in anti-tuberculosis work among children. At least 80 per cent. of children sent to sanatoriums are found to be imperfect nasal breathers, and the correction of bad respiratory habit is at least as important as an effort to fatten the child.

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[1] THE LANCET, 1921, i., 1065. [2] Ibid., 1913, ii., 1620. [3] Ibid., 1914, i., 23.

Potent Impurities in Anæsthetics.

EXACT research has made havoc of current notions regarding the action on the body of certain well-known drugs. It is not long since the Advisory Committee appointed by the Liquor Control Board published the disconcerting conclusion that the influence of alcohol on the human nervous system is sedative rather than stimulant, the effects usually interpreted by the consumer as evidence of stimulation being actually due to the removal of control exercised by higher nervous centres. Acceptance of this generalisation need not, however, preclude the devotees of whisky and claret from ascribing particular virtues to the ethers and essential oils which accompany the pure alcohol content. From the year 1846, when Jackson and Morton introduced ethylic ether as an adjuvant in surgery, this drug has been regarded essentially as an anæsthetic agent. It is true that as such it has not satisfied all reasonable demands, for nitrous-oxide gas has been extensively used to supplement induction of anæsthesia and various admixtures of chloroform to carry on in the later stages. But no doubt existed that the narcotic effect was due to the action of pure ethylic ether. Cushny states in the sixth edition (1915) of his Text-book of Pharmacology that ether seldom contains impurities of importance, although when exposed to air and sunlight it may contain acetaldehyde and peroxide bodies, rendering it more irritant to mucous surfaces.

Four years ago Dr. J. Cotton of McGill University claimed[1] to have discovered extraneous substances in the anæsthetic ether of commerce, one group favourable to the production of anæsthesia, which he termed synergists, and a second group of undesirable impurities responsible for mucous irritation and post-operative nausea. On his initiative an anæsthetic ether was put on the American market with certain impurities removed and with the addition of 2 per cent. by volume of ethylene, half a volume of CO_2 and 1 per cent. by weight of ethylic alcohol. Dr. J. E. Lumbard of New York City went on to show[2] that the purest ethylic ether he was able to produce possessed almost contemptible anæsthetic properties. This sample assayed 99·8 per cent. pure ethylic ether, the remainder being water, and Dr. Lumbard states "it was actually impossible to get a really satisfactory degree of surgical anæsthesia with it, in spite of any increased amount administered." And now, in the paper by Dr. R. L. Mackenzie Wallis and Mr. C. L. Hewer in our present issue, the myth of anæsthetic action is apparently finally laid, ether becoming merely a convenient vehicle for administering certain potent anæsthetic substances present in it in small quantities as impurities.

The main outcome of this work of Wallis and Hewer has been to show that most of the harmful effects of ether—and it may be added, parenthetically, of chloroform—are due to the impurities which they contain. In the case of ether the chief irritants are aldehydes and mercaptans, and when these are removed the ether is freed from any harmful effect in some respects. Further purification, they found, removed not only the irritants, but some compounds essential for anæsthesia, the remaining pure ether having an intoxicant rather than an anæsthetic action. Finally, the anæsthetic effect was discovered to be due to the presence of ketones in small quantities, and the subsequent re-addition of these ketones to the purified ether resulted in the production of a good anæsthetic mixture, free from irritant effect and almost odourless. Should further experience confirm these observations they open up a wide field for investigation, and the new product has been supplied to anæsthetists with the object of ascertaining its true value under a variety of conditions. It may be that other drugs, particularly organic chemicals, owe their main action to impurities contained in them. Thus we know that salvarsan contains sulphur in small amounts, although we do not yet know the significance of this sulphur. Differences in therapeutic effect have been observed between natural and synthetic sodium salicylate. It seems not impossible that the specific action of salicylates may be due largely to impurities; hence the necessity of giving large doses to obtain the necessary therapeutic action. Many naturally occurring organic compounds are found to be more efficacious than those synthetically prepared. All this suggests the continued need of curiosity into the active ingredients of drugs about which we were prone to regard our knowledge as complete.

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[1] Jour. Canad. Med. Assoc., September, 1917.
[2] Amer. Jour. of Surg., Anæsthesia Supplement, 1920, xxxiv., 118.

THE BUFF BOOK AND THE G.M.C.

AT the February meeting of the Executive Committee of the General Medical Council the question of the insertion of the names of medical and dental practitioners in the Buff Book (being a classified commercial telephone directory for London) was under consideration, and a resolution was passed to the following effect:—

> That the insertion of the name of a medical practitioner for payment, whether with or without typographical display, in a list issued to the public, and purporting to be a list of local medical practitioners, which is not open to the whole of the profession without such payment, is not in accordance with professional standards in respect of advertising, and might be held to bring a practitioner so advertising himself within the terms of No. 5 of the Council's warning notices.

So much is, or should be, familiar to our readers. The Council's Registrar has now received a communication from the secretary of the Law Society, in which he says that he "understands that all professional men are now being admitted free of charge, provided their names are printed in small type, but that the Buff Book is not making any hard-and-fast rule that a professional man's name shall appear only in small type. They will print him in any size type he likes provided he pays for it. The Council of the Law Society, however, still feel an objection to solicitors inserting their names at all in the Buff Book, and the objection is based upon this, that some solicitors have no telephone, and that a classified list of solicitors in the Buff Book might give an undue advantage to those who have. This objection does not attach to the ordinary telephone book where names are in alphabetical order, and there is no classification."

We understand that, although no further action was taken by the General Medical Council at its recent session, the attitude of the Council remains as stated in the resolution of its Executive Committee. Should a complaint be lodged against a practitioner in regard to this matter it might be necessary for him to appear before the Council.

HARVEIAN SOCIETY OF LONDON. — The annual dinner of this society, as already announced, will take place at the Café Royal, Regent-street, on June 22nd, at 7.30 P.M. (for 7.45 P.M.), with Dr. G. de B. Turtle, the President, in the chair. The price of the dinner is 12s. 6d., exclusive of wines, and this amount will be collected by the secretaries at the entrance. It is hoped as many members as possible will attend. Those who intend to be present are asked to communicate as soon as possible with the hon. secretaries of the society, 81, Cambridge-terrace, Hyde Park, W.

Annotations.

"Ne quid nimis."

THE WAR AND INDUSTRIAL UNREST.

AT the Royal Society of Arts on May 26th Dr. C. M. Wilson read a paper dealing with Some Effects of the War on Industrial Unrest. The avowed purpose of his paper was to supply an analysis of the present mood and temper of labour, rather than to provide a cut-and-dried solution of problems of industrial unrest. He maintained that in the endeavour to allay that unrest little help is to be obtained from a study of existing institutions; we must rely mainly upon a consideration of human nature, as being the only constant in the problem under review. The difficulties of this task are not made lighter by the practical absence of a labour press in which currents of political thought can be traced. At the outset of the problem lay the necessity of distinguishing the case of the man who saw active service from that of the man who remained at home. Many of the causes of unrest are older than the war, but the mood in which labour is advancing its solutions of these problems is mainly a by-product of the four years of war. We must realise the importance of examining that mood with sympathy and understanding, for it is the outcome of trench experiences. In the later years of the war the "cooking" of war news before it was served up in the press in England was a prime factor in unsettling opinion in France; scepticism marked a decline of confidence in leadership and authority. Examination of the history of the transfer of power from the few to the many since the Reform Act of 1832 demonstrates that it was mainly attributable to the pressure of economic grievances. Abstract theories of natural rights carry little weight without such grievances; the causes of disillusionment in the trenches having no economic basis might therefore appear transitory, but we must be cautious in accepting that interpretation of them, not only because of their intensity and widespread distribution, but also because they are still in operation. The men in the trenches were gradually taught to use new standards in judging men; they are now asked to revert to older standards, associated with "getting on in life," which they had found in the trenches to be artificial standards. With that caution, we can perhaps accept the fact that the real motive force to-day is not political but economic, and that the mass of the people simply want to better their conditions. It is important to meet this wish up to the very limit compatible with the industrial state, because history tends to show that the people will only welcome sudden and sweeping changes if they have solid grievances. It must also be remembered that in handling those who saw active service we are often dealing with men rendered abnormal by the ordeal of modern warfare—men who underwent a change as part of a defensive mechanism set up to meet the environment of the trenches. This defensive mechanism tended towards apathy and what at first sight appeared to be indolence, and this may account for diminished production on the part of workmen at the present time. There is also to be considered the effect of monotony on men both during the war and in their present work, which tends to exaggerate the state of mind resulting from trench life. It is essential that the existing temper of labour be understood before remedies are advanced. Men in the mass are more critical as a result of the war, and less inclined to believe in the infallibility of the press. They have been prepared by the war for an appeal based on something higher than self-interest. This is the opportunity of the war, and it has not been taken. The ineffectiveness of words in an atmosphere of suspicion is becoming increasingly obvious. The methods of the old regular army in handling men merit consideration. The so-called indiscipline of labour is not a fact but a prejudice. The influence of lack of security is of the greatest importance in precipitating strikes; this influence is a symptom of the instinct of class preservation only to be removed by the erection of machinery for settling trade disputes in which labour really believes. The conditions of contentment are partly material and partly moral. There is no danger of the material factors being overlooked at the present day, but there is a danger of the moral factors which constitute the basis of contentment being neglected. In the past the essentials of leadership have been laid down by feudal conditions. It was Dr. Wilson's forcible plea that these essentials must now be reviewed in the light of the attributes of leadership required in an industrial state.

THE TYPHUS EPIDEMIC IN SERBIA IN 1915.

A MODEST volume[1] of 273 pages recently published contains a whole epic of human tragedy in a faithful, unvarnished account of the awfulness through which distracted Serbia lived during 1915. The epidemic of that year was one of the most severe that the world has known in modern times; it not only interrupted and suspended for approximately six months all important military activities of the Serbian army, but it also delayed the military advance of the Central Powers. During the height of the epidemic the number of new fever cases entering the military hospitals alone reached 2500 per day. How many more unreported cases actually occurred one will never know. The mortality varied between 30 and 60 per cent., and in complicated cases reached 70 per cent. Over 150,000 deaths occurred within six months before the epidemic could be suppressed, and coincident with the typhus there occurred an epidemic of relapsing fever. There were only approximately 350 Serbian doctors in the country prior to the outbreak. The majority of this small number sooner or later became afflicted with the disease, 126 succumbing, a mortality of 36 per cent. In an institution originally reserved for surgical cases, with 400 beds, there were approximately 1600 patients, 1100 of which were suffering from typhus. Of a hospital staff of 42 only three escaped the disease. There were no lavatory or bathing or toilet facilities; no nurses: and often only a few Austrian prisoners as attendants. Prison camps were veritable death-traps. Over one-half of the 70,000 Austrian prisoners in Serbia died of typhus during the epidemic. Uskub was a veritable valley of the shadow of death; tired nurses on leaving the crowded hospitals for a little fresh air and exercise were met by a long procession of bullock wagons carrying rude coffins to the cemetery. Sometimes three coffins with unfastened lids rested on the same cart, exposing the bodies of the dead. Of the six surgeons attached to American hospital units two died. Lice were ubiquitous; even the linen brought back from the laundry was not free from vermin. For some time not a single hospital possessed a steriliser. The account of the preventive measures used, now familiar to English readers, is instructive. It had been argued that in order to exterminate typhus from Serbia it would be necessary to raise the standard of living of the whole Serbian people, and entirely to change their habits—a work of years. But owing to the heroic efforts of the American and English commissions, with the coöperation of the Serbian people, the epidemic was not accompanied by starvation and famine, and after six months' intensive labour was entirely eradicated. The habits of the people even now show but little permanent change. In order to cope with the epidemic it became necessary to improvise apparatus for disinfesting and bathing on the spot; the majority of centres did not attain a high standard of efficiency, but usually served their purpose in destroying lice and their ova. Experience demonstrated that highly perfected steam machines were not absolutely essential for overcoming such an outbreak.

The discovery of the Rickettsia bodies, and the series of experimental investigations by different observers which led to their general acceptance as the cause of typhus fever, trench and Rocky Mountain fever, make an interesting story, of which a good account is given by Dr. Strong and his colleagues. The bodies were discovered by Ricketts in guinea-pigs and monkeys injected with blood from Rocky Mountain fever cases, and were also demonstrated in the body of *Dermacentor venustus*, as well as in the ova of infected ticks. In 1910 Ricketts and Wilder observed similar bodies in the blood of typhus fever cases in Mexico, and in 1913 this discovery was confirmed by Prowazek in Belgrade, while Sergent, Foley, and Vialatte in the following year observed similar organisms in infected lice during their experiments in the louse transmission of typhus in Algiers. Rocha-Lima and Prowazek confirmed these discoveries in Germany in 1916, and demonstrated similar bodies in the intestines of lice on the fourth and fifth days after feeding them on typhus blood: in the same year Wolbach in Wyoming found Rickettsia bodies in the capillary endothelial cells of guinea-pigs injected with Rocky Mountain fever blood. From 1917 onwards research was directed towards the discovery by Toepfer, Munk, and Rocha-Lima of similar bodies in the blood and infected lice from cases of a remittent fever, first described as Volhynia fever, but now more generally known as "trench fever." In 1918 Arkwright, Bacot, and Duncan definitely proved the association of these bodies in the fæces of infected lice with the production of trench fever in man. Finally, in 1918, Kuczynski demonstrated the Rickettsia bodies, now known as *Rickettsia prowazeki*, in the petechiæ of the typhus rash, and in the endothelial cells of the capillaries of the liver and other organs, work which has since been confirmed by Wolbach and Todd in the recent Polish epidemic. This, then, very briefly is the outline of the story of the discovery of the long-sought-for cause of typhus.

THE SULPHUR CYCLE, OXIDATION OF SULPHUR BY MICRO-ORGANISMS.

AMONGST the many observations and meditations of Hamlet not the least interesting are those on the mutability of matter. "A man may fish with a worm that hath eat of a king; and eat of the fish that hath fed on that worm," the reflex of that speculation addressed to Horatio: "Why may not imagination trace the noble dust of Alexander, till he find it stopping a bunghole." What even the vivid imagination of Shakespeare himself portrayed is outbid by the achievements of a microscopic cell or by infinitesimally small, lowly bacteria. The small things of the world confound and transform the complex and the mighty. To trace the cycle of a single chemical element in the round of Nature is both a romantic and singularly useful occupation. The latter aspect may be illustrated by the production of free organic acids—acetic, butyric, lactic—by specific micro-organisms, or by mineral acids the products of animal cells, or by micro-organisms. One of the gasteropods contains so much pure sulphuric acid in its saliva, that when it falls on a marble floor it causes effervescence. Again, in the whole round of the vertebrates free hydrochloric acid is always present in gastric juice. It is interesting to note that parotid saliva—alone of all the secretions poured into the mouth—contains an organic compound of sulphur, the sulpho-, or thio-cyanide of potassium, while the bile contains sulphur in its taurin, and every hair or epithelial cell when shed removes in the keratin a certain small amount of sulphur. The liver cell has the remarkable power of fixing organically certain sulphur combinations, which are excreted in the urine. There is, however, a group of microbes which deal specially with sulphur compounds by way of oxidising the sulphur. Winogradsky many years ago was the first investigator definitely to demonstrate the rôle of microbes in the oxidation of H_2S, and of the latter to H_2SO_4. Only about thirty years after, Keil isolated these two organisms—*Beggiatoa* and *Thiothrix*. They never turned the medium acid; this was explained by the presence of sufficient $CaCO_3$ in the culture to neutralise any acid formed. There are various groups of sulphur-oxidising bacteria; the two forms above mentioned accumulate sulphur within their cells. Other forms—*Thiobacillus denitrificans* is anaerobic, deriving its oxygen from the decomposition of nitrates, and *T. thioparus*, which oxidises thiosulphates, H_2S, and S—do not accumulate sulphur within their cells, but produce abundance of sulphur outside their cells and cause the medium to become distinctly acid. Mr. Selman A. Waksman and Mr. J. S. Joffe, of the New Jersey Agricultural Experiment Station, New Brunswick, have isolated another group of bacteria, closely allied morphologically to the latter group, which do not act upon thiosulphates and H_2S, but act only upon elementary sulphur, and allow the medium to become very distinctly acid. They were isolated from certain composts by means of a purely inorganic culture-medium, consisting of minerals, with elementary sulphur as the only source of energy. These organisms are very remarkable, are autotrophic, and do not need any organic substances for their development, the carbon being supplied from the CO_2 of the air. The sulphur is oxidised very rapidly with the production of sulphuric acid. In the presence of the proper neutralising agents, salts or acid salts are formed which tend to make the medium less acid. The noteworthy thing about this group of bacteria is that they produce a more acid zone than the final acidity of the majority of acid-producing bacteria (lactic, acetic, &c.) and yeasts, and they produce a greater concentration of acids and remain alive in that acid medium. The authors' object is the production of acid at such a rate and under such conditions that it should transform insoluble tricalcium phosphate into soluble phosphates and phosphoric acid, the insoluble phosphates being used as neutralising agents But the whole story of the rôle of sulphur in bacterial life remains to be told.

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[1] Typhus Fever, with Particular Reference to the Serbian Epidemic. By Richard P. Strong, George C. Shattuck, A. W. Sellards, Hans Zinsser, and J. Gardner Hopkins. Published by the American Red Cross at the Harvard University Press, Cambridge, Mass. 1920. Pp. 273.

SUNSHINE, SLEEP, AND HEALTH.

THE medical department of the Board of Education has just issued to local education authorities a circular (No. 1215) which institutes an inquiry into the operation of the Daylight Saving Act in regard to any injurious effect upon the health of school children. The report of the Summer Time Committee in 1917 showed that in Scotland 80 per cent., and in England 46 per cent., of education authorities reported no evidence of curtailment of sleep as a result of the alteration of the clock face. The high percentage of negative answers from Scotland, where summer daylight is normally more prolonged than in England, is a testimony to a higher standard of parental control and sense of responsibility north of the Tweed. Southron parents must learn to understand that children of school age should not be kept out of bed until dark. Education authorities might usefully draw the attention of parents to the paramount necessity of sufficient rest in bed for young children. The mere fact of their not sleeping at the beginning and end of bed rest is of no great importance. All young animals naturally sleep less in summer than in winter; there is less demand on metabolism in warm weather and consequently less need for sleep. Children have always been kept out of bed later in the summer than in the winter time, and the fact has been a source of lament to teachers for generations. But they are apt to forget this periodicity and to put down to the Daylight Saving Act what is a yearly occurrence. Statistics show that more children die of winter than of summer ailments, and there can be little doubt that the prolonged sunlight of early summer is even more beneficial to growing children than it is to adults.

THE PATHOLOGY OF HYDROCEPHALUS.

THE researches of Mr. W. E. Dandy, of the Department of Surgery of the Johns Hopkins Hospital, have revolutionised as well as simplified our knowledge of the pathology of hydrocephalus. In 1913, in conjunction with K. D. Blackfan, he showed that any lesion which occludes the ventricular system will always produce stasis of fluid and dilatation of the ventricles proximal to the obstruction, but will not change the size of the ventricles distal to it.[1] In a recent paper[2] he has shown that the cause of the other form of the disease—communicating hydrocephalus—i.e., the form in which all the ventricles are in communication with the subarachnoid space, is similar. In studying the absorption of cerebrospinal fluid in hydrocephalus, Dandy and Blackfan found that in the communicating form absorption from the subarachnoid space is greatly reduced. This suggested reduction in the amount of absorption space. Later, in cases studied at necropsy, adhesions were found which obliterated the cisternæ. Hence it was assumed that, by preventing the cerebro-spinal fluid from reaching the great absorption spaces over the cerebral hemispheres, these adhesions caused hydrocephalus. This was proved by experiment. An obstruction of the cisternæ may be demonstrated in two ways—after death and during life. If a coloured suspension is injected into the spinal canal before making a necropsy the colour will reach but not pass an obstruction in the cisternæ. The cause of communicating hydrocephalus may also be shown by its experimental production. In dogs the mesencephalic cisterna was blocked by surrounding the midbrain with a piece of gauze saturated with iodine. Shortly before necropsy a suspension of Indian ink was substituted for an equal amount of cerebro-spinal fluid, which had been aspirated from the cisterna magna through a puncture in the occipito-atlantal membrane. When Indian ink is introduced into the spinal canal of an animal with intact cerebro-spinal spaces, the colour will find its way to every point of the subarachnoid space over both cerebral hemispheres. But in animals with the perimesencephalic barrier the passage of the ink is abruptly terminated there, and none reaches the hemispheres. Further, hydrocephalus develops and the foramina of Luschka and Magendie become so dilated that a retrograde flow of ink takes place into the cerebral ventricles. In one case of communicating hydrocephalus the opportunity arose of verifying this fact in man. The colour was introduced post mortem by gravity for 15 to 20 minutes—pressure was not used for fear of rupturing delicate adhesions. The colour filled the cisternæ, even the cisterna interpeduncularis, and covered the cerebellar subarachnoid spaces, but failed to reach the cerebral hemispheres. On the other hand, the ink passed freely into every part of the cerebral ventricles, for the foramina of Luschka and Magendie were widely open. The cerebro-spinal fluid circulates in a mesothelial-lined vascular system just as definite as the blood vascular. The cerebral ventricles are concerned only with the production of cerebro-spinal fluid, and the spaces on the exterior of the brain (subarachnoid) normally only with its absorption. The fluid passes from the former to the latter through the foramina of Luschka and Magendie. Hence, when these are obstructed hydrocephalus of all the ventricles is produced. But in communicating hydrocephalus they are open and the fluid reaches the cisterna magna and then passes under the medulla, pons, and midbrain to the cisterna interpeduncularis and chiasmatis, whence it is distributed to the cerebral sulci, where it is absorbed. It has been shown experimentally that about three-fourths of the cerebro-spinal fluid is absorbed in the subarachnoid spaces of the brain and the remainder in the spinal subarachnoid space. An obstruction in the cisternæ under the medulla, pons, or mesencephalon will produce hydrocephalus just as effectually as a block in the aqueduct of Sylvius. An interesting method of demonstrating during life an obstruction in the subarachnoid space has been devised. By lumbar puncture 30 to 60 c.cm. of fluid are removed and an equal volume of air is substituted. If there be no obstruction every part of the subarachnoid space will be visible in a radiogram; the cerebral sulci will be seen as a network. If hydrocephalus be present it cannot be of the communicating form. But if air is absent in the sulci an obstruction must exist in the subarachnoid space.

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[1] Jour. Amer. Med. Assoc., 1913, lxi., 2216.

[2] Bulletin of the Johns Hopkins Hospital, March, 1921, 67.

LEGALISED CHILD ADOPTION.

THE Committee appointed last August by the Home Secretary to consider the desirability of making legal provision in this country for the adoption of children has just brought in a very practical and serviceable report.[1] Soon after getting to work a brief interim report was issued recommending immediate amendment of the law so as to secure the legitimation of children born out of wedlock by the subsequent marriage of their parents. An enactment to this effect, which has already been embodied in a Bill read a second time in the House of Commons, would secure the rights of one considerable group of unfortunate children. The present report proposes two further alterations in the law, both urgent. First, an Act to give legal recognition to the adoption of children under the judicial sanction of county courts, securing both for adopter and adopted child similar rights and duties to those obtaining between natural parents and their children. Such an enactment would give to the adopter that protection which has heretofore been so sadly lacking. Parents who have habitually neglected a child, and left it to be brought up by relatives or strangers, are all too ready to claim it again on reaching the wage-earning age. Such a catastrophe has occurred to many adopters and deterred others from adopting. The second recommendation is an amendment of the Children Act, 1908, whereby so-called adoptions which do not receive formal legal sanction should be notified and properly supervised. Here the provision would be for the protection of the child, for whom in many cases a monetary consideration has arisen. When these three questions have been dealt with by separate Acts the Committee recommends the reconsideration of the whole legislation relating to children with a view to amendment and consolidation. The personnel of the Committee, which has discharged so wisely and quickly its civic duties, consists of Sir Alfred Hopkinson (chairman), Mr. Neville Chamberlain, Hon. Lady Norman, Mrs. C. E. B. Russell, Mr. J. H. Seddon, and Mr. T. W. Sherwood. We are grateful to them, and trust that Parliament will lose no time in setting the seal upon their labours.

THE EPIDEMIOLOGY OF THE MENINGOCOCCUS.

ONE of the most illuminating and suggestive papers hitherto published on the peculiarities of the meningococcus has recently appeared under the signatures of Prof. O. Thomsen and Dr. Ferdinand Wulff of the Serum Institute in Copenhagen.[2] The starting-point of their theories would seem to be the observation that in no case has more than one type of meningococcus been found at the same time in the naso-pharynx of a "carrier." Interpreting this observation as a sign of mutual antagonism between the different types of meningococcus, the authors make the interesting suggestion that, with regard to the meningococcus at any rate, there are two totally different kinds of immunity. The one is due to the antibodies present in the blood and, to a less extent, in the secretions of the naso-pharynx. The other is due to the "carrying" of harmless or comparatively harmless types of meningococcus which allow no foothold for a virulent type. This second kind of immunity is, in the authors' opinion, the chief factor which renders long service soldiers comparatively unsusceptible, while recruits seem to be peculiarly susceptible. Under the often overcrowded conditions of military service, both avirulent and virulent types of meningococcus are frequently to be found in the naso-pharynx, and in the case of a recruit who joins an old draft of soldiers, there is a race between the avirulent and virulent types. If the latter reaches his naso-pharynx first, and if his concentration of antibodies is low, he falls ill or, if his concentration of antibodies is high enough to prevent serious blood infection, but not high enough to prevent lodgment in the naso-pharynx, he becomes a "carrier" of this type and is a serious danger to his fellows. The authors describe an epidemic of cerebro-spinal fever among recruits lodged in barracks, one side of which was much more damp and dark than the other. Soon after the outbreak every soldier was examined, and the "carriers" of the virulent type A (which appears to be totally distinct from the virulent types identified in this country) were isolated and the epidemic was checked. An instructive feature of this investigation was the discovery that, though the soldiers were equally divided between the two sides of the barracks, many more harboured meningococci on the dark and damp side than on the other, the actual figures being 22 to 9. Similar observations have been made by Danish army surgeons in earlier years, and the authors suggest that the explanation for this phenomenon is to be found in the lowered resistance of the body to infection induced by darkness and other unfavourable atmospheric influences. The authors translate their hypotheses into certain recommendations on behalf of recruits in their relations with old service men who may prove to be "carriers" of the dangerous type, and it appears from a note in *Hospitalstidende* for March 2nd that these recommendations have already been adopted by the Danish army authorities.

THE PNEUMOCOCCUS AND STREPTOCOCCUS IN RELATION TO INFLUENZA.

THE current number of the *Edinburgh Medical Journal* contains a valuable report on this subject made by Dr. W. R. Logan to the Medical Research Council. The plan of investigation adopted was to examine cases of (1) pure influenza in their earliest stage of illness, and (2) pulmonary complications in the more advanced stages of the disease. In the early cases where there was no sputum the material was obtained from the naso-pharynx by means of a swab, whilst in the later pulmonary cases sputum was available for examination. All the cases were obtained during the influenza epidemic in Edinburgh from November, 1918, to February, 1919. Dr. Logan examined 44 cases of pure influenza and 64 cases of pulmonary complications. From 13·6 per cent. of the former and 78·1 per cent. of the latter pneumococci were obtained, and from 100 per cent. of both groups streptococci were obtained. In differentiating the pneumococcus from the streptococcus the bile solubility test was used as the final arbiter of distinction. Thirty-four pneumococcal strains were examined as to type on the well-known lines of work of the Rockefeller bacteriologists, and 26 strains of Type IV. obtained. Nearly all these Type IV. strains were virulent to mice, whilst their cultural characteristics strongly suggested that in reality they were different strains. An attempt to subdivide them by means of serological and fermentation tests proved unsuccessful. Dr. Logan very wisely concludes that Type IV. is not a type at all, but merely a heterogeneous collection of strains which do not fall into the grouping of Types I., II. and III. In the absence of satisfactory agglutination tests for streptococci Dr. Logan used the hæmolytic test as the best means of differentiation. Non-hæmolytic streptococci having the morphological and cultural characteristics of saprophytic streptococci largely predominated, but 11 strains from 8 cases were found to be definitely hæmolytic and were virulent to mice. Several interesting questions naturally arise as the result of Dr. Logan's valuable work. Probably the most important is the place in bacteriology which must be assigned to the heterogeneous Type IV. of the pneumococcus group. The predominence ot this type in the number investigated is striking, and serves to show how relatively valueless is the ordinary routine bacteriological examination for this organism or group of organisms. Another question, perhaps closely allied, is the high proportion of apparently purely saprophytic streptococci found, as compared with the hæmolytic pathogenic varieties. Clearly we are in urgent need of some more satisfactory means of differentiating the various members of this large unwieldy group of organisms.

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[1] Report of the Committee on Child Adoption. Cmd. 1254. H.M. Stationery Office. Price 2d.

[2] Hospitalstidende, 1921, vol. lxiv., Nrs. 2 and 3.

In the main Dr. Logan's conclusion as to the bacterial flora of the late influenza epidemic agrees with and supplements the tentative conclusions arrived at by Sir Frederick W. Andrewes in the Report on the Pandemic of Influenza, 1918–19, published by the Ministry of Health last year. More bacteriological material is now to hand than was available when that report was compiled. We note, for example, in the June number of *Medical Science* a considerable number of abstracts from various British and foreign journals dealing with this aspect of the question. Dr. Logan concludes by dividing influenza from the toxin point of view into three stages: "A primary stage when the unknown infecting virus of the disease is apparently *acting* alone, though presumably frequently accompanied by other organisms which may or may not later be able to develop a like activity; a secondary stage, when pathogenic pneumococci and streptococci are active in producing pulmonary complications; and a tertiary stage, when saprophytic mouth organisms may invade the already diseased lung." Probably this is quite as far as we can justifiably go along the road of causation at the present moment, but it is interesting to note how much we have all been shaken in our views of Pfeiffer's *B. influenzæ* during the last four years.

THE JOURNAL OF OBSTETRICS AND GYNÆCOLOGY OF THE BRITISH EMPIRE.

THIS journal appeared for the first time in January, 1902, and the aim of the promoters was to make the journal an impartial and complete record of British work, an exponent of British obstetrical and gynæcological practice, and an encyclopædia of contemporary thought and achievements in obstetrics and gynæcology throughout the world. In this the various distinguished occupants of the editorial chair succeeded admirably. Unfortunately the outbreak of the war and the fact that a large number of the younger men practising obstetrics and gynæcology were called up on active service, and that those left at home were fully occupied in other ways, led to its ceasing to exist for the time being. It is now proposed to revive it, and the first number of Vol. XXVIII. of the new series has just appeared. If the journal is to be a success it must receive the loyal support of all those who practise this branch of medicine, and they must assume the responsibility not only of supporting the new venture financially, but also of helping it by contributing to its columns. The number of young obstetricians and gynæcologists has much increased of recent years, and many new developments have taken place in this department of practice. There should be ample scope for such a journal, and it would be little short of a scandal if sufficient support is not forthcoming not only to keep the journal alive and flourishing, but also to maintain the very high reputation it has had in the past. There are numerous problems awaiting solution both in midwifery and gynæcology, and it is to be hoped that the number of workers in this field of research will be greatly increased. There is ample room for them and no lack of material. The new editors, Dr. Comyns Berkeley and Dr. Eardley Holland, will be happy to receive contributions.

GOVERNMENT SURPLUS MEDICAL STORES.

ENORMOUS stocks of medical and surgical material, instruments, and drugs still exist, and the question has arisen as to the best way in which these large quantities can be most usefully employed. The Disposal Board decided to invoke the assistance of the Joint Council of the Order of St. John and the British Red Cross Society. Sir Napier Burnett, who is the chief executive officer of the Joint Council, considered that it would be wise to collect into one place the stores which were scattered about in every part of the country. This has been done and they have been housed near Shepherd's Bush in a large building in the grounds of the Disposal Board; and there all the instruments and material have been classified and arranged for exhibition. A private view of them was given on Monday last to representatives of a large number of newspapers. A written description can give but a faint idea of the very great quantities that are available; the stores must be seen for their extent to be appreciated. Some idea of the quantity available can be obtained from the statement that the original cost has been estimated to have been about a million pounds. There are over half a million of surgical instruments, and approximately 50 tons of drugs of nearly every variety. 130 million tablets are available, including five million of the famous "Number 9" pill. In view especially of the anxious financial position of the hospitals of this country at the present time it has been resolved to offer these stores to the hospitals at very reasonable prices, and for this purpose they are to be open to view by representatives of the hospitals in rotation; about 100 hospitals are to be invited each day, but nothing will be sold until all the hospitals have had an opportunity of inspecting them, so that in about a fortnight the sales to hospitals will begin. Current will be available for the testing of the X ray apparatus by intending purchasers. It is clear that the arrangements have been devised with the greatest care, and the hospitals will doubtless find this an excellent opportunity of obtaining at a moderate price what they need. Sir Howard Frank, the Commissioner of the Disposal Board, presided at a luncheon held at the Royal Automobile Club after inspection of the stores. He was supported by Sir Arthur Stanley, Chairman of the Joint Council, Sir Napier Burnett, and Major-General Sir L. B. Friend, member of the Disposal Board. Sir Howard Frank, Sir Arthur Stanley, and Sir Napier Burnett explained the mode in which it is intended to dispose of the stores, and they expressed the hope that the arrangements made would be to the benefit of the hospitals, and at the same time would result in a substantial addition to the funds of the Government. The scheme has been carefully thought out, and should work well.

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

TUESDAY, MAY 24TH.

THE address delivered by the PRESIDENT was reported in last week's issue of THE LANCET. At its conclusion a vote of thanks to the President was carried by acclamation.

Appointment of Committees.

The following committees were appointed :—

Business Committee.—Dr. Norman Walker (chairman), the President, Sir Francis Champneys, Dr. Magennis, Dr. Macdonald.

Pharmacopœia Committee.—The President (chairman), Dr. Caton, Dr. Matthew Hay, Dr. Kidd, Dr. Hopkins, Dr. Norman Walker, Sir John Moore, Sir Norman Moore, Dr. Russell Wells.

Finance Committee.—Sir Norman Moore (chairman), the President, Mr. Waring, Sir James Hodsdon, Sir Arthur Chance.

Dental Committee.—The President (chairman), Mr. Bennett, Sir James Hodsdon, Mr. Waring, Sir Arthur Chance.

Dental Education and Examination Committee.—Sir James Hodsdon (chairman), the President, Mr. Bennett, Mr. Waring, Dr. Adams, Sir E. Coey Bigger, Sir Arthur Chance.

Students' Registration Committee.—Sir Norman Moore (chairman), Sir Gilbert Barling, the President, Mr. Littlejohn, Dr. Mackay, Dr. Kidd, Mr. Sinclair.

Penal Cases Committee.—The President, Sir Francis Champneys, Sir Arthur Chance, Dr. Norman Walker, Dr. Macdonald.

Executive Committee.—The President, Sir Gilbert Barling, Sir James Hodsdon, Dr. Macdonald, Dr. Norman Walker, Sir Norman Moore, Sir Arthur Chance, Mr. Waring, Sir John Moore.

Reports of Finance and Education Committees.

The report of the Finance Committee was then received and approved, after which the chairman of the Education Committee made an oral report to the Council, calling the attention of the Council and of medical schools generally to the changes in the Medical Students' Regulations which had been made since the last meeting, embodying the resolutions adopted by the Council in November. He explained that the examination in the preliminary sciences was intended to be separate and distinct from the preliminary examination in general education; and also informed the Council that the Education Committee had recognised the shortened matriculation examination of the University of London, and also the senior public examination of the University of Queensland, and that these would be inserted in the next published list of examinations recognised by the Council.

Penal Cases.

The Council then proceeded to the consideration of penal cases.

The Case of Frederick Percy Richard Gover.

The Council considered the case of FREDERICK PERCY RICHARD GOVER, registered as c/o Pearce and Sons, 58, West Smithfield, E.C. 1, L.R.C.P. Edin., F.R.C.S. Edin., L.R.F.P.S. Glasg. 1910, who had been summoned to appear before the Council on the following charge :—

> That being a registered medical practitioner you were convicted of the following misdemeanours, viz. :—On June 9th, 1916, at the Marlborough Street police court, of being drunk in charge of a motor-car and fined forty shillings. On the same day of driving in a dangerous manner and fined twenty pounds. On Dec. 26th, 1916, at the Tower Bridge police court, of being drunk in charge of a motor and fined two pounds or one month's imprisonment. On the same day of driving a motor-car recklessly and fined ten pounds or one month's imprisonment. On April 9th, 1917, at the Hove Borough police court, of being drunk in charge of a motor-car and sentenced to one month's imprisonment with hard labour and disqualified from holding a licence for six months, which sentence was modified on your appeal to the East Sussex Sessions to one month's imprisonment in the second division, but otherwise affirmed. On Nov. 9th, 1920, at the County of London Sessions, held at the Session House, Clerkenwell, of having caused bodily harm to Mary Ann King by wilful misconduct or by wilful negligence whilst having the charge of a motor-car, and ordered to be imprisoned for three months and to be treated as an offender of the second division.

Mr. Gover attended, accompanied by Mr. Watts, his counsel.

The Council's solicitor, Mr. Harper, laid the facts of the case before the Council. He read a report of the proceedings at the County of London Sessions in November, 1920, and a police report on the case. He also read a report of an inquiry under the National Health Insurance Acts concerning the convictions, and the decision of the Ministry of Health on the report thereon. Mr. Watts then opened the case for the defence. He called Mr. Gover, and examined him as a witness in his own behalf. Mr. Gover answered questions put to him by members of the Council through the chair. The Council's solicitor did not desire to cross-examine Mr. Gover. He put in two petitions organised on behalf of Mr. Gover by panel patients and by the police. Mr. Watts then addressed the Council on behalf of Mr. Gover. The Council's solicitor addressed the Council in reply. This closed the case.

The Council having deliberated on the case in camera, the PRESIDENT announced the judgment of the Council as follows :—

I have to tell you that the alleged convictions against you in the notice have been proved to the satisfaction of the Council. These convictions indicate a habit which is not only discreditable to your profession but may become dangerous to your patients. In order to give you an opportunity of reconsidering your habit in this matter the Council has postponed judgment on the convictions proved against you till the May session, 1922. Before that date you will be required to send to the Registrar of the Council the names of some of your professional brethren who may be willing, upon written application from the Registrar, to testify by letter, addressed to him for the use of the Council, as to your character and conduct in the interval. You will receive in due course a formal written intimation of what I have just announced to you, and the intimation will specify the date to which I have referred, when you should be present, and should understand that in the event of any further conviction for a similar offence the Council may instruct the Registrar to erase your name from the Medical Register.

On invitation from the chair, Mr. Gover renewed his solemn undertaking to refrain from drink for the rest of his life.

The Case of Clement Thomas Cory Kingdon.

The Council considered the case of CLEMENT THOMAS CORY KINGDON, registered as of 62, Falcon-road, Clapham Junction, S.W. 11, M.B., C.M. 1893, M.D. 1905 U.Edin., who had been summoned to appear before the Council on the following charge :—

> That, being a registered medical practitioner, you, on Feb. 7th, 1921, signed and gave to one W. McKernon, ex-member of the Australian Imperial Force, a certificate dated Feb. 5th, 1921, that the said W. McKernon was suffering from influenza, and was at present (i.e., on Feb. 5th, 1921) unable to travel, whereas you had neither seen nor examined the said W. McKernon on Feb. 5th, 1921, or at all before Feb. 7th, 1921. And that in relation thereto you have been guilty of infamous conduct in a professional respect.

The complainant was the Australian Imperial Force. Dr. Kingdon attended in answer to his notice, accompanied by Mr. Hempson, solicitor to the Medical Defence Union, his solicitor. The Australian Imperial Force, the complainant, was represented by Major F. M. Best, A.I.F., solicitor, of Messrs. J. Galbraith and Best, Australia House, Strand, W.C. 2. The President inquired whether any member of the Medical Defence Union was present. No such member was present. Major Best then opened the case on behalf of the complainants. He called Major E. W. Morris as a witness and examined him as to the truth of his statutory declaration. Major Morris was cross-examined by

Mr. Hempson, and answered questions put to him, through the chair, by members of the Council. Major Best did not desire to re-examine Major Morris. This closed his case.

Mr. Hempson called Dr. Cory Kingdon as a witness, and examined him as to the truth of his statutory declaration. Dr. Kingdon was cross-examined, answered questions put to him by the Legal Assessor and by members of the Council through the chair. Mr. Hempson read statutory declarations as to Dr. Kingdon's good character from Dr. Philip Rashleigh Dodwell, assistant resident medical officer to the Brompton Consumption Hospital, and from Dr. James Smith, deputy medical officer to His Majesty's Prison, Wandsworth.

The Council having deliberated the case in camera, the PRESIDENT announced the decision of the Council as follows:—

I have to inform you that the Council has found that the facts which were alleged against you in the notice of inquiry have been proved to its satisfaction, but that the Council has taken into consideration the evidence as to your previous good character, and your assurance that the certificate was given without due care and thought. In order to give you an opportunity to rehabilitate your character and to prove to the Council that you realise the gravity of your offence, and in particular in regard to the giving of certificates, the Council has postponed judgment till the November session, when you will be required to attend and to produce evidence from your professional brethren regarding your character.

The Council then adjourned.

WEDNESDAY, MAY 25TH.

The earlier part of this day's session was occupied with the hearing of penal cases.

The Case of John Thomas Godfrey.

The Council considered the case of JOHN THOMAS GODFREY, registered as of Royton Hall, Royton, Oldham, M.B., Ch.B., 1917 U.Edin., who had been summoned to appear before the Council on the following charge:—

That being a registered medical practitioner, you were, at the Manchester Assizes, held on Nov. 15th, 1920, convicted of the following misdemeanour, namely, of attempting to obtain money by false pretences and fraudulent conversion of goods and ordered to be imprisoned for three calendar months.

Mr. Godfrey attended accompanied by counsel. The Council's Solicitor laid the facts of the case before it. He read the statement by Detective-Inspector Quayle in regard to the conviction which he put in, and read extracts from the report of the proceedings of the Insurance Acts Committee which inquired into the conviction. Counsel for the defence then addressed the Council on behalf of Mr. Godfrey, and handed in a series of testimonials in his favour, including testimonials from Dr. J. Sinclair McGowan, Mr. Henry Beswick, J.P., chairman of the Royton District Council, Dr. J. Lorrain Smith, Dean of the Faculty of Medicine of the University of Edinburgh, from Mr. Timothy Cusock, parish priest of Royton, from Mr. John Lindley of the Manchester Royal Exchange, and from Mr. Godfrey's schoolmaster at Durban. The Council's Solicitor addressed the Council in reply.

The Council having deliberated on the case in camera, the PRESIDENT announced the judgment of the Council as follows:—

I have to inform you that you, having been proved to have been convicted of the misdemeanour alleged against you in the notice of inquiry, the Registrar has been directed to erase your name from the Medical Register.

The Case of George Ormiston.

The Council considered a report by the Dental Committee on the charge against GEORGE ORMISTON, in regard to whom certain facts had been found. Mr. Ormiston was not present, nor was he represented by counsel or solicitor. Mr. Hugh Atkins, general secretary of the British Dental Association, the complainants, was present. The Registrar read the following report on the case:—

The complaint against George Ormiston having been referred to the Dental Committee to ascertain the facts, the Dental Committee reported as follows:

On May 23rd, 1921, the complainants, the British Dental Association, represented by Mr. Hugh Atkins, the general secretary of the Association, attended before the Committee and were duly heard. The said George Ormiston did not attend before the Committee, nor was he represented by solicitor or counsel. The chairman asked at the opening of the inquiry whether any member of the British Dental Association was present on the Committee. No member of the Association was present. The Committee find that the following facts were established by the evidence:—

The said George Ormiston was registered on Dec. 27th, 1878, as "In practice on July 22nd, 1878." His address in the current Register is 170, Skene-street West, Aberdeen. Up to a recent date there were exhibited at 170, Skene-street West, aforesaid, the following:—

(*a*) On the window in gilt letters the words:—

Dentist: Mr. Ormiston, Mr. Thow.

(*b*) On the front railing a wooden sign with the words painted thereon: Ormiston and Thow.

(*c*) At the side entrance, painted on the stone wall, the words: Mr. Ormiston.

In the *Aberdeen Free Press* of Dec. 7th, 1920, and March 18th, 1921, under the heading "Artificial Teeth," appeared an advertisement "Ormiston and Thow, Surgeon Dentists" (Dec. 7th, 1920), and "Ormiston and Thow" (March 18th 1921), advertising also painless extractions, gas, skilled work and moderate charges at 170, Skene-street West, aforesaid. In the telephone directory of the Aberdeen district dated February, 1921, is the entry: "Central 2601: Ormiston and Thow, Surgeon Dentists, 170, Skene-street."

Thow, who has never been on the Dentists' Register, was trained by the said George Ormiston as a pupil, and had up to April 28th, 1921, been in his employment for 20 years. The said George Ormiston stated this in a letter to the Registrar, adding that Thow was a most skilful operator and mechanic, and that he, George Ormiston, had been compelled to use his services owing to his own health giving way. In a letter dated May 13th, 1921, from the solicitors of the said George Ormiston, it is stated that he has definitely and finally retired from dentistry practice, and he applies to be allowed to withdraw his name from the Register. The letter adds that the said George Ormiston has withdrawn his name entirely from 170, Skene-street, and that all financial and professional connexion between him and Thow have ceased, with the exception that Thow has only now to pay for the fixtures, furnishings, and material which are identified with the dentistry practice.

In the absence of further information (the said George Ormiston not having been present at the inquiry or represented), the Dental Committee infer that on receipt of the notice of inquiry he parted with his practice to Thow for a consideration, and that this has not yet been fully discharged. The said George Ormiston sent to the Registrar through his solicitors a certificate from George Williamson, M.B. 1886, U. Aberd., dated May 13th, 1921, certifying that he was unable to travel to London on account of physical infirmity, and that he had suffered for some years from heart disease, for 12 months from angina, and for some months from religious melancholia; that it was extremely unlikely that he could ever work at his profession again, and that for a year he had practically done no work.

The evidence before the Committee consisted of the following documents, viz.:—(1) A statutory declaration by Macbeth Moir Duncan, dated April 19th, 1921; (2) and (3) advertisements from the *Aberdeen Free Press* of Dec. 7th, 1920, and March 18th, 1921; (4) letter from the said George Ormiston to the Registrar, dated April 28th, 1921; (5) letter from Alexander and Wm. Robertson to the Registrar, dated May 13th, 1921; (6) certificate of George Williamson, M.B., to the Registrar, dated May 13th, 1921.

The PRESIDENT inquired whether any member of the British Dental Association was present. No such member was then present. In answer to a question from the chair, Mr. Atkins intimated that he did not desire to address the Council on the facts found in the report. The Council having deliberated on the report in camera, the CHAIRMAN announced its decision as follows:—

Mr. Atkins, I have to announce to you that in the facts found in the report of the Dental Committee it has been found that George Ormiston has been proved guilty of the charges, and the Council has directed the Registrar to erase from the Dentists Register the name George Ormiston.

Yearly Tables and Inspection of Final Examinations.

Dr. NORMAN WALKER (chairman of the Examination Committee) presented the report of the Examination Committee on the Yearly Tables and on the Inspection of Examinations. The Council's Committee state that in accordance with their recommendation adopted by the General Council on June 2nd. 1920, the annual tables showing for 1920 the results of examinations for qualifications primarily admitting to the Medical Register have not been printed. The following analyses of those which concern the Committee have been prepared as usual.

Of the 23 bodies granting primary qualifications, it will be seen that the returns for 1920 are complete so far as they go. The table concerned with higher qualifications calls for no special comment by the Committee. The table dealing with exemptions shows that these are again exceptionally numerous. As before, many of them are directly or indirectly due to the war: others to an increasing readiness to accept the examinations of other bodies.

The inspection of the final examinations is not yet completed. That in medicine is almost finished, but there are still seven bodies to be inspected in surgery and eight in midwifery. It is highly desirable that all these should be completed before November in time for consideration at the autumn session of the Council.

—	Medicine.			Surgery.			Midwifery.		
	Passed	Rejected	Percentage of rejected	Passed	Rejected	Percentage of rejected	Passed	Rejected	Percentage of rejected
University of Aberdeen	97	7	6·73	94	26	21·66	49	6	10·91
Apothecaries' Hall, Dublin	3	1	25·00	7	2	22·22	5	3	37·50
Apothecaries' Society of London.. ..	45	23	33·82	48	36	42·85	43	41	48·84
*Queen's University, Belfast	63	24	27·59	63	24	27·59	63	24	27·59
*University of Birmingham	14	10	41·66	14	10	41·66	14	10	41·66
† „ Bristol	4	0	—	6	0	—	4	0	—
„ Cambridge	89	40	31·01	97	77	44·25	97	77	44·25
English Conjoint Board	366	199	35·22	346	304	46·77	427	206	32·54
Irish Conjoint Board	56	37	39·78	46	23	33·33	49	22	30·99
§Scottish Conjoint Board	74	66	47·14	68	86	55·84	77	44	36·36
University of Dublin	50	11	18·03	56	12	17·65	57	21	26·92
* „ Durham	34	14	29·17	34	9	20·93	34	5	12·82
„ Edinburgh	171	55	24·34	178	76	29·96	175	20	10·25
„ Glasgow	128	98	43·36	131	115	46·75	142	32	18·45
* „ Leeds	17	6	26·08	17	6	26·08	17	6	26·08
* „ Liverpool	20	5	20·00	20	5	20·00	20	5	20·00
„ London	164	48	22·64	176	81	31·52	197	60	23·34
„ Manchester	63	14	18·18	46	32	41·02	46	26	36·11
National University of Ireland	121	85	41·26	123	58	32·04	122	57	31·84
*University of Oxford	9	3	25·00	9	3	25·00	9	3	25·00
„ St. Andrews	16	1	5·88	15	3	16·66	14	3	17·65
* „ Sheffield	1	2	66·66	1	2	66·66	1	2	66·66
„ Wales	—	—	—	2	1	33·33	1	0	

* At these examinations Medicine, Surgery, and Midwifery must be passed at one time.
† Medicine, Surgery, and Midwifery must be passed at one time, except in case of certain old students.
§ Medicine, Surgery, and Midwifery must be entered for at one time.

On June 2nd, 1920, the General Medical Council, by resolution, adopted the following recommendation of the Examination Committee:—

"That the licensing bodies which have not hitherto supplied in their annual return information as to whether they do or do not examine in operative surgery, ophthalmology, and mental disease, be asked to do so in future." (Minutes, 1920, p. 21.)

This resolution was communicated by the Registrar to the bodies concerned. As a result, the information given respecting the examinations held during 1920 is much more complete than that obtained regarding those held in 1919, as the following comparative table will show:—

	1919		1920
Operative Surgery:—			
Bodies giving passes and rejections	4	..	8
„ stating that it is included under Surgery	3	..	6
„ „ that there is no special examination	—	..	7
„ „ that there is no examination	—	..	2
„ not alluding to the subject	16	..	—
Ophthalmic Surgery or Ophthalmology:—			
Bodies giving passes and rejections	3	..	9
„ stating that it is included under Surgery	3	..	3
„ „ that there is no special examination	1	..	9
„ „ that there is no examination	—	..	2
„ not alluding to the subject	16	..	—
Mental Diseases:—			
Bodies giving passes and rejections	8	..	10
„ stating that it is included under Medicine	5	..	6
„ „ that it is included under Surgery	—	..	1
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Public Health Committee.—England: Dr. Dean, Sir G. Newman, Sir T. Jenner Verrall; *Scotland:* Dr. Matthew Hay, Mr. Littlejohn, Dr. McVail; *Ireland:* Sir E. Coey Bigger, Dr. Magennis, Sir John Moore.

The Council then adjourned.

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THE FEDERATION OF MEDICAL AND ALLIED SOCIETIES.

THE annual dinner of the Federation of Medical and Allied Societies was held on May 26th at the Café Royal, London, Sir **BERKELEY MOYNIHAN**, the President of the Federation, being in the chair. The special guests of the evening were Dr. Christopher Addison, the late Minister of Health, and his successor, Sir Alfred Mond.

The loyal toast having been drunk, Sir **BERKELEY MOYNIHAN** proposed the health of Dr. Christopher Addison, the first Minister of Health. In eloquent terms he commended Dr. Addison's scientific equipment, sympathetic attitude towards medicine, and dignity under ill-informed criticism.

Dr. **ADDISON** thanked the Federation for the warm reception of the words from the chairman, and said that he especially valued the opinion of a body whose "aim is wide and public spirited, and marks a thoroughly wise departure from the usual purposes of professional associations. It is to promote in the medical profession the means whereby societies and associations of widely different aims from the professional or technical point of view may come together to consider not their own interests only, but in what manner they can work together for the public good, how the work of central or local governmental authorities affects the work of the medical profession and how it may best be guided and helped."

The Community of Medical Interests.

Dr. Addison then pointed out that the medical profession is not simply a body of trained men with work and interests bounded by a professional ring fence. If there was one lesson of the war, he thought, more manifest than another (though there were signs that it is being forgotten) it is that, in the language of the Scriptures, "we are members one of another." The strength or weakness of one class must be the strength or weakness of the rest, to be revealed in the time of stress, and conversely the progress and prosperity of any one class could not be promoted at the expense of the rest of the community, but would be conditioned by their progress and prosperity. He continued:—"The Federation seeks to foster in the profession a lively interest in public questions, and is confronted with peculiar difficulties, for the absorbing nature of medical practice leads to a detachment from public issues, making it difficult for medical men to appreciate the task of those who are associated with the work of government and its many-sided complications. Therefore it is hard for medical men to provide in considered and collective form the assistance which they are fitted to render to public authority. But society will seek more and more to enlist the aid of those who can help it to promote the physical well-being of its citizens—for the strength of the State is measured by the capacity of its individual members—and you all know how great is that mass of avoidable disability. In the early stages of the Ministry of Health its dominant purpose was necessarily the development of preventive agencies, primarily with the authority of the State, though the executive agents must, for the most part, be members of the medical or closely allied professions. We had and we have to take long views and be willing to create agencies and set work going that must take time to develop and to achieve results. Opportunist spectacular performances are not the function of a Ministry of Health. If they were to be, they would destroy any chance of achievement of its great and governing purposes."

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Maternity and Child Welfare Work.

As another illustration of the reasonable expending of money he brought forward Maternity and Child Welfare work, saying that throughout the country it was costing a good deal of money and that in some cases the country was not getting the return which should have followed on the better training provided. "Therefore," said Dr. Addison, "I arranged for grants at about £20 a head for special training-classes for nurses, health-visitors and others, and added two or three expert medical officers centrally to supervise the work, as it was quite evident that the staff available could not physically compete with the amount required. The expenditure was a few thousand pounds. and, although I do not put it higher than being an important contributory cause to the recent striking improvement in the child-welfare statistics, it is one of the few new facts in the situation the importance of which cannot be ignored. You may be interested to know that the recent vote by Parliament to cover a week's loss owing to a railway strike is seven years the total expenditure in England and Wales out of the Exchequer of the whole of our Maternity and Child Welfare services; that the ten millions proposed to be given in aid of miners' wages will represent about nine years of our total Maternity and Child Welfare Exchequer contributions. . . . If it comes to a contest as to which expenditure is the more important to maintain, I tell you frankly that I shall place the interest of British babies before the building of barracks in Bagdad, and that a thousand maternity beds in decent houses for the use of women, who are now living in wretched slums, are of more value, as they are of less cost, than one giant gas-bag of doubtful utility."

The Vision of Opportunities.

After referring to the necessity for commencing the work in preventive medicine of the Ministry of Health by tackling the housing problem, he said that it would be easy to indicate a number of directions in which developments would be certain to arise in connexion with improved preventive and early remedial health services, such as would provide a substantial contribution towards diminishing the avoidable waste of life and strength to which we were still exposed. These things, he said, need cause no violent dislocation of business or great expenditure. There would be phases of advance and reaction, but the lessons of the War would not be forgotten, and they could only properly be utilised if they were supported by an instructed and considered professional opinion. "It is the purpose of the Federation to aid in furnishing that essential service, and it is evidence of a vigorous spirit to have a vision of the greater proved guilty of the charges, and the Council has directed the Registrar to erase from the Dentists Register the name George Ormiston.

Yearly Tables and Inspection of Final Examinations.

Dr. NORMAN WALKER (chairman of the Examination Committee) presented the report of the Examination Committee on the Yearly Tables and on the Inspection of Examinations. The Council's Committee state that in accordance with their recommendation adopted by the General Council on June 2nd, 1920, the annual tables showing for 1920 the results of examinations for qualifications primarily admitting to the Medical Register have not been printed. The following analyses of those which concern the Committee have been prepared as usual.

Of the 23 bodies granting primary qualifications, it will be seen that the returns for 1920 are complete so far as they go. The table concerned with higher qualifications calls for no special comment by the Committee. The table dealing with exemptions shows that these are again exceptionally numerous. As before, many of them are directly or indirectly due to the war; others to an increasing readiness to accept the examinations of other bodies.

The inspection of the final examinations is not yet completed. That in medicine is almost finished, but there are still seven bodies to be inspected in surgery and eight in midwifery. It is highly desirable that all these should be completed before November in time for consideration at the autumn session of the Council.

—	Medicine.			Surgery.			Midwifery.		
	Passed	Rejected	Percentage of rejected	Passed	Rejected	Percentage of rejected	Passed	Rejected	Percentage of rejected
University of Aberdeen	97	7	6·73	94	26	21·66	49	6	10·91
Apothecaries' Hall, Dublin	3	1	25·00	7	2	22·22	5	3	37·50
Apothecaries' Society of London.. ..	45	23	33·82	48	36	42·85	43	41	48·84
*Queen's University, Belfast	63	24	27·59	63	24	27·59	63	24	27·59
*University of Birmingham	14	10	41·66	14	10	41·66	14	10	41·66
† ,, Bristol	4	0	—	6	0	—	4	0	—
,, Cambridge	89	40	31·01	97	77	44·25	97	77	44·25
English Conjoint Board	366	199	35·22	346	304	46·77	427	206	32·54
Irish Conjoint Board	56	37	39·78	46	23	33·33	49	22	30·99
§Scottish Conjoint Board	74	66	47·14	68	86	55·84	77	44	36·36
University of Dublin	50	11	18·03	56	12	17·65	57	21	26·92
* ,, Durham	34	14	29·17	34	9	20·93	34	5	12·82
,, Edinburgh	171	55	24·34	178	76	29·96	175	20	10·25
,, Glasgow	128	98	43·36	131	115	46·75	142	32	18·45
* ,, Leeds	17	6	26·08	17	6	26·08	17	6	26·08
* ,, Liverpool	20	5	20·00	20	5	20·00	20	5	20·00
,, London	164	48	22·64	176	81	31·52	197	60	23·34
,, Manchester	63	14	18·18	46	32	41·02	46	26	36·11
National University of Ireland	121	85	41·26	123	58	32·04	122	57	31·84
*University of Oxford	9	3	25·00	9	3	25·00	9	3	25·00
,, St. Andrews	16	1	5·88	15	3	16·66	14	3	17·65
* ,, Sheffield	1	2	66·66	1	2	66·66	1	2	66·66
,, Wales	—	—	—	2	1	33·33	1	0	

* At these examinations Medicine, Surgery, and Midwifery must be passed at one time.
† Medicine, Surgery, and Midwifery must be passed at one time, except in case of certain old students.
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On June 2nd, 1920, the General Medical Council, by resolution, adopted the following recommendation of the Examination Committee:—

"That the licensing bodies which have not hitherto supplied in their annual return information as to whether they do or do not examine in operative surgery, ophthalmology, and mental disease, be asked to do so in future." (Minutes, 1920, p. 21.)

This resolution was communicated by the Registrar to the bodies concerned. As a result, the information given respecting the examinations held during 1920 is much more complete than that obtained regarding those held in 1919, as the following comparative table will show:—

	1919	1920
Operative Surgery:—		
Bodies giving passes and rejections	4	8
,, stating that it is included under Surgery	3	6
,, ,, that there is no special examination	—	7
,, ,, that there is no examination	—	2
,, not alluding to the subject	16	—
Ophthalmic Surgery or Ophthalmology:—		
Bodies giving passes and rejections	3	9
,, stating that it is included under Surgery	3	3
,, ,, that there is no special examination	1	9
,, ,, that there is no examination	—	2
,, not alluding to the subject	16	—
Mental Diseases:—		
Bodies giving passes and rejections	8	10
,, stating that it is included under Medicine	5	6
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Sir Malcolm Morris then proposed the health of Sir Alfred Mond, the Minister of Health, in a speech in the course of which he described the origin of the Federation and its constructive policy.

Sir Alfred Mond, in reply, said that his friend and predecessor in office, Dr. Addison, had two advantages over him:—First, as a medical man himself, he could command and obtain medical assistance from personal friends; secondly, he started the work of the Department at a time when the national purse was popularly supposed to be bottomless, whereas at the present moment rigorous economy was necessary. Sir Alfred Mond pointed out, however, that small economies which resulted in large expenses were not businesslike propositions, and that his aim would be to do a few things thoroughly, rather than spread the financial resources of the Ministry over a large number of services. Speaking as a layman, though head of the Ministry of Health, he ventured to point out that doctors' work was so absorbing that they were apt to look at public affairs in the wrong perspective. They could hardly help thinking of the nation in terms of the sick, whereas the majority of the public was perfectly healthy. He humorously commended the habit of doctors to take regular recreation on the golf-course, saying that such a habit was very good for doctors quite apart from any health question, as it compelled them to become acquainted with lay views and helped them to understand how medical affairs were regarded by a deeply interested public. Sir Alfred Mond then pointed out that the medical profession possessed most powerful influence in moulding opinion, but they must develop unanimity and decision. He concluded by saying that he should always welcome from the Federation all the assistance which they could give him in the shape of considered and corporate views on questions affecting the professions of medicine and pharmacy and nursing.

The toast of "Prosperity to the Federation" was proposed by Lieutenant-Colonel F. E. Fremantle, M.P., who said that he spoke as, in a sense, the first baby of the Federation, inasmuch as he believed that he was the first Member of Parliament in support of whose candidature the Federation had supplied speakers and assistance. He congratulated the Federation on the work that it had done and the ideals which it had placed before it. Speaking as a loyal member of the British Medical Association, he asserted that the work of the Federation could not be done by the Association.

Dr. Arthur Latham, replying for the Federation, thanked those present for their sympathy and asked for their support. He said the Federation was a federating force for the purpose of focusing the knowledge possessed by all grades of health workers to the advantage of the community. They regarded the manufacture of health as the key industry of the country, and they differed from all other societies in that the patient was their prime consideration—the potential patient, who represented the preventive side of their work, and the actual patient, who would benefit by their efforts in remedial or happily curative measures against disease. They wished to enlighten public opinion in health matters, and he called attention to the fact that the public conscience was awakening to the value of the health worker, as was shown by the number of medical men in the House of Commons, the peerage conferred on Lord Dawson of Penn, and the appointment of Sir Clifford Allbutt to the Privy Council. They were jealous of the interests of their members, but they hoped by suasion rather than dictation to show the public and the leaders of the public that if they were to have an efficient band of health workers they must make such a career an attractive one. Behind their work was a good idea. Individuals might delay the fructification of a good idea, but they could not kill it.

Already they represented 18,000 doctors and 90,000 health workers, and he was confident that their sphere of influence would rapidly increase.

Among those present at the dinner were Lord Dawson of Penn; Sir Arthur Stanley (President, British Hospitals Association): Sir George Newman (Chief Medical Officer, Ministry of Health); Sir H. Kingsley Wood, M.P. (Parliamentary Private Secretary, Ministry of Health): Sir Arthur Robinson (Permanent Secretary, Ministry of Health); *Sir Thomas Neill (Chairman of Council for* National Health Insurance, Ministry of Health); Mr. A. C. Thompson (Chairman of National Conference of Industrial Approved Societies); Viscount Knutsford (British Hospitals Association); Lord Queenborough: Dr. Nathan Raw, M.P.; Dr. Donald Murray, M.P.; Sir Philip Magnus, M.P.: Dr. G. de Bec Turtle (President, Harveian Society of London); Dr. A. G. Buchanan, (President, Chelsea Clinical Society); Dr. F. J. McCann (President, West London Medico-Chirurgical Society); Dr. T. A. Goodfellow (President, Manchester Medical Society); Dr. J. Forsyth Craig (President, Birmingham and District Medical Practitioners Union); Dr. Godfrey Carter (President, Sheffield Medico-Chirurgical Society); Lieutenant-Colonel Hugh Stott (President, Brighton and Sussex Medico-Chirurgical Society); Dr. J. E. Gemmell (President, Liverpool Medical Institution); Dr. J. F. Murton (President, Nottingham Medico-Chirurgical Society): Miss Olga Nethersole (Hon. Secretary, The People's League of Health); Mr. E. T. Neathercoat (President, Pharmaceutical Society of Great Britain); Sir William Glyn-Jones (Secretary, Pharmaceutical Society of Great Britain); Mr. Philip Rowsell, J.P. (Pharmaceutical Society of Great Britain); Dr. Farquhar Buzzard (Royal Society of Medicine); Dr. J. F. Gordon Dill (Royal Society of Medicine); Sir John MacAlister (Secretary, Royal Society of Medicine); Dr. Jane Walker and Lady Barrett, M.D. (Medical Women's Federation); Sir StClair Thomson; Mr. Ernest Clarke; Dr. Charles Buttar (Harveian Society); Sir Bruce Bruce-Porter; Mr. E. B. Turner (National Council for Combating Venereal Diseases); Major R. Worth, Sir Maurice Craig, and Dr. E. S. Pasmore (Medico-Psychological Association of Great Britain and Ireland); Miss E. C. Barton (Poor-law Infirmary Matrons Association): Dr. and Mrs. Remington Hobbs (Infirmary Medical Superintendents Society); Sir Sydney Beauchamp: Sir Squire Sprigge; Sir Crisp English; Colonel A. S. Woodwark; Mr. P. L. Lockhart-Mummery; Dr. H. J. Cardale and Dr. R. J. Farman (Association of Panel Committees); Dr. F. Hernaman-Johnson (British Association of Radiology and Physiotherapy); Mr. C. F. Rilot (British Dental Association); Mr. Montagu Hopson (President, British Dental Association); Mr. Robert Lindsay (Dental Secretary, British Dental Association); Major C. Thomson, M.D. (West Kent Medico-Chirurgical Society); Sir Ronald Ross (British Science Guild); Dr. E. H. M. Stancomb (Southampton Medical Parliamentary Committee); Miss H. L. Pearse and Miss Lord (National Union of Trained Nurses); Miss Sheriff-MacGregor (College of Nursing); Dr. H. Wansey Bayly (Society for the Prevention of Venereal Disease); Mrs. Greenwood, Miss Armitage, Miss de Chaumont, Miss Hoskins, Miss Jarvis, and Miss Whitbread (Women Health Visitors Association); Sir Ernest Hodder-Williams; Dr. David Lawson; Dr. G. E. Haslip; and Dr. Howard Mummery (General Secretary, 5, Vere-street. W. 1.)

AUSTRALIA.

(From our own Correspondent.)

Public Health Association.

The Brisbane Medical Congress last year decided, through some members interested in public health, to form a Public Health Association of Australia. The underlying idea is that the laity should be encouraged and educated to take an interest in matters of public health apart from politics. A provisional committee was appointed to complete preliminaries. A meeting was held in Melbourne Town Hall on April 11th to inaugurate the movement. Office-bearers are already appointed, and although the aim of the Association is stated to be "free from departmental connexions," almost all the office-bearers are departmental medical officers. The President is Dr. J. H. L. Cumpston, Director of the Federal Health Department. Provision is made for all classes of members, but the lowest subscription is to be £1 per annum. It is proposed, if funds permit, to publish a periodical devoted to questions of public health. His Excellency the Governor of

Victoria and the Countess of Stradbroke attended the meeting.

Death of Dr. C. J. Tozer.

The trial of Mrs. Mort, charged with the murder of Dr. C. J. Tozer, under circumstances already described, came before the Chief Justice and a jury in Sydney on April 6th. The accused was still in a weak state, and required special attention throughout the proceedings. Medical evidence was given that Mrs. Mort had always been of neurotic temperament, and evidence was also brought that she had applied for employment as a film artist, and had been sent home by the manager suffering from delusions that men were following her. Dr. R. Lee Brown, Government medical officer at Long Bay Penitentiary, where Mrs. Mort was detained, gave evidence that he had seen her daily during her detention and observed no signs of insanity. The jury decided that the accused was insane when she committed the act, and she was ordered to be detained during the Governor's pleasure.

Small-pox.

A suspicious case of illness in the Melbourne Hospital was reported to the health authorities as probably small-pox. The patient was a coloured fireman from the s.s. *Gracchus*. The Health Department at first pronounced the disease to be chicken-pox, but subsequently regarded it as small-pox. Six cases from the same steamer have since been reported from Sydney, whither the *Gracchus* had proceeded. She called at Fremantle and Adelaide, but no shore cases have yet been registered.

May 4th.

DANGEROUS DRUGS ACT:

REVISED REGULATIONS.

THE Committee appointed last March by the Home Secretary to consider the objections raised to the draft regulations issued under the Dangerous Drugs Act, 1920, has issued a report, dated May 12th, as a Parliamentary White Paper [*Cmd. 1307.* Price 3*d.*], which may be obtained from H.M. Stationery Office. The personnel of this Committee was as follows: Mr. Chester Jones (chairman), Sir Malcolm Delevingne, K.C.B., Captain W. E. Elliot, *M.C.*, M.P., Major A. C. Farquharson, M.D., M.P., Mr. Gerald A. France, M.P., Sir Beville Stanier, Bart., M.P., and Mr. W. J. U. Woolcock, *C.B.E.*, M.P., with Mr. A. H. Anderson of the Home Office as Secretary.

After a closely reasoned argument, which we summarise elsewhere, the Committee presents the regulations in an amended form, which will, it trusts, go a long way to prevent the increase of the drug habit without avoidable inconvenience to the medical or pharmaceutical profession or to the public.

TEXT OF THE REGULATIONS.

1. *Application.*—The drugs to which these Regulations apply are morphine, cocaine, ecgonine, and diamorphine (commonly known as heroin), and their respective salts, and medicinal opium, and any preparation, admixture, extract or other substance containing not less than one-fifth per cent. of morphine or one-tenth per cent. of cocaine, ecgonine or diamorphine.

For the purpose of the foregoing provision, the percentage in the case of morphine shall be calculated as in respect of anhydrous morphine.

2. *Manufacture.*—No person shall manufacture or carry on any process in the manufacture of morphine, cocaine, ecgonine or diamorphine, or their respective salts or medicinal opium—

(*a*) unless he is licensed by the Secretary of State or is authorised by these Regulations or by any authority granted by the Secretary of State to do so,

(*b*) except on premises licensed for the purpose by the Secretary of State,

(*c*) otherwise than in accordance with the terms and conditions of such licence or authority.

3. *Sale, Distribution and Possession.*—No person shall supply or procure or offer to supply or procure any of the drugs to or for any person whether in the United Kingdom or elsewhere or shall advertise any of the drugs for sale—

(*a*) unless he is licensed by the Secretary of State or is authorised by these Regulations or by any authority granted by the Secretary of State to supply the drug or unless he is licensed by the Secretary of State to import or export the drug or unless he is licensed or otherwise authorised to manufacture the drug or

(*b*) otherwise than in accordance with the terms and conditions of such licence or authority.

4. Except when the drugs are lawfully dispensed in pursuance of a prescription given by a duly qualified medical practitioner, registered dentist or registered veterinary surgeon, or are supplied by a duly qualified medical practitioner or registered veterinary surgeon who dispenses his own medicines, in accordance with the conditions hereinafter specified, no person shall supply or procure or offer to supply or procure any of the drugs to or for any person in the United Kingdom who is not licensed or otherwise authorised to be in possession of the drug nor to any person so licensed or authorised except in accordance with the terms and conditions of such licence or authority.

Provided that administration of the drugs by or under the direct personal supervision of a duly qualified medical practitioner, or by or under the direct personal supervision of a registered dentist in dental treatment, or by or under the direct personal supervision of a registered veterinary surgeon in the treatment of any animal, shall not be deemed to be supplying the drug within the meaning of this and the following Regulations.

5. A prescription for the supply of the drugs must comply with the following conditions:—

The prescription must be in writing, must be dated and signed by the medical practitioner, registered dentist or registered veterinary surgeon as the case may be, with his full name and address, and must specify the name and address of the person for whose use the prescription is given, and the total amount of the drug to be supplied on the prescription, except that in the case of prescriptions issued for national health insurance purposes on the form provided by the Insurance Committee the medical practitioner's address need not be marked on the prescription.

A prescription shall only be given by a registered dentist for the purposes of dental treatment and shall be marked "For local dental treatment only."

A prescription shall only be given by a registered veterinary surgeon for the purposes of treatment of animals and shall be marked "For animal treatment only."

The Secretary of State may prescribe and issue a form hereinafter referred to as the "official form" for use in giving prescriptions for the drugs, and in that case a prescription for any of the drugs shall only be given on an official form or in the case of prescriptions issued for national health insurance purposes on the form provided by the Insurance Committee, provided that in a case of emergency when the person giving the prescription has not the official form available, the prescription may be given without using the official form, but in that case shall be marked with the words "Official Form not available" or similar words.

A medical practitioner, registered dentist or registered veterinary surgeon shall not give any prescription for the supply of any of the drugs otherwise than in accordance with the foregoing conditions.

A medical practitioner who dispenses any medicines to which these Regulations apply shall enter particulars thereof in his day book or in the register hereinafter specified.

6. The following conditions shall be observed by persons dispensing prescriptions for the drugs:—

(*a*) If an official form is prescribed and issued by the Secretary of State in pursuance of the foregoing Regulation, a prescription for any of the drugs shall only be dispensed if the prescription is on one of those forms or on the form provided for national health insurance purposes by the Insurance Committee, or in the case of an emergency prescription given under the conditions specified in the foregoing Regulation, if the person dispensing the prescription is acquainted with the signature of the medical practitioner, registered dentist, or registered veterinary surgeon by whom the prescription purports to be given, or is acquainted with the person for whose use the prescription is given and has no reason to suppose that the prescription is not genuine;

(*b*) the drugs shall not be supplied more than once on the same prescription: Provided that, if the prescription so directs, the drugs may be supplied on more than one but not exceeding three occasions, as directed in the prescription, at intervals to be specified in the prescription;

(c) the prescription shall be marked with the date on which it is dispensed, and shall be retained by the person, firm, or body corporate by whom the prescription is dispensed, and (unless issued for national health insurance purposes on the form provided by the Insurance Committee) shall be kept on the premises where it is dispensed and shall be available for inspection.

7. No person shall be in possession of any of the drugs unless—

(a) he is licensed to import or export the drug, or

(b) he is licensed or otherwise authorised to manufacture or supply the drug, or

(c) he is otherwise licensed by the Secretary of State or authorised by these Regulations or by any authority granted by the Secretary of State to be in possession of the drug, or

(d) he proves that the drug was supplied for his use by a duly qualified medical practitioner or registered veterinary surgeon or on and in accordance with such a prescription as aforesaid.

8. (i) No person shall supply any morphine, cocaine, ecgonine, diamorphine or their respective salts or any medicinal opium unless the package or bottle containing it is plainly marked with the amount of the drug in the package or bottle.

(ii) No person shall supply any preparation, admixture, extract, or other substance containing any of these last mentioned drugs and coming within these Regulations unless the package or bottle is plainly marked

(a) in the case of a powder, solution, or ointment, with the total amount thereof in the package or bottle and the percentage of the drug in the powder, solution, or ointment;

(b) in the case of tablets or other articles with the amount of the drug in each article and the number of articles in the package or bottle.

This Regulation shall not apply to any preparation dispensed by a duly qualified medical practitioner or on the prescription of a duly qualified medical practitioner.

9. Every person who supplies any of the drugs shall comply with the following provisions:—

(a) he shall enter or cause to be entered in a register kept for the sole purpose all supplies of the drug purchased or otherwise obtained by him and all dealings in the drug effected by him (including sales or supplies to persons outside the United Kingdom) in the form and containing the particulars shown in Schedule I. to these Regulations;

(b) separate registers or separate parts of the register shall be used for (a) cocaine and ecgonine and substances containing them, (b) morphine and substances containing it, (c) diamorphine and substances containing it, (d) medicinal opium; provided that with the approval of the Secretary of State separate registers may be kept for separate departments of a business;

(c) he shall make the entry with respect to any of the drugs purchased or otherwise obtained by him on the day on which the drug is received and with respect to any sale or supply by him of the drug on the day on which the transaction is effected; or where that is not reasonably convenient on the day following the day on which the drug is received or the transaction is effected;

(d) where he carries on business at more than one set of premises he shall keep a separate register or registers in respect of each set of premises;

(e) he shall keep the register or registers in some part of the premises to which it relates so that it shall at all times be available for inspection in accordance with the provisions of the Act;

(f) he shall not cancel, obliterate, or alter any entry in the register or make therein any entry which is untrue in any particular. Any mistake in an entry may be corrected by a marginal note or footnote giving the correct particulars and dated:

(g) he shall furnish to the Secretary of State or to any person authorised by any order of the Secretary of State for the purpose all information in regard to any purchases by him of the drugs, all stocks held by him of the drugs, and all transactions effected by him in the drugs as may be required by the Secretary of State for the purpose of seeing that the provisions of the Act are observed.

A duly qualified medical practitioner who records in a day book particulars of any of the drugs supplied by him to any patient, together with the name and address of the patient and date of the supply, may, in lieu of keeping the register required by this Regulation of drugs sold or supplied by him, enter separately for each of the drugs in a book to be kept for the purpose references under the appropriate dates to the records in the day book of any supply of the drug. A person lawfully keeping open shop for the retailing of poisons in accordance with the provisions of the Pharmacy Act, 1868, as amended by the Poisons and Pharmacy Act, 1908, may in lieu of keeping the register required by this Regulation of drugs sold or supplied by him enter separately for each of the drugs in a book to be kept for the purpose references under the appropriate dates to the entries in the "Poisons Book" or "Prescription Book" kept by him in pursuance of Section 17 of the Pharmacy Act, 1868, relating to any supply of the drugs. Provided that all such books shall at all times be available for inspection in accordance with the provisions of the Act.

10. Any person lawfully keeping open shop for the retailing of poisons in accordance with the provisions of the Pharmacy Act, 1868, as amended by the Poisons and Pharmacy Act, 1908, is hereby authorised—

(a) to manufacture at the shop in the ordinary course of his retail business any preparation, admixture, or extract of any of the drugs;

(b) to carry on at the shop the business of retailing, dispensing, or compounding the drugs, but subject always to the provisions of these Regulations.

In the event of any such person being convicted of an offence against the Act or of an offence under the enactments relating to the Customs as applied by the Act, the Secretary of State may by notice in the London, Edinburgh or Dublin Gazette withdraw the authorisation aforesaid, if, in the opinion of the Secretary of State, such person cannot properly be allowed to carry on the business of manufacturing or selling or distributing as the case may be, any such drug; provided that the Secretary of State shall, before withdrawing the authorisation in the case of any such person, consult the Council of the Pharmaceutical Society of Great Britain.

11. Any duly qualified medical practitioner, or any registered dentist, or any registered veterinary surgeon or any person employed or engaged in dispensing medicines at any public hospital or other public institution being a person duly registered under the Pharmacy Act, 1868, as amended by the Poisons and Pharmacy Act, 1908, or any person in charge of a laboratory for purposes of research or instruction attached to any University, University College, public hospital or other institution approved by the Secretary of State for the purpose, or any person appointed by a local authority with the approval of the Minister of Health as an analyst for the purposes of the Sale of Food and Drugs Acts, 1875 to 1907, is hereby authorised so far as is necessary for the practice of his profession or employment in such capacity to be in possession of and supply the drugs.

12. In the event of any person authorised by these Regulations or by any authority granted by the Secretary of State to manufacture, supply or be in possession of the drugs, or any of them, being convicted of any offence against the Act or of an offence under the enactments relating to the Customs as applied by the Act, the Secretary of State may by notice in the London, Edinburgh or Dublin Gazette withdraw the authorisation in respect of such person, if, in the opinion of the Secretary of State such person cannot properly be allowed to manufacture, supply or be in possession of any such drug.

13. No person shall deliver any of the drugs to any person not licensed or otherwise authorised to be in possession of the drugs who purports to be sent by or on behalf of a person so licensed or authorised unless such person produces an authority in writing, signed by the person so licensed or authorised, to receive the drug on his behalf and unless the person supplying the drug is satisfied that the authority is genuine. This Regulation shall not be deemed to apply to medicines dispensed in pursuance of the foregoing Regulations.

14. Any of the drugs in the order or disposition of any person shall be deemed to be in his possession.

15. In the case of a ship not carrying as part of her complement a duly qualified medical practitioner, the master of the ship shall be deemed to be a person authorised to be in possession of the drugs so far as is necessary to comply with the requirements of the Merchant Shipping Acts, and it shall also be lawful for him, subject to any conditions prescribed by the Secretary of State, to administer and supply the drugs to any member of the crew in accordance with instructions prepared or sanctioned by the Board of Trade. The keeping of a record of the use of the drugs in the official log in accordance with the provisions of the Merchant Shipping Acts shall be deemed to be compliance with the requirements of these Regulations as to the keeping of records.

16. The Secretary of State may exempt from the operation of these Regulations any hospital or other public institution subject to the observance of such conditions as he may by order prescribe.

17. These Regulations shall not apply in respect of the preparations named in Schedule II. to these Regulations, nor to any of the drugs when denatured in a manner approved by the Secretary of State. The Secretary of State may from time to time by order add any other preparation to the Schedule or remove any preparation from the Schedule.

18. In the application of these Regulations to Ireland :—

(a) A reference to the Poisons (Ireland) Act, 1870, the Pharmacy (Ireland) Act, 1875, and the Pharmacy (Ireland) Act, 1875, (Amendment) Act, 1890, shall be substituted for any reference to the Pharmacy Act, 1868, and

(b) A reference to the Pharmaceutical Society of Ireland shall be substituted for the reference to the Pharmaceutical Society of Great Britain.

Forms to be used by those Supplying Drugs.

Schedule I. gives the approved form of records as follows :—

(a) Record of { Morphine, &c.
Diamorphine (Heroin), &c.
Cocaine, &c.
Medicinal Opium. } Purchased or otherwise obtained.

Date on which supply received.	Name of person, body or firm from whom obtained.	Address of person, body or firm from whom obtained.	Amount obtained.	Form in which obtained.

(b) Record of { Morphine, &c.
Diamorphine (Heroin), &c.
Cocaine, &c.
Medicinal Opium. } Sold or supplied.

Date on which the transaction was effected.	Name of person, body or firm to whom sold or supplied.	Address of person, body or firm to whom sold or supplied.	Authority of person, body or firm to be in possession of the drug.	Amount sold or supplied.	Form in which sold or supplied.	When sale is on a prescription specify the ingredients of the prescription.

Exemption of Certain Familiar Remedies.

Certain familiar remedies containing narcotic drugs are exempt from the regulations under §17. These are given in a schedule as follows :—

Schedule II.—Cereoli Iodoformi et Morphinæ, B.P.C., Emp. Opii, B.P., 1898, Lin. Opii, B.P., Lin. Opii Ammon., B.P.C., Pasta Arsenicalis, B.P.C., Pil. Hydrarg. c. Opio, B.P.C., Pil. Ipecac. c. Scilla, B.P., Pil. Plumbi c. Opio, B.P., Pil. Digitalis et Opii Co., B.P.C., Pil. Hydrarg. c. Cret. et Opii, B.P.C., Pulv. Cretæ Aromat. c. Opio, B.P., Pulv. Ipecac. Co., B.P. (Dover's Powder), Pulv. Kino Co., B.P., Suppos. Plumbi Co., B.P., Tablettæ Plumbi c. Opio, B.P.C., Ung. Gallæ c. Opio, B.P. (Gall and Opium Ointment), Ung. Gallæ Co., B.P.C.

ROYAL SANITARY INSTITUTE.—A sessional meeting will be held on Thursday and Friday, June 9th and 10th. 1921, in the Guildhall, Gloucester, jointly with the West of England branch of the Society of Medical Officers of Health. On June 9th at 10 A.M. a discussion on Public Health Development in Gloucestershire will be opened by Dr. J. Middleton Martin. At 2.30 P.M. a visit will be paid to Cheltenham Corporation Refuse Destructor, Sewage and Water Works. On June 10th at 10 A.M. Major E. W. A. Carter, M.I.M.C.E., will open a discussion on the Collection and Disposal of House Refuse. Professor H. R. Kenwood will preside. Those proposing to attend the meetings should notify the Hon. Local Secretary, Dr. J. R. Bibby, 9, New Inn-lane, Gloucester, so that the necessary arrangements may be made.

Public Health Services.

The Allocation of Sanatorium Benefit Surplus.

THE Lancashire Insurance Committee has approved a recommendation by its finance committee as to the allocation of a sum of about £18,000 standing to its credit at the end of March. The finance committee recommended that £10,000 should at once be handed over to the county council for its tuberculosis scheme, and that the whole of the surplus should be applied in the same way as soon as its total can be ascertained. The Ministry of Health and the local committee do not see eye to eye as to the disposal of this surplus credited to the committee's sanatorium benefit fund. When the National Insurance Act was amended last year sanatorium benefit was abolished, and the Health Ministry was empowered to provide by regulation for the disposal of any such surpluses, provided that they were paid over to the Ministry itself, except when the Ministry might decide that part should go to the local county council. The local committee has taken its own course without waiting for the approval of the Ministry of Health. The local committee states its reasons in favour of the course it has adopted, and correspondence with the Ministry has taken place. So far the Ministry has not declared its intention to take the Lancashire surplus to its own uses, nor has it stated what part of the total surplus would remain for use in the county area. A conflict has thus arisen as to the disposal of the surplus funds.

Paying Patients at Poor-law Hospitals.

Mr. R. A. Leach, clerk to the Rochdale Board of Guardians, read a paper at the Northern Poor-law Conference, recently held at Keswick, on the admission to Poor-law hospitals of private patients. He stated that had the suggestion been made before the war the reply would have been "No." Having regard to the fact that during the war hundreds of thousands of British sick and wounded were maintained, treated, cared for, and healed in the Poor-law hospitals, why should not these hospitals, if empty beds are available, be used for civilians other than of the Poor-law class? Several boards of guardians, especially in Lancashire, opened their hospitals to such patients. If the hospitals are so opened it was imperative that the guardians should safeguard the rights of the poor, and above all, it behoved the guardians not to allow themselves to be fettered with rules and regulations that might impair the guidance, government, and control of their hospitals; that is, they should not do anything or consent to anything which was calculated to injure them as the statutory authority for the relief of destitution. The sick poor should never come under any risk of hustle with the better-off classes to obtain admission to the hospitals. After discussion the Conference passed a resolution that when there were surplus beds immediate measures should be adopted to take advantage of the changed attitude of the Ministry of Health to throw open this vacant accommodation to non-Poor-law cases, having due regard to the position of local voluntary hospitals.

SCHOOL MEDICAL INSPECTION.

Shrewsbury.

In his report[1] on school medical inspection for 1919 at Shrewsbury Dr. James Fenton, medical officer of health and school medical officer, states that very little had been done during 1916, 1917, and 1918, but that the work returned to normal from the beginning of 1919. The number of children on the registers was 4494, and the number examined in the code groups was 1172, time not allowing of a complete examination in the case of the elder children. The most common defect requiring treatment was uncleanliness of the head (22·9 per cent.), and next to this dental disease (9·9 per cent.). Nutrition was satisfactory, only 11 children among those in the code groups (0·94 per cent.) needing attention. There were seven cases of organic heart disease, but only one of definite pulmonary tuberculosis. Dr. Fenton considers that, on the whole, children appear to be better nourished than they were before the war, and has "come to the definite conclusion that there is less evidence of thriftlessness and drunkenness amongst parents." On the other hand, the important but disquieting statement is made that "the inspections show that each year there is a marked falling off in vaccination compared with the previous one, and the time appears to be rapidly approaching when there will be very few children in the town protected against small-pox." Among the 12-year old children, 6·1 per cent.; among those of 8 years, 31·0 per cent.; and of the 5-year old children, 148, or 41·2 per cent., were found to be unvaccinated. It must be acknowledged that the responsibility for this condition cannot be attributed only to the ignorance of the parents. An important advance has been made in the treatment of ringworm of the scalp. During 1915, 77 children lost 11,125 attendances from this cause, causing a total loss of grant amounting to £48 12*s*. At the beginning of 1916 the Education Committee adopted the X ray treatment, and decided to pay the whole of the expense, the children having to be conveyed to Birmingham for the purpose; 136 cases have been treated with entire success during these four years. There has been a saving of over 10,000 school attendances per annum, and a gain of something like £45 per annum in the Government grant. There are now only two children in the whole town absent from school on this account. There has also been an improvement in the cleanliness of the children, owing to the support given by the magistrates and the press, though 22·86 per cent. of those examined in the code groups were found to need treatment.

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[1] Annual Report of School Medical Officer for 1919.

Cardiff.

Until November, 1919, the work of school medical inspection[2] at Cardiff was carried on under considerable difficulties on account of disorganisation of staff and arrangements due to war conditions. The intermediate group of children (8 years of age) could not be examined, but all arrears were overtaken and the entrants and leavers completed—these numbered 8077; and in addition 1248 children were brought forward as special cases. In the code groups systematically inspected, defective vision (462) and squint (68) combined to form the most numerous group requiring treatment; and after them enlarged tonsils (314), or adenoids (104), or both of these conditions together (89). Organic heart disease was diagnosed in 18 children, of whom 9 were recommended for treatment, and 9 to be kept under observation. Not a single case of definite pulmonary tuberculosis was found during the routine examinations; 6 cases were "suspected," of which 3 were referred for treatment. It is stated that "cases of nose, throat, and ear defects, defective vision, and minor ailments, if treatment is not otherwise procurable, are referred for treatment at the school clinic," where, however, the facilities provided are at present inadequate, and "it is feared that in consequence many have to go without treatment." It is also observed that "there are many cases for the treatment of which no special provision is made, and parents are in such cases recommended to seek the advice of their own doctor." No mention is made of any available hospital or dispensary treatment. As regards care of the teeth, Dr. Edward Walford, medical officer of health for the city and school medical officer, who presents this report, states that "at present the dental arrangements provide only for the inspection of children between the ages of 6 and 8 years, and for the treatment of the children in that group requiring it, and belonging to families whose weekly income does not exceed £4." Everyone will agree with his remarks that "these arrangements are extremely inadequate," and that "the school dental service urgently requires development and expansion, and an additional dentist (whole time) should be appointed." About 5 per cent. of the children inspected suffer from enlarged tonsils or adenoids, and require treatment by an aural surgeon. At present operative treatment is carried out on one half-day a week. This is not enough, and a large number of cases are awaiting treatment. An aural surgeon should attend on two half-days a week, and operations should be performed in the afternoon, the patients being detained overnight in a recovery room, of course under care of a nurse, and handed over to their parents next day. With regard to "minor ailments"—ringworm, scabies, skin diseases, otorrhœa, &c., which are a cause of considerable non-attendance at school, with consequent loss of grant, the arrangements appear to be very unsatisfactory. "No child attends at the clinic for treatment more often than once a week, consequently the treatment devolves to a great extent upon parents, and has to be continued in many instances over a long period, instead of being regularly and carefully carried out by school nurses under the supervision of medical officers." There can be no question that there is urgent necessity, as Dr. Walford points out, for a school clinic to be open daily for, say, two hours, with school nurses in attendance, in order that minor ailments may be treated regularly and thoroughly. The X ray treatment should also be provided for ringworm. There were 92 cases of ringworm of the head during the year under report, 83 of which were "specials," but it is not stated how long these children were absent from school on this account—i.e., how long they were deprived of education through want of effective treatment. The provision of a suitably constructed and equipped building as a school clinic appears to be a pressing need at Cardiff, the facilities for treatment at present being "inadequate and altogether unsuitable." It appears that one room only is available for operations—eye treatment, dental treatment, and for minor ailments. The five rooms at the City Hall at present available are obviously not nearly sufficient. As the city of Cardiff ranks first in the Principality in regard to population and prosperity, it may be confidently anticipated that adequate arrangements will be made by the civic authorities to enable this necessary work to be satisfactorily dealt with.

VITAL STATISTICS OF LONDON DURING APRIL, 1921.

IN the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the ten diseases notified in the table was equal to an annual rate of 8·7 per 1000 of the population, estimated at 4,531,971 persons in the middle of 1920; in the three preceding months the rates had been 10·6, 10·2, and 9·7 per 1000. Among the metropolitan boroughs the lowest rates from these diseases were recorded in Paddington, Chelsea, the City of Westminster, St. Marylebone, Hampstead, and the City of London; and the highest in Hackney, Finsbury, Bethnal Green, Stepney, and Woolwich. The prevalence of enteric fever was about equal to that in the preceding month; of the 14 cases notified during the four weeks ended April 30th, 2 cases belonged to each of the boroughs of Paddington, Hampstead, Greenwich, and Lewisham. There were 10 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 11·9 and 10 at the end of the three preceding months; the weekly admissions averaged 2, against 3, 2, and 3 in the three preceding months. The case of small-pox occurring during the month was notified from the borough of Holborn. The prevalence of scarlet fever was 10 per cent. less than in the preceding month: this disease was proportionally most prevalent in Hammersmith, Hackney, Bethnal Green, Stepney, Bermondsey, and Woolwich. The Metropolitan Asylums Hospitals contained 3217 scarlet fever patients at the end of the month, against 2618, 2766, and 2652 at the end of the three preceding months; the weekly admissions averaged 411, against 489, 461, and 469 in the three preceding

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[2] Annual Report of School Medical Officer for 1919, Cardiff, April, 1920.

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING APRIL, 1921.

(*Specially compiled for* THE LANCET.)

Cities and Boroughs.	Estimated civil population, 1920.	Notified Cases of Infectious Disease.												Deaths from Principal Infectious Diseases.									Deaths from all causes.	Death-rate per 1000 living.
		Enteric fever.	Other continued fevers.	Small-pox.	Scarlet fever.	Diphtheria.*	Erysipelas.	Poliomyelitis and polioencephalitis.	Encephalitis lethargica.	Cerebro-spinal fever.	Puerperal fever.	Total.	Annual rate per 1000 persons living.	Enteric fever.	Small-pox.	Measles.	Scarlet fever.	Whooping-cough.	Diphtheria.*	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	4,531,971	14	—	1	1737	1077	141	2	14	12	30	3028	8·7	2	—	34	20	41	93	52	242	0·7	4337	12·6
West:																								
Paddington ...	149,673	2	—	—	29	22	3	—	—	—	—	56	4·9	—	—	—	—	—	1	4	5	0·4	131	11·4
Kensington... ...	164,177	—	—	—	65	15	7	—	—	—	1	88	7·0	—	—	—	2	2	—	3	7	0·6	146	11·6
Hammersmith...	136,200	—	—	—	76	28	3	—	—	2	1	110	10·5	—	—	—	—	—	2	1	3	0·3	115	11·0
Fulham	158,621	1	—	—	55	33	10	—	1	—	3	103	8·5	—	—	—	—	1	3	1	5	0·4	145	11·9
Chelsea	62,987	1	—	—	15	6	4	—	1	—	1	28	5·8	—	—	—	—	—	1	—	1	0·2	79	16·4
City of Westmin'r	132,615	—	—	—	25	20	1	—	—	1	1	48	4·7	—	—	—	1	—	3	1	5	0·5	134	13·2
North:																								
St. Marylebone...	101,856	—	—	—	13	14	4	—	1	—	—	32	4·1	—	—	—	—	1	5	—	6	0·8	134	17·1
Hampstead ...	91,519	2	—	—	20	9	2	—	2	—	1	36	5·1	1	—	1	1	1	1	2	7	1·0	77	11·0
St. Pancras... ...	228,178	—	—	—	74	62	6	—	—	—	—	142	8·1	—	—	—	1	3	5	—	9	0·5	225	12·9
Islington	335,907	—	—	—	84	106	9	—	1	2	—	202	7·8	—	—	8	—	6	11	3	28	1·1	349	13·5
Stoke Newington	52,984	—	—	—	25	14	4	—	—	—	—	43	10·6	—	—	—	—	—	2	2	4	1·0	52	12·8
Hackney	225,372	—	—	—	120	75	5	—	1	—	2	203	11·7	—	—	—	—	2	8	2	12	0·7	202	11·7
Central:																								
Holborn	39,676	—	—	1	11	8	4	—	—	—	—	24	7·9	—	—	—	—	—	—	2	2	0·7	52	17·1
Finsbury	78,291	—	—	—	30	34	1	—	—	3	1	69	11·5	—	—	3	—	1	3	—	7	1·2	93	15·5
City of London...	14,447	—	—	—	3	2	1	—	—	—	—	6	5·4	—	—	—	—	—	—	—	—	—	12	10·8
East:																								
Shoreditch... ...	102,044	—	—	—	34	42	6	—	—	—	1	83	10·6	—	—	10	—	4	4	2	20	2·6	140	17·9
Bethnal Green...	114,471	—	—	—	60	53	8	—	1	—	2	124	14·1	—	—	2	2	—	7	3	14	1·6	120	13·7
Stepney	241,770	1	—	—	152	67	5	—	1	—	5	231	12·5	—	—	3	2	1	2	4	12	0·6	237	12·8
Poplar	159,766	—	—	—	53	39	4	—	—	1	1	98	8·0	—	—	1	—	1	5	1	8	0·7	146	11·9
South:																								
Southwark... ...	187,142	—	—	—	73	27	8	—	3	—	—	111	7·7	—	—	—	1	—	2	1	4	0·3	226	15·7
Bermondsey ...	129,189	—	—	—	69	30	3	—	—	—	—	102	10·3	—	—	—	1	2	5	3	11	1·1	136	13·7
Lambeth	293,572	1	—	—	78	50	10	—	—	2	2	143	6·3	—	—	—	3	2	5	5	15	0·7	264	11·7
Battersea	165,664	1	—	—	78	50	4	—	—	1	1	135	10·6	—	—	—	1	3	3	2	9	0·7	195	15·3
Wandsworth ...	346,990	—	—	—	142	78	10	2	—	—	2	234	8·8	—	—	—	1	2	5	3	11	0·4	255	9·6
Camberwell ...	284,712	—	—	—	97	45	8	—	1	—	—	151	6·9	—	—	—	1	5	4	—	10	0·5	252	11·5
Deptford	115,636	—	—	—	53	38	3	—	—	—	2	96	10·8	—	—	—	1	—	2	4	7	0·8	110	12·4
Greenwich... ...	102,408	2	—	—	47	31	2	—	—	—	2	84	10·7	—	—	1	1	—	1	—	3	0·4	92	11·7
Lewisham	174,438	2	—	—	72	43	3	—	—	—	1	121	9·0	1	—	4	—	3	2	2	12	0·9	140	10·5
Woolwich	141,666	1	—	—	84	36	3	—	1	—	—	125	11·5	—	—	1	1	1	1	1	5	0·5	128	11·8

* Including membranous croup.

months. Diphtheria also was somewhat less prevalent—about 12 per cent.—than in March; the greatest proportional prevalence of this disease was recorded in Islington, Hackney, Finsbury, Shoreditch, Bethnal Green, and Deptford. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 2648, 2766, and 2652 at the end of the three preceding months, numbered 2129 at the end of April; the weekly admissions averaged 261, against 319, 333, and 290 in the three preceding months. Erysipelas was proportionally most prevalent in Fulham, Chelsea, Stoke Newington, Holborn, the City of London, and Bethnal Green. The 2 cases of poliomyelitis belonged to Wandsworth. The prevalence of encephalitis lethargica showed a marked decrease since the beginning of the year, 77 cases having been notified in January, 56 in February, 24 in March (five weeks), and 14 in April; of these latter, 3 belonged to Southwark, and 2 to Hampstead. Twelve cases of cerebro-spinal fever were notified during the month, against 11, 17, and 14 in the three preceding months; of these 3 were notified from Finsbury, 2 from Hammersmith, 2 from Islington, and 2 from Lambeth. The 30 cases of puerperal fever included 5 in Stepney and 3 in Fulham.

The mortality statistics in the table relate to the deaths of civilians actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ended April 30th the deaths of 4387 London residents were registered, equal to an annual rate of 12·6 per 1000; in the three preceding months the rates had been 12·5, 14·0, and 13·6 per 1000. The death-rates ranged from 9·6 in Wandsworth, 10·5 in Lewisham, 10·8 in the City of London, 11·0 in Hammersmith and in Hampstead, to 15·5 in Finsbury, 15·7 in Southwark, 16·4 in Chelsea, 17·1 in St. Marylebone and in Holborn, and 17·9 in Shoreditch. The 4387 deaths from all causes included 242 which were referred to the principal infectious diseases; of these 2 resulted from enteric fever, 31 from measles, 20 from scarlet fever, 41 from whooping-cough, 93 from diphtheria, and 52 from diarrhœa and enteritis among children under two years of age. No death from any of these diseases was recorded in the City of London. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Paddington, Hammersmith, Fulham, Chelsea, Southwark, Wandsworth, and Greenwich; and the highest in Hampstead, Islington, Stoke Newington, Finsbury, Shoreditch, Bethnal Green, and Bermondsey. The 2 fatal cases of enteric fever were 4 fewer than the average in the corresponding period of the five preceding years. The 31 deaths from measles were about one-sixth of the average; of these 10 belonged to Shoreditch, 8 to Islington, and 4 to Lewisham. The 20 fatal cases of scarlet fever exceeded the average by 7; of these, 3 belonged to Lambeth, 2 to Kensington, 2 to Bethnal Green, and 2 to Stepney. The 41 deaths from whooping-cough were less than a third of the average number; of these, 6 belonged to Islington, 5 to Camberwell, 4 to Shoreditch, and 3 to each of the boroughs of St. Pancras, Battersea, and Lewisham. The 93 fatal cases of diphtheria were 39 in excess of the average; the greatest proportional mortality from this disease occurred in St. Marylebone, Stoke Newington, Hackney, Finsbury, Shoreditch, Bethnal Green, and Bermondsey. The 52 deaths from infantile diarrhœa were 4 below the average; the greatest proportional mortality from this disease occurred in Paddington, Stoke Newington, Holborn, Bethnal Green, Bermondsey, and Deptford. In conclusion, it may be stated that the aggregate mortality in London during April from these principal infectious diseases was 47 per cent. below the average in the corresponding period of the five preceding years.

URBAN VITAL STATISTICS.

(Week ended May 21st, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18¼ million persons, the annual rate of mortality, which had been 12·5, 12·4, and 12·5 in the three preceding weeks, fell to 11·3 per 1000. In London, with a population of 4½ million persons, the annual rate was 10·7, or 0·9 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 3·9 in Swindon, 6·2 in East Ham, and 6·4 in Hornsey to 18·9 in St. Helens, 20·7 in West Hartlepool, and 21·1 in Oldham. The principal epidemic diseases caused 213 deaths, which corresponded to an annual rate of 0·6 per 1000, and comprised 63 from infantile diarrhœa, 48 from whooping cough, 44 from diphtheria, 43 from measles, 11 from scarlet fever, and 4 from enteric fever. Measles caused a death-rate of 1·1 in Portsmouth, 1·8 in South Shields, 2·5 in Exeter, and 2·7 in Barrow-in-Furness, and whooping cough of 1·3 in Warrington and in Preston. There were 3209 cases of scarlet fever and 2215 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 3238 and 2281 respectively at the end of the previous week. During the week ended May 14th, 5 cases of encephalitis lethargica were notified in the County of London, of which 2 belonged to Stepney and 1 each to Camberwell, Hammersmith, and Poplar. The causes of 34 of the 4011 deaths in the 96 towns were uncertified, of which 6 were registered in Birmingham and 5 each in Liverpool and West Hartlepool.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 15·0, 14·7, and 14·3 in the three preceding weeks, further declined to 13·3 per 1000. The 286 deaths in Glasgow corresponded to an annual rate of 13·6 per 1000, and included 23 from whooping cough, 3 from infantile diarrhœa, 2 from diphtheria, and 1 each from measles and scarlet fever. The 118 deaths in Edinburgh were equal to a rate of 13·8 per 1000, and included 6 from diphtheria, 2 from scarlet fever, and 1 each from measles, whooping cough, and infantile diarrhœa.

Irish Towns.—The 97 deaths in Dublin corresponded to an annual rate of 12·0, or 4·9 per 1000 below that recorded in the previous week, and included 1 each from whooping cough and diphtheria. The 112 deaths in Belfast were equal to a rate of 13·9 per 1000, and included 3 from whooping cough and 1 each from measles, diphtheria, and infantile diarrhœa.

The Services.

ROYAL ARMY MEDICAL CORPS.

F. E. Feilden, late temp. Maj., to be temp. Maj.

Capt. P. D. Warburton retires, receiving a gratuity.

Temp. Capt. C. C. Chance relinquishes the actg. rank of Maj.

Temp. Capts. relinquishing their commns. on appt. to the Ind. Med. Serv.: F. M. Kirwan, S. R. Prall, and F. R. Thornton.

Temp. Capt. O. E. Finch, relinquishes his commn. and retains the rank of Capt.

To be temp. Lts.: W. E. Barnes and C. A. Lindup.

ARMY DENTAL CORPS.

Capt. A. R. Inglis, Dental Surg., late Spec. List, to be Capt.

F. D. Neal to be temp. Lt. whilst empld. as a Dental Surg.

DEFENCE FORCE.

To be Asst. Dirs. of Med. Servs.: Temp. Cols. G. H. Edington (D.F.), L. J. Blandford (D.F.), F. G. Proudfoot (D.F.), D. Rorie (D.F.), H. T. Samuel (D.F.), E. A. Wraith (D.F.)

To be Dep. Asst. Dirs. of Med. Servs.: Temp. Majs. F. W. Squair (D.F.), C. J. Martin (D.F.), H. A. Leebody (D.F.)

To be temp. Maj.: J. B. Batchelor.

To be temp. Capts.: W. J. M. White, D. Craig, S. S. Greaves, D. C. MacLachlan, and W. J. C. Watt.

To be temp. Lt.: G. L. Lyon-Smith.

1st (Highland) Fd. Amb. (D.F.).—To be temp. Lt.: G. M. Gray.

3rd (Northumbrian) Fd. Amb. (D.F.).—To be temp. Capt.: A. C. Barker.

44th (Home Counties) San. Sect. (D.F.).—To be temp. Capt.: S. W. Hoyland.

N. Midland Divl. San. Sect. (D.F.).—To be temp. Lt.: H. J. Morgan.

2nd (S. Midland) Fd. Amb. (D.F.).—Temp. Maj. A. E. P. McConnell to be temp. Lt.-Col.

1st (Welsh) Fd. Amb. (D.F.).—To be temp. Lt.-Col.: T. Donovan.

To be temp. Maj.: E. Bull.

ROYAL AIR FORCE.

Capt. (Bt. Maj.) F. C. Cowtan, R.A.M.C., is granted a permanent commission as Squadron Leader.

The undermentioned Flight Lts. relinquish their temporary commissions on ceasing to be employed, and are ermitted to retain the rank of Capt.: S. G. Seymour d K. F. D. Waters.

Correspondence.

"Audi alteram partem."

THE ÆTIOLOGY OF MITRAL STENOSIS.

To the Editor of THE LANCET.

SIR,—In his lecture on Mitral Stenosis, published in THE LANCET of May 28th, Dr. Basil Parsons-Smith states that "measles, scarlet fever, small-pox, erysipelas, pneumonia, septicæmia, &c., account for a considerable number of cases" of this form of valvular disease. Can any evidence be brought forward to support such a contention? Personally I should maintain that, from the standpoint of morbid anatomy, there is no such evidence. Murmurs may appear over the heart during a febrile attack in the young, due to almost any cause, but those murmurs are not evidence of endocarditis, and disappear, leaving the heart quite sound. I cannot but think that the text-book statement regarding the numerous causes of an endocarditis which may result in chronic deformity of the valve must be due to a misinterpretation of the nature of temporary cardiac murmurs. This applies not only to systolic murmurs, but to the dull diastolic sound variously named "mid-diastolic" sound, part of a "reduplicated first" sound, or of a "reduplicated second" sound, audible at the apex. Such a sound may appear during various conditions of ill-health and not uncommonly during normal health, but both in ill-health and normal health I have frequently known it to be considered to indicate the presence of mitral stenosis by medical men. Such a sound heard in a case of measles, or some similar disease, may lead to the belief that measles has caused mitral stenosis. If we take the evidence of the post-mortem room, rheumatism and chorea, I maintain, are the only diseases worthy of consideration in connexion with the ætiology of mitral stenosis. Yet in a sense, the word rheumatic endocarditis used as the precursor of mitral stenosis may be said to be a misnomer. Rheumatism and chorea, to a less extent, affect the whole heart, the muscular and interstitial structures, as well as the lining membranes, being affected. It is not disease of the endocardium which produces mitral stenosis, but inflammation of the fibrous structures of the cusps of the valve from the apices of the columnæ carneæ to basal ring. The presence of a small bead of vegetations along the margin of the cusps of the valve during an attack of acute rheumatism or chorea may be described almost as an accident. The inflammation affects the fibrous structures of the chordæ tendineæ, and at the spot where these fibrous structures are inserted into the valve and interlace there is some thickening. The endocardium covering this inflamed band chafes against the endocardium covering the inflamed band on the opposite side. Some vegetations are the result, but they have no bearing upon the disease. The inflamed fibrous structures gradually contract. They draw the two halves of the valve together and the chordæ tendineæ also. A slowly progressive thickening and fusion of cusps and also of the chordæ tendineæ are the result. In short, it is a disease of fibrous structures, not of the lining endocardium.

The above remarks will suggest that "long-continued strain, gout, syphilis, chronic nephritis, plumbism, arteriosclerosis" are not considered to play an important part in the causation of mitral stenosis. Personally, I hold that they play *none.* Mitral stenosis commences in childhood or early adult life. It may last many years, and in very exceptional cases until over 50 years of age, but even then it has commenced in early life. In thus sweeping aside all such diseases as gout, syphilis, &c., as causes of mitral stenosis, it should perhaps be remarked that there may be one apparent exception, that exception occurs in association with calcareous disease of the aortic valve. The nature of the disease is to me obscure. It is, however, locally infective in the sense that it may send calcareous processes into the cardiac muscle or into the large flap of the mitral valve. When it sends a well-marked process into this flap it must interfere with the action of the valve, but it cannot be said to produce a true mitral stenosis. I am, Sir, yours faithfully,

Norwich, May 27th, 1921. THEODORE FISHER.

IRRADIATION AND SAFETY.

To the Editor of THE LANCET.

SIR,—I have read with considerable interest and with no little surprise the leading article upon Irradiation and Safety published in your issue of May 28th.

You state that a committee composed of radiologists, physicists, pathologists, and others has been appointed to consider this important question, and you then mention the names of those selected to serve. I note particularly that there is no extra-metropolitan representative on this committee, no representation from Scotland, and none from Ireland. Perhaps it is not within the knowledge of the existing Committee that any X ray or radium work is done outside London, but for their information and guidance I may state that in Manchester there is at the present time the second largest supply, and in the near future there will be the largest supply of radium in the United Kingdom, and that at the Royal Infirmary there is one of the most efficient and most up-to-date X ray departments in the country. Would it not be policy on the part of this very "parochial" committee to invite a few extra-metropolitan representatives of radium and X ray workers to share their responsibility, the more especially as I feel sure that they will eventually have to apply to them for much of the information they ultimately require in reference to the protection of the worker? In Manchester, such items as the blood count of the workers, the regularisation of work, the holidays of workers are matters of ancient history.

May I suggest that the Committee would be well advised to coöpt a few workers from *outside* London if they wish to present in their report anything approaching an up-to-date epitome of actual and practical experience.—I am, Sir, yours faithfully,

W. MILLIGAN,
Hon. Secretary, Manchester and District
May 27th, 1921. Radium Institute.

THE DIAGNOSIS OF DYSENTERY BY THE SIGMOIDOSCOPE.

To the Editor of THE LANCET.

SIR,—For the last five years I have been greatly interested in the diagnosis of dysentery by the sigmoidoscope, a subject which Dr. P. Manson-Bahr and Dr. A. L. Gregg have so well discussed in their paper in THE LANCET of May 28th. In an article published in the Guy's Hospital Reports for January of this year I referred to the strikingly different appearances seen with the sigmoidoscope in amœbic and bacillary dysentery. I have had the advantage over Dr. Manson-Bahr and Dr. Gregg of being afforded the opportunity of examining cases in which actual ulceration of the bacillary type was present, both in the acute stage in Salonica and in one chronic case in England. The appearance is identical with that observed in the ulcerative colitis, which occurs sporadically in England, and which I believe to be of the same nature as the bacillary dysentery of tropical countries. The ulcers are shallow, irregular in outline, varying much in size, and are separated from each other by swollen, deeply congested and easily bleeding mucous membrane. Amœbic ulcers are generally more regular in shape and deeper, and the intervening mucous membrane is normal in appearance, offering a very striking contrast to that of bacillary dysentery. I have several times also seen a very early stage of amœbic dysentery in which small round projections from the mucous membrane are present, some—but not all—of which show a minute central area of necrosis surrounded by a red areola, corresponding exactly to the condition illustrated in the second plate in Sir Leonard Rogers's book on Dysenteries.

It is extremely interesting to watch with the sigmoidoscope from day to day the rapid healing of amœbic ulcers under treatment with emetine, and that of bacillary ulcers with antidysenteric serum. Quite apart from the question of diagnosis, the instrument is of the greatest value in determining when the condition should be regarded as cured. As I pointed out already in the first edition of my book on *Medical Diseases of the War*, in 1916, I have several times found that ulcers were still present when all symptoms had disappeared and the stools had become perfectly normal. Treatment should always be continued until the sigmoidoscope shows that all trace of active disease of the mucous membrane has disappeared.

I am, Sir, yours faithfully,

New Lodge Clinic, Windsor Forest, ARTHUR F. HURST.
Berks, May 30th, 1921.

ABDUCTION PARALYSIS IN EXOPHTHALMIC GOITRE.

To the Editor of THE LANCET.

SIR,—In the report of the proceedings of the Laryngological Section of the Royal Society of Medicine in your issue for May 21st (p. 1081), I am stated to have suggested in regard to a case of bilateral recurrent laryngeal paralysis and exophthalmos that the "symptoms" might have been due to pressure exerted by the enlarged thyroid gland on the sympathetic nerve. I intended to refer only to the exophthalmos, and to convey that the goitre which could produce paralysis of the recurrent laryngeals was unlikely to be the goitre of Graves's disease. The exophthalmos, therefore, might require a special explanation, such as irritation of the sympathetic produced by the pressure of an enlarged thyroid body.—I am, Sir, yours faithfully,

JAMES DUNDAS-GRANT.

Harley-street, W., May 24th, 1921.

TREATMENT OF ACUTE TOXÆMIA.

To the Editor of THE LANCET.

SIR,—The cells of many types of living beings, unicellular and multicellular, secrete poisons—endotoxins for defensive and exotoxins for offensive purposes. The microbes of disease, insects, snakes, and numerous plants furnish examples. All our vegetable medicines are endotoxins which, by means of poisonous action, often combined with disagreeable taste, protect the producing plants from animal enemies. In chronic diseases (e.g., tuberculosis and leprosy) the poisons are mainly endotoxins; in acute diseases (e.g., measles, pneumonia, diphtheria, septicæmia) they are exotoxins. Fever is a reaction to toxæmia. While experience of some poisons—for example, strychnine, quinine, and tuberculin—confers little or no added power of resistance, it is possible to train the individual to increased tolerance of other poisons—for example, nicotine, opium, snake and insect venom, and the toxins of the acute diseases. It is unnecessary to discuss the vexed question as to how this tolerance arises; bacteriologists have formulated many suppositions; but, presumably it is, in essence, what biologists call "a useful acquirement," a product of functional activity, an habituation. The individual becomes "used" to, accustomed to, educated to toxins, and, in recovery from acute disease, his cells, no longer poisoned to impotence, are able, as a consequence, to attack and destroy the pathogenic organisms. Hence recovery and acquired immunity, temporary or permanent.

This habituation may be achieved in three distinct ways. (1) By beginning with small, and proceeding to larger and larger doses of toxin, as in tobacco and opium smoking, and when diphtheria toxin is administered to a horse during the manufacture of antitoxin. (2) By beginning with and maintaining in action one large dose, as happens in acute disease which is followed by recovery. (3) By antitoxin and vaccine treatment, the rationale of which, as I say, need not be discussed.

The second method is exceedingly dangerous and is the cause of death in disease. The last method has been attempted in many infections, but as yet it has been conspicuously successful in only a few acute diseases—e.g., diphtheria and small-pox. Were it possible in acute illness to combine antitoxic serum with small doses of toxin, we should have an ideal method of cure. But sera for many acute diseases are lacking. Moreover, in illness the patient is already suffering from a large dose of toxin, which the introduction of small doses from outside would only make larger. Consequently, during illness, the only conceivable method of causing a sufferer to experience small doses is to reduce the amount of toxin in him. I do not know that this has ever been consciously attempted. I believe, however, it is not impracticable. In other words, I believe it is possible to abstract toxin from a sufferer.

Consider lobar pneumonia. A portion of the lung is invaded by the pathogenic organisms; blood is extravasated; and that portion of the lung becomes more or less solid. The temperature rises, rigors occur, the patient suffers from headache, sleeplessness, and a general feeling of illness. The severity of the disease is not at all strictly proportionate to the amount of lung involved, but depends rather on a toxæmia which especially affects the heart and breathing centres. In favourable cases a "crisis" occurs about the fifth to tenth day. Commonly the patient sleeps and awakes some time later feeling much improved. His temperature has fallen, his headache, rigors, and sleeplessness have gone, and he is bathed in sweat. Apparently the condition of his lung has not altered; but later gradual resolution occurs, and the extravasated and disintegrated blood is voided as "rusty" sputum.

Sweating is nature's mode of cooling the healthy body by evaporation from the surface. But if, as usually happens in pneumonia, the patient is thickly covered with bedclothes and evaporation prevented, the temperature still falls. Presumably, therefore, something more than mere exudation and evaporation of fluid occurs in the crisis—something which in itself causes the fall of the temperature and the general improvement. I can conceive no reason for such a sudden change except a quick elimination of toxins, and, in view of the lack of evidence of increased activity in other possible channels of elimination, I cannot conceive by what road the toxins can be passed out if not by the sweat. I know of no evidence that toxins have been found in the sweat; but then I do not know that they have been sought there. Since recovery from acute diseases is associated with a falling temperature, moisture of the skin, and sleep, the administration of antipyretics, sudorifics, and soporifics was formerly common. But the medicines and the dosage generally employed depressed the heart and breathing centres, and of late it has been regarded as almost axiomatic that antipyretics and sudorifics are injurious under such conditions.

But if we give a patient, suffering from pneumonia (for example) and not already poisoned past redemption, the following dose, aspyrin 10 gr., phenacetin 5 gr., and pulv. ipecac. co. 5 gr., we get (as far as my experience goes) what has all the appearance of an artificial crisis, without depression of the heart and breathing centres, or any other ill-effects. The patient soon falls asleep, and wakes some hours later feeling much better, bathed in sweat, his temperature down, his rigors and headache gone, and his pulse and breathing improved. The signs of illness will gradually return, but they can be abolished in the same way once or twice a day till permanent improvement sets in. On such occasions the patient will be relieved and rested, and unless my experience has been unusual, his illness shortened.

Lately I myself fell ill of lobar pneumonia. I began the treatment I describe about the third day, having previously received ordinary treatment; but I know no good reason why I need have waited so long. My most vivid recollection is the immense and blessed sense of relief that followed each dose. I fell asleep within half an hour. After waking, I was able for some hours to read or converse with comfort; indeed, with little feeling of illness. I suppose I took six or seven doses in all. Within a week I was writing at my desk. On the tenth day of illness I was taken for a 30 miles motor drive in the country. On the twelfth day I was walking about visiting friends at their own houses. On the thirteenth day I was back at full medical work feeling none the worse. I am not young. I voided not rusty sputum, but bright blood, showing rapid resolution. As well as I am able to judge, at each artificial crisis toxins were eliminated in large quantities, and the body was thus presented with several small doses, instead of having to make head against one continuously large dose. Certainly, while my temperature was high I felt poisoned; during the intervals I felt, or seemed to feel, relief from poisoning. Apparently my sweat centre was roused to activity, while my heart and breathing centres were relieved by the elimination of the toxin.

I have never known ill-results follow this treatment, though it has been tried lately in a fair number of cases both by myself privately and by friends in hospital practice. The following is a fair sample of cases:—

Lobar pneumonia. Advanced stage. No improvement followed treatment. Death. Apparently the patient was poisoned beyond redemption.

Lobar pneumonia. Early stage. The temperature was taken as a guide and several doses given. This case followed a course very similar to that in my own illness. Patient was up and about on the tenth day.

Broncho-pneumonia following suicidal immersion. Only one dose was given. Sleep. Sweating. Temperature fell, and never rose again. Recovery, but "vast quantities of sputum were voided for four days."

Mild rheumatic fever. Some temporary relief followed each dose, but apparently no permanent improvement, though treatment was long continued. But aspirin has been found very useful in this disease. How does it act? Hardly as an antiseptic.

Diphtheria. Twenty thousand units of antitoxin given about the same time as the dose. Sleep. Sweating. Patient awoke declaring himself recovered. Temperature never rose again. No further treatment necessary. Presumably, in this case the swift reaction to the antitoxin occurred because much of the toxin had been eliminated. That is, serum treatment was combined with a small dose of toxin.

Threatened breast abscess a week after child-birth. Temperature 101·5°F. Sleepless. Acute headache. Bad mental condition. Dose given. Slept. Sweated. Awoke feeling much better in mind and body. Temperature normal. Threat of abscess gone. No further treatment.

Diphtheria. Only one dose given, which apparently had no effect, good or bad.

Enteric fever. Only one dose given, which apparently had no effect.

Septic infection of ureter. Rigors. Temperature 105°. Effect of doses as in my own illness. Quick uncomplicated recovery in a week.

Two cases of pyrexia of uncertain origin. One dose given. Sleep. Sweating. Immediate recovery.

Measles in child of 6. Early eruptive stage. Severe. Cyanosed, so that mother remarked on "white appearance about mouth." Dose (1/6 adult) given at midday. Slept and later passed a good night. Next morning playing happily in bed. Temp., cyanosis, and photophobia gone. Little cough. Rash fading. Immediate recovery.

Measles in child of 7. Dose given, but little apparent next day. Dose repeated twice. Almost well third day.

Measles in child of 5. Much improved next day. Practically recovered third day.

These are sample cases. Up to now the suggested treatment has apparently given such good results in many cases that I have hopes that it will prove generally useful in the treatment of acute toxæmia—for example, in puerperal fever, surgical sepsis, tetanus, small-pox, and the like. But medicine is full of decaying mare's nests. It is never wise to trust to the experience furnished by a few cases to a few men. I venture, therefore, to ask if some of your readers, medical and surgical, will try this treatment, and either publish their results or inform me of them. Obviously, even if the treatment be useful in some acute diseases, it is sure not to be useful in others; the combination of drugs I suggest *may be improved on*; there may be a right and a wrong stage in each disease for the commencement of treatment; and so on. I suggest that in every instance the trial shall begin by giving a single dose in a single suitable case. If the results are not unfavourable, the treatment may be continued and the experiment extended. My own experience has been such that I feel very confident. But that, I suppose, is the way of all beginners. It should be noted that I suggest an *addition, not an alternative*, to ordinary treatment. The extreme simplicity of the suggested addition is liable to create scepticism; and though simplicity does not always imply inefficiency, unfortunately it often does. However, the test, and perhaps the improvement of this "reduction" treatment, is easy.

I am, Sir, yours faithfully,

Southsea, May 20th, 1921. G. ARCHDALL REID.

EARLY DIAGNOSIS IN DIPHTHERIA.

To the Editor of THE LANCET.

SIR,—Dr. Frederic Thomson, in your issue of May 21st, brings before our profession a very serious matter in emphasising the importance of early diagnosis in diphtheria, and complains that many of the patients arriving at his hospital had been ill for some time, and consequently the toxins of the disease had had too much time for their deadly work. One common cause for delay in reporting these cases is the fear, on the part of the medical man in attendance, of sending a case into a diphtheria ward without being certain that his diagnosis was correct. To get over this difficulty, some years ago the Public Health Committee of the Wimbledon Corporation provided in their isolation hospital some observation wards, where doubtful cases could be sent at once. These cases were watched for a day or so, bacteriological examinations made, and antitoxin given, &c., and if the case turned out to be follicular tonsillitis no harm was done. The Public Health Committee also provided in a very central place in the town—viz., the fire-station—a supply of antitoxin and syringe available for every medical practitioner by day or night, so that time should not be lost in the administration of antitoxin. A good rule is in doubtful cases to err on the safe side, and give antitoxin at once, without waiting for the results of a bacteriological examination or for the disease to develop.

It seems to be that if the Public Health authorities throughout the country followed the example of the Wimbledon Corporation in the provision of "observation wards," and an available supply of antitoxin with syringe, &c., there might soon be an appreciable decrease in the mortality of diphtheria.

I am, Sir, yours faithfully,

Wimbledon, May 23rd, 1921. S. R. COLLIER.

DIGITALIS AND THE PERIPHERAL CIRCULATION.

To the Editor of THE LANCET.

SIR,—I would ask Dr. I. Harris, whose paper appeared in your issue of May 21st, how he thinks it possible to obtain an increased volume of flow per unit of time through the arterial system without either dilatation, at least, of the capillaries or rise of the blood pressure. For purposes of argument let us take Cases 1, 6, and 7 in his Table I., where, after the administration of digitalis, there is recorded an *increase of pulse pressure, but no rise in pulse-rate.* Let us also presume with Dr. Harris that an increase in pulse pressure connotes an increased cardiac output. Is it possible that the increased output recorded in line three, Case 1, passes through the arterial system per time unit, whilst both the systolic and diastolic pressures are markedly lowered, unless at least the capillaries are dilated? In Case 6 the second observation shows no rise in pulse, but an increased cardiac output; the diastolic pressure is negligibly lessened, and there is an appreciable rise in the systolic. Is not the explanation of this rise that capillary dilatation has either not occurred at all or at least not sufficient to allow, without increased intra-arterial pressure, the passage of a greater volume of blood in the same time unit? Finally, Case 7 shows, in the second observation, no rise in pulse-rate or systolic pressure, but an increase of cardiac output and a fall of diastolic pressure. It would again seem necessary to recognise that this combination suggests that digitalis is responsible for at least capillary dilatation to allow, at what is a slightly lowered pressure, the passage in the same time unit of an increased blood volume.

In other words, I contend that these cases bear out, inasmuch as conclusion is legitimate from them, what is a law of physics—namely, that an increased flow per unit of time through the arterial system can be obtained only either by increase of the lumina or rise of the intra-arterial pressure, and that, therefore, they render improbable the basis upon which Dr. Harris builds his conception of the pharmacology of digitalis.—I am, Sir, yours faithfully,

W. J. GRANT, M.D.

Fordoun, Kincardineshire, May 21st, 1921.

THE VALUE OF SANATORIUM TREATMENT.

To the Editor of THE LANCET.

SIR,—The review in THE LANCET of May 21st of the twenty-fourth annual report of the Loomis Sanatorium, New York, deals a much needed blow at the pessimism which has been so prevalent lately in this country with regard to the results of sanatorium treatment for pulmonary tuberculosis. I have recently read an article by a tuberculosis officer in which he arrives at the astonishing conclusion that cases do better in their own homes than in a sanatorium. This may be true in the case of some industrial sanatoriums, judging from certain letters I have received from patients who have had the misfortune to be "treated" in such institutions; but where a sanatorium is so conducted that each individual case is treated on its merits, there can be no question of the benefit of sanatorium treatment, as shown by the results at the Loomis Sanatorium. This cannot be done without sufficient staff and proper equipment, and I am very glad that you have called attention to the inadequacy of both in the public sanatoriums of this country. An X ray installation is a necessity for the proper investigation and treatment of pulmonary tuberculosis, more especially for the control of treatment by artificial pneumothorax, and no sanatorium can be said to be functioning properly if this method of treatment is not utilised in a proportion of cases. It is gratifying to find that dental treatment is considered so important at the Loomis Sanatorium; I have long held a similar opinion, but, further, I think that sufficient attention has not been paid to the hygiene of the upper air-passages. I have seen remarkably beneficial results following, for example, operation for drainage of septic nasal conditions. Another point commented upon in the review, and with which I heartily agree, is that the short length of stay which is the rule in industrial sanatoriums in this country probably accounts to a large extent for the unfavourable results published. Sanatorium treatment properly conducted still holds the premier place in the treatment of tuberculosis, and excellent results can be obtained in the majority of early cases and in a proportion of advanced cases.

I am, Sir, yours faithfully,
J. M. JOHNSTON, M.B., D.P.H.
Tor-na-Dee Sanatorium, Murtle, Aberdeenshire,
May 26th, 1921.

WARMING ETHER VAPOUR FOR INHALATION.

To the Editor of THE LANCET.

SIR,—Dr. K. B. Pinson drew attention last week to the danger of heating ether-laden air by an electric incandescent lamp, and in connexion with this has referred to an intratracheal ether apparatus described by men in your issue of April 2nd. While designing this apparatus I had in mind the accident described by Dr. W. J. McCardie, and have done everything possible to eliminate the risk of such an occurrence. The apparatus when properly connected is vapour-tight, the only place from which the vapour can escape, with the exception of the tube leading to the patient, is through the mercury safety valve, which is adjustable. A manometer is attached to the apparatus. By means of this the pressure at which the vapour is being delivered can easily be seen; the safety valve is therefore only a means of rendering it impossible to raise the pressure above the desired maximum.

In practice one finds that it is quite unnecessary to cause the safety valve to blow off. Furthermore, the length of rubber tubing that I advocate for use between the apparatus and the patient is at least six feet, therefore it is possible to have the apparatus a considerable distance from the patient. I have proved, by putting a thermometer in the current of vapour issuing from this tube, that by adjusting the heater it is possible to maintain a vapour at any desirable constant temperature. In my opinion it is practically impossible for any fire or explosion to take place even if the connexions are faulty.

Dr. Pinson's suggestion of warming the vapour by passing it through a length of rubber tubing placed on the patient's chest would, I think, greatly add to the risk of getting the tube pinched, and, in a number of cases for which intratracheal anæsthesia is used, the tube would impede the surgeon's work.

I am, Sir, yours faithfully,
A. W. MATTHEW,
Anæsthetist to St. Mary's Hospital, &c.
London, W., May 30th, 1921.

THE INTERNECINE VENEREAL CAMPAIGN.

To the Editor of THE LANCET.

SIR,—A writer in your columns (May 21st), signing himself "Morphologist," criticises a recent article of mine in the *Morning Post*, and appears to challenge my right as a layman to express any opinion on current controversies with regard to venereal disease. I have the greatest respect for the opinion of competent experts on subjects exclusively covered by expert knowledge. But the controversial issues with regard to venereal disease are not matters for expert pronouncement. They depend on ethical quite as much as on medical considerations. Indeed, the only medical issue that arises is whether treatment before connexion is more likely to prevent infection than treatment several hours after infection. On this point your correspondent, who says that his name proves that he ought to know his subject, is silent. He confines his argument to points on which his expert knowledge gives him no right to claim papal infallibility.

The issue between the two societies, the S.P.V.D. and the N.C.C.V.D., is very simple. Both accept the fairly obvious proposition that—to quote your correspondent's words—the "*fundamental* cause of venereal disease is the indulgence in promiscuous sexual intercourse"; both appeal to everybody to refrain from this indulgence; but both recognise that some people will not refrain. Up to this point the two societies have identically the same policy; the divergence then arises. To those men who will not refrain, the S.P.V.D. says: "Take certain precautions in advance"; the N.C.C.V.D. says: "Wait till you have had connexion and then report yourself as quickly as you conveniently can to some public institution where you will receive treatment at the public expense." Since your well-informed correspondent is silent on the relative medical merits of these two plans, I think I am entitled to assume that the former plan is more likely to prevent infection. That being so, I contend, as I argued in the *Morning Post*, that the Ministry of Health is not justified in spending public money in giving effect to the latter plan or in advertising the society that advocates that plan.

Ethically there is no distinction between the two courses. If it is ethically wrong to tell a man how he can help himself to sin in safety, it must also be ethically wrong to set up public institutions to give him a chance of escape after he has sinned. Possibly Dr. Addison and Sir Alfred Mond and the other theologians who direct the policy of the Ministry of Health may argue that their policy is less sinful because it provides less safety. But if they use that argument they confess themselves guilty of hypocrisy *in pretending that the purpose of the Ministry is the* promotion of the national health.

I am, Sir, yours faithfully,
Gray's Inn, May 24th, 1921. HAROLD COX.

To the Editor of THE LANCET.

SIR,—In his letter to you in THE LANCET of May 21st "Morphologist," attacking Mr. Harold Cox for his support of the movement for the medical prevention of venereal disease, betrays even more ignorance of the subject than that which he attributes to Mr. Cox. I adduce the following comments in justification of this proposition.

1. "Morphologist's" statement that the Society for the Prevention of Venereal Disease *recognises* the importance of the ethical factor is quite correct; but his further statement that Mr. Cox "fails as a critic" by not mentioning this fact is based on a misconception. The S.P.V.D., while recognising fully the obvious fact that venereal diseases would necessarily be reduced to a minimum, or nearly die out, if promiscuous sexual intercourse could be wholly *stayed* by *ethical or religious teaching, came into existence* solely because the Royal Commission on Venereal Disease, the National Council for Combating Venereal Diseases, and the Ministry of Health, which has all along supported the recommendations of these bodies, had completely ignored the element of immediate self-disinfection as an essential part of any practical measure for compassing a material reduction of venereal diseases. It is clear that Mr. Cox was aware of this fact, and was in no sense unfair to the S.P.V.D. by omitting to insist on the obvious.

2. "Morphologist" does not seem to know that venereal disease is strictly contagious, and can be directly prevented by personal disinfection; that disinfection is effectual in proportion to the quickness of its application; and that the N.C.C.V.D. advise the use of soap and water, which, being practically unportable, are therefore unavailable in the majority of cases. Neither does he seem to realise that, apart from soap and water, the N.C.C.'s recommendations are—moral injunctions, which have demonstrably failed as a means of prevention—and the treatment of those already infected, which never lessens the *incidence* of any disease. Yet surely even a "learned layman" ought to know that appropriate sanitation is the universally recognised method for diminishing the incidence of all diseases.

3. "M." seems not to know the facts (*a*) that both the Royal Commission on Venereal Disease and the N.C.C. ignored from the outset the discovery of Metchnikoff; (*b*) that by teaching the doctrine arising from this discovery the incidence of venereal disease was reduced in India and England to 1·5 from nearly 100, not by one medical officer, but by many; (*c*) that the War Office proposed to bring in this method (simply teaching) for the whole army; (*d*) that a member of the N.C.C. proposed "packets," which were provided.

But the men in our army were told that these packets were for "*early treatment*," and it is alleged that they obeyed this instruction. It is important to note here what "M." could scarcely be expected to know, that the fact of soldiers having used disinfectants as treatment for the disease was adduced before Lord Astor's Interdepartmental Committee as *evidence* that civilians who were taught to disinfect would use the disinfectants in a similarly erroneous manner. Further misrepresentations of the position and statements of the S.P.V.D. have been officially made and fully dealt with several times in many publications, including the book on "The Prevention of Venereal Disease," by Sir Archdall Reid. Lately the whole matter was investigated by the Birth-rate Commission, which made certain suggestions affording some possible ground for surcease of controversy between the two societies for antagonising venereal disease; but the N.C.C., who favoured the establishment of this inquiry, declined to proceed any further in this attempt.

Ought not your correspondent to have known something more about his subject before charging Mr. Cox with possibly "doing great damage to the nation" by his article in the *Morning Post*?

I am, Sir, yours faithfully,
H. BRYAN DONKIN.

May 26th, 1921.

A WIDER FIELD FOR CANCER RESEARCH.

To the Editor of THE LANCET.

SIR,—Do laboratory experiences and statistics derived from ready-made materials form too large a part of cancer research? If cancer comes from without, then the cause of breast cancer may be conveyed direct to the nipple by a contaminated hand. Can it be shown that in no case can this be so? If not, then what excuse is there for not finding out by asking 5000 women doctors and nurses to collaborate in a simple experiment? Would post-operative recurrence be less likely if a vegetarian diet were adopted, since vegetarian races are far less liable to cancer? An American physician, experimenting on a small scale, says "Yes." Experiments with a thousand cases with a like number of controls might settle this.

A case said to be one of Hodgkin's disease is alive after four years. He is doing the sun-cure. Would exposure to light and air influence metabolism in the direction of retarding recurrence in malignant disease? Naked or almost naked races are very little troubled with the disease. The homes of absolutely bedridden persons, and of children, who develop malignant disease, present environments which are unique. A group of expert bacteriologists, entomologists, and public health men might well be employed in examining the surroundings of all such cases. My experience is that this is not done, yet one factor might be discovered common to all. Compulsory disinfection of houses and clothes in one area, the covering and cleaning out of cisterns and covering of food in another, and perhaps an elaborate onslaught on vermin in a third, might be attempted. The Isle of Wight and Isle of Man might be used for such experiments. Is there any case at all for creating special conditions for statistical purposes—not necessarily those mentioned above? I think there is.

I am, Sir, yours faithfully,
PERCY GULLY.

Leysin, May 23rd, 1921.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, MAY 25TH.

Taxation and National Economy.

ON the motion for the Second Reading of the Finance Bill, Lord R. CECIL complained of the heavy burden of taxation imposed on income-tax and super-tax payers. Direct taxation on a small minority of the population was he said, the very worst form of indirect taxation. He was, satisfied that any system by which they tried to raise the whole of the revenue of the country from the present income-tax payers would be very disastrous. It was not in the least true that the people who were not taxed did not pay. They paid, but without in the least knowing it, and without any direct knowledge of the consequences involved in excessive taxation. All taxation was evil, and had a discouraging effect on industry. The only sound financial policy of the country at the present moment was economy. The Government apparently after prodigious efforts could succeed only in keeping taxation no higher than it was at the present time. That was a most disappointing result.

Sir R. HORNE (Chancellor of the Exchequer), replying to the debate, said he was afraid there was no opportunity for enthusiasm at the present time in matters of finance. It was a question of grinning and bearing the condition in which we were, and facing and confronting facts, rather than by lamenting and bemoaning. The present year was going to have a very testing effect upon the courage and stability and steadiness of our people. But he felt no pessimism whatever about the situation. He was sure that once we emerged from our present troubles the nation would settle down to work with a will which we had not known since the armistice, and he was equally certain that if we confronted the situation with courage we should conquer it by our perseverance and our industry.

The Second Reading of the Bill was carried by 213 votes to 16.

Round-table Liquor Conference.

Major KELLEY asked the Prime Minister the terms and personnel of the round-table conference on liquor restrictions and licensing reform.—Mr. CHAMBERLAIN replied: I hope to make a statement upon this matter in the course of next week.

THURSDAY, MAY 26TH.

A Case of Trench Feet.

Mr. GLANVILLE asked the Minister of Pensions whether he was aware that Frederick Dimmock, No. G. 531161, of the Royal Fusiliers, who is a miner and joined up in 1916, when he was passed A1, served in France till May, 1917, when he was sent home with trench feet to the hospital; that his toes were amputated on August 15th, 1919, and he had to return to hospital for an operation; that he was unable to walk owing to intense pain; that he has a wife and child and had no other means beyond his pension and the unemployment benefit which would shortly end; that the medical reference recommended 80 per cent. pension; and that this had since been reduced to 8*s.* 3*d.* per week, though he was quite unable to work for a living; what action he proposed to take in this case, and whether the man in question could come before a medical appeal board.—Mr. MACPHERSON replied: The disabilities in this case are disorderly action of the heart (attributable to service); hammer toes—not trench feet—and varicose veins (both aggravated by service). The little toe of one foot has been amputated. Aggravation of the hammer toes having passed away no pension for that disability can be awarded therefor. Disablement from the other disabilities was assessed at 30 per cent. by a Medical Appeal Board in July, 1920, and a pension of 12*s.* a week will be in payment until July 19th, 1921. Following that day the rate will be reduced to 8*s.* per week, a recent Survey Board, held with a view to renewal of the award, having assessed disablement at 20 per cent. There is a right of appeal through the Local War Pensions Committee to a Medical Appeal Board against the assessment of 20 per cent. and to the Pensions Appeal Tribunal against the decision that aggravation in the case of the hammer toes has passed away.

Grants for School Camps.

Mr. TREVELYAN THOMSON asked the President of the Board of Education whether he was aware that, notwithstanding the recommendation of the chief medical officer to the Board that school camps should be encouraged, local education authorities were seriously handicapped in making these arrangements by the rulings of the Board that attendance at lessons given at such camps cannot be reckoned on the school register of attendances if any charge was made to cover the cost of food or any other item of expenditure in connexion with these camps; and, if the Act of 1918 prohibited such charges, could he see his way to bring in an amending Bill to enable local authorities to organise school camps and make a charge to cover the cost of food, which would otherwise be provided by parents, and at the same time count the attendance at lessons given in these camps in the school register so as to qualify for grants.—Mr. Herbert Lewis (Parliamentary Secretary to the Board of Education) replied: My right honourable friend understands that the honourable Member is concerned with children who receive instruction elsewhere than at the school in accordance with arrangements approved under Article 44 of the Code, and not under Section 17 of the Education Act of 1918, though the conditions under which they receive such instruction are those of a camp. It appears to him that in such a case the local education authority are competent to exercise their powers under the provision of Meals Acts, 1906 and 1914. The power to make a charge under those Acts is expressly excepted by Section 26 of the Act of 1918 from the general prohibition of charges contained in that section.

Physical Education of Boys.

Colonel Sir Charles Yate asked the President of the Board of Education whether out of the 11 inspectors of physical education appointed by the Board of Education 8 were women; and, if so, what steps he proposed to take to place men in charge of the physical education of boys.—Mr. Herbert Lewis replied: Seven of the 11 inspectors of physical training are women. My right honourable friend does not see his way to increase the establishment by the appointment of additional men inspectors.

Grants for Clinical Units in Hospitals.

Mr. Hopkins asked the President of the Board of Education whether he would supply a return setting forth the allocation of the Exchequer grants for university colleges, recurrent and non-recurrent, for the last financial year; and how much of this grant was expended in financing new departures, such as the financing of the University of Cambridge and grants towards the salaries of heads of clinical units in hospitals.—Commander Hilton Young (Financial Secretary to the Treasury) replied: Returns from universities and colleges in receipt of Treasury grants for the academic year 1919–20 have already been presented to Parliament (Cmd. 1263), and they give the information referred to by the honourable Member so far as it is yet available. Similar returns will be presented annually.

Mr. Hopkins asked the President of the Board of Education what were the principles and regulations under which the University Grants Committee was to recommend the distribution of the Parliamentary grants recently approved by Parliament for the coming quinquennium; was it an implied condition in the allocation of financial aid to university colleges from the extra grant voted by Parliament that they should obtain equal financial assistance from local authorities, and was this principle also to be applied to grants made for the formation of clinical units in hospitals; had the principle of giving building grants to university colleges been authorised, and, if so, the principles on which such grants were to be made; and was it intended to supply Government funds to raise the salaries of the more important professors in university colleges to the same figure—namely, £2000 per annum, as had been fixed for the salaries of the professors who acted as the heads of the newly instituted clinical units in hospitals.—Commander Hilton Young replied: The general principles on which the University Grants Committee base their recommendations for the allocation of grants are set out in the Report of the Committee dated Feb. 3rd, 1921, and in the letter addressed by my right honourable friend to Sir William McCormick printed as an Appendix to the Report, which has already been presented to Parliament. As there stated, great importance is attached to the amount of support provided from local sources in calculating the grants payable to the different institutions, but except in the case of the University of Wales there is no undertaking by the Government to make grants on the basis of pound for pound in respect of rate aid. The Committee are authorised to recommend capital grants for sites, buildings and permanent equipment if the funds at their disposal allow, but no such recommendations have yet been made. The responsibility for fixing the salaries of the teaching staffs rests with the authorities of each institution.

Institutional Treatment of Tuberculosis.

Mr. Ronald M'Neill asked the Minister of Health whether regulations had recently been made with respect to the institutional and other treatment of tuberculosis by councils of counties and county boroughs; whether such regulations had to be laid before Parliament for confirmation, and, if so, when they would be laid; and whether, before they took effect, an opportunity would be afforded of discussing any regulation the effect of which would be to impose an additional charge on the ratepayers.—Sir A. Mond replied: The answer to the first part of the question is in the negative, and the second part does not therefore arise. The arrangements to be made by the councils of counties and county boroughs for the treatment of tuberculosis upon the termination of sanatorium benefit and the financial proposals in connexion therewith were fully explained in the course of the debates upon the Public Health (Tuberculosis) Act, 1921, and in the White Paper which was circulated explaining the provisions of the Act and the necessary Financial Resolution.

New Liquor Regulations.

Sir John Butcher asked the Under-Secretary of State for the Home Department, as representing the Central Liquor Control Board, whether he was now in a position to publish, in the form of a White Paper or otherwise, the modifications which had been recently made in the regulations of the Central Liquor Control Board.—Sir John Baird replied: Copies of the recent Orders issued by the Central Control Board (Liquor Traffic) which have been distributed throughout the country are now available for Members. I am circulating a printed copy of the statement published by the Board in explanation of these Orders.

The following is the statement:—

"The Central Control Board (Liquor Traffic) have made Orders dated April 25th and operating on Monday, 2nd May, applicable to all Scheduled Areas in England and Wales consolidating the existing Orders and amending them in the following particulars:—

1. The prohibition of the sale and supply of spirits for consumption off the premises on Saturday is removed, and such sale and supply during the midday period (12 to 2.30 P.M.) on that day is allowed.
2. The provision which fixes a reputed quart as the minimum quantity of spirits which may be sold for off consumption together with the requirement as to the labelling of bottles, is revoked.
3. The hours after 10 P.M. for which magistrates (or, in London, the Commissioner of Police) may grant an Order or licence in pursuance of Section 57 or Section 64 of the Licensing *(Consolidation)* Act, *1910*, are extended beyond the present limit of 11 P.M.
4. The extent to which spirits may be diluted without notice to the purchaser is limited to a strength falling between 30 degrees and 35 degrees under proof.
5. The sale of intoxicating liquor to authorised messes of officers or non-commissioned officers is exempted from the operation of the Order.
6. The requirement that copies of the Board's Orders must be exhibited in every club and in every public room in licensed premises is revoked, and a requirement that copies must be kept on the premises and produced on demand is substituted therefor.

These Orders were published in the *London Gazette* of April 26th, and corresponding Orders have been made for Scheduled Areas in Scotland.

The Government have now announced that no legislation of any kind upon the subject will be possible during the present session, and they have agreed that the relaxations contained in the Orders now published, which have been held over in the expectation that the whole matter was about to be dealt with by Parliament more comprehensively and authoritatively than could be done by the Board, should be made without further delay.

The Board will now proceed to consider what further modifications can properly be made in view of the Government's announcement."

Friday, May 27th.

The Washington Conventions.

Mr. G. Barnes called attention to the fact that the Government had not yet submitted to Parliament certain conventions adopted by the International Labour Conference at Washington, and moved: "That in the opinion of this House the conventions adopted at the International Labour Conference under the League of Nations should be submitted to Parliament as the competent authority." He said that of the three Government Departments concerned the Home Office had given effect to certain of the Washington Conventions by the Act relating to the employment of women and children, and by Departmental Orders; but neither the Ministry of Labour nor the Ministry of Health had given effect to the Labour Chapter. They had failed to deal with the Eight Hours' Convention and the ex-Minister of Health had stated in that House that the Government had decided not to ratify the maternity convention, thereby indicating that the Government assumed to be a law unto themselves. Though the Government were not under an obligation to ratify the maternity convention, they were under an obligation to allow Parliament to have a look at it. If the attitude of the Government was correctly voiced by the ex-Minister of Health it meant knocking the bottom out of the Labour organisation, which would become a mere cipher in the hands of Governments. The success of the International Labour Organisation depended on results, and if there were no results the failure would delight the hearts of the Bolshevists in this country and elsewhere. It was not only unwise, but it was unfair to those who had helped to build up this labour organisation in the hope of contributing to goodwill, lessening waste from stoppages of work, and improving conditions in the poorer countries.

Dr. MACNAMARA (Minister of Labour) moved to leave out *all the words after "That," and add "in the opinion of* this House it is not expedient in existing circumstances to proceed with legislation to give effect to the Washington Convention on Hours of Labour." He said that the Government had no desire to evade their pledges in relation to the conventions. *To do so would be to fall below the* reputation of this country in such matters. The real fact was that as regards most of the conventions we had already a first-class record, and one far in advance of that of any other country. The position of the Government in proposing the amendment was that the great bulk of the proposals had already been translated into definite action and were in effective operation throughout the country.

Viscountess ASTOR said that she thought that the conscience of the country was more awake than that of the Government on the subject of maternity benefit. Before the maternity convention was turned down entirely she suggested that a committee representing women's societies should be called together in order to see what they could get out of the Washington Convention. so that it might be attached to the existing insurance scheme.

Sir M. BARLOW (Parliamentary Secretary to the Ministry of Labour) said it was not the intention of the Government to drop the Hours Bill altogether. Had the Washington Convention been drawn with a little more latitude and elasticity it would have been more easy to apply its provisions. The Cabinet had recently set up a strong Departmental Committee presided over by himself with the desire of getting all international labour matters dealt with expeditiously, and with a view of coördinating the work. With regard to the maternity convention the last word had not yet been said as to the need for further provisions for dealing with the burden of women in industry, and the appeal of Lady Astor would certainly be considered. The *Government and the* Ministry of Labour desired to work in the most cordial and close coöperation with the International Labour Office of the League of Nations.

On a division the Government amendment was carried by 100 votes to 69.

MONDAY, MAY 30TH.

Medical Officers at Pensions Ministry.

Lieutenant-Colonel CROFT asked the Minister of Pensions whether certain doctors employed by the Ministry of Pensions had had a four years' service contract given to them.—Mr. MACPHERSON replied: The answer is *in* the affirmative. With the approval of the Treasury and after consultation with my right honourable friend, the Minister of Health, a number of full-time salaried medical officers, whose employment had previously been subject to one month's notice, have been given a four years' *contract*, terminating on March 31st, 1925.

Lieutenant-Colonel CROFT asked the Minister of Pensions whether he would give an undertaking that the services of those doctors at present employed under the Ministry of Pensions who sacrificed their practices to *join the Army* and Navy at the outbreak of war and were on active service and were now dependent solely on their salaries would be retained at the Pensions Ministry in preference to those who were already drawing big pensions in addition to their salaries and those who were being kept *on* who had never served abroad.—Mr. MACPHERSON replied: Practically the whole of the full-time medical officers of the Ministry served during the late war and, other things being equal, preference for retention will continue to be given to medical officers who saw active service over medical officers in the same class who did not so serve.

TUESDAY, MAY 31ST.

Bonus to Tuberculous Trainees.

Mr. ALFRED DAVIES asked the Minister of Pensions whether any definite decision or ruling had yet been given to war pensions committees with regard to the payment of bonus to trainees who had undergone a course of training on the termination of sanatorium treatment for tuberculosis. Mr. MACPHERSON *replied: Instructions* will be given to the regional offices as soon as the necessary arrangements have been made with the Ministries of Health and Labour.

NEXT Wednesday, June 8th, the Prince of Wales will lay the foundation-stone of the new Institute of Preventive Medicine at Cardiff.

Medical News.

UNIVERSITY OF LONDON.—Dr. R. R. Gates, Ph.D. (Chicago), has been appointed to the University Chair of Botany tenable at King's College, and Mr. D. M. S. Watson, M.Sc. (Manchester), to the Jodrell Chair of Zoology and Comparative Anatomy tenable at University College. Mr. H. G. Jackson, M.Sc. (Liverpool), has been appointed to the University Readership in Zoology tenable at Birkbeck College, and Dr. William Wilson, Ph.D. (Leipzig), D.Sc. (London), to the University Chair of Physics tenable at Bedford College.

At examinations held recently the following candidates were successful:—

THIRD (M.B., B.S.) EXAMINATION FOR MEDICAL DEGREES.

Girdhar C. Agarwala, London Hosp.; Doris Elizabeth Alcock, London Sch. of Med. for Women; Christopher H. Andrewes (honours, distinguished in medicine, forensic medicine, and surgery, University medal), St. Bart.'s Hosp.; Wilfred M. Anthony, St. Thomas's Hosp.; James R. Banks, Univ. Coll. Hosp.; Mary Rushton Barkas, St. Mary's Hosp.; Frank M. Barnes, St. Thomas's Hosp.; Henry E. Beasley, Univ. Coll. Hosp.; Ursula Pousett Blackwell, London Sch. of Med. for Women; Harold J. Blampied, St. Thomas's Hosp.; John Brodie and Philip C. P. Cloake, London Hosp.; Florence R. Clulow (honours, distinguished in pathology) and Eric V. Corry, Univ. Coll. Hosp.; Elsie E. Cowperthwaite, St. Mary's Hosp. and London Sch. of Med. for Women; Llywelyn ap Ivan *Davies, Univ. Coll. Hosp.*; Archibald G. Duncan, London Hosp.; Edith M. Evans, St. Mary's Hosp. and London Sch. of Med. for Women; Ada M. Freeman, King's Coll. Hosp.; Isaac Frost, St. Bart.'s Hosp.; Madeline Giles, St. Mary's Hosp.; Henry A. Harris (honours, distinguished in forensic medicine), Univ. Coll. Hosp.; Frank Heber, London Hosp.; James G. Jones, *Guy's Hosp.*; *Dorothy* M. Kemp, London Sch. of Med. for Women; M. Kathleen Forsaith Lander, St. Mary's Hosp.; Eugene H. L. Leclezio, Guy's Hosp.; Reginald C. B. Ledlie (honours, distinguished in surgery), Guy's Hosp.; Harold W. Lewis, Middlesex Hosp.; Rhys T. Lewis, Univ. Coll. Hosp.; Margaret Longbottom, London Sch. of Med. for Women; Edward R. Lovell, Middlesex Hosp.; Gerald J. W. McMichael, Univ. Coll. Hosp.; Henrietta A. C. Main, St. Mary's Hosp.; Arthur G. Maitland-Jones (honours, distinguished in medicine), London Hosp.; Claude H. Marshall, Guy's Hosp.; Adeline M. Matland, London Sch. of Med. for Women; Kathleen H. Matthews, St. Mary's Hosp. and London Sch. of Med. for Women; Victor E. Negus, (honours, distinguished in forensic medicine), King's Coll. Hosp.; Sybil M. Nuttall, St. Mary's Hosp.; Sybil G. Overton, St. Mary's Hosp. and *London* Sch. of Med. for Women; Robert H. Parry, Middlesex Hosp.; Phœbe M. Phillips and Alice D. Pocock, London Sch. of Med. for Women; William R. Rowlands, Liverpool Univ.; Gordon W. R. Rudkin, Univ. Coll. Hosp.; Herbert L. Sackett, St. Bart.'s Hosp.; Ahmad; Shafeek, St. Thomas's Hosp. and Kasr El-Ainy Hosp.; *Bryan B. Sharp*, St. Bart.'s Hosp.; Katherine J. Shaw, London Sch. of Med. for Women; Philip Steinberg, (honours, distinction in medicine), London Hosp.; Lionel F. Strugnell, St. Bart.'s Hosp.; Richard N. L. Symes, St. Thomas's Hosp.; Raghunath Sabaji Tirodkar, Univ. Coll. Hosp. and Grant Med. Coll., Bombay; Norah E. Trouton, St. Mary's Hosp.; Arthur E. Ward and Sydney A. T. Ware, St. Thomas's Hosp.; Robert W. Warrick, Guy's Hosp.; Frederick W. A. Watt, London Hosp.; Agnes E. Westwood, St. Mary's Hospital; Idwal Glynne Williams and William P. Wippell, St. Bart.'s Hosp.; and Wilfrid C. S. Wood, King's Coll. Hosp.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—E. D. Fenwick (Sects. I. and II.), St. Mary's Hosp.; H. L. Sheehan (Sect. I.), Manchester; and J. Solomonoff (Sects. I. and II.), London Hosp.

Medicine.—F. E. Edwards (Sect. II.), Manchester; M. A. K. El Hennawy (Sects. I. and II.), and E. D. Fenwick (Sects. I. and II.) St. Mary's Hosp.; O. E. Finch (Sects. I. and II.), Toronto; A. Mishriky (Sect. I.), St. Mary's Hosp.; and H. L. Sheehan (Sect. I.), Manchester.

Forensic Medicine.—F. E. Edwards, Manchester; M. A. K. El Hennawy and E. D. Fenwick, St. Mary's Hosp.; O. E. Finch, Toronto; H. L. Sheehan, Manchester; M. Tcherny, Zurich; and R. E. Williams, Guy's Hosp.

Midwifery.—M. A. K. El Hennawy and E. D. Fenwick, *St. Mary's Hosp.*; M. Fox, Charing Cross Hosp.; A. Senn, London Hosp.; and H. L. Sheehan, Manchester.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: E. D. Fenwick and J. Solomonoff.

VISIT OF MEDICAL MEN TO AIX-LES-BAINS AND THE SWISS SPAS.—At the invitation of the managers and with the coöperation of the French and Swiss railways, two parties of medical men from this country are visiting Aix-les-Bains and a number of Swiss spas. The itinerary includes *Chamonix*, Montana, Leuk, Ragaz and Tarasp. The first party of 20 leaves on June 25th under the personal guidance of Sir Henry Lunn.

Royal College of Surgeons of England.—An ordinary meeting of the Council was held on May 12th, Sir Anthony Bowlby, the President, in the chair.—The President presented Mr. Harold Burrows, C.B.E., with the Jacksonian prize, Dr. James Sim Wallace with the John Tomes prize, Mr. W. Kelsey Fry with the Cartwright medal and prize, and Mr. Kenneth Parsons with the certificate of his appointment as Begley student.—A report was read from the Court of Examiners respecting candidates found qualified for the Diploma of Member of the College, and diplomas were awarded to 103 candidates mentioned in the report.—A report was read from the Secretary to the Conjoint Examining Board respecting candidates found qualified for the Diploma in Public Health of the Royal College of Physicians of London and the Royal College of Surgeons of England, and diplomas were granted jointly with the Royal College of Physicians to 23 candidates mentioned in the report.—A report was read from the Secretary to the Conjoint Board respecting candidates found qualified for the Diploma in Tropical Medicine and Hygiene of the two Colleges, and diplomas were granted to 21 candidates mentioned in the report.—It was resolved to inform the British Dental Association that the Council were not prepared to institute a Diploma in Public Dentistry at the present time.—A report from the Committee of Management was read announcing that Sir Charles Ballance, the visitor appointed by the Royal Colleges to inspect the examinations of the Egyptian Medical School and Hospital, Cairo, had sent a full and interesting report on the examinations and teaching of the Medical School and Hospital, and that they (the Committee) were of the opinion that the examinations and course of education justified the Royal Colleges in continuing their recognition of the School. It was resolved that the best thanks of the Council be given to Sir Charles Ballance for his services. —The President reported that he had placed the lecture theatre of the College at the disposal of the University of London for a course of four lectures by Prof. Edward Mellanby, of the University of Sheffield, on "Some Actions of Foodstuffs in the Production and Treatment of Disease," to be delivered on June 6th, 7th, 13th, and 14th.—The President reported that the *terms of office* of Mr. R. Lawford Knaggs and Mr. J. Hutchinson as members of the Court of Examiners would expire on June 8th next, and that the vacancies thus occasioned would be filled up at the ordinary Council on June 8th.—Sir Squire Sprigge was introduced, and admitted a Fellow of the College.

Epsom College.—The annual general meeting of the governors of this medical foundation will be held at 49, Bedford-square, London, W.C., on Friday, June 24th, at 1 P.M., when the result of the voting for pensioners and foundation scholars will be announced.

Society for the Prevention of Venereal Disease.—The second annual *general meeting* of this society will be held at 5.30 P.M. on Monday, June 6th, at the Barnes Hall, 1, Wimpole-street, London, W., kindly lent by the Royal Society of Medicine.

Tuberculosis Society.—A general meeting of this Society will be held at the Margaret-street Hospital, Margaret-street, Oxford-street, London, W.1, on June 6th, at 7.30 P.M., when the President, Dr. Nathan Raw, will read a paper.

University College Hospital.—The Ladies' Association will hold a sale on Wednesday, June 8th, from 11.30 A.M. to 7 P.M., at Someries House, Regent's Park, London, N.W.1. Princess Helena Victoria will open the sale, at which special features will be an antique stall and a second-hand book-stall.

Exhibition of X Ray Photographs.—At the Royal Photographic Society's exhibition, opened this week at 35, Russell-square, London, W.C., there is an important section of X ray photographs under the auspices of the Rontgen Society. Comprising upwards of 250 prints, it includes a number of examples from French workers, sent over by special æroplane. In the competition for prizes offered by Dr. R. Knox, president of the Rontgen Society, first prize was awarded to Mr. Suggars, of the London Hospital, and the second to Mr. A. O. Forder, of King's College Hospital. The exhibition *remains* open during June, from 11 A.M. to 5 P.M.

Donations and Bequests.—The Trustees of Smith's Charity have contributed £500 to the Royal Waterloo Hospital.—The residue of the estate of the late Mrs. Sarah J. Fellowes, amounting to some £5000, will be divided equally between St. Dunstan's Hostel for *Blinded* Soldiers and the Church Army.—The executors of the late Frank Rigby, of Abbots Heyes, Chester, have allocated to the Chester Royal Infirmary £10,000. This gift will be used for the endowment of a ward in memory of Mr. Rigby's nephew, who was killed in Palestine.

The National Medical Union.—During the afternoon of Saturday, May 28th, the eighth annual general meeting of the National Medical Union was held at 11, Chandos-street, Cavendish-square. The main subject for discussion was the creation of a body really representative of the medical profession, and having an influence on its destinies commensurate with that representation. The object of their meeting, as stated by Dr. Blackhall-Morison in an introductory address, was to devise means whereby medicine might regain control of its own development and activities. He pointed out that the preservation of the traditional esprit de corps of the profession was greatly to the benefit of the public; its ethic should be consistently taught together with the theory and practice of medicine. The physician is neither judge nor policeman, and should never be used as such by the *administrators* of justice in the case of those whom he has attended professionally. The sanctity of the Hippocratic oath should know no exception; it would not hinder the assistance which the medical man can give in the detection and punishment of crime in which his technical knowledge is of service. The growth of knowledge of prevention and of epidemiology had resulted, he said, in the rise of a medical civil service dealing with public medicine. In certain conditions medical men had to be regarded in the aggregate, as in the naval, military, and Poor-law services: members of these services, together with public health officers, would wisely be represented in a central body representative of the entire profession. In such a body the Colonial profession should be represented; the whole would constitute an Imperial Medical Council, a term implying local councils, coördinated with an Imperial centre but absolute in their own spheres. In such an arrangement would lie the germ of an international medical power beneficial to the whole of mankind. The General Medical Council, as at present constituted, could in no sense be regarded as representative of the entire profession; each directly represented member represents between seven and eight thousand members of that profession. The bodies chiefly constituting the Council had maintained an absolute passivity in recent important legislation affecting the profession. *To this anomalous situation* the National Medical Union must now address itself, in order to establish such a body as the Government, speaking through the Minister of Health, has stated its desire to negotiate with matters of professional interest. Outside the General Medical Council several other bodies regard themselves as generally representative of the profession, but their claims are not admissible; in the General Medical Council itself, the Medical Union contends, there lies the germ of an adequate professional organisation. With the nominated element as it now exists no fault can be found; but for adequate representation 500 members of the profession should be regarded as a unit, resulting in a Government *or Parliament of medicine containing 100 members*—31 nominated as at present, and the remainder representative; direct representation would then give London 14 members, Provincial England 33, Wales 2, Scotland 8, Ireland 6; the Services might be represented by 3 members, and the Colonies by 6. There would be no great difficulty in the financing of such a body or in establishing its relationship to the Government.

In the evening the Annual Dinner of the General Medical Union was held at the Café Monico, Piccadilly Circus; the chair was occupied by Dr. Blackhall-Morison. After the loyal toast had been drunk the toast of the National Medical Union was proposed by Professor William Russell, *President of the Union*, who *defined the causes for which* the Union stood as those of freedom of the medical profession from State interference in its affairs, and freedom of the public in their relations with medical men. No doubt, he said, the State had certain medical duties to perform, but the Medical Union held that it exceeded those duties when the National Insurance Act was introduced. State interference had had a disastrous effect on the profession and on its high ideals; the sense of individual responsibility for individual patients was being destroyed in the medical man, and with it the self-help and independence which had been the glory of the working class of this country. Dr. Blackhall-Morison, responding, described the medical profession as the least organised *portion of mankind*; he regretted its apathy in the matter of professional interests and also the ingorance which held many medical men back from what they considered to be political matters. Dr. V. T. Greenyer, who proposed the health of the Scottish Medical Guild, briefly described the origins of the Guild, of the London Medical Committee, and of the National *Medical Union*, which bodies had come into being to combat the State socialism rampart during the war and afterwards. He referred to the recent circularisation of the medical profession in Scotland by the Medical Guild on the subject of the Interim Report of the Consultative Council to the Ministry of Health, which had shown the majority of that portion of the profession to disapprove both of the extension of national insurance and of the terms of the Interim Report.

NORTH OF ENGLAND TUBERCULOSIS SOCIETY: POST-GRADUATE COURSE.—A small party attended the course recently held in Paris under the auspices of the Society. The visitors were impressed with the work being done at Berck-Plage for crippled children and the arrangements for treatment of pulmonary cases at Bligny sanatorium, and especially with the thoroughness in diagnostic methods and treatment of Dr. E. Rist at the Laennec Hospital, where artificial pneumothorax is practised. The members were *hospitably welcomed at the various institutions* visited, and appreciated the courtesy and helpfulness of Dr. Rist and his colleagues Dr. E. Sorrel, of Berck-Plage, Dr. Guinard, of Bligny, Dr. Besredka, of the Pasteur Institute, and Dr. Williams and Dr. Soper, of the Rockefeller Commission in France.

PAYING PATIENTS IN THE BRISTOL VOLUNTARY HOSPITALS.—The two principal voluntary hospitals of Bristol, the Royal Infirmary and the General Hospital, have simultaneously decided upon the collection of payments from patients; a guinea per week from in-patients, and a small fee at registration and on subsequent visits from out-patients. Each institution will appoint an almoner, and it is to be clearly explained to all patients that their contributions are towards the cost of maintenance and in no sense *payment for the services of* the honorary staff. The proposals are frankly experimental, and designed to meet the present financial emergency. The Royal Infirmary, it may be added, has recently received from its President, Mr. H. H. Wills, a present of securities sufficient to bring in about £5000 per annum.

ANTI-VIVISECTION HOSPITAL (BATTERSEA GENERAL HOSPITAL, INC.).—Lord Tenterden, who presided at the annual court of governors of the hospital on May 26th, said that it was highly satisfactory that during the past 11 years this hospital—so far as he knew, the only hospital of its kind in the world—could show an excess of income over expenditure. Nevertheless, the board would have to consider the *necessity of closing* down some of the wards unless a more assured annual income was forthcoming. The number of out-patient attendances in 1920 was 11,557, 6000 more than the year before. Mr. Steward, representing the Hospital Saturday Fund, said that when he visited that beautiful hospital the patients told him they could not be more kindly or efficiently treated, and he could only say that *it was worthy of* whole-hearted support. The retiring members of the board were *re-elected.*

NEW ASSOCIATION OF SCOTTISH WOMEN'S HOSPITAL UNITS.—A meeting was held on May 30th *in the building* of the Gynæcological and Obstetric Unit of the Royal Free Hospital of past *members and* friends of this unit, to discuss the formation of an association to endow or maintain beds in the unit, of which Professor Louisa McIlroy is the director. A resolution in favour of such an association was passed unanimously, and a committee was formed. Lady Selborne presided, and among the speakers were Mrs. Russell, M.D., Miss F. Ivens, M.S., and Sir Courtauld Thomson, who paid a *tribute to the excellent* work done by the hospital units under Professor McIlroy in Salonica and in *Constantinople*, and congratulated the Royal Free Hospital on having secured her services. The cost of maintenance of each bed is £200 a year. Donations and subscriptions should be sent to Miss Dorothy Willis at *the* Royal Free Hospital, Gray's Inn-road, W.C.1.

LONDON SCHOOL OF TROPICAL MEDICINE.—A prize has just been instituted at this school in memory of the late Dr. W. H. Langley, C.M.G., Principal Medical *Officer* of Southern Nigeria. Dr. Langley died in the year 1912, and the fund was raised principally *on the coast.* The war intervened and all the papers, subscription lists, &c., *went down in the s.s. Umgeni*, when Dr. Lynch Burgess, of the West African Medical Service, who was treasurer, lost his life. Dr. Thomas Hood, C.M.G., and Major Gerald Bell, two of those originally connected with *the movement*, have made arrangements for setting up the memorial in connexion with the school. *The prize (about* £30) is to be awarded triennially and is open to competition among *officers of the West African* Medical Staff, whether on the active or retired list. The award will be made in respect of the best paper written on one of the following subjects: (*a*) Tropical Medicine or Surgery; (*b*) Tropical Hygiene and Sanitation; (c) Tropical Entomology and Parasitology. The first award will be made *in the* year 1921. Papers should be delivered to the Secretary, Seamen's Hospital *Society, Greenwich, London*, S.E., on or before Oct. 1st, 1921.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.
THURSDAY, June 9th.—*Papers:—Prof. C. S. Sherrington*: Break-shock Reflexes and "Supramaximal" Contraction-response of Mammalian Nerve-muscle to Single-shock Stimuli. Mr. R. J. Ludford and Mr. J. B. Gatenby: Dicytokinesis in Germ Cells, or the Distribution of the Golgi Apparatus during Cell Division (communicated by Prof. J. P. Hill). Dr. F. W. Edridge-Green: The Effect of Red Fatigue on the White Equation (*communicated by Prof.* W. M. Bayliss). Mr. E. Ponder: A Method for investigating the Hæmolytic Activity of Chemical Substances (communicated by Sir E. Sharpey Schafer). Mr. W. H. Pearsall: The Development of Vegetation in the English Lakes, considered in Relation to the General Evolution of Glacial Lakes and Rock Basins (communicated by Mr. A. G. Tansley).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.
THURSDAY, June 9th.—5 P.M., Croonian Lecture:—Dr. F. L. Golla: The Objective Study of Neurosis.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, June 6th.—12.15 P.M., Dr. Burnford: Pathological Demonstration. 2 P.M., Dr. S. Pinchin: Medical Out-patients. Dr. Morton: X Ray Department. 2.30 P.M., Mr. Baldwin: Demonstration of Cases, Surgical Wards. 5 P.M., Lecture:—Dr. A. Saunders: Gastric Disorders in Adults.
TUESDAY.—10 A.M., Mr. *Steadman*: Dental Department. 11 A.M., Dr. McDougal: Electrical Department. 12 noon, Mr. T. Gray: Demonstration of Fractures. 2.30 P.M., Dr. Pritchard: Demonstration of Cases, Medical Wards. 5 P.M., Clinical Lecture:—Mr. Banks Davis: Throat, Nose, and Ear.
WEDNESDAY.—11 A.M., Mr. MacDonald: Demonstration of Cystoscopy. 12 noon, Mr. Sinclair: Surgical Diseases *of the Abdomen.* 2 P.M., Mr. D. Armour: Visit to Surgical Wards. Mr. Gibb: Eye Department. Dr. Owen: Medical Out-patients. 5 P.M., Lecture:—Dr. Morton: Carbon *Dioxide Snow.*
THURSDAY.—10.30 A.M., Dr. Simson: Gynæcological Demonstration. 12 noon, Dr. S. Pinchin: Diseases of the Heart. 2 P.M., Mr. Bishop Harman: Eye Department. Mr. Baldwin: Orthopædic Department. 5 P.M., *Special Lecture*:—Dr. A. Eichholz: Extraordinary Children—their Treatment and Management (open to all Medical Practitioners).
FRIDAY.—10 A.M., Dr. *G. Stewart*: Neurological Demonstration. Mr. D. Buxton: Dental Department. 2 P.M., Dr. Burnford: Medical Out-patients. Mr. T. Gray: Surgical Out-patients. *Dr. Pernet*: Skin Department. 5 P.M., Lecture:—Mr. MacDonald: *Retention of* Urine.
SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 2 P.M., Mr. Sinclair: Surgical Out-patients.
Daily:—10 A.M., *Visit of* Post-graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, W.C. 1.
MEDICAL SCHOOL.
MONDAY, June 6th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Lecture:—Dr. *Russell* Reynolds: X Ray Demonstration of Spinal Cases.
TUESDAY, June *7th*.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Mr. Armour: Surgical Treatment of Spinal Cord Tumours (I.).
THURSDAY, June 9th.—2 P.M., *Out-patient* Clinic: Dr. Farquhar Buzzard. 3.30 P.M., Lecture:—Dr. Kinnier Wilson: Tumours of Spinal Cord (II.).
FRIDAY, June 10th.—2 P.M., Out-patient *Clinic*: Dr. Gordon Holmes. 3.30 P.M., Lecture:—Mr. Sargent: Surgical Treatment of Exophthalmic Goitre.
NEUROLOGICAL OPHTHALMOLOGY.
WEDNESDAY, June 8th.—3.30 P.M., Mr. Leslie Paton: Optic Atrophy.
Fee for Post-Graduate Course £7 7*s*.
C. M. HINDS HOWELL, Dean.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON), Turner-street, Mile End, E.
Courses of Lectures:—
A Course of Fourteen Lectures on Psycho-Neuroses, to be given by Dr. M. Culpin in the Clinical Theatre of the Hospital. Open to *Students of* the Hospital and to Members of the Profession.
TUESDAY, June 7th.—5.15 P.M., Lecture X.: Diagnosis.
FRIDAY.—5.15 P.M., Lecture XI.: *Treatment.*
Advanced Lectures in Physiology, to Students of the University and to others *interested* in the subject.
A Course of Eight Lectures on Reception of Sensory Stimuli, to be given by Prof. H. E. Roaf in the Physiology Theatre.
THURSDAY, June 9th.—4.30 P.M., Lecture V.
SURGICAL UNIT.—A Special Course of Ten Lectures on Advanced Surgery in the Unit Theatre to Post-graduates and Senior Students.

TUESDAY, June 7th, and THURSDAY.—4.15 P.M., Mr. R. Howard: Diseases of the Breast.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND, at the Maudsley Hospital, Denmark-hill, S.E.

TUESDAY, June 7th.—4.30 P.M., Maudsley Lecture: Sir Frederick Mott.

UNIVERSITY OF LONDON.

Advanced Lectures to Students of the University and to others interested in the subject.

A Course of Three Lectures in Embryology on Recent Advances in Experimental Embryology, to be given by Prof. E. W. MacBride at the Imperial College, Royal College of Science, Exhibition-road, S.W.

TUESDAY, June 7th, WEDNESDAY and THURSDAY.—5 P.M., Lectures I., II., and III.

A Lecture in Medicine on Permeability in Physiology and Pathology, to be given by Prof. H. J. Hamburger at the Rooms of the Royal Society of Medicine, 1, Wimpole-street, W.

WEDNESDAY, June 8th.—5 P.M.

A Course of Four Lectures in Pharmacology, on Some Actions of Foodstuffs in the Production and Treatment of Disease, to be given by Prof. E. Mellanby at the Royal College of Surgeons, Lincoln's Inn-fields, W.C.

MONDAY, June 6th, and TUESDAY.—5 P.M., Lectures I. and II.

ST. BARTHOLOMEW'S HOSPITAL (UNIVERSITY OF LONDON), West Smithfield, E.C.

A Course of Eight Advanced Lectures in Physiology, to be given in the Physiological Laboratory, to Students of the University and others interested in the subject.

TUESDAY, June 7th.—4.30 P.M., Lecture VI.: Prof. E. H. Starling: The Heart in Exercise.

UNIVERSITY COLLEGE (UNIVERSITY OF LONDON), Gower-street, W.C.

A Course of Four Advanced Lectures in Hygiene to Students of the University and to others interested in the subject.

MONDAY, June 6th, and FRIDAY.—5.30 P.M., Dr. C. Porter: Recent Developments in Legislation for the Prevention of Disease. (Lectures III. and IV.)

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, June 9th.—4 P.M., Lecture:—Mr. Pitts: Oral Sepsis.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, E.

A Course of Post-Graduate Clinical Lectures and Demonstrations in the Board Room of the Hospital, free to Medical Practitioners and Students of Medicine.

MONDAY, June 6th.—Mr. N. C. Lake: Intussusception.

TUESDAY.—4 P.M., Mr. A. H. Todd: Common Disabilities of the Lower Limbs (other than Paralytic) in Children (II.).

THURSDAY.—4 P.M., Mr. B. W. Howell: Treatment of Injuries to the Elbow (with cases).

FRIDAY.—2.30 P.M., Mr. J. Taylor: Treatment of Anterior Poliomyelitis.

TAVISTOCK CLINIC FOR FUNCTIONAL NERVE CASES, 51, Tavistock-square, W.C.

A Course of Ten Lectures on Elementary Psychotherapy, to be given by Dr. H. C. Miller, at the Kingsway Hall, Kingsway, W.C.

FRIDAY, June 10th.—5.15 P.M., Lecture VI.: Mental Mechanisms: Conflict: Regression: Repression; Complete Formation: Transference; Compensation.

INSTITUTE OF PATHOLOGY AND RESEARCH, St. Mary's Hospital, in the Lecture-room of the Bacteriological Department.

A Course of Lectures on Pathological Research in its Relation to Medicine, open to all Members of the Profession and Students.

THURSDAY, June 9th.—4.30 P.M., Prof. H. Head: Release of Function in the Nervous System.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

TUESDAY, June 7th.—4.30 P.M., Lecture:—Dr. W. F. Shaw: Malignant Disease of the Uterus.

Appointments

COATES, V. M., M.A., M.D., B.C. Cantab., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Honorary Assistant Physician to the Royal United Hospital, Bath.

MCARTHUR, J., L.R.C.P., L.R.C.S. Edin., L.R.F.P.S. Glasg., Medical Officer of Health for Conisborough Urban Council.

ROBERTS, EVA, M.B., Ch.B. Manch., Medical Officer of Health (temporarily) for Isleworth.

WOOD, W. B., M.D. Lond., Assistant County Medical Officer, and to act as Tuberculosis Officer for Grays, Tilbury and Orsett.

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne District Infirmary.—Res. S.O. £250.

Bedford County Hospital.—Asst. H.S. £150.

Bethlem Royal Hospital, Lambeth-road, S.E.—Jun. Asst. Phys. £350.

Birmingham, Queen's Hospital.—Surg. Registrar. £100.

Birmingham University.—Demonstrator of Anatomy. £300.

Bradford Royal Infirmary.—H.S. £200.

Brighton, Royal Alexandra Hospital for Sick Children.—Hon. Anæsth. Hon. Radiologist.

Brighton, Royal Sussex County Hospital.—Three H.S.'s. Cas. H.S. and H. Anæsth. Each £120.

Bristol Royal Infirmary.—H.P., H.S., H.S. to Ear, Nose, and Throat Dept., Cas. O., and Ophth. S. Each £120.

Cardiff, King Edward VII. Hospital.—H.S. £200.

Charing Cross Hospital, Agar-street, W.C.—Phys. in charge of Children's Department. Asst. Phys.

Colchester, Essex County Hospital.—H.S. £200.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Asst. Phys.

Evelina Hospital for Children, Southwark, S.E.—Phys. to Out-patients.

Exeter City Mental Hospital.—M.O. £300.

Hackney Union Infirmary.—Jun. Asst. M.O. £414 16*s.* 10*d.*

Hull Royal Infirmary.—Asst. H.S. £150.

Leeds Infirmary, Beckett-street.—Asst. M.O. £100.

Liverpool Royal Southern Hospital.—Two H.P.'s and three H.S.'s. Each £100.

Liverpool Stanley Hospital.—Three H.S.'s. Each £120.

London Homœopathic Hospital, Great Ormond-street and Queen-square, Bloomsbury, W.C.—Two Res. M.O.'s. £100.

London Lock Hospital, 91, Dean-street, W.—Clin. Assts.

Manchester Royal Infirmary.—H.P. £50.

Ministry of Pensions, Birmingham Orthopædic Centre.—Jun. Res. M.O. at the Highbury, Uffculme, and Sorrento Group of Hospitals. £350 to £400.

Newcastle-on-Tyne, City Hospital for Infectious Diseases, Walker-gate.—Res. Med. Asst. £350.

Newcastle-on-Tyne, Hospital for Sick Children.—Jun. Res. M.O. £200.

Newport, Mon., Royal Gwent Hospital.—Hon. Radiologist.

Nottingham Children's Hospital.—Res. H.P. (female). Res. H.S. (female). Each £180.

Plymouth, Borough of.—Asst. M.O.H., £500.

Preston and County of Lancaster Royal Infirmary.—H.S. £200. H.P. £200.

Prince of Wales's General Hospital, Tottenham, N.—Hon. Asst. P. or S. to X Ray Department.

Queen Mary's Hospital for East End, Stratford, E.—Cas. O.

Rotherham Hospital.—Jun. H.S. £150.

Royal Dental Hospital of London, Leicester-square, W.C.—Two Hon. Anæsths.

Royal Free Hospital, Gray's Inn-road, W.C.—H.S. £50. Hon. Anæsth.

Royal Naval Medical Service.—Surg.-Lieuts. 26*s.* 6*d.* per diem.

Royal National Orthopædic Hospital, 234, Great Portland-street.—Res. H.S. £150.

Royal Waterloo Hospital for Children and Women.—Hon. Phys. for Out-patients.

Salford Royal Hospital.—Anæsth. £50. H.S. and Cas. H. S. Each £150.

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St. Helens Hospital, Lancashire.—Res. M.O. £250.

St. Pancras Hospital.—Asst. M.O. (female). £300.

Southampton Free Eye Hospital.—H.S. £200.

South Uist, Parish of.—M.O. and Public Vaccinator. £170.

Stamford, Rutland and General Infirmary.—H.S. £250.

Taunton, Taunton and Somerset Hospital.—Sen. H.S. £200. Jun. H.S. £150.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Sen. Res. M.O. £250.

West End Hospital for Nervous Diseases.—Asst. P.

West London Hospital, Hammersmith-road, W.—Two H. P.'s, H.S. Each £50. P. Neurologist.

Wigan Education Committee.—Female Asst. Sch. M.O. £500.

THE Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for the Barnard Castle, Darlington, and Richmond County Courts in Circuit No. 2, and the Leyburn and Northallerton County Courts in Circuit No. 15. Applications for the post should be addressed to the Private Secretary, Home Office, and should reach him not later than June 22nd.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshops Acts at Walton-on-Naze (Essex).

Births, Marriages, and Deaths.

BIRTHS.

CUNNING.—On May 23rd, at Upper Wimpole-street, the wife of Joseph Cunning, F.R.C.S., of a son.

GOODWIN.—On the 30th May, at a nursing home, to Elsa Mary, wife of Aubrey Goodwin, M.D., a son (Timothy Rudhall).

HANCOCK.—On 28th May, 1921, at Trevaunance Cottage, Howe Green, Chipstead, Surrey, the wife of Allen Coulter Hancock, M.C., M.R.C.S., L.R.C.P., D.P.H., of a son.

SANDILAND.—On May 19th, in Shrublands Nursing Home, Croydon, the wife of Ernest L. Sandiland, M.B., B.S., D.P.H., of a son.

SHEPHARD.—On May 23rd, at Latymer House, Sheerness, the wife of Dr. Hopper Shephard, of a son.

DEATHS.

BEALY-SMITH.—On May 26th, at Manchester, Richard Leonard Bealy-Smith, M.R.C.S., L.R.C.P., aged 53 years.

WILLIAMS.—On May 29th, at Queen Anne-street, W., Campbell Williams, F.R.C.S., aged 62 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE ECONOMICS OF INFANT WELFARE.

A MEETING of the National Baby Week Council was held at Armitage Hall, Great Portland-street, London, W., on May 24th, when the reports of the Chairman of the Executive Committee and of the Hon. Treasurer were submitted and addresses read.

Dr. **ERIC PRITCHARD**, chairman of the Executive Committee, who presided, said that the three special phases of child welfare work, which the Council were emphasising this year, were (1) the importance of breast-feeding, (2) the urgent need for some scheme of pensions for civilian widows, and (3) the prevention of blindness with special attention to the infectiveness and treatment of ophthalmia neonatorum. It was hoped that the National Baby Week Council and the Health Week Committee would work in close coöperation. The National Baby Week Council would celebrate its fifth birthday from July 1st to 7th, but it had been suggested that combined Health and Baby Week celebrations might be held in the provinces and in Greater Britain in October.

Mr. **J. MARSDEN**, the hon. treasurer, said that subscriptions and donations were greatly needed. On the basis of last year's work about £450 would be required. There was a balance at the bank of about £150, and it was hoped that another £300 would speedily be forthcoming.

Economy in Life.

Dr. **MABYN READ**, medical officer of health for Worcester, then read an inspiring address on the successful efforts to improve infant life in the city over the health of which he presided. The population of Worcester in 1900, he said, was 48,000; it was now about 50,000. When he was appointed medical officer of health in 1891 the infant death-rate was 208 per 1000. During the first five years of the present century it was 145, in the next five years 121, from 1910 to 1914 it fell to 91, in the next five years it was 69, and last year the figures showed 67 per 1000. The three individual years previous to this—namely, 1917, 1918, and 1910—showed 64, 60, and 61 per 1000 respectively. Previous to the founding of the Infant Health Society in 1907 there had been no particular health activities, though some 200 of the worst houses had been removed—a small proportion in a total of about 11,000 dwellings. The Infant Health Society began with one health visitor, but in 1910 the city council gave a grant to the Society and two years later took over the health visitor as an official. A second health visitor was appointed in 1915. Though some classes for mothers were held, no clinics were started till 1917 when a lady doctor was appointed giving half her time to the clinic and half to school work. In 1910 the Society obtained a grant from the American Red Cross Society and established an antenatal clinic. During the progress of the Society milk was provided for mothers and children, and was now supplied by the city council. In 1913 dinners were given to expectant mothers, and a small amount of dental treatment was given; both these activities were limited by the finances of the Society. From 1910 onwards, at the classes for mothers, the infants were weighed. No difficulty had been experienced in obtaining a welcome for the health visitor in the homes of the poor, and an important factor in the progress of the work was the coöperation and sympathy of the midwives. When difficulties had occurred, Dr. Read said, he called the midwives together, when matters were soon smoothed out. Some 16 midwives attended about 80 per cent. of the births in the city. The prevalent opinion among the mothers now was that it was a disgrace to have an unhealthy baby. The good results had been almost entirely due to home visiting. At the present time there were four health visitors and an antenatal centre, which was kept constantly full by the recommendations of the midwives.

Economy in Efficiency and Economy in Health.

Miss **ELEANOR RATHBONE** (Liverpool) deplored the lack of provision made by the State for babies, motherhood not being recognised as work of public importance. The poverty period of the ordinary working-class family came just at the time when the mother was bearing children, and this had most serious effects upon the race. Nothing could be more wasteful or more extravagant than the present system of neglecting mothers and children. Was it not about time that the nation should recognise that its baby crop was as important as its wheat crop?

Dr. **LEONARD HILL** said that health, including the health of the baby, was bound up very largely with the question of coal. With our wasteful methods of using it only about 5 per cent. of its energy and heat value was utilised, the other 95 per cent. polluting the atmosphere and setting up conditions which caused ill-health and dirt. We were now experiencing the benefits of unobscured sunlight as a result of the coal shortage, and he instanced the advantages of sunlight and fresh air as seen in the results to tuberculous children in Alpine climates, where they ran about covered with only a loin cloth. The effects upon these diseased children were extraordinarily good. If this life and open air schools were good for the diseased the same conditions should be good for the healthy. In London he believed there were only two open-air schools, while in New York there were 120.

Prof. **E. L. COLLIS** said that economy consisted in spending money wisely and well, and that it must not be confounded with parsimony. By a long series of enactments during the past 100 years, the country in the interests of economy had been nationalising the care of health. The first test of spending money wisely was the return on expenditure. On the credit side was the productive activity, mental and physical, of the adult members of the nation. But the results of nationalising the care of health had not as yet produced the most economical results. In order to obtain a healthy nation the first need was healthy babies. The standard of health of children at birth was fairly satisfactory and it ought to be maintained and improved. Girls in schools should be taught mother-craft. Money spent on health visitors was true economy. It was cheaper to spread a knowledge of fresh air and cleanliness than to patch up casualties in sanatoriums and dispensaries.

In a short discussion which followed, reference was made to the need for better housing conditions, and for supplying children with milk in the interests of sound teeth.

UNITED STATES ARMY RATIONS.

IN the April number of the *Military Surgeon* Major C. C. Mason and Capt. A. T. Shore speak of the work done in France by the officers of the Food and Nutrition Section, American Medical Corps, attached to the Division of Laboratories and Infectious Diseases. These were staff officers who considered whether the men got good meals regularly, and if not, what was wanted—whether more food, better food, better distribution, better cooking, or better mess equipment. Much bread was at one time lost from an epidemic of mould, and this was looked into. Meat was supplied to the army "in better condition than to the average American home." It was difficult to arrange that all men should get rations, for on Monday demands were sent in, but not till Wednesday were the rations received, and meantime 30 new men might have joined; but eventually the telephone minimised this difficulty. There were mess sergeants who saw to the drawing and the storage of rations, serving of food and prevention of waste, but it is noted that these sergeants should not be chosen merely because they are unfit for other soldierly duties, and that cooks, too, should not be selected in the companies on the sole ground that they are flat-footed men. In an appendix there is a statement of the various rations served out to American

Table of Rations (in ounces).

Ration.	Garrison.	Field.	Travel.
	oz.	oz.	oz.
Beef, fresh	20	—	—
„ canned	—	16	12
Soup cubes	—	1·76	—
Bread, soft	16	—	16
„ hard	—	16	—
Baking powder	0·08	—	—
Potatoes, fresh	20	—	—
„ dehydrated	—	4	—
Beans, dry	4	4	—
„ baked, canned	—	—	4
Tomatoes, canned	—	—	8
Butter	0·5	—	—
Milk, unsweetened, evaporated	1	1	1
Coffee	1·12	1·12	1·12
Sugar	3·2	3·2	2·4
Jam	3	3	2
Candy	0·8	—	—
Chocolates, sweet	—	1	—
Salt	0·64	0·16	—
Tobacco	0·4	0·4	0·4
Pepper	0·02	—	—
Cinnamon	0·014	—	—
Vanilla	0·014	—	—
Vinegar	0·8	—	—
Alcohol (solidified) for cooking	—	2	—

soldiers. We print above the ordinary daily or "garrison" ration, the "field service" ration, and the "travel" ration drawn by men doing little work in troop trains.

The authors of the paper suggest that commanding officers might, with advantage, take greater interest in their cooks and kitchens—"men fight only once in a while, but eat *three times a day.*"

THE EVIDENTIAL VALUE OF CERUMEN.

IN the future it will be the mark of a clever criminal to throw dust, not into the eyes of the police, but into his own ears. Dr. Severin Icard[1] has shown recently that among the trade marks borne infallibly, if unintentionally, on the bodies of industrial workers must be counted the dust adhering to the cerumen in the external auditory meatus. It appears that the most careful toilet will not remove all traces of a man's past environment, but only the use of a small instrument for curetting the meatus, and even so, the operation is not without considerable risk in unskilled hands. Moreover, it is easy to imagine that a completely wax-free ear might prove in itself a cause for suspicion on the part of an examining counsel. Even the alternative method of concealment which we have indicated might well fail under the searching investigation of the technique devised by Dr. Icard. Specimens of wax are examined by him both quantitatively and qualitatively, both under the microscope and by chemical tests; it might well be that a lead-miner who had filled his ears with coal-dust would fail in his deceit as much by the presence of an excessive quantity of coal as by the discovery of a contemporary layer of lead.

SARAH GAMP OF ARABIA.

THOSE who lament the existence of unqualified midwives in England may derive some measure of consolation from the reflection that in some other parts of the world conditions may be even more cruel. It would be difficult to find sadder stories in all the annals of child-birth than those told by Doctor Thierry-Detaille, of Bizerte, in the May number of *Tunis Médical*. He teels first of a primipara, aged 18, to whom he was called by the patient's sister. It appeared that after the girl had been in labour three days her native attendant had confessed her inability to do any more. The doctor recognised by her feverish appearance that the attempts made in these three days had not been without their malign results. The temperature was 101° F. and the pulse 130. Vaginal examination discovered a fœtal head, firmly engaged, with the cranial vault completely denuded. The dead child was delivered by forceps, and it was then seen that a portion of the scalp as large as a five-shilling piece had been torn from the child's head. The family stubbornly refused to allow the young mother to be taken to a hospital, so she remained in the care of the Arab attendant until she died a fortnight after her first-born. His second story is of another native "midwife" who considered that a prolapsed cord was a heaven-sent aid to help her extract the baby. In this case the mother, who was a 3-para, survived, but the child was of course killed. There is room in North Africa for a lot of health propaganda.

THE CARE OF MENTAL DEFECTIVES.

THE training and after-care of mental defectives was the subject of discourse by Dr. F. R. P. Taylor, medical superintendent of the Hellingly Mental Hospital, at the annual meeting, held at Brighton on May 18th, of the Guardianship Society. Dr. Taylor considers that all mental defectives should receive some training in establishments specially set apart for the purpose, and believes that with suitable training a very large proportion of mental defectives could be made at least partially self-supporting. Provision for the future could be made in two directions: (1) by a central colony—preferably attached to a special school—where, after attaining a certain standard, children should be boarded out in cottage homes with foster parents, and attend daily at a central block of workshops; or (2) by the methods employed by the Guardianship Society. The latter scheme had many advantages, and most nearly restored the child to homelike surroundings. The work of the Society was of real benefit, not only in providing for the happiness and welfare of the individual mental defective, but also for the protection of society and of the race.

The Guardianship Society provides for the supervision of the mentally defective: (1) by boarding out in carefully chosen families; (2) by assisting them to obtain training and employment suitable to their capabilities; and (3) by visiting them and taking a friendly interest in their moral and material welfare. The Society's record for the year just ended shows that the fresh applications made during the year numbered 358, compared with 243 in the previous year. The number of fresh patients actually taken was 185, against 156 last year. 360 patients were cared for as against 445, and the number remaining at the end of the year was 206 as against 184. Two patients were removed from institutions and put under guardianship, and one patient was transferred from an asylum to guardianship. The committee considered this was particularly satisfactory as justifying the view of the Society that certain cases were better suited to this method of care than to institutional treatment.

During the year 46 cases had been under supervision in their own homes at the request of the Brighton corporation, and four certified patients had been entirely self-supporting, thus saving at least £200 to the ratepayers. At the present time the Society had 20 patients entirely, and 32 patients partially self-supporting.

HUGH MORTON (UNREGISTERED).

AT the Marylebone Police-court on May 9th, Hugh Morton, of Park-lane (formerly of 15, Cavendish-place), appeared to answer three summons under the Venereal Diseases Act, and one summons under the Medical Act, issued against him at the instance of the Medical Defence Union, Limited. The facts upon which the prosecution relied were admitted by the defendant, and the magistrate after hearing counsel, and without calling witnesses, imposed a penalty of £30 in respect of each offence under the Venereal Diseases Act, and £20 in respect of the offence under the Medical Act, with 5 guineas costs on each summons; and sentenced the defendant to two months' imprisonment in default of payment of the fines and costs within seven days.

HYGIENE IN THE KINEMA.

As the result of the activities of a local health society, the sanitary condition of local kinemas has been under review by the East Ham Borough Council. An opportunity was afforded us of inspecting the new Coronation Cinema at Manor Park, London, E., prior to its formal opening by the Mayor of East Ham on Saturday, May 28th. It is a large and airy building, seating 2000 persons individually, wide aisles, and a number of exit doors providing means for rapid emptying in case of need. Ventilation shafts are arranged for the inlet of cooled air in summer. The aim of the managers to provide healthy conditions under which entertainment can be enjoyed has been successfully carried out.

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One-half Column ...	3	0	0	One-half Page	6	0	0
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Three-quarters Column	4	10	0	Three-quarters Page...	9	0	0
Whole Column ...	6	0	0	Whole Page	12	0	0

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[1] Marseille-Médical, April 1st, 1921, p. 289.

Lettsomian Lectures

[ABRIDGED]

ON

SURGERY OF THE LUNG AND PLEURA.

Delivered at the Medical Society of London on Feb. 7th and 21st, 1921,

BY G. E. GASK, C.M.G., D.S.O., F.R.C.S. ENG.,
SURGEON AND DIRECTOR OF SURGICAL UNIT,
ST. BARTHOLOMEW'S HOSPITAL, ETC.

(WITH COLOURED PLATES.)

[THE first lecture was devoted to an outline of the treatment of chest wounds from the beginning of the 14th century—when the science was raised by Theodoric, the Italian, and Henri de Mondéville from the obscurity which had surrounded it since Roman times—to 1914. The lecturer referred to the "Grande Chirurgie" published by Guy de Chauliac in 1363; to the decline of Western European learning, including medical and surgical knowledge, during the Hundred Years' War; to the appearance of gunshot wounds after the introduction of the arquebus in the 15th century; and to the renascence of surgery in the 16th century under Ambroise Paré, Gale Wurtz, and Peter Lowe. Coming to the 18th century, the work of John Hunter was discussed and linked up with that of Guthrie and Baron Larrey during the Napoleonic War. Mention of the Crimean campaign, the American Civil War, and the Franco-German War, led on to the "antiseptic era," when the work of Pasteur and Lister, and substitution of the pointed bullet for the leaden ball, rendered surgical conditions much more favourable in the Boer, Spanish-American, and Manchurian wars. It was pointed out that in earlier times improvements noted in one century were often forgotten in the next; that treatment during two periods—the 14th century and the beginning of the 19th—was exceptionally good; and that in the latter particularly, when knowledge of bacteriology and anæsthetics was still non-existent, a remarkable state of efficiency was nevertheless attained to by the medical services of the British and French armies during the closing stage of the Peninsular War.]

LECTURE II.*—TREATMENT OF WOUNDS OF THE THORAX DURING THE WAR OF 1914–19.

The treatment of wounds of the chest with which we started at the beginning of the recent war, and which gradually evolved, may be taken, in a measure, as the effect on us of the experiences of our predecessors. The most recent war of any magnitude which affected British military surgery had been the South African War. We saw how in that campaign the mortality from chest wounds was the lowest on record and that owing to the character of the weapon used—namely, the high-velocity low-calibre rifle—the wounds were, on the whole, not very severe, and commonly did not require active surgical treatment. At the commencement of the late war, therefore, surgeons began with the assumption that the wounds would be more or less of the same character, and that the best treatment for chest wounds would be to leave them alone unless an empyema should form, in which case a drainage operation would be performed. This belief that operative measures were unnecessary is probably the main reason for the lack of surgical assistance provided for men suffering from chest wounds; for a long time, however, the fear persisted that handling a wounded lung might re-start bleeding, and that a wide opening of the chest and formation of a pneumothorax might cause death.

In addition to all these reasons, military exigencies in the early days of the war would not allow of anything like active surgery being performed in close proximity to the front line. The wounded men had perforce to be evacuated to hospitals at the base, where they often arrived too late for anything but conservative treatment. Acting on the assumption that active surgical treatment would be harmful, rather than beneficial, a statement of methods of procedure advised was drawn up for the use of medical officers and published in 1915 in the official Memorandum on the Treatment of Injuries in War.

For purposes of comparison with the treatment adopted in previous wars, the following passages from this Memorandum may be quoted as a summary of the treatment:—

> "No doubt many men shot through the chest die in a few minutes, but of those who live long enough to reach a field ambulance or a clearing station the great majority recover. . . . The most important treatment of all is absolute rest in the recumbent or semi-recumbent position. . . . If the opening in the chest be large, so that air passes in and out during respiration, the skin around should be painted with iodine, and the opening of the wound firmly closed with antiseptic gauze covered by strapping. . . . A third of a grain of morphia should be given subcutaneously as soon as possible. . . . The presence of hæmothorax is rather to be taken as an indication for non-interference . . . it is to be accepted that tapping a hæmothorax is never to be practised in the early days after a wound of the lung."

For empyema resection of a portion of rib and drainage of the pleural cavity were advised. It was considered best that missiles retained in the chest should not be removed, unless they lay loose within the pleura and gave rise to pain and discomfort.

UNFORESEEN SEVERITY AND INFECTION OF WOUNDS.

Unfortunately the hopes of a humane war engendered by the experiences of the South African campaign were not realised. None of those who witnessed the arrival in this country of the first convoys of wounded will forget the dismay and consternation which accompanied the realisation that the wounds were severe and lacerated and almost all suppurating. Later, as the war of movement was replaced by trench warfare, wounds from shells, bomb, and trench mortar, and all the inventions of modern warfare became common, with the result that surgeons had entirely to re-cast their ideas of treatment, and the whole character of medical administration had to be remodelled.

THE MORTALITY OF CHEST WOUNDS.

One of the hardest things to arrive at is the actual mortality of chest wounds, yet both from the administrative and surgical aspect it is very important to understand the problem to be faced, which is only now being arrived at. The fatal cases may be considered under three headings as occurring:—

(1) On the field of battle; (2) in the forward medical units; (3) in the base medical units.

Deaths on the Battle-field.—There can be little doubt that the mortality of chest wounds on the battle-field was very high, although at first sight it was not expected. Medical officers working in field ambulances and casualty clearing stations saw how good was the recovery of a large proportion of the men who had been shot through the lungs and they naturally inclined to the belief that in most instances it was not a very serious matter to be hit in the chest. This view, however, neglected a very high mortality in the field. No figures on this point were collected in the British service. On the German side, Sauerbruch gives records of 300 dead examined on the field, and states that 112 of them (or 37 per cent.), were wounded in the chest. A very similar figure, 29 per cent., was recorded by Löffler for 469 dead on the battle-field in the Danish War of 1861, and in the New Zealand War of 1863 there was a 50 per cent. mortality. It is therefore probable that not less than one-third of those killed in the field had been shot in the chest. When one considers that the chest, roughly, is one-third of the target offered, it is probable that the figure given is approximately correct.

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* Lecture III. will appear in the next issue of THE LANCET.

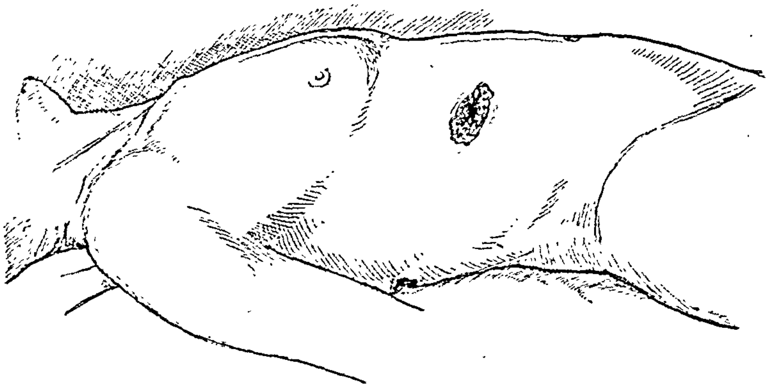
Deaths in Forward Medical Formations.—The mortality rate among the wounded who survived to reach medical units is now pretty accurately known. In the field ambulances it amounted to 7 per cent. and in the casualty clearing stations to 15·9 per cent.

Deaths at the Base.—The figures at the base hospitals are still more accurate. The figures remained pretty constantly at 6 per cent. It is therefore clear that of the men hit in the chest and who survived the battle-field about 30 per cent. died subsequently as the result of their wounds. These figures make one wonder whether the question of the provision of some form of protective armour for the chest should not be considered.

It is evident from what has been written that the mortality from chest wounds in the last war was considerable, and that an effort to reduce the mortality and invalidism of men surviving the field of battle was highly desirable. The problem which presented itself to the surgeon was, firstly, to investigate the morbid anatomy of chest wounds and to find out the causes of death or prolonged invalidism, and, secondly, to study the means of cure.

The opportunity for work of this sort did not present itself until the latter end of 1916, when the fighting on the Somme was dying down and surgeons were no longer delayed with a mass of urgent cases and had sufficient leisure to think and investigate. By this time also vast improvements in the medical services had taken place; hospitals well equipped with good nursing sisters, excellent operating theatres, and the best of instruments had been established close to the front line, so that the wounded were received a few hours after injury and—what was equally important—could be retained sufficiently long to allow proper investigation and observation. There were also facilities for making post-mortem examinations, and good physicians, pathologists, and radiologists were ready and willing to coöperate. In addition the heads of the medical services were eager to encourage and afford every facility for any investigation likely to be of service to the wounded men.

FIG. 1.



Drawing of a perforating shell wound in the right lower costal region. The entry wound behind was slightly smaller than that of the exit in front, but both were large and lacerated. Operation performed 12 hours after the wound.

PATHOLOGY OF CHEST WOUNDS.

It is not possible in these lectures to do more than point out the important aspects of the morbid anatomy of chest wounds; the latter have been described in greater detail in the official Medical History of the War. The wounds inflicted could broadly be divided into three classes: (1) those caused by rifle or machine-gun bullets; (2) shrapnel balls; and (3) portions of shell, bomb, or grenade. The proportion of each class of wound varied with the type of action. In open moving actions wounds by rifle bullets preponderated; in trench warfare the number of those caused by fragments of shell was much greater. Wounds due to shrapnel balls were few, and in the late phases of the war almost disappeared.

Wounds due to rifle bullets commonly perforated the chest and passed out, often drilling a small hole and doing comparatively little damage. These proved the most favourable class and are comparable to the wounds observed in the South African War.

Wounds due to fragments of shell (Fig. 1) were the least favourable, for the jagged fragments made large holes, splintered bones, lacerated tissues, and were prone to carry with them fragments of dirty clothing which provoked sepsis. It was soon found that the causes of death in casualty clearing stations could be divided roughly into two classes—those occurring within the first 36 hours after injury, and those occurring later.

The casualties occurring early were almost entirely due to the severity of the injury, combined with shock and loss of blood; and those occurring later—including those in base hospitals—were almost entirely due to sepsis of the pleural cavity or of the contained viscera. Further, the cause of prolonged invalidism following chest wounds was due almost entirely to infection of the pleural cavity and its sequelæ. (See Figs. 2, 3, 4, Coloured Plates.) Thus the problem which confronted the surgeon in dealing with chest wounds was the same as that of all the other wounds—namely, the immediate saving of life from shock and hæmorrhage and the prevention of sepsis.

CHANNELS OF INFECTION.

Granted that the chief danger to a man who had survived the first severity of the wound was infection, it became necessary to see how organisms reached the chest cavity. There were two main routes: (1) a direct introduction by the missile or by portions of clothing or equipment carried in by it, and (2) through the wound in the chest wall. A wound which opens directly into the pleural cavity, and through which air is constantly sucked, always leads to infection, and unless dealt with is often fatal. Further, unless adequate treatment is given to a wound even of moderate dimensions, through which air is not being sucked, it may suppurate in the course of a few days; and if the thoracic cavity is not sealed off organisms gain entrance to the pleural cavity, where they find the blood a convenient medium for growth. This accounts for many cases which exhibit septic changes only after an interval of five or six days. The principle, therefore, to be aimed at is early mechanical cleansing of the wound (both of the chest wall and of the injured viscera);

DESCRIPTION OF COLOURED PLATES.

FIG. 2.—Posterior view of a gunshot wound of the lung with hæmorrhagic extravasation and a wound in its lower lobe caused by indriven rib fragments, one of which (indicated by a dotted line) remains in the lung. The upper lobe is bruised and on its surface is a large subpleural bleb of air that has escaped from the torn pulmonary tissue. From a patient who died six hours after a non-penetrating dorsal wound of the chest by a piece of shell which passed tangentially from the right tenth rib behind to escape over the angle of the left scapula.

FIG. 3.—Thoracotomy performed 14 hours after a gunshot wound had been inflicted. The picture shows the chest widely opened and the lung pulled out by means of Duval's forceps. The lung is collapsed, wounded, and infiltrated with blood.

FIG. 4.—Perforating shell wound of the chest in the right lower costal region (from the same case as Fig. 1). Picture showing the injury when the splintered ribs had been removed after an incision joining the entry and exit wounds. The diaphragm has a tear 6 inches long and the liver shows radiating fissures with extensive laceration. The diaphragm was sutured and the chest closed. The patient died from shock 20 hours later.

GUNSHOT WOUNDS OF THE CHEST AND THEIR TREATMENT.

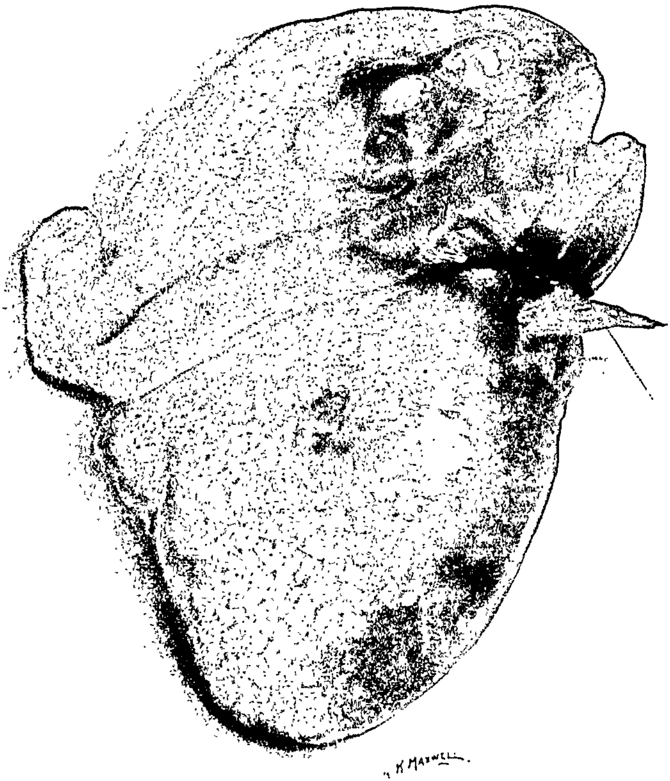


Fig. 2. The Wounded Lung.

GUNSHOT WOUNDS OF THE CHEST AND THEIR TREATMENT.

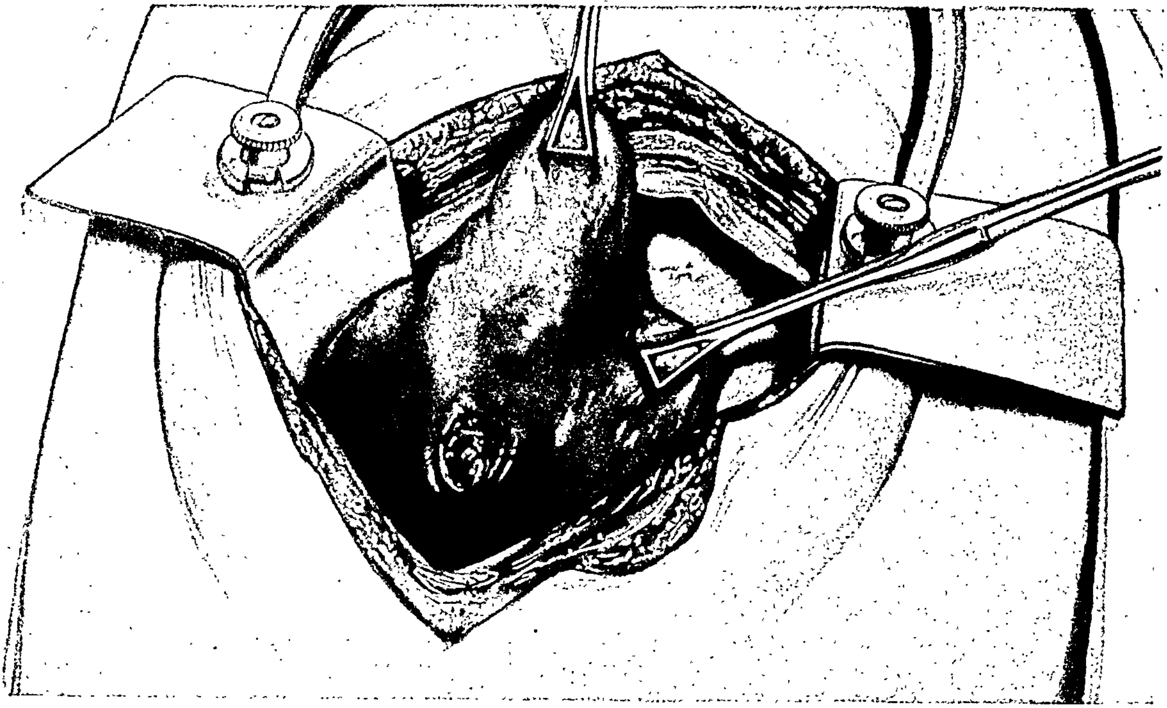


Fig. 3. The Chest widely opened.

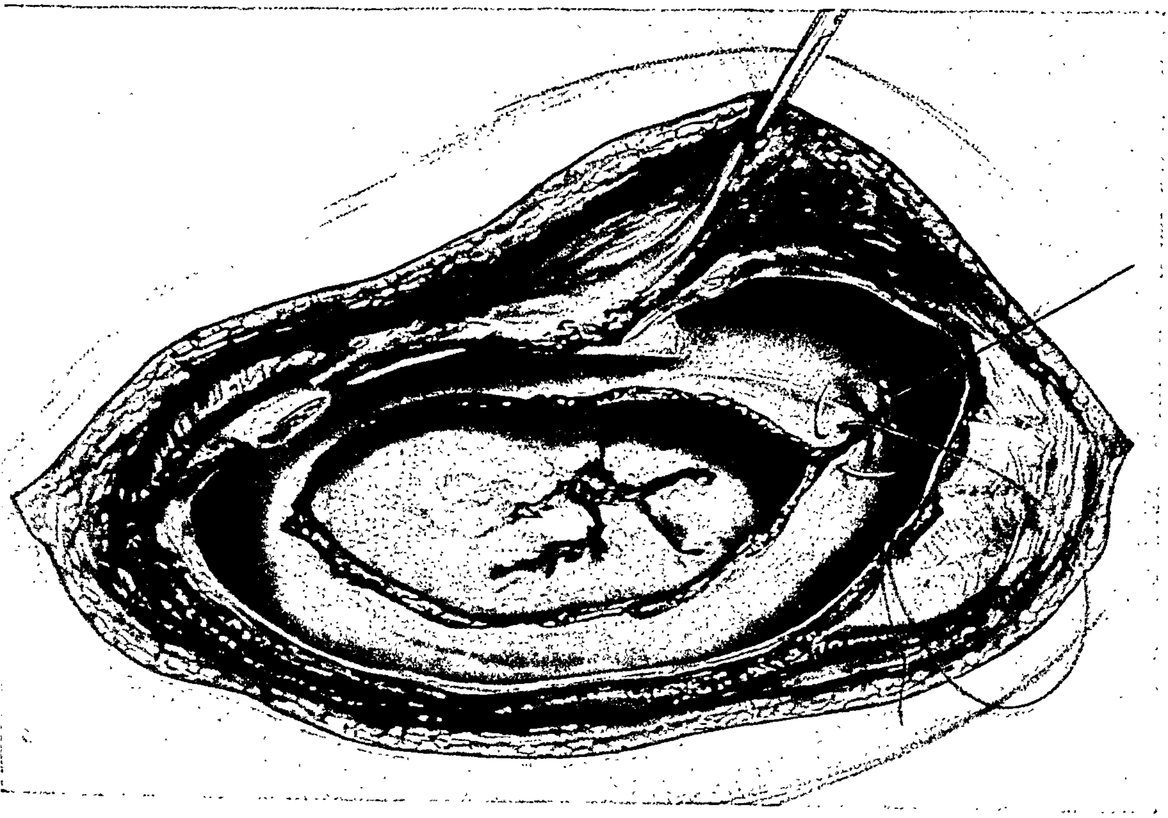
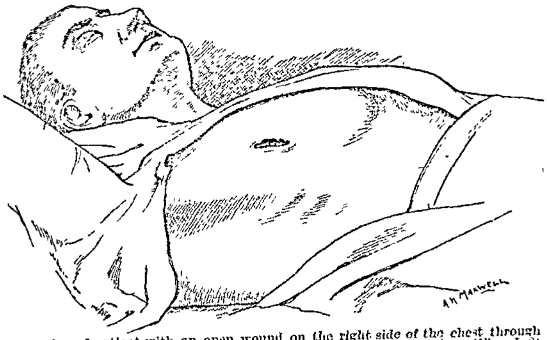


Fig. 4. Repair of the Diaphragm.

evacuation of all foreign bodies and of effused blood from the pleural cavity; repair or suture of the damaged lung, and closure of the chest cavity by suture.

It has been demonstrated with absolute certitude that the correct treatment of a contaminated wound, in order to prevent infection and suppuration in that wound, is a mechanical cleansing carried out a few hours after the injury before organisms have had time to grow and infect. This is attained by excision of the damaged and devitalised tissues, and removal of all foreign bodies, followed by early closure of the wound either by primary or delayed primary suture. The establishment of this principle is a far-reaching truth and is the greatest contribution made to military surgery in the late war. It results from the knowledge of anatomy, physiology, and pathology and is applicable equally to wounds of the extremities, head, abdomen, or chest. Many of our predecessors, especially in the Napoleonic wars, did great work, but the knowledge of bacteriology was denied them, and so they were unable to attain the results which were achieved by surgeons in the late war. The application of this great truth to wounds of the chest was not arrived at in one step; it was only little by little that we groped towards the light, and when we recall our early efforts to cure grossly suppurating wounds with highly-coloured strong antiseptics, and how we stated that surgery was put back to the pre-Listerine period, it seems as if we had been extraordinarily short-sighted and stupid. It is customary to exhibit a mild amusement at the quaint practices of our forefathers, but did not we forget much more than they forgot?

FIG. 5.



Drawing of patient with an open wound on the right side of the chest through which air was being sucked in and out. The series of drawings (Figs. 5–8) shows stages in the thoracotomy performed on this patient 15 hours after infliction of his wound.

OBSTACLES TO CHEST SURGERY.

As has been mentioned before, surgeons attempting chest surgery were at first troubled by two apparently large obstacles. The first was the dread of opening the chest, under a general anæsthetic, lest the resulting pneumothorax should cause a fatal respiratory failure; and the second was the fear lest manipulation of a recently-wounded lung might start uncontrollable bleeding. If the principle of mechanical cleansing of the wound was to be carried out, then it was necessary that a wide opening in the chest should be made so that the thoracic viscera could be brought into view.

Anæsthetics.—Prior to the war, the inclination of surgeons tended towards the use of some form of pressure chamber or intratracheal insufflation apparatus when it became necessary to open the pleural cavity. It was evident that such an apparatus was impracticable in the field and a very few trials with the ordinary anæsthetics proved at once that, at any rate under conditions then prevailing, a patient could be anæsthetised and one pleural cavity could be opened widely without any grave danger. As a matter of fact, patients with thoracic wounds bore operation well and took an anæsthetic satisfactorily, and we found it unnecessary to consider a pressure chamber. My own predilection was for the use of chloroform, either by itself or combined with oxygen, given through a Shipway's apparatus. The French used ether; the Americans, when they came in, used gas and oxygen, and many British surgeons employed local anæsthetics. It is therefore evident that the anæsthetic problem is not a difficult one. One of the bogies which hindered progress was therefore killed.

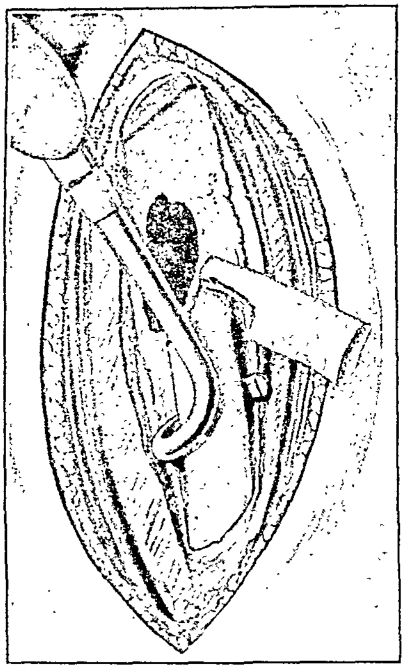
Manipulation of Wounded Lungs.—The other great fear—that handling of a wounded lung might re-start a serious bleeding—also vanished, for it was found that such manipulation was easy, was not attended by a serious fall of blood pressure, and did not cause bleeding. Once these difficulties were removed the way to advance was clear, and it remained only to decide which were the correct cases to operate on, and to devise the best routes of access to the thoracic cavity and the necessary technique.

SELECTION OF CASES FOR OPERATION.

It appeared obvious that a certain proportion of patients would get well without any operation, and equally obvious that a certain number required surgical treatment, either to save their lives or to prevent a long and severe illness; there was also a large intermediate class in which opinion might be divided. The sort of case which appeared most to require assistance was the man with a large open wound with fracture of ribs and a retained missile. Such cases almost invariably did badly on account of sepsis. Many died, or if they did not die, developed an empyema which seriously affected their convalescence.

It was on such a case that I personally did my first big thoracic operation during the war. It was in the latter end of 1916, while the work was very much in the experimental stage, and curiously the subject of the experiment was a young Australian doctor, who was admitted with a large open wound over the lower part of the thorax and a retained missile. After consultation with the excellent and helpful physician who was associated with the investigation, operation was decided on. The patient was anæsthetised with chloroform, the wound opened up, about four inches of the broken rib excised, and the pleural cavity opened widely by means of a rib-spreader. In the cavity of the pleura was found a shrapnel ball, a bit of rib, and a large piece of khaki tunic. These were removed, the jagged ends of rib cut cleanly off, and the pleural cavity cleared of blood; then the chest was closed in layers, pleura to pleura, muscle to muscle, and skin to skin. To our great joy the patient did well; the wound healed by first intention and remained healed, the lung rapidly expanded, and the pneumothorax disappeared. There was no doubt that that man, if nothing had been done, would, even if he had lived, have had an empyema which would have invalided him for a long period and very likely have given him a lifelong disability. As a matter of fact, his convalescence was short, and he soon regained his unit; we saw him in 1917 and again in 1918 and were able to assure ourselves by his record of service and by clinical and X ray

FIG. 6.



The wound of the soft parts has been excised down to the broken rib, which is being lifted subperiosteally by Doyen's elevator; the wound through the parietal pleura is exposed.

examination that his cure was sound and permanent. This successful case made a deep impression on our minds and revealed the possibilities of thoracic surgery in the field which, though suspected, were not proved.

It is unnecessary to detail all the steps which led up to the practice which was in force in the British armies on the Western Front at the termination of hostilities. The results achieved were the outcome of the earnest work of many surgeons, who received the greatest assistance from physicians, bacteriologists, and radiologists; the value of the team-work, as witnessed in the British Expeditionary force, has made a big impression on our profession.

Simultaneously with the progress made in the British medical services, the most excellent work was being done by the French, and the name of that brilliant surgeon. Pierre Duval, whom we esteem as an Honorary Fellow of our College of Surgeons, must ever be associated with thoracic military surgery.

POSITION OF THE TREATMENT OF CHEST WOUNDS AT THE END OF THE WAR.

In order to demonstrate the changes which had been made in the treatment of chest wounds during the war, it may now be apposite to quote a summary which was published in the last "Manual of Injuries and Diseases of War," printed in 1918, as a guide to medical officers.

"I. Cases in which primary operation is indicated:—(1) A ragged wound of the soft parts; (2) compound fracture of ribs; (3) bleeding from the parietal wound and intercostal artery; (4) pain; (5) an open wound of the thorax through which air is pumped in and out of the pleural cavity; (6) retention of a large foreign body in an accessible position.

II. Cases which do not require primary operation:—(1) Small clean wounds, including through-and-through bullet wounds, without evidence of serious intrathoracic injury other than hæmothorax; (2) cases in which a missile is retained, which is only of a small size; (3) cases in which a missile, though of large size, is in a position difficult of access; (4) cases of uninfected hæmothorax.

III. Cases in which primary operation is contra-indicated:—(1) Shock and collapse, such as would be contra-indications for any surgical procedure; (2) Collapse of the opposite lung."

TREATMENT BY OPERATION. (FIG 5.)

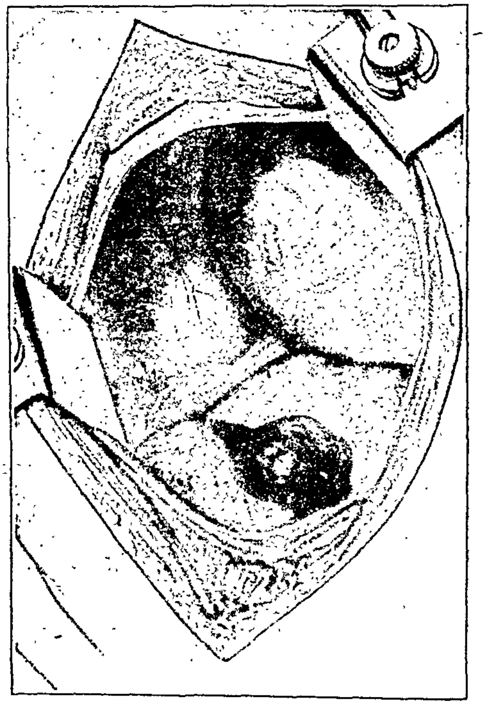
If an operation is to be done, it should be undertaken as soon as the initial shock of the injury has passed off and before sepsis has been established. After the lapse of 48 hours it is rarely advisable to perform any operation except for evacuation of an infected pleural cavity. It was found by experience that it could be undertaken usually about six hours after admission to a clearing station—that is to say, about 12 to 24 hours after receipt of the injury.

If nothing else be done, wounds of the soft parts (unless small and clean, e.g., rifle-bullet wounds) should be excised, because otherwise they will suppurate and infection may spread along the track of the missile, into the pleural cavity, giving rise to empyema. (Fig. 6.) Excision of the wound of the soft parts should be extended down to the ribs which are frequently broken. Whether or no further operation be undertaken for opening the chest, the splinters of bone should be removed, jagged ends of rib cut cleanly off, and all dead tissue excised.

Examination of the wound in this way may reveal either a bleeding intercostal artery or a large hole leading into the chest; a finger introduced into the pleural cavity may discover splinters of bone free or sticking into the lung. At this stage the case has been converted into one of open thorax; if it is decided not to open the chest further, the blood should be evacuated by rolling the patient on to the side, and then the thorax should be closed in layers—pleura to pleura, muscle to muscle, and skin to skin.

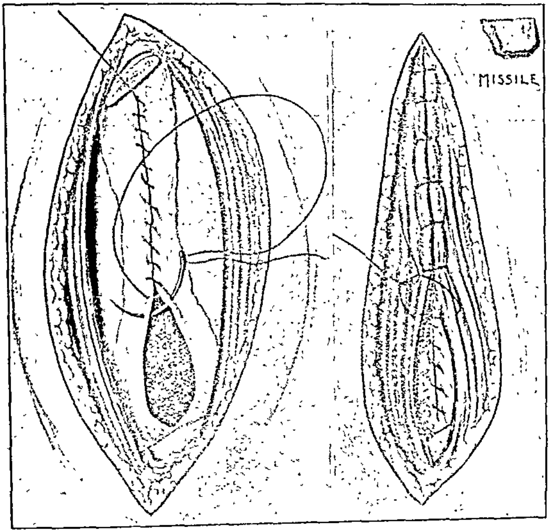
The importance of early closure of the chest cannot be over-emphasised: the relief given to the

FIG. 7.



The pleura has been incised in the line of the resected rib and the chest opened widely by means of a rib-spreader. The effused blood has been evacuated, giving a clear view of the diaphragm, in which there is a small injury; of the mediastinum, uninjured; and of the wounded collapsed lung. The hole in the lung and the rent of the diaphragm were sutured: the cause of the injury, a piece of shell, was removed from the pleural cavity and the chest closed.

FIG. 8.



Shows the first and second stages in the closure of the chest. First, the parietal pleura together with the periosteum of the rib is sutured; then the muscles, and finally the skin. The shell fragment removed from the chest is shown at the side. The patient made a good recovery without suppuration.

patient is immediate and great. Our ancestors discovered it as long ago as the 14th century, but it was forgotten time and time again. It was only on July 27th, 1917, that a memorandum was issued to the medical officers of the British Expeditionary Force calling attention to the value of the treatment of open pneumothorax by immediate temporary closure by suture.

THORACOTOMY.

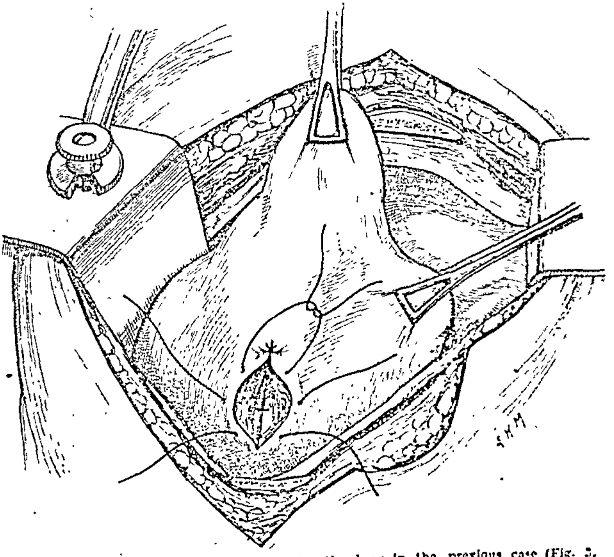
It is not difficult to open the chest sufficiently widely to allow of a complete examination of the lung and the pleural cavity. This opening may be made by excising about four inches of rib or by making an incision through an intercostal space and then inserting a rib-spreader, of which there are several efficient. The choice of route naturally depends upon the position of the foreign body relative to the wound of entry. Where possible, thoracotomy through the wound is to be preferred, for in any case the wound of the parietes needs to be excised and less damage is done to the chest wall by a single incision.

A missile may, however, lodge in the chest at a spot remote from the wound, and in such a case access has to be gained by a fresh incision. (Fig. 7.) The route that probably provides the best and easiest access is via the fifth rib in the mid or anterior axillary line, whence with the aid of a retractor or rib-spreader any part of the pleural cavity can be reached. With the chest thus widely opened the lung can be seen clearly and the foreign body may be visible; if the blood effused into the pleural cavity obscures the view, it should be remove by syphoning or mopping. If the foreign body is not visible (Fig. 8) it may be sought by inserting the hand into the pleural cavity, and removed through the wound of entry in the lung or by fresh incision into lung tissue. (Fig. 9.) Manipulation of the pleural contents can be done freely without dangerous fall of blood pressure.

TREATMENT OF WOUNDED LUNG.

Early operation, even within 12 hours after receipt of a wound, does not cause recrudescence of bleeding. Bleeding stops automatically when the

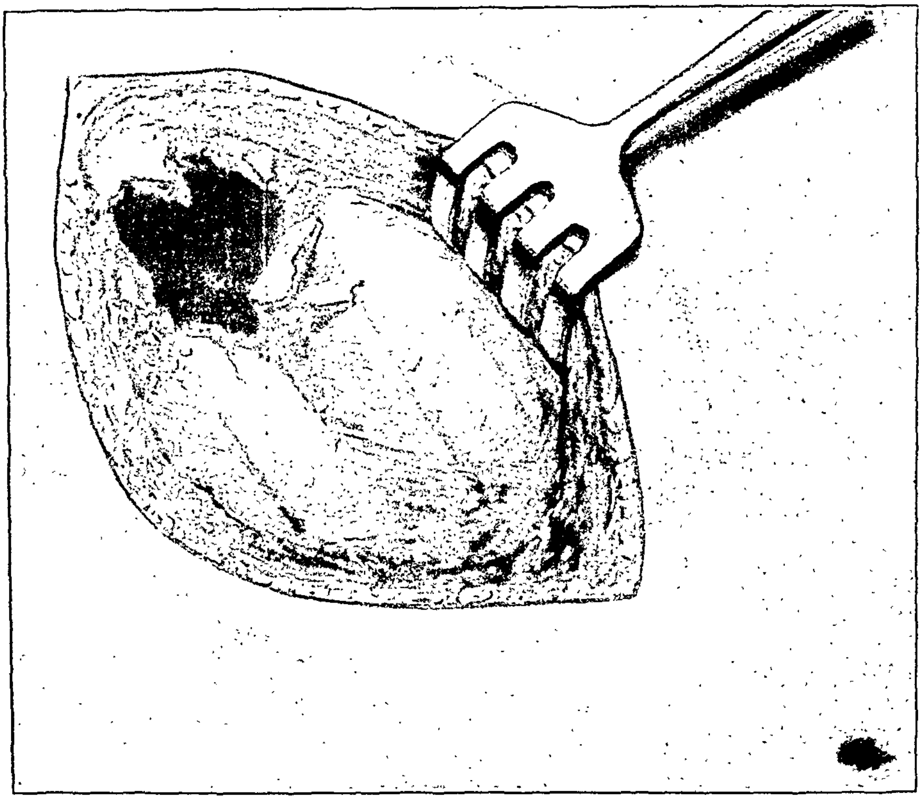
FIG 9.



Drawing to illustrate the method of suturing the lung in the previous case (Fig. 3, Coloured Plate), after excision of the wounded area. The patient recovered without suppuration.

lung collapses, unless a large vessel has been injured. Lung tissue may also be incised without fear; any fresh bleeding is easily controlled by suture. The treatment of a wound of the lung itself is sometimes difficult owing to the fact that it is undesirable to slit up a large wound so as to excise it. If the wound is readily accessible it should be excised, and if that is not practicable it should be cleansed as far as possible by wiping with gauze. (Fig. 10.) Luckily the lung is a well-aerated and vascular organ, apparently able to withstand a very considerable amount of infection. The proof of this statement lies in the fact that gas gangrene of the lung itself was of rare occurrence, though anaerobic infection of the blood in the pleural cavity was frequently met with. The hole in the lung is easily closed by suture and should be so treated. (Fig. 11.)

FIG. 10.



A perforating bullet wound with small entry and "explosive" exit. The destruction to ribs and pleura was great, and a large hole leading into the chest is revealed by the first stage of the operation.

Cleansing of the Pleural Cavity.—In all cases it is necessary to leave the pleural cavity dry and clean. The blood in it can easily be scooped out with the gloved hand and then the surface can be gently sponged. There is no objection either to washing it out with warm saline—the French use ether; but in any case it should be left dry and then closed.

Closure of the Chest.—Whether the operation has been performed through the wound or by fresh incision, the chest must always be closed completely in layers. In those cases in which there has been a loss of pleural membrane it may be impossible to bring the two edges together, and one has to content oneself with a covering of muscle and skin.

A large number of the patients treated in the manner just described made a good recovery, and in those patients who had lost a large quantity of blood recovery was aided by a transfusion of blood. Of course all the patients did not heal by first intention and a certain number of them developed an empyema which had to be drained later. A careful watch had to be kept to see that there was not an accumulation of fluid in the pleural cavity, and some surgeons adopted the principle of a daily puncture of the pleural cavity with an exploring needle, in order to keep the cavity dry. In this way they copied, but in an improved manner, the ancient custom of sucking the wound which was employed for so long in the earlier wars.

Such was the large operation which was developed for the treatment of a certain number of cases. For one reason or another, a very large group of cases were not operated on, either because there was not time or opportunity to do so, or because it was not considered necessary, and a considerable number of them became infected. It would be of great value if one could foretell which patient would become infected and which would not, for then one would forestall sepsis by an early operation. Unfortunately, one cannot do so, and all it is possible to say is that a patient who has lost a large quantity of blood is more liable to infection than one who has not.

TREATMENT OF HÆMOTHORAX.

Opinion has fluctuated as to the correct treatment of a patient suffering from hæmothorax without retention of a foreign body and without severe lacerated wounds—e.g., such as result from through-and-through bullet wounds.

Almost any patient with a penetrating wound had a hæmothorax to a lesser or greater extent. Very many men with clean perforating wounds and a small hæmothorax recovered quickly and returned to duty without disability in one or two months. Others with a large hæmothorax had a long convalescence and recovered with a disability of shortness of breath, due to fibrous thickening of the pleura and contraction of the chest; others again became infected and developed an empyema with all its well-known dangers and troubles. In the early days of the war it was not considered desirable to aspirate a hæmothorax for several days after the injury for fear of starting bleeding. This fear was found to be groundless, and with better knowledge it was clear that in any case of hæmothorax large enough to cause distress it was not only harmless to aspirate, but actually beneficial, and so this became the general practice. A few enthusiasts went so far as to urge that every case of penetrating wounds should be operated on, the hæmothorax emptied, and the chest closed. This appeared to be an extreme view which was not justified.

It remained, therefore, an axiom that a patient with a hæmothorax should be watched most carefully for signs of infection, so that with the first development of symptoms more active measures might be taken.

Treatment of Infected Hæmothorax.

Signs of infection of a hæmothorax developed sometimes within a few days of the injury, or might be delayed for four, five, or six weeks. In the late stages where pus had formed the only treatment to be done is a drainage operation. If, however, infection developed and was recognised within a few days after the wound, it was often worth while to make a wide opening in the chest, so as to clear out the whole of the hæmothorax fluid and the blood clot. In a few cases in which infection was mild it proved possible to close the chest completely without drainage, and in others a secondary closure was made after cleansing the pleural cavity for a few days with Carrel-Dakin fluid.

The success of the procedure in these cases seemed to depend more on the amount and character of the infecting organism rather than the surgery; in general terms, the method was not successful if the infection was due to streptococci.

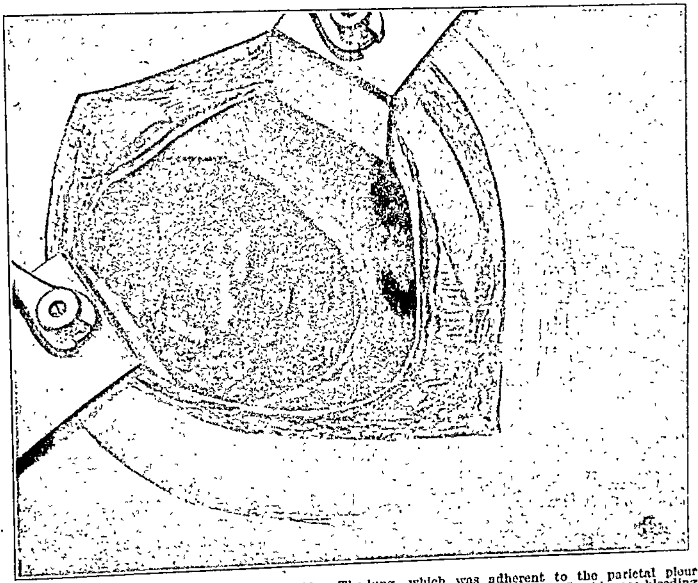
ABDOMINO-THORACIC WOUNDS. (FIG. 4.)

So far the subject has been considered as if wounds in the recent war were always single and confined to one cavity, as was more likely in days when men fought with sword and lance. Unfortunately this was not so, and surgeons who served with the armies must remember how often they were confronted with a man suffering from multiple wounds. A man might have a chest wound and a wound of the head, spine, or abdomen as well. Often, too, the same bullet traversed the abdomen and the chest, and these abdomino-thoracic wounds formed a dangerous and difficult class to deal with. If the intestines were perforated they had to be sutured to save life, and one had to weigh the advisability of operating on both the abdomen and the chest through separate incisions—unless it was possible to reach both through one incision, as sometimes occurred when the wound was in the lower left costal area. In doing operations in the pleural cavity one learnt how often the diaphragm was injured, and it was illuminating to realise how much easier it was to suture this structure from the superior rather than the inferior aspect.

LATE RESULTS OF CHEST WOUNDS.

Much might be said about the complications of chest wounds, of emphysema, of collapse of the lung, and a number of interesting phenomena. There is also a long chapter yet to be written on the after-results, such as the varying amounts of disability and the ultimate fate of retained missiles. Only by taking a broad view of the subject can one justly assess the results obtained.

FIG. 11.



Second stage of operation from the same case as Fig. 10. The lung, which was adherent to the parietal pleura, shows extensive laceration, and in this lacerated area are fragments of rib and visible lung vessels. In this case bleeding was still going on 23 hours after the wound, because the lung could not collapse on account of its adhesions. The bleeding points were ligatured and the chest then closed. The wound suppurated down to the lung, but the patient made a slow and satisfactory recovery.

If we may now presume to generalise, it may be said that progress has been made; but it is clear that this progress has been painfully slow, and neither steady nor continuous. It is also clear that at no time during the last 600 years has so great an advance been made as during the last war; the reasons for this advance are, broadly: The stimulus given to research by the large number of wounded, the fact that the medical services reached a pitch of excellence never previously attained, and the application to surgery of bacteriology, which supplied a rational treatment for wounds that was not understood by our forefathers.

The Relation of HEART DISEASE AND PREGNANCY.

By Sir JAMES MACKENZIE, M.D. Edin., F.R.S.,
DIRECTOR OF ST. ANDREWS CLINICAL INSTITUTE.

IN FOUR SECTIONS—SECTION II.

The Physiology of the Heart in Relation to its Efficiency.

Adaptability of the Heart to the Body's Needs.

The function of the heart is to supply blood to the body. The amount of work done by the heart is not constant, for it has to vary its activities according to the requirements of the different organs. The organs of the body vary in their activities. At one time they are functioning, at other times resting. The heart also varies its activities to meet these requirements.

The work of the heart is greatly facilitated by the modification of the function of other parts of the circulatory apparatus. Thus, during the activity of an organ the heart's output is increased, chiefly by an increase in the rate of its contraction; at the same time its work is facilitated by relaxation of the blood-vessels of the active organ. The heart itself receives a greater supply of blood during its increased activity. Starling computes that the amount of blood received by the heart during effort may be three times as great as that which it receives when at rest. This increased flow is rendered possible by the peculiar distensibility of the coronary artery.

Rest and Reserve Forces of the Heart.

The ability of the heart to accommodate its work to the requirements of the body is due to certain qualities inherent in the heart muscle. When the body is at rest the heart supplies just that quantity of blood which maintains existence. When effort is made it has the power of increasing its energy to meet the new demands. There are thus two forms of heart force: one, sufficient for the needs of the body when at rest—the rest force; and another, held in reserve, and used only when an effort is made—the reserve force.

While this distinction is somewhat theoretical, and is not sharply defined, yet the difference between the heart at rest and the heart during exertion is a very real one. Its importance will be made clear when we are considering heart failure.

Response to Effort in Health.

The healthiest heart can be forced to do only a certain amount of work; in other words, the reserve force is limited. Exhaustion of the reserve force is shown by signs of distress, particularly by dyspnœa. When effort is made the heart responds and continues to use its reserve force; so long as this is not exhausted, effort causes no distress. Thus, though individual may be able to walk a certain distance comfort, if he carries a heavy weight he will suffer distress before that distance is accomplished. His heart is not in any way impaired, but its reserve force is exhausted sooner.

Relation of the Reserve Force to Pregnancy.

This simple statement explains many of the phenomena which occur in the heart during pregnancy. We know that this state imposes more work on the heart, and this not only in connexion with the maintenance of the placental circulation, but also in respect of the additional weight carried by the mother. There are again disturbing factors in the form of interference with the shape and movements of the chest and displacement of the heart itself.

All this additional work is met by a call upon the reserve force. This is shown by the fact that the field of response to effort becomes limited; the pregnant woman cannot run upstairs so freely or so easily as was her wont.

Does the Left Ventricle Hypertrophy during Pregnancy?

The assumption that the heart hypertrophies during pregnancy is, as I have suggested already, not justified. To begin with, there is no need for hypertrophy so long as the reserve force is ample; as we shall see, when it is not ample, grave complications arise. Moreover, it is a mistake to imagine that a heart can hypertrophy in the easy fashion postulated. While it is possible that long years of continued severe effort may produce a slight increase in the size of the organ, this increase is so small as not to be perceptible in the vast majority of people who lead strenuous lives. It is a matter of observation that strong, healthy, vigorous men do not have larger hearts than men carrying on much less vigorous work. The fact that pregnant women are hampered by breathlessness in making some effort which previously they could undertake in comfort shows an earlier exhaustion of the reserve force. This does not suggest hypertrophy. Further, hypertrophy cannot be detected by a physical examination of the heart, except in those instances—for example, aortic regurgitation—in which it is very well marked. In such cases there is a big and forcible apex beat.

This forcible apex beat does not present itself in healthy pregnant women. The changes in the shape of the heart which occur are thus not due to hypertrophy. On the contrary we have a complete explanation of these changes in the displacement of the organ and the widening of the chest caused by the uterine tumour.

Relation of a Normal to an Impaired Efficiency.

The distress arising from an exhausting effort may not be due to disease of the heart, for distress can arise in health. This is well seen when any one becomes "winded" on running as far as he can. So that the phenomena of exhaustion are the same in quality in health and in disease. In health they appear more slowly, in disease more rapidly.

The distance which a healthy person can run is determined by the onset of distress. In the very young this distance is short; but with the years it gradually increases, until a maximum is reached in the hey-day of early manhood. From that period onwards a gradual decrease sets in, the distance ever diminishing, till old age is reached. There is no standard. Some people are remarkably long-winded; others, equally healthy, are short-winded.

The Purpose of Distress in Effort.

The purpose of the mechanism which thus limits for each of us the amount of effort we may undertake can fairly be described as protective; and it is well to keep this point of view in mind. It affords not only a measure of the heart's capacity, but also a rational line of treatment in heart failure. The mechanism is protective because of the universal dislike of distress. This dislike compels a man to cease effort before injury is done to his heart or other organs which are being strained. Little consideration, therefore, is required to understand how observation of the response to effort becomes the most important method of estimating the heart's efficiency. In eliciting this response we are calling into play a mechanism which exists in every individual, healthy and diseased.

The Standard of the Heart's Efficiency.

However, the doctor is to employ this method intelligently; and to do so he must undergo very careful training. The method is apparently so simple that everybody feels confident that he has recognised it, used it, and exhausted its possibilities. As a matter of fact, few people have given it anything like the amount of study it requires. In consequence its importance and the manner of its application are only partially understood.

The standard distance to be employed in determining whether or not an individual's response to effort is limited may at first seem a matter requiring definition. I have already referred to the fact that some people are long-distance runners, while others can run only a short distance. An amount of effort which would stop the latter may thus occasion the former no trouble. From this it can be seen that each has his own standard. It is therefore the duty of the doctor, by appropriate questions and tests, to obtain a knowledge of his patient's individual capacity, both in health and disease, before he attempts to determine the presence or the degree of heart failure. This information can be acquired only after much experience, as indeed may be understood when the various elements of the problem are taken into consideration. Thus, some people with damaged hearts can walk long distances but cannot cycle, while others can cycle but are distressed by walking. Some people, again, suffer speedily on walking on a cold day or after a full meal. One man with mitral stenosis and auricular fibrillation followed his occupation as a mechanic, swinging his fore-hammer many hours, but had difficulty when walking up a hill.

THE LAW OF HEART FAILURE.

The Response to Effort in Disease.

The first sign of heart failure is a diminution of the power of this organ to respond to effort. The heart, as we have seen, holds in reserve a force which can be liberated to meet the demands of the body. The exhaustion of this force gives the key to heart failure. All the organs of the body, being dependent on the heart for an increased supply of blood during their activity, show an impaired efficiency when there is any failure to supply their requirements. Thus the first sign of trouble will be found not in the heart itself, but in the other organs. Their functions will be interfered with and they will give rise to symptoms.

The Nature and Mechanism of the Early Signs of Heart Failure.

Bodily exertion is the most effective way of calling upon the whole reserve force of the heart. Exertion can be carried on at the command of the will; it employs great masses of muscles, and these require a great increase in their blood-supply during effort. While during exertion the muscles demand and receive an increased supply of blood, the other organs of the body have their blood-supply impaired. Their functions are thus not properly executed. Most of the organs afford no sign of impaired function; there are, however, organs which are extremely sensitive to a diminished or depraved supply of blood.

The failure of blood-supply occurs in two ways: (1) by an impairment in quality; and (2) by a deficiency in quantity. During continuous effort in health and in disease a time comes when the output of the heart diminishes so that the organs do not receive a supply of blood suited to their requirements. This diminished circulation through the cleansing organs results in an accumulation of waste products in the blood.

The consequences of this accumulation react upon all the organs, but there are two in particular in which symptoms of a striking and easily recognised kind are produced. The symptoms are so characteristic that we must set them down at once. They are: (1) breathlessness and its associated phenomena, in consequence of the stimulation of the respiratory reflex; (2) pain and its associated phenomena in consequence of exhaustion of the heart muscle. Both may not be present in the one individual, but one or other is always present, however slight the degree of heart failure may be. In advanced conditions other organs and tissues may show signs—for example, dropsy and enlarged liver; but these are late manifestations and are not constant.

Respiratory Distress.

The system most sensitive to an impaired blood-supply, or rather the system which most readily gives rise to sensations of distress, is the respiratory. Exactly how the distress is brought about need not concern us here; the point we are making is its association with heart failure. This is definite and beyond dispute. The impaired and impure blood-supply stimulates the respiratory reflex, so that the breathing is increased in rate. It is not, however, the rapid breathing which constitutes the distress, but that curious sensation called sometimes "air hunger," a feeling which compels the patient to take deep and rapid inspirations.

This breathlessness is the most common cause of distress in health and in disease. It is, in its quality, similar in both these states, as we have already suggested. Thus, a man in health runs a mile with ease, but suffers distress when this distance is exceeded; his heart becomes impaired, and then he may have the same symptoms of distress on running a few yards. With further impairment the breathlessness may come on during but a slight effort or even when he is at rest in bed. The reason for the breathlessness and distress remains the same in each instance. *It is the failure of the heart to supply* sufficient pure blood to the respiratory centre.

Pain.

The next most common distressful sensation which compels cessation of effort is pain felt in some part of the chest, usually on the left side, and in the left arm. The inquiry into the production of pain in affections of the viscera has been a long and difficult one. Indeed the subject is still somewhat confused. A certain advance has, however, been made, which shows that there are but few conditions actually capable of producing pain. One of these is the contraction—or at least a form of contraction—of muscle. It is now many years since my attention was first drawn to the fact that some of the severest pains are associated with hollow muscular organs—for instance, the uterus, the bowel, the ureter, and the gall duct. At a later period the study of heart affections revealed the fact that pain was evoked on occasions when effort was continued after exhaustion had taken place. This pain bore a relationship to the heart.

There is now sufficient evidence to show that, while the peristalsis or contraction of a hollow muscle may in many cases produce no sensation, contractions of a certain strength do produce pain. An analogy, too, exists between the production of this pain and that occurring in the skeletal muscles, for we find that, while the muscles usually contract painlessly, yet certain forms of contraction are very painful; for example, cramp. Moreover, if skeletal muscles be forced to contract when they are exhausted, or—an even more severe test—when they are deprived of sufficient blood-supply, then pain of so severe a character may arise that effort will have to be abandoned.

We find the same kind of pain arising in connexion with exhaustion of the heart. Conditions which enfeeble the heart muscle or impair its blood-supply favour the occurrence of pain when effort is made; and this pain is frequently of such severity as to cause a cessation of effort. The mechanism by which this effect is brought about is present in every individual, and the effect may be produced in the healthy as well as in those with impaired hearts. On several occasions I have noted its production in healthy people who had been exposed to great exertion for a long time; its production in damaged hearts is well known. From a study of a large number of cases, I conclude that pain arises from fatigue of the heart muscle, and is more easily produced when there is a deficient supply of blood to the muscle, as occurs in cases of disease of the coronary arteries. Its appearance in healthy people is due to fatigue from over-exertion. The pain may arise also in people whose hearts suffer, in company with other organs, from some general cause, as, for example, the poisoning from infection. I have dealt more fully elsewhere with the evidence which leads to this view of pain; I refer later to the matter under the heading of "The Neurotic Heart."

Mechanism by which Pain is Produced.

The following seems to be the mechanism by which pain and allied phenomena are produced. When a muscle is exercised beyond its power, exhaustion occurs; this acts by stimulating the nerve ends. These nerve ends convey to the central nervous system a stimulus which affects certain centres of which that giving rise to pain is one. The distress thus produced causes a cessation of the effort. The stimulation may affect not only the pain centres, but also other centres in the neighbourhood, such as the cells of nerves supplying certain muscles. In this latter instance the muscles contract, and thus we frequently find a sense of constriction as well as of pain.

Sense of Constriction.

There is, thus, a relation between the sense of tightness and the pain. In many of my cases of angina pectoris I have observed that the first consciousness of limitation of the field of response to effort is this weight or oppression or tightness across the top of the chest. The production of pain comes later. In some people effort produces first a sense of constriction; if the effort is persisted in, pain is induced. It is for that reason that I lean to the view that the compression of the chest is due to a reflex contraction of the intercostal muscles. The sensation sometimes goes so far as to cause a feeling that the chest is being gripped in a vice; this feeling resembles that accompanying the contraction of the intercostal muscles in pleurodynia, and also the hardening and contraction of the muscles of the abdominal wall in attacks of renal and gallstone colic.

It would seem, therefore, that, while the air hunger or breathlessness is produced by the defective supply of blood to the respiratory centre, the pain and sensation of constriction of the chest are produced by a defective supply of blood to the heart muscle, and therefore due to exhaustion of the heart muscle.

Relation of Symptoms to the Disease.

The question often arises: "Why do many people suffer from the same pathological state, and yet have symptoms so diverse?" We know that many people die of heart failure without having suffered any pain. From what I have said already the reader will be able to understand why I believe that this is to be explained by a reference to the sensation of distress which is first called into play. A defective supply of blood to the respiratory centre may cause such distress in the shape of breathlessness that effort ceases before the defective supply affects the heart itself. In the same way pain may be the first sign of an exhausted heart in those instances in which the blood-supply to the heart muscle is markedly diminished. This view is supported by what happens in some people who develop auricular fibrillation. In the great majority of people with this complaint breathlessness is the dominant symptom. It is produced by effort. Pain is much less frequent, and attacks of angina pectoris rarely occur. Patients who suffer from angina pectoris, and are compelled to abandon effort because of pain, sometimes develop auricular fibrillation. When this happens it is no longer pain which pulls them up, but breathlessness. Thus a man who could usually walk 200 yards before he was pulled up by pain developed auricular fibrillation, and was compelled to stop after 100 yards because of breathlessness. He had no more attacks of pain.

Exhaustion.

Inquiry into sensations which compel cessation of effort discloses the fact that there are several of these. Exhaustion is perhaps the next most important, though it is not directly cardiac in origin. It is the sensation which compels people in indifferent health to cease walking or exerting themselves—a feeling which probably everyone has experienced from time to time, and which each individual would describe in slightly different words. There are a number of different kinds of exhaustion; these can be provoked in different ways and are associated with different diseases. Into that I do not propose to enter here, further than to state that exhaustion is not a sensation provoked by a failing heart responding to effort.

This is important, because a sense of exhaustion is commonly assumed to be an evidence of heart failure. As a matter of fact the feeling is produced by another process altogether, which has as its basis a modification of the vaso-motor system. The fact that exhaustion may occur in healthy people as a temporary phenomenon and under circumstances in which no strain is put on the heart—for example, standing in a hot and stuffy atmosphere—proves this. An inquiry into the whole subject is at present being undertaken. I may perhaps say that the sensation is found to be a symptom of much significance, and that it seems to vary with the nature of the disease present. It may, of course, arise readily in people with some actual heart trouble; this, however, is a different matter from saying that it is due to the heart trouble. Its presence should invariably be regarded as a reason for the examination of the patient for some cause of ill-health other than heart disease, to which—let me repeat—its relationship is only incidental.

Palpitation.

The susceptibility of the heart to stimulation renders it liable to a variety of manifestations. There is scarcely a disease process, however trivial, or a modification of the activity of any organ, which is not reflected on some part of the cardio-vascular system; many of these disturbances affect some portion of the heart's own mechanism. It is on this account that we frequently encounter disturbances in the action of the heart when the body is at rest. As is well known, mental effort or excitement will produce an attack of palpitation. Moreover, experience shows that stimuli, from other organs, will produce the same phenomenon. When, therefore, we find a patient who complains of seemingly causeless attacks of palpitation, we should at once institute a search for the cause of these in some organ other than the heart: for it is rare, even in disease of the heart, for palpitation to arise without some extrinsic stimulus. I do not dispute, on the other hand, that certain states of the heart render it more liable to stimulation of this kind, and I mention in this connexion febrile or toxic conditions due to general infections or absorption from diseases elsewhere.

Summary of Heart Failure.

Evidences of heart failure are *to be found not in* the examination of the organ, but in the manner in which the circulation *is maintained in the different* organs of the body.

The symptoms of heart failure are *to be found* in the evidences of disturbed function of the organs of the body.

Such disturbed function is the outcome of an insufficient or depraved blood-supply.

While every organ of the body suffers when heart failure sets in, only *a few organs produce* recognisable signs.

Dropsy and enlarged liver are sometimes spoken of as "cardinal signs of heart failure," but they occur only in heart failure from certain diseases and in an advanced stage of the condition. Most cases of heart failure do not show these signs at all, or show them only at a late period.

The organs which show the most distinctive signs of heart failure are the respiratory organs and the heart itself.

Although the signs are provoked by these organs, they are not directly due to them, but to their reflex action on the nervous system.

In the case of both these organs heart failure gives rise to distress; in the one case the distress is associated with breathlessness, in the other with pain of a definite kind in a definite locality.

There are thus two groups of symptoms which are provoked by heart failure, and which afford a standard for measuring the heart's capacity.

HEART FAILURE WHEN AT REST.

Heart failure may set in when the body is at rest; when, that is, there are no opportunities for testing the effect of effort except movements in bed. This occurs in the case of people who are forced to lie up on account of an accident, or a surgical operation, or pregnancy, or acute febrile infections.

The symptoms of failure in these states resemble those of certain forms of chronic heart disease when the patient is confined to bed; for example, advanced mitral stenosis or auricular fibrillation. It is in these latter cases that the best opportunity is afforded of studying the condition.

In the inquiry I carried out I observed cases of typhoid fever, of old people confined to bed after a fracture of the leg or after a surgical operation, of pregnant women, and of chronic disease of the heart.

Earliest Signs.

The failure begins very insidiously, and unless carefully searched for it may easily escape notice until it is far advanced. The first symptom which arrests attention is a slight increase in the rate of breathing. A slight acceleration of the pulse usually accompanies the increase in the breathing. This, however, may be masked by an acceleration *of the* pulse due to the complaint.

Dilatation of Right Heart.

In certain cases, especially in *typhoid fever* or in chronic heart disease, there is an increase in the size of the right side of the *heart*, which is revealed by a slight extension of the transverse dullness, and by the appearance *of* pulsation in the epigastrium—a form of pulsation peculiar to the right heart.

In regard to these two signs, it must be noted that increase in the size of the right heart, of a mild degree, causes little increase of dullness to the right, because the right side of the *heart* is fixed by the attachments between the superior and inferior venæ cavæ. The increase pushes *the whole* heart to the left. In some cases, too, the greater part of the anterior surface of the *heart* is *made* up of the right auricle and ventricle. This can be verified by the character of *the apex* beat when it is present. When the apex is formed by the left ventricle there is an *out-thrust* during ventricular systole (Fig. 3), and an indrawing during diastole. When it is formed by the right ventricle, the reverse takes place; an indrawing occurs during systole and an out-thrust during diastole, as in the latter part of Fig. 3.

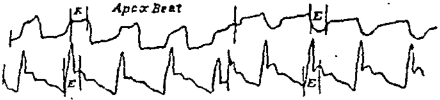


FIG. 3.—Simultaneous tracings of the heart movement (upper tracing), and *of the radial pulse (lower tracing)*. The first part of the upper tracing was taken from the apex beat, immediately outside the nipple line, and shows a rise, due *to the out-thrust of the apex*, during the ventricular systole (space *E*). This out-thrust is characteristic of the movement of the left ventricle. The latter part of the upper tracing was taken immediately inside the nipple line, and shows a fall during the period of the ventricular systole (space *E*). This indrawing is characteristic of the movement of the right ventricle—receding from the chest wall as it empties.

In *epigastric pulsation* due to dilatation of the right ventricle, the movements are similar to those of the apex beat, *when this is due to the right* ventricle—an indrawing during systole and an out-thrust during diastole (Fig. 4). That point distinguishes epigastric pulsation due to the right ventricle from epigastric pulsation due to other causes; for example the left ventricle, the abdominal aorta, or the liver—all of which show an out-thrust during systole. It is to be noted that this increase of the right heart may take place with no perceptible modification of the heart sounds.

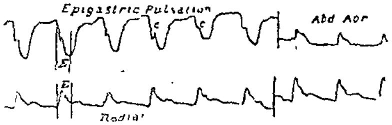


FIG. 4.—Tracings of the movements of the right ventricle in the epigastrium taken at the same time as the radial pulse. The epigastric pulsation shows an indrawing during systole (space *E*), due to the recession of the ventricle as it empties—resembling the latter part of the heart movement in Fig. 3. At the end of the tracing are two beats of the abdominal aorta, to show the difference between the epigastric pulsation *of the right heart and that of the aorta.*

Œdema of the Lungs.

The most instructive signs of early failure in bed, however, are *the changes which take place at the* bases of the lungs. The systematic examination of weakly people, *confined to bed, reveals frequently* a few fine crepitations at one or other base of the *lung*, behind. *In* the early stage of failure those crepitations disappear after the first deep inspiration. In many weakly people the condition goes no farther; in those, however, in whom heart failure proceeds, the crepitations do not disappear during deep inspiration, but persist. In course of time an impairment of the percussion note may be detected, and the condition may go on till there is marked dulness of one or both bases. Disappearance of the crepitations and the breath sounds now *occurs*. A post-mortem examination of such cases shows the lungs to be sodden *and airless at the base*. Sometimes patches of *catarrhal* pneumonia are found in the substance *of the œdematous parts* of the lung.

With the increase of this passive congestion other *symptoms appear*. The breathing becomes more hurried; the act of turning over in bed produces *evident* dyspnœa; the pulse-rate increases; if there be catarrhal pneumonia, the temperature *rises* with its onset, and the patient becomes manifestly ill.

Method of Detecting the Onset of Pulmonary Stasis.

It had been recognised that stasis of the lung tends to occur in cases of pregnancy complicated by mitral stenosis. Bearing this in mind, I extended my inquiry to include not only people with damaged hearts, but healthy women during pregnancy and people suffering from any form of debility. My object was to find out whether or not crepitations at the bases of the lungs are a sign of danger in pregnancy when they occur in a woman with heart disease. I examined and kept notes of women in the manner previously described.

I found by this means that crepitations at the bases of the lung are far from being an uncommon sign. The method I adopted was as follows: I told the patient to stay in bed on a particular day. When I visited her I observed which side she lay on, and before attempting any further examination made her sit up. While I auscultated the base of the lung on the side on which she had been lying, she took a deep breath. In most cases no crepitations were heard; in others fine crepitations were heard which disappeared after the first deep inspiration.

Such people went on to full time, were confined, and suffered from no heart trouble. Even those in whom the crepitations were more persistent did not have any cardiac trouble. In all of them the crepitations disappeared during the strain of labour, though many showed crepitations at the base a day or two after the delivery. No bad consequences followed. I noted, however, that the crepitations all disappeared on taking a few deep breaths.

In those women who had mitral stenosis or auricular fibrillation, and who gave trouble on account of their hearts, the crepitations did not disappear on deep breathing, but persisted. In some the lungs became dull to persussion from an increase of œdema. The œdema occasionally grew worse till the breathing became embarrassed; the œdema after confinement was often more pronounced than before it.

While, therefore, crepitations at the base, in a healthy woman, were shown to be a sign of no serious significance, they gave an indication of danger when the pregnancy was complicated by heart disease.

Mechanism of Right Heart Failure.

While in some people heart failure can take place and proceed far without demonstrable physical sign, in others œdema of the legs is a prominent feature. It is not quite clear why there should be this difference; personally I reasoned that dropsy is in some way or other associated with a diminished force of the left ventricle, and is, in all probability, due to a diminished *vis-a-tergo*. This view was strengthened by the observation that true cardiac dropsy is always associated with a dilated left ventricle.

I had frequently been confronted with cases of dropsy in which an abnormal sign such as a systolic murmur was present. I assumed that the dropsy was due to a failing heart. But I found that some of these cases showed no enlargement of the heart, and in the course of time it became apparent that their dropsy was not of cardiac origin. I therefore came to the conclusion that in all cases of *cardiac* dropsy the left ventricle is dilated, and so is not able to overcome the peripheral resistance. What other factors there are, beyond this, I do not know; nevertheless the recognition of an association, even if it be not cause and effect, is of great clinical value.

Reasoning from these facts, I looked upon the crepitations at the base of the lungs as being due to œdema, occasioned by a diminution of the force of the right ventricle. The association of œdema of the lungs with the demonstrable evidence of dilated right heart, already described, supported this view. I then set about to ascertain why it was that heart failure should set in while the body remained at rest, and why it should take this particular form.

When one reviews the factors which favour the flow of blood through the lungs, two of these stand out prominently:

(1) The force of the right ventricle;
(2) The movements of respiration.

The force of the right ventricle is the main factor, but the free movement of the chest wall undoubtedly helps. When a heart fails the patient sits up and breathes in a laboured fashion. When a person lies down pressure is exerted upon the ribs so that their movements are restricted.

With a good right ventricle there is no difficulty in maintaining the circulation through the lungs. With a weakened one, or with an embarrassed pulmonary circulation, the case is altered and the circulation is not maintained efficiently. The blood tends to stagnate in that part of the lung which is passive during respiration. This probably is the reason why the first signs of right-heart failure are the crepitations at the base of the lung on the side on which the patient lies. I have repeatedly seen all signs of stasis disappear when the patient was made to sit up and when, at times, he breathed deeply.

The fact that mitral stenosis hinders the flow of blood through the lungs, and therefore embarrasses the right heart, accounts also for the fact that œdema of the lungs is an early sign of the failure of the right ventricle. Having assured myself of this, I put the question why it should be specially serious in pregnancy. In order to find an answer, I made a careful study of certain changes which take place in a normal pregnancy. It is perfectly evident that in the pregnant state, towards the later months, the heart is embarrassed in healthy women; for the woman is not capable of so much exertion as she was accustomed to undertake, and becomes breathless during efforts which at other times would not have inconvenienced her.

Source of Danger in Pregnancy with Mitral Stenosis.

The embarrassment of the circulation which occurs during pregnancy was described in an earlier section, where it was shown that the growth of the uterine tumour interferes with the movements of respiration by widening the thoracic cavity, preventing the descent of the diaphragm, and displacing the heart. The result was seen to be a limitation of the heart's power to respond to effort, and a tendency to stasis at the bases of the lung.

In some cases of mitral stenosis the blood is obstructed at the mitral orifice, the left auricle becomes full and embarrassed, engorgement of the lungs occur, and the right heart has a difficulty in forcing the blood through the lungs. In mitral stenosis where this state of affairs is already present the additional embarrassment caused by pregnancy places the woman in a precarious state. This point, however, will be more fully discussed under mitral stenosis.

The Back-pressure Theory of Heart Failure.

The explanation given of the mechanism of heart failure in mitral stenosis has led to the idea that this is the usual manner of heart failure, and in consequence there has arisen what is called the back-pressure theory. Although, as I have pointed out, there is some truth in this theory in certain cases, yet in the majority it gives a wrong impression. With the discovery of murmurs, and their relation to valves found damaged at the post-mortem examination, there arose the idea that the embarrassment of the circulation in heart failure was due to the incompetency of the valves. This idea seemed to be strengthened by the dropsy and œdema of the lungs which were also frequently present. It was taught that where any difficulty occurred at the aortic orifice, the left ventricle would be embarrassed, and dilatation would follow. As a result of this dilatation, the mitral valve would no longer be able to close the orifice, so that during systole the blood would flow back into the left auricle. This in time would, in its turn, become distended, and so lead to interference with the pulmonary circulation and to engorgement of the lungs. The right ventricle thus must be embarrassed also, and would sooner or later dilate so that the tricuspid valves would be rendered incompetent and cause distension of the right auricle, and then engorgement of the veins of the body, enlargement of the liver, and dropsy. By some people to-day a tricuspid murmur is looked upon as a sign of complete heart failure.

It was on this plausible reasoning that the back-pressure theory of heart failure was built up; and it is because of this reasoning that murmurs are looked upon as being so ominous.

Seeing that this belief is so widely accepted by authorities and teachers, one might reasonably expect that, in the vast literature dealing with affections of the heart, there would be recorded at least one case showing the progress of heart failure after this fashion. I have searched diligently, but I have not found the record of one single case which could support the idea. Moreover, I have, time and again, asked its supporters to give me a record from their own experiences of heart failure arising in this way. None of them have done so. So long a period has elapsed since I first called attention to this misconception, that plenty of time has been afforded physicians to produce evidence in support of it. They have failed to produce any evidence.

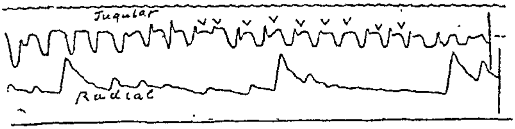


FIG. 5.—Characteristic irregularity appearing at the onset of auricular fibrillation. The upper tracing is from the jugular vein and shows large waves (*v*) with each systole of the right ventricle. The lower tracing is from the radial, and shows in addition to a marked irregularity that the beats are sometimes so small that the instrument fails to record them.

The reason why the erroneous view is held is that there are present in certain forms of heart failure marked evidences of engorgement; for example, congestion of the veins, lividity of the face, enlarged liver, and dropsy. These evidences are invariably pointed to as proofs of "back-pressure." But if one watches the onset of those symptoms, one will be able to perceive that they arise in another way.

The Mechanism of Heart Failure.

While watching for a period of years the changes which gradually occurred in my patients with mitral disease following rheumatic fever, and in elderly people, I was struck with the suddenness of the onset of heart failure in these subjects. It came accompanied by great breathlessness, lividity of face, enlargement and pulsation of the liver, and dropsy. During my observations I had taken notes of the various signs; on comparing the signs before and after the onset of heart failure, I found some remarkable differences. Thus, before the onset of heart failure the organ would be perfectly regular, while after the onset it would be irregular. The irregularity, too, was of a peculiar and distinctive kind.

Moreover, while before the onset of heart failure there were evidences of auricular activity, these disappeared with the onset. (These evidences of auricular activity were movements in the jugular veins or the liver due to contraction of the auricle, as in Fig. 2, and, in some cases, presystolic mitral or tricuspid murmurs. These all disappeared on the onset of heart failure.) These changes were afterwards found to be due to the occurrence of fibrillation of the auricle.

In some of my cases the auricular fibrillation lasted but a few hours or a few days. In a few, the patient, immediately after the onset of the fibrillation, became breathless. Some hours later the face would grow livid, the heart dilate, and the liver enlarge. The heart would sometimes suddenly revert to its normal, regular rhythm—the auricle beating again in a normal fashion. In these instances the patient at once experienced a great sense of relief, and in a few hours the face had regained its usual colour, and the heart and liver diminished in size. Effort would then be undertaken without breathlessness.

While I do not profess to comprehend the whole of the mechanism of heart failure, it is manifest to me that this sequence represents a very different picture from that which could be presented by "back-pressure." So far as I can understand it, the real process seems to be as follows: In cases of auricular fibrillation with heart failure the rate of the heart becomes increased, often greatly so, while the beats are weak and ineffective, and the radial pulse is small and sometimes scarcely perceptible (Fig. 5). The chief force which sends the blood through the systemic circulation to the right auricle is the left ventricle. When we find the ventricular beats small and ineffective, it is a reasonable surmise that such concomitant symptoms and signs as dropsy, enlarged liver, and lividity are due to the inability of this chamber of the heart to force the blood through the peripheral vascular system.

The inability of the left ventricle to expel its contents leads naturally to an accumulation of the blood in its cavity. Thus dilatation may occur. It is not, however, the accumulation of the blood alone which causes dilatation. In many hearts, in which fibrillation of the auricle is present, there is no dilatation. Dilatation indicates that the wall of the ventricle is damaged or impaired; its presence should always lead to consideration of the integrity of the heart muscle.

The importance of auricular fibrillation as a factor in the production of heart failure should be recognised. In my observations I found that about 90 per cent. of cases of heart failure with dropsy and enlarged liver were cases of auricular fibrillation. Moreover, in the great majority of cases of "heart-strain"—i.e. where heart failure with breathlessness has suddenly set in while the individual was making a violent or prolonged effort—the failure is due to the sudden onset of auricular fibrillation.

Auricular fibrillation is often attended by little or no impairment of the cardiac efficiency. In such cases the heart muscle is good, and the rate of the heart is not markedly increased.

There are other, but rarer, conditions which induce heart failure, but as they seldom, if ever, occur in connexion with pregnancy they need not be discussed here.

While "back-pressure" fails to account for the symptoms of heart failure, it is nevertheless a factor in some cases. In mitral stenosis there can be no doubt the left auricle is often embarrassed, and in some cases the pulmonary circulation shares in this disability. The right ventricle hypertrophies to overcome the difficulty in the pulmonary circulation. This point is of importance as it throws some light on the danger of pregnancy in mitral stenosis.

A MEDICAL FELLOW OF TRINITY COLLEGE, DUBLIN. Trinity College, Dublin, up to a few years ago elected one Fellow annually as the result of an examination in mathematics, classics, and philosophy. But under recent regulations it can, if it thinks fit, dispense with an examination and choose its Fellows where it will. The choice this year has fallen on Dr. W. R. Fearon, assistant to the King's Professor of the Institutes of Medicine, who has done much useful work in physiological chemistry. Apart from his work in science, Dr. Fearon's course in arts was distinguished. Among his honours is the vice-chancellor's medal for English poetry. Although Dr. Fearon is the first medical man for a long time to be chosen a Fellow, it has always been the custom for at least one Fellow at a time to devote himself to medicine subsequent to election. In former times the Board of Senior Fellows always included a *socius medicus*, and many who held this post were very distinguished in medicine as well as in arts.

THE SCHICK REACTION

AND DIPHTHERIA PROPHYLACTIC IMMUNISATION WITH TOXIN-ANTITOXIN MIXTURE.[*]

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The Schick reaction and diphtheria prophylaxis by active immunisation with toxin-antitoxin mixtures together constitute the greatest advance in our knowledge of the problems associated with diphtheria since the introduction of antitoxin. It is probable that when public opinion is sufficiently familiarised with these two methods and their significance, they will come into universal use and there will follow the same reduction in the occurrence of diphtheria that has been brought about by Jennerian vaccination for small-pox. Dr. Park of New York advocates the injection of all children between the ages of 6 months and 2 to 3 years. It is probable that the adoption of this method would lead in a very short time to the disappearance of diphtheria in the community. The methods are, therefore, of importance to those responsible for public health and to the immunologist.

We owe the intradermic skin reaction to Schick, and the active immunisation (which was foreshadowed many years ago by that prolific worker, Theobald Smith) to von Behring. Most of the work in this field has been carried out by von Behring and his colleagues in Germany, and by Park and Zingher in New York. It is a pleasure to acknowledge the generous manner in which Dr. Park and his colleagues have placed their material at our disposal.

Technique of the Reaction.

The Schick test consists in the intradermic injection of 0·2 c.cm. of a dilution of diphtheria toxin containing in 0·2 c.cm. 1/50 m.l.d. for a guinea-pig. The quantity of toxin actually used is about 0·0004 c.cm. of an ordinary aged toxin. When we use a concentrated toxin similar to one recently prepared by Dr. P. Hartley, we inject about 0·000 016 c.cm., which contains 0·000 000 02 g. of nitrogen.

Four types of reaction are shown: "negative" given by people with antitoxin in their blood; "positive" by those without antitoxin. The positive consists in a persistent red flush at the spot where the unheated toxin was injected, whereas no reaction appears where the heated toxin was given. A third group ("pseudo") give a reaction, but have antitoxin in their blood. These people respond to the injection of broth in which diphtheria bacilli have been grown, and which has subsequently been heated to 75°C. for 10 minutes. This heated toxin contains practically no "true" toxin; it produces no reaction in the skin of a guinea-pig and large quantities can be injected subcutaneously into guinea-pigs without harming them. The response given by these people is called a pseudo-reaction and is due to some unknown constituent. It is commonly stated to be due to bacillary protein, but we cannot find any authority for this statement and we propose to investigate the truth of it. The fourth group ("combined") consist of those who are sensitive to toxin and also to the "pseudo" constituent. At the site where the heated toxin was injected they show a reaction, while at the site where the unheated toxin was injected there appears a much larger reaction, which is the sum of the "true" toxin reaction and the pseudo-reaction. These people are not immune to diphtheria. (We are emphatically of opinion that in carrying out the test injection of toxin alone may lead to dangerous confusion. It is imperative that the control, heated toxin, be injected into one arm and the unheated into the other.)

The pseudo-reaction is rather puzzling. Park and Zingher in their very large experience have not found it in infants or young children whether immunised or not; it begins to appear at 5–10 years of age, and becomes much more frequent in adult life. If it is a specific response to the protein of diphtheria bacilli, then one would expect it to appear more or less in parallel with the immunity to diphtheria toxin, but it does not do so. It does not appear for certain in those who have had diphtheria and recovered, and who months later may have antitoxin in their blood. It does not occur in the babies either of those mothers who show a pseudo-reaction or of those who do not. One German observer records a series in which 10 of a group of 20 mothers showed pseudo-reaction, whereas none of the 20 babies did so. The cell sensitiveness is therefore not transmitted diaplacentally. The concentrated toxin referred to earlier unfortunately produced a pseudo-reaction, although its nitrogen content is extremely low. Ordinary toxin boiled for 30 minutes has produced a pseudo-reaction in one of us.

Preparation of Toxin for the Schick Test.

We have hitherto advised the issue of diluted toxin only for several reasons. There is an error in "filling" capillaries with toxin, as described by Zingher last year. We are of opinion that the clinician is liable to introduce an error in dilutions owing to the difficulty of getting the whole of a minute drop of toxin, which is about 1/50 of a c.cm., into the diluting fluid. Earlier in our work a batch of toxin diluted in the laboratory sometimes failed to pass our guinea-pig test. It is evident that the conditions must be very rigidly controlled, or the dilution of toxin will not be of standard strength. A serious mistake might arise if practitioners used weak toxin and, because of erroneous reactions, concluded that certain patients were immune and might be safely left exposed to infection—e.g., in a school epidemic—or, on the other hand, might be safely left without the injection of antitoxin though suffering from membranous sore throat. (Recent work makes us hope that we have succeeded in finding a stable dilution.)

We therefore make a toxin dilution each week and test it intracutaneously on normal guinea-pigs. We find the m.r.d.—i.e., the minimal dose that will produce a reaction when given alone—and also the dose that, when mixed with varying quantities of antitoxin, will give a reaction. Our current toxin dilution ready for the Schick test, when further diluted 20 times, causes a reaction in the guinea-pig's skin; 0·1 c.cm. when mixed with 0·0004 of a unit of antitoxin and injected intradermically, must also produce a definite reaction.

Stability of Diluted Toxin.—The details of tests presented show that the diluted toxin when kept at 0°C. undergoes practically no deterioration in four weeks, whereas after seven weeks a loss of about 30 per cent. in value is found. After seven days at 15°C. the loss in potency is just detectable, while after 14 days the loss is about 30 per cent. When kept at 37°C. the dilution deteriorated seriously in one day.

Reliability of the Test.

During the past few years we have tested some of the laboratory staff many times and have obtained consistent results. Park and Leete found in repetitions of tests on the same patients by the same observer a discrepancy of a few per cent. only. We were interested to observe that most if not all of these discrepant observations relate to patients who had been positive, and, later, became negative. We have experimental evidence that the very small amount of toxin present in the Schick test dose will produce an increase in the antitoxin concentration of the blood. The details of some experiments on rabbits show that five days after the injection of a Schick test dose the antitoxic content of the rabbit's blood had risen above the level at which the Schick reaction fails to appear in human beings. If the same effect, as shown, had been produced in human beings, the first Schick test would have given a positive result, whereas another test of five days or more later would have given a negative result.

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[*] Read before the Pathological Section, Royal Society of Medicine, April 19th, 1921.

The Schick test is roughly quantitative. A positive reaction does not indicate the total absence of immunity. The test does not divide the population into black and white, but rather into those darker or lighter than a certain shade of grey. If Schick had originally determined on 1/500 of an m.l.d. instead of 1/50, it is practically certain that numbers of people who give a positive response to the present standard Schick would give a negative reaction with the weaker dilutions, and would be considered immune to diphtheria. Roughly speaking, people with at least 1/30th of a unit of antitoxin per c.cm. of blood give a negative reaction, while those with less than 1/30th, or with no antitoxin at all, give a positive reaction. As the result of clinical experience Schick decided that it was safe to assume that people with 1/30th of a unit were immune to clinical diphtheria.

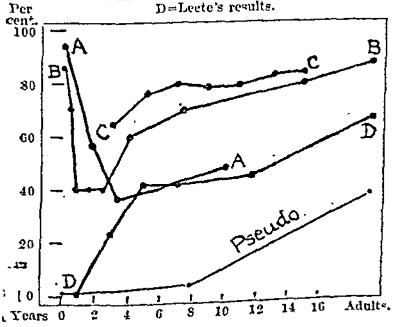
Results Obtained.

Recent observations on 18 members of the laboratory staff showed that 10 of them contained less than 0·0005 of a unit of antitoxin per c.cm. of blood—i.e., they probably contained none at all. Eight contained from one-fifth of a unit to 1 unit. Of these eight, six gave pseudo-reactions. Observations made from 1913 up to the present show that some of the laboratory staff have in their sera a greater concentration of antitoxin now than they had seven years ago. It was very interesting to find that three people, who had had abundant chance of becoming infected while working in diphtheria wards, gave positive reactions and had no antitoxin in their sera. It would appear that non-immune people may escape infection, and a suggestion arises that there may be some protective mechanism, bactericidal or otherwise, in addition to the antitoxin defence. There may be such an additional defence, but, on the other hand, we are told that in the history of infectious diseases hospitals many resident medical officers who have worked for years in diphtheria wards have assumed that they were immune, but have, later, succumbed to diphtheria. Our colleagues, presumably, did not suffer from the disease because they were fortunate enough to escape the implantation of bacilli on their mucous membrane.

The only clinical observations published in England are those made by Leete. His figures are of the same order as those of Park. Leete has published a series of observations in England. His results on patients over 4 years old, in the main, agree with the results of other investigators, shown on the graph. The discrepancies between Leete's observations on very young children are probably due to the smallness of the number of patients available. It may be that the differences in level between the curves obtained by Park and these other investigators are due to differences in population or to the use of a slightly different strength of toxin. We have some experimental evidence to suggest that the prescribed standard of "1/50 m.l.d. for a guinea-pig" may not be precise enough. We have not, however, completed our observations on this point.

Age Distribution of Negative Schick Reactions.

A=Schick's results. B and C=Park's results.
D=Leete's results.



Toxin-antitoxin Mixture.

The toxin-antitoxin mixture we have used complies with the American Government regulations. Although von Behring does not give the full details of his mixture, it is fairly certain, from the perusal of various German articles, that his mixture contains relatively more antitoxin than the American and ours. One would expect the antitoxin response of injected patients to be less than after the use of the American mixture, and so far as we can judge from the German literature, this is what is found. In 1 c.cm. of mixture, there are three L+ doses of toxin and about 3·5 units of antitoxin. A sample test of our current batch showed that three guinea-pigs injected with 1 c.cm. were all alive and well 30 days later, while of 17 guinea-pigs injected with 5 c.cm. of the mixture two died of an intercurrent disease (probably *B. Gaertner* infection) which was epidemic at the time, and 14 showed diphtheritic paralysis, most of them dying between the twentieth and twenty-ninth day. The injection of the toxin-antitoxin mixture into normal rabbits produced a satisfactory degree of immunity within 8–12 weeks. A quicker method of testing the antigenic suitability of a mixture consists in injecting it into a rabbit already possessed of a low degree of immunity. In one rabbit thus injected the concentration of antitoxin per c.cm. of blood rose from 0·004 units per c.cm. to 0·08 units four days later, and in six days to 0·5 units.

With regard to the period that elapses before an injected child becomes immune, it has been found that about 90 per cent. of children who have received three weekly injections of 1 c.cm. of a mixture give a negative response to the Schick test three months later. A negative response indicates a concentration in the blood of at least 1/30th of a unit of antitoxin. It is quite possible that a much lower content of antitoxin reached within a period of some weeks in the blood of a child who has been actively immunised recently would be sufficient to produce a considerable degree of protection against clinical diphtheria. Experimental evidence obtained by one of us (A. T. G.), and as yet unpublished, convinces us that the first minute amount of toxin conveyed into the system of the patient from the diphtheria bacilli that had gained a lodgment in the throat would produce an immediate and great increase of antitoxin in the patient's blood sufficient to neutralise further quantities of toxin produced by the attacking bacilli.

Conclusion.

Unfortunately we cannot bring forward a long series of results of the injection of toxin-antitoxin mixture. English physicians in charge of schools, institutions, and infectious disease hospitals have apparently been too busy up to the present to be able to investigate these two methods. In America the Schick reactions that have been carried out number many tens of thousands, and thousands of active immunisations have been done. The main purpose of this paper is to try to induce those who are fortunate enough to have large clinical opportunities to apply these two methods. We hope that some investigations may be carried out in London, for we believe that until much more experience has been gained in England, it would be very desirable for the laboratory investigator and the clinician to work in close coöperation. We may by working together succeed in explaining difficulties and discrepancies that are bound to be met with when new methods such as these are first used.

POST-WAR NEUROSIS.

By S. HERBERT, M.D., M.R.C.S., L.R.C.P.

There still exists among English psychotherapists a good deal of reluctance to recognise to the full the importance of the sex factor as a cause of psychneurosis. Though strenuous efforts are being made to find a substitute theory which will exclude sex, facts have so far proved too strong for such a procedure to have success. Even Dr. Rivers, who in his latest book attributes war neurosis to "a disturbance of the relatively simple instinct of self-preservation," admits at the same time that "the great majority of the neuroses of civil practice depend on failure of balance between the less simple sexual instinct and the very complex social forces by which this instinct is normally controlled."[1]

The cases recounted below add a striking testimony to the truth of Freud's sexual theory of neurosis, while incidentally furnishing an experimental truth of the oft-made observation that war tends to loosen the moral restraints, built up so painfully during civilised life. In our cases we have found that the return to the normal conditions of society, with its dull routine of conventions, led to an outbreak of a neurosis in persons who, in good mental health before the war, passed through the war itself in a most satisfactory manner. This kind of neurosis, in a sense a consequence of the war, being due to the sudden reversion of life from war to peace conditions, may be aptly described as post-war neurosis.

Case 1.—A professional man of 40 served in the Western Army during the war. He was extremely happy in his work there, and hated coming back to the narrow conditions of his civil life. As usual, he attributed his breakdown, which occurred shortly after his return, to overwork. His chief complaint was that he could not do his work. He was constantly afraid of committing gross blunders which would get him into trouble. The depression ultimately became so great that at times he seriously contemplated suicide, from which he was kept only by consideration for his wife. Though strictly moral in his sex relationships, he always felt himself to be of a somewhat frivolous temperament. This found plenty of outlet under the conditions prevailing in the war zone, without, however, leading to more than pleasantries and innocent flirtations. He masturbated in his youthful days, the sinfulness of which haunted him right through life. His wife, to whom he was devoted, is of a rather frigid temperament, and does not represent the type of woman who most attracts him sexually.

It soon appeared during the psycho-analysis that it was the repression of the sexual freedom enjoyed during the war that had produced the neurosis in the patient; and, indeed, the pursuance of the treatment on this line soon produced a remarkable improvement of the patient. He recovered his spirit and is now able to do a full normal day's heavy work.

Case 2.—A clerk, aged 30; was four years in the army, at the front 2½ years, being promoted from the ranks and serving as an officer to the entire satisfaction of his superiors. He felt very happy among his fellow officers and liked his army work very much. Though of a rather timid nature, he managed to "gulp down" his fear so completely that he became a successful leader of his men. He married at the beginning of his enlistment a girl he had known for years, with whom he is very happy. On his discharge from the army he was at a loss what to do, being disinclined to return to his old work which he disliked. Just as he was settling down to take up some new work he had to undergo a slight operation, which, though completely successful, interfered for the time being with his new profession. Thereupon he became frightfully depressed, feeling that he would never do any good again, that ruin was staring him in the face, &c. In this state he consulted me. Being always of a rather diffident nature, he now was convinced that he was "an utter good-for-nothing," who would never be able to look up again. He had lost all sex desire for his wife.

Here seemed to be a case where repressed fear might have been the cause of the neurosis. During the actual course of analysis, however, this soon proved to be fallacious. One of his earliest associations brought to light the fact that what weighed heaviest on his conscience was the circumstance that he had allowed himself to be tempted to have illicit intercourse at the front. Though this had happened "once, and once only," he felt in his own eyes degraded for ever. Strange to say, nevertheless, he felt that having always been as a boy of a sober and rather shy nature, he had not enjoyed life like other lads. The war had given him a taste of the lighter side of life among the officers which he missed very much on his return home. Further analysis showed that this was the complex which he had tried to repress with all his might since he had come back, and which had ultimately forced its way out in the form of an anxiety neurosis. Analytical elucidation of the conflict ultimately restored the patient to full health. His sexual desire for his wife returned and he lost all fear of the future.

Case 3.—A young tailor of 22, who had been in the army two years, but had never been to the front. He had been a shy, retired lad, not associating much with girls for fear of the harm it might do him. He never could get used to army life, felt lonely and homesick, and made, as he himself confessed, a very bad soldier. He kept well for some months after his demobilisation, but could not adjust himself to his previous work. He was suddenly seized with fits, which came regularly two to three times a week, especially towards night-time. The fits had, at first sight, very much the appearance of epileptic fits, though the possibility of their being hysterical was not excluded. Psycho-analytical treatment was recommended as holding out some prospect of cure, however faint. The success of the treatment entirely justified the advice given. Psycho-analysis soon revealed the sexual origin of the seizures. In the first place it transpired that the patient had given way to his sexual desires, inhibited so long during civil life, in no moderate degree. Always in fear of having to go to the front, he threw health scruples to the winds, thinking he would have "a good time" at any cost, and hoping, if he did break down, that it would at least save him from having to go into the trenches. Secondly, it became clear during the psycho-analysis that even in his youth his sexual desires had had the mastery over him; for though he did not actually associate with girls, he suffered from excessive sex phantasies which often produced a sort of stupor in him. Indeed, these states of mental absence were nothing less than the equivalents of sex indulgences. His fits proved to be merely the last extreme form of these mental absences. The repression he had had to exercise since his return to normal civil life—fear of consequences once more getting the better of him, as he now once more had "the will to live" in its normal form—led in its ultimate consequence to the fit as the unconscious equivalent of sex indulgence. Patient was completely cured of his fits, which so far, after 1½ years, have not returned.

What is characteristic about these cases is that in all of them sex repression was present before the war, without, however, leading to an actual neurotic breakdown of the patient. Life in the war zone tended to mitigate the condition of the patients rather than to accentuate it. They only broke down when the extended liberties enjoyed for the first time during the war had suddenly to be foregone once more with the return to civil life. This can only be explained on the assumption that the sudden repression of the temporarily released libido produced the neurosis according to the strictly Freudian mechanism.

Another case seems to point to the same conclusion. A working man, aged 40, came with a complaint of emissio præcox. He was married, and had suffered from the disease only since his return from the war. "Out there" he had taken things in a rather lax way, and he now found the restrictions of a monogamous life not at all to his taste. As the patient could not afford prolonged treatment, the case could unfortunately not be followed up.

Those who try to minimise the sex factor in neurosis should not forget that man's tendency is essentially poly-erotic. This poly-erotism must not be confused with polygamy. A man—and perhaps this also applies to a lesser or larger extent to women—may be married and truly devoted to his partner, and yet be full of other fancies.[2] It is when these become subject to strong repression that, under certain circumstances, they lead to the outbreak of a neurosis. It is the recognition of the sex factor which enables us to deal with such a neurosis in a satisfactory manner and effect a proper cure by means of psycho-analysis. Case 3 has an additional interest as showing that what appears to be epilepsy is often merely a masked hysterical fit which can be successfully treated by the psycho-analytical method.

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[1] W. H. R. Rivers, Instinct and the Unconscious.

[2] S. Herbert, M.D., Fundamentals in Sexual Ethics.

HIPPURIC ACID SYNTHESIS TEST AS REGARDS THE FUNCTIONAL CONDITION OF THE KIDNEY.

BY P. L. VIOLLE,
MÉDECIN-CONSULTANT À VITTEL.

IN THE LANCET of April 17th, 1920, I stated in a letter that the study of hippuric elimination may give useful data as regards the functional condition of the kidney, and I wrote: "Hippuric acid elimination is profoundly influenced by diet. Hence it is necessary to base a test on conditions not dependent on the intaken food." The normal amount of hippuric acid having been estimated, we give the patient a dose of 0·50 g. of glycocoll and 50 g. of benzoic acid. From the time of taking the doses the total amount of urine is collected during 24 hours. The analysis should show an excess over normal of about 0·74 g. for 24 hours. Since the normal output for a healthy subject is about 0·40 g. the figures we should expect to find are somewhat as follows: 1·14 g.—that is, 0·40 g. the normal amount, and 0·74 g. the amount synthesised from the benzoic acid and glycocoll we have given. When the figure is lower, say 0·50, 0·40, &c., it may be asserted that the hippuric function is abnormal, and that probably there is some renal parenchymatous disorder.

Since my communication I have carried out researches to ascertain the relations which may exist between eliminations of hippuric acid and functional renal disturbances. In addition I have been desirous of proving to my satisfaction that the synthesis of hippuric acid is rather a function of purely renal origin, and in particular that it is not influenced by functional disturbances of the liver. The work is classified according to three clinical divisions of patients: renal, hepato-renal, and hepatic.

The following cases are typical examples:—

1. *Renal.*—Female, aged 20. Chronic uræmic nephritis for the last 10 years. Examination shows: albuminuria; excess of urea in the blood; blood pressure, max. 100 mm., min. 130 (Pachon). Ocular disturbances and constant headache for several years. Hippuric acid test: 0·10 g. instead of 0·74, the amount normally synthesised when 0·50 g. of benzoic acid and 0·50 g. of glycocoll are given. Second examination (a fortnight later), urea in the blood normal; blood pressure, max. 180, min. 120. No more ocular disturbances, no more headache. Therefore considerable amelioration of symptoms, except of arterial tension. Acid hippuric test; 0·27, instead of 0·74. Hippuric acid elimination: Jan. 4th, 0·18; 5th, 0·18; (test) 6th, 0·45–0·18=0·27; 7th, 0·18. The test of the hippuric acid synthesis shows that the state of the renal parenchyma is not ameliorated, and the blood pressure, always raised, is in ratio with the functioning of the renal parenchyma. The elimination of methylene-blue, when absorbed, lasts eight days.

Male, aged 60. Suffering from gout. First attack when aged 36. Feet œdematous. Big toes enlarged. Ulceration of and tophi in the feet and elbow-joints. Two attacks of gout a year for the last 25 years. General condition bad, never feels well, nausea, no sleep, no appetite; liver normal. Examination shows urine moderately abundant, no albuminuria, urea in blood normal; blood pressure, max. 250, min. 100.

Hippuric acid eliminations: Jan. 5th, 0·27; 6th, 0·28; (test), 7th, 0·27–0·27=0; 8th, 0·27. As in the preceding case the high blood pressure continues to be in ratio with the disturbances of the renal parenchyma, as evidenced by the hippuric acid test.

Male, aged 38. Arterial hypertension, without albuminuria, urea and chlorides normal; blood pressure, max. 200, min. 120 (Vaquez). Hippuric acid test perceptibly diminished, 0·59 g. instead of 0·74 g. Methylene-blue test similarly indicates that the kidney is slightly affected. Hippuric acid eliminations: Dec. 8th, 0·36; 9th, 0·38; (test), 10th, 0·95–0·30=0·59; 11th, 0·34. Thus the arterial hypertension is still in ratio with the renal disturbance shown by the test of hippuric acid synthesis.

2. *Hepato-renal.*—Male, aged 50. Admitted to hospital in state of coma. Generalised icterus, ammoniacal odour in breath, Cheyne-Stokes respiration, myosis, for many years slight signs of Bright's disease, urine scanty, some traces of albuminuria. Excretions of hippuric acid followed in the course of the attack, without the test of the synthesis being made, were as follows:—

	Azotæmia.	Hippuric acid.
1st day	1·81	0·25
2nd "	2·40	0·10
3rd "	2·14	0·10
4th "	2·66	0·08

There is a parallel between these excretions of hippuric acid and the retention of urea, and in the course of the acute attack the hippuric acid excretion forms a good index to the state of the kidney.

3. *Hepatic.*—Male, aged 40. Malarial subject and alcoholic. At the age of 31 he was treated in the colonies for enlarged and painful liver, with icterus and abdominal distension. Present state: alcoholic cirrhosis, emaciation, subicterus, liver enlarged and projecting four fingers width beyond the costal fossæ, hard and painful upon palpation; abdomen distended, no collateral circulation, no ascites, spleen normal. Urine normal in amount, no albuminuria, no sugar, urobilin in large amount, no bile-salts, urea 18 g., Maillard's coefficient 14 per cent. When Roch's test was carried out (absorption of 0·002 g. of methylene-blue by ingestion), after half an hour the methylene-blue appeared in the urine and persisted for 24 hours. Well-marked hæmoclasic shock following injection of milk (Widal). Consequently hepatic insufficiency. Hippuric acid test, synthesis completely effected 0·70. Hippuric acid excretion: Jan. 19th, 1·52; (test), 20th, 2·40–1·80=0·70; 21st, 2·08; 22nd, 1·85. The hepatic insufficiency has not therefore in any way affected the hippuric acid synthesis.

Summary.

1. The arterial hypertension is fairly closely connected with the renal condition so far as it has been possible to discover that condition by testing the hippuric acid synthesis in the cases under observation.
2. The azotæmia, chloridæmia, and albuminuria are evolved by crises. The modifications observed in the hippuric acid synthesis appear to be rather the reflection of functional parenchymatous disturbances that are capable of gradual modification.
3. The hepatic disturbances, since they are not accompanied by renal disturbances, fail to effect any modifications in the hippuric acid synthesis, which appears to be of purely renal origin.

From the point of view of hydrology these findings may explain the results obtained in cases of arterial hypertension by means of treatments by diuretic waters which act energetically on the renal parenchyma. For example, in the course of the Vittel treatment one frequently sees not merely a persistent lowering of the maximum tension—a result which is easily obtained by means of other treatments, but at the same time a simultaneous lowering of the minimum tension, which alone is of any value. On the other hand, I have noted that diuretic waters favour the production of hippuric acid, exciting the renal parenchyma, sometimes to such an extent as to double the output.

SOUTH LONDON HOSPITAL FOR WOMEN, CLAPHAM COMMON.—A garden fête will be held at this hospital on Friday, June 24th, when Princess Helena Victoria will open a sale of work in aid of the funds.

MR. F. B. POWER, Ph.D., was recently presented at Washington, by Mr. Henry S. Wellcome, with a gold medal specially struck to commemorate his services to science during 18½ years as director of the Wellcome Chemical Research Laboratories, London. Dr. Power's researches have been chiefly concerned with the constituents of plants, and more especially those plants used in medicine, and during his directorship some 170 papers were contributed to scientific societies from the Wellcome Laboratories.

THE EVIL EFFECT OF EXCESS OF PROTEIN ON MILK SECRETION.

By GLADYS ANNIE HARTWELL, M.Sc.

(From the Physiological Laboratory, Household and Social Science Department, King's College for Women, Kensington, London.)

OUR experimental knowledge concerning the relation between diet and mammary secretion is not extensive, but it is generally believed that the amount of protein in the mother's diet is an important factor, and great stress is laid on the necessity for giving a larger proportion of protein than normal. It is also recognised by the farmer that a cow in full milk should have a high protein ration. But in a recently published investigation[1] it was found that adding a quantity of caseinogen to the diet of a nursing rat caused the baby rats to die, while the mother remained in apparently good health.

This extraordinary result might have been due either specifically to the caseinogen, or to the fact that excessive protein was being given to the mother rat. To settle this point other proteins were substituted for the caseinogen, and in no case were the litters normal; many, if not all, of the babies died. The few which survived the lactation period were not successfully weaned and lived only a few days after being separated from the mother. None the less the mothers often throve, if appearance and body weight are accepted as criterions.

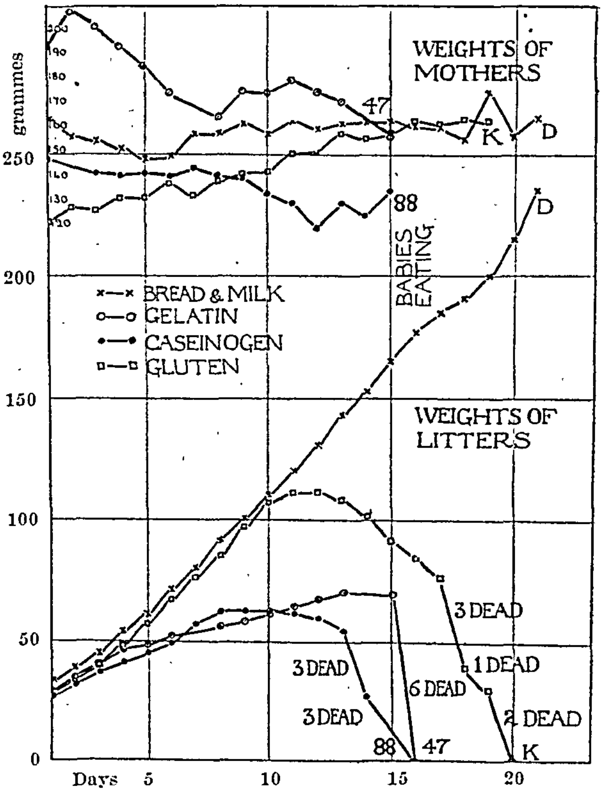
Method of Test Employed.

The litters used were strong and healthy at birth and born of healthy mothers. The mothers were fed on a mixed diet during gestation. The number of the litter was reduced to six to avoid any strain on the mother. (A rat can rear as many as 13 or 14 young.) Mothers and litters were weighed every day, the mothers being allowed to eat as much as they liked. The amounts eaten were weighed. Water was given ad lib. When caseinogen was fed to the mother rat (in the proportion 15·0 g. bread to 5·0 g. caseinogen) the litter did well until about the eleventh or twelfth day, when they ceased to gain any appreciable amount, then lost weight and died. For a few days before the change in the rate of growth appeared, great excitability was noticed. The babies squeaked, kicked and struggled considerably when taken out of their cage. Later they exhibited extensor and contractor spasms, inability to crawl properly, and when still older dashed wildly about, biting their mother and each other. After such fits and just before death extreme exhaustion was evident. The babies were thin and emaciated, and post-mortem examination showed the stomach and intestines to be almost devoid of contents. The intestinal walls were thinner than in a normal animal of the same age. Other proteins used were egg and blood albumins, gelatin, gluten, dried fish, and dried meat-protein.

Effects on Litters.

The effects on the litter were much the same as those already described for caseinogen, the babies nearly always died, and their alimentary canals were practically empty except for small amounts of liquid material and gas in the large intestine. The better the protein, the more drastic the effects—for example, the babies of caseinogen-fed and meat-fed mothers developed worse spasms than those babies whose mothers received gelatin or gluten. Again, the former were very excitable for several days, while the latter exhibited this feature for a short time only, and in some instances it was absent altogether, extreme weakness developing at a much earlier stage. Typical growth curves of the mothers and young are shown in the diagram, and are compared with the maximum growth yet obtained for any litter (example D). Rat D was fed on white bread and milk, a diet physiologically complete in all respects. Whether milk contains any specific stimulus for mammary secretion, or whether it is merely good as containing the necessary foodstuffs, &c., in suitable proportions remains to be proved. It is interesting that litter K (the mother of which was eating an excess of caseinogen) achieved optimal growth until the tenth day, after which it lost weight and finally the young died. Rat 47, which had gelatin, a defective protein, in her diet, lost weight rapidly, and to a far greater extent than if she had been fed on bread only.

The better the protein fed to the mother the more rapid, up to a point, the growth of the young, yet with excess of any protein in the mother's diet, the babies eventually die (or if they survive are by no means healthy or normal). It is suggested that this is due to failure of the milk secretion, preceded by some change in composition which is responsible for the spasms and abnormal condition of the babies. It is unlikely that nursing women ever take a dietary containing nearly as much protein as carbohydrate and practically no fat. But if we may argue from rats to human beings, it is clear that excessive proportions of protein in the mother's diet may lead to metabolic and nervous trouble in the suckling. In view of their possible medical application these experiments are briefly described. A fuller account will be published in the near future.



Curves showing weights of mothers and litters. D, Normal growth, diet of bread and milk. K, Diet of bread and caseinogen. 47, Diet of bread and gelatin. 88, Diet of bread and gluten.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Prince of Wales's General Hospital, Tottenham, N.15).—Clinical Demonstrations, free to medical practitioners, will be held on Tuesdays, Wednesdays, and Fridays, from June 14th to July 22nd. Further particulars will be found in our Medical Diary. An Intensive Course of two weeks duration will be held in September, consisting of morning demonstrations on Clinical Methods and afternoon demonstrations of groups of selected cases. A syllabus will be issued in due course.

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[1] Biochemical Journal, vol. xv., p. 140, 1921.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

A MEETING of this section of the Royal Society of Medicine was held on June 1st, Mr. W. G. SPENCER, the President, in the chair.

Mr. C. A. PANNETT read a paper on

Treatment of Imperfect Descent of Testicle.

He said that all the present methods of treatment were unsatisfactory, and that in the future treatment would probably be the supply of the missing hormone. Meanwhile, the methods orchidopexy and orchidocœlioplasty were at our disposal, though these were by no means ideal. Mr. Pannett then reviewed the methods of orchidopexy. In arrested descent as distinct from abnormal descent (ectopia) all methods of replacing the testicle in scrotum were ineffective. In a case of Bevan's operation, where the testicle was removed a few days later, sections showed a condition of hæmorrhagic infarct in which all the secretory cells of the testicle were degenerated, the internal secretory as well as the spermatogenic cells. This was a very undesirable result, because the imperfectly descended testicle was ordinarily able to maintain the male characteristics. Mr. Pannett proceeded to the discussion of orchidocœlioplasty, with special reference to experimental study on the rabbit. The results observed in this animal were the disappearance of spermatogenic cells and of their derivatives, but the continued activity of other cells, notably those lining tubules, which in the rabbit probably serve an internal secretory function. No vascular lesions and no obstruction of vas deferens were produced as a result of operation. The curious atrophy of the external secretory function was probably due to loss of the assistance in the evacuation of secretion usually supplied by contractions of the cremaster muscle. The testicle was unique in having a very long and tortuous path between the secreting acini and the excreting duct—the vas. The seminal tubules by themselves had not a sufficiently high secretory pressure to overcome the resistance of the 20 feet winding epididymal tube, when unaided by the compression exercised by the cremaster, which squeezed out the contents of testis and epididymis into vas as from a sponge. The practical deductions which Mr. Pannett drew from his experiments and clinical experience were: (1) that when orchidopexy is impossible orchidocœlioplasty should be performed rather than removal or a Bevan operation; (2) that in order to avoid destroying the possible spermatogenic function of an arrested testicle which might descend later on, operation on uncomplicated cases should be postponed until the eighth or the twelfth year; (3) that a bubonocele was no indication for operation; (4) that indications for operation were attacks of strangulation, torsion, or pain (orchitis from muscle trauma). Mr. Pannett concluded by describing the technique of orchidocœlioplasty.

Discussion.

The PRESIDENT expressed his interest in Mr. Pannett's communication, and emphasised the desirability of careful differentiation between the various conditions described by Mr. Pannett. It was especially necessary to distinguish those cases who would be likely to get a delayed descent at puberty. The possibility of the insidious onset of malignant disease must be borne in mind.

Mr. PHILIP TURNER had now abandoned the fixation operation. Many years ago he had started trying to bring the testicle down to the opposite side of the scrotum. The anatomical results of this procedure were satisfactory. As to the distinction made by Mr. Pannett between imperfect descent and ectopia Mr. Turner considered that no sharp line of demarcation could be drawn between these conditions. Mr. Pannett had alluded to the shortness of vessels as a reason against the operation of orchidopexy. In Mr. Turner's experience this trouble was unusual, but shreds of fascia resembling vessels often had to be defined and divided. Mr. Turner did not interfere with vessels. One advantage of bringing the testicle through a septum was that no sutures are needed—if a small hole is made and the testicle drawn through, the septum contracts and exerts a continuous slight force to prevent the testicle from retracting again. In three out of four cases who returned for examination on request a few years after this operation the testicles were well developed and no sign of the operation was detectable. Of 10 cases written to last year seven responded; of these four showed most satisfactory anatomical results; in two the testicle was either smaller than the other or had risen somewhat, and one case was a failure. The age of election for operation was between 6 to 10. It was preferable to operate before the age of 12, because symptoms—usually attacks of pain due to orchitis—seldom arose before that age. He had operated on adults because they desired it. As to a chemical stimulus some had tried thyroid extract, but inasmuch as a patent processus vaginalis was practically always present, Mr. Turner was sceptical as to the possible value of such treatment.

Mr. MCADAM ECCLES put forward a plea for the use of the term "imperfectly migrated" testicle instead of the expression in common use, since developmentally the testis does not descend. He considered that there was little if any alteration in the replaced testicle, since few had spermatogenic functions to start with, but they did have an internal secretion. In Mr. Eccles' experience cases came up more on grounds of definite hernia than for an imperfectly migrated testis, and if the condition was associated with hernia he was convinced that the testicle should not be drawn down to either side of the scrotum in young subjects, because this treatment would destroy its special function. In cases of double internal migration Mr. Pannett's method was the correct one. The glands should be brought right within the peritoneal cavity, the greatest care being taken not to damage the vessels. In an adult Mr. Eccles always endeavoured to bring down the gland, and in these cases Mr. Turner's method seemed to him the most desirable.

Mr. SPENCER MORT said that Mr. Pannett's idea of the squeezing action of the cremaster muscle appealed to him. He asked about the spermatogenic functions of such animals as the elephant, whose testes were in the abdomen, and the cock whose testes were not external. He suggested that by placing in the abdomen both testes of a healthy buck rabbit, and after a suitable interval mating it with a doe, the question as to whether the spermatogenic functions of the rabbit were impaired by this procedure might be determined.

The PRESIDENT agreed with Mr. Turner that longitudinal fibrous bands had often to be severed.

In reply Mr. PANNETT said that if no hernia and no pain were present there was no reason to operate, but after puberty it was not desirable to leave testes in the canal.

Answering Mr. MORT, Mr. PANNETT said that in the cock the testes do not go right up into the abdomen, but are drawn up into the groin, still retaining some contact with the cremaster muscle.

Dr. A. GOODMAN LEVY read a paper on

Cardiac Massage.

He first discussed the general principles underlying the use of cardiac massage. Its sole function was to create an artificial circulation. The term massage was a misnomer, as it was really an effective rhythmical compression of both ventricles that was required. The hand must have access to the right as well as the left ventricle, and the whole heart must be compressed with the movement used on the bulb of a Higginson's syringe. As to surgical technique the method described by Bost and Neve[1] appeared to Dr. Levy to satisfy most nearly the required conditions. In this method the attachments of the diaphragm are cut for two inches, through an abdominal incision. The right hand is inserted into the left pleural cavity and the heart grasped outside the pericardium. During massage the parts are pressed round the right wrist so as to prevent air from entering the pleural cavity. Dr. Levy emphasised the importance of performing artificial respiration, preferably by perflation, but artifical respiration performed by Sylvester's method might be sufficient when there was no opening into the pleural cavity, provided it did not interfere with the proper performance of massage. He attached little importance, to variation of the rate of cardiac compression, as the rate bore no relation to that of the spontaneous beat on recovery. But the occasional interruption of massage was desirable since some observers had found that a spontaneous beat developed more readily after a pause. The limit of the interval between the occurrence of syncope and the commencement of massage depended mainly on the length of time during which the nerve centres could stand deprivation of blood. If the interval were too long severe nervous symptoms, such as tetany, rigidity, incontinence of urine, and cerebral irritation, followed the restoration of the circulation. The generally accepted limit was five minutes. As to posture partial inversion was desirable only in so far as it assisted cerebral circulation and the filling of the heart chambers. Dr. Levy then proceeded to the separate consideration of (1) syncope from overdosage, and (2) primary cardiac syncope. In the former condition artificial respiration alone was usually sufficient to restore the heart beat, but if it had not been applied early enough cardiac massage was called for. In cats Dr. Levy had found the latter uniformly successful. Adrenalin was recommended by Gunn and Martin,[2] but Dr. Levy considered it unnecessary, and in the presence of low blood pressure even dangerous. In this case pituitary extract should be injected. In primary cardiac syncope spontaneous recovery sometimes occurred, but experimental evidence in cats showed that in these animals it occurs only within the first 1¼ minutes. Dr. Levy deduced from experiments that not more than two minutes should be allowed for the chance of spontaneous recovery, and cardiac massage, with intermissions, should be attempted. The duration of massage required varied from one to 48 minutes in a series of 29 cats in which ventricular fibrillation had set in.

Discussion.

Mr. MORT said that he had found by opening the radial artery that forcible pressure in the lower thorax in the course of artificial respiration caused an intermittent flow of blood as great as direct massage of the heart from the abdomen.

The PRESIDENT asked if any case had been known to recover after massage of the heart through a hole in the diaphragm into the left pleural cavity.

Mr. LEVY replied to this question in the affirmative.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

EXHIBITION AND REPORTS OF CLINICAL CASES.

A MEETING of this Section of the Royal Society of Medicine was held on May 27th, Dr. F. S. LANGMEAD, the President, being in the chair.

Dr. J. H. THURSFIELD contributed the notes of a case of

Renal Calculus.

The patient, a girl aged 10 years and 2 months, had been admitted to hospital with a history of recurrent hæmaturia for eight months. There had at times been œdema of the feet and face, and on admission the right ankle was swollen. The urine contained blood, albumin, and blood and epithelial casts. Systolic blood pressure was 124. The heart was not hypertrophied. While the patient was confined to bed the œdema disappeared, but the urine still contained traces of blood. The urine was passed freely in fair quantity and there was no pain. A tentative diagnosis of nephritis was made, but as the bleeding continued and a few pus cells were found in the urine, the latter was examined bacteriologically and found to be sterile. She was then given 15 c.cm. of normal horse serum, and nine days later reacted with a typical macular rash, fever to 99° F., and some reduction of urine, which contained more blood and pus. The diagnosis of nephritis became doubted, especially as a tumour, thought to be a displaced right kidney, could be felt low down on the right side of the abdomen. At this time there was but little hæmaturia and the child was placed on a more liberal diet, and encouraged to get about the ward. The result was an attack resembling uræmia, with scanty urine, hæmaturia, vomiting, headache, and collapse. The hands were in the characteristic tetany position. She recovered and was skiagraphed soon afterwards, the skiagram showing a doubtful calculus on the right side low down. A urea-concentration test indicated that the excretion appeared to be somewhat delayed. Cystoscopy showed that the right ureteric orifice was normal, the left somewhat dilated. A second urea-concentration test demonstrated decided increase of excretion. Tubercle bacilli were now reported in the urine, but four subsequent examinations failed to confirm their presence. By this time the constant presence of the tumour had convinced Dr. Thursfield of the desirability of an operation, and to facilitate the diagnosis further, oxygen was injected into the peritoneal cavity and a skiagram taken. The resulting pictures showed quite clearly a large tumour with the circular shadow, previously noted, within it. Mr. O. Addison operated and extracted a calcium oxalate calculus from the dilated and thickened pelvis of the right kidney. There was no evidence of tuberculosis and no enlarged glands could be felt in the peritoneal cavity. Her recovery was slow, delayed by vomiting and a considerable amount of hæmaturia, but in the course of a fortnight this improved and the child began to put on flesh rapidly.

Dr. J. PORTER PARKINSON showed a case of

Symmetrical Gangrene (? Raynaud's Disease).

The patient, a female child aged 3 years, was the second illegitimate child of an apparently healthy mother aged 25 years. The mother's statement was as follows: The infant had always been healthy, but suffered from chilblains at Christmas; these became swollen and blue in March, and began to discharge a thick yellow matter from the toes of both feet. The sores would dry up and then appear again when the child wore shoes. The toes began gradually to fall off and were found in the dressings. The child was well nourished but small. The Wassermann reaction was negative. The outer three toes of the left foot had disappeared, leaving round sores which had now healed. All the toes of the right foot were missing and the foot was much swollen and very tender, the skin being purple in colour as far as half-way up the leg. This colour had since gone and the swelling was much less. The heart, lungs, abdominal organs, and urine were normal.—Dr. THURSFIELD said that he regarded syphilis as the usual cause of symmetrical gangrene and Raynaud's disease, like hæmoglobinuria, when it occurred in children, as always syphilitic. He asked whether a Wassermann reaction of the mother's blood had been done, as members must all have seen cases of indubitable hereditary syphilis in which the patient's blood was persistently negative.—Dr.

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[1] THE LANCET, 1918, ii., 552.

[2] Journal of Pharmacology and Experimental Therapeutics, 1915, vii., 31.

PARKINSON replied that no opportunity had been afforded to test the mother's blood. He quite agreed as to the frequency of a syphilitic origin for Raynaud's disease and also hæmoglobinuria, and referred to a family group of cases of the latter disease in which syphilis was shown to be the cause.

Mr. PHILIP TURNER showed a case of

Tumour of the Left External Ear.

It was soft, non-fluctuant, and situated chiefly behind the ear, and recently had been increasing in size, so that it occluded the external auditory meatus, rendering the girl deaf unless she cleared the meatus by traction on the pinna. Recently there had appeared also a swelling over the parotid, and a similar soft tumour of the scalp in the occipital region. One or two hard nodules could be detected imbedded in the tumour. A coarse growth of hair had appeared over the anterior part of the swelling. Mr. Turner regarded the tumour as almost certainly a nævo-lipoma and the harder nodules as foci which had undergone fibrosis. Because of the increase in size, and the blocking of the external auditory meatus, he proposed to attempt to remove it.

The PRESIDENT showed a case of

Cirrhosis of the Liver with Splenomegaly.

For about six months the patient, a girl aged 9 had been ailing, but since the end of April had been worse, complaining of abdominal pain. Blood had been passed with every stool during the first fortnight of more severe illness, and there were also oozing from the gums and epistaxis. Vomiting was occasional. Jaundice of fair severity appeared. On admission early in May, in addition to the jaundice, a few telangiectases were noticeable on the face. The gums continued to ooze slightly. There were some dilated veins in the flanks. In the epigastrium the liver could be felt enlarged, hard, and nodular. The spleen was also enlarged, reaching below the costal margin for about two fingers-breadth. It varied considerably in size and was not hard. After admission slight ascites developed. The cervical and axillary glands were slightly enlarged. Nutrition was good. The jaundice lessened and hæmorrhages diminished after admission. Wassermann reaction negative on two occasions. The urine was normal, containing neither bile pigment nor salts, but was not examined until the jaundice had begun to lessen. A blood examination gave the following results: red blood cells, 4,700,000; Hb, 74 per cent.; colour index, 0·78; white cells, 5500, consisting of polymorphs, 69 per cent.; small lymphocytes, 22 per cent.; large lymphocytes, 5 per cent.; eosinophiles, 2·5 per cent.; large hyalines, 1 per cent.; basophiles, 0·5 per cent. A week later the red blood cells fell to 4.400,000, the hæmoglobin to 66 per cent., and the white cells to 3000. The diagnosis lay between primary cirrhosis, with secondary splenomegaly and Banti's disease. In favour of the latter was the leucopenia. He thought, however, that true Banti's disease—i.e., the combination of splenic enlargement, anæmia, hæmorrhages, and cirrhosis of the liver, with ascites—was extremely rare in young children, much rarer than primary cirrhosis. The occurrence of telangiectasis was a prominent feature of hepatic cirrhosis in children and he favoured that diagnosis.—Dr. THURSFIELD said that many of the cases described as splenic anæmia and Banti's disease in children did not conform to type and present the features which he regarded as essential to the diagnosis. The softness of the spleen in this case was against the diagnosis of Banti's disease and in favour of congestion secondary to primary cirrhosis. The appearance, too, in Banti's disease he considered characteristic, whilst this patient looked too well. Cirrhosis of the liver possibly might be due to an acute infection. An epidemic of fatal cirrhosis had occurred among the deer of Richmond Park, which certainly suggested an infective origin. Gaucher's family splenomegaly had also to be considered in the diagnosis—

The PRESIDENT, in reply, agreed with Dr. Thursfield's remarks concerning splenic anæmia. The softness and variability of the spleen, he thought, was against a diagnosis of Gaucher's disease.

The PRESIDENT also contributed the notes of a case of

? Cerebro-spinal Fever.

The patient, a boy aged 13½, towards the end of February had suffered from pains in the limbs and had developed an eruption of the skin, regarded by the doctor who saw him as erythema nodosum. There were no joint swellings. After an interval of about a week he complained of severe paroxysmal pains in the head, radiating from the temporal region sometimes to the occipital region, sometimes to the forehead, and sometimes to the neck and shoulders. These attacks recurred every few days and were accompanied by fever, gradually rising higher with each attack, and sometimes by vomiting. With the attack there was considerable irritability, the boy being restless and disliking manipulation; there was no head retraction. Between the attacks he was quite at ease and had a good appetite, and physical examination showed no other abnormalities than slight rigidity of the legs, weak knee-jerks, loss of weight, a slight mitral systolic bruit, and slight tenderness over the left kidney, which appeared unduly easily palpable. There had been no urinary changes, but in view of the poverty of physical signs and the palpability of the kidney, it was thought advisable to have the urine examined bacteriologically; it was reported upon as containing *B. lactis aerogenes*. Neither alkalis nor urinary antiseptics caused any improvement, and the boy was admitted to hospital, the attacks becoming more severe and prostrating during the interval of one week. During the first bout of fever after admission the temperature rose to 105° F. Thereafter the attacks of headache and fever occurred every 48 hours for 17 days, the temperature ranging from 92° to 105°, and the chart resembling closely that of benign tertian malaria. Examination during the attacks revealed always restlessness, general hyperæsthesia, flushing, and rigidity of the legs, whilst sometimes there were vomiting, ptosis, and slight squint. The urine remained normal and a second bacteriological examination showed it to be sterile. Radiographic examination of the abdomen was negative. The cerebro-spinal fluid was under slightly increased pressure and contained 6500 white blood cells per c.mm., chiefly polynuclears. Culturally it was sterile on two occasions, nor were organisms seen in a film after centrifugalisation. A blood culture gave negative results, as did also examination for malarial organisms. There was a leucocytosis of 23,000, 90 per cent. of which were polynuclears. Ophthalmoscopic and otoscopic examinations were negative. An agglutination test, using the cerebro-spinal fluid against strain II. of the meningococcus showed no trace of agglutination. Complement-fixation test for tubercle, using the blood serum, was also negative. Quinine failed to modify the fever. After this period the febrile attacks became more occasional. On one occasion he complained of numbness in the left forearm and left leg, and partial anæsthesia was demonstrable in these positions, but gradually disappeared within a few days. A final lumbar puncture was done 21 days after admission, the fluid escaping under considerable pressure. Since then there had been no further rise of temperature and the boy was now convalescent. The knee-jerks were still difficult to obtain and there was nystagmus. In view of the increasing intrathecal pressure, the high polynuclear count in the cerebro-spinal fluid, and the negative findings by other examinations, the case was regarded as probably one of cerebro-spinal fever in spite of the negative bacteriological examination of the cerebro-spinal fluid and almost complete absence of signs between the attacks, which resembled the crises encountered in that disease.—Dr. E. A. COCKAYNE agreed with the diagnosis and referred to a case in which, after the appearance of a rash resembling somewhat erythema nodosum, there were four days of complete intermission of symptoms, followed by definite cerebrospinal fever, which proved fatal.

SOCIÉTÉ DE THÉRAPEUTIQUE DE PARIS.

AT a recent meeting of this Society Dr. ARTAULT DE VEVEY read a paper on

The Treatment of Scabies and Pediculosis by Benzine,

in which he stated that though the parasiticide properties of benzine were well known to naturalists, especially entomologists, they were not generally recognised by the medical profession. He had frequently found that a garden syringe filled with benzine was sufficient to rid a house of ants, beetles, and cockroaches. In the case of scabies, treatment consisted in swabbing the regions affected with benzine, and applying at night an ointment composed of 10 g. of benzine with 50 g. of lanoline, and covering it with wool. The following morning the ointment was washed off with soap and a cure was effected. The body-linen and clothes were disinfected by sprinkling them with benzine, and putting them in a closed chest for a few hours. In pediculosis capitis the scalp was swabbed with benzine, and the head covered with a paper or cloth cap for an hour. Not more than 10–15 c.cm. of benzine need be used. In the case of body-lice the axillæ, groins, and flexures of the limbs should be swabbed, and the clothes and linen treated as in the case of scabies. The only danger, which could easily be avoided, was the inflammability of benzine. The applications were never painful, except over excoriations.

The Treatment of Laryngeal Tuberculosis by Rare Earths.

Dr. G. ROSENTHAL in his paper stated that this treatment must be both local and general. General treatment consisted in giving an intravenous injection three times a week of 4 c.cm. of a solution of didymium sulphate, at first in a 2 per cent., and later in 4 per cent. strength, together with 5–20 c.cm. of concentrated solution of saccharose. Local treatment included (*a*) progressive intratracheal injections of from 2–15 and 20 c.cm. of 1 in 10 gomenol oil, supplemented by 2 cg. of didymium sulphate; (*b*) local applications of the preparations already mentioned, or one of the following solutions: sulphate of didymium 0·02 g., gum arabic q. s. ad 4 c.cm., or novocaine 0·02 g., didymium sulphate 0·02 g., gum arabic q. s. ad 4 c.cm. The only contra-indication to local treatment was weakness of the patient. Great care should be taken in giving intravenous injections in febrile cases.

Dr. R. HUERRE read a paper on

Cedar Wood Oil as a Substitute for Sandalwood Oil,

in which he stated that the chemical composition of cedar wood oil, which contained sesquiterpenes and sesquiterpenic alcohols, showed that it was in no way inferior to sandalwood oil in its action on the mucous membranes.

The Phosphorus and Calcium Balance in Tuberculosis.

Dr. R. LAUTIER in his paper recorded cases showing that, though a nitrogenous deficit or retention was generally accompanied by a deficit or retention of calcium, this was not a universal rule. In like manner the nitrogen balance and phosphorus balance did not always go hand in hand. In order to obtain the best conditions of nutrition or repair, food or drugs containing phosphorus or calcium should not be prescribed haphazard, but should be given in such a way that there should be a slight excess of calcium.

The Treatment of Whooping-Cough by Adrenalin.

Dr. L. DUMONT in his paper stated that this method, which was introduced by an English writer in 1912 or 1913, had been employed by him with constant success since 1913. His dosage was as follows, a 1 in 1000 solution of adrenalin being employed: below 3 years, 2 drops three times daily; from 3 to 7 years, 3 drops every three hours; from 7 to 15 years, 4 drops; above 15 years, 5 drops. The doses must be taken immediately after the paroxysms, so as to prevent the drug being vomited. If no improvement occurred in three days' time, the dose must be increased by one drop daily until a real improvement took place. An attack so treated should not last longer than two to three weeks.

NATIONAL COUNCIL FOR COMBATING VENEREAL DISEASES.—The business meeting of the General Council will be held on Tuesday, June 28th, at 3 P.M., at the Morley Hall Y.W.C.A., George-street, Hanover-square, London, W. The business meeting will be followed by the annual general meeting.

Reviews and Notices of Books.

AN INTRODUCTION TO THE PSYCHOLOGICAL PROBLEMS OF INDUSTRY.

By F. WATTS. London: George Allen and Unwin, Ltd. 1921. Pp. 240. 12*s.* 6*d.*

THERE is to-day a vogue for things psychological, and another for things industrial. The book now before us is concerned with both.

The author starts by proclaiming the need that exists in industry for investigating the human side of work, and for scientific methods "to collect the facts, to arrange them, and to attempt to explain them." When pointing to the underlying influence exerted by the ductless glands upon the emotions he even tempts the reader to expect a physiological explanation of psychology; thus, the effect of emotional excitement upon the adrenal glands, which leads to increase in the rate and force of the heart-beat and promotes effective muscular innervation, is claimed as a factor in industrial fatigue. Fatigue, its onset and elimination, is dealt with at some length, but the subject is treated in too abstract a manner, a not unusual failing with psychologists who write of industry; there is little appeal to facts, of which there are to-day plenty accumulating, small effort to arrange them, but a vast deal of theoretical disquisition and a priori deduction. The section devoted to vocational selection is perhaps the best in the book, although here, too, there is little evidence of real investigation. Attention is well drawn to the need in industry for economical route-ing of human ability, just as there is an economical route-ing of processes; "economy suggests it; humanity demands it." The criticism is particularly applicable to the last half of the book. Here appeal to carefully collected data is thrown to the winds, and theoretical psychology rules supreme. Monotony, for instance, is discussed without establishing by results that any such thing really exists; surely, processes could have been found and instanced, similar in the amount of physical exertion required, in the conditions of labour, in the wages paid, and in other pertinent factors, but differing in the variety of movement called for in the one case and the constant repetition work in the other: observations could then be quoted to establish how important this question of monotony really is, and then would be the time, if at all, to build up a superstructure claimed to be the framework of industrial unrest. We fully allow that by adopting the method pursued an interesting and readable book can be written, and in producing such a book Mr. Watts has succeeded. The pity is that the reader has to disentangle ideas based on fact from those based on some general consensus of opinion. The author has allowed himself rather too many footnotes, which have well been called indications of lazy writing. References to authorities quoted are irregularly dealt with, appearing now in footnotes, now (where they always should appear) in a list at the end of the chapter; here is another indication of slackness in preparation. The index of the book is quite inadequate, and hardly supplements the statement of contents.

We can recommend this book to those who desire to acquaint themselves with the interesting thoughts of an interesting thinker, but we are unable to promise them a solid contribution to the science of the subjects dealt with therein.

ANNALS OF MEDICAL HISTORY.

Vol. III., No. 1. New York: Paul B. Hoeber. 1921. Pp. 96. $2.50.

THE previous volumes were interesting, and the number now before us is no exception to the pattern. Among the papers of chief note is one by Isador H. Coriat, dealing with an ancient Eyptian medical prescription for hysteria to be administered either by fumigation or internally. It consisted of semi-precious stones together with wine and certain plants. It was apparently found efficacious, but still we prefer the simple methods of our more immediate ancestors quoted by Sir D'Arcy Power in his Annual Oration (1920) delivered before the Medical Society of London.[1] Circa 1670, the Rev. John Ward, vicar of Stratford-on-Avon, wrote in his diary concerning the practice of a neighbouring medical man: "Dr. Trig cured a woman yt was troubled with histerical fits this way; he laid her upon ye ground with her face downwards, yn took up her coat and gaue her 3 or 4 good slaps on ye arse, and they cured her."

Another notable paper in the Annals is by Henry Barton Jacobs on Elizabeth Fry, Pastor Fliedner, and Florence Nightingale, all of whom brought about enormous improvements in nursing the sick. Pastor Fliedner was the founder of the Deaconess Hospital, Kaiserwerth. John C. Hemmeter contributes an interesting article upon Leonardo da Vinci as a Scientist, and Harry Friedenwald discusses the giving of medical degrees in the Middle Ages by other than academic authority; references are given to the granting of medical degrees to Jewish physicians by the Pope, in 1402 and also in 1502. We can call two instances to mind not mentioned by Dr. Friedenwald of degrees being granted without academic authority in much later times. In 1657 the poet Cowley, "complying with the men then in power (which was much taken notice of by the royal party), he obtained an order to be created Doctor of Physic, which being done to his mind (whereby he gained the ill will of some of his friends) he went into France again. . . ." This occurred in December, 1657, at Oxford. Again even to day "Lambeth Degrees" in every faculty are or can be granted by the Archbishop of Canterbury, a remaining privilege of His Grace's former position as Papal Legate.

TYPES OF MENTAL DEFECTIVES.

By MARTIN W. BARR, M.D., Chief Physician, Pennsylvania Training School for Feeble-Minded Children; and E. F. MALONEY, A.B., Professor of English, Girard College. London: H. K. Lewis and Co., Ltd. 1920. Pp. 180. 16s.

As the title suggests, this book is a study of a series of cases illustrating the various grades and specialised types of mental deficiency. The authors' aim that the cases should be "sign-posts pointing the way to successful diagnosis" is certainly achieved, for the grading standard is well maintained, the notes on hereditary and environmental conditions are illuminating, and the descriptions of general intelligence, behaviour, and educability of each case give clearly outlined clinical pictures. The absence, however, of any record of examination by the newer psychological methods is a somewhat notable omission in a book on this subject, especially in one which emanates from America. Unfortunately for English readers the grading is not that to which they are accustomed, for Dr. Barr still refuses to use the term "feeble-minded," or even its American equivalent, "moron," for the higher grades, and classifies his cases as "idiots, idio-imbeciles, and imbeciles (low, medium, and high-grade)." His medium and high-grade imbeciles, however, practically correspond to our feeble-minded. This more extensive application of the term "imbecile" makes the use of the term "moral imbecile" less of an anomaly than it is in the English nomenclature, but Dr. Barr's classification is not likely to be adopted here, partly on sentimental grounds and partly because the Mental Deficiency Act has definitely fixed our terminology.

On the subject of moral imbeciles there is still much confusion of thought, from which this book is not quite free. For after speaking of "perversion, or complete absence of the moral sense," as a characteristic of this type, Dr. Barr quotes two cases who could "undoubtedly discriminate between right and wrong," and another who realised that his punishment was deserved. And, as the great majority of the examples cited are, from the descriptions given, obviously deficient in intelligence and therefore certifiable under one or other of the grades already mentioned, one is reminded of Healy's dictum, in speaking of the moral imbeciles, that he had "not found one." Of much interest is the chapter on "idiots savants," those curious types who compensate for their general deficiency by a special talent in one or more directions. One of the cases described has been made familiar to English readers by Dr. Tredgold, who, however, regards the case as one not of primary defect, but of secondary defect due to deafness. Another of Dr. Barr's cases is of extreme interest as showing how the discovery and encouragement of a specific talent caused definite improvement of behaviour and an interest in other work which six years of previous training had failed to produce. From the point of view of operative treatment, the case of a lad who, after castration at 14 years of age, showed greater capacity for training and marked increase of control over his baser instincts, is of some importance. A photograph is given of every case, an unusual and valuable feature, but it has apparently necessitated the reduction of many to a size incompatible with clear definition. It is scarcely possible, for example, to find a Darwinian tubercle in a photograph of head and shoulders the size of a postage-stamp.

The book is well worth careful study by all who have the responsibility of diagnosis of such cases.

TRAITÉ PRATIQUE DES MALADIES DES ENFANTS DU PREMIER AGE.

By GASTON VARIOT, Médecin de l'Hospice des Enfants-Assistés et de l'Hôpital Notre-Dame du Perpétuel-Secours, Chef des Services de l'Institut de Puériculture, President-fondateur du Dispensaire Goutte de Lait de Belleville. Paris: Octave Doin. 1921. With 88 figures. Pp. 1150. Fr.75.

Dr. Variot's new text-book includes a study of the diseases of infants in the first two years of life. The early chapters are devoted to the very important subjects of infant hygiene and infant feeding, on which the author can speak with authority. There is an elaborate consideration of the diseases of the digestive system, with a special chapter on congenital anomalies. Respiratory, cardio-vascular, and nervous systems are treated in turn, and are followed by detailed consideration of congenital syphilis, tuberculosis, specific fevers, rickets, dystrophies, and so forth. The work is essentially personal, and is the fruit of a long career of careful clinical and laboratory study of disease in early childhood. It reads easily and never becomes dull, though it is a most complete treatise on the diseases of infants—in fact, an exposition of the modern teaching of the French school in the matter of infant hygiene and disease.

RATIONAL TREATMENT OF PULMONARY TUBERCULOSIS.

By CHARLES SABOURIN, M.D., Medical Director of the Durtol Sanatorium, France. Authorised English translation from the sixth French edition. Philadelphia: F. A. Davis Company. 1921. Pp. 440. $3.50.

THE author who would write a book devoted solely to the treatment of pulmonary tuberculosis must take his courage in both hands, for he has to run the gauntlet of the hundreds of advocates of various remedies, and he is certain to please few unless he is prepared to give his book encyclopædic dimensions. The present work does not attempt to discuss the latest "advances" in the specific treatment of tuberculosis, and only a page is devoted to vaccine- and sero-therapy. Many other comparatively modern forms of treatment are either wholly ignored or discussed with a brevity that may be taken as the measure of Dr. Sabourin's estimate of their value. He is a sanatorium physician with long and varied clinical experience, and it is evident that he is either ignorant of the enormous amount of new therapeutic work, or that he has found it profitless. His book thus conveys nothing new. But it would be difficult to over-estimate the value of the sound and practical clinical advice he has to give. In almost every page he shows a profound and intimate knowledge of the workings of the tubercle bacillus in the human body and of the many steps which can be and ought to be taken to make the reaction of the host to the parasite victorious. With regard to exercise he is emphatic that it should be aimed mainly at the lower limbs, for the arms are located too near to the lungs to be used freely with impunity by the consumptive. Thus he advocates walking as the most useful form of activity, and he regards sawing wood, even if it be for 15 minutes only, as "highly detrimental." His advice with regard to coughing shows the same sympathetic knowledge of his subject, and he contrasts the unrestrained indulgence in coughing by the untrained patient with the coughless silence of a sanatorium dining-room. The author of the tag—

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[1] THE LANCET, 1920, i., 1043.

> "It's not the cough that carries you off,
> It's the coffin they carry you off in,"

was more witty than wise, for many a patient coughs himself into his grave who, had he learnt to discipline this reflex, would still be a useful member of the community.

MEDICINE IN VIENNA IN THE PAST.

Das alte medizinische Wien in zeitgenössischen Schilderungen. Von Dr. Med. et Phil. Max Neuburger, O.Ö. Professor für Geschichte der Medizin an der Universität zu Wien. Wien und Leipzig: Moritz Perles. 1921. Mit 9 Abbildungen. Pp. 266. M. 35.

This account of the medical side of Vienna from contemporary records comprises the period from the death of Gerhard van Swieten in 1772 to 1814, the year of the Congress of Vienna, a period when Vienna was the Mecca of the medical pilgrim, and when "Es war nur *ein* Wien." But much has happened since then. G. van Swieten, one of the famous pupils of the illustrious and then all-powerful H. Boerhaave, of Leyden, was called by Maria Theresa, Empress of Austria, to become her physician and to reorganise medical studies in Vienna and in the Austrian Empire generally, which he did with gratifying success, carrying with him the doctrines and methods of the Leyden School. Anton de Haen was brought from the Hague by van Swieten to assist. An account is given of what is called two sensational events in the history of Vienna Medicine—the opening of the General Hospital, with its adjuncts—for maternity cases, also for foundlings, lunatics, and incurables in 1784, and the foundation by Joseph II. of the K.K. Medico-Chirurgical Academy in 1785.

The text is composed of extracts from reports by medical men—German, French, Russian, and English—who visited Vienna and in their travels described what they saw in the hospitals and medical school. The mortality of the "foundlings" seems to have been appalling; one surgeon treated his cases with water dressing and no bandages or plasters even to hold the linen covering in position, another extols plasters and salves; one physician was all for expectant treatment, and others adopted vigorous methods, so that there was plenty of variety in treatment for observation and criticism. We get glimpses of the activities of Störck, Stoll, Plenck, Peter Frank, and others famous in their time; of Mesmer, with his Animal Magnetism, who found fewer fools in Vienna than in Paris; of cases diagnosed into two classes, sthenic and asthenic, and treated accordingly; of the famous oculist, then of European reputation, von Beer; of G. Prochaska, with his wonderful collection of injected anatomical specimens, and some of the original preparations of Lieberkühn; of Gall and his doctrine, and his public lectures in 1786, which, however, were suppressed. We hear of the terrible epidemic of typhus in Vienna after the battle of Austerlitz in 1805, of a visit by K. Ernst von Baer and his impressions. We are reminded, also, of a forgotten incident in the life of Richard Bright by a reference to "Travels from Vienna through Lower Hungary, with some remarks of the State of Vienna during the Congress in the Year 1814." Here we get a picturesque account of De Carro's introduction, advocacy, and practice of Jenner's methods of the cowpox inoculation against small-pox. Bright also notices that of the most celebrated practising physicians scarcely one is an Austrian by birth.

There is much to interest the reader in these studies of the practice and doctrines, as well as the personalities, of a by-gone age in medical history.

CLINICAL STUDY AND TREATMENT OF SICK CHILDREN.

Third edition, revised and enlarged. By John Thomson, M.D. London and Edinburgh: Oliver and Boyd. 1921. Pp. xxxii.–877. 32*s.* 6*d.*

Dr. Thomson brings to his work the outlook of a scientific observer as well as of a clinician, and over and above his acquaintance with disease in children has an inspiring knowledge of the literature of the subject. The only criticism that can be offered is that, doubtless from considerations of space, Dr. Thomson has too often limited himself to a mere recapitulation of symptoms when fuller discussion and expression of his personal views as to their interpretation would have been welcome. Different parts of the book will necessarily appeal to different readers. The opening chapters, dealing with methods of examination of the sick child and with symptoms and signs peculiar to children, will be found especially valuable by the student. Physical constants, and the variations to which growth and development are liable in health and disease are treated comprehensively, and the diet and general hygiene of the infant and adolescent are not neglected.

Certain of the views expressed are not those most generally accepted. For the breast-fed infant, supplementary feeding is advocated in cases where the supply of breast-milk is insufficient. The balance of opinion in England appears to favour alternate feeding as being both more easy to carry out, especially in working-class homes, and on the whole more beneficial both for mother and child. The chapters on rickets and scurvy are brought well up to date; a table of the composition of infant foods is of special value (pp. 162–166), the criticisms of the properties of each foodstuff being pertinent. A chapter is devoted to congenital hypertrophic pyloric stenosis, illustrated by reproductions of photographs which compare favourably with any hitherto published, though this rare condition hardly merits the attention devoted to it. The nutritional diseases of infancy are dealt with at length, and the exposition and discussion of Finkelstein's work on food disorders is particularly illuminating. Dr. Thomson would appear to incline more strongly than do most authorities to Finkelstein's theories, that dietetic errors, particularly improper quantitative relationship between protein, fat, and carbohydrate in the feeds, rather than bacterial infection, are responsible for digestive disorder and its sequela marasmus.

The chapters on child metabolism we have found the most interesting in the book. The causation and treatment of tetany and the nervous manifestations of rickets are treated in a chapter headed "Spasmophilia," while an exhaustive study of cyclic vomiting is placed in the chapter on acetonæmia. The ætiology and treatment of asthma in childhood includes a description of the protein-sensitive tests, and the subject of anaphylaxis receives further attention in Appendix C. As regards the application of organic compounds of arsenic to the treatment of congenital syphilis, Dr. Thomson seems rather more optimistic as to the results of treatment of the later manifestations than are most observers. The relative prevalence of the bovine type of infection in Edinburgh in contrast to the greater frequency of infection with human-type tubercle bacilli in London is discussed. Under existing conditions the boiling of milk is strongly advocated. An apparent contradiction appears on p. 774. After admitting the soundness of the investigations of Ghon and others, who showed that a primary lesion may always be found at the point of invasion of a tissue such as the lung by tubercle bacilli, the lymphatic glands at the hilus being secondarily infected, the author states "in early childhood there is a greater tendency for the lymphatic glands to be severely affected, and it is only when this first line of defence is broken down that the disease is able to reach the lungs." The contention of Ghon was that pulmonary disease reached the lung directly by the air-passages in children as in adults; and that infection of the lungs by continuity of lymphatic paths was unlikely to occur. Dr. Thomson advocates tonsillectomy in cases of tuberculous infection of glands in the neck; he does not devote much attention to the important group of children who show delayed or even complete failure of resolution after broncho-pneumonia, nor to those who suffer from recurrent broncho-pneumonic attacks of catarrh: a warning that these conditions are too frequently diagnosed as juvenile pulmonary tuberculosis might have been helpful to his less experienced readers.

This edition, like its predecessors, is well produced. A comprehensive index and many beautiful illustrations are provided, and the appendices include a Children's Pharmacopœia.

SUGGESTION AND AUTO-SUGGESTION.

A Psychological and Pedagogical Study based upon the Investigations made by the New Nancy School. By CHARLES BAUDOUIN. London: George Allen and Unwin. Ltd. 1920. Pp. 288. 15*s*.

IT is well, at the present time, that the attention of psychotherapeutists should be recalled to the efficacy of suggestion in the treatment of certain morbid states. Before the war a small band of enthusiasts, in this country and other countries, made use of suggestion, with or without hypnosis, in the treatment of functional disorders, and often succeeded in alleviating conditions which had resisted all other methods. Sometimes cures could be recorded, though sometimes claims in this direction had to be turned down. During the war the limitations of suggestion were forcibly impressed upon those medical officers who, often without much previous experience, employed it in the treatment of "shell-shock," and the need felt for some more "rational" therapy, together with the gradual assimilation of some of the doctrines of the psycho-analysts, led in time to a hybrid form of treatment which was neither suggestion nor psycho-analysis. Since the war the tendency would seem to be towards the employment of some form of mental analysis in every case in which psychotherapy is indicated, and the use of suggestion appears to be falling into disrepute. Baudouin's book is therefore opportune in that it serves to remind us that suggestion has still a useful part to play in psychotherapeutics.

The doctrines expounded by him are based on work carried out by Emil Coué at Nancy during the past 10 years. These doctrines are a natural development—indeed, almost an inevitable development—of the views put forward by Liébeault and Bernheim many years ago. Their main feature is the insistence on the importance of auto-suggestion and of the part it plays in all effective suggestion whatsoever. The truth of this has been felt by many who have used suggestion extensively in therapeutic practice; and, indeed, apart from the possibility of some supernormal influence exercised by the hypnotist on his patient, it is obvious, to quote Frederic Myers, that when a subject is told not to feel an aching tooth, "we cannot credit the doctor with doing more than set in motion some *self-suggestive* machinery by which the patient cures his toothache himself." But although the central feature of Coué's doctrines is not new, what *is* new and valuable in Baudouin's exposition is the formulation of the laws and mechanisms through which auto-suggestion works, and the precise description of the most effective ways of bringing them into action.

Perhaps the most important law discovered by Coué is that which Baudouin calls the "Law of Reversed Effort." It is the law exemplified in the attraction which a bunker has for the novice at golf, or a big stone on the road for the budding cyclist. In Coué's words: "When the will and the imagination are at war, the imagination invariably gains the day." It is on the proper appreciation of the relation between the imagination and the will that success in the use of suggestion mainly depends, and a study of Prof. Baudouin's book, in which this topic is fully dealt with, cannot fail to be of great value to the practitioner.

Throughout this work there are numerous references to psycho-analysis, and apparent acceptance of its teachings; but attempts to relate these teachings to those of the new Nancy School are few, and not very successful. Especially is it noteworthy that the writer avoids any discussion of the outstanding contribution of psycho-analysis to the psychology of suggestion—namely, the relation of suggestion to "*transference*." But it is not surprising, and perhaps not regrettable, that in an essentially practical book certain theoretical problems, which are hardly yet ripe for settlement, should be passed over without comment.

ŒDEMA AND NEPHRITIS.

A Critical, Experimental, and Clinical Study of the Physiology and Pathology of Water Absorption in the Living Organism. Third edition. By MARTIN H. FISCHER, M.D. New York: John Wiley and Sons, Inc. 1921. Pp. 922. 55*s*.

THE third and enlarged edition of Dr. Martin Fischer's well-known work contains the same material as the two previous editions, practically unaltered, and also several important additions. The author develops his conception of the hydrophilic colloid in further detail and gives an account of new experiments on the swelling, and solution of gelatin in non-acid media. Another new feature of this edition is a discussion of the nature of the increase and decrease in hydration capacity of the proteins and a more general discussion of the essential nature of water secretion, while some interesting experiments are added on the behaviour of protein colloids in the presence of buffer mixtures. Much of the book has a direct clinical interest, and the relation of chronic interstitial nephritis to chronic parenchymatous nephritis on the one hand, and to arteriosclerosis on the other hand, is discussed from the point of view of acid-intoxication of the respective tissues. The bias of Dr. Fischer's views is well illustrated by his statement that "any means which leads to an increased production or accumulation of acid in the kidney is a means of "producing nephritis"; and again, in the classification of the several forms of nephritis, in his statement that "there is but one form of nephritis—parenchymatous nephritis." No succinct definition of nephritis is given; the author says that he uses the word in its ordinary clinical sense and yet he seems to regard the albuminuria that follows hard physical exertion as evidence of nephritis. Another word that requires more exact definition is "acid-intoxication," for the ambiguous sense in which acid-intoxication is used has led to the assumption that it means hydrogen-ion concentration. The book would be improved for the general reader if a chapter were added dealing with this fundamental question and defining the differences between acid-intoxication, hydrogen-ion concentration and titration acidity. The subject would be further simplified if it were possible to measure the degrees of acid-intoxication in the body tissues. This is, however, an enormously difficult matter, since alkalies and other substances in addition to acids may increase the hydration capacity of colloids.

If the reader is content to leave such matters as these wrapped in mystery he will yet be interested in the clinical aspect of the author's views; he may, in fact, be prepared to judge them on the success attained in the treatment of œdema and nephritis on the lines that Dr. Fischer lays down.

TUBERCULOUS SALPINGITIS.

A Clinical Study of 200 Cases. By J. P. GREENBERG. The Johns Hopkins Hospital Reports. Vol. XXI., Fasc. 2. Baltimore: The Johns Hopkins Press. 1921.

THIS monograph is based upon an analysis of all the cases of tuberculous salpingitis which occurred in the gynæcological service of the Johns Hopkins Hospital during the years 1890–1919 inclusive. The author found that this condition was present in nearly 1 per cent. of all women admitted to the gynæcological service, and that of every 13 abnormal tubes removed by operation one was tuberculous. It occurs most commonly in young sterile women, of whom one quarter had pulmonary tuberculosis. The chief symptoms are abdominal pain and leucorrhœa. In two-thirds of the patients there was some elevation of temperature, and one-half had lost weight. In very few of the cases was a correct diagnosis made before operation, which was performed in rather more than half the cases. It was found that abdominal fistulæ were much commoner among the cases which were drained. The tubes were involved most frequently of the pelvic organs, and next in order of frequency were the uterus, ovaries, cervix, and vagina. In 99 per cent. both tubes were involved. The operative mortality was 7·6 per cent. and of 90 patients traced 78 were found to be living from two months to 30 years after the operation. Nearly all those alive were in good health.

THE SPUTUM.

By Prof. Dr. HEINRICH VON HOESSLIN. Berlin: Julius Springer. 1921. Pp. 398+x. M.148.

WE confess to having opened this volume with a certain amount of anxiety. Four hundred pages on the subject of sputum alone seemed to promise redundancy, but the work has afforded us considerable pleasure. It was apparently prepared for publication in the summer of 1914 and was held over by the publishers owing to the outbreak of hostilities. As the author himself points out in his preface, it would be difficult to produce such a work now under the changed conditions of the publishing world.

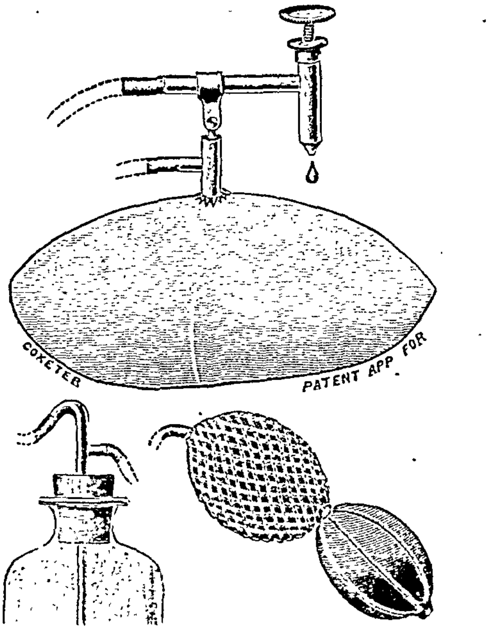
Prof. von Hoesslin has filled a gap in clinical pathology. The consideration of sputum examination is generally relegated to a short chapter, even in works on clinical pathology; but neither pathologist nor clinician can complain here. The book is one to which it is almost impossible to do justice in a review, because it is packed with facts from first to last page, covering the ground from the naked-eye examination of sputum to the bacteriological cultures and differential diagnosis. The cytology, macroscopical and microscopical appearances, the technique of the examination of pigment, the qualities of elastic tissue and crystals, and the chemistry of sputum occupy together rather more than half the book. The second portion deals with the bacteriological aspect of the subject. The accounts given of some of the organisms is not quite as detailed as it might be (e.g., streptococcus, pneumococcus), and the protozoa, notably the spirochætes, do not receive much attention—so hard is it, even in the largest text-book, to be quite comprehensive. The higher bacteria, such as the mucor group, which are liable to give a good deal of worry in the examination of sputum owing to difficulties of classification, culture, and pathogenicity, are not dealt with quite adequately from the point of view of a practical laboratory worker. Perhaps a fuller consideration of non-pathogenic mouth organisms would have cleared up these points.

Diagrams, tables for differential diagnosis, coloured plates—some of them typical, others unconvincing, but practically all well executed—are numerous. It is with relief that we note the omission of the old engravings of Curschmann's spirals which disfigure some text-books, and find instead the inclusion of a series of really beautiful drawings of this somewhat rare appearance in sputum. But perhaps the best indication of the thorough way in which Prof. von Hoesslin has done his work is to be found in the forty closely printed pages of references at the end of the book. We trust that it will not be long before Prof. von Hoesslin has the opportunity of bringing out a second edition of this work in which he will be able to add all the new work of the war years, including the diagnosis by "types" of the pneumococcus and meningococcus, and other recent advances on the bacteriological side. This volume is chiefly valuable as a good reference book on a subject which has hitherto been scattered about the literature of medicine and pathology, and the fuller it can be made the better for the research worker to whom it will largely appeal.

New Inventions.

AN AUTOMATIC ANÆSTHETIC INHALER.

THE inhaler here illustrated consists of a mask to which is attached a small dropper, which can be fixed in any position. The drops are regulated to any speed by rotating the milled head of the valve. The anæsthetic in the bottle is subjected to air pressure by means of rubber bellows, and is forced through the tube from the bottle to the dropper. When the bellows have been pumped up the liquid continues to flow through the tube at a constant drip for a considerable time without attention, the length of time depending upon the size of the bellows used. The small tube at the side permits oxygen to be given if desired. A rubber band can be used to secure the mask to the patient's face. This mask was designed for use with ethaneseal, but can, of course, be utilised for any liquid anæsthetic.



C. LANGTON HEWER, M.B., B.S. Lond.
Marylebone, N.W.

THE LANCET.

LONDON: SATURDAY, JUNE 11, 1921.

The Revival of Morbid Anatomy.

NINE years ago the late Sir JAMES GOODHART delivered the Harveian Oration, choosing as his text the Passing of Morbid Anatomy. Whereas, he said, we used to display disease in the gross, the results of disease that is, we are now able to recognise finer changes and more minute evidences of bioplasmic unrest that are behind these results, and they are the goal that we make for now. He had just met the first biochemist. "And pathology still is shifting!" added the orator. That it is possible to question the value of morbid anatomy to medicine might seem absurd to one who had not followed closely the trend of medical thought in the crowded years since GOODHART's masterly address; but there is no doubt that the pendulum has been swinging somewhat wildly, not only backwards and forwards, but also from side to side, with the result that progress has been erratic. Sir G. SIMS WOODHEAD in our correspondence columns raises points of considerable interest, and particularly worthy of attention is his plea for a more general performance of post-mortem examinations. The last two or three decades have witnessed dramatic discoveries in parasitology, immunity, biochemistry, and physics, and the more humdrum field of morbid anatomy has been to some extent neglected. As is only natural, the recruits have flocked to those branches of medical science which seemed to offer the most brilliant future, for rich harvests are more easily gained from virgin soil than from land which has long been cultivated. But it is becoming clear that even in these fields the obvious discoveries have now been made; future progress can only result from intensive effort, and day by day the boundaries of the expert's knowledge in his own particular science are becoming more and more restricted; the bacteriologist is becoming divorced from the serologist, and in biochemistry a man may lead a full and useful life as a pure devotee of the lipoids. Similarly, on the clinical side, whereas the old-time physician studied all the ills of the body, the modern specialist is often content with a single system as his province, or even a single microbe, for the *Treponema pallidum* and the tubercle bacillus have both their cults, while the activities of a surgeon are frequently limited to districts marked out in the human body by imaginary horizontal lines. This modern system has undoubted advantages, but it suffers from a serious drawback; it is prone to cause atrophy of that most important sense, the sense of proportion. The physician exalts his own particular system above all other organs of the body; the student of vitamins is blind to everything but his mysterious protégés; and the bacteriologist forgets that microbes are, medically speaking, of no importance at all except for the effects they produce on human tissues.

It is necessary, from time to time, for the enthusiast to be brought down to earth that his observations and theories may be compared with cold fact and the test by which he must be judged is morbid anatomy. Physical signs are worthless unless they actually correspond with pathological lesions, and microbes or positive serum reactions must be correlated with definite lesions before they can claim to possess more than an academic interest. This unfortunately necessitates a high degree of coördination between the various workers, a difficult matter, but one which must be faced. The older physicians, such as BRIGHT and ADDISON, needed no pathologist to help them, for they were their own morbid anatomists. They followed their cases to the post-mortem room, and themselves sought there for an explanation of the signs and symptoms they had detected during the patient's life. Liaison officers were unnecessary in those days, but now they are essential. With the progress of morbid histology, pathology has become a vastly wider subject. The detection of gross lesions is no longer sufficient, their elucidation by histological studies is equally necessary, and the physician is therefore compelled to rely upon the expert pathologist. On the other hand, no morbid histologist desires or even claims to be in a position to do his own bacteriology; though, in its early days bacteriology was practised by the general pathologist, the science has now become too unwieldy for this, and demands its own practitioners. But while it is of the utmost importance that all clinical observations, as well as the investigations of the experts in the newer sciences, should be controlled by morbid anatomy, there is another side of the question. Morbid anatomy is a living science, and every day fresh discoveries are being made in the post-mortem room or the histological laboratory. These can only be of value, however, if we understand what they mean, and a proper understanding can only be arrived at by the help of the clinician and the workers in other fields. Just as in the post-mortem room the true meaning of the signs and symptoms recorded in the clinical notes of the case is made clear, so in the records of other workers may the pathologist hope to find the key to his own investigations.

No amount of coördination, however, between himself and his colleague can help the pathologist if there is lacking the coöperation of the lay public. It is true that he may learn much from the study of tissues removed by operation, and it may be pointed out in passing that the so-called science of the pathology of the living comes finally to the study of tissues which have been killed, but the greater part of his work is concerned with the dead. Only in the post-mortem room can he study the late results of disease, and the earlier, even the earliest, manifestations of morbid processes. And here the force of public opinion is directly opposed to his labours. Time after time the work of the clinician is rendered worthless so far as the advancement of knowledge is concerned by the refusal of permission to make a post-mortem examination. And this state of affairs is likely to continue till education and the growth of a more logical mode of thought shall sweep away the prejudice and false sentiment of the layman. If we were asked in what way a thousand persons could best serve the interests of medical research, we would say by leaving orders that post-mortem examinations should be performed on themselves, and by pledging themselves not to refuse permission for similar investigations on their relatives. Such a series of autopsies, if performed by trained observers in the light of such clinical records as Sir SIMS WOODHEAD suggests, might be of incalculable value to medical science and of real benefit to mankind.

Insanity in Law and Medicine.

THE coöperation of medical practitioners and lawyers is necessary whenever questions have to be settled at law relating to insane persons, whether such questions refer to the detention and safe custody of these unfortunate subjects, their civil rights, or their civil or criminal responsibility for their acts. Consequently a paper read recently by Dr. W. G. H. COOK, a barrister and Doctor of Laws, before the Medico-Legal Society, upon the Liability of the Insane in Respect of Civil Wrongs, dealt with a subject very appropriate for such joint consideration. The criminal responsibility of the insane person, and of the person whose defence to a criminal charge is that he was insane when he committed the act, is frequently considered by the courts, and, whether members of the medical profession may approve or not of the test of insanity adopted by the law for such trials, that test is well established and well known. It is not so generally known, and it may have come as a surprise to some of Dr. COOK'S audience, that the degree of liability imposed by the common law upon the mentally deranged person when sued in civil courts differs from that which obtains in criminal trials, and indeed is not defined with any certainty. It has been dealt with to some extent in text-books, and has been the subject of obiter dicta by judges, but no leading case in which the degree of insanity which will excuse a man from the civil consequences of a tortious act appears to have occupied the attention of the Courts of Appeal, so as to supply a precedent of recognised weight.

The general effect produced by Dr. COOK'S survey of the law in the light of such precedents as exist, was that whereas the intention to do wrong is the essential feature of the act which brings punishment upon the wrong-doer, the point of view in a civil action is different. The law is not there enforced by the State in order that crime may be penalised or prevented for the future. It is set in motion by a person who has suffered damage in order that he may obtain compensation for loss or injury inflicted upon him. The consequences of a certain act have to fall upon someone, and the tendency of the law from the earliest times has been to compensate, and to let the insane person bear the burden of his own act, rather than it should be endured by his innocent neighbour. Dr. COOK was of opinion that the general tendency of recent cases bearing on the subject was to excuse the person incapable of an intent to injure, and that this was consistent with the general policy of the law. In opening the interesting discussion which followed, the chairman, Mr. Justice ATKIN, pointed out that the latter contention was open to question. He gave as an example of a tort, in which intent to injure need not be proved even in a sane person, the case of a libel, for the publication of which an action would lie even if the person publishing it was not aware that he was defaming the plaintiff. The speakers who followed, and who included Sir WILLIAM COLLINS and Sir ROBERT ARMSTRONG-JONES, added valuable criticisms, and appeared to be in agreement as to the difficulty of defining insanity with Lord BLACKBURN, who was quoted by Dr. COOK as having said that he had never been satisfied with any definition, and had endeavoured in vain to make one, adding, "I verily believe that it is not in human power to do it." It may be suggested that such definition is for Lord BLACKBURN'S successors on the bench, and not for the medical profession, to consider with a view to the uses to which it is to be put. It will then be for medical men to say how far the individual case comes within that definition or lies outside it. The whole question of the law in relation to insanity is, as has been suggested, eminently one for the Medico-Legal Society to ventilate and discuss.

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The Relations of Medicine to Industry.

A MEETING of medical men, working in connexion with industrial establishments, was held on June 2nd at the offices of the Industrial Welfare Society, Westminster, and may mark the beginning of a valuable movement. The meeting was presided over by H.R.H. the DUKE OF YORK, the President of the Society, and was well attended, while our brief report of the two discussions (p. 1257) will show alike the pioneer work which has been done, and the difficulties which stand in the way of quick and smooth progress. It happened that on the same day a series of conferences was commenced at the Guildhall under arrangements made by the Royal Institute of Public Health, when, at one of the Sessions, industrial medicine was the subject of debate. This series of conferences was also opened by the DUKE OF YORK, who in his speech declaring the proceedings open, used the following words: "Industry has too long been carried on without thought of its effect on the worker." The DUKE OF YORK recognised the real reason for holding the meeting.

The conference at Westminster was of a strictly practical nature; it was concerned, firstly, with what could be done to maintain and improve the health of the workers, the second question being what steps ought to be taken to make the resulting advantages of healthy labour quite clear to the minds of the employers. This definite movement on the part of practitioners connected with industrial establishments has been made opportunely. From our report of the comprehensive discussion at the Guildhall it will be seen that each of the medical services of the country still awaits arrangement and coördination, so that at the present moment there is room for new activities to establish themselves and to plan their programmes without interference from old-established customs or interests. The work which has already been done in the factories, for example, in the avoiding of tragedies by timely examination of workmen, and in the prevention of sepsis by prompt attention to injuries, are examples of what may be expected to become commonplace routine; the establishment of dental clinics at many works, the provision of trusses, the shortening of disablement period after accidents by electrotherapy and massage, clinics at the works, the provision of half-time, or light work for convalescents, the removal of men from dangerous work at an age when slight accidents might make them permanent cripples, are examples of care for the individual worker which are already in evidence. But much remains to be done to make unhealthy processes healthy, and to remove the causes of long-standing ills. Industrial phthisis presents huge difficulties. The presence of the doctor in the works, on the Whitley Councils, and on the works committees, will help towards dealing with this difficult situation. But we must go cautiously to begin with. The average medical practitioner has had little opportunity as yet of studying these problems practically or at close quarters with employer and employed, despite the real desire of all to aid and abet sound therapeutics.

Any attempt to upset the management of industrial concerns by ill-considered advice founded on book knowledge would inevitably bring the whole medical movement into discredit. Experience at the works will bring invaluable lessons, but a course of preliminary training would make that experience doubly valuable. There was general agreement at the conference that the general practitioners would have the chief part to play in the improvement of industrial health, perhaps through a rota of works doctors, in which case the works clinic and ambulance room would resemble a "centre" under the Dawson scheme. Whatever the exact method may be that future consideration decides upon, the works doctors must be in close touch with the general practitioner and with the certifying factory surgeons.

We must not make industrial medicine into another "close" specialism, and it is obvious that if the general practitioner is to acquire a preventive outlook, he must have the opportunity of studying the effect on his patient of both home and occupational conditions. We may have concentrated too closely on home conditions. How often have we heard the declaration at health conferences that "consumption is a house disease" by speakers who ignored the well-known effects of certain occupations, and the evidence of the doubled death-rate from tuberculosis of the lungs among males when compared with females. The Industrial Welfare Society (to quote its journal) voices the longing for a revival of practical goodwill between employer and employed. One of the conference speakers said: "This movement must be based on medicine." We feel sure that the medical profession will rise to the occasion and worthily play its part in what the *Daily Telegraph* last Saturday described as "that most promising of modern developments in industry, the prevention of ill-health and the promotion of efficiency in general by medical care in the factory and the workshop." Once inaugurated on safe and sound lines, industrial medicine is likely to go ahead faster than some may think.

FATE OF A BRIGHTON HOSPITAL SCHEME.—A Brighton correspondent writes:—"The only maternity hospital in Sussex is the Brighton and Hove Hospital for Women in West-street, with two small branches—one in Brighton and one in Hove. The institution is in the ninety-first year. Before the war the need of larger premises was so pressing that, an excellent opportunity arising, an old school building was actually secured and would have soon been transformed into a hospital but for the outbreak of hostilities. Within a day or two of the actual taking over by the hospital of their new building the Government commandeered it, and it became the Second Eastern General Hospital, the hospital returning to its old premises. There is no need to enlarge on the changes the war has brought about, but since the return to the new premises negotiations have been going on with the Health Committees of the Brighton and Hove Town Councils and the East Sussex and West Sussex County Councils with the object of coördinating the work of the hospital with the needs of the area it serves, and these have been fatal to the hospital. The final decision was made on May 26th by the Brighton Town Council, which body agreed as follows:—(1) In view of the circular of the Ministry of Health urging that no fresh capital expenditure should be undertaken which can be postponed without material risk to public health; (2) as three of the local authorities concerned have already withdrawn from the scheme; and (3) owing to the high cost involved in the carrying out of the scheme the Town Council cannot proceed further with the scheme. It is a pity such a hospital—dealing with over one thousand maternity cases every year—to say nothing of visits to out-patients—cannot secure the additional accommodation which it so much needs. The raising of a healthy population begins at the cradle."

Annotations.

"Ne quid nimis."

THE BIRTHDAY HONOURS.

THE list of honours issued on the occasion of the official celebration of the King's Birthday contains the names of several medical men who have rendered eminent service both to the profession to which they belong and to the State. Among the new knights are Mr. Arthur Keith, F.R.S., Hunterian Professor and Conservator of the Museum of the Royal College of Surgeons of England; Dr. Thomas Lewis, F.R.S., honorary consulting physician to the Ministry of Pensions; and Dr. Sydney Russell Wells, Vice-Chancellor of the University of London and its Representative on the General Medical Council. In the Irish list is the name of Dr. F. C. Dwyer, ex-President of the Royal College of Surgeons in Ireland, Chairman of the House of Industry Hospitals, and Inspector of Anatomy in Ireland, and in the Colonial Office List Brigadier-General D. J. McGavin, Director-General of Medical Services in New Zealand; both these distinguished medical men have received the honour of Knighthood. In the Order of the Bath Surgeon Rear-Admiral P. W. Bassett-Smith, C.B., is promoted to Knight of the Order, while Colonel C. E. Pollock, D.S.O., Assistant Director of Medical Services, Eastern Command, receives a Companionship of the Military Division. Major-General W. M. Edwards, Director-General, I.M.S., and Colonel W. H. Willcox, late medical adviser to the civil administration in Mesopotamia, receive Knight Commanderships of the Order of the Indian Empire; and Lieut.-Colonel B. H. Deare, I.M.S., Principal of the Medical College, Calcutta, and Dr. Mohendra Nath Banerjee, Principal of the Carmichael Medical College, Belgatchia, Companionships. Major W. D. Neal, Indian Medical Department, becomes a Companion of the Imperial Service Order, and Dr. Ernest Muir, of the School of Tropical Medicine, Calcutta, research worker and missionary, the Kaisar-i-Hind Medal of the First Class. Sir Ernest Hodder-Williams, chairman of Wakley & Son, Ltd., proprietors of THE LANCET, has received the Commandership of the Royal Victorian Order. We congratulate these recipients of well-earned honours.

NEW SOUTH WALES AND INFLUENZA.

THE report for the year 1919 of the Director-General of Public Health for New South Wales is a monument to the thoroughness with which the work of the department is carried out, and in its 273 large pages contains full details of everything connected with public health work, from the usual mortality returns to the value of the 121 pairs of beaverskin trousers made at the State Asylum for Aged and Infirm Men, Parramatta. Section five, which runs to 100 pages or more, consists of the report on the influenza epidemic of 1919 and is an admirable account of that invasion, considered under the following headings: Epidemiology, Administrative measures, Mortality statistics, and lastly the Pathological, bacteriological and ætiological investigations into the epidemic in Sydney, contributed by Dr. J. B. Cleland, principal microbiologist to the department. It is interesting to read that the quarantine cordon was successful in preventing the arrival of the second and virulent wave until January, 1919, whereas infected ships reached the ports in October, 1918. The actual case-mortality was not so high as it was in England. Careful investigations have shown that in the metropolitan area 290,000 persons, or 36·6 per cent. of the whole population, were attacked with a mortality of 3902, or 1·3 per cent. Among pregnant women not previously inoculated the mortality-rate was found to be 30·6 per cent., while in those who had been inoculated previously it was found to be 9·5 per cent. Both figures confirm the very grave risk the disease brings to expectant mothers.

The prophylactic measures taken were remarkable and complete. Proclamations were issued closing all libraries, schools, churches, theatres, picture-palaces, and all other places of indoor entertainment. The wearing of masks in trains, trams, public places, and shops was made compulsory. Public meetings for any purpose either indoor or in the open air were prohibited, racecourses were closed, and church services, at first prohibited, were only permitted in the open air under certain restrictions and regulations for the quarantining of influenza contacts. As regards protective inoculation, Australia had an unique opportunity to exploit the value of this measure. The time which elapsed between the arrival of the first influenza infected ships in October, 1918, and the invasion of New South Wales in January, 1919, was utilised by the department to manufacture large quantities of mixed vaccine having the following composition:—

Pneumococcus	1000 millions.
Influenza bacillus	100 ,,
Streptococcus	100 ,,
Staphylococcus aureus	250 ,,
M. catarrhalis group	250 ,,

A conservative estimate of the total number of inoculations performed in New South Wales was 819,083, which brings the number of people so treated to 404,803. In Sydney between 35 and 40 per cent. of the whole population were inoculated. Among the inoculated the mortality was 10·7 per cent.; among those not inoculated it was 16·5 per cent. Further, it is shown that the mortality fell regularly according to the number of inoculations. Among those inoculated once it was 11·1 per cent., among those twice inoculated 10·1 per cent., and it was 8·2 per cent. among those inoculated three times. The effect of inoculation in preventing an attack is known to be slight, if any, but figures are here produced which show that it has no tendency to increase the susceptibility of the person inoculated, or in other words, the question of the negative phase may be disregarded.

Dr. Cleland summarises his personal deductions from the immense amount of information he had at his disposal and amongst his conclusions from the pneumonic cases he states that:—

1. The primary ætiological agent of influenza is unknown but is probably a virus of the filter-passing group.
2. The primary lung lesions are probably directly due to this virus.
3. Both lungs are usually more or less involved, the upper lobes in most cases, the lower lobes less often.
5. In fatal pulmonary cases a bacterial growth is usually obtained comprising one, two, three, or more groups of bacteria, of which pneumococcal organisms are the most prevalent, while the influenza bacillus, streptococci, and *Staphylococcus aureus* occur in about one-third of the cases.
6. These bacteria are believed to be secondary invaders flourishing in the exudate and hæmorrhagic areas resulting from the primary virus.
8. Vaccines seem to have led to a quite distinct though not very great diminution in the mortality.
9. Inoculations of animals with infective material have proved of no value except to show that the rhesus monkey is almost completely refractive to the disease.

The macroscopic features presented by the diseased lungs were protean in character, so much so that it is difficult to describe in general terms the appearances that may be expected in any one case. A series of very beautiful coloured plates illustrates the various lesions found in the lungs, and the coloration produced by them; the appearances in the Australian epidemic being precisely similar to those recorded in England, France, America, and other parts of the world during this widespread epidemic. When discussing the use of vaccines Dr. Cleland mentions the remarkable feature which has been observed in this country also, not only in connexion with influenza vaccine, but after the use of T.A.B. vaccines in the army during the days of the war—namely, that many persons suffering from forms of chronic rheumatism or other complaints of a similar nature derived unmistakable benefit from the injections. It was found that a number of persons made a practice of attending the inoculation depôts weekly in order to maintain the benefit they derived for these chronic affections. Dr. Cleland concurs with the views of observers over here, that the beneficial substances are the foreign proteids introduced into the systemic circulation. Emphasis is laid on the value of masking both as a means of preventing the exit of the virus from those infected and of preserving the non-infected from inhaling infection.

The report forms a very complete record of an epidemic which it was possible to observe from before its commencement to its, fortunately, not long-delayed termination. As an account of the measures both preventive and curative which can and should be taken by an intelligent administration it is of the highest value and the work should be retained for reference in all medical libraries.

SELF-DISINFECTION: THE GOVERNMENT'S ATTITUDE.

THE Ministry of Health has sent a circular dealing with the prevention and treatment of venereal diseases to the authorities of counties and county boroughs in England and Wales. We give the substance of this circular on p.1256. After careful consideration of the evidence the Government, it is stated, find that there is general agreement that the best way to avoid risk of venereal disease is to abstain from promiscuous sexual intercourse, disinfection applied immediately after exposure to risk of infection being effective only to the extent to which it can be thoroughly applied in the particular case. They find that medical opinion is divided as to the practicability and likelihood of the success of self-disinfection by the civil population, whereas on the moral and social side weighty objections have been advanced against it. In the circumstances the Government have decided that, whatever the individual or groups of individuals may practise or recommend, they cannot make a system of self-disinfection for the civil community part of their official policy. It is hoped that this clear statement on behalf of the Government may form a useful basis for united coöperation of persons and societies concerned in the campaign against venereal diseases.

EXHIBITION OF X RAY PHOTOGRAPHS.

INTERESTING X ray photographs are being shown at the house of the Royal Photographic Society, 35, Russell-square, London, W.C. The exhibition is under the auspices of the Rontgen Society, and contains more than 250 prints, some of which arrived by special aeroplane from Paris too late to be included in the official catalogue, though short descriptive notes are attached where available. Specimens of the work of the late Dr. C. Infroit, of the Hospice de la Salpêtrière, Paris, are on view. Drs. Vignal, Haret, and Contremontez have sent remarkable examples of their radiographic work, and specimens of metal radiography have been contributed by the firm of Giaffe-Gallot and Pilon. Among the notable work contributed by radiographers in this country is a fine series of prints illustrating various abnormalities of the vermiform appendix, by Dr. C. Thurstan Holland. The Cancer Hospital is represented by some good prints recording the progress of opaque meals. Prints of paintings are shown by Dr. A. Chéron and the Sunic Research Laboratory, and illustrate the application of radiography in the detection of fraud. Some photographs taken by Mr. A. Campbell Swinton in 1896 are of historic interest. Dr. R. W. A. Salmond shows some good work, and the comparative results obtained with the new Impex plates and the ordinary X-ray plates, by Dr. G. H. Rodman, the president of the Royal Photographic Society, are of special interest. A series of plates taken with a portable apparatus in France, by Miss Phyllis Berry and Miss Collum, late of the Scottish Women's Hospital, illustrates some of the war-time applications of the X ray. The exhibition generally marks a distinct advance, and the opportunity of direct comparison of the work of radiographers in this country with that of workers abroad is of considerable value in demonstrating different methods of procedure. The series of sets of four prints produced by lay workers employed either in the radiographic departments of hospitals or acting as assistants to qualified radiographers, are specially helpful in this respect, entries for prizes offered by Dr. R. Knox are of a high standard. The first prize has been awarded to Mr. Suggars, of the London Hospital, and the second to Mr. A. O. Forder, of King's College Hospital. The exhibition will remain open daily throughout June (Sundays excepted) from 11 A.M. to 5 P.M., and admission is free.

EXCESSIVE PROTEIN IN DIETS.

WE drew attention in THE LANCET of April 16th to the important observations of T. B. Osborne and L. B. Mendel, of Yale University, on growth with diets poor in true fats, and growth without preformed carbohydrate in the diet. The same observers[1] discuss the question of growth with diets containing more than 90 per cent. of protein. Although it has been demonstrated that a carnivorous animal can be kept alive and maintained in activity for considerable periods on an exclusive diet of meat, it is not known whether growth as well as maintenance can proceed on a regimen entirely free from both fats and carbohydrates. Hammarsten has stated that omnivora and herbivora cannot survive on such a ration. The authors' successful experiments in growing rats on food extremely poor in fats and in carbohydrates respectively encouraged them to test diets containing only minimal quantities of *both.* The mixtures included protein 95 per cent., inorganic salts 5 per cent., with a supply of vitamins A and B in the form of tablets of alfalfa (0·4 g.), and dried brewery yeast (0·2 g.) daily. On such diets, when casein furnished the protein, animals have already grown to three times their weight at the beginning of the trial. The vitamin-bearing substances were the only noteworthy sources of either fat or carbohydrate, and supplied 4–8 per cent. of the food eaten. If future experiments prove as successful as those described by these authors, then various problems of nutrition and physiological function can be approached from new experimental standpoints. The earlier experiments by Hammarsten, few in number in relation to this problem, were conducted on a less satisfactory plan, the food mixtures being inadequate in respect to one or more essential factors. It is to be noted that in Osborne and Mendel's experiments the growth of the rats was observed only until their weight was trebled. It has still to be determined whether rats will attain adult size and normal functions on diets furnishing proteins as the almost exclusive source of energy and tissue substance. The communication in our present issue from Miss G. A. Hartwell would seem in the first place to indicate that there may be exaggeration even in the diet of a lactating mother. We know little of the metabolism of even a single protein in any single animal, and practically nothing of the transformations of proteins in a suckling mother and of the metabolites that may be discharged in the milk under abnormal or even normal conditions of nutrition. It would be interesting to have an analysis of the milk in other animals giving suck while consuming excess of proteins. Experiments have been made which show that the metabolic machinery of adult rats works in a different way from that of young rats. Grown rats fed on one protein, gliadin, with the other essentials of a diet, remain active and healthy and capable of reproduction. The offspring appear normal and grow actively as long as they are suckled by the mother, but if after weaning they are fed on the same diet as the mother, growth ceases at once. The young animal would seem to be unable to manufacture something which is present in the maternal pabulum, and which is not present in the constitution of the directly-fed gliadin. Once the growth stage is over, some new machinery must arise capable of transforming the gliadin.

FIBROMA OF THE OVARY.

ACCORDING to Dr. Edmund D. Clark and Dr William E. Gabe[1] of Indianopolis, who record a personal case in a single woman aged 46, fibroma of the ovary is a sufficiently rare condition to warrant the publication of all carefully studied cases. They quote statistics derived from various sources showing the surprisingly small number of true ovarian fibromata encountered in large clinics or by men with an extensive experience of pelvic surgery. Only three examples were found by Sir Spencer Wells among 1200 ovariotomies. Kelly, in 1200 laparotomies, found only four cases, and Hellman reported only six instances among 4500 pathological specimens at the Woman's Clinic at the Berlin Charité in the course of ten years. Hellman and Reel estimate that fibromata constitute approximately 2 per cent. of all ovarian tumours. They occur from the time of puberty up to an advanced age, the youngest case on record being in a girl aged 17 and the oldest in a woman of 73. The majority occur in single women and about the menopause. Their size and weight vary extremely, the smallest ones being enclosed in ovarian tissue, while the larger ones weigh as much as 56 pounds. Their consistency is also very variable, some being composed of a loosely woven network of connective tissue, while others are so dense that a bone saw is needed for their section. They are liable to various changes, such as œdema, necrosis, hyaline formation, and fatty degeneration. The diagnosis is dependent solely on microscopical examination, which in typical cases shows a certain regularity of the individual fibres or muscular cells and strands, despite varying quantities of cells, fibres, vessels and degenerative changes. The principal feature in the symptomatology of ovarian fibroma is the presence of a hard, unilateral movable tumour, accompanied by ascites. Pain is of varying degree and is often absent altogether. Other symptoms, such as frequent micturition, constipation, &c., are due to mechanical factors. Owing to its absence in other tumours of the ovary and its rarity in fibromata elsewhere, especially in the uterus, the occurrence of ascites is of considerable diagnostic value. The prognosis of ovarian fibroma is invariably good. Treatment is exclusively operative.

POST-GRADUATE MEDICAL STUDY.

A RECENT newspaper announcement has reached this country of a scheme of medical amalgamation, rendered possible in New York by private munificence, whereby the medical faculty of Columbia University has been able to amalgamate with the Presbyterian Hospital, which is one of the largest hospitals in the city. Those who are familiar with the medical institutions of New York will be able to appreciate the comprehensiveness of the scheme, for which the claim has been made that, in point of size and equipment at least, a medical centre has been created which will be "the greatest in the world." The organisation thus brought into being has been endowed to the extent of £3,000,000—

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[1] Proc. Soc. Exp. Biol., 1921, xviii., 167.

[1] Amer. Jour. of Obstetrics and Gynecology, March, 1921.

a sum provided, in several instances anonymously, by a few wealthy families of the United States; the donation of one contributor amounted to £1,000,000; a site, anonymously presented, was valued at a quarter of a million. The bestowal of sums of this magnitude marks a high order of philanthropy, for it brings no material gain to the donor, whilst enormously benefiting the community. *In this country a minimum sum of £30,000 is needed* in order to place the Fellowship of Medicine Post-Graduate Medical Association upon a firm financial and imperial basis, and we trust it will not be long before some public-spirited benefactor comes forward to render possible a medical enterprise of vital importance. In most instances of generosity similar to those we have mentioned, it may be assumed that the undertaking in question has been ventilated, and its value emphasised, before the evocation of so admirable a response; in other words, the needs of the Post-Graduate Medical Association of the Fellowship of Medicine must be clearly and repeatedly stated, both by the spoken and the written word. Individual effort must be brought to bear; with such a meritorious end in view an extended appeal can hardly fail of its effect. The novel form of requirement may cause some possible donors to hesitate, but it is just as likely to attract others by its novelty. In this connexion it is gratifying to note the increasing number of post-graduates joining the Association, particularly as the later summer, most usual and favourable time of year for post-graduate courses, has not yet come. The augury is for a successful session. It may, perhaps, be repeated that the sum of £30,000 for which the Fellowship of Medicine appeals is the minimum amount required to set the Post-Graduate Medical Association in a position worthy of the country which will reap the benefit of its activities.

ARSENOBENZOL IN SYPHILIS.

Dr. Joseph Nicolas, of the Lyon School of Medicine, gives an excellent summary of the treatment of syphilis in the *Journal de Médecine de Lyon* for April 20th. He prefaces his article with the following dicta: 1. That the arsenobenzol compounds afford the best treatment of syphilitic lesions not only from the point of view of cure but also from that of prevention. These may be supplemented by mercury in cases of intolerance, of resistance to arsenical treatment, or where such treatment is not available. 2. That when the lesions have disappeared under the influence of these injections it is necessary to submit the patient to a treatment which is methodical, regular, and of long duration, such treatment being intense during the first years and moderate during the later years, but in all cases being carried out over a considerable period—four to five years or even longer. 3. That the Wassermann reaction is a sign without any absolute value, which taken alone affords no guide to treatment. To await the return of a positive reaction before continuing treatment is to indulge in an absolutely unjustifiable opportunism.

After discussing the advantages and disadvantages of various arsenobenzol compounds and the different methods of administration of mercury, the author gives a standard table of treatment extending over a period of five years. Following this is a summary of treatment suitable for special cases. Cases of albuminuria are to be carefully investigated from the point of view of renal function before undergoing treatment. In cases of severe renal disease treatment with arsenobenzol compounds must be absolutely proscribed, the author quoting a case as an example in which uræmic coma was precipitated as the result of a single injection of 0·15 g. of novarsenobenzol in a patient suffering from renal tuberculosis. He considers that arsenical compounds are in any case less irritating to the kidneys than mercury, and on this account afford the treatment of choice in syphilitic albuminuria. Lesions of liver are of still greater importance from the point of view of treatment. As a general rule it may be said that no arsenobenzol compounds should be given when the liver is diseased. Reliance in such cases should be placed on mercurial treatment. Arsenobenzol injections must be immediately abandoned on the appearance of jaundice. If, however, jaundice has existed before commencing treatment, or after the first injection (possible Herxheimer reaction), the prohibition of novarsenobenzol need not be absolute, but only very small injections should be given, and a careful look-out kept on the patient. Laryngeal symptoms also necessitate special precautions, especially when there are indications of œdema and stenosis. In such cases a preliminary course of mercury must be administered, preferably intramuscular injections of biniodide or intravenous injections of cyanide. When some improvement in the condition of the larynx has been obtained arsenical treatment may be instituted.

Discussing the treatment of *ocular syphilis* the author remarks on the innocuousness of the arsenobenzol compounds compared with atoxyl from the point of view of bulbar neuritis. After having given 120,000 injections of arsenobenzol he has only come across one case of optic neuritis, and there was nothing to prove that this was due to novarsenobenzol. In the treatment of neuro-syphilis the author prefers intravenous injections of novarsenobenzol. Small doses should be given, and on no account must the slightest reaction be provoked; *deplorable results* follow the employment of doses producing a reaction. General paralysis is not affected at all by treatment. In the treatment of pregnant women he again uses small doses of 0·15 to 0·3 g. of novarsenobenzol, and in cases of intolerance intravenous injections of cyanide of mercury. As a routine treatment for syphilitic babies he prefers mercurial inunctions. When a rapid action is necessary he recommends intravenous injections of novarsenobenzol, 0·01–0·025 g. per kilo of weight. However, he considers arsenical treatment in infants not without danger and regards it as expensive. When an apparently healthy child is born of parents known to be syphilitic, the author pays special attention to the appearance of the placenta; if this is voluminous or shows signs of disease he institutes treatment of the child even in the absence of any signs of congenital disease.

Dr. Nicolas's summary of treatment emphasises two points: first, that novarsenobenzol compounds are the medicaments of choice in antisyphilitic treatment; and second, that such treatment must be continued over a much longer period than is generally recognised in France.

THE FRESH AIR CULT.

THERE are probably few medical men to-day who are not convinced of the value of an open-air life, in so far as this is practicable, in building up the individual resistance to infection, more especially in the case of children and of young adults. At the Congrès d'Hygiène Scolaire de Langue Française, which took place in Paris early in April, one of the subjects discussed was that of open-air schools, mainly for pre-tuberculous subjects and for children suffering from tuberculous *adenitis* and from latent tuberculosis. Various aspects of these schools were emphasised by the different delegates, one speaker, for example, pointing out that much more use could be made for this purpose of the open spaces in large towns. Another dwelt on the importance of a carefully graduated course of heliotherapy in each individual case, the duration of exposure being increased till the child can be left in the sun for many hours in the day; he had seen astonishing results on the physical condition, the powers of resistance, and even on the character. Yet another delegate recalled how a year previously the speakers at a meeting of the Society of Public

Health expressed a dread lest a catastrophe, such as the occurrence of a fatal case of broncho-pneumonia should kill the new venture of open-air schools, whereas as a matter of fact the pupils at these particular institutions had shown an extraordinary resistance to catarrh and infection of all kinds. The effect of an open-air life in increasing the weight is shown by Dr. Mestrezat in the March issue of the *Revue d'Hygiène*. The particular case described at some length is that of a healthy medical man of 32, whose average weight in Paris in 1914 was kg. 54·5, rising in 1915, when he was living an open-air life and taking daily exercise, to 58·1; falling again gradually to 56·1 in 1915–16 when living in a country town with three hours exercise daily; and falling again steadily to 54·6 in 1921 on resumption of life in Paris. Other instructive tables given by the same writer deal with the rapid and progressive gain in weight of soldiers convalescent from chicken-pox and mumps under the open-air treatment, the diet being the ordinary army rations in no way modified. After all this it is something of a shock to find in the March number of the *Archives de Médecine des Enfants* an article dealing with the treatment of the pre-tuberculous state in children, in which the writer deprecates open windows at night for such cases, quoting and endorsing the opinion of another medical authority as to the disadvantages in the shape of coryza, bronchitis, diarrhœa, and conjunctivitis which more than counterbalance any possible advantages to be derived from the practice. After hinting that most of the doctors who prescribe the treatment do not practise it themselves, he adds that in summer, during the hottest months, the windows may be partly open during sleep provided that there are curtains or blinds that can be drawn, but the warning is added "Il faut veiller surtout ce que l'air n'arrive pas directement sur le lit de l'enfant." This echo of past teaching contrasts strangely with the almost unanimous opinion in the medical world of to-day as to the value of fresh air in health and in sickness. "There's night and day, brother, both sweet things"; and it is surely time that the phantom-bogy of the danger of night-air should be laid once and for all.

DILATATION OF THE ŒSOPHAGUS *WITHOUT STENOSIS.*

DILATATION of the œsophagus in the absence of any anatomical stenosis has aroused considerable attention during the last few years, especially since skiagraphy and the use of the œsophagoscope has rendered its diagnosis a matter of comparative ease and certainty. Enormous dilatation may take place with almost total inability to swallow, producing complete failure of health and even death, and yet there is no obstruction whatever. A full-dress debate was held on the subject a couple of years ago at the Laryngological Section of the Royal Society of Medicine,[1] accompanied by an excellent series of pathological specimens, but it cannot be said that the ætiology has been finally explained. Certain points are established—namely, that food is arrested at the level of the diaphragm and not at the cardiac orifice, that there is no hypertrophy of the cardiac sphincter, and that the muscular wall of the gullet is not atrophied but rather hypertrophied. All records of cases of this affection are therefore of interest, though one of the most recent contributions, a paper by Dr. R. Bensaude and Dr. G. Guénaux, of the Hôpital Saint-Antoine in Paris,[2] also fails to clear up the doubtful points in its causation. Referring to the ease of diagnosis due to modern methods, the authors state that one of them, who had only seen one case in 15 years, has now diagnosed 17 cases in 18 months. Of these 17 cases 12 were females, and the neurotic element was an evident factor, the influence of the emotions during the war being very manifest. The age-incidence was very variable, two cases beginning in childhood, one of them at the age of 6, but the majority occurring between the ages of 33 and 55. The symptoms are fairly constant, with a slow insidious onset, a sensation of arrest of food at the lower part of the gullet, eructations, rumination, inability to take certain foods, regurgitation, vomiting, cough, dyspnœa, and periods of complete occlusion. The vomiting is without nausea or effort, and suggestive of the overflow of an over-full vessel. On X ray examination the opaque substance is arrested above the diaphragm, and gives a very characteristic cylindrical shadow ending in a regular finely-pointed extremity. On œsophagoscopy the dilatation is evident, and the entire wall, from top to bottom, is arranged in transverse folds; the aspect of the cardia is variable; the genu-pectoral position is recommended for this examination. Unfortunately none of the seven cases described are uncomplicated cases of idiopathic dilatation.

RADIOGRAPHY IN OBSTETRICS.

A SERIES of remarkable radiograms, published by Prof. Sebastián Recasens in the February number of *La Clinica Castellana*, brings forcibly to the attention the many possibilities of radiography in the field of obstetrics. There is, for example, the problem of the twin pregnancy, up till the present rarely diagnosed with certainty except by the detection of two sets of fœtal heart sounds beating in distinct rhythms. Not only does X ray assistance settle this problem, but it goes further and displays the relation of the twins to each other and to the maternal pelvis. There are numerous ante-partum conditions which may be revealed with certainty by this method to the great assistance of the obstetrician; among such may be mentioned fœtal deformities, hydrocephalus, and the various degrees of extrusion of the fœtal head. Prof. Recasens challenges the accepted view, expressed in all text-books (and copied, so he says, from one to another) that the fœtal limbs in utero are normally completely flexed. The published radiograms seem to bear out his contention.

SIR FREDERICK BANBURY'S REASONING.

IN moving the second reading of the Dogs Protection Bill Sir Frederick Banbury extracted from a series of editorial articles which appeared in THE LANCET some two years ago one line, which means nothing without the context, but on the strength of which he seems to have claimed our support for his contentions. For future quotation in any reasoned speech he may make on the subject we bring to his notice our considered opinion on the Bill, as expressed in the closing sentence of one of the articles which he may be supposed to have consulted already. "The limitations which are intended to be put upon medical research may bear sad fruit when this readiness to put sentiment and sensibility ahead of sense and truth will not appear such a humane proceeding as many now consider it to be."

WE regret to announce the death on June 2nd of Dr. John Matthew Fortescue-Brickdale, physician to Clifton College and the Bristol Royal Infirmary, and an authority on pharmacology.

DR. E. G. Graham Little has been elected by the graduates of medicine and surgery of the University of London to serve a fifth term of office as representative on the Senate.

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[1] Proceedings of the Royal Society of Medicine, Section of Laryngology, vol. xii., No. 5, March, 1919.

[2] Contribution à l'Etude de la Dilatation Diffuse et Généralisée (dite idiopathique) de l'Œsophage, Revue de Médecine, 1921, No. 2, p. 3.

CONTROL OF VENEREAL DISEASE.

County Councils and Venereal Disease: An Official Circular.

The Government, as is well known, have had under consideration the policy hitherto adopted in this country for dealing with venereal diseases, and the question whether any modification of that policy is required at the present time. The outcome of this consideration is the issue by the Ministry of Health of a circular (No. 202), dated May 31st, 1921, dealing as follows with the present position of the prevention and treatment of venereal diseases.

Basis of the National Scheme.

As the Council are aware, the national scheme for the prevention and treatment of these diseases is based upon the recommendations contained in the Final Report of the Royal Commission on Venereal Diseases. The main recommendations of the Commission were: 1. That gratuitous treatment for persons suffering from these diseases should be provided at hospitals and other institutions in all parts of the country. 2. That a widespread campaign of publicity and education as to the dangers and effects of these diseases, and as to the necessity for early and skilled treatment, should be undertaken. These recommendations have been and are being carried out under schemes formulated by the Councils and approved by the Minister of Health or his predecessors, while the propaganda campaign, in accordance with the recommendation of the Royal Commission, has been directed, centrally by the National Council for Combating Venereal Diseases, under the supervision of this Department, and locally by the County and County Borough Councils, a large number of which have coöperated with the local branches of the National Council in carrying out measures of publicity and education. In a few areas, also, Ablution or Disinfecting Centres have recently been instituted as an experimental measure in order that facilities may be provided for the disinfection, by skilled attendants acting under medical supervision, of persons who have exposed themselves to the risk of infection with these diseases.

War-time Experience.

The experience gained during the war by different armies in attempting to prevent the spread of venereal diseases has given rise to question whether, in the case of the civilian community, some further measures should not be adopted with a view to diminishing the incidence of these diseases, and after the conclusion of hostilities this question was considered by an Interdepartmental Committee appointed by the Minister of Health. This committee came to the general conclusion that although certain drugs, if properly and skilfully applied, are efficacious in preventing venereal diseases, the most carefully organised system for the supply of these drugs in "packets" and the instruction of men as to their use, did not produce such a general reduction in the incidence of these diseases as to warrant its recommendation by the Government. It was, however, found that where preventive treatment was provided, after exposure to the risk of infection, by a skilled attendant, the results were better than when the same measures were taken by the individual affected, even after the most careful instruction. Unofficially also this question has recently been under consideration by a special committee of the National Birth-rate Commission, and the conclusions of that committee are contained in a report which has now been published.

The Question of Self-disinfection.

The Government have given careful consideration to the question on which the views of these two committees, official and unofficial, are not completely in accord—namely, the question of self-disinfection—but they find that there is general agreement on the following conclusions: 1. That the best way to avoid risk of venereal disease is to abstain from promiscuous sexual intercourse, and that a steady and continuous policy of public enlightenment on this point, and as to the risks of venereal disease and its resulting consequences on the general health of the community, is essential. 2. That disinfection immediately after exposure to risk of infection is effective only to the extent to which it can be thoroughly and intelligently applied in the particular case. They also find that medical opinion is divided on the question of the efficacy of self-disinfection for the civilian population, and in particular on such questions as (1) whether it is practicable to give such instruction to the population generally as will ensure that the disinfectants are thoroughly and skilfully applied; (2) whether the spreading of knowledge as to the efficacy of disinfectants would not lead to persons running the risk of infection who would otherwise avoid that risk, and thus increase the spread of disease; and (3) whether the disinfectants will not be used in some cases for the treatment of developed disease with the result that proper treatment will be delayed and the cure of the disease rendered more difficult and uncertain.

The actual situation which confronts the Government is that there is not unanimity of opinion on the medical side as to the practicability and likelihood of success of self-disinfection for the civil population, whereas on the moral and social side most weighty objections are advanced against it. It is clear that this question is one which cannot be decided solely by reference to medical opinion—moral and social considerations of very great importance are involved in it. In the circumstances the Government have decided that they cannot give official support to self-disinfection as a policy.

Public Instruction.

The decision of the Government emphasises the importance in the interests not only of the individuals concerned, but also in those of the community in general, of continuing and extending public instruction and enlightenment as to the dangers arising from promiscuous sexual intercourse, and the disastrous consequences on the general health of the community which result from the spread of venereal diseases. The Minister is aware that in most parts of the country a wisely directed campaign has been, and is being, carried on in this direction, and he is advised that it is essential that no opportunity should be lost of educating public opinion on this matter. It is important that the Council should call to their aid every available agency in their area which exists for the purpose of the moral and social betterment of the people, and the assistance of voluntary organisations of this kind should be most valuable in advising as to the lines on which a campaign of publicity and education can best be directed and as to the contents of such leaflets, posters, &c., as the Council may issue. It is essential that due economy should be exercised in this matter as in all other public services at the present time, but the Minister trusts that the Council will not curtail their expenditure during the current financial year on educational and propaganda work in connexion with these diseases, and he is prepared, as indicated in paragraph (6) of Circular 192, to consider applications for his approval of limited expenditure for this purpose in excess of that incurred by the Council during the past financial year. This is a matter also in which the Council would be justified in looking to voluntary bodies for some financial assistance.

Issue of Warning Leaflets.

The question of the contents of any publications which may be issued by the Council on this subject is one for the decision, in the first instance, of the Council, but the Minister desires to suggest the advisability of the widespread issue of leaflets, &c., warning the public of the dangers of venereal diseases and containing advice on the following lines:—1. The prevalence of venereal diseases is a grave source of danger and ill-health to the public. 2. These diseases are usually contracted through promiscuous sexual intercourse, and the best way to avoid risk is to avoid such intercourse. It is the duty of all individuals who have incurred, or think they have incurred, the risk of contracting disease, to cleanse themselves thoroughly and immediately, and thereby diminish the risk. 3. If any signs or symptoms of disease, however slight, are experienced the individual should promptly seek medical advice or attend a venereal diseases clinic. 4. Any attempt at self-treatment of these diseases is likely to be disastrous.

Ablution Centres.

The Minister is of opinion that the arguments which have influenced H.M. Government in deciding against any official advocacy of self-disinfection do not apply to the provision of ablution centres where facilities are provided, with proper safeguards, for disinfection by skilled attendants acting under medical supervision. The experience so far obtained is not sufficient to enable any final conclusions to be drawn as to whether such ablution centres should be established permanently in large towns; but the evidence available as to the results obtained in different armies from the provision of these centres justifies further experiments of the same kind for the civilian population, and the Minister is accordingly prepared to consider applications for his approval of the experimental provision of further ablution centres.

Legal Position of Chemists Selling Disinfectants.

It is understood that questions have arisen as to the precise effect of section 2 (2) of the Venereal Disease Act, 1917, and the Minister considers it desirable to state that, although he is not empowered to give an authoritative interpretation of the provisions of any Act of Parliament, he is advised that a chemist does not commit an offence by selling any substances for which he is asked, merely because those substances are capable of being used as disinfectants against venereal diseases, so long as the substances are not sold accompanied by any written or printed recommendations or instructions as to use. It should be carefully borne in mind that by sections 1 and 2 (1) of the same Act, an offence is committed by any person (other than a duly qualified medical practitioner) who for reward direct or indirect, treats, prescribes for, or offers advice in connexion with the treatment of venereal disease, and by any person who does any of these things or even offers to do them, by advertisement, public notice, or announcement.

It will be seen that the official circular has the merits and the limitations which could have been foreseen from the announcement in the House of Commons made by the Minister of Health on the vote to meet the expenses of the department.[1]

INTERNATIONAL LABOUR COÖPERATION.

At the recent International Congress of Transport Workers, held in Geneva, a discussion arose on the treatment of venereal disease amongst seafarers, and a resolution was passed calling upon the executive to initiate a movement in favour of international legislative measures, and to enter into negotiations with the International Organisation of Shipowners with the object of giving effect thereto. On the suggestion of Mr. Walter Clarke, chief of the Division for Combating Venereal Diseases of the League of Red Cross Societies, this resolution was transmitted to the Office International d'Hygiène Publique for its information. In forwarding it, Lieut.-Colonel T. F. Ritchie, assistant chief of the same Division, writes:—

> "I think it is very encouraging to see that the transport workers themselves realise the importance of providing treatment for seafarers, and that they wish to initiate international legislative measures in regard to venereal diseases."

We hope that the example set by the Transport Workers' Federation will encourage other industrial bodies to take similar action within their own borders. More good will come of it than from any external attempt to impress such suggestions upon their members. The holding without delay of an international anti-venereal congress would afford the required opportunity for the other industrial federations to be represented and to take appropriate action.

SOCIETY FOR THE PREVENTION OF VENEREAL DISEASE.

The second annual meeting of this Society was held on June 6th at the house of the Royal Society of Medicine, Lord Willoughby de Broke, the President, in the chair. The President said that venereal disease was still proceeding at such an alarming rate as to be a great public danger. The official policy of exhorting the public to be chaste and advising them to consult a doctor when infected had not succeeded in preventing its spread. The circular recently issued by the Ministry of Health stated that it was the duty of all individuals who had incurred the risk of infection to cleanse themselves thoroughly and immediately in order to diminish the risk. The President urged that this statement affirmed the Society's policy of self-disinfection, though the Government would not take responsibility for the official issue of disinfectants accompanied by instructions. He moved a resolution recommending formal application by the Society to the Ministry of Health for sanction for the preparation and sale, under the supervision and control of the Society, of materials for immediate self-disinfection. This resolution was seconded by Lady Askwith and was carried. The hon. secretary, Mr. Wansey Bayley, in submitting the annual report, said that the number of county and borough councils which had adopted the Society's policy had increased from 12 to 20.

ROYAL INSTITUTE OF PUBLIC HEALTH:

CONFERENCES ON PUBLIC HEALTH PROBLEMS.

ON June 2nd, at the Guildhall, a series of Conferences on various questions concerning the health of the nation was opened by H.R.H. the DUKE OF YORK. In welcoming the delegates His Royal Highness said that the work of the Conferences was of national and international importance, and that the immense significance to the nation of such questions as the support of voluntary hospitals and the improvement of housing conditions could not be too much emphasised. Other matters of vital importance to the community were venereal disease and tuberculosis. As President of the Industrial Welfare Society he took great interest in the subject of the Session dealing with the necessity for greater attention to the maintenance of efficiency and the prevention of ill-health in industry. Industry had too long been carried on without thought of its effect on the worker, and it is good, he said, that the questions of industrial physiology and psychology and vocational aptitude should be seriously discussed. The future prosperity of the country was bound up with the establishment of a healthy, happy, and contented industrial army.

The LORD MAYOR on behalf of the City of London, having welcomed the delegates,

Sir ALFRED MOND, the Minister of Health, moved a vote of thanks to the Duke of York, who, he said, was following the great traditions of his House by taking the keenest interest in the public health of the country.

Lord LEVERHULME seconded, and the Duke of York in his reply expressed his appreciation of the honour which had been conferred upon him in being made an Honorary Fellow of the Royal Institute of Public Health.

MUNICIPAL HYGIENE AND VOLUNTARY HOSPITALS.

Lord BURNHAM, who presided over the session on Municipal Hygiene, said that the Conference was not only opportune but necessary in connexion with the administration of the Poor-law and the future of voluntary hospitals. The whole system of local administration had to be considered, for there were no longer any scientific frontiers of local government; they had disappeared in the cataclysm of the great war, while the welfare of the community depended upon the health of its individual members. Some people believed that the transformation of the Local Government Board into the Department of Public Health meant only a change in name, but that there had really been a change in Parliamentary attitude and consideration was shown in the fact that the Minister of Health was on the platform that morning. The real problem of public health was how to link up the various health services and health institutions with the system of national insurance. The great defect of the National Insurance Act was that it ignored the existing services and institutions from the financial and administrative points of view. The voluntary hospitals were primarily intended for the treatment of the sick poor, but in their development they had become of even greater importance as places of original research and for educating those who served the cause of health. While the hospitals were overcrowded the Poor-law infirmaries were half empty and not brought into relation to the rest of the health services. He hoped that all the hospitals and infirmaries would be coördinated for public welfare, and that ways and means would be secured from the insurance funds.

Major W. ORMSBY-GORE, M.P., in opening the discussion, said that one of the problems to be discussed was the administrative separation of preventive from curative medicine. The Poor-law system owed its origin to the reaction against a state of affairs that had been allowed to grow up since the reign of Elizabeth. The basis of the present position was the Metropolitan Act of 1867, which established State-provided infirmaries, and as a result there were to-day in Poor-law institutions 94,000 beds. In London the beds in these institutions were more numerous than those of the voluntary hospitals. In order to bring about coördination legislation was necessary, but before that could be obtained public opinion would have to be developed both inside and outside of Parliament. There should be a general demand that not only should the Insurance Act, and all the work in connexion with that Act be brought into line with the work of voluntary hospitals and State-provided hospitals, but that all curative treatment should be considered as a whole. That would include private nursing homes. Whatever happened to voluntary hospitals the whole question must be made a national and not a local matter. It was vital to the progress of medical science that the voluntary system of hospital support should be autonomous and under the control of the Ministry of Health.

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[1] THE LANCET, May 21st, p. 1088.

Prof. E. W. HOPE (M.O.H., Liverpool), while realising the good work that had been done by boards of guardians, said the infirmaries were not being utilised to their capacity and the voluntary hospitals were closing. It would be a disaster to the country if the voluntary hospitals were placed upon the rates.

Councillor WILSON (Liverpool) said it was a mistake to place the charge for the upkeep of voluntary hospitals on National Insurance funds. The money would have to be found either in higher charges upon incomes, or in complete reassessment of profits and so forth, and not out of the pockets of working people.

Mrs. BRYCE (Chairman of the Public Health Committee, Hackney) said that very little would be done until children and parents were properly housed, fed, and trained.

Dr. H. C. PATTIN (M.O.H., Norwich) thought that hospitals should be provided for directly from the Exchequer. The health of the people was the first consideration of the State.

Mr. H. L. WOOLLCOMBE (Secretary to the Charity Organisation Society) appealed for the continuation of the voluntary system, and hoped that a large number of the Approved Societies would follow the splendid example of the National Deposit Friendly Society in contributing towards these institutions.

Sir WILLIAM SMITH expressed the opinion that Poor-law hospitals should be made generally available for public use, the arrangements enlarged, and a staff of honorary medical officers added.

Miss MOTT said that the National Insurance Act was very unpopular because people did not get value for their money.

Dr. J. HOLROYDE (M.O.H., Chatham) shared the common feeling against State interference, but already, he said, the thin end of the wedge had been introduced; for public funds were received by hospitals, for school children, infants, maternity and child welfare centres, venereal treatment, and for other purposes. At the Chatham local hospital a scheme of graduated payments had been initiated with some success, and had received the support of labour and trade councils.

A representative of the National Labour Housing Council asked that a larger share of the management of hospitals should be given to the working classes or their representatives.

Mr. C. F. PEYTON BALY (British Dental Association) said it was not possible to separate preventive from curative work, and any scheme that was drawn up must take proper account of preventive medicine. Full provision would have to be made for the training of young doctors as well as for keeping qualified men up to date.

Councillor BULLEN (West Ham Board of Guardians) maintained that treatment in infirmaries was just as skilful as that given to patients in other hospitals.

The Housing Problem.

In the afternoon Sir GEORGE MCCRAE (Chairman of the Scottish Board of Health), who presided over the Session on the Housing Problem in its various bearings, said that at the present moment there was a world shortage of houses—it existed at home, in our colonies, all over Europe, in America, and in Asia. That house shortage was not due to the war, because, though the war had intensified the situation, there had been a great falling-off in house building all over the world before the war. He gave facts and figures in support of this view, and asked whether it was not a question for our legislators to consider whether they had really got to the root cause of the housing difficulties. While many grumbled at the slow progress that was being made in house building, those who knew the magnitude of the difficulties in the way realised that progress had been made. Having regard to falling prices and the augmentation of the supply of labour, he thought the future would see further and economic progress.

Colonel F. E. FREMANTLE, M.P. (Chairman of the Housing Committee of the London County Council), confining his remarks to London, dealt with the need for housing and the provision that had been made. The needs increased year by year. It was necessary to provide a margin of empty houses so as to supply accommodation for that portion of the population who moved in accordance with the constantly changing and developing needs of the community. Then there was the matter of overcrowding, the standard according to London County Council requirements being not more than two adult persons in one room. Quoting figures as to rents, he said the Government would have to bring out a new scheme for housing. Before the war the housing schemes under the County Council were self-supporting, and he maintained they should be self-supporting again; but, in the meanwhile, the Government must provide some money. The great insanitary areas that had long been known would have to be dealt with. The population of London should not be encouraged to go further away and provision should be made for new industries near to their houses.

Mr. TREVELYAN THOMSON, M.P., said it was an impossible proposition now to hold our hands from the housing scheme of 1919. There were suggestions that the need was not now so great. Deplorable conditions, he said, existed at Middlesbrough, 15 to 18 people living in two rooms. In the interests of morality, public health, and true economy he asked the Conference to say that there should be no cutting down of the housing programme.

Mr. TOM MYERS, M.P., and other speakers having taken part in the discussion,

Councillor WILSON and Mr. J. S. WHYBROW (Secretary of the Labour Housing Association) moved and seconded the following: "In view of the continued shortage of houses and the evils of overcrowding, this Conference expresses its opinion that in the interests of public health no relaxation should take place in the efforts which are being made to increase the immediate supply of houses." The motion, after some discussion, was carried.

Industrial Efficiency and Health.

At the morning session on June 3rd Lord LEVERHULME, the President, in an introductory address said that we must get things done or be undone. Nothing, however, could be done except on the basis of robust health. He thought that one of the secrets of past success in this country was the apprenticeship system. In these days close contact between master and men was impossible. The system of granting doles for unemployment was a pernicious one. There were only two periods in the life of a human being when allowances and doles could be wisely given—before about the age of 16 and after the age of 70. Any dole given for the better education and healthy upbringing of young people was good, and the country owed something to those who were past work; but doles to the healthy and strong would prove a curse. On the mechanical side of production, in factories employers sought the aid of well-trained engineers, but for the most complex machine of all, the human worker, no educational engineers were employed.

Prof. E. L. COLLIS dealt with the necessity for greater attention in industry to the maintenance of efficiency and the prevention of ill-health. He said that it might fairly be claimed that the most important of all subjects had been specially referred to by the Duke of York when he said that industry had been carried on too long without thought of the workers' health. In the interests of production industry was generally quick to seize upon anything which made for increased output, and he maintained that attention to the vocational selection of the worker was a primary need for the prevention of ill-health. The State was taking steps to bring up healthy adolescents, so that they might be useful citizens and productive workers. Industry had a duty to maintain them in health and efficiency and must provide hygienic conditions of work in order to acquire a stable personnel, to increase efficiency, and to pay high wages out of good results. Medical supervision, which might take the form of a medical department in the establishments, was a sound investment, and was a means of maintaining efficiency and preventing ill-health. Facilities for convalescence among industrial workers were needed to expedite recovery, and when linked up with re-education, as was done by the Ministry of Pensions, could reclaim many useful workers from the ranks of the unemployable.

Mr. KENNETH LEE (Manchester Cotton Industry) said that far too much money was spent on hospitals for cure and far too little on prevention. Sufficient precaution, at any rate at an early age, was not taken to see that young people on entering a factory were suitable for the work to which they were put. Bad teeth, too, were a serious cause of ill-health.

Mr. J. HODGE, M.P., said that if Capital had done its duty towards Labour there would have been no necessity for discussion that morning. The worker must be treated not as a "hand" but as part of the organisation for the production of wealth.

Sir FREDERICK MILLS said that no nation could prosper when its industries were constantly subjected to sudden stoppages, for industry in these circumstances was incapable of properly carrying out its engagements. Population was dependent upon industry and not industry upon population. The history of this country showed that the population for centuries on had varied between five and ten millions. Sometimes we had our civil wars, and the population went down suddenly, gradually grew, and on the introduction of steam in the middle of the eighteenth century began to advance by leaps and bounds. Industry made population. There was only one cure for industrial unrest. The workmen should become shareholders in the companies they worked for. Working-men directors on the boards of the companies were needed.

Prof. Sir THOMAS OLIVER (Durham) said that efficiency in occupation could only be secured by the worker himself being healthy, and by labour being carried on under healthy conditions. The healthiest occupation was that which was carried on out of doors, as seen in the low mortality rates of the farming classes. In this respect the oldest occupation occupied the prime position.

Dr. H. M. VERNON (Investigator for Industrial Fatigue Research Board) agreed with all that had been said as to the importance of prevention of ill-health in the industrial workers and the effect of ill-health on efficiency. The results of investigation had shown that long hours and overwork produced sickness and inefficiency. There was a lack of investigators and many employers failed to realise the bearing of research work of the kind he referred to on health and therefore on efficiency.

Dr. RHODA ADAMSON (Clinical Lecturer in Obstetrics in the University of Leeds) recounted her experiences in examining and supervising women war-workers, which showed the advantage to employers of labour in regulating the employment of women by medical advice. From the point of view of health there was very great neglect among the working women of the country. Proper attention to eyes and teeth saved a great deal of sickness, while putting women on light work during pregnancy was economical both to master and worker.

Prof. F. SCHOOFS (Liége) pleaded for the establishment of a connexion between engineering and the medical sciences in the university curriculum.

Venereal Diseases.

The BISHOP OF BIRMINGHAM presided over a discussion on the present machinery for dealing with venereal diseases and the measures essential for effective prevention. He said that he could not understand the policy of the Ministry of Health in regard to venereal diseases, but he wished that the medical profession would show unanimity in their opinions. It would be a great help if the medical profession could pronounce whether disinfection before connexion was a certainty for the prevention of the disease. On the Committee with which he was connected there was difference of view, and the conclusion which the Government had reached was that, the evidence being contradictory, self-disinfection was not a certainty. He agreed that in a large proportion of cases it would not be quite satisfactory because the person who was using the method was not in a condition in which he—still more she—would be likely to take the proper precautions and do the right things. Discussing the moral and social aspects of the matter, he said that medical men appreciated the moral side of the question as well as the social, and pointed out that the disease was terribly destructive not only to the guilty but to the innocent.

Prof. E. W. HOPE said that though every facility was given in Liverpool for the treatment of venereal disease, there were great difficulties in the way of persuading those who had started treatment to continue with it. That led to a great waste of public money. Sixty per cent. of the patients attending the hospitals in Liverpool ceased to attend before they were free from infection. Of the patients attending at the Royal Infirmary there was a preponderance of men, a large proportion of whom were seamen, and among them many foreigners. The women patients formed about one-eighth of the whole. It was proposed to ask Parliament to consider a measure which would make larger provision for free treatment, would call upon those who were infected, and who knew it, to consult a medical man, and would impose on that medical man the duty of explaining to the patient the nature of the infection and the necessity for continuous treatment. Other provisions placed upon parents and guardians the duty of protecting, by medical guidance, young persons under their care.

Sir WILLIAM MILLIGAN (Lecturer on Diseases of the Throat and Ear in the University of Manchester) said that it was exceedingly difficult for any Government to act unless there was unanimity of medical opinion. This there would never be, but he thought the guiding principle should be the opinion of the majority. He did not believe that venereal disease would ever be swept out of any country. It would always exist to some extent, but a very great deal could be done to decrease its incidence and its ravages. Self-disinfection, in his opinion, was a snare, and often a cloak with a very great number of people for the continuance of vice. It was not practicable for the layman to disinfect himself, and particularly herself, without knowing a great deal about the anatomy of the parts. If the matter was going to be seriously tackled a large expenditure of money would be needed and provision would have to be made for ensuring that people should attend at clinics until cured. Young men and women before going out into the world should be taught something of sex physiology, and it must be recognised that the incidence of venereal disease was very much mixed up with the drink question.

Dr. H. J. SEQUEIRA (London Hospital) did not agree that self-disinfection was useless, and pointed out that it was easier to disinfect the glans penis than the very delicate conjunctiva of an infant. He thought that the measures at present in use were effective so far as they could be effective.

Prof. WINIFRED C. CULLIS (University of London) pleaded in the interests of the Mercantile Marine for clinics at every port, the provision of recreational facilities for men who wished to keep straight, and for educational propaganda.

Colonel C. J. BOND (Vice-Chairman of the Consultative Council of Medical and Allied Services of the Ministry of Health) said that all would agree that the present machinery for dealing with the disease was certainly defective on the preventive side. The Government had not yet recognised the value of the influence of the group mind and public opinion.

Mrs. SCHARLIEB (Royal Free Hospital) pleaded for a stricter control in the upbringing of persons of both sexes.

Dr. F. N. KAY MENZIES (Public Health Department, London County Council), describing the scheme which was in operation by the London County Council in controlling the disease, said that something like 40 per cent. of the patients ceased treatment before they were out of the communicable stage. There were great difficulties in regard to providing treatment at times which would suit all kinds of people, and it was proposed to make arrangements so that the clinics might be open all day. The cost of treatment in 1917 had been £33,000 ; in 1918, £50,000 ; in 1919, £80,000 ; in 1920, £100,000 ; and this year it would probably reach £120,000.

Lord WILLOUGHBY DE BROKE said that it was obvious that, in spite of exhortation and treatment, the present methods were inadequate, and that there was an increasing charge upon the ratepayers and taxpayers of the country. Everything possible ought to be tried.

Lady BARRETT, representing the Federation of Medical Women, said that unless it could be proved that self-disinfection, as used by the layman, was successful, it was not right to teach young people that they could obtain immunity by so using them.

Dr. MARIE STOPES said that the only cure for the deplorable state of things which existed was early marriage and control of conception.

Industrial Tuberculosis.

The proceedings on Saturday consisted of a debate upon the efficiency of the present machinery for dealing with tuberculosis, at which Sir ROBERT PHILIP, Prof. LYLE CUMMINS, Sir G. SIMS WOODHEAD, Dr. JANE WALKER, and Dr. F. J. H. COUTTS (Ministry of Health) were the principal speakers.

BRISTOL MEDICO-CHIRURGICAL SOCIETY.—At a meeting of this society held recently, with Dr. L. E. V. Every-Clayton, the President, in the chair, various modern clinical methods were demonstrated. Drs. Patrick and Eric Watson-Williams showed a number of patients to illustrate the use of the Otorhinoscope. Dr. J. O. Symes and Dr. Cecil Clarke exhibited the apparatus used in the Fractional Method of Gastric Analysis, illustrating its action on two students. Dr. Geoffrey Hadfield gave an account of a simple plan for the estimation of blood-urea, and demonstrated the apparatus. Dr. R. G. Gordon showed a tuning-fork apparatus for the quantitative estimation of vibration sense, with a series of charts illustrating the value of the method in the diagnosis of nervous disease. Dr. Gordon also showed a patient with aphasia and described the tests applied in accordance with Head's theory. Dr. C. E. K. Herapath gave a brief account of the Polygraph and Dr. Carey Coombs of the Electrocardiograph.

INDUSTRIAL MEDICINE:

A CONFERENCE OF PRACTITIONERS.

A MEETING of medical practitioners engaged in medical service at industrial undertakings, called together by the Industrial Welfare Society, was held in the council room of the Society at 51, Palace-street, Westminster on June 2nd. The Conference was opened by H.R.H. the DUKE OF YORK, President of the Society, who spoke of the importance of the movement and wished success to the deliberations.

Medical Service in Industry.

Dr. R. McN. WILSON delivered the opening address, in the course of which he paid a tribute to the factory inspectors, who had been instrumental in removing the terrible conditions which formerly existed in our factories. If employers had listened to the factory inspectors and doctors, the trouble between labour and capital would have been healed 50 years ago. The work of fatigued or underpaid employees did not pay the employer. The medical profession was in an impartial position for demonstrating that the interests of capital and labour are identical. Here were enormous opportunities for industrial medicine. The human machine must be well "vetted." The medical profession should have a preventive outlook and adopt the "Mackenzie line of thought." Actual disease was an end process and we must study the processes which led up to it. Any successful system of industrial medicine must be based on the general practitioners who alone knew the conditions of the home and family and who alone had the necessary influence to convince his patient as to the need for following advice (for the benefit of his health) which often seemed distasteful.

Dr. T. M. LEGGE, of the Home Office, insisted that all industrial welfare work must be based on medicine. The movement for industrial "doctors" was only in its infancy. He would like to put some questions to the meeting. What was the relation of the "works doctor" to the panel doctor, to the certifying factory surgeon, to the welfare superintendent, and to the Whitley Councils ? Could they have a panel of works doctors, or could part-time industrial work be linked up with the panel system ? Were there clinics established in the works, ophthalmic, dental, &c ? Could they show to the employer results in £ *s. d.* from industrial medicine ? They were committed to the insurance system for weal or for woe. Medical examination of employees by the firm's doctor was not feasible, but might be done by State doctors, as under the present panel system. In the U.S.A. they had no insurance system to retard the spread of industrial medicine.

Dr. ARTHUR SELLERS pointed out that the certifying factory surgeon had not time to examine children properly. He (Dr. Sellers) had a panel himself. His practice was to examine selected cases in the ambulance room of the works and then refer them to their panel doctor. The panel doctor had no means of suggesting suitable employment for his patient. Certifying factory surgeons must have more time to do their work and should work more in touch with the industrial welfare doctor.

Dr. E. E. MATHER stated that he and a woman doctor worked "whole time" for Messrs. Cadbury. There were about 9000 employees, 1000 being under 16. They treated all who came for treatment, men, women, and children, and had no difficulty with the panel doctors. They had a dental clinic and the firm paid for special cases to be sent to hospitals and consultants. He had had two years' experience, but wished a special course of training had been available for him before taking up the work. The medical examination of existing employees was optional, but the examination of applicants was compulsory. There were very few rejections, not more than 1 per cent. perhaps. Some would be admitted conditionally on submitting to an operation for tonsils or obtaining a truss for hernia.

Dr. Wilson in his reply said the backbone of the whole system of medicine was the general practitioner. They must interest the general practitioner and bring him into the scheme of industrial medicine.

Health Problems in Industry.

At the afternoon session, Prof. E. L. Collis gave the opening address. He pointed out how welfare work had grown as the result of the war. In 1913 they could only muster about 20 welfare supervisors at a conference at York. There was no reason why medical service in factories should not grow equally rapidly, but propaganda work amongst employers was necessary. Medicine could save industry millions a year by preventing break-downs, lost time, by finding workers jobs suited to their health, and by making the jobs more healthy for the workers. Miners' nystagmus, lead poisoning, anthrax, and phosphorous poisoning were comparative rarities—the things they wanted to prevent were bronchitis and phthisis. The question is what is the best way of convincing industry of its needs.

Dr. E. Halford Ross instanced a firm of printers doing fine work which saved thousands a year by employing an ophthalmic surgeon. Medical supervision should go right through industry.

Dr. R. E. Cree showed graphs illustrative of accidents to groups of workers at the shipyard of Swan Hunter and Wigham Richardson. Boys, of course, had the most accidents. Old men were often disabled permanently by very trifling accidents, and suitable non-dangerous work should be found for them. He attended the ambulance room and treated accidents only for the firm. He knew that he saved the firm a great deal of money by preventing sepsis. There ought to be a system by which convalescents could do half time or light work suited to their condition.

Sir Thomas Oliver pointed out, as £ *s. d.* gain, that the match industry was now free from jaw and dental trouble. He thought there should be a State department for industrial medicine, as in France and U.S.A. Half-time work for convalescents would be very valuable.

Dr. J. R. Kerr, of St. Helens, spoke of the sheet and plate glass industry. Since 1907 the Pilkington firm had given him great support in finding medical equipment. The hospital was largely self-supporting. Firms and insurance companies paid towards the cost.

Dr. M. W. Renton, who had worked for Vickers, mentioned that this firm had a hospital and special clinics for electro-therapeutics and massage, &c., and that insurance companies send patients for treatment. The certifying factory surgeon should never be the "works doctor." The practitioners on the panel were often very hazy as to the exact occupation when they signed certificates and should attend the works clinic.

Dr. T. L. Llewellyn said that two years ago he got the North Staffordshire coal-owners to set up a massage centre. They had an attendance of 200 a week and had obtained very satisfactory results. He always wrote to the family doctor informing him that he was going to give his patient a course of treatment. He was certain the centre had more than paid for itself by getting men "fit" more quickly.

Dr. D. A. Coles acted as "works doctor" for the Gas Light and Coke Co. He was not on the panel himself, and had no difficulty with the panel practitioners. The men were always willing to be overhauled because they knew it was in their own interest. He endeavoured to get the cases early, examine eyes, provide trusses for hernia, &c. He hoped to get his firm to assist in dentistry and the provision of spectacles.

Mr. Seebohm Rowntree said that his firm had a works' doctor, a dentist assisted by mechanics, and an oculist. The cost was comparatively trifling. £2000 on a wage bill of £1,250,000. The establishment of a clinic was not costly like that of a canteen. Probably the Industrial Welfare Society would be the best body to do the propaganda work as to the value of medicine to industry.

Mr. R. R. Hyde, the Director of the Society, asked the meeting at the close to formulate a scheme for the continuation of the campaign initiated by the day's work.

Ultimately Dr. Coles, Dr. Mather and Flight-Lieut. F. J. P. Saunders were appointed a small sub-committee to draw up a programme to be put before another conference in connexion with the Summer School of the Industrial Welfare Society, which is to be held at Balliol College, Oxford, in September.

HYGIENE ON THE SEA.

ACCOMMODATION FOR SEAMEN IN SHIPS OF TO-DAY.

(By our Special Correspondent.)

VII.—P. & O. MAIL STEAMER.

A P. & O. mail steamer, ready to embark her passengers and go to sea, lies comparatively unnoticed among the other great ships at Tilbury, and that just shows how big is London, how small relatively are the great Eastern ports of the world. Here the ship is hardly noticed. At the other end of her voyage the whole port will be interested in her. Her arrival with the English mail, the London papers, passengers primed with the latest gossip from home, and the trunks of some of them full of the newest fashions, has been eagerly expected, and the day she does come in is something of a holiday, at any rate a "festa," even in Bombay or Hong Kong, busy ports that they are. London has a mail day every day, and the docks, though they stretch for 20 miles along the river, are far from the town or else perhaps the hard conditions of the sailors' life might sooner have been improved. Slums in Drury-lane are visible, and their cry for improvement is heard, slums beyond Wapping, who shall know of them.

It was by the kind permission of the P. & O. Company that I was recently taken down to Tilbury, on behalf of The Lancet, by Dr. Arnold Chaplin, medical superintendent of this and other companies, to see their ship *Malwa*. She was built ten years ago; her gross tonnage is 10,941; she can carry some 6000 tons of cargo, and has accommodation for 285 first- and 127 second-class passengers, 412 in all; she is 540 ft. long, 61 ft. broad, and draws 27 ft. when loaded. She has a ship's company of 340, of whom 101 are lascar firemen, 51 lascar sailors, and 67 Goanese stewards. The large saloon, kept cool by electric fans, and the spacious music saloon, the ladies' card-room, &c., make the travellers comfortable, while the large deck area outside shows the ship is built for the tropics, and to get for her passengers all the coolness there may be. The cabins are of the usual pattern, and of them we need only say they have electric fans for hot and electric radiators for cold weather, and as to the cuisine its excellence is well known, and accounts in part for the eagerness that people in the ports abroad manifest in the P. & O. ships.

Accommodation of the Crew.

As to the accommodation of the crew, which is what interests the readers of The Lancet, there can be about *Malwa* only a good report. The officers are berthed above the promenade deck, the white crew forward in the forecastle. These last are all petty officers, and live in cabins with two, three, or six beds. The beds are spring beds with hair mattresses, and for each man there is a locker. I would have liked to see a shelf or two and some hooks for clothes instead of the nails there were, but bright brass knobs to some of the bed frames gave an unusual appearance of cheerfulness and comfort. The lavatories and baths (earthenware) were good and numerous, salt water the only supply to baths, here as throughout the ship, but fresh water for the lavatory basins. No ship with so many passengers could carry fresh water enough for full length baths in the tropics for even a fortnight's run, let alone for four weeks. Forward also are berthed the Goanese stewards, in a sleeping deck with double-tiered cots, and I should say 120 cubic feet per person. Hot it would be, every place in a ship in the tropics is hot, but I was very glad to see that the ten windows, ports, or scuttles were fitted with Utley's patent ventilating sidelights, which allow air to come in, though they keep water out absolutely[1] and are consequently of the greatest use in the monsoon weather, when seas are rough and ordinary ventilators are closed. They cost twice as much as the ordinary sidelights and are twice the weight, but they are a great comfort to those who live near them in bad weather, and one cannot but feel obliged to the company which has had them fitted in a crew space, evidencing its consideration for its employees. Nobody who is unacquainted with the poisonous atmosphere which develops in a crowded crew space in warm, heavy—i.e., bad—weather in the tropics can imagine the comfort it is to have "the fug" diluted with even a trickle of fresh air from the outside. I was told here, as usual, that these Utley sidelights never go wrong. These 61 Goanese stewards have about a dozen wash-basins, white earthenware, small square troughs, useful also for washing clothes, with fresh water taps over them; their baths were as already described, and their water-closets were good, pedestal closets, with lifting seats that could be, and had been, scrubbed; all were clean—the ship was to sail next day—and they were separated from one another by light wooden partitions. In each of the cells thus formed was a box for latrine paper; two boxes were deficient, and there was no paper in any of them, but at present the ship was in dock and the water-closets were officially not in use. All these w.-c. compartments were painted white throughout, and in all were a couple of sidelights to four closets. Quite good this installation, and better than that found in the ocean giants.

Next comes the accommodation for the first-class passengers already touched on, and further aft, the second-class saloon, smoking-room, music-room, &c., and further aft again, separated on every deck by a bulkhead (i.e., a partition), is the accommodation for the native crew, better than any I have hitherto travelled with, but I have never travelled in so large a ship with a native crew. Being aft they are deeper down in the ship, but that has advantages. They were stated to have, each of them, 140 cubic feet of space, but I was not, I think, assured that that figure was the result of exact measurement, with deduction of encumbrances. The space they had was any way larger than would probably have been given to invalid soldiers in a hospital carrier, and was arranged in double-tiered iron berths, the fittings used being very similar to those used in hospital ships. There was cork paint on the iron overhead and on the frames and webs, but not on the iron plates of the ship's side, which besides were not wood cased; still the iron berths did not touch the ship's side, and no bed could be wetted by the water running off the side when the iron sweated in cold weather. There are ventilators of supply and exhaust to cowls on the decks above—there is no artificial ventilation; in cold weather temperature is raised by small coal stoves. This ship is ten years old, and steam heating is installed in the newer ships built during and after the war. There are, I am told, washing places for the lascars, and I did see a latrine for them, but the plans for latrines for natives that were on board *Achilles*[2]—cement gutters on the deck which could be flushed from a tap—were to be preferred. At the after end of the lascars' deck is a railed-off section for sick lascars taking passage as invalids—lying-down cases, but not infectious. Now this is a great comfort.

Medical Arrangements.

As regards the medical arrangements of the ship, there is on the boat deck, over the promenade deck and not accessible to any passenger, an infectious hospital, which, considering it has to deal with such cases for a population of 750 only, would appear to be quite sufficient. Two four-berth cabins, one to starboard, one to port, one for men, one for women, each with bath, washing-basin, water-closet, steam radiator, fan, and portholes. Alongside is a cabin for an attendant. This is a very satisfactory installation. The crew will also be isolated up here, but natives with their own straw mattresses and bedding, Europeans with the usual cabin equipment. In the newer and larger ships this boat deck extends over the whole of the ship to the stern, and the infectious hospital is moved to the after end, a plan which has much to recommend it, and to which I see no objection. The medical staff is a surgeon, with him a steward he has trained, and in future another steward is to be added for the infectious hospital. (Naval medical officers will be glad to know I heard something about a pensioned naval sick-berth steward being possibly the first.) The surgeon is placed at the starboard after corner of the first-class passengers' accommodation, where he is readily accessible to first- and second-class passengers and to the crew. He has here a hospital of two two-bed wards, with, for each, the usual annexes. The dispensary, large, well lighted, and well supplied, is between his cabin and the hospital. Here is an operating table, which can be rapidly set up and securely fastened to the floor; a sufficient stock of instruments is supplied by the company, and in this ship was a most useful piece of equipment, a carrying chair—a great help to the surgeon, for many sick people take passage in the P. & O. from year to year (there are more deaths amongst the passengers than amongst the sailors of the line)—and one can always extemporise a carrying chair, but the results of prevision are habitually superior. Next door to the dispensary, and communicating with it, is the surgeon's commodious cabin. It is his duty to examine the crew when they join (assisted by the dock surgeon of the company, as it were a D.A.D.M.S.), he sees the sick; and he has to know what is happening, and to answer the many questions propounded to him by the various port medical officers who come on board. Also I found, when a ship's medical officer, I was a buffer state between the captain and troublesome lady passengers. The post is responsible, and at times of epidemics anxious, but in a P. & O. mail steamer, what with the variety of the ports visited, the moderate weather of the region in which they sail, the society of the officers and passengers, and the table the company spreads, it is an employment with many compensations, and at present extremely popular. Employment under the P. & O. is for the officers continuous, for the surgeon pretty much the same, while the crew sign on for each trip separately, but are really employed continuously so long as they do not get themselves disliked or invalided, and I should say that any seaman might be pleased to go to sea in the *Malwa*.

Morbidity and Mortality on Board Ship.

I was taken over this ship by the experienced medical superintendent, and I have voyaged in others of this line; those ships were smaller, this was larger and better, and I hear of better existing beyond. The management seems to me to be more sympathetic than formerly, more anxious to give its servants better conditions than it was 20 years ago, and it gives them in this ship accommodation that is quite up to and indeed ahead of that customary in the merchant service of to-day. It would be absurd to ask the company to make alterations here and now, when losses on passenger voyages are being counted in tens of thousands of pounds, and giant liners are being laid up, and they tell me down the Commercial-road that if 20 men are wanted for a ship the shipping office is swamped by 200 eager applicants. Most men would rather take a chance of death by phthisis in five years than a large probability of death by starvation in five weeks. Better to have a slightly imperfect ship running than no ship at all and 400 sailors more out of work. Yet there is advantage in considering these questions and discussing any "leading" that may seem to emerge.

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[1] THE LANCET, 1902, i., 1597.

[2] THE LANCET, 1920, ii., 1110.

Recent statistics of illness and deaths of sailors in the Eastern trade were brought by *Dr. Arnold Chaplin* before the Epidemiological Section of the Royal Society of Medicine in February.[3]

The figures are shown in the table which follows.

Comparative Illness and Death-rates of Sailors in the Eastern Trade: (A) Lascars; (B) Europeans.	(A)	(B)	(A)	(B)
	Per 1000.		Relative proportions.	
General death-rate, 1912	5·4	3·5	154	100
In 16 years in the Eastern trade, general death-rate	4·2	2·6	161	100
Pneumonia, mortality..	0·8	0·3	266	100
Phthisis, attack-rate	5·0	2·0	250	100
,, mortality	0·17	0·14	335	100

That is, natives have a liability to disease in the Eastern trade 61 per cent. greater than that of Europeans; to death from pneumonia. 166 per cent. greater; to attack by phthisis, 150 per cent. greater, and to death from phthisis, 235 per cent. greater than that of white sailors in the same ships. Probably the white sailors are older, and we have no account of the relative ages, or of the age-distribution of the illnesses. Of course it may be easily asserted that the difference is due to a congenital lesser resistance of the natives to disease. Such an explanation rises easily to the lips, and is difficult of disproof. Not otherwise, 30 years ago, did people ascribe to climate diseases since learned to be attributable to mosquitoes, trypanosomes, or ankylostoma. Not otherwise, in the older days, were cases of typhoid fever being described in service reports as "due to *infection on leave*," yet were, I noticed, becoming steadily fewer and fewer, as more careful attention was being paid to men's life when on duty. Take phthisis, 5 per 1000 natives were attacked, but only 2 per 1000 Europeans. Let it be noticed that the European crews have better ventilated quarters, and with more *isolation*. There are some 100 lascar firemen in this unusually well-ventilated ship, in a single compartment, with 140 cubic feet of space to each, good beds, and four large (let us say 18 inches diameter) ventilating shafts and many portholes. A case of phthisis introduced has a great opportunity to spread, though *lessened* by the quite tolerable ventilation. Still the bacilli have a chance to find a suitable nidus among the 20 men around, but in a white man's cabin forward, with two, three, or six beds, the chances in its favour would be fewer, the better ventilation of cabins higher up in the ship being always remembered as well.

Further Development in Ventilation.

This company has made great advances, but *Plus ultra* is a motto that cannot be unknown to those who sail through the Pillars of Hercules and handle Mexican dollars. Clearly a ship is coming in which ventilation is given thorough examination. What strikes one so much is the little use that is made of the "wild heat" from the boilers and engine-rooms. That is a waste product, and like so many others in industry is being thrown away. It should be used *to ventilate all the central part of the ship*; but look how tiny are the openings generally found on the boat deck. Old men-of-war were ventilated into the funnel casing—there is no funnel casing nowadays. But the ends of the ship must have artificial ventilation, and this should have been in mind from the time the first sketches of the ship were made. Artificial supply, artificial exhaust, as in *Olympic*, the best ventilated ship I have seen, with one funnel exclusively a ventilation exhaust. Ventilation is the great problem of healthy life in ships. It will reduce the cubic space necessary for the men, at the same time making them more comfortable; it will thereby release to the owners more space to be income-earning. The great advances at sea these 30 years are iron ships, without leaks, replacing wood, and *electric light replacing* candles and lamps. Electric light means that steam is always up, and so ventilation can always be maintained; that will get better work out of the crew, and it can be applied to holds when cargo is being worked; that will mean quicker stowage, and quicker despatch for the ships. Also there must *be an engineer told off* to watch the ventilation, to keep it running properly, to write up a log, and make reports which will show the captains that the companies think that ventilation is important. Then it will be always satisfactory. It is a thousand pities that the Naval Medical Department, with its vast experience, *does not put out a book* on the ventilation of ships to be a guide to all ship constructors and managers, and to improve the health of passengers and crews of our island nation. It might well copy the publicationary zeal of the sister service.

Meanwhile, as regards *the P. & O. Company*, it is clear that the owners are showing themselves considerate, that their newer ships are well arranged, that their newest are better still, and that in future, when others are built, they will surely maintain their standard, a high standard as one is glad to witness.

BRITISH MEDICAL ASSOCIATION:
ANNUAL MEETING.

THE eighty-ninth annual meeting of the British Medical Association will be held at Newcastle-on-Tyne, where the sixty-first annual gathering met in 1893. On Friday, July 15th, the Annual Representative Meeting will open at 10 A.M., and be continued on the following days. Other arrangements are as follows: Friday, July 15th, at 7.30 P.M., Representatives' Dinner; Tuesday, July 19th, 2 P.M., Annual General Meeting; 5 P.M., Religious Services; 8 P.M., Address by the President, Prof. DAVID DRUMMOND, and Adjourned General Meeting; Wednesday, July 20th, 2 P.M., Conference of Secretaries; 6.30 P.M., Secretaries' Dinner; 8 P.M., Special Address on Industrial Medicine by Sir THOMAS OLIVER; Thursday, July 21st, 7.30 P.M., Annual Dinner of the Association; Friday, July 22nd, 7.30 P.M., Popular Lecture on "Evolutionary Wounds," by Sir ARTHUR KEITH. The 17 sections will conduct their discussions on one, two, or all of the following days: Wednesday, Thursday, and Friday, July 20th, 21st, and 22nd. The sections will meet from 10 A.M. to 1 P.M.; laboratory and clinical demonstrations will be given between 3 P.M. and 4.30 P.M.

Section of Medicine.

President: Prof. Thomas Beattie; Vice-Presidents: Lord Dawson of Penn, Prof. A. J. Hall, Dr. G. S. Haynes, Dr. J. Wilkie Smith; Hon. Secretaries: Dr. C. E. Lakin (105, Harley-street, London, W. 1); Dr. W. T. Ritchie (11, Rothesay-place, Edinburgh); Prof. W. E. Hume (1, Ellison-place, Newcastle-on-Tyne).

Provisional Programme.—July 20th, 10 A.M.—Discussion: Visceral Syphilis, especially of the Central Nervous System and Cardio-Vascular System: to be introduced by Sir Clifford Allbutt. July 21st, 10 A.M.—Discussion: Asthma and Allied Disorders: to be opened by Sir Humphry Rolleston. July 22nd, 10 to 11.30 A.M.—Discussion: Encephalitis Lethargica: to be opened by Dr. Edwin Bramwell; 11.30 A.M. to 1 P.M.—Discussion: Renal Efficiency Tests: to be opened by Prof. H. Maclean.

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[3] THE LANCET, March 19th, 1921.

Section of Surgery.

President: Prof. J. Rutherford Morison; Vice-Presidents: Prof. H. Brunton Angus, Mr. Arthur Cooke, Mr. W. J. Greer, Dr. A. M. Martin; Hon. Secretaries: Mr. W. Girling Ball (77, Wimpole-street, London, W. 1); Mr. J. M. Renton (16, Sandyford-place, Glasgow, W.); Mr. G. Grey Turner (The Hawthorns, Osborne-road, Newcastle-on-Tyne).

Provisional Programme.—July 20th, Morning Session.—Discussion: Acute Pleural Empyema: to be opened by Mr. Henry Wade. At 3 P.M., demonstrations by Prof. Rutherford Morison at the War Pensions Hospital of cases and specimens illustrating (1) Bipp, (2) Bone Cavities, (3) Bone Grafts. July 21st, Morning Session.—Discussion: Compound Fracture of the Thigh and Leg. At 3 P.M., demonstrations at the Royal Victoria Infirmary of cases and specimens, illustrating Compound Fracture of the Thigh and Leg. July 22nd, Morning Session.—Discussion: The Diagnosis and Treatment of Injuries of the Intestines: to be opened by Mr. Gordon Taylor. At 3 P.M., demonstrations by Mr. G. Grey Turner at the Royal Victoria Infirmary of six cases of implantation of the ureter into the bowel.

Section of Pathology and Bacteriology.

President: Prof. Stuart McDonald; Vice-Presidents: Dr. J. F. Gaskell, Dr. James A. Murray, Prof. Matthew J. Stewart; Hon. Secretaries: Dr. R. R. Elworthy (West London Hospital, Hammersmith, London, W. 6); Dr. A. F. Bernard Shaw (Pathological Department, College of Medicine, Newcastle-on-Tyne).

Pathological Museum.—It is proposed to gather together a series of exhibits illustrating the pathology of individual cases. The Pathological Museum Committee will arrange the material under the following heads: (1) Exhibits bearing on discussions and papers to the various sections; (2) specimens and illustrations relating to any recent research work; (3) instruments relating to clinical diagnosis and pathological investigation; (4) individual specimens of special interest or a series illustrating some special subject. Interesting specimens will be welcomed. The Hon. Secretary of the Committee is Dr. A. F. Bernard Shaw.

Section of Preventive Medicine with Industrial Diseases.

President: Sir Thomas Oliver; Vice-Presidents: Sir Josiah Court, Dr. T. Eustace Hill, Dr. I. G. Modlin; Hon. Secretaries: Dr. C. M. Wilson (64, South Audley-street, Grosvenor-square, London, W. 1); Dr. W. H. Dickinson (1, Ridley Villas, Newcastle-on-Tyne).

Provisional Programme.—July 20th.—Discussion: The Effect of Health Legislation on the Health of the People. July 21st.—Discussion: The Importance of Industrial Medicine to the Community: to be introduced by Prof. E. L. Collis, followed by Dr. T. M. Legge. July 22nd.—Joint meeting with the Section of Medical Sociology.

Section of Orthopædics and Diseases in Children.

President: Mr. A. H. Tubby; Vice-Presidents: Mr. R. C. Elmslie, Dr. H. Morley Fletcher, Dr. Lachlan G. Fraser, Sir Henry M. W. Gray, Mr. A. E. Morison; Hon. Secretaries: Mr. C. Max Page (134, Harley-street, London, W. 1); Dr. Frank Hawthorn (10, Ellison-place, Newcastle-on-Tyne); Dr. H. R. Souper (Ministry of Pensions Hospital, Castle Leazes, Newcastle-on-Tyne).

Preliminary Programme.—July 20th, 10 A.M.—Discussion: The Early Diagnosis and Treatment of Anterior Poliomyelitis. July 21st, 10 A.M.—Discussion: Blood Diseases in Children. July 22nd, 10 A.M.—Discussion: Tuberculosis of Bone: General Principles of Treatment.

Section of Neurology and Psychiatry.

President: Prof. A. W. Mackintosh; Vice-Presidents: Dr. A. Helen A. Boyle, Dr. E. Farquhar Buzzard, Dr. Harry Campbell, Dr. Horsley Drummond; Hon. Secretaries: Dr. Anthony Feiling (41, Devonshire-street, London, W.); Dr. George Hall (1, Eslington-road, Jesmond-road, Newcastle-on-Tyne).

Provisional Programme.—July 20th, 10 A.M.—Discussion: The Diagnosis and Treatment of Borderland Cases: to be opened by Prof. G. M. Robertson and Dr. James G. Collier. July 21st, 10 A.M.—Papers.

Section of Ophthalmology.

President: Prof. J. D. Wardale; Vice-Presidents: Dr. H. P. Bennett, Lieut.-Col. R. H. Elliot, Dr. Harry M. Traquair; Hon. Secretaries: Dr. N. B. B. Fleming (9, Harley-street, London, W. 1); Mr. Stanley Robson (Milton-house, Rowlands Gill, Co. Durham).

Provisional Programme.—July 20th, 10 A.M.—Discussion: The Causes and Prevention of Blindness: to be opened by Mr. Bishop Harman. July 21st, 10 A.M.—Discussion: The Treatment of Corneal Ulcers: to be opened by Mr. J. V. Paterson.

Section of Oto-Rhino-Laryngology.

President: Dr. G. William Hill; Vice-Presidents: Dr. R. Gordon Bell, Dr. James Don, Dr. Dan Mackenzie; Hon. Secretaries: Mr. Lionel Colledge (22, Queen Anne-street, London, W. 1); Dr. W. Frank Wilson (97, Jesmond-road, Newcastle-on-Tyne).

Provisional Programme.—July 20th, 10 A.M.—Discussion: Problems in connexion with the Early Diagnosis and Treatment of Meningitis occurring in Aural Cases: to be opened by Sir Charles Ballance. July 21st, 10 A.M.—Discussion: The Various Problems presented by Hæmorrhage occurring in connexion with Operations on the Tonsils.

Section of Physiology, Pharmacology, Therapeutics, and Dietetics.

President: Dr. H. H. Dale; Vice-Presidents: Prof. A. V. Hill, Prof. John C. Meakins, Prof. J. A. Menzies, Dr. Alfred Parkin; Hon. Secretaries: Dr. O. Inchley (Babraham, Cambridge); Miss Mildred Atkinson (College of Medicine, Newcastle-on-Tyne).

Provisional Programme.—July 20th.—Paper by Prof. Hill: The Use of the Hot Wire for Investigating (*a*) the Time Relations of the Pulse; (*b*) the Characteristics of Voluntary Contractions in Man. Paper and demonstration by Prof. J. A. Menzies, Miss Atkinson, and G. A. Clark: The Passage of Sulphate through the Cells of the Tubules of the Kidney of the Frog. Paper by Dr. Dale: Anaphylatoxin. July 21st.—Paper, with lantern demonstration, by Dr. H. Muir Evans: The Poison Organs and Venoms of Venomous Fish. Paper by Prof. C. H. Browning: Recent Work on Chemotherapy. Paper by Dr. G. Arbour Stephens: Acid Feeders. Paper by Dr. Sim Wallace: Physiology of Oral Hygiene. July 22nd.—Joint discussion with the Section of Medicine on Tests for Renal Efficiency.

Section of Venereal Diseases.

President: Col. L. W. Harrison; Vice-Presidents: Dr. James Charles Buckley, Mr. Charles Gibbs, Dr. Mary Raw; Hon. Secretaries: Mr. Kenneth M. Walker (86, Harley-street, London, W.); Dr. James Hudson (42, Crossley-terrace, Newcastle-on-Tyne).

Provisional Programme.—July 20th, 10 A.M.—Treatment of Syphilis in Man, by Dr. R. MacKenna; Syphilis in Women and Children, by Prof. Walter Swayne. July 21st, 10 A.M.—Treatment of Gonorrhœa in Men, by Dr. David Lees; The Standard of Cure in Gonorrhœa, by Mr. Townley Clarkson. In the afternoon of Wednesday, July 20th, a demonstration will be held of Methods of Diagnosis and Treatment in Venereal Diseases, Dark-Ground Illumination Work, Models of Venereal Disease Clinics, &c.

Section of Obstetrics and Gynæcology.

President: Prof. R. P. Ranken Lyle; Vice-Presidents: Lady Barrett, Dr. W. R. Grove, Mr. William Robinson; Hon. Secretaries: Mr. Gordon Ley (5, Wimpole-street, London, W. 1); Dr. Mabel R. Campbell (49, Wingrove-road, Newcastle-on-Tyne); Dr. E. Farquhar Murray (52, Jesmond-road, Newcastle-on-Tyne).

Provisional Programme.—July 21st, 10 A.M.—Discussion: The Rôle of Cæsarean Section in Midwifery: to be opened by Dr. Eardley L. Holland and Dr. J. M. Munro Kerr. Paper: The Treatment of Advanced Malignant Disease of the Cervix, by Dr. Arthur Burrows, to be followed by a discussion. July 22nd, 10 A.M.—Discussion: The Neurasthenic Element in Midwifery and Gynæcology: to be opened by Dr. Archibald Donald and Dr. Farquhar Buzzard. Papers to be followed by discussion: (1) Curettage, (*a*) Diagnostic, (*b*) Treatment of Uterine Hæmorrhage, by Mr. H. Beckwith Whitehouse; (2) The Position of the Medical Practitioner called in to attend a case of Procured Abortion, by Dr. John Campbell.

Ambulance and Red Cross Section.

President: Sir James Cantlie; Vice-Presidents: Dr. Robert Anderson, Sir G. T. Beatson, Major-General Sir G. J. H. Evatt, Rev. C. F. Townley; Hon. Secretaries: Lieut.-Col. R. M. Vick (The Warden's House, St. Bartholomew's Hospital, London, E.C. 1); Dr. H. L. Rutter (31, West-parade, Newcastle-on-Tyne).

Section of Proctology.

President: Mr. J. P. Lockhart-Mummery; Vice-Presidents: Dr. Henry B. Densham, Mr. Ernest Miles, Mr. D. P. D. Wilkie; Hon. Secretaries: Mr. Cecil W. Rowntree (9, Upper Brook-street, London, W. 1); Mr. Hamilton Drummond (6, Saville-place, Newcastle-on-Tyne.)

Provisional Programme.—July 20th.—Discussion: Surgical Treatment of Internal Hæmorrhoids, to be opened by Sir C. Gordon Watson and Mr. D. P. Wilkie.

Section of Dermatology.

President: Dr. John Farquhar Christie; Vice-Presidents: Dr. Ernest Dore, Dr. Arthur D. Heath, Dr. D. Wells Patterson; Hon. Secretaries: Dr. William Jenkins Oliver (58, Queen Anne-street, London, W. 1); Dr. Sydney Thompson (19, Windsor-terrace, Newcastle-on-Tyne).

Provisional Programme.—July 21st, 10 A.M.—Discussions: (1) Cutaneous Sensitisation and Focal Sepsis in the Ætiology of Certain Skin Affections: to be opened by Dr. H. W. Barber; (2) The Association of Skin Tuberculosis with Visceral and other Tuberculous Manifestations: to be opened by Dr. George H. Lancashire; (3) Dermatological Cases attending the Pensions Boards: to be opened by Dr. Henry MacCormac.

Section of Medical Sociology.

President: Sir Jenner Verrall; Vice-Presidents: Dr. Charles Buttar, Dr. A. C. Farquharson, Dr. E. Rowland Fothergill; Hon. Secretaries: Dr. J. F. Walker (Rocklands, Clifton-terrace, Southend-on-Sea); Dr. Mabel G. Brodie (Maternity and Child Welfare Offices, 42, Old Elvet, Durham).

Provisional Programme.—July 22nd, 10 A.M.—Discussion: Relation of the Medical Profession to Local Authorities in respect to Rate-provided Hospitals and Clinics.

Section of Radiology and Electro-Therapeutics.

President: Dr. Robert Knox; Vice-Presidents: Mr. W. Hope Fowler, Dr. Robert Edward Howell; Hon. Secretaries: Dr. James Metcalfe (123, Harley-street, London, W. 1); Dr. Thomas Lowe Bunting (6, Portland-terrace, Newcastle-on-Tyne).

Provisional Programme.—July 22nd, 10 A.M.—Discussion: On the Changes induced in Blood Constituents by Radiations: (*a*) Experimental Evidence, Prof. Sidney Russ and Dr. Archibald Leitch; (*b*) Clinical observations, Dr. Mottram, Dr. Gamlen, Dr. J. B. Waters, Dr. Metcalfe, Dr. Hope Fowler, and others. On Morbid Conditions of the Blood: (1) The Anæmias, (2) Leukæmia, (3) Banti's Disease, &c. Opening paper by Prof. G. L. Gulland. Discussion on Surgical Diathermy, to be opened by Dr. Cumberbatch. A visit will be paid to the X ray and electrotherapeutic department of the Royal Victoria Infirmary, Newcastle-on-Tyne.

Section of Urology.

President: Mr. J. W. Thomson Walker; Vice-Presidents: Dr. P. J. Cammidge, Mr. John Clay, Mr. H. C. Pearson; Hon. Secretaries: Mr. Sydney G. MacDonald (51, Queen Anne-street, London, W. 1); Mr. W. S. Dickie (Ardencapel, Southfield-road, Middlesbrough).

Provisional Programme.—July 22nd, 10 A.M.—Discussion: The Diagnosis and Treatment of Cystitis: to be opened by Mr. J. F. Dobson. Papers: Experimental Evidence Bearing on the Source of the Amylolytic Ferment in the Urine, by Dr. P. J. Cammidge; Open Prostatectomy, by Mr. J. W. Thomson Walker; Treatment of Bladder Growths, by Mr. Sydney G. MacDonald.

The Honorary Local General Secretary of the meeting is Mr. R. J. Willan, M.V.O., O.B.E., F.R.C.S., 6, Kensington-terrace, Newcastle-on-Tyne.

THE WELSH NATIONAL SCHOOL OF MEDICINE.

MEDICAL interest attaches to the installation of the Prince of Wales as Chancellor of the University of Wales in succession to his father. The laying of the foundation-stone of the new Institute of Preventive Medicine, and the formal opening of the physiological buildings, recalls the fact that both these buildings owe their existence to the same generous benefactor, Sir W. J. Thomas. The new institute should be unique in the medical schools of this country. It is to house the public health laboratories of Glamorgan and the City of Cardiff, and provide accommodation for teaching and research for the Mansel Talbot Professor of Preventive Medicine, Dr. E. L. Collis, whose chair was endowed a few years ago by the late Miss Talbot. The establishment of this department also owes much to the interest taken in it by the late Sir William Osler and to the advice he gave; he saw a great opportunity for the development of preventive medicine in connexion with the Welsh National School of Medicine. This medical school at this moment is at an interesting stage. For some 30 years the school has been in existence at Cardiff, but hitherto has not carried teaching beyond the anatomy and physiology stage; its students have gone elsewhere to obtain clinical teaching. Completion of the full curriculum has long been under contemplation and was recommended by the Royal Commission on Welsh University education, of which Lord Haldane was the chairman. This Commission held that the medical school should be an independent College in the University, but the claims of the University College of South Wales and Monmouthshire, which fostered the school through its initial stages, to remain suzerain, have prevailed. The school is to be governed by a Board of Medicine and a Faculty of Medicine, having the status of a Senate. Additional grants arising from a penny rate levied by the local authorities of Wales, and met by an equal sum from the Treasury, are providing the initial funds. The school is planned on the unit system; a professor in pathology and bacteriology, whose department in laboratory accommodation and in teaching strength must now be enlarged, has been in existence for some years. Now whole-time professors of medicine and surgery are to be appointed immediately, so that a full course can be embarked upon next October.

Clinical Work.

The clinical work is to be established at the King Edward VII. Hospital at Cardiff. At first the beds at the disposal of the clinical professors will be below the desired number; but when hospital finance is on a better footing the position will be remedied, while the possibility exists of obtaining immediate facilities at the Poor-law infirmary and at the Seamen's Hospital. The plan under consideration is not to extend the hospital on its present site, but to establish a large branch for convalescent and less important cases a few miles outside the city. Action on these lines would be at once less expensive than extension within the city, and would place the patients under more ideal climatic surroundings. At the same time an effort is to be made to concentrate at the central hospital all forms of out-patient clinical work—*i.e.*, tuberculosis, venereal, infant welfare, and school work—in addition to psychiatry and ordinary out-patient work which already are carried on. Under the able direction of its new chairman, Sir William Diamond, extension and consolidation of the work of the hospital may be confidently anticipated.

The Cardiff district provides excellent material for the teaching of special subjects—at the City Sanatorium for infectious diseases, and at the Whitchurch Hospital for mental cases: while close association of the medical school with the King Edward VII. Welsh National Tuberculosis Association is assured through the newly-endowed David Davies Chair of Tuberculosis, the holder of which, Dr. S. Lyle Cummins, is also principal medical officer to the Association. The number of students is at present 250, spread over the first three years of study. Since, however, the figure contains certain ex-Service students, it is above the average to be expected in the future, but a steady entry year by year of between 50 and 60 students is anticipated. Much yet remains to be done to provide adequate facilities during the three clinical years for this number of students, and heavy responsibility must lie with the new Board of Medicine to obtain these facilities, and with the Faculty of Medicine to organise the teaching with the means at their disposal in accordance with modern thought. But the forging of a new school must of necessity be a difficult and toilsome procedure. To-day the metal of opinion in Wales is hot, and if constructive blows are shrewdly dealt, and if further benefactors to this national effort are forthcoming, a high grade medical school will be constructed of which the Principality may be justly proud.

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

THURSDAY, MAY 26TH.

THE Council proceeded to the consideration of various reports.

Report of the Public Health Committee.

The report was presented by Sir JOHN MOORE (chairman of the Public Health Committee). The Committee has considered the returns (*a*) of professional examinations held in 1920 for Diplomas in Public Health, and (*b*) of exemptions granted by the licensing bodies from any of the rules of the Council in regard to such diplomas. The salient facts are summarised as follows: During 1920, 453 candidates were examined for the first examination, of whom 342, or 75·5 per cent., passed, and 111, or 21·5 per cent., were rejected. For the second and final examination 463 candidates presented themselves, of whom 373, or 80·6 per cent., were successful, and 90, or 19·4 per cent., failed. During the year the English Conjoint Board granted exemptions to 7 out of 142 candidates; the University of Liverpool granted exemptions to 8 out of 33 candidates; and the Victoria University of Manchester granted an exemption to 1 out of 43 candidates. Seventeen bodies granted no exemptions during the year in regard to qualifications in Public Health.

Since its last report the Committee has received reports, together with the remarks of the bodies concerned, from the Universities of London, Birmingham, Leeds, Sheffield, Edinburgh, and Glasgow. All the bodies whose examinations have been inspected have sent in their remarks, except the University of Durham and the Scottish Conjoint Board. The only bodies remaining to be inspected are the Universities of St. Andrews, Dublin, the Queen's University of Belfast, and the Irish Conjoint Board.

During the recess the chairman had dealt with a number of applications for special consideration, and the Committee at its meeting had considered and approved the action of the chairman in each case.

After presentation of the report Sir John Moore read the following recommendation of the Public Health Committee:—

That in view of the fact that the Committee has reason to expect the completion of the inspection of Public Health Examinations in July, and with a view to preparing a detailed report on these inspections, and on the proposed revision of the resolutions and rules for diplomas in Public Health, the Committee recommend that the Council should sanction a special meeting of the Public Health Committee for these purposes to be held in the last week in September.

The report of the Public Health Committee, together with the above recommendation, were adopted by the Council.

Report of Students' Registration Committee.

The Council considered the report of the Students' Registration Committee, which included notice of the registration antedated according to precedent, of 101 medical students and 27 dental students, together with details and treatment of applications for registration and antedating in exceptional circumstances. The report also contained the Committee's resolution to the effect that application having been received for the approval of the Council of the Central Secondary School, Sheffield, and the Handsworth Technical School, Birmingham—both of which are recognised by the English Conjoint Board—these institutions be added to the list of those recognised by a licensing body and approved by the Council.

The report of the Student's Registration Committee was adopted by the Council.

Report of the Pharmacopœia Committee.

The Council considered the report of the Pharmacopœia Committee, which was presented by the PRESIDENT (chairman of the Committee).

The report stated that the number of copies of the British Pharmacopœia, 1914, which were sold by the publishers between Nov. 20th, 1920, and May 21st, 1921, was 980. The number sold in the year ending May 21st, 1921, was therefore 3106. The total number sold since the date of publication is 39,958. The stock in hand is sufficient to meet the present demand for some time to come.

Numerous communications have been made on behalf of the Committee to the Home Office concerning the draft regulations under the Dangerous Drugs Act. The Secretary of State, finding that many well-founded objections were taken to certain of the proposed regulations affecting the prescribing and dispensing of potent remedies, agreed to set up a special committee to consider these. Evidence was furnished by the Pharmacopœia Committee, and by other medical and pharmaceutical bodies, in favour of a modification of the regulations, in such wise that, while ensuring public safety, they should not unduly fetter the legitimate distribution and use of the remedies in question. The revised regulations have been published in the *London Gazette* of May 24th, 1921, and they appear to give effect to the representations made by the Committee in the public interest.

The report of the Ministry of Health Committee on the "biological" control of certain therapeutic substances, which cannot be sufficiently tested by direct chemical means, has now been presented to Parliament.

The recommendations of the Committee are in general accord with those submitted on behalf of the Council in 1909. They propose the establishment of a Privy Council Committee as controlling authority; the appointment of an Advisory Committee, on which the General Medical Council should be represented; the provision of a Central Laboratory under the Medical Research Council; and the institution of a system of licensing, inspection, and testing of samples, which would ensure to the public that the therapeutic serums and other preparations offered for sale were of the prescribed standard quality. These proposals require legislation before they can become operative. Should they pass into law, certain changes in and additions to the text of the Pharmacopœia will become necessary. There will be no difficulty in effecting such alterations, and the Committee will be ready at the proper time to make suitable submissions to the Council on the subject.

A short discussion of the report followed, during which Mr. E. B. TURNER (a member of the Council of the British Medical Association) stated that there had been many inquiries addressed to him by members of the medical profession as to whether the General Medical Council had approved the original regulations; It was necessary to remove misapprehension on this subject. A certain number of regulations had been approved, but the Committee had objected to others, and care was taken that the objections reached the right quarter.

The PRESIDENT said that the regulations which came to the Committee were draft regulations, and their observations had been sent before the draft was published. They were surprised to find that the draft regulations were published without amendment. Apparently the draft had been confused with the final form in which the regulations had appeared.

The report was adopted by the Council.

Report of the Dental Education and Examination Committee.

Sir JAMES HODSDON (chairman of the Committee) presented this report.

The report stated that the annual returns of professional examinations held in 1920 for qualification under the Dentists Act called for no comment. The Committee has had the dental curriculum under consideration from November, 1915, to November, 1917, and recommends that, in view of the proposed amendment of the Dentists Act, the question of requiring some preliminary instruction in biology for dental students and the consideration of the 1917 report on the dental curriculum be again postponed.

In November, 1920, the Council passed certain resolutions which are to come into operation on Jan. 1st, 1923, in regard to the registration of medical students. If any of these resolutions are to apply to dental students it is important, in the interests of those who propose entering the dental profession, that the recommendations adopted by the Council in 1898 should be modified during the present session.

The existing recommendations for the preliminary examination and registration of dental students are:—

(1) "That every dental student shall, at the commencement of his studentship, be registered in the manner and under the conditions prescribed for medical students." (2) "That no person shall be registered as a dental student who has not previously passed one of the preliminary examinations in general education recognised by the Council."

In the report of the Departmental Committee on the Dentists Act (February, 1919, pp. 41, 153) the following recommendation is made: "We think that it is essential that a student, in ordinary circumstances, should have passed a preliminary examination in general education which should be the same for dental students as for medical students." Further, it is stated (152): "We notice that dental students may commence their course of professional study on reaching the age of 16. We are of opinion that a boy or girl who completes a course of study at a secondary school up to the age of 18 would probably be in a better position to profit from a course of professional study than one of the age of 16." The Departmental Committee's report (151) also states that—"It is desirable that the course of study in chemistry and physics should form a portion of the normal school course. A pass in science, with credit in chemistry and physics in the first schools examination, in secondary schools inspected by the Board of Education, should be accepted as entitling a student to enter his professional examination in these subjects, a pass in chemistry and physics in the second schools examination should be accepted as an adequate substitute for the professional examination in these subjects."

The recommendations of the Departmental Committee on the Dentists Act are thus similar to the "resolutions of the General Medical Council in regard to professional education" adopted by the Council in November, 1920.

The Dental Education and Examination Committee recommends that the preliminary examination and registration required of candidates for licences in dentistry or dental surgery be the same for dental students as for medical students, and that the recommendations adopted by the General Medical Council in May, 1898, be modified so as to provide:—

I. (*a*) That before registration in the Dental Students' Register every applicant shall be required to have passed, in addition to the examination in general education, an examination in elementary physics and elementary chemistry conducted or recognised by one of the licensing bodies.

(*b*) That before registration as a dental student every candidate shall produce evidence that he has attained the age of 17 years. Provided: "That the minimum standard of general education required by the Council for registration as a dental student should be raised to a standard equivalent to that demanded in other learned professions previously to, or concurrently with, the coming into operation of the requirements of a preliminary examination in science before registration."

II. That the requirements contained in recommendation I. come into operation on Jan. 1st, 1923.

British Dental Association and a Diploma in Public Dentistry.

The Executive Committee, at its meeting in February, referred to the Committee, for its information, a memorandum in regard to this matter. The Committee recommends that no action be taken with regard to this matter at the present stage.

R.C.S. England—Regulations for the L.D.S.—A copy of the new regulations has been received. The grouping of the subjects of the examination has been altered; general and dental anatomy and physiology have been separated from the examinations in general and dental surgery and pathology of the general professional examination, and now form Part III. of the final professional examination or the licence. Candidates who have passed the preliminary science examination may enter for the examination in general and dental anatomy and physiology after completing six months' study at a recognised medical or dental school.

The report concluded with detailed accounts of applications for colonial and foreign registrations and recommendations of the Committee upon them.

The report was adopted by the Council.

Appointment of General Registrar.

The proposal to reappoint Mr. Norman C. King as General Registrar was unanimously carried by acclamation.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Scarcity of Nurses in Hospitals.

As a consequence of the social upheaval, occupations requiring a more than ordinary amount of devotion are not much sought after by the lower classes of the population. If it is hardly possible at present for a middle-class household to find a servant, this fact, not in itself important from the standpoint of the State, assumes a different aspect when it is considered that numerous women unused to household work now have to do it, and thereby suffer severely in health. Moreover, the children cannot be looked after so thoroughly if the middle-class mother has to leave them to do shopping, &c. The general health is thus materially affected. Still more important is the fact that the very onerous vocation of nursing is now becoming discredited. In the General Hospital alone, where good pay and good board are available, more than 70 sisters are wanted. In this country before the war nurses were mostly recruited from the same class as servant girls, barmaids, and factory hands. Better educated girls only took up this calling during the war. The latter now find it easier to work in shops or offices, whilst hospital nurses are eager to go out to the country hospitals, where they are much better off, with less work. Owing to the 8-hour day, instituted by law even in hospitals, the numbers required are trebled, and the scarcity results both from the removal of qualified women from the city and the absence of new-comers, necessitating the closing of several wards in the General Hospital.

Difficulties of Teaching Anatomy.

A serious condition has arisen in our anatomical institutes with regard to the problem of dissection. Hitherto all unclaimed bodies of persons dying in the hospitals were brought to the anatomical dissecting rooms for didactic purposes, together with many corpses of suicides and stillborn children. But with the break-up of the old empire the once large number of unclaimed bodies of patients from distant parts fell to nearly nil; furthermore, a private charitable religious society has been formed which claims nearly every dead body and gives it burial with religious rites within three days after death. The present first-year students have not much opportunity for dissection and have to be satisfied with study of skeletons and preserved specimens at the anatomical museum; and now and then one group of students can watch another group dissect a corpse. Naturally, the authorities of the medical faculty are endeavouring to improve the state of things. Legislative measures are suggested to enable adequate teaching of the principles of anatomy to be continued.

The "Allotment" Movement in Vienna.

Food scarcity during the war resulted in cultivation of vegetables on every available plot of waste ground, even within the city, where numerous public gardens and squares were also converted for the purpose. This national necessity has now been so impressed upon the town-dwellers that the precincts and outskirts of Vienna at present form a zone of highly-cultivated small gardens and allotments. The citizens are fully aware of the enormous advantages to be derived from this kind of work, not only from the economic point of view, but also from the physical, mental, and moral standpoints. Only by these means can the town-dweller rid himself of dependence upon the agricultural profiteer. Fully 25 per cent. of the supply of potatoes, 18 per cent. of cabbages, tomatoes, beans, and other fresh vegetables required by the population of Vienna have been derived last year from this source; and the slowly but steadily improving health of the bulk of the population is undoubtedly due to work in the fresh air and physical exertion.

Legal Permission for Interruption of Pregnancy.

The National Assembly will shortly be called upon to decide whether a law should be passed permitting the interruption of pregnancy whenever stringent medical or economic reasons demand it. The interruption should take place before the fœtus is three months' old, and nobody but a doctor of medicine should be permitted to perform the operation, of which a report must in each case be made to the Board of Health. Grave social and economic conditions, especially amongst families with numerous children, make this demand easy to understand; it clearly emanates from a real feeling of responsibility on the part of the politicians who have drawn up the report, amongst whom are nearly all the female members of the National Assembly.

X Ray Treatment of Cancer of the Uterus.

At a recent meeting of the Medical Society of Vienna Professor Weibel read an instructive paper on treatment of cancer of the uterus by X rays. The lecturer pointed out that it is only nine years since the first case of such a treatment was reported, and the initial enthusiasm with which the use of radium was received soon disappeared, while X rays continued to be used alone. In Erlangen and Berlin especially this method was much employed, and in high doses; it was believed that by applying a certain amount of the rays it was possible to kill or devitalise the cancer cells. But the after-results are not too encouraging. The method of the Berlin school makes it necessary to give the patient a transfusion of about 1000 cubic centimetres of blood immediately after the X ray sitting because of the rapid weakening of the patient. The donor, preferably one of the patient's relatives, must be waiting for the procedure at the doctor's office. The results of the extensive investigations of the Vienna school in this line go to show that it is possible, by combining X ray and radium treatment, applied after a radical operation, to cure cancer of the womb in about 50 per cent. of all observed cases. Only 20 per cent. of all cases can be regarded as fit for treatment without operation—i.e., by radiotherapy only; every case of cancer fit for operation should be operated on without losing time by previous radiotherapy; the latter follows the operation. Maximal doses should be used wherever possible. Professor Weibel prefers the vaginal route instead of the abdominal route, and its mortality statistics appear better. As regards the apparatus, it does not matter much which outfit is used, as long as the required intensity is obtained. In fact, many of the excellent results obtained within the last two years are due to old plants, much used during war time. In the discussion which followed Professor Weibel's paper the majority of those present seconded the views explained in the paper, but some expressed their belief that in the near future the curative effects of radium would be more thoroughly understood.

May 28th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Remuneration of Practitioners Treating Pensioners.

ACCORDING to a French Parliamentary Act of March, 1919, the remuneration of practitioners treating ex-Service men in receipt of disability pensions is a State obligation, when they are consulted for sequelæ due to war wounds, or for disease contracted in or aggravated by service. It has been mentioned in this correspondence that when the Bill was passed it was decided that remuneration was to be settled by arbitration. On March 9th, 1921, a decree was published by order of the Minister of Pensions in the *Journal Officiel* standardising professional fees. But a great majority of general practitioners thought the decree of the Ministry of Pensions was not in accordance with the conclusions arrived at by a special committee which had been selected to report the matter. The Committee of the Union des Syndicats Médicaux de France have urged their members to oppose the decree ever since its publication. It was proposed to refer the decision to a committee consisting of delegates from the Ministry of Pensions, the Associations of Pensioners, and the Medical Syndicates. Since this suggestion was made the Minister of Pensions has invited members of all groups concerned to meet in conference. The Minister himself presided at the meeting. A compromise was reached, and it was decided that the decree will only be applied as far as previous medical attendances are concerned, while a new rate of remuneration will be adopted in the future to meet the practitioners' claims. It was also decided that there should be special rates of remuneration for surgical treatment and treatment given by specialists. These various rates of remuneration are to be settled by a committee consisting of delegates from the Ministry of Pensions, the Associations of Pensioners, the Union des Syndicats Médicaux de France, and this committee will also include medical practitioners who do not happen to be members of any syndicate.

Dangers of X Rays.

Since you have recently pointed out in your columns the scare promulgated by the Parisian popular press resulting from Mr. Contremoulin's report to the Academy of Sciences on experiments of his own, which indicate that it may be dangerous to live in the proximity of X ray centres, it may be of interest to your readers to know that at a recent meeting of the Académie des Sciences a special committee was appointed with the object of controlling Mr. Contremoulin's findings.

Radiology and the Medical Profession.

The Préfet de la Seine has recently selected a new chief of laboratory to be at the head of the X rays department of the Hospice de la Salpêtrière, where he is to occupy the post held previously by the late Mr. C. Infroit, whose death in the cause of science has been recorded in THE LANCET. This appointment has been officially accepted by Mr. P. Mourier, Directeur de l'Administration Générale de l'Assistance Publique. In consequence the Chairman of the Syndicat Général des Médecins Français Electrologistes et Radiologistes has addressed a letter to Mr. Mourier to let him know that the members of the Syndicate protest against his decision, on the ground that the newly appointed radiologist does not hold any medical qualification, and that such posts should be filled by medical men.

June 4th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Sir William Smyly and the Rotunda Hospital.

LAST week the Master of the Rotunda Hospital, Dr. G. FitzGibbon, and Dr. E. H. Tweedy, an ex-Master, presented to the hospital a portrait of Sir William Smyly, the senior surviving ex-Master. Sir William Smyly was Master from 1889 to 1896, and in making the presentation Dr. Tweedy referred to the great part which he had taken in modernising the work and equipment of the hospital, thus exercising an influence not only in Dublin, but throughout the kingdom. It was also largely due to Sir William Smyly's activity that the present gynæcological wing of the hospital was built, and it was during his mastership that efficient trained nursing was introduced.

Sir F. Conway Dwyer.

The name of Sir F. Conway Dwyer appears among the new knights in the list of birthday honours. Mr. Dwyer, who is one of the surgeons to the House of Industry Hospitals, was President of the Royal College of Surgeons in Ireland at the time of the outbreak of the war. For a considerable period he served as operating surgeon at King George V. Hospital with the rank of lieutenant-colonel. He is Inspector of Anatomy in Ireland.

An Honour for the Provost of Trinity College.

At their last meeting, the President and Fellows of the Royal College of Physicians elected as an Honorary Fellow the Right Honourable and Right Reverend J. H. Bernard, Provost of Trinity College.

Medical Representation in the Parliament of Northern Ireland.

The medical profession will be well represented in the Parliament of Northern Ireland. Of the four representatives of the Queen's University three are members of the medical profession—viz., Mr. John Campbell, Dr. R. J. Johnstone, and Dr. H. M. Morrison. Mr. Campbell is senior surgeon to the Samaritan Hospital, Belfast, and has long held a prominent position as a consulting and operating gynæcologist. He has been for some years Chairman of Convocation of the Queen's University Graduates' Association. He served in France as chief surgeon of No. 5 British Red Cross Hospital, and was adjutant and second in command of the Queen's University Veterans Volunteer Corps. Dr. Johnstone is professor [of gynæcology in the Queen's University of Belfast. He has been for twelve years a member of the Council of the British Medical Association, and has taken an active part in medical politics and administration. He is chairman of the Irish Medical Committee, and a former chairman of the Hospitals Committee of the British Medical Association. He is also a member of the Nursing Council for Ireland. He served during the war as one of the surgeons of the U.V.F. Hospital, Belfast. Dr. H. S. Morrison, who represents the country practitioners of the six counties, is coroner for the Coleraine District, and chairman of the South Londonderry Unionist Association and of the County Londonderry Branch of the Irish Union Alliance. The fourth member for the Queen's University, Mr. John H. Robb, a well-known member of the North-East Circuit, and the author of various legal text-books, has also close associations with the medical profession, to which his three brothers belong.

Ulster Medical Society.

At the annual meeting held in the Medical Institute, Belfast, on May 26th, the following officers were elected for the ensuing session:—President: Dr. Robert Hall. *Vice-Presidents*: Mr. James A. Craig, Belfast, and Dr. St. George, Lisburn. Council: Prof. C. G. Lowry, Mr. Howard Stevenson, Dr. W. Burns, Dr. V. G. L. Fielden, Dr. S. Boyd Campbell, Dr. M. Beath. Hon. Treasurer: Dr. S. I. Turkington. Hon. Secretary: Dr. W. W. D. Thomson. Hon. Librarian: Dr. W. L. Storey. Hon. Editorial Secretary: Dr. R. Marshall. A resolution of sympathy with Dr. W. W. D. Thomson in his prolonged illness was passed, and Dr. Marshall was thanked for his efficient discharge of his duties as secretary *pro tem.* A discussion took place on the finances of the society, and suggestions were made as to various means of meeting the annually recurring deficits in the budget.

SEAMEN'S NATIONAL INSURANCE SOCIETY.—The Society held its annual meeting in London on May 25th, Sir Norman Hill in the chair, when stock was taken of nine years' work. With the help of the medical profession a thoroughly efficient medical service has been established, available to every member in every port of the United Kingdom; £216,600 have been expended in benefits, institutional treatment has been provided for all cases of consumption for whom it had been recommended, and the finances of the Society are on a satisfactory basis. The great difficulty is the foreign-going sailor. His card has to be filled up by the officers of the ship, and enough care is not taken accurately to give his number and his name. Consequently he cannot always be identified and his money paid over to his society. The deficit at present is estimated at £50,000, lying idle in the hands of the Ministry of Health, and this sum should be available for increasing benefits and admitting these lost men to benefit. Sir Alfred Mond has promised that this matter shall be looked into. Everything should be done to help this Society, one-third of whose members, it is estimated, joined the fighting forces in the war.

Correspondence.

"Audi alteram partem."

THE PLACE OF PATHOLOGY IN MEDICINE.

To the Editor of THE LANCET.

SIR,—I have, as may be imagined, been somewhat astonished at the extensive publicity given to, and the amount of interest aroused by, a casual statement made in answer to a question put by a student after the last of a short course of lectures on general hygiene delivered to a number of very intelligent but not specially trained students. The question was: What did I think of cremation? My answer, that I look upon cremation as the most cleanly, sanitary, and convenient way of ensuring the rapid resolution of our no-longer-useful clay into its constituent elements. I pointed out, in passing, that certain objections are raised to this method of disposal of the dead, one of them being the cover it might afford to those who are too anxious to hurry their friends and others out of the world. If this but helped us to overcome the dislike that survivors have to allowing *post-mortem* examinations to be made on their dead, I for one should look upon it as something in its favour. I added that when my own time came to depart—naturally I was in no great hurry for this—I hoped a post-mortem examination would be made on my remains—and for the following reasons. One's illnesses and strains—some of them slight, some of them serious—had, I knew, left their mark on certain of my internal organs. I and my doctor friends who had been good enough to treat me, had noted certain symptoms and physical signs, on the importance of some of which we were agreed, concerning others differences of opinion arising. In view of all this I had arranged with an old friend who possessed a short record of certain portions of my clinical history, signs, and symptoms, that before my cremation these should be compared and co-related with the conditions found on post-mortem examination. Holding this as of some importance in my own case, I did not see why the same routine procedure should not be extended not only to doctors but to all intelligent people who have been trained to observe.

Whilst enjoying good health we need not trouble about these matters, but on the slightest departure from health we should make notes and call in the doctor to our aid. Just at present people—even intelligent people and officials—seem to think that the medical world is divided into water-tight compartments, in one of which are those who treat disease, in another those who investigate disease: in one those who maintain that disease and its history can only be studied at the bedside and by the clinician, in another those who garner their best harvest in the laboratory or "in a medical unit." Those who seek to divide the work of the "doctor" in this fashion are, I am satisfied, in very imperfect touch with the medical thought of the present day. There are those who are engaged on the study of the early phases of disease. They have been specially trained in this type of work, have had special opportunities of carrying it on, and the efforts of such men as Sir James Mackenzie and his disciples in this field have been fruitful beyond even their wildest hopes. On the other hand, we have amongst us men like Sir Clifford Allbutt, Henry Head, and F. W. Mott, to mention but a few outstanding names, who, in their clinical study, have called to their aid laboratory methods wherever they believe that they can derive help in the elucidation or explanation of the processes that play any part in the disturbance of functional processes or the production of organic lessons. They exploit the microscope, experimental physiology, bio-chemistry, and physics, and hand on the results of their researches to others.

During the war we have learnt much concerning the prevention of disease; we have made enormous advances in medical and surgical treatment, but best of all we have gathered into our profession a number of skilled surgeons, trained observers, and expert laboratory workers, who if they receive encouragement and support will be able to bring to bear on civil and State medicine some of the lore and experience gathered under conditions in which disease was the primary study, the individual patient receding into the background. In so far as we are able to bring the patient back to the position of foremost importance, and no further, shall we derive full benefit from all our experience gained on the field and in the war hospital.

At certain periods, owing to the development of some special phase or aspect of medicine, the other aspects are looked upon as being old-fashioned and "out of date," and one still hears of those who exhibit a contempt for research in the wards, for those who are incapable of realising the dignity of the work and opportunities of the general practitioner, of those who speak of careful work in the post-mortem room as "coffin-labelling," and of those again who are convinced that morbid histology has had its day. Many speak as though those working in these fields were seeking for the finished products of disease alone, and as though such workers had no thoughts of function and of the thousand minute changes that are associated not only with the changing structure but with impaired functions of organs and tissues. The so-called practical school has been unreasonably irked by what they consider the neglect of their work by the scientific or laboratory school, which latter again is often twitted for pinning its faith to the creed of the Red Lions, whose toast, "Here's to higher mathematics, may they be no use to anyone," achieved such vogue and fame.

In recent years the Edinburgh School of Medicine and its daughter in Manchester have, greatly to their credit, taken a forward step in teaching pathology which, to my mind, will, in the long run, have a greater bearing on the training of the medical practitioner than any step taken in recent years. All men cannot become skilled pathologists and bacteriologists, but all should be trained to interpret the signs and symptoms of disease and to allocate, more or less accurately, to each sign or group of signs some change of function, temporary or permanent, the results of pathological processes in their various stages and phases.

How can we study the beginnings of disease if we are constantly concentrating our attention and focusing our observations on the last illness of the patient? Last illnesses should no doubt be studied carefully, and all methods of investigation should be brought to bear on the complicated problems presented to us on these occasions, but every step that has led up to the final issue should, if possible, be submitted to examination. In the Edinburgh Medical School every student of pathology has placed before him the clinical notes of a case, containing a record of family and personal history, signs, and symptoms developed from time to time, the nature and results of treatment, and post-mortem findings. He has then to make a careful naked-eye and microscopic examination of the organs and tissues of the patient, and finally is called upon to write a report of the case as a whole, coördinating the findings at the various stages and explaining, as far as possible, the relation of the earlier changes to those of later date in the sequence of events.

If the medical student could, whilst writing these reports, have access to patients in the wards, suffering from diseases similar to those with which he is dealing, could examine and compare the history and clinical and laboratory findings, could note the effects of treatment, still clearer pictures of diseased conditions could be obtained. I hope this development may take place.

A few of the advantages of such an organised system are already apparent to those who have looked into the matter. How infinitely greater might these advantages become if all those who are interested in the study of disease—and this is an interest that should be shared by all educated and intelligent people—would make a point, when first they fell ill, of asking their medical men to help them to keep a record of their illnesses, would describe their sensations in their own words, and would get their doctors to interpret these sensations for them, and, finally, would give instructions that before burial or cremation their bodies should be carefully examined by someone skilled in the interpretation of lesions met with during the course of disease.

Under these conditions doctors would be called in earlier, prevention would play a far greater part in the maintenance of health, many illnesses would be nipped in the bud, the doctor would become his client's "adviser" and not merely his "repairer," the patient might confidently expect a longer, more healthy and efficient life, and medicine would become not a finer art merely but would attain a scientific level never hitherto attained.

I am, Sir, yours faithfully,

May 30th, 1921. G. SIMS WOODHEAD.

THE MEDICAL DIRECTORY, 1922.

To the Editor of THE LANCET.

SIR,—The annual circular has been posted to every member of the medical profession. We shall be grateful for its early return to us. If any practitioner fails to receive the form we will, upon request, send him a duplicate.

We are, Sirs, yours faithfully,

THE EDITORS.

7, Great Marlborough-street, London, W. 1,
June 4th, 1921.

WARMING ETHER VAPOUR FOR INHALATION.

To the Editor of THE LANCET.

SIR,—In his letter to THE LANCET of May 28th Dr. K. B. Pinson has criticised the method of heating in a tracheal insufflation anæsthesia apparatus described by me in THE LANCET of April 30th. May I point out that, in the apparatus referred to, the ether-laden air does not come into contact with the electric lamp as Dr. Pinson seems to suppose, and hence the danger of ignition of the ether must be extremely remote. Furthermore, for those who fear explosions, the construction, primarily intended for use when electricity is not available, admits of the use of hot water with equal efficacy.

As regards the practical value of heating anæsthetic vapours, I am convinced (and I believe that my conviction will be borne out by most anæsthetists) that in tracheal insufflation anæsthesia, at any rate, the adequate heating of the ether-laden air is a most important factor if pulmonary complications are to be avoided.—I am, Sir, yours faithfully,

I. W. MAGILL,
Anæsthetist, the Queen's Hospital for Facial and Jaw Injuries, Sidcup.

May 30th, 1921.

THE FEDERATION OF MEDICAL AND ALLIED SOCIETIES.

To the Editor of THE LANCET.

SIR,—It is unfortunate that in the necessarily abridged account of the speeches at the annual dinner of the Federation of Medical and Allied Societies, published in your columns last week, the invitation to the British Medical Association to officially participate in the work of the Federation, which such a large number of its members support through other societies, should have been omitted. Sir Malcolm Morris, Vice-President of the Federation and Chairman of its Medical Council, in proposing the toast of the Minister of Health, again offered the right hand of fellowship which has always been extended to the Association. He emphasised that the British Medical Association was not asked to give up any of its activities nor was there any desire to interfere with its autonomy, and he made it clear, as also did Lieut.-Colonel F. E. Fremantle, M.P., in a later toast, that the work the Federation was doing was necessary and valuable work, and that it could not be done by the Association. The speakers in referring to the success of the Federation paid generous tribute to the past work of the British Medical Association, and in so doing indicated the greater possibilities which the future promised if these two organisations, the one primarily concerned with the interests of the patient and the other with those of the doctor, could go forward hand in hand.

The report of the dinner published in the *British Medical Journal* of June 4th duly recorded the invitation again extended to the Association, and I trust that you will be able to give space for this addendum to the account you have already published.

I am, Sir, yours faithfully,
N. HOWARD MUMMERY,
General Secretary.

The Federation of Medical and Allied Societies (Inc.),
5, Vere-street, Cavendish-square, W. 1,
June 5th, 1921.

⁂ We regret that in a report which had to be reasonably shortened the omissions to which Dr. Mummery refers should have occurred. We have pointed out many times the value of a rapprochement.
—ED. L.

The Services.

ROYAL NAVAL DENTAL SERVICE.

Mr. Norman Godfrey Bennett, M.B. Camb., L.D.S., and Mr. Montague Hopson, L.D.S., have been appointed to act as examiners for the entrance examination.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lieuts. to be Surg. Lieut.-Comdrs.: J. Lorimer, L. C. D. Irvine, N. J. L. Rollason, B. Cohen, A. G. V. Elder, A. G. L. Reade, D. J. Williamson, W. C. Macartney, W. G. Evans, J. H. Lamb, and E. F. Murray.

ROYAL ARMY MEDICAL CORPS.

Capt. A. Rodd is placed on the h.p. list on account of ill-health.

Temp. Capt. G. J. McGorty to be Capt.

Temp. Capt. D. L. Lindsay relinquishes his commission and retains the rank of Capt.

The undermentioned to be temp. Lts.: D. Loughridge and W. B. Fox.

TERRITORIAL FORCE.

Capt. (actg. Maj.) G. Potts relinquishes the actg. rank of Maj. on ceasing to be specially empld.

Maj. H. A. Lake (late R.A.M.C.) to be Capt., and relinquishes the rank of Maj.

Capt. G. B. Fleming to be Maj.

Capt. J. Downie to be Maj.

J. Robinson to be Lt.

Lt. K. Pretty to be Capt.

ARMY DENTAL CORPS.

Capt. W. A. Rankin, late Dental Surg., Spec. List, to be Lt. (with the temp. rank of Capt).

The undermentioned Dental Surgs., from Spec. List, to be Lts. (with the temp. rank of Capt.): Temp. Capts. H. F. Byrne, H. O. Sumerling, C. T. Hastings, H. R. Ellis, and C. H. Pywell; Temp. Lt. J. J. Boyle.

SPECIAL RESERVE OF OFFICERS.

To be temp. Cols.: G. H. Edington, L. J. Blandford, and F. G. Proudfoot.

H. A. Leebody to be temp. Maj.

The undermentioned Capts. relinquish their commns.: O. Williams, and is granted the rank of Maj. And retain the rank of Capt.: J. A. Musgrave and D. B. Robertson.

DEFENCE FORCE.

To be Asst. Dirs. of Med. Servs.: Temp. Cols. A. D. Sharp, T.D., Def. Force; and F. H. Westmacott, T.D., Def. Force.

To be temp. Capts.: G. F. Hardy, T. B. Batchelor, W. J. Harrison, J. E. P. Coleman, and J. F. Weston.

1st (S. Midland) Fd. Amb. F.D.—To be temp. Capt.: C. W. J. Brasher.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

THE DENTISTS BILL: THIRD READING.

THE Dentists Bill, a measure to give effect to the recommendations of the Departmental Committee on the Dentists Act, 1878, was considered by a Standing Committee of the House of Commons on Tuesday, June 7th. Mr. G. R. TURTON was in the chair.

Lt.-Colonel FREMANTLE moved an amendment to Clause 1 to place all existing unregistered dentists on a special list of registration. The British Dental Association, he said, were willing to admit unregistered dentists in partnership on condition that in future all men who practised should be under proper control. This position was taken up in the public interest. The Association objected to the proposal that men who had not gone through sufficient training in the theory as well as the practice of dentistry should be placed on a register on equal terms with themselves, so that the public would be led to suppose that there was little difference between the registered and the hitherto unregistered man. This matter had been considered by the Medical Committee of the House of Commons, and that Committee resolved to support the amendment that the unqualified dentist under registration should be placed on a separate list.

Mr. BRIANT said everyone must agree that the conditions of dentistry as they existed at the moment could not be allowed to continue. There should be some check on those men who put a board outside their house upon which they called themselves surgeon-dentists and professors. These advertisements unfortunately meant a great deal to some people.

Colonel WEDGWOOD said that the amendment supported the continuance of a corporation of vested interests in dentistry, similar to that of the British Medical Association in regard to medicine. It sought to give the dental practitioners an enormous advantage, raising their status and creating for them a monopoly. At the present time the majority of the working classes were attended by the unregistered dentists. The unregistered men were now being raised under the Bill to the status of the qualified practitioners. That would inevitably mean higher prices for dentistry, and although the unregistered dentist was to be registered the amendment would still draw a distinction between the qualified and the unqualified dental surgeon.

Mr. SEDDON said that there were approximately 10,000 men in this country engaged in the practice of dentistry, who had done so as unregistered practitioners for five years. He held that these men had gained the confidence of the public. They all wanted to raise the standard of dentistry, but he did not think the amendment would help to that end. He asked the British Dental Association to adopt the new system in a generous spirit.

Mr. HARTSHORN hoped the Committee would not accept the amendment, which aimed at making an inner and an outer circle, and the advantage would be for those who had the privilege of being in the inner circle. They would be known as the aristocracy of the profession.

Major MOLSON said to-day there were not sufficient dentists in the country. There were only about 1000 practising at the present time as registered dentists, and the Bill would cause the registration of about 9000 more. He had seen some of the work done by unqualified dentists, and he knew how great was the necessity for raising the standard. He thought it would be a good thing to have two stages—A and B—so that those in the lower category after the specified period could pass to the higher category.

Sir A. MOND (the Minister of Health) said that as the amendment stood the unregistered dentist would not be placed on the register. He did not believe in dividing the profession into sheep and goats. If the amendment were accepted it would cut right across the whole foundation of the Bill and would wreck it.

Colonel FREMANTLE said that the British Dental Association did not wish to wreck the Bill, and he withdrew the amendment.

Mr. SEDDON moved an amendment to Clause 3 to include membership of the National Dental Association or the Chemists' Dental Society, as qualifications for admission to the Dental Register.—On a division the amendment was defeated by 20 votes to 6.

On Clause 4, which provides that all the directors, managers, and operating staffs of dental companies shall be registered dentists: Sir T. ROBINSON moved that only one of the directors need be registered.

Sir A. MOND said that one was too few. As a compromise he would agree to a provision that the majority of the directors should be registered dentists.

The amendment was withdrawn and the suggested compromise agreed to, reference to managers being omitted.

After further discussion the Committee stage of the Bill was completed, and the measure was ordered to be reported to the House.

HOUSE OF COMMONS.

WEDNESDAY, JUNE 1ST.

Post-war Disability Pensions.

Major Sir **BERTRAM FALLE** asked the Financial Secretary to the Admiralty when the post-war disability scale of pensions would be applied to the Royal Navy and Royal Marines.—Mr. **AMERY** replied: The post-war scales will become operative 30 days after the official termination of the war. It is anticipated that detailed particulars will be ready for publication at an early date. The regulations governing the application of the post-war scales to pre-war disability pensioners who have served in the present war are now practically complete, and as soon as some minor details have been settled the work of re-assessing these pre-war pensions will be taken in hand.

Pure Atmosphere and Public Health.

Mr. **TREVELYAN THOMSON** asked the Minister of Health whether his attention had been drawn to the appreciable improvement in the health of urban populations at the present time, attributable by many medical authorities to the purer condition of the atmosphere due to reduced coal consumption; and had he considered the possibility of securing these same health advantages by means of measures for smoke abatement when coal consumption again became normal.—Sir **ALFRED MOND** replied: The time during which the consumption of coal has been reduced has not been sufficient for the confirmation or contradiction of the suggestion in the first part of the question. The whole question of the pollution of the atmosphere by smoke and other noxious vapours is receiving the consideration of a Departmental Committee under the chairmanship of Lord Newton. I have no doubt that the Committee are fully conversant with the aspects of the problem to which the honourable Member refers.

National Health Insurance.

Mr. **WILKIE** asked the Minister of Health whether he had received representations from societies approved under the National Health Insurance Acts who had difficulties in meeting their administrative costs out of existing allowances; whether he was aware that the increased postal charges would add to these difficulties; and whether he could say when the measure for the relief of the societies by increasing the administration allowance would be brought before the House. 2. Sir **THOMAS BRAMSDON** asked the Prime Minister whether it was the intention of the Government to give immediate effect to the recommendations of the Departmental Committee on National Insurance Administration.—Sir **ALFRED MOND** replied: The answer to the first question is in the affirmative. The Departmental Committee appointed by my predecessor to go into the whole question took account of the effect of increased postal charges on the societies. I hope at an early date to introduce a Bill to give effect to the recommendations of the Committee which have been presented to Parliament.

Sir **WALTER DE FRECE** asked the Minister of Health whether his department had considered the likelihood that when the insurance year closes on July 3rd several million insured persons would be in arrear with their contributions owing to the amount of unemployment; whether such insured persons would, unless they paid 12s. before Oct. 31st to liquidate 25 contributions in arrear, be disqualified from receiving sickness, disablement, and maternity benefit for a whole 12 months; whether he could take any steps to ease what might become a very serious situation; and whether, in particular, he would consider the possibility of allowing Approved Societies to use some of their surplus funds, as ascertained by the recent valuation, to assist in paying off members' arrears. 2. Sir **WALTER DE FRECE** asked the Secretary to the Treasury whether the Government would, in view of the vast volume of unemployment, consider the possibility of extending the excusing of contributions under the National Health Insurance Act to persons while unemployed.—Sir **A. MOND** replied: The honourable Member has correctly stated the position of insured persons who will be in arrear with their contributions at the end of the insurance contribution year. The matter has engaged the close attention of the department and has already been discussed with a representative conference of Approved Societies. As a result it has been decided to ease the situation by allowing an insured person an extended period from July to the end of November in which he may make the comparatively small payment necessary to avoid or mitigate any reduction of benefit during the following calendar year. These yments are on a graduated scale varying from 1s. to s. in accordance with the extent of the arrears, and in the extreme case where the arrears exceed 26 a single payment of 5s. would qualify the insured person for sickness benefit at 8s. a week (in addition to any amount added by way of additional benefit) with full maternity benefit, and the rate of sickness benefit would be increased by 1s. a week for each further instalment of 1s. paid during the five months. There is nothing to prevent a society which has a disposable surplus in valuation submitting for the approval of the department a scheme for utilising the whole or part of the surplus for the remission of arrears.

Colonial Medical Service.

Lieutenant-Colonel **FREMANTLE** asked the Secretary for the Colonies whether he intended as recommended by the Colonial Medical Services Committee to appoint a Director-General of the Colonial Medical Service who would, inter alia, advise the Secretary of State and the permanent staff of the Colonial Office as to all questions relating to the personnel of the Colonial Medical Service.—Mr. **WOOD** replied: The recommendations of the Colonial Medical Services Committee are at present being considered in connexion with the observations of the Colonial Governments. I cannot yet make any statement as to the decision on the proposal to appoint a Director-General of the Colonial Medical Service.

Colonel **FREMANTLE** also asked the Secretary for the Colonies whether he had sanctioned a minimum salary of £600 per annum, with pension, for colonial medical officers as recommended in the Report of the Colonial Medical Services Committee.—Mr. **WOOD** replied: No, Sir, the differences in the resources of the several colonies are so great and the conditions under which their medical officers serve so diverse that I see no prospect of it being possible to insist on Colonial Governments adopting the minimum in question as a hard-and-fast rule. In a number of the more prosperous colonies the local governments have adopted, and in some cases exceeded, the minimum.

Colonel **FREMANTLE**: Is it conceivable that any decent respectable medical man can be obtained to go abroad for a less salary than that amount?—The **SPEAKER**: That does not arise out of the question.

THURSDAY, JUNE 2ND.

Secrecy in Medical Practice.

Colonel Sir **ARTHUR HOLBROOK** asked the Minister of Health whether he was aware that the Insurance Committee of the area comprising Bramley, near Basingstoke, received an intimation that a portion of the Exchequer grant payable to them will be withheld in consequence of a local medical practitioner having declined to give information detrimental to one of his patients acquired by him in the course of his profession, such information having been called for at the behest of a rich corporation with whom the man was insured; and whether he would take action to secure that a doctor shall not be penalised for doing his duty to his patient.—Sir **A. MOND** replied: In the case to which this question appears to refer an Approved Society sought to obtain the opinion of the medical referee of the Ministry on the question of the incapacity for work of one of their members who was claiming sickness benefit, and I regret that the insurance practitioner has definitely declined to give any particulars as to the history and condition of the patient likely to assist the medical referee, notwithstanding the provision in his terms of service which clearly requires him to do this. In these circumstances it has become necessary to inform the doctor that a portion of the Exchequer grant forming part of his remuneration must be withheld, the grant being payable only if the terms of service were complied with. But in accordance with the provision of the Regulations any representations which the doctor may wish to make in the matter will first be considered.

Mothers' Pensions.

Mr. **TYSON WILSON** introduced a Bill to provide for pensions for mothers which was read a first time.

FRIDAY, JUNE 3RD.

Public Health (Officers) Bill.

The House considered the Public Health (Officers) (No. 2) Bill as amended in the Standing Committee.

On Clause 1, which deals with the tenure of office of a medical officer of health, Sir **P. MAGNUS** moved an amendment to insert at the beginning of the Clause the words "in cases to which this section applies."—The amendment was agreed to.

Sir **P. MAGNUS** moved to add at the end of the Clause the words: This section applies to—(*a*) the medical officer of health of a county borough where any portion of the salary of the medical officer was paid out of moneys voted by Parliament before it was constituted a county borough; (*b*) the medical officer of health of a county district any portion of whose salary is paid out of the county fund of the county in which the district is situate and charged to the exchequer contribution account.

Dr. **MURRAY** asked for an explanation of this amend-in at the request of the Ministry of Health in order to restrict the operation of the Bill to certain local authorities which had special advantage given to them previously.—On a division the amendment was carried by 100 votes to 17.

The Bill was read a third time and passed.

Dogs Protection Bill.

Sir F. BANBURY, in moving the second reading of the Dogs Protection Bill, said the Bill had already passed second reading on three different occasions, twice without a division, and once by a considerable majority. If any honourable Member was under the impression that by passing it he would injure the cause of vivisection he would read an extract from THE LANCET, dated May 31st, 1919: "This is not to say that such knowledge could not have been acquired in any other way." Therefore having the admission of THE LANCET,[1] the well-known and recognised authority of the medical profession, it was evident that the knowledge which the medical profession said was acquired by experiments on dogs could be acquired in another way. The right hon. baronet concluded by reading a passage in praise of the dog written by an American poet and writer, whose name, he said, he regretted he did not know.

Sir WATSON CHEYNE said this was the third or fourth time that he had had to speak on this Bill, and naturally it was rather difficult to say anything new. He would summarise the chief objections which they as a scientific and medical profession had against the measure. He was a dog-lover—all his friends were dog-lovers—and they sympathised with the passage read by Sir F. Banbury. It was not that they disliked dogs, but that they could not afford to lose the experience that could be gained from them. The first thing that they asserted, in contradiction to THE LANCET, was that there were many fields of knowledge that they must explore if they were to advance the science of medicine and do their duty in the fight against disease. Some of the fields of observation which they gathered from the dog were quite necessary. It was not simply a question of vivisection. The animals that were used in experiments fell into four classes: these were the small rodents, rats, mice, and guinea-pigs; dogs; cats to a smaller extent; horses, rabbits, and apes. Other animals were only occasionally used. Rodents were almost entirely used in connexion with investigations respecting infectious diseases. Horses were used not so much for experiments as for commercial purposes and for the production of sera, such as tetanus antitoxin, which saved so many lives during the war. The animal had to be infected with the disease. The dog and the ape were really the only two animals from which they got the main part of their knowledge as regarded the processes of health and disease. It was quite true that most of the work could be done with apes, not so conveniently in some cases, certainly not so cheaply. But one or other must be used for various reasons. In the first place, if they wanted to get results which they could apply in the treatment of disease they must have animals whose mode of life resembled man's and whose metabolism and chemical changes in their bodies were on the same lines as man's. He knew that Sir F. Banbury was not out for humanitarian purposes. It did not matter to him what animals were vivisected so long as they were not dogs, and therefore he said why not use apes? There were various objections. In the first place there were not many apes in this country, and in the second place the apes were not so easily handled. They were not so tame as dogs; they were more like spoiled children. Put a dressing on a dog and he did not trouble so much about it. In a few hours he apparently forgot about it; but the ape did not forget. He never rested satisfied until he had torn open the stitches and vitiated the whole experiment. It would be extremely difficult to carry out many delicate operations which did not hurt the animals in the least. They must take account of the question of expense. The men who were engaged in this sort of work were in the great majority of cases poor men. They did not spend their money on pleasure, but on instruments and other things they wanted for their experiments; and to ask the poor man to buy such expensive animals as apes was out of the question. He would be very much surprised if the House would pass any vote for a laboratory if they found that apes were being used instead of dogs. There would be an economical outcry against it. The results which had been got from experiments on dogs were of the greatest value and were the groundwork of our whole knowledge of the healthy processes of human nature. Physiology, the science of health, was based almost entirely on observations on dogs. It was said by opponents that they would not so much object if the experiments led to a practical result. But it did not do to despise knowledge because it had no immediate utilitarian outlook. Almost all the great sciences had begun in insignificant things.—The honourable Member was still speaking at five o'clock when by the rules of the House the debate stood adjourned.

HOSPITAL FINANCE:
REPORT OF THE VOLUNTARY HOSPITALS COMMITTEE.

THE final report of the small committee over which Viscount Cave presides contains the following important recommendations:—

(1), (2) That a Hospitals Commission and Voluntary Hospitals Committees be formed for the country as a whole, the King Edward's Hospital Fund for London continuing to perform the functions of the latter for the Metropolitan Police District.

(3), (4) That Poor-law guardians be authorised to enter into arrangements as to the use of infirmaries, and that county councils be empowered to contribute to the expenses of voluntary hospitals committees.

(5) That failing the provision in the National Health Insurance Acts of a "hospital benefit," the courts be authorised to award to hospitals compensation under the Employers' Liability and Workmen's Compensation Acts.

(6) That local authorities be authorised to pay the cost of the treatment in hospitals of persons in their employ.

(7) That the payment out of technical education funds of grants for the training of nurses be considered.

(8) That provision be made for obtaining and tabulating returns of cases treated in hospitals.

(9), (10), (11) That all contributions by employers to hospital funds be allowed as deductions from profits for income-tax purposes, that where the payment to a hospital of a testamentary gift of residue is delayed for more than a year, the hospital be authorised to claim repayment of income-tax, and that legacy and succession duty on testamentary gifts to hospitals be remitted.

(12) That Parliament be asked to sanction a temporary grant of £1,000,000 to be expended under the direction of the Hospitals Commission in the assistance of hospitals which require it.

A last clause states that the Hospitals Commission should be authorised during a period of two years to recommend grants for the extension and improvement of hospitals subject to like contributions being made from private sources.

These recommendations if adopted will require legislation or executive action.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At the Congregation held on Saturday, June 4th, the following degrees were conferred:—

M.D.—C. S. Clarke and L. M. Weeks, Caius.

Ph.D.—C. G. L. Wolf, Christ's.

M.B., B.Ch.—H. Barbash, St. John's; and L. W. Batten, Sidney.

B.Ch.—W. H. Marshall, Pembroke.

Diploma in Psychological Medicine.—The dates for the next examinations have been fixed as follows: for Part I. (Anatomy and Physiology of the Nervous System and Psychology) Oct. 11th, 12th, and 13th, 1921; for Part II. (Neurology and Psychiatry) Nov. 30th, Dec. 1st, and 2nd, 1921. A course of instruction for the Diploma will be held in Cambridge from July 18th to August 20th. Lectures and practical work will be given by Dr. J. P. Lawson (Psychology), Dr. C. R. A. Thacher (Anatomy and Physiology of the Nervous System), Dr. J. F. E. Prideaux and Dr. C. S. Myers (Psychopathology), Dr. W. H. R. Rivers (Psychology and Pathology of Dreams), Dr. M. A. Archdale (Mental Diseases). Those who wish to take the course are requested to send their names, if possible, before July 10th, to the Secretary of the D.P.M. Committee, Psychological Laboratory, Cambridge, from whom further particulars may be obtained.

UNIVERSITY OF MANCHESTER.—Mr. Harold Robinson, D.Sc., Senior Lecturer in Physics and Assistant Director of the Physical Laboratories, has resigned his appointment. The Turner Medical Prize has been divided between Mr. G. V. Ashcroft and Miss Margaret Single.

THE PRINCE OF WALES AND THE RED CROSS.—The message sent by the Prince of Wales to the League of Red Cross Societies in connexion with a world-wide campaign to increase the membership of the Red Cross in all countries reads as follows: "I am very glad to learn from you that the Red Cross Societies of the world, under the auspices of the League of Red Cross Societies, are undertaking a campaign for membership to enable them to carry on the peace work of the Red Cross. The effort which the League of Red Cross Societies is making to serve humanity in peace time as well as in war, has my heartiest approval, and I trust that your campaign will result in a very large addition to the membership of National Red Cross Societies." Other messages of warm approval have been received from Lord Robert Cecil, from the President of the Republic of Czecho-Slovakia, from Mr. Samuel Gompers, Cardinal Mercier, and Mr. Herbert Hoover. The aim of the British Red Cross Society is to enlist the service of the whole country in the work of healing. It is hoped that volunteers will offer their services to the British Red Cross Society to help the suffering in peace time in the same spontaneous manner in which they came to the aid of the sick and wounded in war time. The peace activities of the British Red Cross Society include the after-care of the disabled ex-Service man, aid to the hospitals, work at infant welfare centres and day nurseries, and assistance to the clergy and educational authorities. The Red Cross, members are reminded, should be available on all occasions when the clergy and heads of educational establishments, such as orphanages, require the simple assistance which is often lacking on such occasions as school and choir treats and annual outings. The glamour and the brassards may have disappeared, together with the ornamental people to whom the Cross of Geneva was an excuse to smile for press photographers; the hard work still remains on lines perhaps less interesting and certainly more obscure.

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[1] See page 1253 for comment upon this sort of quotation. The reference was to a particular series of results.

Federation of Medical and Allied Sciences.—A meeting of the Medical Council of the Federation was held at 11, Chandos-street, W., on May 31st, when consideration was given to the possible means of providing additional medical services to supplement the existing resources of practitioners and bring within reach of all sections of the community modern methods of treatment now largely confined to the well-to-do. The Organising Committee of the National Provident Scheme for Hospital and Additional Medical Services had submitted to the Federation its proposals and these were fully discussed and explained by Dr. Gordon Dill. It was resolved to obtain the opinions of the constituent Societies with a view to again pressing for a public and independent inquiry into the working of the medical benefit clauses of the National Insurance Act. The intention was stated to make the inquiry in a constructive spirit and with a genuine desire to retain all that is good and add what may be lacking.

It was decided that the annual meeting should be held on June 28th next. A number of medical men were elected individual members of the Federation.

Royal Sanitary Institute.—Preliminary arrangements for the Congress to be held at Folkestone, from June 20th to 25th, have now been issued. The President will be Lord Radnor, and the hon. local secretaries are Mr. A. F. Kidson, town clerk, and Dr. M. G. Yunge-Bateman, medical officer of health. The sections will be as follows:—(*a*) Sanitary Science and Preventive Medicine; President: Sir Leslie Mackenzie, M.D.; Recording Secretary: Dr. W. J. Howarth. (*b*) Engineering and Architecture; President: Major W. H. Prescott, M.P.; Recording Secretary: Mr. W. C. Tyndale. (*c*) Hygiene of Maternity and Child Welfare, including School Hygiene; President: Mrs. H. A. L. Fisher; Recording Secretary: Dr. Charles Porter. (*d*) Personal and Domestic Hygiene; President: The Mayoress of Folkestone (Mrs. Reginald G. Wood); Secretaries: Mrs. J. E. G. Calverley, Mrs. Sydney Weston. (*e*) Industrial Hygiene; President: Lord Burnham; Recording Secretary: Dr. E. H. Snell. Fellows, members, and associates of the Institute are supplied with tickets for the Congress on application to the Secretary before the Congress, or tickets can be obtained at the Reception Room during the meeting. To those not connected with the Institute, Congress tickets, at £1 11*s.* 6*d.* each, can be obtained from the hon. secretaries, Royal Sanitary Institute Congress, Town Clerk's Office, Folkestone. Ladies' tickets (not including copies of the proceedings), 10*s.* 6*d.* each.

Livingstone College. — Commemoration Day, May 27th, was celebrated at Livingstone College, Leyton, Sir George Makins presiding. Dr. L. E. Wigram, the retiring Principal, said that though his health prevented him from continuing as Principal of the College his work in connexion with it as a lecturer would not cease. Referring to new developments at the institution, he said women students would be admitted and next session arrangements would be made for them as residents. Sir George Makins said the aim of the missionary was to minister to the souls and bodies of his fellow men. To fulfil this dual object it was necessary that he should have, in addition to his theological training, some knowledge of medical things. Sir George Makins emphasised the great value of partial medical training in everyday life, instancing the great help it had been in the work of orderlies and V.A.D.'s during the recent war, and its uses in the Mercantile Marine. If the benefit of partial medical training was so felt in a civilised country, he said, how much more necessary must it be in the mission field where a man was far from qualified medical aid. Such knowledge as could be obtained at Livingstone College must be immensely helpful. Dr. C. F. Harford, representing the Committee, in proposing a vote of thanks to Sir George Makins, expressed the regret of the Committee at Dr. Wigram's enforced resignation, and wished him many years connexion with the College as lecturer. He welcomed in the name of the Committee Dr. T. Jays as the new Principal, and felt sure that he was the right man to fill the post.

St. Thomas's Hospital Medical School.—The distribution of prizes by the Duke of Connaught will take place on Tuesday, June 21st, at 3 p.m.

Royal Institution of Great Britain.—An extra Friday evening discourse will be held on June 17th, at 9 o'clock, when Sir J. J. Thomson, F.R.S., will lecture on "Chemical Combination and the Structure of the Molecule."

Rontgen Society.—At the meeting of the Society to be held at 35, Russell-square, London, W.C., on June 16th, at 8.15 p.m., there will be a discussion on the Physics of the X Ray Tube. All interested are invited to attend.

A Dining Club, composed of all past and present members of the honorary and house staffs of the Hospital for Sick Children, Great Ormond-street, held its first dinner on June 1st. Sixty-three members attended, including many who were house officers of the hospital as far back as 1880–1890, when Sir Thomas Barlow presided.

A Tribute to the Memory of Sir Morell Mackenzie.—On Sunday, June 5th, a group of well-known laryngologists assembled at Wargrave to pay a tribute to the memory of Sir Morell Mackenzie, who had a residence in the little Berkshire village, and is buried in the churchyard of St. Mary's, Wargrave. A special service was held in the churchyard by the Rev. S. M. Winter, after which Mr. Mark Hovell and Dr. James Donelan, former assistants to Sir Morell Mackenzie, placed a laurel wreath upon the tomb. Mr. Hovell, Sir StClair Thomson, and Sir James Dundas-Grant, gave short addresses. Dr. Irwin Moore, who had recently acquired Sir Morell Mackenzie's house at Wargrave, acted as host to a gathering which he had been instrumental in assembling.

National Hospital for Diseases of the Heart. A Systematic Post-Graduate Course of Instruction in Diseases of the Heart will be held at this hospital from July 11th to 23rd. Practical instruction will be given in the use of the polygraph, electrocardiograph, and other instruments. Systematic and clinical instruction will be given in the wards and the out-patient department throughout each day. The number admissible is limited. Applications should be made as soon as possible to the Secretary, National Hospital for Diseases of the Heart, Westmoreland-street, London, W.1.

Ladies' Medical Golfing Society.—A meeting will be held at Beaconsfield Golf Club on Wednesday, June 15th. The annual subscription to this society is 5*s.*; and those eligible for election include medical women and the wives, sisters, and mothers of medical men. Further particulars can be obtained from the hon. secretary, Mrs. Laming Evans, 50, Seymour-street, London, W.1.

Medical Golfing Society.—The 1921 tournament will be held on Thursday, June 16th, at Walton Heath Green fee of 2*s.* 6*d.* for the day. Trains leave Charing Cross and London Bridge for Tadworth. Thence by conveyance to the course. A Challenge Cup for the Medical Golf Championship has been presented by the The Lancet. This championship is played annually at the meeting of the Medical Golfing Society, and the Cup is held for the year by the player on the Medical Register who makes the best scratch return v. Bogey. A replica of the Cup is also given as a memento. The "Henry Morris" Challenge Cup and the Medical Golfing Society's Gold Medal will be awarded for the best return under handicap. First, second, and a prize for the best last nine holes will be given in each class. No player can take the first or second, and the prize for the best nine holes. Class I. Handicaps 8 and under. Class II. Handicaps over 8. Handicap limit 18. (Members of the Walton Heath Golf Club will deduct two from their handicaps.) Cards may be handed in till 7.30 p.m. A Foursome Sweepstake will be arranged in the afternoon. Players who want caddies (fee 5*s.*) must make their own arrangements with the Caddy Master at Walton Heath. Anyone on the Medical or Dental Register is eligible to join this society by payment of the annual subscription of 5*s.* Entries should be sent on or before Tuesday, June 14th, to Dr. L. E. Creasy, hon. secretary and treasurer, The Medical Golfing Society, 36, Weymouth-street, London, W.1.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Thursday, June 16th.

GENERAL MEETING OF FELLOWS: at 8.30 P.M.

Discussion: on "The Problem of the Private Clinic System in Great Britain." To be opened by Sir Thomas Horder. The following will also speak:—Dr. G. C. Anderson, Mr. W. Clayton-Greene, Mr. W. S. Dickie, Mr. Bishop Harman, Dr. A. F. Hurst, Dr. Drury Pennington, Sir Humphry Rolleston, Dr. Gilbert Scott, Dr. Maurice Wright.

Fellows desiring to take part in the discussion are invited to send in their names to the Hon. Secretaries.

Tuesday, June 21st.

GENERAL MEETING OF FELLOWS: at 5 P.M. Ballot for election to the Fellowship.

MEETINGS OF SECTIONS.

Thursday, June 16th.

SECTION OF DERMATOLOGY: at 5 P.M. (Cases at 4.30 P.M.)

Cases will be shown.

Friday and Saturday, June 24th and 25th.

SECTION OF STUDY OF DISEASE IN CHILDREN.

Provincial Meeting at *Reading.*

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

FRIDAY, June 17th.—7.15 P.M., Demonstration. 8.15 P.M., Annual General Meeting. Paper:—Major R. Knowles: The Mechanism and Treatment of Snake Bite in India.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

TUESDAY, June 14th, and THURSDAY.—5 P.M., Croonian Lectures:—Dr. F. L. Golla: The Objective Study of Neurosis.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, June 13th.—12.15 P.M., Dr. Burnford: Pathological Demonstration. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. Dr. Simson: Diseases of Women. Dr. Morton: X Ray Department. 4.15 P.M., Lecture:—Dr. Arthur Saunders: Gastric Disorders in Old Age.

TUESDAY.—10 A.M., Dr. Robinson: *Gynæcological Operations and Visit to Wards.* 2 P.M., Mr. Banks Davis: Diseases of the Throat, Nose and Ear. Dr. Pernet: Skin Department. Dr. Burnford: Medical Outpatients. 5 P.M., Lecture:—Dr. Pritchard: Chronic Infective *Processes.*

WEDNESDAY.—10 A.M., Mr. MacDonald: Genito Urinary Department. 12 noon. Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Mr. Gibb: Eye Department. Mr. Donald Armour: Demonstration of Cases, Surgical Wards.

THURSDAY.—10.30 A.M., Dr. Simson: *Gynæcological* Demonstration. 12 noon, Dr. Scott Pinchin: Diseases of the Heart. 2 P.M., Mr. Bishop Harman: Eye Department. Mr. Baldwin: Orthopædic Department. 5 P.M., Special Lecture:—Dr. Harry Campbell: Observations on *Diet.* (Open to all Medical Practitioners.)

FRIDAY.—10 A.M., Dr. Grainger Stewart: Neurological Demonstration. 2 P.M., Mr. Tyrrell Gray: Surgical Out-patients. 2.30 P.M., Mr. Addison: Visit to Surgical Wards. 5 P.M., Lecture:—Mr. Baldwin: Surgery of the Rectum (1).

SATURDAY.—10 A.M., Dr. Arthur Saunders: Medical Diseases of Children. 2 P.M., Mr. Sinclair: Surgical Out-patients. Dr. Owen: Medical Out-patients.

Daily:—10 A.M., Visit of Post-graduates to Wards. 2 P.M., In-patient, *Out-patient Clinics* and Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, June 13th.—10 A.M., Mr. W. E. Tanner: Surgical Out-patients. 2 P.M., Dr. A. J. Whiting: Medical In-patients. 2.30 P.M., Mr. J. B. Banister: Gynæcological.

TUESDAY.—9.45 A.M., Lt.-Col. R. H. Elliot: Eye Operations and Cases. 2.30 P.M., Dr. J. Metcalfe: X Ray Department. 3 P.M., Lecture:—Mr. C. H. Hayton: Anatomy *of the Nose* and Accessory Sinuses.

WEDNESDAY.—2 P.M., Mr. C. H. Hayton: Throat Operations. 2.30 P.M., Dr. W. J. Oliver: Dermatological. 3 P.M., Lecture Demonstration:—Mr. W. E. Tanner: Clinical Pathology and Differential Diagnosis of Scrotal Enlargements.

THURSDAY.—2 P.M., Mr. N. Fleming: Eye Department. 2.30 P.M., Mr. J. B. Banister: *Gynæcological* Operations. Dr. J. Metcalfe: Radiology.

FRIDAY.—2 P.M., Dr. C. E. Sundell: Diseases of Children. 3 P.M., Lecture Demonstration:—Mr. T. H. C. Benians: Blood Examination in Diagnosis. 5 P.M., Dr. Provis and Mr. Benians, Venereal Department.

SATURDAY.—10.30 A.M., Mr. W. E. Tanner: Operations. 3 P.M., Mr. H. W. Carson: Surgical In-patients.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen Square, W.C. 1.

MEDICAL SCHOOL.

MONDAY, June 13th.—2 P.M., *Dr. Hinds Howell*: Out-patient Clinic. 3.30 P.M., Dr. Aldren Turner (Lecture Room): Demonstration of Cases.

TUESDAY, June 14th.—2 P.M., Dr. Grainger Stewart: Out-patient Clinic. 3.30 P.M., Lecture:—Mr. Armour: Surgical Treatment *of* Spinal Cord Tumours (2).

THURSDAY, June 16th.—2 P.M., Dr. Farquhar Buzzard: Out-patient Clinic. 3.30 P.M., Lecture:—Dr. Farquhar Buzzard: Encephalitis Lethargica.

FRIDAY, June 17th.—2 P.M., Dr. Gordon Holmes: Out-patient Clinic. 3.30 P.M., Dr. Collier (Lecture Room).

NEUROLOGICAL OPHTHALMOLOGY.

WEDNESDAY, June 15th.—3.30 P.M., Mr. Leslie Paton Papillœdema.

Fee for Post-Graduate Course £7 7s.

C. M. HINDS HOWELL, Dean.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON), Turner-street, Mile End, E.

Courses of Lectures:—

A Course of Fourteen Lectures on Psycho-Neuroses, to be given by Dr. M. Culpin in the Clinical Theatre of the Hospital. Open to Students of the Hospital and to Members of the Profession.

TUESDAY, June 14th.—5.15 p.m., Lecture XII: Treatment.

FRIDAY.—5.15 P.M., Lecture XIII: Association Methods.

Advanced Lectures in Physiology, to *Students of the* University and to others interested in the subject.

A Course of Eight Lectures on Reception of Sensory Stimuli, to be given by Prof. H. E. Roaf in the Physiology Theatre.

THURSDAY, June 16th.—4.30 P.M., Lecture VI.

SURGICAL UNIT.—A Special Course of Ten Lectures on Advanced Surgery in the Unit Theatre to Post graduates and Senior Students.

TUESDAY, June 14th.—4.15 P.M., Mr. R. Warren: Ventral Hernia.

WEDNESDAY.—4.15 P.M., Mr. R. Warren: Suppuration of the Lung.

UNIVERSITY OF LONDON.

Advanced Lectures to Students of the University and to others interested in the subjects.

A Course of Four Lectures in Pharmacology, on Some Actions of Foodstuffs in the Production and Treatment of Disease, to be given by Prof. E. Mellanby at the Royal College of Surgeons, Lincoln's Inn-Fields, W.C.

MONDAY, June 13th, and TUESDAY.—5 P.M., Lectures III. and IV.

ST. BARTHOLOMEW'S HOSPITAL (UNIVERSITY OF LONDON), West Smithfield, E.C.

A Course of Eight Advanced Lectures in Physiology, to be given in the *Physiological* Laboratory, to Students of the University and others interested in the subject.

TUESDAY, June 14th.—4.30 P.M., Lecture VII.:—Dr. H. H. Dale: Anaphylaxis.

A Course of Four Advanced Lectures in Medicine, to be given in the Surgical Lecture Theatre, *to* Students of the University and others interested in the subject.

MONDAY, June 13th, WEDNESDAY and FRIDAY.—5 P.M., Prof. F. R. Fraser: The Therapeutic Use of Digitalis (Lectures I., II., and III.).

THE HOSPITAL FOR SICK CHILDREN, *Great Ormond-street*, W.C.

THURSDAY, June 16th.—4 P.M., Lecture:—Dr. Thursfield: Mongols.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, E.

A Course of Post-graduate Clinical Lectures and *Demonstrations* in the Board Room of the Hospital, free to Medical Practitioners and Students of Medicine.

MONDAY, June 13th.—4 P.M., Mr. W. P. T. Atkinson: Tinea Tonsurans and its Treatment by X Rays.

TUESDAY.—4 P.M., Dr. S. A. Owen: The Premature Baby.

THURSDAY.—12 noon, Mr. V. Nesfield: The Treatment of Corneal Ulcers by Subconjunctival Injection of Phenolaine Solution.

FRIDAY.—3.30 P.M., Dr. J. L. Bunch: Skin Diseases in Children.

TAVISTOCK CLINIC FOR FUNCTIONAL NERVE CASES, 51, Tavistock-square, W.C.

A Course of Ten Lectures on Elementary Psychotherapy, to be given by Dr. H. C. Miller, at the Kingsway Hall, Kingsway, W.C.

FRIDAY, June 17th.—5.15 P.M., Lecture VII., Analytical Methods: Reassociation and Readjustment; Word Association; Hypnoidal Analysis.

INSTITUTE OF PATHOLOGY AND RESEARCH, St. Mary's Hospital, in the Lecture-room of the *Bacteriological Department.*

A Course of Lectures on Pathological Research in its Relation to Medicine, open to all Members of the Profession and Students.

THURSDAY, June 16th.—4.30 P.M., Prof. W. Bulloch: Use and Abuse of Scientific Medical Literature.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

TUESDAY, June 14th.—4.30 P.M., Lecture:—Dr. E. B. Leech: Blood Pressure.

Appointments.

Armstrong-Jones, Sir R., M.D. Lond., has been appointed a Visitor in Lunacy.

Brown, A. Middleton, M.D. Aberd., D.P.H., Medical Officer of Health and Schools Medical Officer for the City of Hereford.

McPherson, J. M., M.B., Ch.B. Glasg., Medical Officer of Health to the Swansea Rural District Council.

Warburton, G. B., Ch.M., F.R.C.S., Visiting Surgeon to the Crumpsall Institution and Infirmary, Manchester.

Webster, J. H. Douglas, M.D. Edin., M.R.C.P. Edin., Honorary Physician-in-Charge of Department of Physical Medicine at the Middlesex Hospital.

Young, W. A., B.Sc., M.B., B.S., M.R.C.S., L.R.C.P., Pathologist to St. John's Hospital for Diseases of the Skin.

Jessop Hospital for Women, Sheffield: Hall, R. J. B., M.B., Ch. B. Otaga, Senior Resident Officer, and Jaede, C. H., M.B., Ch.M. Sydney, and Sohpianopoulos, G. J., M.R.C.P. Lond., M.R.C.S., Assistant House Surgeons.

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Falconer.—On June 2nd, the wife of Dallas S. Falconer, M.B., Ch.B., F.R.C.S., of a son.

Swan.—On June 2nd, at Dartmouth House, West Byfleet, Surrey, the wife of James Swan, M.C., M.B., Ch.B., F.R.C.S., of a daughter.

MARRIAGES.

Greaves—Duggan.—On June 2nd, at St. Luke's, Grayshott, Dr. S. Sowry Greaves, D.S.O., M.C., to Eva Duggan, M.B.E.

Shepherd—Gordon.—On June 2nd, at St. John's Wood Presbyterian Church, London, George A. Shepherd, M.B., Ch.B., Mornington House, Old Southgate, London, to Coral Ogilvie Gordon, M.B., Ch.B.

DEATHS.

Fortescue-Brickdale.—On June 2nd, at Clifton, John Matthew Fortescue-Brickdale, M.D. Oxon., M.R.C.P. Lond., aged 51.

Jupp.—On June 6th, at Chalfont Park Hotel, Gerrards Cross, of pneumonia, Ralph Tennyson Jupp, M.B., F.R.C.S., aged 45 years.

Little.—On May 30th, at Midgham, Berks, Capt. Gerald Lewis Little, M.B., F.R.C.S., I.M.S., retired, aged 37.

Morton.—On May 28th, at Territet, Switzerland, Charles James Morton, M.D. Edin., late of Walthamstow and Welbeck-street.

Skyrme.—On May 28th, Christopher Ralph Skyrme, M.B., B.C., B.A., of Albany-road, Bexhill-on-Sea, in his 49th year.

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ALPINISM.*

BY JOSEPH BARCROFT, C.B.E., M.A., F.R.S.

THE effects of rare air upon the human body have always had a peculiar fascination for those who make physiological inquiry their life's work. In spite of all the thought that has been spent on it in the last fifty years, the subject is as full of interest as ever. For this there are several reasons. On the intellectual side it is evident that the knowledge already gleaned has merely served to arouse a deeper interest; on the practical side the effects of rare air, ceasing to be the monopoly of a few mountaineers, have become the limiting factor of the activities of airmen. In this way the air is now vital to the world system of modern transport. Moreover, within the last decade it has become abundantly apparent that many if not all the symptoms of mountain sickness are simply due to some kind of deficiency of oxygen in the arterial blood—a condition also to be found in many pathological conditions. In such the condition of "unsaturation" of the arterial blood is, however, associated with other troubles. If, therefore, we desire to study the effect of this type of oxygen-want for the purpose of applying the knowledge to general pathology, it is best to study it in its least complicated form—namely, where unsaturation of the blood is simply brought about by insufficient pressure of oxygen in the inspired air.

"Oxygen-Want."

The phrase "oxygen-want" requires a word of caution. Oxygen-want in the body may arise from causes other than insufficient oxygen saturation in the arterial blood. It is not, therefore, a foregone conclusion that information gleaned in the high Alps can be applied to general conditions of oxygen-want. Anoxæmia, which by convention means want of oxygen in the tissues, and not merely as its derivation implies—want of oxygen in the blood—may be divided into three classes[1]: (1) the anoxic type, in which the arterial blood is unsaturated; (2) the anæmic type, in which the amount of hæmoglobin per c.cm. of blood is too small; (3) the stagnant or ischæmic type, in which the blood flow is too slow.

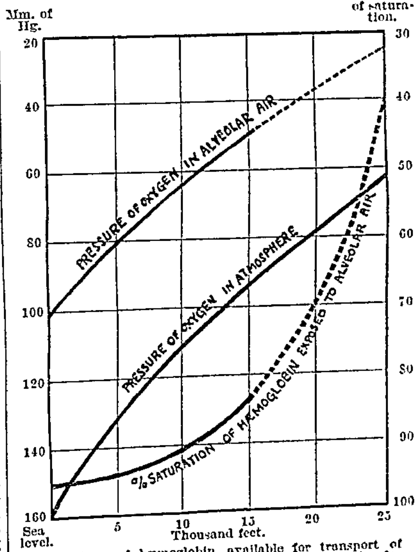
Mountain Sickness.

Mountain sickness is typical of the anoxic type, but not at all typical of the anæmic or of the ischæmic types. Let us pass to the closer study of it. Probably if nine out of every ten persons were asked what they understood by the term "mountain sickness," they would reply that most persons on ascending high mountains, and some on ascending lower ones, vomited. Antiperistalsis is a natural safety valve; but as the study of mountain sickness has proceeded vomiting has held the attention of researchers in a gradually decreasing degree; at present if one were to ask half a dozen physiologists who have worked at over 10,000 feet what they observed, it is probable that not one of the six would mention vomiting as being the first symptom to cross his mind. Yet in point of fact mountaineers who have camped at over 20,000 feet have told me that alimentary trouble is the factor which places the real limit in the altitude attainable. Before discussing the symptoms of mountain sickness in some detail let me first define the cause more particularly than I have yet done.

Cause of Mountain Sickness.

As an ascent is made the barometric pressure gradually diminishes, till at the summer snow line in the Alps (10,000 feet) it is 510 mm., and at the summits of the highest peaks, such as those of Mont Blanc and Monte Rosa (15,000–16,000 feet), the observer is above nearly half the atmosphere and the barometer stands at but 410 mm. As the barometric pressure falls, so in proportion falls the pressure of oxygen which is always approximately one-fifth of the barometric pressure. The figure shows the oxygen pressure in the atmosphere plotted against the altitude in feet. The blood, however, is exposed not directly to the atmosphere, but to the air in the alveoli of the lungs. The composition of this alveolar air cannot be predicted, but measurements have been made up to about 15,000 feet in the Alps with the result shown in the figure. At sea-level, when the atmospheric air forms an oxygen pressure of 160 mm., the oxygen in the alveolar air has a pressure of 100 mm. In other words, the human body, by its configuration, starts with a handicap against it of about 12,000 feet.

To carry the investigation from the alveolar air to the blood which it aerates, one may ask what difference this gradually decreasing-pressure oxygen makes to the blood. That is the kernel of the whole problem of the physiology of alpinism. The lowest line in the figure shows the extent to which the blood would be oxygenated if exposed to the alveolar air of the corresponding altitude at the normal body temperature. At the sea-level 95 per cent. of the hæmoglobin functions and the remaining 5 per cent. leaves the lung without any load of oxygen. As the altitude increases the fall in oxygen pressure produces very little effect upon the amount of oxygen taken up by the arterial blood, but at about 15,000 to 18,000 feet a critical point is reached, and at altitudes above this the blood ceases to function with increasing rapidity, the line separating the hæmoglobin which does not function from that which does. This constantly, and above 18,000 feet rapidly, rising curve of "unsaturation" of the arterial blood is the physiological mountain which the body has to scale, and somewhere on it is the real limit to man's faculties and activities. This curve is the real Everest.



Percentage of hæmoglobin available for transport of oxygen from the lung if the composition of the alveolar air were as shown.

Effects of High Altitudes on the Blood.

Since the blood permeates all the organs of the body the changes which it undergoes may first be studied. Apart altogether from the actual amount of oxygen which the blood carries at any one time, the properties of the fluid as a whole undergo certain well-defined alterations, directed towards the preservation of an approximately constant hydrogen-ion concentration. Our knowledge is limited by the fact that actual measurements of the hydrogen-ion concentration of the blood as it exists in the body have never been made at high altitudes. Hydrogen-ion measurements have been made in chamber experiments both at Copenhagen[2] and on my own blood at Cambridge.[3] These measurements seem to agree in showing that in the chamber there is no change in the reaction of the blood which is large enough to be outside the range of error of the electrode.

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* Being one of a course of advanced lectures in physiology given in the Physiological Laboratory of St. Bartholomew's Hospital, London.

[1] Barcroft: Presidential address, Section I., of British Association, Cardiff, 1920.

[2] Hasselbach and Lindhard: Zur experimentellen Physiologie des Höhenklimas, Biochem. Zeitschr., 1915, lxviii., 295.

[3] T. R. Parsons, W. Parsons, J. Barcroft: Journal of Physiology, 1919, vol. liii., p. 111.

Measurements before incarceration and after six days in my case were for the reduced arterial blood pH = –7·35 and –7·36 respectively. Such constancy of reaction is far from a matter of course. For it is maintained in spite of one factor at all events which would tend to disturb it greatly—namely, a marked fall in the concentration of free carbonic acid in the blood. To compensate for the loss of free CO_2, which would tend to make the blood more alkaline, the kidney secretes alkali and so preserves the balance. In this presentation of the subject I have, as it were, stopped the film to show the most striking picture. The ends of the film are much less definite and extremely difficult of interpretation. especially as regards what is cause and what is effect; for the moment we will leave the matter here.

The constancy in the reaction of the blood seems to carry with it one very important functional property of the blood—namely, a constancy of the power of the hæmoglobin to unite with oxygen. So far then as the resting body at high altitudes is concerned, the blood preserves its normal power of acquiring oxygen in the lung and of giving it over to the tissues.[4] During muscular exercise, however, the reaction of the blood is not constant either at low or on high mountains[3 5 6]. The blood becomes more acid, and in two words the effect of altitude is that a much less amount of exercise will produce the same change in reaction at altitudes than at low, therefore every derangement due to exercise appears with correspondingly greater facility at high altitudes. The following data from a chamber experiment illustrate this point:—

—	In atmospheric air.	In chamber.
Quantity of exercise in 36 mins.	4600 foot pounds.	2700 foot pounds.
Pressure of oxygen—		
In air	87 mm.	160 mm.
In arterial blood ..	48 mm.	100 mm.
Exponent of hydrogen-ion concentration of blood during rest	7·43	7·44
Ditto at end of exercise	7·35	7·36
Difference	0·08	0·08

Analysis of the blood on Monte Rosa and elsewhere seemed to show that the increase in acid is due principally to the formation of lactic acid by the muscles.

The Heart.

It is notorious that life under anoxæmic conditions puts a strain upon the heart. Any considerable amount of exercise causes evident palpitation, and here I would remind you again that at high altitudes no one does take any considerable quantity of exercise. But even at rest there is usually some quickening of the pulse; not only is this quickening the direct result of oxygen-want, but the suddenness with which it is abolished by administration of oxygen is dramatic. If I may refer again to the experiment in my chamber a year ago, I would draw your attention to an occurrence which illustrates my point. One night, the fourth of my incarceration, I was lying wakefully in bed and counting my pulse from time to time; quite regularly it was within a beat or so of 86. The time was 2 A.M. For a few moments I left the chamber and went into the outer air. In less than a minute it had dropped to 58—a normal figure for me at that time—and even mild exercise on the bicycle ergometer did not greatly raise it. It is evident, therefore, that the heart itself was not in an abnormal state, and—apart from the anoxæmic conditions under which it was working—not unduly irritable.

Let us now turn to consider what the strain on the heart means. How are we to estimate "what the heart is doing"? I use this phrase advisedly, because I wish to avoid the phrase "work done by the heart," which has a definite physiological significance that I do not wish to convey. "The work done by the heart," or at least by the left ventricle, means approximately the volume of blood put out and the mean pressure at which it leaves the ventricle. This may be no indication of the strain put upon the heart. I will give you a case in point.

Just now I have a pupil who suffers from paroxysmal tachycardia.[7] His heart suddenly commences to beat at about 200, and continues so to do for about eight hours. The quantity of blood which leaves the heart drops from 8 to 3 litres per minute, and as the arterial pressure is not greatly altered, the work done by the left ventricle would drop in the same proportion. Yet, of course, it is inconceivable that the man's heart is in reality having a rest. We must seek some other numerical estimate of the strain which the heart is sustaining. In this connexion I would refer you to the work of Rohde.

Rohde,[8] working on the perfused heart, came to the conclusion that the oxygen used by the heart, which may perhaps be taken as a measure of the energy which it is transforming, varied with the product of the pulse-rate × the maximal pressure at each beat. Since Rohde's time the subject has moved rapidly, and all the beautiful work on the metabolism of the heart which we associate with the heart-lung preparation[9] has been carried out. Yet the simplicity of Rohde's result gives it a value which still remains, because the elements from which he builds his measure of "what the heart is doing" are such as can be estimated—the pulse and the systolic pressure. If we apply Rohde's test to the case of paroxysmal tachycardia to which I have referred a result appears quite opposite to that given by conventional measurement of the "work." The pulse in this person, normally 80, with a systolic pressure of 120 mm., rises to 200 with a systolic pressure of 100 mm. Therefore there is reason to suppose that the metabolism of his heart during the attack is increased in some such ratio as 20,000 to 9600, while the amount of blood which it distributes is less than halved.

If we apply the same reasoning to the figures which I gave for my experiment in the chamber. the pulse, as I said, dropped from 86 under anoxæmic conditions to 58 outside the chamber, the arterial pressure was 105 in the chamber, while it normally is 110, so that the limiting figure for the product of the arterial pressure and the pulse was:—

In the chamber in oxygen .. .. $86 \times 105 = 9030$
Outside the chamber in 21 per cent. oxygen .. .. $58 \times 110 = 6380$

The above figures are, of course, only approximations, because the data used are the mean arterial pressures, and not, as they should be, the systolic pressures. Nevertheless, as approximations they illustrate the point that the heart is doing more than is normally the case during rest.

A natural inquiry arises as to what is driving the heart to its unusual exertions. The answer is. I think, the "nervous system." Dr. W. E. Dixon and I have taken many tracings in years gone by of perfused mammalian hearts which had been excised from the body and to which the supply of oxygen was gradually reduced. In no case did we observe a quickening as the result. Whether the anoxæmia causes a stimulation of the sympathetic or a diminution of the vagus tone, or both, is as yet uncertain. In the absence of any direct proof that the C.N.S. is stimulated by diminished pressure of oxygen in the blood, one rather leans to the idea that the vagus control is to some extent withdrawn. It is natural to see in this increased activity of the heart some sort of compensation to the body for the anoxic condition of the blood. One might suppose that by the supply of an increased volume of blood per minute the body might get the quantity of oxygen which it required, but we have no knowledge that such is the case. So far as man is concerned the data are lacking; such observations as exist were made on the cat by Doi,[10] who found no increase in the volume of blood driven round the body when diminished pressure of oxygen in the inspired air led to a quickening of the pulse.

I have dwelt on the heart at rest because, little as we know about the effect of anoxæmia upon it, that little is at least more than we know about its effect on the heart during exercise. Yet, of course, the fact about the heart which impresses itself upon the mountaineer is not increased pulse-rate at rest, but the increase in the pulse-rate caused by a very trifling degree of exertion. Dr. J. S. Haldane once put this point very pithily to me; he said: "Over 10,000 feet everybody is a case of disordered action of the heart."

In view of the amount of work which has been done within the last five years on disordered action of the heart and on effort syndrome, it is much to be hoped that the investigations of mountain-climbers in this direction may early bear considerable fruit. In the meantime let me pass from the vascular system to its partner in the effort syndrome—the respiratory system. Just as there is usually some quickening of the heart at high altitudes, so there is usually some increase in the total ventilation even at rest.

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[4] Barcroft: Teneriffe Expedition. Journal of Physiology, 1912. xlii., p. 44.

[5] Report of Monte Rosa Expedition. 1911. Phil. Trans. B. 206. 49.

[6] Barcroft: The Respiratory Function of the Blood, chapter xviii.

[7] Barcroft, J., Bock, E. N., and Roughton, F. J. W., communicated by Physiological Society, May, 1921, to be published in Heart."

[8] Rohde: Archiv f. Exp. Path. und Pharm., 1912, Bd. lxviii., p. 401; quoted Respiratory Functions of the Blood, p. 90, et seq.

[9] Starling. H. J., and Colleagues: Journal of Physiology; Evans: Ibid., xlv., p. 230.

[10] Y. Doi: Journal of Physiology, 1921, lv., 43.

Respiration.

More light is necessary on the cause of the mechanism by which the increase in the volume of air which enters and leaves the chest is brought about. There are two theories on the subject, for each of which there is something to be said, and which indeed are not at all mutually destructive. The first is based on two ideas largely accepted as the result of work by Haldane and Priestley,[11] (1) that increased total ventilation is a function of increased hydrogen-ion concentration of the blood; (2) that the increase of hydrogen-ion concentration is necessary to produce a perceptible increase in total ventilation is very slight. The second theory is that the hydrogen-ion concentration of the blood which reaches the respiratory centre is precisely the same at high altitudes as at low ones; but that in view of the fact that the arterial blood contains somewhat less oxygen than usual, the respiratory centre is more active. The actual evidence on which a decision could be based as to which of these two theories is correct is very meagre.

The theoretical questions at issue are: (1) is the hydrogen-ion concentration of the blood altered (with that we have already dealt) and (2) does the degree of anoxæmia experienced in the Alps alter the respiratory rhythm?

The following data may be quoted on this subject from my chamber experiment, some of which have already been discussed. A measured quantity of work was carried out on the bicycle ergometer (*a*) in normal air, (*b*) at the end of six days of progressively anoxæmic conditions; the increase of hydrogen-ion concentration of the blood and the total ventilation were observed.

—	Work performed.	Increased hydrogen-ion concentration of blood.	Increased total ventilation.
Under normal conditions	4600 foot pounds	7·43—7·35 = 0·08	29·2—8 2 = 21 litres.
Under anoxæmic conditions	2700 foot pounds.	7·44—7·36 = 0·08	32·2—6·1 = 26 litres.

The figures show that in each case there was the same increase in hydrogen-ion concentration of the blood and almost the same increase in the total ventilation, so that they afford little help to the theory that the anoxæmic conditions had rendered the centre unduly irritable. On the other hand, they show that this increase in the hydrogen-ion concentration of the blood had under anoxæmic conditions resulted from little more than half the effort that had been required to produce it in atmospheric air. This single experiment, and as far as I know it is the only one available, would appear to favour the idea that the acidæmia factor in effort syndrome is exaggerated at high altitudes, and that there is little change in the irritability of the respiratory centre. While the above experiment gives little support to the theory of increased irritability of the respiratory centre as the result of oxygen-want, it also sheds no light on the alternative theory that the increased ventilation at rest is due to increased hydrogen-ion concentration of the blood. In the experiment in question there was no increase in total ventilation during rest.

Skeletal Muscle.

First, then, let us consider the musculature. In connexion with the muscles of the body the effect of oxygen-want, which is to me most interesting at the present time, is not much stressed by climbers—namely, undue stiffness.

It forced itself first upon me, not in the Alps, but in my own respiration chamber, when sojourning there about 15 months ago. It was my custom to pass some portion of the afternoon taking muscular exercise in the form of riding the bicycle ergometer. The result of this exercise was to make me very stiff. Quite recently, however, the same phenomenon occurred in a much more telling way. Three subjects were testing their capacity to do mental work in an atmosphere which was poor in oxygen, to which they were quite unacclimatised. In one case I suggested to Dr. J. P. Lawson, of the Cambridge Psychological Department, who was carrying out the research, that they should undertake physical exercise previous to the mental tests. This they did in the shape of Swedish drill, with the unlooked-for result that they suffered acutely from stiffness, which was very definite for three days, and only disappeared entirely at the end of a week. Dr. Lawson describes the degree of stiffness in his own case as having been exceeded on the previous occasion—namely, when entirely out of training he ran eight miles without a stop on a club run. In control experiment, in which the same drill was undertaken in air after the lapse of about three months, the same subjects experienced in one case no stiffness, in two others stiffness of a quite inferior order. No doubt the less the anoxæmia the greater the amount of exercise which can be taken without subsequently paying the penalty of stiffness. Until trained, muscle, whether because it needs less oxygen or because it is supplied with more, can take almost as much exercise in normal conditions as it is capable of. Such, then, is the subjective effect of oxygen-want on muscular exercise. The principal objective effect which has been discovered is the excessive amount of lactic acid which appears in the blood.[5] The possible relation between the subjective stiffness thus observed, the objective changes in turgidity, and the properties of muscle proteins which are known to occur in muscle when stimulated under grossly anoxæmic conditions form an interesting subject.

Effects of High Altitude upon the Mind.

These effects are perhaps the most interesting of the whole series. It is a wonderful thing to see a man's whole character change as the result of exposure to a certain degree of rarity of the atmosphere, and I am sorry to say this change is always for the worse. Usually some want of restraint occurs which takes different forms in different individuals, the best tempered men may become testy, the most equible may become hilarious. I am sorry to say I have yet to meet the man who becomes pleasanter to live with when he is at 12,000 feet altitude than at the sea-level. These traits may pass into that apathy which is well known to beset climbers, and of which I could give many instances. These traits suggest some sort of intoxication, but such dependence of character on environment brings one into a much wider sphere than that of experimental physiology which limits the scope of this paper.

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[11] Haldane and Priestley: Journal of Physiology, 1905, xxxii., p. 225.

NATIONAL CHILDREN ADOPTION ASSOCIATION.

THIS voluntary organisation was founded by Miss Clara Andrew with the primary object of assisting children orphaned or rendered destitute by the war. Its aims were subsequently extended, and now include the formation of a National Register of those who are willing and able to guarantee the future welfare of some needy child, and of a similar register of children accepted by the committee as suitable for adoption. No premiums or weekly payments are allowed to adopters of children, and the interests of both parties are further guaranteed by references, doctors' certificates, and interviews as considered necessary. It is hoped that several hostels will shortly be established in connexion with the association; one hostel at Tower Cressy, Campden Hill, W., has been open since December, 1919, and others have since been opened in London and Southampton. The address of the association is 19, Sloane-street, London, S.W.; subscriptions should be sent to the treasurer, National Children Adoption Association (Francis O. Rybot, Esq.), c/o London Joint City and Midand Bank, 419, Strand, London, W.C. 2.

MALINGERING AND SIMULATION.

IN a paper contributed to the *Military Surgeon* for May Dr. Tom A. Williams deals with Malingering and Simulation of Disease in Warfare, contrasting thetwo extreme views held in the army about malingering; the first that all complaints by the soldier not easily intelligible by the medical officer are feigned and to be punished, the other that all detected simulations are the result of mental abnormality and are to be treated accordingly. His own view is that malingering is the outcome of a selfish desire for greater comfort than the environment supplies, a desire to be fought by moral stimulus, and by the fear of punishment which will make the already uncomfortable environment still more inconvenient. He notes in France and the United States a tendency to relieve simulators of responsibility, but thinks that in England borderland criminals are apt to be punished unless conspicuously insane. Malingering and the exaggeration of symptoms do not occur in simple severe injuries requiring amputations, but in slighter and less definite injuries, especially concussion cases without external wounds; that is why relatives and nurses must be warned not to keep awake the patient's memories of past horrors, nor to dwell on his future uncertainties. The malingerer has really a very bad time; he must be constantly on the alert to see his story is being in no way discredited, and that anxiety wears him down and he loses colour and weight, and people think this proves him ill. Such cases do become nervous and afraid of detection, and are ready to recover if some new and striking treatment gives them an excuse. One patient who had been for eight months a deaf-mute indicated one afternoon that he expected to recover. He went out for a walk, and the evening paper announced he had had a fit in a public place and on coming to himself gave out to his kindly helpers that he had recovered, thank goodness; later he wrote a letter to the doctor, thanking him for saving him from court martial, and promising to do all he could to atone for his conduct.

BRIGHTON AND THE BLIND.

THE Brighton Town Council has just adopted a scheme for the exercise of the powers conferred on the council under the Blind Persons Act, 1920, and has voted a grant of £100 to the local Blind Relief and Visiting Society. The object of the scheme is to keep in touch with babies born blind or with defective sight, and in the case where the home is unsuitable and where the infant shows signs of not developing there is provision for the infant being sent to the National Institute's Home for Blind Babies. Provision is also made for children of school age, for the teaching of basket-making, chair-caning, &c. after school days, and for the marketing of goods.

AN EXAGGERATED REPORT.

OUR Geneva Correspondent writes: Although a good deal of excitement has been aroused over an incident in the surgical clinic here, no rumour current is quite so startling as that found in the English press that "the surgeon . . . extracted the beating heart of a man lying unconscious on the operating-table." The patient in question was a suicide who had inflicted on himself an incised wound. The knife had penetrated the heart and diaphragm. The thorax was opened with the idea of suturing the heart muscle, but the man was already dead. It is said that one of the assistants saw a fibrillation or contraction after adrenalin had been injected into the heart. The fact that the surgeon proceeded to open the abdomen seems to be criticised both on the ground that the patient was dead and therefore that no further procedure was proper in the operating-room, and on the ground that as a contraction of the heart had been seen the patient was not beyond hope of recovery, and therefore exploration of the abdominal cavity was unjustified. A competent commission is investigating these and similar charges and will report in due course In the meantime it should be undtrstood that the dispute is rather on a question of technique than on a question of honour, and that whatever the result of the present inquiry no gross impropriety can be charged to the surgeon.

CONJOINT BOARD OF SCIENTIFIC SOCIETIES.

THE fourth report of this Board shows that scientific investigation is being seriously hampered by the heavy cost involved in the publication of results. An unusually large number of papers are being communicated, including many held up during the war, while the resources of the societies are insufficient at present prices to publish even the normal pre-war number. The country is thus in danger of being handicapped at a time when the rehabilitation of industry is in serious need of scientific assistance. A short abstract of the third report of the Committee on the Water Power of the Empire is included in the report of the Board. It is claimed that too little is being done to ascertain the total resources available, or to secure uniformity in investigation and record. It is urged that steps should be taken to convene an Imperial Water Power Conference in London at which the various Dominions and Dependencies of the Empire should be represented. Such a conference might result in the creation of an Imperial Water Power Board with extensive powers to carry out a comprehensive policy for stimulating, coördinating, and where necessary assisting, development throughout the Empire.

The Conjoint Board of Scientific Societies has also dealt with questions relating to the formation of National Research Committees in connexion with the International Research Council formed in 1919; with the collection of scientific data in the former German Colonies; and with instruction in Technical Optics. The research on glues and other adhesives initiated by the Board as a war measure, at the instance of the Air Ministry, has now been taken over by the Department of Scientific and Industrial Research.

EUGENICS EDUCATION SOCIETY.

IN his address at the annual meeting of the Eugenics Education Society on June 7th Major Leonard Darwin said that eugenics had been called a dismal science, it should rather be described as an untried policy. If combined with an equal striving for improvements in human surroundings, it would more truly justify a hopeful outlook than anything ever yet tried. Both in genetics and eugenics further advances in knowledge are much needed, and many inquiries are now only held up for want of funds. The wisdom of attending to breed in the case of cattle and dogs is universally admitted. Experiences in the stockyard enabled us better to understand the laws of natural inheritance, but reliance on those laws does not imply that the methods of the animal breeder should be introduced into human society. Eugenists advocated nothing which was contrary to the highest religious ideals. They had been accused of wishing to abolish love as a guide to conduct; but this was false. They wished to purify it of all harmful influences. Love was largely aroused by advantageous moral and mental qualities, and it formed the firmest foundation on which to base a eugenic policy. By promoting right ways of regarding sexual problems the moralist was often unknown to himself striving to improve the racial qualities of future generations. We should encourage the discussion of all relevant reforms, but should be cautious in recommending governmental interference. If action be too bold, progress will be slow, for the wrong road will often be taken. If discussion be not bold, progress will also be slow; for a nation cannot grope its way quickly in the darkness of ignorance. As to sterilisation, for example, by open discussion true conclusions would be most likely to be reached. Nearly every subject should be discussed, the occasion being properly chosen. Politicians mainly settle how far the teaching of science is to affect legislation, and this they do largely to catch votes. But the votes of future generations cannot now be caught, and their interests will receive scant attention in all democratic countries. Eugenists should discuss long and freely, and when they do advance, advance boldly. Eugenics aims at increasing the rate of multiplication of stocks above the average, and at decreasing that rate in the case of inferior stocks. Eugenists put moral qualities first, mental second, and physical last. When science taught us that man had been slowly evolved from some ape-like progenitor, it gave rise to a new hope that that upward march would be continued, and out of that hope sprang the eugenic ideal. But science, whilst giving good grounds for hopes, also issued a grave warning concerning the danger of national deterioration from the unchecked multiplication of inferior types. A determination that such a downfall shall not be the fate of our nation if we can help it is a sentiment felt by all of us who are inspired by the eugenic ideal.

SHOT BEFORE BIRTH.

FROM Guatemala, where the use of firearms is more free than in the equable English climate, there comes a curious story of how a baby was shot before birth and probably saved her mother's life at the expense of a slight flesh wound only. Dr. Joaquin Barnoyag, who relates the story[1] was a good deal puzzled by the case. His patient, aged 24, had certainly a small round wound two fingers'-breadth above the umbilicus. But there were no serious symptoms, nor even was there any pain. Although the woman was only eight months pregnant, labour began on the night of her admission into hospital and a healthy girl was born. It was not till two days later that the doctor was asked to see a suppurating fistula on the baby's left buttock. He probed but could find no metal. Clearly the bullet had entered the uterus—but what had happened afterwards? The X rays failed to discover it in mother or child. The mother's clothing showed only one hole. Completely mystified, Dr. Barnoyag asked the mother herself what had happened to the bullet and she at once admitted that she had found one in her bedclothes shortly after the baby was born. If there had been no pregnant uterus to catch the missile no doubt the intestines would have been perforated and the woman would very possibly have died either from hæmorrhage or from peritonitis.

INTRATRACHEAL INSUFFLATION OF CHLOROFORM: A SIMPLE METHOD.

MR. G. F. V. Anson, M.R.C.S., L.R.C.P. Lond., late senior anæsthetist to the Children's Hospital, Birmingham, and assistant anæsthetist to the General Hospital in that city, who is now on his way to New Zealand, where he intends to continue his studies, writes as follows:—

"I venture to bring to the notice of the medical profession a method of giving an intratracheal insufflation of chloroform vapour. I have used the method a number of times, and have found it eminently satisfactory. The patient is anæsthetised by the usual methods, and an intratracheal catheter is passed through either the mouth or the nose. The catheter is connected by rubber tubing to a mercury safety-valve (such as is fitted to all intratracheal apparatus), and this, in turn, to an oxygen cylinder, from which a slow stream of oxygen is allowed to flow. Into the delivery tube of a Junker apparatus is then fitted a large hypodermic needle of about the bore used with a Barker spinal anæsthetic syringe. This needle is afterwards passed into the lumen of the rubber tube near where it joins the intratracheal catheter. By squeezing the bulb of the Junker apparatus a slow stream of chloroform vapour is allowed to mix with the oxygen. The rate of delivery of the chloroform vapour is curtailed to within safe limits by the bore of the needle.

"The method is of considerable use in such operations as diathermy of growths in the mouth and pharynx where, of course, the use of ether is contra-indicated."

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[1] La Juventud Medica, vol. xvii., No. 200, p 205.

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The Relation
OF
HEART DISEASE AND PREGNANCY.

BY SIR JAMES MACKENZIE, M.D. EDIN., F.R.S.,
DIRECTOR OF ST. ANDREWS CLINICAL INSTITUTE.

IN FOUR SECTIONS—SECTION III.

MURMURS.

Misconception of the Significance of Murmurs.

I RECOGNISE at the outset that in dealing with murmurs I have to overcome a great number of erroneous notions held by the medical profession with conviction. The idea that a perfectly sound heart may show a murmur is so surprising to many doctors that they cannot accept it. Their view seems to be that if murmurs are not organic they are functional and imply debility or some other condition of weakness. That a murmur may be as physiological as a pure sound is altogether outside the limits of this faith. I know that some doctors are ready to admit that some murmurs may be without significance; but nowhere have I found a description which makes clear the exact difference between murmurs of serious significance and those which are innocent. It is on this ground that teachers have failed to enlighten their students. They hedge so much in their descriptions that their pupils go forth with vague ideas and consider it wiser and safer when in practice to view all murmurs with suspicion. I speak of this from a wide experience derived not only by seeing individuals to whose murmurs an unnecessarily grave significance has been attached, but also by questioning doctors as to their views.

In no field of medicine, so far as I know, has this attitude towards murmurs proved so disastrous as in pregnancy. The detection of an innocent murmur has often supplied a reason for forbidding pregnancy or even marriage. Indeed, when I ponder on this subject I am sometimes inclined to think that the discovery of auscultation has actually done more harm than good to the practice of medicine.

It is necessary, if we are to make any progress at all, to understand wherein lies the danger associated with murmurs. Most murmurs seem to arise at the valve orifices of the heart. It has been demonstrated that certain damaged valves give rise to abnormal sounds, and it is evident from the appearance of the valves post mortem that the flow of blood must have been hindered on passing through the orifice or that the valves, being incompetent, have allowed blood to escape backwards. In this way the work of the heart muscle has been hampered. An additional burden being thus thrown upon his heart, a man leading his usual life puts a greater strain on this organ than it is fit to bear. Thus it is only a matter of time until the muscle becomes exhausted and heart failure sets in. But there are murmurs which do not indicate damaged valves, or valves damaged to such a degree as to cause embarrassment to the heart, and it is necessary to distinguish between these murmurs and those which indicate valve damage which embarrasses the heart.

Physiological Murmurs.

Physiological murmurs are always systolic in time, and it is impossible to tell the origin of the greater number of them. They may be loudest at the apex or at the base, or at mid-sternum; they may vary with respiration or posture; sometimes they are heard when the patient is lying and disappear when he stands up; again, they may be present on standing and disappear on lying down. Much time has been spent in speculation on their causes, and fanciful names have been bestowed upon them. From the point of view of the heart's efficiency they are negligible. They indicate neither disease nor impairment, and do not foreshadow the oncoming of any heart trouble. I make this statement as wide a one as possible, for I have watched great numbers of people at all ages—the young growing into manhood and womanhood, leading strenuous lives, and in the case of the women bearing children—*yet in no case have I seen any harm result from the* fact that their doctor ignored these systolic murmurs. Moreover, there is not to be found in the whole literature of medicine, so far as I am aware—and I have diligently sought for such evidence—a record of a single case of an individual, man or woman, who suffered from heart failure of which a systolic murmur was the only symptom.

Functional Murmurs.

Functional murmurs are usually assumed to be due to dilatation of the heart; the orifices of the valves are supposed to be rendered so wide that the valves fail to close them. This is not entirely correct, for while it is true that we may find a murmur with dilatation of the heart, we may often find great dilatation without a murmur. Further, murmurs come and go when there is no perceptible change in the size of the heart; they may, for example, appear only when the organ is excited or when the patient stands up, and may disappear when the heart quiets down or the individual is at rest. Again, murmurs which we find when the heart is acting quietly, with the body at rest, may disappear on exertion or excitement.

From this it can be inferred that there is some special mechanism, apart from that involved in the dilatation of auricle and ventricle as a whole, which is capable of producing a murmur. This obscure mechanism varies in its efficiency according to circumstances which we are still unable to appreciate. The importance of this is most clearly seen in connexion with the hearts of young people, in whom it is probable that the organ has a peculiar power, which is gradually lost in later life, of adapting itself. It must be remembered also that free regurgitation can take place at the mitral and tricuspid orifices without producing any murmurs. We frequently get evidence of marked tricuspid regurgitation in the veins of the neck and in the liver, yet cannot detect a tricuspid murmur when we come to listen to the patient's heart.

Systolic Murmurs and Heart Failure.

These systolic murmurs, whether functional or organic, are thus supposed to be originated by an escape of blood back from the contracting chamber. This is called regurgitation and has, as we have seen, been assumed to be the chief factor in the production of heart failure. From the theoretical study of it has arisen the "back-pressure" view of heart failure.

There are, however, no accurate data regarding the quantity of regurgitant blood necessary to produce a murmur; and so we are forced to estimate this amount by indirect methods. I have been able to keep under observation, for 20 or 30 years, individuals with loud, rasping, systolic, mitral murmurs, who gave a history of rheumatic fever, and so permitted me to conclude that the murmurs were due to some damage of the mitral valves. These patients never suffered from heart failure. I venture, therefore, the conclusion that, in them, the leak at the valve was small and the damage slight. One may thus say that within certain limits, and in respect of mitral murmurs due to damaged valves, the smaller the leak the louder will be the murmur. In the case of functional murmurs, the leak, if there be a leak, is so slight that it never, except in cases where there exists grave damage to the heart muscle, embarrasses the auricles in their work. The small quantity of blood thrown back does not alter appreciably the size of the auricles, for we often find murmurs in hearts of the normal size.

Differentiation of Functional from Organic Murmurs.

It is not always easy to distinguish between functional and organic murmurs. As a rule functional murmurs are systolic in time and are heard with equal clearness over different parts of the heart. They are usually soft and blowing. But these characteristics do not distinguish them from some organic murmurs. Indeed, though much has been written, and though many attempts at exact differentiation have been made, it remains true that even the most seemingly characteristic organic murmurs resemble functional murmurs so closely that it is not possible in all cases to arrive at certainty. A very rough murmur, especially if accompanied by a purring tremor or a musical note, is indicative of a valve lesion. In the early stages of an endocarditis, however, the murmur is usually soft and blowing, and so presents "functional" characteristics.

To distinguish between these two murmurs the whole circumstances of the case must be considered. In the first place, it is necessary to bear in mind that a murmur may be a normal event. When we find a systolic murmur occurring in an individual in robust health who reveals no other cardiac sign, such as a thrill or an increase in the size of the heart, we may consider the murmur as indicative neither of impairment nor of disease. When we find a murmur occurring in a debilitated person, we should avoid arriving at any conclusion until a search has been made for conditions which may account for the debility. Examples of such conditions are anæmia, imperfect nourishment, insufficient rest, and disease of other organs. It is of great importance, too, to place in their true perspective murmurs occurring in febrile cases, or after the subsidence of an acute febrile attack such as rheumatic fever. The question in these instances is whether the heart has been affected by the disease process. It is always necessary to bear in mind that the raised temperature or the toxins of the illness may produce changes in the heart's action as opposed to changes in its structure, and so may give rise to murmurs and even dilatation which have no organic basis in the strict sense. During the febrile stage of an acute illness, therefore, judgment should be suspended. It should remain in suspense until definite signs of an organic lesion are forthcoming. After a febrile attack a murmur which has arisen during the attack may be observed to persist, or again a murmur may arise at this time de novo. In these cases the other signs and symptoms present must be observed and weighed duly before conclusions are reached. Thus if, after the subsidence of the fever, the rate of the heart becomes slow and the respiratory type of irregularity develops, it may be assumed that the heart has escaped infection and that the murmur is functional. If, on the other hand, the rate is persistently increased, fear may be justified that the heart has become infected, and that active changes are going on.

Significance of Systolic Murmurs.

Since it is true that individuals with systolic murmurs may be in perfect health, may be leading strenuous lives, and may never show any sign of heart failure, we are entitled to conclude that these murmurs may be a physiological and normal sign, and indicate no impairment of the organ's efficiency, nor foreshadow the oncoming of its failure.

I wish to insist upon this, and I base my insistence on the fact which I have already stated, that I have watched numbers of healthy young people, who exhibited such murmurs, grow up into manhood and womanhood, lead healthy and vigorous lives, and never show the slightest sign of heart failure. We know so little of the causation of murmurs that we have small justification indeed for treating them as abnormalities. Even if they are due to regurgitation, it is quite conceivable that this regurgitation may be consistent with a good functioning heart. I have already pointed out that the fear of regurgitation has attained the dimensions of a bogy in the medical mind; further, I have pointed out that, even in cases of organic disease, the amount of regurgitation necessary to produce a murmur is probably very slight. Again, functional murmurs may be present in debilitated individuals; in these cases the murmur is not necessarily an indication of disease or impairment of the heart. Nor is the valve incompetency which its presence indicates the cause of the debility. Manifestly, a murmur is thus but one of many symptoms which an individual may exhibit. Sound diagnosis demands therefore a search for other evidences and signs which may throw light on the fundamental cause of the debility. I do not deny, in saying this, that a systolic murmur may be present in cases of grave heart failure, but I do urge that in these, as in all other cases, it is but an associated symptom. The valvular incompetence is not the cause of the heart failure; it is merely one of the changes which have arisen in consequence of impaired functional efficiency of the heart muscle.

Significance of Organic Murmurs.

I feel that I cannot emphasise this truth sufficiently. That organic murmurs have a varied significance is true, and that they are associated with heart failure is not in dispute; I am nevertheless convinced that the valve lesions which they indicate are in most instances not the cause of the failure. We cannot afford to forget in this respect that individuals with murmurs due to damaged valves caused by some infective disease, such as rheumatic fever, may lead vigorous lives, and in strenuous occupations, without any sign of heart failure.

We conclude, then, that valve lesions in themselves may not necessarily be of serious significance. As, however, murmurs are often associated with heart failure, the presence of organic murmurs would give rise in our minds to the following considerations:

(1) Whether we have here an indication that the heart has been invaded by a disease process;

(2) Whether the damage done by the disease process is stationary or is slowly progressive;

(3) Whether the disease process has affected and impaired the heart muscle as well as the endocardium; and

(4) Whether the damage to the valve is such that it obstructs the work of the heart and so embarrasses the muscle and impairs its efficiency.

In acute illnesses, as we have suggested, it will not be possible to answer these questions, for there the immediate consideration is the infection itself. In chronic cases—that is to say, cases described as chronic valvular disease—it is absolutely necessary that these questions should be considered and answered if a rational conclusion is to be reached. The method of obtaining the knowledge necessary to answer them will be described in connexion with the different valve lesions.

To sum up: estimation of the significance of murmurs, as of all other signs, should be based not on the murmur itself, but on the functional efficiency of the heart, and on the presence or absence of additional symptoms of cardiac mischief (size, rate, and rhythm). If we find in a heart of normal size and rhythm (or with the respiratory type of irregularity) a systolic murmur unaccompanied by evidence of cardiac inefficiency, we may conclude that this heart is perfectly sound. If there be present evidence of weakness, or of other abnormal conditions, then the opinion we reach should be based on these conditions, and not on the murmur.

MITRAL REGURGITATION.

Nature of the Valve Changes and Character of the Murmur.

Mitral regurgitation may be the result of a damaged valve, or of dilatation of the auriculo-ventricular orifice from the giving way of the muscles supporting the valve. The murmur of mitral regurgitation is systolic in time; it is loudest at the apex. It may be soft and blowing and of little intensity. Sometimes in these cases it is heard over a very limited area; in other instances it is propagated into the axilla; again, it may be rough and loud, and may be heard over the whole heart and round at the back of the chest. It is not always possible to tell whether this murmur is due to dilatation of the auriculo-ventricular orifice or to damage of the valve. The rough, loud type, with an accompanying thrill, is always a sign of a damaged valve.

Mitral Regurgitation and Failure of Heart Muscle.

When the muscle of the heart is unimpaired, little or no bad effect follows incompetence of the mitral valve. Even in those cases in which the regurgitation is due to "functional" dilatation of the orifice, the contractile power of the muscle may maintain a good and efficient circulation and the patients enjoy perfect health. The really serious trouble in connection with mitral regurgitation arises when the myocardium is damaged; the regurgitation may then add to the embarrassment. Yet it should be remembered that until the muscle actually gives way few symptoms of heart failure may be produced.

Dilatation is generally looked upon as the result of mitral regurgitation, the idea being that back-pressure ultimately causes the walls of the right heart to yield. This is not quite correct, for long before there is any back-pressure we may find evidence of a dilated right heart. Thus, if during one of the slight attacks of heart failure which are likely to occur after over-exertion we investigate the condition of a heart—in which the valves have been damaged by rheumatic endocarditis—we may find the organ slightly dilated, the right ventricle in front and the left ventricle pushed to the left, behind the lung. The apex beat in such a case is caused by the right ventricle, as is shown by the occurrence of an indrawing of the beat during systole. After a few days' rest and treatment, this right heart may retreat; the apex beat will then be caused by the left ventricle, and the beat will present the normal character, i.e. an out-thrust during systole (see Fig. 3). In these cases there is no evidence of pulmonary engorgement and back-pressure.

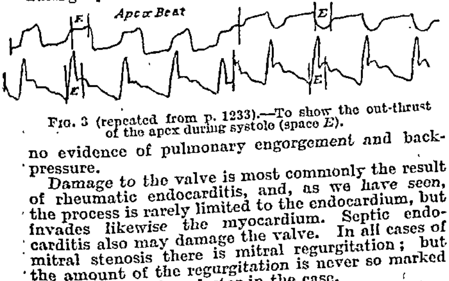

FIG. 3 (repeated from p. 1233).—To show the out-thrust of the apex during systole (space *E*).

Damage to the valve is most commonly the result of rheumatic endocarditis, and, as we have seen, the process is rarely limited to the endocardium, but invades likewise the myocardium. Septic endocarditis also may damage the valve. In all cases of mitral stenosis there is mitral regurgitation; but the amount of the regurgitation is never so marked as to be the serious factor in the case.

Regurgitation occurs through a mitral orifice, of which the valve is uninjured, in the later stages of many affections—for example, conditions which produce exhaustion of the heart muscle and more especially renal disease and cardiosclerosis. Here the mischief is brought about by the failure of the muscle to support the orifice; regurgitation may in such cases furnish one sign of a final and fatal exhaustion of the heart muscle.

It will thus be seen that the symptoms produced by mitral incompetence are only grave when there is also muscle failure. In this latter event we shall encounter those symptoms of heart failure in general which we have already discussed, and the earliest of which is usually breathlessness on exertion. When dropsy sets in, auricular fibrillation (q.v.) is commonly present.

Mitral Regurgitation with Auricular Fibrillation.

The necessity of assessing the significance of mitral regurgitation in terms of the presence of signs of damage to the muscle becomes very evident when we examine the literature of this subject and note how great is the confusion of mind which inevitably results from an imperfect understanding of the nature of symptoms.

Angus Macdonald, in his book, quotes the cases of two women with mitral insufficiency who passed safely through repeated pregnancies (Cases XV. and XVI.). He then quotes the cases of two other women (XVIII. and XIX.) with mitral insufficiency who died from heart failure shortly after delivery. The one sign common to these four cases was a mitral systolic murmur. When, however, the other recorded signs are studied, a striking difference between the two groups is found. In the first group —those who did well—the response to effort was good; in the second—those who died—breathlessness on effort was noted and is clearly described. In one of those who died (Case XIX.), the pulse was "rapid and irregular," an almost sure indication that the patient suffered from auricular fibrillation—a matter of far more importance than the murmur. The post-mortem examination showed not only a damaged mitral valve, but a damaged myocardium.

Mitral Regurgitation and Pregnancy.

The detection of a mitral systolic murmur in a woman who is pregnant or who may become pregnant should cause the physician to consider the following *points*:

(1) The response to effort;
(2) The size of the heart;
(3) The rhythm of the heart.

If the response to effort is good and the heart is not increased in size, then the murmur requires no further consideration, as in all likelihood it is physiological.

If there be an increase in the size of the heart, but no diminution in the response to effort, and if the circulation is well maintained, then pregnancy may be allowed, even if there be a history of rheumatic fever.

If the size of the heart is increased and the response to effort is limited, then the case requires careful consideration. It must be determined whether the limitations are or are not due to a temporary cause and whether or not the heart muscle has been damaged. If no doubt remains that the heart muscle is damaged, then pregnancy should not be permitted.

If there is present an irregularity of the rhythm of the heart, the nature of this must be carefully investigated. Should the irregularity prove to be of the youthful or respiratory type, then there will be no danger if pregnancy is incurred. If, again, it is due to extra-systoles, no fear need be occasioned by their presence, for these of themselves afford no clue to the state of the heart's efficiency. In such instances opinion must be based on the presence or absence of other signs (size of the heart, response to effort).

Finally, if the irregularity is due to auricular fibrillation, opinion should be based on the circumstances to be described under that heading. The whole subject of irregularity is dealt with later.

MITRAL STENOSIS.

The heart affection which most frequently causes danger in pregnant women is that associated with mitral stenosis following rheumatic fever. Although this has long been recognised, yet we find some authorities to-day declaring that there is little danger. The reason for the diversity of opinion which prevails is that, in many cases, experience is limited. For it is a fact that there are forms of this complaint which are attended with no danger, and there are others which imperil the life of the woman. It is necessary, therefore, if we are to distinguish between the different forms, to look at mitral stenosis far more minutely than has usually been done.

Origin and Progress of the Cicatrising of the Mitral Valves.

Mitral stenosis is, perhaps, the most common of valvular defects with which heart failure is associated. It arises generally in consequence of rheumatic endocarditis, though it may be found in people with no rheumatic history; in these instances a previous history of erysipelas or some other febrile complaint may give a possible clue to its origin.

The condition is never recognised during the acute illness which induces it, for the reason that stenosis does not occur till the cicatrising process which follows the inflammation narrows the orifice. Thus, on account of its origin in scar formation, the lesion is often a progressive one. The stenosis may, however, remain moderate in amount, and offer so little embarrassment to the heart that patients may reach extreme old age with no heart failure. Usually the cicatrising process goes on with varying rapidity until in some cases the mitral orifice is reduced to a mere slit, and the valves resemble a thickened calcareous diaphragm. It is thus always important to bear the probably progressive nature of the lesion in mind. We have here the secret of the varying changes in the symptoms.

Accompanying Changes in the Heart Muscle.

It should also be borne in mind that a similar cicatrising process may be going on in the muscle, causing contraction of the chordæ tendineæ, impairing at other places the functional activity of the heart muscle, and affecting the auriculo-ventricular bundle and depressing its conductivity or producing those conditions which lead to auricular fibrillation. Such changes profoundly affect the efficiency of the heart and modify the nature of its rhythm.

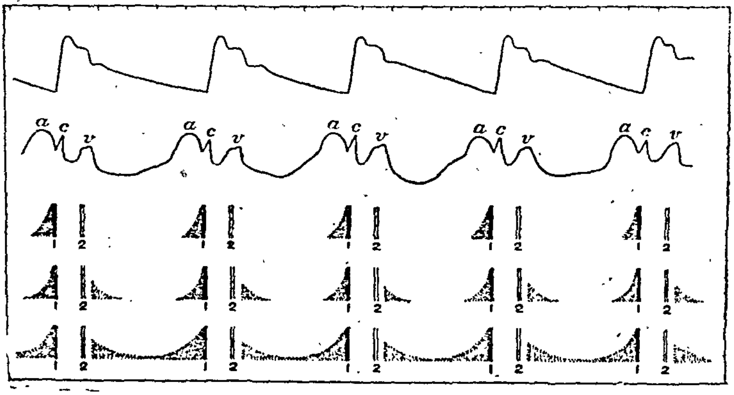

FIG. 6.—Tracings of the radial and jugular pulse with diagrammatic representation of the changes in the murmurs of mitral stenosis. The down strokes 1 and 2 represent the first and second sounds of the heart. The first indication of stenosis is the appearance of the murmur before the first sound, and on reference to the jugular tracing this murmur will be found to coincide in time with the wave *a*, due to the systole of the auricle. With an increase in the stenosis, a short diastolic murmur appears, immediately after the second sound, and this is represented in the middle diagram. A further increase in the stenosis, shown in the lowest diagram, leads to prolongation of the diastolic murmur, which in combination with the presystolic murmur fills up the whole interval between the second and first sounds. (For the next change see Fig. 7.)

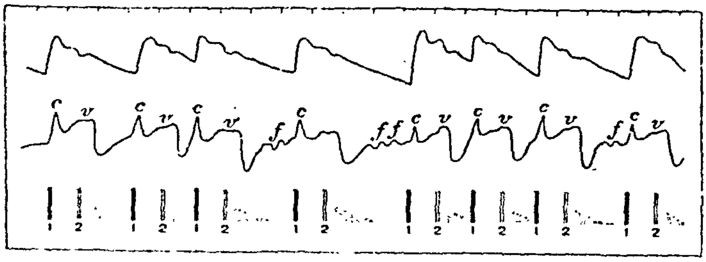

FIG. 7.—After the changes described in Fig. 6 the next change is a sudden alteration of the rhythm of the heart. In Fig. 6 the heart is quite regular; in Fig. 7 it is irregular. The wave *a*, which is a marked feature in the jugular tracing of Fig. 6, is absent in Fig. 7. The presystolic portion of the murmur is also absent in Fig. 7, this feature being best appreciated during the longer pauses of the irregularity. The disappearance of these evidences of auricular activity and the irregular action of the heart indicate the onset of auricular fibrillation. The waves *ff* are due to the fibrillating auricle.

Cause of Heart Failure.

From this it can readily be understood that the manner in which heart failure is brought about in mitral stenosis is somewhat complicated. In some patients embarrassment may not ensue until the narrowing of the orifice has become extreme. In others there may be a fatal issue while the narrowing is yet moderate. In these latter the muscle wall will invariably be found to have been damaged.

Presystolic Murmur in Mitral Stenosis.

The characteristic murmur present in mitral stenosis, the so-called presystolic murmur or auricular systolic murmur, is due to the passage of the blood through the narrowed mitral orifice. During the whole of ventricular diastole the blood is passing through the orifice, but until the contraction of the auricle forces it through with increased rapidity no sound is heard. With advancing cicatrisation, the murmur of mitral stenosis alters and presents peculiarities which have not hitherto been sufficiently appreciated. In the very early stages, some years before the appearance of a murmur, I have detected a slight presystolic thrill. After a time the thrill was accompanied by a murmur. This murmur precedes, or runs up to, and seems to terminate in the first sound; it is audible over a small area around the apex. At the beginning it may not always be present. This murmur is at first short in duration. As time goes on and the mitral orifice becomes narrow, it lengthens, beginning earlier in the diastole. It is of a crescendo character; rising in pitch till it ends in the first sound.

Diastolic Murmur in Mitral Stenosis.

With advancing stenosis of the orifice, another murmur makes its appearance. This one occurs immediately after the second sound, and is heard only in the immediate neighbourhood of the apex beat. At first it is very faint, and not very constant; but in time it increases in volume. This diastolic mitral murmur diminishes in intensity as it proceeds, differing thus (in its diminuendo character) from the presystolic murmur. Frequently during the diastole of the heart we can detect a continuous murmur, beginning loudly, falling away, then increasing in intensity. The first or diminuendo portion of such a murmur is the diastolic mitral murmur, the terminal crescendo portion is the presystolic. The cause of the diminuendo diastolic mitral murmur is the passage through the narrowed mitral orifice of the blood which has accumulated in the auricle during the ventricular systole. This passage begins as soon as the mitral valves open—that is, when the pressure in the ventricle falls below that in the auricle. The development of the murmurs is shown in Fig. 6.

The Appearance of Auricular Fibrillation.

The next change in the character of these murmurs is the sudden disappearance of the presystolic crescendo murmur, the diastolic murmur persisting. Usually this occurs with the onset of grave symptoms of heart failure, the action becoming rapid and irregular. At other times the change takes place with no serious symptom, though the heart invariably becomes irregular. This irregularity is due to the fact that the rhythm of the organ no longer starts with an effective auricular systole. The auricle, on the contrary, ceases to contract as a whole, and passes into the condition of fibrillation (Fig. 7).

In those cases in which the heart's action is slow there is no difficulty in recognising the presence of the diastolic murmur and the absence of the presystolic. The diastolic murmur is, however, sometimes of greater length, and starts immediately after the second sound; in such cases, when the heart's action is rapid, it may fill up the whole diastolic pause, and might then be assumed to be presystolic. If the heart be carefully auscultated this error will be avoided, for the diastolic murmur is not crescendo in character. In auricular fibrillation long pauses may occur between two beats; and if this murmur be listened to then, it will be found that it stops short before the first sound, so that there is a silence between the end of the murmur and the beginning of the first sound (see Fig. 7). In these cases the jugular and liver pulses are invariably of the ventricular form, showing that the auricle, which erstwhile produced the presystolic murmur, is no longer acting.

Heart Failure in Mitral Stenosis.

From the progressive nature of the lesions in the valve and in the heart muscle it will be realised that the symptoms are not constant. The patient, as a rule, comes first under notice in early or middle adult life. The complaints, at this time, are shortness of breath, a sense of suffocation, and palpitation on exertion. In some instances the face is ruddy, with a hue a shade darker than is compatible with the ruddy countenance of robust health: in others there is pallor. At this stage there is little or no increase in the size of the heart and no dropsy. A presystolic murmur can usually be detected. The patient's complaints may be the only evidence we have of the heart failure; they point to an exhaustion of the reserve force. After a period of rest, this exhaustion may disappear, and the patient may go on for years with little further trouble. Some patients, however, break down again, when the symptoms complained of are usually those of the first attack. Frequently, however, a change is found in the character of the murmurs; a diastolic murmur is now commonly noted, and there is sometimes a longer duration of the thrill. These signs imply an increased narrowing of the orifice. In those in whom no further narrowing takes place the murmur does not change. These are the people who go on for many years, and, if females, may bear children with no breakdown. We can thus infer that there is no progressive muscular or valvular sclerosis.

With the increased narrowing of the orifice, as indicated by the appearance of the diastolic mitral murmur, the heart becomes much embarrassed, the symptoms become much more distressing, and finally dilatation of the organ may set in. But even in the absence of progressive narrowing of the orifice dilatation may appear early. This is a sure sign that the rheumatic process has permanently injured the heart muscle. It is to be noted that the left ventricle also dilates in many cases, showing that there is some vital factor concerned in dilatation.

Heart Failure in Mitral Stenosis with Pregnancy.

In mitral stenosis, as I have said, there does occur a degree of back-pressure which is the result of the narrowing of the mitral orifice. This latter event impedes the flow of blood so that there is a tendency to congestion of the lungs; it throws, too, more work on the chambers behind, i.e. the left auricle, and right ventricle and auricle. When these begin to fail the circulation in the lung becomes embarrassed, and then in cases of pregnancy the growth of the uterus adds further to this embarrassment. I have dwelt already on the embarrassment which occurs in the pulmonary cirulation as a result of the widening of the thorax and the impairment of its movements which take place in pregnancy. The early signs of this embarrassment are found in the crepitations at the bases.

But that is not the whole story. The damage due to rheumatic fever is rarely limited to the valves; it frequently extends also to the heart muscle. As a rule no certain evidence of this is available. We are therefore under the necessity of making an inference from the increased size of the heart, the great excitability of its action, and its marked inefficiency. Occasionally, however, we do get more direct evidence. This occurs when the damage invades the bundle connecting the auricles and ventricles, and produces a partial heart block. That point need not concern us here, for the heart block in these cases rarely, if ever, reaches such a degree as to cause embarrassment to the organ in its work. Its significance lies in the fact that it reveals an extension of the disease process from the valves to the wall of the heart.

Estimation of the Significance of Mitral Stenosis in Pregnancy.

Recognising, then, that the sources of danger lie in the narrowness of the mitral orifice, and in the embarrassment of the heart muscle, we are in a position to estimate the danger. Our estimate will take account of several considerations; it will depend in the main on *the rate at which the cicatrisation of the mitral valves is proceeding.*

I have already indicated the means of determining this in describing the changes which occur in the murmurs. These changes afford a basis of assessment, rough, it is true, but still of distinct value. I set them down in serial order thus:

(*a*) When, ten or fifteen years after the causative rheumatic attack, there is only a presystolic murmur, with no signs of œdema of the lungs, and the response to effort is good, then the outlook is favourable. Such an individual can be permitted to become pregnant with fair assurance of safety.

(*b*) When there is not only a presystolic murmur, but also a diastolic murmur. If the heart is normal in size and not too excitable, and if it is capable of a fair response to effort, then pregnancy may proceed. The patient, however, should lead a somewhat restricted life, avoiding especially such effort as brings on breathlessness or palpitation.

(*c*) When, even with a short presystolic murmur, and many years after the causation of mitral stenosis, there is marked inefficiency of the heart, shown by breathlessness on slight exertion, rapid pulse or easily excited palpitation, then there is danger in pregnancy.

(*d*) When the heart is large or irritable, and when effort readily induces palpitation and breathlessness, even if there be no diastolic murmur, then pregnancy should be forbidden. If, in spite of advice, it has been undertaken, the case should be carefully watched, particular attention being paid to œdema of the lungs. If crepitations become persistent after coughing or deep breathing, the advisability of inducing premature labour should be considered. If the percussion note of the lungs becomes impaired, interference is called for.

AORTIC DISEASE.

Aortic Stenosis.

The form of aortic disease which need concern us is aortic regurgitation. Aortic stenosis apart from regurgitation is so rare in the young that I, personally, have never met with it. I repeat here that a systolic murmur at the base—or as some might say "over the aortic area"—should never be looked upon as a sign indicating damage to the aorta; it is not infrequent in people with perfectly healthy hearts. Therefore a systolic murmur at the base of the heart, with a good response to effort and no increase in the size of the heart, is negligible.

Aortic Regurgitation.

It is difficult to determine the relation of aortic regurgitation to heart failure.

I have watched many people with aortic regurgitation lead strenuous lives for twenty or thirty years with no limitation of their powers; others of my patients have suffered early from heart failure of a fatal kind. I have long endeavoured to distinguish between these types. I have found that in the former case the heart has been little, if at all, enlarged and the blood pressure only moderately raised. There has been no wide range between the systolic and diastolic pressures—in other words, there has been an absence of the "Corrigan" or "water-hammer" pulse. When, on the contrary, the heart is greatly enlarged and there is a marked "Corrigan" pulse (systolic pressure in the neighbourhood of 200, and diastolic 70 or 60), and when the response to effort is either greatly restricted or gradually becoming restricted, the outlook is grave.

I am inclined to the view that in the first type damage has been done only to the valves, and that to a small extent, while in the second the heart muscle has been invaded, or the valves have been greatly affected.

Heart Failure and Aortic Regurgitation.

I must, however, confess that I have been baffled in my attempts to understand heart failure in many cases of aortic regurgitation. When this condition sets in, it does so in such diverse ways that clear comprehension is very difficult. Sometimes, for example, effort is restricted because of pain, and this pain may be of a severe kind and easily provoked. Yet the degree of pain seems to bear no relation to the gravity of the condition. Thus, I have found some patients suffer for long periods of years great pain on slight exertion, while in the case of others pain has heralded a fatal issue. In some, again, heart failure is shown only by palpitation on exertion, these individuals suffering neither from pain nor breathlessness.

Some die suddenly with no previous sign of heart failure; others are as suddenly seized by an intense dyspnœa which ends fatally. Only a few have dropsy. I suspect that heart failure in these latter is due to the damage of the muscle more than to the regurgitation.

There is one peculiar feature about the heart failure of aortic regurgitation: when once it sets in, it proceeds apace. We all know what remarkable recoveries take place in people who break down from extreme heart failure with disease of the mitral valve, and even of the heart muscle; I have had no such experience in aortic regurgitation. My experience has been that, once the heart gives way, only very slight improvement ever takes place: moreover, in my own practice every case of aortic regurgitation which developed auricular fibrillation drifted to death.

Aortic Regurgitation and Pregnancy.

My experience of aortic regurgitation complicated by pregnancy is limited to two cases. In these the heart was only moderately enlarged. One was prematurely confined (seventh month). Both made good recoveries, but were left very weak. In both palpitation was easily induced. Neither ever improved. They drifted and died within two years. I have, however, had under my care a number of cases with aortic regurgitation who gave a history of rheumatic fever in their youth. They had borne children, and had not suffered in consequence. Presumably the aortic damage was done during the rheumatic fever attacks. There was only slight enlargement of the heart.

Drawing from my experience in general, I would be disposed to allow pregnancy in a young woman with aortic regurgitation, if there was no "Corrigan" pulse, if the heart was not enlarged or only slightly so, and if the response to effort was good. On the other hand, if there was a forcible apex beat outside the nipple line, a marked "Corrigan" pulse, and a distinct limitation of the response to effort, I should decide that pregnancy ought to be forbidden.

Lettsomian Lectures

[ABRIDGED]

ON

SURGERY OF THE LUNG AND PLEURA.

Delivered at the Medical Society of London on Feb. 7th and 21st, 1921,

BY G. E. GASK, C.M.G., D.S.O., F.R.C.S. ENG.,
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LECTURE III.—THE PRESENT POSITION OF SURGERY WITH REFERENCE TO DISEASES OF THE THORAX.

THE war compelled the attention of surgeons to a class of work which otherwise they would not have engaged in, and had a very distinct effect on the outlook of surgery towards diseases of the thorax; during the war surgeons learnt to open the pleural cavity, control hæmorrhage, and repair a wounded lung without serious difficulty and with great advantage to the patient. It would be a thousand pities if we were not able to turn these lessons to good account, and it is the purpose of this lecture to demonstrate a few points in which advancement might be made.

APPLICATION OF WAR-TIME EXPERIENCE.

Instead of turning to text-books on thoracic surgery, to see what is the current teaching, it may be useful to turn to the operation theatre lists, and to consider the patients who present themselves for treatment in the casualty departments and wards of the big hospitals. Looking at the operation lists, one is struck by the fact that, except for empyema, any operation on the interior of the thoracic cavity is of rare occurrence, and very few appear to be done; though there must be many patients who would greatly benefit if a safe and satisfactory opening of the chest could be made.

Now that danger from sepsis has been eliminated, the surgeon's only real dread is the danger of producing a pneumothorax. It is essential carefully to consider this point. In order to do clean and efficient work inside the thorax it is absolutely necessary, just as when dealing with the abdomen, to have a good exposure; a wide opening of the pleural cavity or mediastinum therefore becomes a sine qua non. The question may then be asked as to whether such a wide opening either kills the patient or causes serious respiratory disturbance; the answer is that during the war many hundreds of chests were opened without fatality or serious disturbance to the patient; and, moreover, that manipulation of the thoracic viscera was made without causing serious shock. If that can be done in military practice, why can it not be done in civil surgery? Or can the method be improved upon?

PRE-WAR METHODS OF MAINTAINING INTRAPULMONARY PRESSURE.

If one turns to pre-war conditions, one finds that two forms of apparatus were recommended for the purpose of maintaining intrapulmonary pressure during the course of an operation on the thorax and eliminating the dangers of collapse of the lungs; these were the positive pressure chamber and the intratracheal insufflation. The great advocates of the pressure chamber were Sauerbruch of Munich and Willy Meyer of New York, and with its aid they certainly have done some fine work. Willy Meyer had constructed in his hospital in New York a chamber, costing thousands of dollars, for the regulation of pressure as needed. I had the opportunity of seeing this chamber and of arguing the need for it; in Meyer's opinion it makes the operation both easier and safer, and he holds strongly that every thoracic surgeon should use it. It is not easy to traverse the opinion of such experts as Sauerbruch and Meyer, but my own deliberate opinion is that a way ought to be found that does not need such a bulky and expensive apparatus, and that unless such a way can be found thoracic surgery cannot come into daily use.

Intratracheal insufflation, with which is combined anæsthesia, has been used successfully in lung surgery; by this method a slight positive pressure can be maintained in the lung, and rapid and exaggerated movements which interfere with operative manipulation are minimised. The method has certain objections which are not, however, insuperable. These objections are: first, that the initial anæsthesia, before insertion of the tracheal tube, must be deep enough to abolish all reflexes; and, secondly, that the introduction of the tube into the trachea requires a certain amount of practice on the part of the anæsthetist. The method is a good one, has given good results, and must be seriously considered.

THE FACE-MASK METHOD.

Another scheme, which has been evolved during the war, may be called the positive pressure face-mask method. This calls for the use of an air-tight face-mask with a rubber reservoir for the gases. It is, in fact, a slight modification of the gas and oxygen anæsthesia apparatus, and by it a pressure of from 5 to 7 mm. of mercury is easily obtained, and may be raised still higher. This apparatus possesses the great advantage of being simple, cheap, portable, and easy to use. I have never had the opportunity of operating with the pressure chamber, and so I am not able to say much about it from personal experience, but I have used the other methods and can unhesitatingly affirm that the chest can be opened without undue danger to the patient and an intrathoracic operation satisfactorily performed.

Of the two methods—intratracheal insufflation and the air-tight face-mask—I prefer the intratracheal method; but if for any reason it is not possible to have either, the ordinary methods of anæsthesia, such as chloroform or ether, perhaps combined with oxygen, give good results. If these observations are accurate, then the expense and bulk of a pressure chamber is eliminated, and the dread of creating a pneumothorax should not prove a bar to the performance of intrathoracic operations.

DIAGNOSIS.

The next difficulty which confronts the surgeon is that of making an exact diagnosis of the nature and position of a disease within the chest. In the present state of our knowledge it is more difficult to localise, say, an abscess in the thorax than an abscess in the abdomen. The rigid wall of the thorax prevents one feeling a swelling with the hand, and in the case of the abdomen thousands of laparotomies have helped to rectify errors of diagnosis and standardise methods of treatment. It can only be by a patient and careful investigation of cases, together with a systematic investigation of our findings, that like result can be obtained.

If we turn our minds once again to thoracic work during the war, it is evident that the results obtained were due to a careful investigation of the wounds correlated with the X ray findings and localisation of foreign bodies. The same is true of civilian surgery, only here the problem is one of far greater difficulty on account of the multiplicity of the forms of disease and the fact that large numbers of patients suffering from the same variety of disease do not present themselves at the same time.

METHODS OF EXAMINATION.

It may be profitable to run through, very briefly, the various methods of examination which we have at our disposal for the purpose of making a diagnosis.

History.—A real help towards the attainment of a diagnosis is the taking of a careful history—occasionally even a correct localisation of the disease may be gained; attention must be paid to the history of pain, cough, difficulties of breathing, and swallowing.

Physical Examination.—A general survey of the whole patient is necessary as well as the well-known method of auscultation and percussion to which reference need not be made. The need for examination of the sputum, quantitatively, microscopically, and bacteriologically, is too well known to require comment. Then we have cystometry, and the use of the spirometer, bronchoscope, and œsophagoscope—each of which has its own rather limited sphere of utility.

Exploratory Puncture.—This process, performed with an aspirating needle, is often of definite service, though it must be remembered that a negative finding may sometimes be a hindrance rather than a help, and in my opinion patients with all the clinical signs of pus in their chests have often been kept too long from operation on account of the fact that pus was not found with the needle.

X Ray Examination.—In the last few years the X rays have proved to be a great help towards diagnosis and localisation of disease, and they will probably become of much greater value when our interpretation of the pictures has improved. It would, however, be very wrong to rely entirely on an X ray finding and neglect the ordinary clinical methods of examination; it is by a careful summing-up of all results of examination that the good diagnosis, so essential before operative treatment, can be arrived at.

Exploratory Thoracotomy.—This is the right thing to do when all other methods have failed to yield a diagnosis and when it is considered imperative that one should be made; and in my opinion, it is by a judicious use of exploratory thoracotomy that the surgery of the chest will be advanced. With our improved methods of surgery, the danger to life or health from the operation is very slight, and by it it is possible, as in the case of an exploratory laboratory, to gain an accurate knowledge of the diseased organs by direct inspection and palpation.

There is one great difference, however, between an operation for exploring the chest and one for exploring the abdomen; in the former an incision in the wrong place is of great importance, for the bony structure of the thorax does not allow of the amount of retraction of the parietes possible in the abdomen.

METHODS OF OPENING THE CHEST.

The technical difficulties of opening the chest, though greater than those of opening the abdomen, are by no means insuperable. Access to the pleural cavity is usually made from behind or from the side; the medial longitudinal opening, which is the common operation of preference in the case of the abdomen, is reserved for investigations of the mediastinum. Various incisions of the skin are used, the object of which is to bring into view the largest possible portion of the bony thorax; thus, longitudinal, L-shaped incisions, or flap may be employed.

The actual opening of the pleural cavity may be made in many ways. One or more ribs may be removed—usually subperiosteally—and at the end of the operation the edges of the parietal pleura are sewn together if possible, and then the muscles are drawn together over the defect of the rib. Or an osteoplastic flap is made, lifted up, and at the close of the operation replaced in situ. This method has drawbacks: it is followed by considerable pain and gives an ugly wound.

Personally, I have been in the habit of excising 4 inches of rib subperiosteally, and then inserting a rib spreader; by this incision a good view of the interior of the chest can be obtained and a hand can easily be inserted into the pleural cavity. I was led to adopt this plan when operating on soldiers with wounds of the lung, when pieces of splintered rib commonly required removing. I am now of the opinion that an incision through an intercostal space is simpler, gives as good a view, is easier to close and causes less subsequent deformity, and I intend to use this method until a better one is found.

If the exploration has to be done in the upper part of the chest, intercostal retraction may not be sufficient on account of the small amount of spring of the upper ribs. In such a case extra room may be gained by dividing the rib above and below the incision at its costal junction.

CLOSURE OF THE CHEST.

After an opening by means of an intercostal incision, the chest can be closed without difficulty by suture either passed round or through the ribs immediately above and below the incision. The former or pericostal stitch has the merit of being quicker; a curved needle is passed through the whole thickness of the intercostal space at the upper edge of the upper rib; it is then passed under the lower rib and out through the lower intercostal space, just sufficiently removed from the inferior edge to miss the intercostal artery. If the trans-costal stitch is used, holes are punched through the ribs above and below the incision, sutures threaded through, and then drawn tight.

Such a procedure as has just been detailed is that which is advised for an exploratory thoracotomy. I venture to emphasise the importance of this operation, for its usefulness has been abundantly proved in the war, and only by a comparison of the clinical findings and the actual pathological conditions present can improvements in diagnosis be obtained and sound lines for operative treatment laid down. In addition the possibility of the removal of certain forms of tumours can only be gauged when the chest is opened. I would like to repeat that exploratory thoracotomy can now be done without much danger, and there are good grounds to believe that it may become as easy to perform as exploratory laparotomy.

OPERATION OF SPLITTING THE STERNUM.

If the region of the chest to be explored lies in the upper and inner portion of the chest or in the mediastinum, the easiest means of access may be through the sternum.

The trans-sternal route is one of some antiquity; Maister Peter Lowe, writing in the latter end of the sixteenth century, records an operation of trepanning the sternum for evacuation of congealed water from under the sternum, by which he may have meant a chronic tuberculous abscess. Trephining the sternum does not give sufficient room to work, but splitting the sternum gives good access. It may be done in two ways.

One way is to make an oblique incision through the sternum from the second intercostal space into the notch at the top of the manubrium. A curved incision is made, starting in the middle line half an inch above the manubrium sterni, and continued in a curved direction to the third rib, one inch external to the edge of the sternum. The attachment of the intercostal muscles to the sternum in the second intercostal space is then severed and a director passed from the second space to the manubrial notch, keeping immediately under the bone; a special pair of sternum shears is then passed along the track of the director and the bone split. The two surfaces of the sternum are then clawed apart with retractors and good visible access is gained to the upper part of the mediastinum and the pleural space.

A second method is to split the sternum down the middle and turn up a flap consisting of sternum and the attached ribs. Two small trephine holes may be made with a Hudson's trephine, one opposite the second and the other opposite the sixth or seventh interspace; the sternum is then split medially between the two holes by the sternum shears; next, two cuts are made outwards, one from each trephine hole, through the sternum into an intercostal space, and a flap consisting of sternum and attached ribs lifted up. The internal mammary vessels are then brought into view, ligatured, and divided. The costal-sternal flap can then be lifted up and an excellent view of the mediastinum obtained. At the end of the operation the flap can be replaced, sutured in position, and the chest completely closed.

I have only done this operation twice, but it did not present any great difficulty; anæsthesia was smooth, the patient stood it well and made a good recovery. The first operation was performed for a young man with a large tumour of the chest, which turned out to be a cystic teratoma which burst into the pericardium. The incision into the chest as just described gave an excellent view; the cyst was exposed, emptied, a portion of the wall excised and drained. With more experience and practice the whole cyst could probably have been removed. As it is, the patient is relieved of all his symptoms and is healed. The second operation was done for a man who had been wounded by shrapnel at the Dardanelles. Ever since the wound the patient had been unable to work owing to pain, and it was suspected that the ball, which lay alongside the aorta, moving with each pulsation of the aorta, was the cause of the disability. Splitting the sternum in the way just described enabled the missile to be removed without great difficulty and without damage to the patient.

Teratomata of the thorax are of course rare, and it is not suggested that this can become a very common operation, but there are other tumours of the mediastinum for which this route may be useful.

The question is often asked whether it is possible to remove an entire lobe of a lung for such a disease as bronchiectasis or carcinoma. It is not at all difficult to remove a portion of the periphery of the lung; it has often been done for the removal of an injured portion of the lung during the war. Removal of the entire lobe presents certain difficulties; but it has been done successfuly, and may be done again if really required. The difficulty lies in the permanent closure of the bronchus. The method suggested by Willy Meyer recommends itself — namely, an adaptation of the usual way of securing and invaginating the stump of the appendix after appendicectomy. The stump of the bronchus is left as long as possible and then softened by crushing; next the end is ligatured, invaginated, and sewn over.

SPECIAL DISEASES.

It is not intended here to enter further into a discussion of the methods of treating such well-known and gross forms of disease as abcess of the lung or bronchiectasis, nor the various forms of tuberculous diseases; they well may later become the goal of preventive medicine or surgery. Nor will I do more than mention the possibility of handling malignant diseases of the œsophagus or upper end of the stomach. These subjects may become of more importance when methods of intra-thoracic surgery have become easier and standardised, but at present they are hardly practicable. It is, however, worth while carefully to consider the subject of suppuration within the thorax, for that is a common condition, of which the dangers to life and health are great; and our methods of treatment cannot be said to have advanced far since the times of the ancients.

EMPYEMA.

The treatment of an ordinary straightforward case of empyema has not changed markedly for hundreds of years. In olden times it was opened by a cut with a razor through an intercostal space or by burning a hole with a red-hot iron. The latter method was preferred by some surgeons as being less dolorous. Considerable advances have, however, been made with regard to our methods of investigation, for in addition to the physical examination we have the use of the exploring needle and the X rays. There is therefore rarely any excuse for missing an empyema when the pus is free in the pleural cavity. At the present time the usual treatment is to open the chest and drain the pleural cavity by means of a rubber tube, either through an intercostal incision or by excising an inch or so of rib. As the discharge lessens the tube is shortened, and if all goes well, as it often does, the partially collapsed or compressed lung expands, becomes adherent to the parietal layer of the pleura, and the patient is cured after a few weeks, though the chest may show some permanent flattening on the affected side. But all cases do not run such a favourable course; in many patients the external wound tends to close before the pleural cavity has become obliterated, and has to be reopened perhaps two or three times in order to evacuate a collection of pus. In such cases a permanent cure may still be obtained, at the expense of a more or less collapsed lung and a greatly thickened pleura. In other patients—luckily a minority—there is a persistent sinus, which if untreated lasts for years and is a source of grave danger.

IMPROVED TREATMENT OF ACUTE EMPYEMA.

It is universally recognised that a collection of pus in the pleural cavity is a dangerous condition, and it behoves us to consider whether the classical treatment can be improved on.

The first improvement to be noted is that which has followed making an air-tight closure round the drainage-tube which is inserted into the chest, and leading a tube from this to a vessel partly filled with water under the bed, so that pus may drain out and air may not be sucked back; by this device the lung is encouraged to expand more quickly, so as to obliterate the pleural space. It is not necessary to dilate on the many devices which have been invented to accomplish this end.

Another procedure which is still very much in the experimental stage, and therefore sub judice, is that of evacuation of the pus in the pleural cavity by open operation followed by immediate complete closure. During the last war medical officers had many cases of hæmothorax to treat. A certain proportion of these became infected and developed empyema, being usually opened and drained in the classical way. It was found, however, that if the infection was diagnosed at a very early stage the chest could be opened, the blood clot cleared out, and the chest closed without having to be drained. It is true that the number of patients treated in this way was small, and that there were many failures requiring subsequent drainage. It is also true that once infection had been established for several days the method appeared to be useless; moreover, success depended greatly on the amount of infection and the nature of the infecting organism, for in the presence of streptococci failure was the rule.

It has been suggested that this method should be applied to empyema in civilian patients, and in a few cases it has been carried out successfully. Before making any pronouncement in its favour it is, however, necessary that a much larger number of observations should be made than are now available, and in any case good judgment must be used to avoid the danger of allowing pus to reaccumulate. In general terms it may be said that the diagnosis of empyema must be made very early, and that in the presence of streptococci it is safer to drain rather than to close the chest.

TREATMENT OF A LOCALISED EMPYEMA.

The diagnosis of empyema is not always an easy matter, especially when pus is not present in any great quantity, or is so thick that it cannot be drawn through a needle, or when it is walled off by thick fibrous adhesions, or is lying between the lobes of the lung. In many such cases it has been the custom of clinicians to delay operating until pus has been located by means of the exploring needle. Often the abscess is never located by this means, and the pus tends to accumulate and track until it bursts into a bronchus and the patient commences to spit pus. It is well known that in this way a spontaneous cure may result, but it is at the expense of a great deal of discomfort and distress to the patient, and under less favourable circumstances pus spitting may continue for years with all its uncomfortable sequelæ. I submit that in such a case, when there is good reason to believe from the clinical findings that there is pus in the chest, and when it has been found impossible to localise it either with the exploring needle or the X rays, an exploratory thoracotomy should be undertaken; by this operation lives may be saved or prolonged convalescence shortened.

A CASE OF LOCALISED COLLECTION OF PUS.

To illustrate this point the following case may be quoted:—

A man, aged 37, was admitted to hospital suffering from a perforated gastric ulcer. The diagnosis was made promptly, the abdomen opened, the hole in the stomach sutured, and a gastro-enterostomy performed. A large amount of fluid and stomach contents was evacuated from the peritoneal cavity, and the abdomen closed except for a drain which was removed 48 hours later. The patient did well, the pulse and temperature falling to normal. Then suddenly three weeks after the operation the patient had a sudden sharp pain in the lower part of the right side of the chest, accompanied by a rising temperature. It was suspected that he had developed a subphrenic abscess, and that this abscess had caused infection of the pleural cavity, but a careful examination did not reveal one. Later he developed signs of pleurisy and some dullness over the base of the lung and he began to cough and spit. The temperature remained raised and a leucocytosis was present. He was needled on several occasions in various places, but no pus was found. A skiagram showed a general opacity of the lower part of the chest, but no localised abscess.

Acting on the belief that pus was present although it could not be located, an exploratory thoracotomy was undertaken. About four inches of the posterior portion of the ninth rib was excised, the pleural cavity opened, and a rib spreader inserted. The lung was found adherent by recently formed lymph to the parietal pleura. Search was made, first in the space between the lung and the diaphragm on the assumption that it would be there that pus would accumulate if infection had come from a subphrenic abscess. No pus was found. The exploration was then carried higher up and a localised collection of pus was found close to the spine, shut off from the general pleural cavity by layers of soft yellow lymph about a quarter of an inch thick. This cavity was drained, the temperature and pulse fell to normal, the coughing ceased, and the patient made a rapid recovery.

The collection of pus in this case did not form a rounded abscess, but was spread out in quite a thin layer over about three or four square inches of lung surface, and it was walled off by a thick layer of soft lymph. This will no doubt explain the difficulty of hitting it off with the needle, and the fact that it was not recognised with X rays. There is little doubt that had the patient been left without evacuation of the abscess, death, or long illness resulting in a more or less permanently damaged lung, would have supervened.

CHRONIC LOCALISED EMPYEMA.

There is another type of case which may be described as chronic localised empyema, which has its origin in the pleural cavity, becomes shut off by firm adhesions, and which discharges itself generally very incompletely via a bronchus. Such cases are well known; they tend to run a very chronic course and lead to great and permanent disability. They call emphatically for surgical assistance, though the treatment given is too often conservative. The following case may be used to illustrate this point:—

During the epidemic of 1918 a hospital nurse acquired influenza followed by pneumonia and an empyema, which was treated by resection of rib and drainage. The empyema healed, but the patient was not cured, because for the succeeding nine months she had periodic attacks of fever, associated with cough and expectoration of pus. These attacks lasted a few weeks and then almost disappeared, but the patient was unable to do any work. The affected side of the chest was smaller than the opposite side and the lung did not expand well. The fingers were clubbed and there were the signs of a long-standing collection of pus within the chest; in addition X rays showed a considerable opacity. An incision was made along the sixth rib in the post-axillary line, about three inches of bone were resected, and the chest was opened by means of a rib spreader. Pus was found lying between the lobes, and there was immense thickening of the pleural membrane round it. The pus was evacuated and the thick mass of fibrous tissue dissected off the lung. The cavity was plugged temporarily with gauze soaked in flavine and the chest closed secondarily.

The patient made a good, quick recovery and is now working hard as a nurse. Had that patient been left alone she might have recovered by coughing up the pus, but convalescence would have been long and she might have become a chronic invalid. The only satisfactory way of dealing with the abscess was by an operation which gave a clear access to the affected part; and that operation is both safe and satisfactory.

TREATMENT OF A CHRONIC EMPYEMA SINUS.

Unfortunately many patients for whom a drainage operation has been performed do not heal, but are left with a permanent discharging sinus. The treatment of these people is very difficult and unsatisfactory; in hospital practice they are constant attenders in the casualty department until they become dissatisfied and drift away to other hospitals or infirmaries. In an empyema of long standing, whether it has been opened or not, the pleura (both visceral and parietal) is converted into a layer of fibrous tissue often half an inch or more in thickness. The lung in these cases is literally imprisoned by fibrous tissue; it cannot possibly expand and fill the cavity, no matter how hard the patient blows bubbles or does thoracic exercises. Meanwhile the fibrous tissue tends to contract, pulling the diaphragm up and the ribs in, though the rigidity of the bony thorax is generally too great to allow sufficient collapse to secure union of the visceral and parietal layers of the cavity.

There seem to be only two accepted methods of treating this condition. One is to remove a sufficient quantity of the bony thorax, so as to allow the parietes to fall in and obliterate the cavity; this is done by means of the well-known operation of Estlander.

The other method is, remove the visceral layer of fibrous tissue so as to allow the imprisoned lung to expand up to the parietes and so obliterate the cavity. For this purpose the operation known as decortication has been devised and is commonly associated with the great name of Tuffier. Estlander's operation is objectionable, for it spells great and permanent deformity of the chest and a permanently collapsed lung, yet it may be right and timely to save life even as amputation of a limb may be necessary.

The ideal treatment is to remove the fibrous sheathing and allow the imprisoned lung to expand, but it must be remembered that to be successful the operation must not be delayed so long that the collapsed lung has itself become hard and fibrous and no longer capable of expansion. The removal of the fibrous tissue is in itself not difficult, provided that good access can be gained especially towards the upper part of the cavity where the layer is generally thickest.

The difficulties which I have *myself* encountered were, firstly, that the thick fibrous walls did not allow [illegible]d retraction of the chest, and secondly, that the [illegible]ll available working space makes it difficult to dissect away the thick fibrous tissue at the upper extremity of the pleural cavity, and it seems that the lung will not expand readily even if the bulk of the organ is freed from tissues and yet the apex is still bound down. Failures have been at least as common as successes, yet it seems clear that the method is a sound one, and that with increased experience a good operation will be evolved. Like most forms of treatment it must be undertaken early; the amount of time which should be allowed before it is performed must, however, be left to the judgment of the surgeon.

SKIN-GRAFTING THE SINUS.

There is yet another device for curing a persistent empyema sinus which has been used by Beck, of Chicago. He has skin-grafted the interior of the tissues and has shown patients cured in this manner. The method is not likely to be widely used; it is difficult to carry out, and the patient is left with a deep hole in the side, covered by skin, but very difficult to keep clean and non-odorous.

TUBERCULOSIS OF THE LUNG.

What is the position of surgery at the present time towards tuberculosis of the lung? About 1800 a certain number of surgeons conceived the idea that portions, or indeed the whole, of the lung might be removed. Animal experiments were performed which proved that portions could be removed with safety, the remaining lung expanding and filling the pleural cavity. On the strength of these experiments a certain number of operations were undertaken for the removal of portions of lung affected by tuberculosis.

With regard to these operations it may be said that they are never likely to have a wide application; not only because it is nearly certain that more than one part or more than one lung is affected, but also because in the early stage (in which alone surgical measures would be justifiable) there is a good chance of securing a cure by medical methods. There is a very general feeling, too, among surgeons that surgical treatment of tuberculosis should become less and less as our knowledge of preventive and curative medicine increases. As an example of this statement, one may turn to the treatment of tuberculous glands in the neck. Ten or fifteen years ago the removal of tuberculous glands in the neck was one of the common operations in hospital; now it is rare, for the glands are cured in other ways.

Of collapse of the lung by nitrogen no mention need be made here, for it is fully dealt with in medical books. When nitrogen replacement fails owing to adhesions preventing collapse of the lung, it may become necessary to remove a certain amount of the bony thorax so as to allow the chest wall to fall in, so that in that respect surgery may be of use.

CONCLUSION AND SUMMARY.

It is now time to sum up the conclusions to be arrived at and to state the point of these lectures. It has been pointed out that during the past 600 years surgery of the chest has at times receded and at times advanced, and that at no period has such progress been made as occurred during the last war. During that time surgeons overcame their dread of opening the closed thorax and learnt to repair a wounded lung and restore it to its normal function. It has also been demonstrated that in civil practice it is possible with safety to the patient and without expensive apparatus to open the chest widely and to deal with discarded processes which previously were unrelieved. The evidence that has been brought forward is intended as proof that the operation of thoracotomy is a sound and reasonable one.

I submit that more and more operations on the chest should be undertaken, and that with a wider experience the operation of thoracotomy will become as useful and ordinary as that of laparotomy.

THE OPERATION OF VENTROFIXATION,

WITH THE AFTER-RESULTS OF 220 CASES.

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VENTROFIXATION is a generic term for a large group of operations in which widely differing methods have been used to fix the uterus to the anterior abdominal wall. There is no doubt that many of these methods have been anatomically unsound, and have been followed by post-operative complications and obstetric difficulties, or the so-called fixation has resulted in the attachment of a long and futile band of peritoneum to an otherwise unaltered uterus. Such bands, which every gynæcologist has seen and excised, may easily lead to strangulation of bowel, and are therefore not only useless but dangerous. In other cases where true fixation has been achieved, entirely unsuitable parts of the uterus have been selected as fixation points—e.g., the upper segment, the fundus and even the posterior surface. A uterus anchored in this way is incapable of symmetrical enlargement, and subsequent pregnancies will either terminate in early abortion or end in some form of dystocia at term. In view of these facts it is perhaps not surprising that the operation is regarded with disfavour in some quarters. Such sequelæ certainly condemn the type of operation concerned and emphasise the danger of bad methods, but do not prove that the principle of ventrofixation is fundamentally unsound.

It is the purpose of this paper to show that a properly performed ventrofixation is free from undue risk, does not interfere with subsequent pregnancy or labour, and in a large majority of cases permanently cures the patient of those symptoms for which the operation is undertaken. Our conclusions are based on a number of cases operated on at the Hospital for Women, Liverpool, by one of us (J. E. G.), using one particular method throughout the series. Of 470 patients operated on prior to December, 1917, 220 have been traced. In 115 cases the operation was performed for retroversion, and in the remainder (105) as a part of the treatment of prolapse.

Indications for Operation.

Retroversion—congenital retroversion and retroponation—with a freely mobile uterus of normal size is symptomless, and in the absence of infection, repeated abortions, or sterility, does not justify operative interference.

Backache and dysmenorrhœa in such cases are due to associated neurosis, and the results of operation are disappointing—sometimes actually harmful. On the other hand, a bulky, tender, fixed, retroverted uterus is in a different category. Many of these cases follow labour and in most of them some degree of infection is present. Backward displacement by stretching peritoneal ligaments and kinking blood-vessels and lymphatics produces pain, enlargement of the uterus, œdema of the endometrium, and menorrhagia; menstruation becomes painful and prolonged, leucorrhœal discharge is increased, and other symptoms, such as dyspareunia and repeated abortions, may follow. If unrelieved chronic ill-health ensues, a condition of semi-invalidism characterised by a well-defined group of symptoms. (Table I.)

Prolapse.

We consider ventrofixation to be a necessary part of the surgical treatment of severe prolapse in young fertile women; for women past the menopause an abdominal operation is often undesirable and also unnecessary, for any lesion can be permanently cured by vaginal methods, either colporrhaphies or the interposition operation. We readily concede that prolapse can be successfully treated in young women by vaginal plastic work alone, but to accomplish this in severe cases (50 per cent. of our cases were complete procidentias) very sweeping colporrhaphies must be carried out, and usually amputation of the cervix.

Such sacrifice of tissue is inimical to subsequent conception. We have found that of 27 cases in which amputation of the cervix was performed, only 4 became pregnant afterwards (14·0 per cent.), compared with 59 subsequent pregnancies in the remaining 193 cases (30·5 per cent.—this figure should be higher as some of the patients were unmarried). Further, if pregnancy does occur the risk of perineal and vaginal lacerations during labour must logically be increased; in other words, there is a risk of reproducing the original lesion in an exaggerated form.

We believe that if ventrofixation (or some comparable abdominal operation) is practised in addition to the necessary vaginal repair, the latter may be safely restricted within moderate limits and the cervix, unless obviously diseased, conserved.

The advantages of a moderate colporrhaphy over a very extensive one need no emphasis. Sexual life and conception are not interfered with and labour entails no special risks. We are not concerned with the relative merits of ventrofixation and other abdominal procedures such as Gillian's operation, for whilst we have seen excellent results in isolated cases, we have had no experience of a large number of results. (Table II.)

Description of Operation.

The necessary vaginal work which is first carried out consisted of the following operations in our cases:—

Anterior colporrhaphy ..	4	Dilatation and curettage ..	57
Posterior colporrhaphy ..	38	Trachelorrhaphy	14
Anterior and posterior colporrhaphy	67	Amputation of cervix ..	27
		Hæmorrhoids	5

Abdominal Incision.—A small two- or three-inch median incision is made extending from the symphysis pubis upwards, or alternatively the transverse (Pfannenstiel) method may be used; the latter, which was employed 73 times, gives satisfactory access, and leaves a sound and almost invisible scar, and can be safely recommended in the absence of infection. After opening the peritoneum the uterus and adnexa are examined for the purpose of determining their exact position and the presence and nature of lesions other than mere displacement. Any such lesions are then dealt with.

Additional abdominal procedures in the present series include:—

Separation of adhesions ..	25	Myomectomy	10
Salpingectomy	14	Herniotomy	6
Double salpingectomy ..	3	Appendicectomy	2
Salpingostomy	2	Utriculoplasty	1
Ovariotomy	10	D'Artigue's operation ..	1

In this case as D'Artigue's operation was found to be unsatisfactory when completed it was disregarded, and ventrofixation carried out in the usual way. The amount of associated infection is worthy of notice.

Formation of Bladder Septum.—The peritoneum covering the bladder is picked up in the middle line with a succession of Spencer Wells forceps arranged in file and extending from the utero-vesical attachment to the upper border of the symphysis pubis. It will be noticed that the latter point coincides with the parietal peritoneum at the lower angle of the incision.

Using these forceps as guides, a catgut suture is inserted in the centre of the utero-vesical fold and continued as a running stitch through the peritoneum covering the bladder, passing downwards, forwards, and upwards in the middle line until the parietal peritoneum is reached at the lower angle of the wound. This stitch is both continuous and interrupted, for the two ends are knotted at short intervals, thus bunching or gathering the peritoneum into one mass and forming a median septum stretching across the utero-vesical pouch between the uterus and the abdominal wall; the two ends of the suture are finally brought through the rectus fascia on each side, just above the symphysis pubis.

TABLE I.—*Retroversion Cases showing Age of Patient and Nature of Symptoms.*

	Age in decades.					Symptoms.									
						Pain.									
	10–20	20–30	30–40	40–50	50–60	Hypogastric and iliac.	Dysmenorrhœa.	Backache.	Bearing-down.	Menorrhagia.	Leucorrhœa.	Sterility.	Dysuria.	Repeated abortions.	Irregular menses.
No. of patients	4	30	63	27	1	32* 59	14* 58	24* 45	6* 10	22* 45	4* 36	8* 19	1* 18	4* 8	7

* Number of patients in whom this particular symptom was specially predominant.

TABLE II.—*Prolapse Cases showing Age and Fertility of Patients and Type of Prolapse.*

	Age in decades.					Number of children.											Type of prolapse.			
	20–30	30–40	40–50	50–60	60–70	0	1	2	3	4	5	6	7	8	9	10	Cystocele.	Cystocele and rectocele.	Prolapse not complete.	Complete procidentia.
No. of patients..	17	43	41	3	1	4	24	17	22	10	6	14	1	1	3	3	4	7	44	50

TABLE III.—*Effect of Ventrofixation on Repeated Abortions.*

Case No.	Before operation.		Operation.	After operation.	
	Living children.	Abortions.		Abortions.	Living children.
69	0	4	Ventrofixation and myomectomy.	0	0
71	0	3	Long peritoneal suspension band found attached to fundus and excised. (A previous operation performed elsewhere.)	0	3 First labour occurred 11 months after operation.
70	2	4	Simple ventrofixation.	0	1 Patient added " first time labour was natural."
153	0	6	Simple ventrofixation.	0	1 B.B.A.: (9 lb. weight).
58	3	3	Simple ventrofixation.	0	2
Totals	5	20	—	0	7

TABLE IV.—*Effect of Ventrofixation on Labour.*

Total No. of patients operated on.	No. of patients confined.	No. of children.				Labour.				Dystocia.	Still-births.
		1	2	3	4	Easy.	Very hard.	Precipitate.	Forceps.		
220	63	34	14	13	2	23	4	2	27	0	—

TABLE V.—*Effect of Ventrofixation on Symptoms.*

—	Prolapse.	Retroversion.	Time since operation in years.												
			3	4	5	6	7	8	9	10	11	12	13	14	15
No. of patients ..	83	96	17	24	20	32	20	15	13	18	5	5	6	2	2

TABLE VI.—*Patients with Symptoms due to Labour.*

—	Original lesions.			Number of children.				Present complaint.			Forceps.	Stitches.
	Prolapse.	Complete prolapse.	Retroversion.	1	2	3	4	Unqualified answer.	"Occasionally."	" Slight."		
No. of patients ..	7	5	8	9	6	4	1	12	4	4	15	2

This septum effectually obliterates the space which would otherwise exist below the fixation area, converts the fixation band into a ridge, and hence by preventing the formation of adventitious bands and peritoneal fossæ, eliminates the danger of post-operative strangulation of bowel. It is, therefore, merely a safety device and does not act, and is not intended to act, as a uterine support. It must interfere to some extent with the upward movements of the bladder, but in actual practice such interference is negligible, for that viscus ascends freely on each side of the septum, there is no diminution in working capacity and no disturbance of the mechanics of micturition.

Fixation of Uterus.—The uterine wall immediately related to the utero-vesical fold of peritoneum is part of the lower uterine segment; its function during labour is passive dilatation. Repeated examinations during Cæsarean sections have failed to show any elevation of the level of this reflection. Fixation of a point that normally remains stationary cannot interfere with the symmetrical development required by pregnancy, or retard dilatation during labour. This area is therefore selected as the fixation point—i.e., the anterior surface of the uterus immediately above the attachment of the utero-vesical reflection of peritoneum.

Two silkworm-gut sutures are introduced with a round-bodied needle so as to include a fair bite of muscle, and then drawn through the rectus sheath immediately above the catgut suture forming the baldder septum.

It is important to notice that the peritoneum is deliberately avoided in these fixation sutures. The uterine muscle is thus brought into intimate contact with the rectus fascia and muscle, and a fibro-muscular ligament is formed at the junction. Closure of the abdomen is carried out in layers in the usual way. The operation is a simple one and may be completed in 15 to 20 minutes.

Results.

There are two chief methods of investigating results: the objective, in which the surgeon examines the patient and relies chiefly on his own findings, and the subjective, in which the patient's own statements are accepted as criteria of success or failure. Both these methods are open to criticism, for whilst an operation may be technically perfect it is not a true success if symptoms persist; conversely, symptoms complained of by the patient arise in some instances quite independently, and may have no connexion with the operation or with the original condition for which the operation was performed. It is, of course, obvious that the success of any operation can only be measured in terms of symptoms cured, and therefore the subjective method is, on the whole, more trustworthy, if sometimes unfair to the surgeon.

Although we have examined a good number of our patients (25 per cent. at least), we have used this method (the subjective) exclusively in assessing the results, and we think it desirable to publish the questions asked in toto to show the completeness of our inquiry.

Dear Mrs. ——

You were operated upon by Dr. Gemmell some years ago at Shaw Street Hospital. He is anxious to know the result of the operation, and will be much obliged if you will answer the following questions and return the completed form. He will be glad if you will also report at Shaw Street, any Tuesday or Friday, between 2 and 3 o'clock.

1. Have you any complaint of the womb, &c., at present? If so, when did you first notice it?
2. Have you had any children since the operation? How many? Give dates.
3. Have you had any miscarriages since the operation? When did they occur? How many months were you pregnant?
4. Had you any special complaint when carrying these children?
5. Were the labours easy? Mention any special points such as instruments or operations?
6. Have you any difficulty in passing or holding the water?
7. Are your bowels regular? Have you any difficulty in holding the motions?
8. Are your periods regular and free from pain?
8a. Have you any discharge between your periods?
9. Is your general health good?

General Results.

1. One patient died from sepsis, aggravated by her own action in removing the dressing and walking to the lavatory the day following operation.
2. There were no cases of intestinal obstruction.
3. 179 patients described themselves as cured (including 43 women with 72 pregnancies).
4. Forty-one patients complained of symptoms, of whom 20 had been confined of 31 children and attributed their symptoms to labour; 14 of the remainder stated their complaint to be either slight or occasional, leaving seven patients as possible failures.

Effect of Ventrofixation on Conception and Pregnancy.

Conception.—The fact that 63 patients conceived subsequently proves that ventrofixation does not prevent conception in fertile women.

Sterility.—Of eight patients specially operated on for sterility (with retroversion) three became pregnant afterwards, one woman after seven and a half years of marriage, and two others after four and three years respectively. Of 28 married nulliparæ, eight afterwards had children.

Abortion.—Prior to operation 36 patients had aborted 58 times; afterwards 12 women aborted 13 times, eight of the latter had also borne living children since operation and had aborted previously (i.e., before operation). Of the remaining four patients, one attributed the miscarriage to overwork (when ignorant of her condition). In the second definite pelvic infection was found at the operation, necessitating left salpingectomy, whilst no reason was alleged for the remaining two cases, of whom one has since gone to full term.

Repeated Abortions.—Five patients were operated on for multiple abortions with the results shown in Table III. In view of the complexity of these processes—conception and sterility—it is impossible to dogmatise from a few cases, but it seems fair to conclude that the chances of conception are not diminished, and that by reducing the frequency of abortions, ventrofixation actually increases fertility.

Effect on Pregnancy.—Although one might have expected patients to complain of abnormal pains during pregnancy, actually only two patients did so, seven others mentioned various symptoms, such as swollen legs, hæmorrhage, cough, which could clearly have no bearing on the operation.

Effect on Labour.—The figures in Table IV. need no comment and permanently dispose of the idea that ventrofixation necessarily means dystocia.

Effect on Symptoms.—Patients without symptoms: 179 patients remained free from symptoms for periods ranging from three to 15 years, averaging seven. (Table V.)

Patients with Symptoms.—Forty-one patients (18·6 per cent.) complained of symptoms. Of these 20 attributed their trouble to labour.

Effect of Labour on Ventrofixation.—It is universally admitted that labour is the most potent of uterine displacements, and every plastic operation is severely tested by parturition. It is, of course, impossible to prevent vaginal lacerations by any form of abdominal procedure (excluding Cæsarean section), and we have already pointed out the increased likelihood of such injuries where extensive colporrhaphies have been carried out. In the absence of adequate repair vaginal prolapse must follow, and in those of our complaining prolapse cases that have been examined we have invariably found a vaginal lesion, with the uterus in normal position. So far we have not seen a long hypertrophied cervix, although such a condition is a natural sequence in advanced cases where the pelvic floor has "gone" and the uterus is supported solely from above.

To some degree these recurrences are preventable, lacerations and injuries, generally speaking, are commonest and severest in small pelves in which antenatal examination and pelvimetry (so often neglected) would reveal the contraction and suggest a remedy. The number of instrumental deliveries is excessive and unnecessary, and lastly, forceps are frequently "mis"-applied before the cervix is fully dilated on the principle that might is right. (Table VI.) The percentage of forceps deliveries

(75 per cent.) is striking in conjunction with the fact that only one patient mentioned stitches. It must also be remembered that 43 patients successfully passed through 72 confinements without subsequent complaint.

The remaining 21 patients who complained of symptoms had not been subjected to the strain of parturition. They fall into two groups, which may be briefly considered and tabulated. Group A, 10 prolapse patients (Table VII.), and Group B, 11 retroversion cases (Table VIII.).

In connexion with Group A we make the following suggestions :—

TABLE VII.—*Ten Prolapse Patients with Symptoms in the Absence of Confinements.*

—	Age of patient in decades.			Original lesion.		Length of time elapsing before onset of symptoms.								Nature of complaint.			
	20–30	30–40	40–50	Partial prolapse.	Complete prolapse.	1	2	3	4	6	7	8	9	Occasional weakness	Slight falling of womb.	Discomfort only on exertion.	Bearing-down pain.
No. of patients..	1	1	8	5	5	2	1	2	1	1	1	1	1	1	2	5	2

TABLE VIII.—*Eleven Retroversion Patients with Symptoms in the Absence of Confinements.*

Case No.	Married or Single.	Age.	Children.	Chief symptoms before operation.	Years since operation.	Present complaint.
26	S.	30–40	0	Dysmenorrhœa and menorrhagia.	6	Cured for four years: dysmenorrhœa for two years.
43	S.	30–40	0	Dysmenorrhœa and menorrhagia. Abdominal pain.	6	Dysmenorrhœa and abdominal pain. (NOTE.—This patient had three previous abdominal operations.)
44	S.	20–30	0	Dysmenorrhœa, leucorrhœa and menorrhagia.	4	Cured for four years, bearing-down for three months.
54	M.	40–50	3	Bearing down, leucorrhœa and menorrhagia.	3	Pain continuous since operation.
68	M.	20–30	1	Abdominal pain, menorrhagia, leucorrhœa.	5	Occasional pain in stomach.
97	M.	20–30	0	Dysuria, dysmenorrhœa, backache.	4	Bearing-down on and off.
164	M.	40–50	11	Abdominal pain, backache.	11	Abdominal pain. Uterus found retroverted.
200	M.	20–30	1	Menorrhagia, dysmenorrhœa, leucorrhœa.	7	Cured for four years, now slight pain at periods. ? Recurrent infection.
233	S.	40–50	0	Abdominal pain, dysuria, leucorrhœa.	8	Tired strained feeling. T.B. tube was removed at operation.
234	M.	30–40	3	Menorrhagia, dyspareunia.	8	Bearing-down. Salpingectomy at operation (?T.B.).
309	M.	40–50	5	Abdominal pain, dysmenorrhœa.	10	Cured for seven years; dysmenorrhœa lately.

1. The age of patients at the time of operation (eight cases were between 40 and 50 years of age), makes the menopause a likely cause of symptoms, definitely proved in one or two cases examined by us—e.g., patient complains of a bearing down; the uterus and vagina in perfectly normal position; senile vaginitis found to be responsible for symptoms.

2. The interval elapsing before the appearance of symptoms—in four cases six or more years after operation.

3. Muscle overstrain and lack of tone is an undoubted factor—one patient, a thin woman of 50, was running a boarding house single-handed; another was a chronic bronchitic. Two other patients had developed inguinal herniæ, whilst deficient musculature was further exemplified by obesity and visceroptosis.

4. As every case qualified her answer it is fair to assume that all were improved.

With reference to Group B, Case 164 (Table VIII.) is important as being the only one in which we found the uterus retroverted. The original notes describe the uterus as enlarged and heavy, but omit to mention the suture material used; still this must be regarded as a primary operative failure. Neurosis is a factor in Cases 43 and 54. Recurrent infection and the menopause in Cases 200, 233, and 234. On the whole it is clear that the majority of these patients were benefited by the operation.

Considering these results as a whole we are convinced of the merits of ventrofixation. It was evident from the letters received from places so far apart as India, Canada, and Greece that many patients were very appreciative and attributed their excellent health to the operation. Although 18·4 per cent. complained of symptoms, such symptoms were frequently described as trivial, and do not disturb our confidence as to the value of the procedure.

Conclusions.

1. Ventrofixation is a simple and useful operation for certain types of uterine displacement.

2. Post-operative intestinal complications do not occur and subsequent gestation and parturition are not interfered with if suitable technique is employed.

3. The frequency of abortion is diminished and fertility increased.

4. The percentage of patients subjectively cured is satisfactory, and the occurrence of symptoms after operation is largely due to factors beyond the control of the surgeon, namely: (*a*) Labour. (*b*) Over exertion. (*c*) Recurrence of infection. (*d*) The menopause. (*e*) Neurosis.

THE TREATMENT OF URINARY INCONTINENCE BY ELECTRICAL METHODS.

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URINARY incontinence does not in any way threaten life; if it is nocturnal only, it does not directly interfere with work or pleasure; and even when the control is imperfect by day as well as by night, the use of a receptacle usually enables the patient to carry on his business, and to take part, more or less, in the social doings of ordinary people. Nevertheless, this particular disorder is responsible for more distress of mind than that caused by many troubles of a physically more serious nature. In the young child the symptom is distressing to the parents rather than to the patient; but with the first plunge from home into the great world—even though this be represented at first by something no more formidable than a preparatory school—the conviction is brought home to the sufferer that he is not as other boys. Often he begins to feel a sense of shame, and this increases as he grows older.

When treatment fails, parents and patient are often consoled with the prophecy that all trouble will disappear with the onset of puberty. The boy resigns himself to his complaint, in the confident expectation that he will be better by the time he is 15 or 16; and, about that age, partly because the changes of adolescence really have in many cases a beneficial effect, partly because of the force of suggestion, the disorder often tends to improve, or disappears. But not always by any means. And the case which does not improve about the age of 15 is increasingly difficult to deal with. The previous suggestion of cure now becomes a counter-suggestion, and there is a great danger of the patient becoming morbid.

Wide Distribution of the Condition.

How many young men who inexplicably refuse invitations, who are "curious" in their behaviour, who shun the society of the other sex, are thus afflicted? We do not know. But the late war showed that of apparently healthy recruits, in all countries and from all classes, an unexpectedly large percentage were afflicted with functional urinary troubles. Yet in private practice the condition seems rarely met with among otherwise healthy adults. I venture to suggest that it is in reality fairly common, but that the victims, partly from a feeling of false shame, and partly from a belief that they are too old to be in any way helped, do not often seek medical advice. Girls appear to suffer much more rarely than boys, but when it occurs in them the condition is even more distressing. Whatever the sex it is important to cure the condition if possible during the period of home life.

When control has never been properly established, there is often a general nervous defect—the child is somewhat backward, stammering is frequent, and there is often some diurnal as well as nocturnal trouble. In other cases the disorder comes on gradually between the ages of 4 and 5, sometimes in children who seem to be in every other respect normal.

Possible Causes.

In either case the most careful search should be made for possible exciting causes, which may be either local or general. The two things most likely to be directly productive of incontinence are stone in the bladder and scybalæ in the rectum. Vesical calculus in young children is more common than is generally believed. X ray examination will detect 90 to 95 per cent. of all bladder stones; for the residue, consisting of uric acid, cystoscopy is necessary. Intestinal worms are a source of both local and general nervous irritation. A long prepuce has been much blamed as a local cause, but to remove it simply because it is long is not a justifiable proceeding. There is always some risk, however slight, in the administration of a general anæsthetic and incontinence is too often unbenefited. Unless, therefore, there is some other reason for the circumcision in addition to that of possible benefit to the enuresis, it should not be performed until other measures have failed. Adenoids are of great importance: not that one can count upon their removal effecting a cure, but a cure by other means is impossible so long as the handicap of adenoids or "tonsils and adenoids" is allowed to remain.

Treatment by Drugs and Suggestion.

Drug treatment can be alluded to only very briefly. Belladonna is often much abused; it should be employed only with a view to "breaking the habit," and never be pushed for more than two months at a time. It is useless and even harmful when there is definite lack of tone in the sphincters: here nux vomica is indicated. Thyroid (advocated by Dr. Leonard Williams) is useful in some cases, especially when there are adenoids. Alkalies may be useful where the urine can be shown to be hyperacid.

Suggestion treatment, hypnotic or otherwise, while of great value, may fail when employed alone. Most cases are compounded of a physical and a mental element; and either the first or the second may predominate. In the latter event psychical methods have a great field; but if they do not succeed quickly an auto-suggestion of incurability may be set up, and the difficulty of cure is much increased.

Electrical Treatment.

Electrical treatment has been employed for nocturnal enuresis for many years—in fact, reference can be found to it in text-books half a century old. Galvanism and faradism were then used with some success. We have now added the high-frequency condenser electrode to our armamentarium. Interrupted currents are employed to produce rhythmical contraction of the abdominal muscles; the condenser electrode is inserted per rectum. In this latter case the patient feels nothing, but a spark may be drawn from any part of his body. These methods both aim at increasing local and general tone. They should always be employed for some weeks before anything more drastic is contemplated. For the first week or ten days, the method should be unaccompanied by any verbal suggestion, other than an initial explanatory statement in the case of older children. These should be told that the brain controls the bladder even during sleep, provided that it gets proper messages as to the state of affairs there; and that the effect of the electricity will be to increase the strength of the messages—"to make the telephone bell ring more loudly."

Combination of Suggestion with Electrical Treatment.

If there is no improvement within ten days a definite suggestion should be made to the effect that, although the bladder is not yet strong enough to hold its water all night, yet its distress signals will wake the patient before an accident happens. This is often successful, even though previously, without the use of electricity, the suggestion may have been made in vain. (The kind of suggestion here referred to is, of course, ordinary "waking suggestion" and persuasion: hypnosis should not be employed except by experts in the subject.) If the patient can be got to wake regularly feeling a desire to micturate, the battle is practically won, and in most cases undisturbed nights are ultimately arrived at. When it is not possible to get the child to wake as the result of sensation from his bladder, an alternative is to have him awaked at certain fixed hours for the purpose of making water. This is generally best accomplished by post-hypnotic suggestion, and is probably not made any easier to accomplish by electrical treatment, which latter aims at increasing the intensity of the natural call.

Internal Application of Electrical Methods.

Internal methods of electrical application are unpleasant and sometimes even painful. In unskilled hands they may be dangerous. The simplest method is to introduce a metal bougie into the bladder and pass a faradic current through it up to the patient's limit of tolerance. The risks are no more than such as are involved when any metallic instrument is passed into the bladder. A second method is to fill the bladder with a weak solution of zinc sulphate and pass into the bladder a rubber catheter containing a wire of soft metal. Care must be taken that the metal does not at any point come into contact with the wall of the bladder or the urethra. A current of 10 to 15 milliamperes is then passed for 10 minutes, the wire being positive; a pad is placed under the buttocks to form the negative pole. This proceeding may be repeated every other day for a fortnight.

The above methods increase sensibility as well as tone. They ultimately produce a certain amount of soreness which may aid in stimulating the patient's attention. But the action differs from that resulting from the mere introduction of an irritating solution into the bladder. I have seen cases of the latter in which the reaction was very severe, causing the patient to wake up to make water with pain and tribulation for days and even weeks; yet, ultimately, the incontinence was not even benefited.

Prognosis.

As to prognosis, on the whole, the cases in which the trouble comes on in apparently healthy children at the age of 4 or 5 are the most difficult to cure; but it should be possible to get a satisfactory result in at least 50 per cent. of such cases, even when various other methods have failed. The backward child, physically and mentally underdeveloped, benefits in a remarkable manner from the general effects of electricity, unless there is some actual congenital defect. The cure of the incontinence may, however, be delayed—the child has first to be brought to a stage of mental development where he can coöperate with the physician. The change in the physical and mental outlook of such little patients after a few weeks' treatment is often most gratifying to their friends and relations.

The time required to effect a cure in a favourable case is about a month, the patient being seen four or five days a week. A case which is definitely benefited but not cured in four weeks may require a further month to banish the trouble. On the other hand, if no improvement takes place in a month, it is best to have the case treated by hypnosis, either alone, or in combination with some electrical procedure which has not previously been used. It should not be forgotten, however, that the good effects of electrical treatment are sometimes a little delayed, and I have known several cases of boys who seemed little better at the time, yet proved to be greatly benefited after their return to school.

Incontinence occasionally follows an attack of infantile paralysis, the statements found in some text-books to the contrary notwithstanding. It is usually amenable to electrical methods and, when banished, the result is lasting.

Incontinence and Progressive Spinal Disease.

The case of incontinence occurring in the course of progressive diseases of the spinal cord—e.g., disseminated sclerosis—is somewhat different. It is impossible here to bring about a permanent cure; nevertheless, the sufferer should not be denied assistance, as a remission for several months can be secured by a few weeks' treatment; and such short courses can be repeated more than once with equally good effects. Besides the usual electrical technique X rays should be applied to the spine. I have personal knowledge of a patient suffering from disseminated sclerosis who has been kept comfortable as regards incontinence for nearly eight years, during which he has had seven courses of electricity and X rays, each of about four weeks' duration. This is an exception; but instances in which the incontinence has been kept at bay for three to four years are not uncommon. The urinary symptoms are often more distressing to the patient than the paralysis itself.

Percentage of Cures to be Expected.

To return for a moment, in conclusion, to nocturnal incontinence. Not every case can be cured by electricity—or for that matter, by any known methods. At the Cambridge Hospital, Aldershot, during the war, we worked out statistics for several hundred cases, and found that 65 per cent. were cured—i.e., they were reported as free from trouble a month after their return to their regiments. But these patients were all otherwise well-developed lads of between 19 and 20. Taking all types of patients, at all ages—which in my private practice have ranged from 3½ to 27—the percentage of cures to be counted on is over 50, but probably less than 60. This is a conservative estimate. One's results improve with experience, and, without being unduly optimistic, it is permissible to expect that in future it will be possible to attain success in three out of every four such cases.

SQUINT:

THE QUESTION OF EARLY OPERATION.

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DURING recent years a number of papers have appeared upon the treatment of strabismus convergens and divergens, and several discussions have taken place at ophthalmic meetings, especially in America, upon this subject. There has been a general consensus of opinion that untreated squint produces, in a large number of cases, amblyopia, or blindness in the squinting eye, so-called amblyopia ex anopsiâ. This practical unanimity of opinion, notwithstanding Poulard,[1] has been reached mainly since the publication of the valuable researches of Mr. Claud Worth,[2] who was almost the first to measure accurately the visual acuity of young children immediately after the onset of the strabismus.

He has been able to demonstrate that amblyopia ex anopsiâ is almost entirely due to the convergent squint of childhood by showing that cases in which at the onset the vision of both eyes was normal, or nearly normal, when left untreated for two or three years returned with the squinting eye amblyopic or nearly blind. Prior to his time the accepted view was that the amblyopia preceded the squint, and was partly the cause of it. The amblyopia ex anopsiâ which follows squint varies generally between 6/24 and 0·5/60, and usually means complete inability to read ordinary type. When the vision is improved by glasses it is the defect which cannot be corrected which is called amblyopia ex anopsiâ. This form of amblyopia develops, as its name implies, from want of use. The squinting child would see double if he used both eyes. The child unconsciously suppresses the image of the squinting eye and does not use it, so that the vision in it is more or less lost. Diplopia may be elicited by special tests in recent cases. It is the same as if we bound up the arm of a child for months and years. It would waste and atrophy. If we bandage the eye of a young child for months it will also be found to become amblyopic; but adults do not lose the vision of an eye by prolonged occlusion.

The earlier that a convergent squint commences in childhood the greater is the degree of the amblyopia. Amblyopia is also increased by the duration of the squint; it does not, as a rule, occur when the squint commences *after* 7 years of age. At least, I do not recall having seen a case of it in which the strabismus had come on after that age, but when strabismus convergens develops under 3 years of age the squinting eye is almost certain to become amblyopic or blind. The only exceptions are when the squint is alternating, in which case the vision remains good in both eyes, or when the vision is saved by training the squinting eye, with or without occlusion of the good eye. These cases, however, are exceptional when the squint develops before 3 years of age. When the onset is between 3 and 6 years of age there is still great danger of amblyopia developing in the squinting eye, but it is more easily prevented by non-operative methods of treatment. The rate at which amblyopia develops varies in these cases, but I have seen several instances where it has come on within a period of from four to six months. I have observed amblyopia develop in a child's good eye which was being occluded for the sake of bringing back the vision to the squinting eye, but the vision recovered after removing the occlusive bandage. The younger the child the more rapidly the amblyopia develops.

Method of Testing Vision.

In testing the vision of these young children one must gain their confidence. My usual plan is to cover the squinting eye and to teach them the names of the different objects on the test types, on which are represented horses, pails, barrows, flags, &c. After the child gets to know the names of the different test objects the parent is told to cover the good eye completely with a handkerchief so as to make sure that the child is not seeing with it. The child now knows the names of the objects on the test type, but has not had time to remember their order. He will often show his blindness by giving the wrong names when the squinting eye is thus tested. He must be brought nearer and nearer, at the same time taking great care to prevent his seeing with the good eye, until he is able to state correctly the name of the largest object. A child sometimes cannot even name, with the amblyopic eye, the largest object at a distance of half a metre. Transfer the cover then to the defective eye, and you can at once demonstrate to the parents how good the sight is in the other eye, because generally they attribute the defect of the blind eye to ignorance and not to defective sight. The vision should be tested before the use of atropin, but if the child becomes irritable it is best to repeat the examination a week later, and try again to gain the confidence of the child. It is remarkable how quickly they become accustomed to the various steps of the examination.

The refraction should be tested after the use of atropin for children or homatropin for adults, while the fields of fixation and the positive and negative ranges of convergence should be investigated as pointed out by Mr. Freeland Fergus.[3]

Treatment.

Non-operative.—For a number of years I attempted to cure the concomitant strabismus convergens and strabismus divergens of childhood by non-operative methods, such as occlusion of the good eye and prism training. Each case was examined for astigmatism, and suitable glasses were prescribed. I always attempted to give as high a value as possible to the hypermetropic element in convergent cases, which means in myopic convergent cases the weakest spherical element possible. In divergent cases, on the other hand, the lowest hypermetropic element was taken, and if the eyes were short-sighted the strongest myopic glass which could be safely prescribed was employed. After the glasses were prescribed the children were kept on atropin for a prolonged period in the convergent cases, while the good eye was occluded more or less constantly. To private patients I lent Priestley-Smith's tubes or prescribed prisms for training purposes. These methods always took a considerable time, and even after a course of 6 or 12 months they frequently failed. I was therefore driven more and more to operate for the treatment of squint. It is unnecessary to give the history of such cases.

Operative.—In former times it was said that one should wait until the child was 15 years of age before operating upon the squint. When it became generally recognised that by this time the squinting eye was often hopelessly blind and practically useless it was suggested that the operation should be performed at 7 years of age. However, I found that that age was far too late in many cases. A 7-year old child is often brought for treatment who has had two or three pairs of glasses and is still squinting, while the squinting eye is nearly blind.

Kearney,[4] in a recent article, states that he has also been driven to operate in most cases of strabismus convergens and I would agree with all he says on the subject, but I would urge that the operation should be undertaken earlier. Amblyopia may develop rapidly. I have seen it come on in the course of six months, and on the other hand, I have seen it disappear equally rapidly after a successful operation done for a patient who was 4 years of age.

The following cases show what can be done by early operation and training of the amblyopic eye.

CASE 1.—Jan. 21st, 1919: V. U., a girl aged 3 years, a patient of the late Dr. Willis, of Strathaven. Strabismus convergens of right eye. Angle 50°. Duration four months. Illiterate type. V.R. 6/36; V.L. 6/12. Ordered atropin to both eyes. 28th: Retinoscopy:

$$\text{R.}\ \begin{matrix}+4.5\\+7.5\end{matrix}\qquad\qquad \text{L.}\ \begin{matrix}+5.5\\+8.5\end{matrix}$$

Ophthalmometer, R. and L. 3·5 D. ax. 90°. Feb. 4th: V.R. +3 D. Sph. +3 D. Cyl. ax. 90° = 6/36. V.L. +4 D. Sph. +1·5 D. Cyl. ax. 90° = 6/12. Ordered R +2·75 D. Sph. +3 D. Cyl. ax. 90°. L. +3·5 D. Sph. +1·5 D. Cyl. ax. 90°. To keep left occluded all day. April 7th: Advised operation. Oct. 10th: R. Advancement rectus externus with modified tenotomy rectus internus. 24th: Straight. March 29th, 1920: V.R. +4 D. Sph. +4 D. Cyl. ax. 90° = 6/12, 1 letter. V.L. +4 D. Sph. +2 D. Cyl. ax. 90° = 6/6 letters. Straight. No return of the squint.

CASE 2.—August 5th, 1918: R. W., a boy aged 4½ years. A patient of Dr. D. J. Graham, of Edinburgh. Strabismus convergens of left eye. Angle 35°. Duration two years. Illiterate type. V.R. 6/12, V.L. 0·5/60. Ordered atropin to both eyes and to cover right eye two hours daily. Oct. 10th: Advised operation. Stop atropin. Nov. 27th: L. Advancement rectus externus with modified tenotomy rectus internus. Dec. 14th: Stitches removed. R. converging 10°. Jan. 28th, 1919: R. Advancement rectus externus with modified tenotomy rectus internus. April 3rd: Straight V.R. 6/18, L. 6/24. Sept. 4th: Straight V.R. 6/12, L. 6/9. Nov. 15th, 1920: Straight, with gl. V.R. 6/6, with gl. L. 6/6. Stop occlusion of right eye.

CASE 3.—Oct. 28th, 1918: W. R. W., a boy aged 8 years (elder brother of Case 2). Strabismus convergens of right eye. Angle 40°. Duration four years. Has had glasses +1 D. Sph. all the time, but they have done no good. V.R. 6/24, V.L. 6/6. Advised operation. Nov. 27th: R. Advancement rectus externus with simple tenotomy rectus internus. Dec. 14th: Stitches removed. April 3rd, 1919: Straight V.R. 6/6, 2 letters. V.L. 6/3, 1 letter. May 21st: R. Converging 5°. V.R. 6/9. V.L. 6/3, 1 letter. June 11th: L. Advancement rectus externus. Sept. 4th: Straight R. 6/6, 4 letters, L. 6/3. Jan. 13th, 1920: Straight R. 6/6, L. 6/3.

CASE 4.—Nov. 10th, 1919: J. A. M., a boy aged 7 years. Strabismus convergens of left eye. Angle 35°–45°. Duration 3½ years. V.R. 6/6. With glasses 6/6. V.L. 6/36. With glasses 6/18. Advised operation. 26th: L. Advancement rectus externus. Dec. 9th: R. Advancement rectus externus. Jan. 28th, 1920: L. Still converging. April 9th: L. Re-advancement rectus externus with modified tenotomy rectus internus. 26th:

$$\text{R.}\ \begin{matrix}+3\\+3{\cdot}5\end{matrix}\qquad\qquad \text{L.}\ \begin{matrix}+1{\cdot}5\\+4{\cdot}5.\end{matrix}$$

Ophthalmometer, R. 1 D. ax. 90°. L. 1·5 D. ax. 90°. May 18th: V.R. +1·5 D. Sph. +0·5 D. Cyl. ax. 90° = 6/5. V.L. +1 D. Sph. +2·5 D. Cyl. ax. 90° = 6/9, 3 letters. Ordered above lenses, and atropin to right eye. Feb. 2nd, 1921: V.R. (dilated pupil) with above glasses, 6/12. V.L. (active pupil) 6/24. With glasses, 6/9, 2 letters. No return of the squint.

CASE 5.—Nov. 28th, 1919: J. I., a boy aged 5½ years. A patient of Dr. Robertson, of Motherwell. Strabismus convergens of the left eye of three months' duration. V.R. 6/9. V.L. 4/60. Atropin drops to both eyes. Dec. 3rd:

R. $\substack{+4{\cdot}5 \\ +5}$ L. $\substack{+4{\cdot}5 \\ +5{\cdot}5.}$

Ophthalmometer, R. 1·5 ax. 90°. L. 2·5 ax. 90°. V.R.+3 D. Sph.+0·5 D. Cyl. ax. 90°=6/9. V.L.+3 D. Sph.+1 D. Cyl. ax. 90°=6/60. Advised operation. Jan. 31st, 1920: L. Advancement rectus externus. Feb. 14th: R. Advancement rectus externus. 23rd: L. Modified tenotomy rectus internus. March 26th: Straight. Ordered: R.+2 D. Sph.+0·5 D. Cyl. ax. 90°. L.+2 D. Sph.+1 D. Cyl. ax. 90°. March 23rd, 1921: V.R. 6/6. V.L. 6/24. Glasses no improvement. This patient has had no special training by occluding the right eye, but he is now again instructed to cover the right eye two hours daily.

Recovery of Vision in the Squinting Eye.

The table gives the visual acuity of the squinting eye, after correction with glasses if they were necessary, both before operation and at the latest date on which I have seen the patients after operation. The last column gives the duration of the occlusion of the non-squinting eye, in these cases of monocular strabismus. It will be seen that there was no occlusion of the good eye in Cases 3 and 5.

Case.	Before operation.	After operation.	Occlusion of good eye.
1	6/36	6/12	Half a day for 2 months.
2	0·5/60	6/6	2 hours daily for 15 months.
3	6/24	6/6	None.
4	6/18	6/9	Half a day for 12 months.
5	6/60	6/24	None.

Remarks.

Case 3 was 8 years of age when he first came, and the squint had been present for four years, during all of which time he had worn glasses. After the operation he discarded his spectacles. They were +1 D. spheres, and had been prescribed by another ophthalmic surgeon. I told the boy to wear them if he had pain in his eyes while reading, but they have not been necessary.

Case 5 was 5¾ years of age, and the squint had been present for three years. The improvement in vision, as above, was found a year after the operation, although no training had been undertaken at all. Instructions have now again been given to occlude the good eye for two hours daily, and to report in three months time. The other three cases have all had more or less continuous occlusion of the good eye.

Case 1 was 3 years of age, and the squint had been present for four months. After the operation she stopped attending and was lost sight of for four years. The occlusion had only been used for two months, and the improvement in vision was therefore almost entirely due to the result of the operation.

Case 2 had never been treated with glasses, and his vision made remarkable improvement from the date of operation. When he first came he was unable to recognise the largest letter except at a distance of ½ a metre. He was 4½ years of age, and the squint had been present for two years. He had occlusion of the good eye for two hours daily for about 15 months, and at the end of that time the vision had improved from 0·5/60 to 6/9. Recently he has been ordered glasses, and with these there was a further improvement to 6/6 in both eyes separately.

Case 4 was 7 years of age and had the squint for 3½ years. After operation the vision of the squinting eye had improved from 6/18 to 6/9. He has had atropin in the good eye, as well as occlusion, but the vision of the squinting eye still remains slightly defective. This is probably due to the fact that there was great difficulty in persuading the boy to keep the good eye occluded, and he constantly pushed the patch aside from the right eye. He has not yet been able to reach more than 6/9.

It will be seen, therefore, that each of the cases show an improvement in the vision of the squinting eye after the operation, two of them being without any occlusion of the good eye, while the remarkable recovery of Case 2 was due to the operation as much as to the occlusion of the good eye. If a child of 1 to 3 years is going to lose the sight of one eye, why should it be refused an operation, when by such an operation amblyopia may be prevented. The position which I take up is that the operation should be done within a reasonably short period after the appearance of the squint.

Children are frequently brought to us when the squint has just appeared. If we then give them glasses the parents are satisfied and they disappear, and nothing further is done. The glasses are often lost, and when they come back we find that the squinting eye is practically blind. Would it not be far better to perform the operation when the children are first brought to us? If the eyes are put straight it is the best chance for recovery of vision in the squinting eye. The earlier the operation is done the better, because there is a far greater tendency to the recovery of function. If the operation is delayed there is less likelihood of the disappearance of the amblyopia, and, indeed, it is not to be expected after the age of 15 or 20.

The one condition is that the squinting eye be put straight, both for near and for distance. The operation is useless unless the eye is made absolutely straight. If there is the slightest squint still present there is no recovery of function, because the child would again see double, and therefore still suppress the vision of the squinting eye. It has been said that the same may be done by non-operative methods, including glasses, but it is well known that the squint often recurs with the glasses. I would go further. The squint must be put so straight by operation that it is independent of glasses, unless they are required for refractive errors. It is a pure waste of time trying non-operative methods if we have to fall back on operation at the end.

Objections.

One objection that has been raised against early operation is that if the squint is left alone a certain number of cases come straight. This point, of course, is known to everyone, and has been found recently in the recruiting stations. Dr. Clarence Löeb[5] has pointed out that the number of men with one eye amblyopic made a fairly considerable percentage of the returns from the eye examinations of recruits, whereas adult men with a convergent squint were in a much smaller percentage. He suggested that if the amblyopia caused the squint, the ratio should be in the inverse. The cases which come straight without operation in my experience are nearly always those which have become amblyopic in the squinting eye. In such a case, had it been operated on within a short period of the onset of the squint the amblyopia would have been prevented.

The second objection which has been raised is that some parents prefer their children's eyes to be put straight by glasses. This seems often to be because the parents themselves have already worn glasses all their lives and consider that nothing better can be hoped for their children. There seems also to be a widespread belief in the uselessness of strabismus operation, apparently due to the non-success of the earlier methods of operating. If there is slight astigmatism and low refractive error, I advise that the patient should have an operation and leave off the glasses. If the refractive error is of a medium amount or higher, I tell the patient to wear the glasses outside when they experience the necessity for them, and to keep them as much as possible for near work. If the patient has been put straight by operation then glasses should not be necessary to keep him straight.

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THE TREATMENT OF CASES OF SYPHILIS HAVING A PERSISTENT POSITIVE WASSERMANN REACTION.

By C. F. MARSHALL, M.D., M.Sc. Vict., F.R.C.S. Eng.;

AND

A. G. SHERA, M.D., B.Ch. Cantab., M.R.C.S.,
PATHOLOGIST TO THE PRINCESS ALICE HOSPITAL, EASTBOURNE; LATE PATHOLOGIST TO THE BRITISH RED CROSS HOSPITAL, NETLEY.

Cases of syphilis with a positive Wassermann reaction persisting in spite of treatment may be provisionally divided into two categories: (1) those in which clinical symptoms also persist or continue to recur; (2) those in which the positive reaction is the only sign, clinical symptoms having been absent for some considerable time. It is obvious that cases belonging to the first category require further treatment; but the procedure to adopt in cases belonging to the second category is not so easy to decide.

In the present state of our knowledge this question cannot be decided by statistics, for the Wassermann reaction is of too recent introduction for us to know the ultimate fate of such cases. We do not yet know how long the reaction may remain positive, nor whether it tends to become negative after a lapse of time. Nor do we yet know whether it is these cases with persistent positive reactions which ultimately develop tabes, general paralysis, and other late manifestations. To decide this question we should require statistics of the Wassermann reaction 10 or 20 years hence in patients who have been treated during the last 10 years. All we know at present is that the reaction may remain positive in spite of repeated and intensive courses of treatment, and also that it may become negative in the absence of treatment.

Cause of Reaction—Generally Accepted View.

The advisability or not of giving further treatment to cases with a persistent positive reaction, but no clinical symptoms, depends upon the real nature and significance of the reaction itself, and whether a positive reaction always indicates the presence of living spirochætes or not. The view now generally accepted is that the reaction is caused by substances of histogenetic (katabolic) and not microbial origin, and it is not inconceivable that these substances may continue to be formed for some time after the death of the spirochætes which originally gave rise to their formation. If a patient with a persistent reaction could be reinfected with syphilis, this would decide the question; because, for true reinfection (as distinguished from superinfection) to take place all the spirochætes of the first infection must be dead. So far as we know, no such case has been recorded; as a rule, recent blood tests have not been made in cases of true reinfection.

Problem of Persistent Positive Reaction.

If a positive reaction always signifies active spirochætosis further treatment is evidently indicated, but if it may be due to the continued formation of katabolic tissue products in the absence of spirochætes further treatment is obviously contra-indicated, if no symptoms are present. Assuming that the first interpretation of the reaction is correct, when the reaction remains positive in spite of repetition of the same courses of treatment, it would appear advisable to change the therapeutic methods. The majority of cases with persistent positive reactions, including most of those in the table opposite, have been treated with the usual courses consisting of intravenous injection of arsenical compounds and intramuscular injection of mercurial cream. This method is strong in arsenic but rather weak in mercury. It would be interesting to find whether an increase in the intensity of the mercurial factor would reduce the number of persistent reactions.

Effect of Sulphur.

The effect of sulphur is another point worthy of investigation. Sulphur, which was formerly much used in the treatment of syphilis, has lately fallen into disuse, but has been revived by McDonagh in the form of intramine. Case 10 in our table is suggestive in this connexion. This patient had been treated with two courses of intravenous injections of neosalvarsan and mercury. When seen by us there were no signs of syphilis, but the reaction was found to be strongly positive. Further treatment by mercury and iodides was not tolerated. Sulphur was then given, and the reaction is now negative. Although it is impossible to generalise from a single case, the administration of sulphur in these cases seems worth a trial.

Conclusions.

1. We are of opinion that the possibility of the Wassermann reaction remaining positive in the absence of active spirochætosis has not yet been disproved. But, as it is equally impossible to disprove the contrary hypothesis, it is best in actual practice to regard a patient with a persistent positive reaction as one who is not definitely cured and as a subject for further observation and possibly further treatment.

2. We consider that a persistent positive reaction is not, by itself, sufficient evidence to decide the question of further treatment, and that we should be guided equally by the clinical progress of the case, the nature of the former symptoms, and the intensity and duration of previous treatment. If clinical symptoms have been present comparatively recently (say, during the last 12 months), we hold that further treatment is advisable; but if symptoms have been absent for more than a year, that the advisability or not of further treatment should depend chiefly upon the clinical course of the case.

3. If further treatment is decided upon, we think that this should differ materially from that given previously. We suggest that sulphur should form part of this treatment without venturing on any hypothesis to explain its possible action.

Cases with Persistent + Reaction but no Symptoms.

No.	Stage of disease.	Treatment received.	W.R.	Remarks.
1	S.	Two courses.*	+	Recommended further treatment.
2	S.	Three "	+ + +	
3	T.	Two "	+	Disappeared.
4	T.	One course.	+ + + +	Receiving further treatment.
5	T.	Treated 5 years ago; method unknown.	+	
6	T.	One course.	+ + +	Disappeared.
7	T.	Two courses.	+	
8	T.	One course.	+	
9	T.	One course of galyl and mercury.	+ + + +	Before treatment reaction only +.
10	T.	Several intensive courses of neosalvarsan and mercury.	+ + + +	Treatment by mercury for short time.‡
11	T.	Treated 20 years ago with mercury.	+ + + +	Recommended further treatment.
12	C.	Two courses.	+ +	

* One course as a rule consisted of 1·5 g. N.A.B. and 6 gr. Hg.
‡ Then sulphur, after which reaction became negative.
+ = Weakly positive. + + = Positive. + + + = Strongly positive. + + + + = Very strongly positive.
S., secondary. T., tertiary. C., congenital.

The method used was that described by one of us (A. G. S.) in Marshall and Ffrench's "Syphilis and Venereal Diseases" (1921), wherein the complement was kept constant and the antigen varied.

Sterilisation and Washing of Infectious Linen is undertaken by Messrs. W. G. Lacy and Co., Ltd., St. John's Wharf, Carnwath-road, Fulham, London, S.W.6.

Clinical Notes:

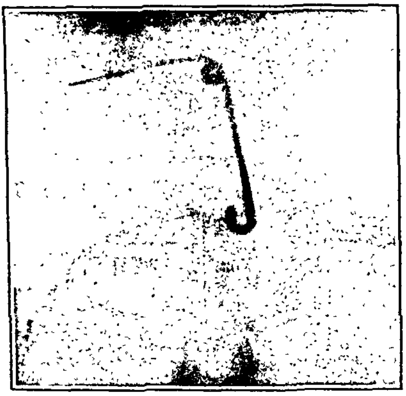
MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

AN UNUSUAL CASE OF A FOREIGN BODY IN THE ŒSOPHAGUS FOR NINE MONTHS.

By CHARLES H. CARROLL, M.R.C.S., L.R.C.P.LOND.

IN May, 1918, when house surgeon to the ear, nose, and throat department of the London Hospital, I was consulted by a woman who brought her baby boy, aged 15 months, to the hospital, suffering from what appeared to be a superficial ulcer on the neck, which she stated had existed for some considerable time past, healing and breaking down in turn. On examining the child's neck and removing the scab from the ulcer, I felt a "pin point" projecting through the centre of the wound.

The child was admitted for investigation of its condition and X ray examination, the result of which is disclosed in the accompanying X ray photo. The mother, on being shown the photo, at once said: "That is the safety-brooch which I gave baby nine months ago in his cot to play with, and it was lost." I had no doubt as to her statement being correct.



Radiogram showing safety-brooch in œsophagus.

Under general anæsthesia, Mr. Norman Patterson, surgeon to the department, passed an œsophagoscope and cut the pin, distal to the joint; the portion projecting through the soft tissues of the neck was removed by that route and the major part through the œsophagoscope. The child was discharged home in a few days none the worse for its experience.

The pin, on examination, proved to be a brass safety-brooch with a flat bar; and the point of interest is the fact that a baby should be able to put up with so formidable a foreign body in its œsophagus for so long a time without any apparent symptoms of dysphagia or discomfort.

A CASE OF LOCKED TWINS.

By DENIS V. MURPHY, M.B., B.CH. N.U.I.,
DISTRICT MEDICAL OFFICER, QUEEN CHARLOTTE'S LYING-IN HOSPITAL, N.W.

LOCKED twins is a very rare condition; Munro Kerr, in his "Operative Midwifery," states that V. Braun only found instances of two such cases in the 90,000 recorded at the Vienna clinic. Further, he states that knotting of the cords in twin pregnancy is also very rare, and illustrates this condition by a photograph of twin cords knotted twice; he says also that such knots lead to fœtal death. The following case is therefore of interest, as both these conditions were present at the same time and without fœtal death.

On April 25th last I was called to see Mrs. V., aged 23, primipara. Membranes ruptured during sleep 38 hours previously, and the midwife sent as "presentation not made out, fœtus passing meconium."

Abdominally.—Fundus was broad, too big to contain a head, too hard for a breech, no ballottement elicited; uterus tended to be moulded on fœtus; fœtal back to the left anterior; fœtal heart heard at level of umbilicus to the left and soft part made out engaged in the brim.

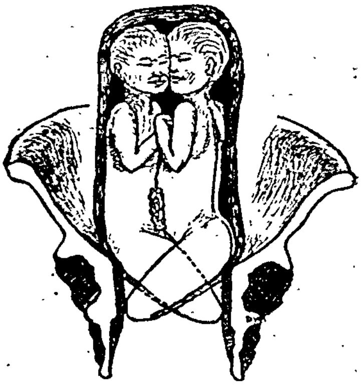


FIG. 1.—Presentation (diagrammatic) at first P.V. examination.

Per Vaginam, pelvis was full of a mass of "small parts" so tightly wedged together that examining fingers were unable to sweep around the mass. A knee was recognised, and after some force was used a foot was brought to the vulva; another foot was found then just inside and brought to the surface. No advance being made with the next pain, the fingers were again introduced, and to my astonishment found two more feet lying loose in the hollow of the sacrum, which followed my fingers to the vaginal orifice as I withdrew them. There were now four feet showing at the vulva, all moving voluntarily. One fœtus was now seen to be lying in the L.S.A. position and the other in the R.S.A. position. An attempt was made to push up the posterior fœtus, but this had to be given up as there was no upward movement. Traction was now made on legs of the anterior fœtus, the buttocks of the posterior being kept up by a hand inside vagina. The anterior fœtus moved downwards for about 6 inches and stopped; the cord was palpated and found pulseless and the arms were extended, these latter were now brought directly downwards, much force having to be used. The head now locked, chin on the symphysis of the other fœtus and occiput on the mother's pubis. By applying two fingers to back of neck and pushing in the direction of the sacrum and rotating the head backwards with a hand externally, the head passed the brim and delivery was effected. Cord being taut, was cut and clamped. Other child followed in 10 minutes—both were dead. Placenta came away 10 minutes later. There was no post-partum hæmorrhage and patient made an uneventful recovery.

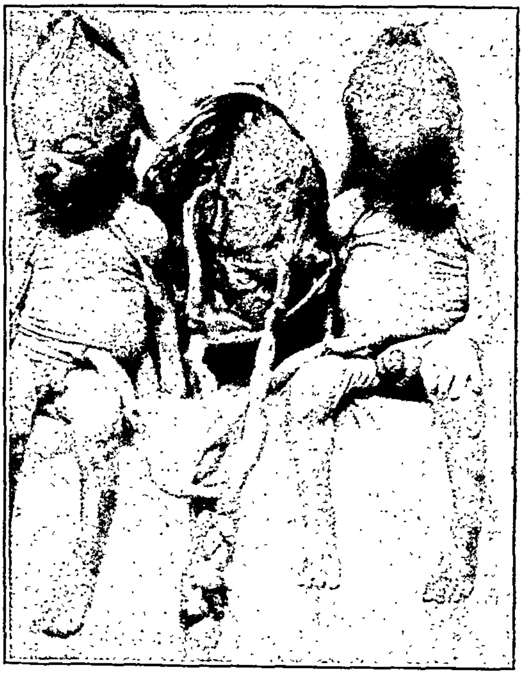


FIG. 2.—The fœtuses with the knotted cord. The uppermost knots being unravelled when fixing specimen for photographer.

Presentation.—"Locking" or impaction of twins due to descent of two breeches, is not described in the text-books. In this case there was clearly a double knee presentation (Fig. 1) and impaction resulting as both fœtuses entered the brim together. The cause of the fœtuses presenting together was evidently due to the shortening of the cords by the knotting. The liquor amnii having drained away for 38 hours caused the uterus to tend further to keep the fœtuses together during the first stage. The fœtal heads were much flattened on one side where they were in apposition. Uniovular twins, males, 17½ inches and 17 inches long; weight, 3 lb. 8 oz. and 3 lb. 6 oz., about 34 weeks maturity.

Cords.—The centres of both cords were looped, coiled, and knotted together into an elongated mass about 7 inches long, which lay at right-angles to the cords (Fig. 2). The cords show at least eight distinct knots, and at the free end of this mass are very tight. It is of interest that both fœtuses were alive before delivery, despite this condition.

I have to thank Mr. Leonard Phillips, obstetric surgeon to out-patients, Queen Charlotte's Hospital, for permission to publish this case. My thanks are also due to Mr. H. H. Gellert, house surgeon of the Samaritan Hospital, for his kindness in taking the accompanying photograph and to the district superintendent, Miss Rodmell, for her valuable assistance during the course of this case.

CASE OF ALUMINIUM POISONING.

BY JOHN SPOFFORTH, L.R.C.P.EDIN., M.R.C.S.ENG.

I WAS recently called to see a man, aged 40, who was then employed at a firm of metalworkers. He was in a state of great exhaustion and suffering from very severe and persistent vomiting. The pulse was slow and irregular. I suspected metallic poisoning and later sent a specimen of his urine to Messrs. Thomas, Bourlet, and Newman, analytical chemists, who reported that it contained a large amount of aluminium, also of phosphates. The patient said that he had been dipping red-hot metal articles, contained in an aluminium holder, into concentrated nitric acid. Aluminium produces a rather slow intoxication. In this case it caused loss of memory, tremor, jerking movements and impaired coördination. There was also chronic constipation and incontinence of urine.

Richborough-road, Cricklewood, N.W.

A CASE OF RECKLINGHAUSEN'S DISEASE.

BY F. McG. LOUGHNANE, F.R.C.S. ENG.,

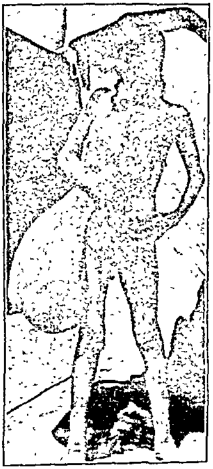
HONORARY SURGEON, ST. MARY'S HOSPITAL, PLAISTOW.

THE patient, an Arab, I saw when in Mesopotamia. He had been found in a palm grove, where apparently he had been deserted; he said his age was 25 years, but he appeared to be about 50. His history was difficult to interpret accurately, but as far as one could gather he had had lumps on his body for as long as he could remember; no other member of his family or village had been similarly afflicted.

All over his trunk, limbs, and head he was covered with multiple tumours of molluscum fibrosum, varying in size from a small pin's head to a Victoria plum, with the exception of one exceedingly large tumour hanging from the right loin, which on removal weighed 70 lb. The skin covering the tumour was thick and corrugated, inflamed in some parts, ulcerated and septic in others. On palpation it felt more or less semi-solid, and a fluid thrill was present. The tumour was about the size of a small sheep, and when standing the patient carried it under his arm. The base of the pedicle, with the patient lying down and the tumour extended, was 11 inches broad. The general condition of the patient was poor: he had a temperature of 101° F., was very emaciated and obviously suffering from toxæmia. He was kept under treatment for a few days so that he might withstand an operation with greater safety, but as he showed no improvement I decided to operate at once, hoping his life would be saved by the removal of a great source of toxæmia, and to fit him to earn a living instead of being dependent on the chance alms of a casual passer-by.

Chloroform anæsthesia was given by Captain W. H. Dye, and I was assisted at the operation by Captain A. J. McDonnell. An hour previous to the operation patient had been given a rectal saline with brandy. A separate table was required for the tumour to rest on. The operation was rather prolonged, 70 minutes, which was unavoidable for two reasons—first, the tumour had dragged into itself a portion of the abdominal wall, which here was very thin, necessitating careful separation to avoid opening into the peritoneal cavity, for the separating muscle layer was almost non-existent; and secondly, there was a great risk of hæmorrhage, so the vessels had to be identified before division. The tumour was very vascular. There were a large number of vessels running irregularly through the pedicle, and many of the veins were the size of the average common femoral vein. Despite all precautions there was a fair amount of hæmorrhage, though not more than occurs in many a breast operation. Patient collapsed towards the end of the operation, and saline was given intravenously and subcutaneously, but he died two hours later.

On cutting open the tumour later it was seen to consist of a large amount of fat, running through which fairly large nerve strands were clearly visible. The vessels, especially the veins, were large and numerous. In places the tumour was pulpy and undergoing degeneration. Suppuration had extended some inches deep to the ulcerated areas.



The patient standing, showing the large tumour amputated from patient's side and several smaller tumours on body and limbs.

Death was due to three causes: (1) Debilitated condition of the patient, (2) shock, and (3) hæmorrhage, not free, but in the amount of blood necessarily withdrawn from the body by removal of a tumour weighing 5 stones.

Remarks.

The question of shock is an interesting one, for it is well known that the nearer to the trunk a limb is amputated the greater the shock, due to the fact that large nerve trunks and vessels are implicated. In this case an exceedingly large tumour was amputated from the trunk itself, a tumour both very vascular and certainly containing a very large amount of nerve tissue.

The same patient in resting position.

For the accompanying photographs I am indebted to Captain McDonnell for the negatives, and to Captain C. G. Whorlow for the prints.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF LARYNGOLOGY.

The summer meeting of this Section of the Royal Society of Medicine was held on June 2nd and 3rd, Dr. W. Jobson Horne occupying the chair.

Complete Tonsillectomy as a Routine Operation.

Mr. Mark Hovell read a paper on this subject. He said that during the last few years the practice had sprung up of systematically enucleating all tonsils which were found to be enlarged, quite irrespective of the cause of such enlargement; hence the mere slicing of a portion of the redundant tonsil, leaving the remainder behind, had been largely criticised and regarded as an incomplete procedure. He reminded members that not every enlarged tonsil was diseased; in children especially such hypertrophy was a result of nasal obstruction, and when free nasal respiration had been restored the tonsillar tissue contracted again. Therefore, he contended that in such cases removal of the projecting portion of tonsil while exerting counter-pressure from outside and the application of astringents was all that was needed. He criticised the habit of rapid operating under nitrous oxide gas, no attempt being made to ascertain the condition of the posterior extremity of the inferior turbinate body. In deciding to stitch the pillars of the fauces it should be remembered that the movements of the soft palate were thereby curtailed. Hæmorrhage, also, after complete enucleation, might be very serious, and he knew of several deaths from it, and the later singing voice was liable to be jeopardised by the radical procedure.—Dr. D. Aitken confirmed Mr. Hovell's contentions, especially concerning the bad effect on the voice following the complete enucleation.—Mr. W. Rose took the opposite view to Mr. Hovell's, urging the complete operation. Not merely was the partial operation inadequate, in his opinion, but in some cases its performance had been the starting-point of repeated attacks of tonsillitis. He agreed that the scarring following tonsillectomy in some cases resulted in impairment of the voice.

Mr. Jefferson Faulder did not agree that mere enlargement of tonsil had been regarded as an indication for total removal. When there was mere enlargement, with no other symptom, it sufficed to remove the enlargement. He quoted an intimate case in which partial procedures led to a long course of trouble and inconvenience.—Sir William Milligan said he regarded a hypertrophied tonsil as a diseased one, and septic tonsils should be subjected to complete tonsillectomy, to entirely get rid of the crypts. By mere tonsillotomy the crypts were all opened up and were the ready receptacles of septic and other foreign material from the mouth. Before any slicing procedure, the condition of the mouth, especially the teeth, should be investigated. He deprecated hurry in the operation. He did not remember more than three of his cases in which suture had had to be performed.—Mr. Wright (Bristol) said cases in which removal of tonsils was necessary could be divided into two classes: (1) those in which the tonsils were freely movable on the pharyngeal wall, in which the complete removal could be done as easily and be as free from risk as taking away a portion; (2) those in which the tonsil was adherent to the pharyngeal wall owing to recurring attacks of peritonsillar inflammation. Though more difficult in these, the complete operation was the only reasonable one.—Mr. W. Stuart-Low took the opposite view to Mr. Hovell, and deprecated the public being led to believe that partial operation or medical measures sufficed.—Mr. F. H. Diggle agreed with what Sir William Milligan had said. He referred to his histological investigations of removed tonsils, and said he found in 75 cases five were definitely tuberculous. He knew no means of distinguishing these from ordinary chronic enlargements, for the five tuberculous cases had no enlarged glands. The tonsillar operation should be as thorough as any other surgical procedure.—Mr. J. F. O'Malley was also an advocate for complete removal, for none were called upon to operate on tonsils which were healthy. The larger number of cases of fatal or alarming hæmorrhage in the last 60 years occurred in the period when tonsillotomy was the chief operation; hæmorrhage was held by some to be more likely when a part of the tissue was left.—Dr. Burger (Amsterdam) said he had recommended and carried out tonsillectomy as the general operation for children. With regard to mortality, there was always a tendency for operators to report their best cases. For tonsillotomy he did not consider a general anæsthetic was needed in the case of children.—Mr. Douglas Guthrie referred to the class of case in which the enlargement wholly projected and there was no buried portion. For these not numerous cases tonsillotomy sufficed.—Mr. Herbert Tilley said he never used a guillotine for tonsils; he always did enucleation and dissection, and he agreed with Sir William Milligan.—Mr. Horgan said he used the guillotine, and that the scarring left after operations on the tonsil was due to over-instrumentation. He referred to the valuable work on the pathology of the tonsils by Mitchell, of Edinburgh.—Mr. Syme agreed with Sir William Milligan, and said there was need for a more exact diagnosis of these conditions, to determine which should be removed and which could safely be left, hoping for a return to a normal size.—The President thought the trend of the discussion had shown that a tonsillar case should either be left alone or tonsillectomy carried out. There was much to be said for that. Mere size of tonsil was not an indication for operation; the largest tonsil he had ever seen was in a man who made no complaint about himself; he had brought somebody else for treatment! If coincidently with enlarged tonsils cervical glands were palpable, that was an indication for removing the tonsil.—Mr. Hovell replied.

Operations on the Frontal Sinus.

Mr. Walter Howarth read a paper on this subject, remarking that only recently had thorough operations on the sinus become established, hence no single operation had become stereotyped. He believed the experience of an individual, if his cases were numerous enough, was a more valuable criterion than that of a group of operators. He had dealt with over 200 frontal sinus cases. He regarded the ethmoid as the key to the frontal sinus. With regard to the intranasal operation, the fronto-nasal duct could be enlarged so that it would admit the passage of a No. 15 bougie, and it was effected by removing the spur of bone which projected from the nasal process of the frontal bone. The opening could be maintained long enough to ensure a permanent cure of the sinus suppuration in a large number of cases. The more acute the stage, the more was the intranasal operation likely to be successful. In reference to the external operation, he said the Killian—which he did not perform—was founded on the fallacy that it was possible to completely obliterate the frontal sinus. Complicated sinuses were common, and the Killian operation was apt to leave dead spaces behind the bridge, along the ethmoid and elsewhere, which prevented satisfactory healing and might be a source of future danger. But why try to obliterate the cavity when it could be drained? The procedure he had adopted for eight years was to open the sinus just above the lacrymal groove and remove the floor, disturbing the mucous membrane as little as possible. He next dealt with the ethmoid, all the anterior cells being removed; this cavity was then joined to the frontal sinus by cutting through the ascending process of the superior maxilla and the nasal process of the frontal bone. There was no alteration in contour as a result of this, and the scar was so fine as to be almost invisible. It was a safe operation, as he had not lost a case, and he never regretted the day he had embarked on it.—Mr. HERBERT TILLEY said he had not done the Killian operation for six or seven years. Failure in so many operations on the frontal sinus was due to the fact that the operator so often overlooked the fact that an outlying orbito-ethmoidal cell was leaking into the floor of the frontal sinus, and what had been regarded as the floor of the sinus was really the roof of the orbito-ethmoidal cells.—Several other members took part in the discussion.

Site of Origin of Intrinsic Laryngeal Cancer.

Sir STCLAIR THOMSON read a contribution entitled "The Usual Site of Origin of Intrinsic Cancer of the Larynx as demonstrated at 50 Laryngo-Fissures." The series showed that malignant disease exhibited no preference for the posterior part of the vocal cord, although it had been so stated in text-books. The invasion of the neoplasm in the 50 cases was as follows:—

Limited to anterior third of cord	3	cases.
" middle third	7	"
" posterior cord	0	"
" anterior and middle together	16	"
" middle and posterior together	3	"
Occupying the whole cord	21	"

Expressed another way, the cancer invaded the anterior third in 39 cases, the middle third in 47 cases, the posterior third in 24. The growth was in the subglottic area in 13 of the cases, and more than 50 per cent. of the subglottic cases had died of recurrence. In every case, however limited the growth might be, the entire vocal cord *should be excised*.—The paper was discussed, and Sir STCLAIR THOMSON replied.

Paralysis of Vocal Cords in Cases of Malignant Breast Tumours.

Dr. LOGAN TURNER (Edinburgh) submitted an interesting contribution on this subject, based upon six cases he had seen in the last 12 years. Three were married women, three unmarried, and they were first seen for hoarseness, which had developed at varying periods after breast amputation for malignant disease, the average period between the two events having been 3½ years. In none of the cases had there been operation on the cervical glands, the question of trauma did not therefore arise. Two of them were cases of contralateral paralysis—i.e., the cord on the opposite side to that of the breast cancer was paralysed. By means of an epidiascopic demonstration he showed the mechanism of causation.

Diathermy in Inoperable Cancer.

Sir WILLIAM MILLIGAN gave a contribution on diathermy in inoperable pharyngeal and epi-laryngeal malignancy, its objectives and limitations, with a review of cases. He said that during six years he had made use of diathermy in even inoperable cases of malignant disease in the floor of the mouth, the tongue, the faucial pillars, the sinus pyriformis, and even in the hypo-pharynx. He found that in inoperable cases diathermy placed the patient in a much more comfortable condition than would otherwise have been the case; he did not suggest there was anything like lasting cure, but the destruction of the local lesion and the clearing up of sepsis rendered the patients' last days infinitely more endurable than if nothing of the kind had been done. Sometimes a secondary deposit also was amenable to diathermy treatment: He proceeded to discuss the technique of the operation in different conditions and the strength of current needed, and to give particulars of patients treated. The method was available for surgically operable cases also.—The contribution was fully discussed.

Dr. IRWIN MOORE read a paper on Eversion of the Sacculus Laryngis, and showed a number of illustrative slides. The matter has been before the Section on a previous occasion recently.

The Ventricle-Stripping Operation for Cord Paralysis.

Prof. F. HOBDAY read a paper setting forth his experience in 2000 operations on horses with paralysis of the vocal cord—manifested in "roaring"—by stripping the membrane from the ventricle of Morgagni, and suggesting that the operation was applicable to the human subject suffering from similar paralysis. He exhibited specimens to support his thesis.—Mr. TILLEY, Mr. M. E. VLASTO, Mr. S. B. WORTHINGTON, Mr. J. F. O'MALLEY, and the PRESIDENT discussed the paper and emphasised the differences between the human and equine larynges, and Prof. HOBDAY replied to the various criticisms.

Bronchoscopy in the Treatment of Asthma.

Mr. SYME submitted a contribution on the treatment of asthma by bronchoscopy and the use of a 10 per cent. solution of silver nitrate when the correction of nasal trouble or accessory sinus disease did not produce a lasting result on the asthma. He hesitated to use the word "cure" in severe cases, in which there were changes in the lung tissue, but in 12 such the benefit had been so decided as to enable the patients to resume their usual life, and he thought the results justified his reporting the method to the Section.—The paper was discussed.

In the afternoon Dr. REGINALD MORTON exhibited some recent developments in X ray treatment for laryngeal cases. Mr. G. T. MULLALLY showed the technique of blood transfusion, and Mr. T. B. LAYTON demonstrated some specimens from the recently acquired collection of the late Prof. Onodi, of Vienna.

Later in the afternoon the usual clinical meeting was held, when about a dozen cases were exhibited and discussed. In the evening members and visitors dined together.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

AT a meeting of this society held on June 3rd, at 11, Chandos-street, and presided over by Prof. W. J. R. SIMPSON, a paper was read by Lieut.-Col. H. KIRKPATRICK, I.M.S., entitled

Some Points Concerning Trachoma.

His subject called for little introduction, for the disease was well known as one of the chief causes of blindness in both Near and Far East, and for its association with bad hygiene and dirt. It was undoubtedly very infectious, and its spread was favoured by the harmful effects of dust and glare of the East, where among Mahomedans the use in common of the henna pot as a cosmetic was a fertile source of infection. Flies, though occasionally responsible for its conveyance, were not now regarded as an important factor. Following the Napoleonic wars England shared in the wave of infection which spread over Western Europe at the beginning of the last century, since when it had disappeared and was now rare in the British Isles, with the exception of parts of Ireland, where it still persisted, and when seen in England is chiefly confined to immigrants from the East. Colonel Kirkpatrick described trachoma as a specific and infectious inflammation of the conjunctiva, chronic in type and characterised by the formation in the membrane of follicles and papillæ, resulting in cicatrisation. He gave a detailed account of the structure of the conjunctival membrane and the anatomical relations of its three parts, the tarsal or palpebral, the fornical or transitional, and the bulbar. Reference was made to the normal development of papillæ in the tarsal portion and their inflammatory overgrowth in the early stage of trachoma. He described fully the pathology of the characteristic changes occurring in the conjunctiva—the general round-cell infiltration of the deeper layer and varying degree of vascular engorgement, together with the formation of pseudo-papillæ, tubular depressions of epithelium, and occlusion cysts. In particular the growth of the follicle was regarded as the striking feature of trachoma, composed of central large connective-tissue cells and peripheral zone of small lymphocytes in a stroma continuous with the connective tissue of the surrounding conjunctiva. The later stages of the follicles resulted in inflammatory cicatrisation and consequent deformity of the tarsus of the lid, leading to the *sinuous outline of the free margin. Pannus due to* cell invasion and vascularisation of the superficial layers of the cornea was of common occurrence. No organism had yet been discovered as the specific cause of trachoma, although many had been described.

Signs and Symptoms.

The lecturer proceeded to discuss in detail the symptoms and signs of the disease, which he divided into three stages: (1) An early or florid stage with formation of the characteristic follicles and *papillæ; (2) a middle or cicatricial stage;* (3) a late stage in which advanced cicatrisation of the conjunctiva with marked changes in the tarsus and cornea became evident. All stages tended to merge into one another. Ptosis, owing to inflammatory involvement of the insertion of the levator palpebræ, was commonly to be observed in the early stage. Vascularisation of the cornea, or pannus, generally developed during the middle stage, when all signs of the disease became more accentuated with the gradual network development of fibrous tissue in the conjunctival membrane, and the appearance of retention cysts. The formation of follicles in excess, giving rise to a pale yellow gelatinous mass on the tarsus, was known as Stellway's gelatinous trachoma. With continued cicatrisation and degeneration in the tarsal plate during the third stage, marked irregularity and deformity of the lids occurred and resulted in entropion, increasing pannus, and ulceration of the cornea, both much aggravated by trichiasis. *Finally, following on the* deposition of kerato-hyaline, the eye became dry, in the state known as xerophthalmia, the cornea more and more opaque, and total blindness eventually set in. The diagnosis of trachoma previous to the onset of the cicatricial stages was often a problem of great difficulty and called for differentiation particularly from follicular conjunctivitis, spring catarrh, and a chronic form of purulent conjunctivitis. During the early stages of trachoma the signs of most value were the presence of ptosis, the early occurrence *of pannus in the upper part of the cornea,* and, the situation of the trachoma follicles, best marked along the upper, or convex, margin of the superior tarsus, spreading upwards to the fold of the fornix and downwards on to the conjunctiva covering the tarsus. but much less evident in the lower fornix and conjunctiva of the lower lid. Colonel Kirkpatrick gave graphic details as to the differential diagnosis of the three conditions, above mentioned, for which trachoma was liable to be mistaken. In the treatment of the disease the first essential was the prevention of its spread by segregation of infected persons, the provision of separate basins and towels for each patient, the observance of proper precautions for cleansing the eyes, and the correct disposal of cloths soiled by conjunctival discharge.

Treatment.

In regard to treatment, the lecturer observed that it should aim at promoting the disappearance of the follicles without causing an excessive amount of fibrous tissue; the former was effected by Nature, in course of time, but by means of cicatrisation, which led to the serious complications and sequelæ. and it was to overcome these that every effort, whether medicinal or operative, should be directed. In the treatment of the first stage nitrate of silver in solutions varying from 5 to 60 grains to the ounce, but preferably 10 grains, or copper sulphate, applied in the form of a stick, were most in favour as medicinal applications to the affected areas of the conjunctiva; and these were best exposed by ballooning the fornix with a subconjunctival injection of sterile normal saline, *including 4 minims of 4 per cent.* solution of cocaine and 4 minims of adrenalin. The obstinate character of trachoma necessitated treatment, even in the first stage, over a period of some months, if the danger of relapse was to be avoided. More dical measures were occasionally advisable to fford more rapid relief, and for this purpose the operation of excision of the transitional portion of the conjunctiva, after ballooning with a local anæsthetic, *was advocated and described in detail.* In dealing with the second stage of the disease medicinal treatment was likely to be of little avail, and the adoption of operative measures was distinctly indicated, the most satisfactory being the combined excision of fornix and tarsus as described by Heisrath. A full and comprehensive account of this particular operation was given and illustrated by drawings thrown on the screen from the epidiascope. Following on the excision there was some reaction lasting about 36 hours, but it was possible to remove the stitches from the sutured conjunctiva and to commence painting with silver nitrate at the end of the first week. In the third stage of trachoma the membrane had undergone so much shrinkage that little of the fornix remained, but much benefit was to be derived from excision of the diseased tarsus, the possible reservoir of infection. The treatment of such complications as trichiasis and pannus, the latter occasionally by peritomy, and corneal ulceration by the use of scarlet R, 2 per cent. in olive oil, were called for in the third stage. The use of dionine for promoting absorption of corneal opacities, and instillation of 5 per cent. infusion of crushed jequirity seeds for the relief of pannus were mentioned as of considerable value. The trachomatous conjunctiva was especially liable to, and necessitated constant watch against, secondary infections—e.g., by the bacilli of Morax-Axenfeld and Koch-Weekes, calling for the use of sulphate of zinc drops and silver nitrate respectively. In gonococcal and particularly streptococcal infections, eye-baths of saturated magnesium sulphate solution were most useful remedies.

In conclusion, Colonel Kirkpatrick emphasised the following points: (1) that trachoma was not a single disease entity; (2) that the causes of the characteristic conjunctival changes might vary widely in different cases; (3) the importance of guarding against secondary infections; (4) the difficulty of diagnosis, as no causative organism had yet been established in trachoma.

Experiences with Chinese Labourers in France.

After opening remarks from the PRESIDENT, Dr. A. G. BAGSHAWE, the honorary secretary of the Society, read a letter from Dr. C. F. HARFORD, as the latter's contribution to the discussion. Dr. Harford quoted some of his experiences with Chinese labourers in France during 1917 and 1918 in order to show the great importance of trachoma from the epidemiological point of view, and the difficulties of diagnosis owing to the absence of any definite pathological test which could be applied to the disease. On a great ammunition dump at Dannes, where he was in medical charge of South African natives, two companies of Chinese were brought in who had been classified on their entry to France as "Trachoma Companies" and "Conjunctivitis Companies" respectively. Obviously, this was only a rough classification by which it was sought to segregate in the first class all who were potentially trachomatous, doubtful cases being collected in the second class. He had been asked to see some of the more acute cases taken from these companies on their first arrival at Dannes, and found it difficult to distinguish well-marked cases of trachoma. The more severe appeared to be similar to cases of muco-purulent conjunctivitis as seen in England with a red velvety conjunctiva covering sometimes irregular nodules. Later on at Havre he was called upon to inspect Chinese companies which had been classified as clean from the point of view of trachoma; even in these there was a distinct tendency to conjunctival irritation with a certain proportion of more serious cases. He attributed this to the lax eyelids of the Chinese and uncleanly habits. He contended that the object-lesson thus afforded during the war of the prevalence of contagious eye disease, and the difficulties of diagnosis, should lead to renewed inquiries both by the administrative and medical authorities in countries where these conditions were prevalent.

Lieut.-Colonel R. H. ELLIOT *stated his emphatic* belief that trachoma was responsible for more *blindness in India, Persia.* Afghanistan, and China than all other eye conditions put together; and he maintained that nothing like enough was being done by the Government to realise the necessity of grappling with the problem, especially in the earlier stages. For *trachoma, if* treated properly from the start, should never cause blindness. He heartily agreed with Colonel Kirkpatrick on two important points he had discussed: firstly, as to the great value of magnesium sulphate treatment of the conjunctiva; secondly, as to the ballooning of the conjunctiva, which had proved a most useful manœuvre both for diagnosis and treatment.

Colonel S. P. JAMES *inquired* if Colonel Kirkpatrick *from* his experience did not consider it important that trachoma should be made compulsorily notifiable in England.—Lieut.-Colonel KIRKPATRICK agreed as to the necessity that the condition ought to be notifiable as an infectious disease; and Lieut.-Colonel ELLIOT advocated a further step—namely, that all doubtful cases should be notified, whether definitely diagnosed as trachoma or not.

An Early Portuguese Contribution to Tropical Medicine, by Dr. CARLOS FRANÇA, Collares, Portugal, which had been translated by Professor Clifford Dobell, was submitted in the translator's absence by Dr. BAGSHAWE for publication in the Society's Transactions. The subject was of considerable interest in the history of medicine, dealing as it did with the first mention of some of the tropical diseases, ascribed to certain Portuguese physicians in the sixteenth and seventeenth centuries. The references included an account of *cholera*, by Garcia da Orta (1583); of yellow fever, by Ferreira da Rosa (1694); also descriptions by travellers, who were not medical men; of scurvy, by Joao de Barros (1552); of the cholera epidemic of 1543, by Gaspar Correia; and of *Dermatophilus penetrans*, in the production of what is now commonly known as "Chiggers," by Gaspar Affonso (1596). Mention was also made of a work of the sixteenth century containing a clear account of the part played by insects in the transmission of framboesia tropica (yaws), written by Gabriel de Souza, a Portuguese colonist of Brazil, in 1587. The account given by this shrewd observer of the sixteenth century had waited over three centuries for verification by the work of Castellani, who in 1907 demonstrated experimentally that the house fly (*Musca domestica*) could transmit the spirillum, *Treponema pertenue*, of yaws. It was rightly claimed, therefore, that the name of Gabriel de Souza was one which should henceforth figure in the history of Tropical Medicine.

TUBERCULOSIS SOCIETY.

A MEETING of this *Society was held on June* 6th at the Margaret Street Hospital for Consumption, London, when a *paper* was read by *Dr.* NATHAN RAW, M.P., President of the Society, on

What we do NOT *Know regarding Tuberculosis.*

He said that in spite of an enormous amount of research work by many of the greatest clinicians and scientists of the day there still remained great *uncertainty and* lack of knowledge on several fundamental and crucial points. Tubercle bacilli were divided *into three* types, *originally all of a* common species—human, bovine, and avian. The avian did not infect *man* and so could be disregarded. Just as the bacilli of tetanus and dysentery selected special organs, so the human and bovine tubercle bacilli attacked different parts of the human body. Speaking generally, Dr. Raw said that the human bacilli attacked the lungs and larynx, whereas the bovine attacked the alimentary system and the lymphatic glands. How and at what exact time a person became infected with pulmonary tuberculosis was *still a matter* of uncertainty, and how long the bacilli had the power to remain latent before acute symptoms developed was still unknown. The period of adolescence was undoubtedly a critical period *and one in* which the infection was stimulated to activity. Pulmonary tuberculosis was caused by the human bacillus in 90 per cent. of cases and was always primary. The remaining 10 per cent. were secondary to a primary infection by the bovine bacillus and were either an extension from the cervical glands downwards to the apex or an extension upwards from the abdomen to the bronchial glands. The problem of the bronchial glands was still unsolved, *and whether or not the bacilli live and flourish in the blood stream was still a matter of controversy. Diathesis* played an *important* part in predisposition to tuberculosis, and gouty people were much less susceptible than those of the diabetic diathesis. Tubercle bacilli varied greatly in virulence and to-day their virulence appeared to be much less than it was 50 years ago. The amount of individual resistance to attack and the degree of inherited tendency were still matters of uncertainty. Nomadic tribes were relatively free from *tuberculosis*, whereas *civilised nations* were *more susceptible*; and hence tuberculosis was really a *disease* of civilisation. Dr. Raw said that introduced into a primitive race it rapidly decimated the population, as this population had neither immunity nor resistance. How did civilised peoples become more or less immune to infection? Probably because the majority were infected with small doses which protect them against a more massive infection. Only a small proport*ion of married couples* were *infected, and this fact might* be ascribed to the non-infected *mate becoming* immunised by contact with the infected mate. There was a strong *antagonism* between the human and bovine types of the tubercle bacillus, and it had never been *found* possible to distinguish the two types in the same body. If the body were attacked by the human type and exposed afterwards to the bovine, the latter was incapable of causing infection. *Calmette had* shown also that it was possible to protect calves and other animals by using *attenuated* bacilli of the same *type. How was infection produced* and *how long might it remain latent?* The difficulties which arose when we *attempted to answer these* and *other questions* showed how little indeed we *do* know regarding tuberculosis and how much yet remained for research to accomplish.

Discussion.

Dr. H. B. GIBBINS remarked on the improvement *shown by many women suffering from tuberculosis* during pregnancy, for which improvement no adequate reason had been adduced, and on the *fact* that so few cases of the disease showed *physical signs* of excavitation.

Dr. A. SANDISON *commented* on the association of the colour of the hair with disease and noted that red hair was *more* commonly met with in the rheumatic diathesis, and black hair in the tuberculous. *Such association* might be a matter of considerable importance in prognosis, to which aspect of *the* problem he *thought too little attention* was paid in general; the psychology of the patient, his susceptibility to the influence of *suggestion in treatment*, had also been unduly *neglected*.

Dr. F. HERNAMAN-JOHNSON *stated that, so far as* the X *rays* showed, pulmonary tuberculosis always appeared to begin in the hilus glands and *to spread* therefrom, bandwise or fanwise, towards the apex, which might or might not show signs *of being affected*. A pure apical tuberculosis was never found without definite signs at the root, though the connexion *between* them might not, however, be very obvious.

Dr. HENRY A. ELLIS called *attention* to the difference in prognosis between man and woman. The proportion of deaths in man grew greater as age increased, whereas the *death-rate* in woman was *highest* between the ages of 15 to 25. In regard to the question of immunity he *pointed out that, if* cases were injected with tuberculin in the pre-tuberculous stage, tuberculosis would *not develop in them*.

Dr. CAMPBELL MCCLURE considered that one of the *most* hopeful signs of the times was the *tendency* to leave theory alone and to concentrate on the tabulation of large series of cases. Two most important questions were (1) diathesis; and (2) the low death-rate from the disease compared with the high incidence-rate.

Dr. JOHN SORLEY thought that some of those who held views on the production of immunity by small infecting doses did not always have the courage of their convictions and put these views into practice. It might be possible to produce immunity by administering small doses of living bovine bacilli to children in milk, but one could not guarantee that disaster might not result, and parents were not likely to offer their children for experimentation in view of this uncertainty.

Dr. ELLIS showed the upper lobe of the lung of a lion which had died of pulmonary tuberculosis. The whole lobe was one large cavity. The specimen was obtained from the Zoological Gardens through the kindness of Dr. C. F. Sonntag.

Reviews and Notices of Books.

DIATHERMY.

Its Production and Uses in Medicine and Surgery. By ELKIN P. CUMBERBATCH, M.A., B.M. Oxon., M.R.C.P. London: Wm. Heinemann (Medical Books), Ltd. 1921. 44 illustrations. Pp. 193. 21s.

THE author takes the trouble at the outset to explain the term diathermy, which means the "through heating" which occurs on the passage through the body of an electric current of special kind. A brief history of the way in which these currents came into use is followed by the technical features which distinguish both their production and their application to the body in conditions of disease.

The subject is a comparatively new one; the first diathermy machine for medical use was introduced into this country by the late Dr. Lewis Jones in 1909. Dr. Cumberbatch's work on diathermy is well known to those conversant with the subject; the author's particular studies on the rise in temperature of various parts of the body traversed by diathermic currents form the subject-matter of Chapter VI.; they will repay careful perusal, for they are well-planned experiments. Further experimental work by Dr. Cumberbatch upon physiological lines—for example, the effect of diathermy upon blood pressure, pulse-rate, and respiratory exchange—paves the way for an appreciation of the medical possibilities of this special form of electric current. One of the most striking features of electrical currents, which alternate with great frequency, is their inability to stimulate the excitable tissues. Until quite recently no explanation of this has been offered, but researches upon this phenomenon have now shown that the power of an electric current to stimulate the excitable tissues depends both upon the strength of the current and upon its duration; if the latter falls below a certain critical value the current loses altogether the power of excitation. The diathermic currents flow for less than this critical period of time before they reverse and therefore have no stimulating action; the sensation of warmth which is felt is due to the actual generation of heat within the tissues by these currents. The body can tolerate sufficiently large currents of this kind to allow of a very considerable rise of temperature; herein lies the possibility of surgical applications of these currents, discussion of which forms the concluding chapter of the volume.

The book is an excellent one. The subject is dealt with in a thoroughly scientific manner, the descriptions of the various types of diathermy machines at present in use are brief but lucid; the author has a scrupulous regard for exactness in every detail of his subject. On p. 16 an inversion of sentences occurs which the author will doubtless correct in future editions. The book is illustrated with line drawings and plates which enhance but do not over-balance the letterpress.

OBSTETRICAL AND GYNÆCOLOGICAL MONOGRAPHS.

Pelvic Inflammation in Women. By JOHN OSBORN POLAK, M.Sc., M.D., F.A.C.S., Professor of Obstetrics and Gynæcology, Long Island College Hospital, &c. London and New York: D. Appleton and Co. 1921. With 2 coloured plates and 88 illustrations. Pp. 229. £1 1s.

THIS monograph deals with the large group of diseases peculiar to women which result from septic, gonorrhœal, and tuberculous infections, and an attempt has been made to give the accepted pathology, a definite clinical picture, and the treatment. Dr. Polak uses the term pelvic inflammation in the wide sense, since he deals with this condition as it affects all parts of the genital tract. The book contains a great deal that is interesting. The author has a very profound belief in the prevalence of gonorrhœa in the female, and considers it a potent cause of pelvic inflammation and of one child sterility. He quotes the well-known figures of Nöggerath, the accuracy of which we are inclined to doubt. However, as is well known, the proof is difficult to obtain owing to the rapid disappearance of the gonococcus in these cases. Dr. Polak maintains that pyogenic cocci not infrequently persist in the prostate of men who have had gonorrhœa, and that in some cases they are the cause of infection in their wives. Considerable stress is laid upon the frequency of gonorrhœal infection of the mucosa of the cervix, and its treatment by a cone-shaped excision of the affected area is recommended in bad cases.

The chapter dealing with gonorrhœal infection is a very good one, and in the section on treatment great stress is laid on the importance of preventing the upward spread of the disease. In discussing the treatment of cases of puerperal infection the author strongly maintains that local interference is practically always contra-indicated and entirely condemns manual manipulations within the uterus or the use of the curette. In dealing with cases of puerperal pyæmia and general puerperal infection, treatment by sunlight, food, fresh air, repeated small blood transfusions, and general supportive stimulation is advised. Dr. Polak believes that by the repeated transfusions of small quantities—300–500 c.cm.—of citrated blood it is possible to lessen the secondary anæmia, to increase the number of active leucocytes, and to raise the blood pressure. Reliance is also placed on postural drainage by Fowler's position, proctoclysis, posterior colpotomy, and packing the pelvic cavity with gauze after the method introduced by Pryor. In the radical treatment of cases of salpingitis it is urged that no operative procedure should be undertaken until all acute symptoms have subsided. The case is tested by a blood count and a thorough bimanual pelvic examination. If after this the temperature and the leucocytes are not raised the operation may be performed with safety. Four very interesting cases are quoted in this chapter, in which the streptococcus lay latent in a parametrial exudate for periods varying from five to 15 years, and then gave birth to a general infection. In removing infected tubes Dr. Polak recommends the procedure by which a wedge-shaped portion of the fundus of the uterus, including the pars interstitialis, is resected. Resection of the ovary on general principles, in his opinion, should be discouraged.

Dr. Polak's book is interesting and valuable, and contains a great deal of information based on sound principles and on a wide experience.

Cæsarean Section. By FRANKLIN S. NEWELL, A.B., M.D., Professor of Clinical Obstetrics, Harvard University; Obstetrician, Massachusetts General Hospital. London and New York: D. Appleton and Co. 1921. With 53 illustrations. Pp. 210. £1 1s.

THE operation of Cæsarean section is occupying so large a place in the treatment of many complications of labour at the present time that a methodical review of the operation and its results, such as this monograph contains, is of great interest and value. Professor Newell is an obstetrician of considerable experience, and it is refreshing to see that he, at any rate, is not so enamoured of the frequent performance of Cæsarean sections as a means of overcoming many of the accidents of labour as are a number of the younger obstetricians at the present day. As he points out, the operation is undoubtedly abused, and "its true value can only be appreciated when it is applied to properly selected patients by competent operators." On the whole he declares himself in favour of the classical operation, and does not think that the various modifications introduced have any real advantages. At the same time he admits that the good results obtained by Kustner in his extraperitoneal method, namely 112 cases with only two deaths, are very striking, and show the method to have good features.

Professor Newell's teaching with regard to the treatment of contracted pelves by abdominal section is that generally recognised by the majority of teachers. In dealing with ovarian tumours he favours Cæsarean section followed by ovariotomy. He agrees in general with the dictum "Once a Cæsarean always a Cæsarean." In cases of eclampsia he believes the operation has a limited application, but on the whole he agrees with the conservative school, who prefer to treat the eclampsia rather than to terminate the pregnancy. In placenta prævia he is in favour of version or the use of a hydrostatic bag, and does not see any likelihood of the maternal or the fœtal mortality being lowered by the more frequent performance of Cæsarean section. In the worst cases of accidental hæmorrhage he recommends delivery by the abdominal route. In performing the operation he follows the usual technique, and sees no special advantages either in the subumbilical incision or in opening the uterus through the lower uterine segment. As he points out, the performance of an ordinary classical Cæsarean section calls for much less skill or knowledge than the delivery of a patient in a difficult case of labour by the vagina, and this is one of the main reasons why the operation at the present time is so often performed on occasions when it is not certainly the best or the safest method of delivering the patient.

The book is a very sound piece of work, and Dr. Newell's views are in harmony with those of the majority of experienced teachers of the subject.

COUNSELS AND IDEALS FROM THE WRITINGS OF WILLIAM OSLER.

Second edition. Selected and edited by C. N. B. CAMAC. London: Humphrey Milford, Oxford University Press. 1921. Pp. 355. 8s. 6d.

COLLECTIONS of extracts from any author are, as a rule, unsatisfactory, except in the case of poets, where whole short poems can be given. This collection is to our minds no exception to the rule, despite Dr. Camac's statement on p. xv. of his preface to this second edition, though we agree that a few of the extracts lose nothing by being divorced from their context. But for an anthology Dr. Camac's selection is well made, and those who have neither the leisure nor the opportunity to read Osler's works in their entirety will find fragments of gold dust which may well set them seeking in the matrix where lies the original metal.

Osler was widely read and steeped in seventeenth-century literature. Sir Thomas Browne one may almost say he knew by heart, while the language of the Authorised Version and of the Prayer Book appears again and again in his writings; and though he was eminently practical, and though there perhaps never lived a clearer teacher, yet in his writings we feel the vague detachment from the troubles of this world which we feel in reading Browne, or Vaughan, or Feltham, who wrote that wise book of "Resolves" when only 18. In these troublous times it is well for us to read Osler and to remember one of his rules of life—"to do the day's work well, and not to bother about to-morrow." To no man more than to Osler does the dictum of St. Bernard apply, "Tu qui in Congregatione es, bene vive, ordinabiliter, sociabiliter, et humiliter: Ordinabiliter tibi, sociabiliter proximo, humiliter Deo." We must refer to an error which occurs on p. 24, where we find "Nowhere in literature do we have such a charming picture . . . as that given in Plato's *Dialogues of Eryximachus*, himself the son of a physician, Acumenus." Of course this should read, "as that given in Plato's *Dialogues*, of Eryximachus." In a third edition this should be corrected.

INTERNAL SECRETIONS.

Die Innere Sekretion. By Dr. ARTHUR WEIL, Privat Dozent der Physiologie an der Universität Halle. Berlin: Julius Springer. 1921. Pp. 140. M.28.

THE author has compressed into a volume of 140 pages a mass of scientific fact and theory. He gives a concise summary of our present knowledge of the internal secretions in regard to their functions, their influence on the growth and development of the body generally, and discusses the minute histology of the glands. He is no slave to the idea that the internal secretions alone reveal to us the secrets of life; they do not, he says, rule over all, but share with the brain and nervous system the regulation of the course of life. The composition of the blood and the influence thereon of the secretions of the thyroid, thymus, and suprarenal are discussed fully by Dr. Weil, while special reference is made to the ferments of the plasma and the effect of the injections of gland extracts on coagulation-time. He explains that both factors in the circulation of the blood, the activity of the heart and the resistance of the peripheral circulation, are under the influence of the internal secretions, the thyroid and suprarenals increasing the excitability of the nerve endings, whilst the pituitary acts directly on the heart muscles.

In discussing metabolism, he shows how in thyroidism the negative nitrogen balance can be lessened by full doses of fat and carbohydrate; as to heat production, he maintains that the thyroid and pituitary increase heat by stimulating cell oxidation, whilst the adrenals act physically by their action in contracting the peripheral vessels. Many authorities would disagree with Dr. Weil here, and would claim that the thyroid acts partly by increasing the electrical conductivity of the tissues, and that the suprarenal is directly concerned with cell oxidation. Dr. Weil considers that the kidney has its own internal secretion, on the grounds that experimental injections of kidney extract reduce the symptoms of uræmia after the removal of the kidneys. The relation of the pituitary to the kidney, and the action of cholin on the intestinal contractions, are also discussed by Dr. Weil, who points out that there is more of this latter base in the adrenals and spleen than in the intestinal mucous membrane. In dealing with the theory of the vitamins, he suggests the possibility of their being antecedents of the internal secretions, and shows the similarity in the chemical formulæ of tyrosin, tyramine, hordenin, and adrenalin, and further directs attention to the resemblance between pellagra and Addison's disease, and to the degenerative changes in the ductless gland, especially the thymus, in beri-beri. The influence of the internal secretions, more especially those of the thyroid, parathyroid, thymus, sexual organs, and pituitary, on the rate of growth, relative development of the different parts of the body, and the variations in the two sexes form the subject-matter of another section of the book. Dr. Weil describes the development of the sexual organs and shows how the testicular and ovarian secretions influence the development of the sexual characteristics of the male and female.

Experimental change of sex is illustrated by a photograph of some guinea-pigs, in whom transplantation of the glands of the opposite sex was effected. Dr. Weil recognises three ovarian secretions, one related to the development of form, another concerned with the function of menstruation, and the third, which he associates with the corpus luteum, connected with the development of the placenta. In hibernating animals he has found atrophy of the sex organs in the autumn and asserts that the thyroid and pituitary are similarly atrophied. Recent work in America by Rasmussen on the woodchuck does not support this as regards the hypophysis. Mental conditions Dr. Weil regards as directly under the influence of the internal secretions. The nervous system regulates the ductless glands as well as other organs of the body; on the other hand, these glands in their turn influence the nervous system. The chemistry of the internal secretions, as far as they have been investigated, is discussed, and formulæ are given of adrenalin, cholin, thyroxin, and spermin; the isolation by Hermann of a hormone from the ovary, and by Fühner of a crystalline substance of chemical structure still undetermined from the hypophysis, is mentioned.

The illustrations in the book are excellent and the various tables instructive. Altogether the volume can be recommended to those who desire a concise review of the present knowledge of the internal secretions. The clinical aspect is not dealt with.

The Community Health Problem.

By Athel Campbell Burnham, M.D., Health Service, Atlantic Division, American Red Cross, &c. London and New York: The Macmillan Company. 1920. Pp. 160. 8s. 6d.

The author's preface tells us this book is intended to give welfare workers, public health nurses, and practising physicians an outline of the measures which are being suggested for the solution of the health problem as it exists in the United States. The problem as it exists in Great Britain does not differ in essentials, and for that reason we feel sure that Dr. Burnham's book will be read with interest by a wide circle of readers in this country. In our issue of April 9th we commented at length on the recently issued Hospital and Health Survey in Cleveland, Ohio, and it is justifiable to deduce that experiments have been carried further in this country than in the United States as a whole. No general system of school clinics, tuberculosis dispensaries, maternity and child welfare centres, free venereal disease clinics, and medical treatment on the insurance principle has as yet been established in the States. In this respect the Americans will be able to benefit by our experience and our failures. We well recognise, however, that we are only in the experimental stage, and that our own medical service is in the melting-pot. We have a long way to go before we secure for each family a family doctor with a public health point of view, who will be called upon when required (irrespective of the fear of a bill which may cripple the resources of the family perhaps for years), and who will be linked up with consulting physicians and surgeons, dentists, hospitals, convalescent homes, midwives, district nurses, and mothers' helps in such a way that his patients may have the benefit of these services in time of need. This is, in fact, something like the problem which Dr. Burnham puts before his readers.

In Chapter I. the author endeavours to give some idea of the extent of sickness disability. He estimates that about 6 per cent. of an average community are always in need of medical treatment, and that sickness leads on an average to a loss of nine days wages per head per year. He lays stress upon the small amount of the public expenditure to prevent sickness, and instances the work of the Rockefeller Foundation as an example which should be followed by public bodies. The fact that the private physician has neither the experience nor the time to practise preventive medicine is emphasised. Chapter V. is devoted to the important part that must be played by public health nurses in any satisfactory "programme for the betterment of community health." In the next chapter the question of the rehabilitation of the disabled worker is discussed, and the methods are noted of the Ford Company, which can boast that a man is never discharged from their employ because of physical disability. "If he is unfit for his former occupation, he is trained for another." In a later chapter we learn from Dr. Burnham that the Federal Board was overwhelmed with the problem of training the men disabled through the war. This is somewhat surprising when we consider the immense financial resources available and the comparative size of the problem to be faced in the United States and in the other belligerent countries.

Interesting experiments in industrial medicine, in the establishment of health centres and in social unit organisations are recorded in other chapters, and the book ends with some account of endowed health demonstrations such as the Rockefeller and Russell Sage Foundations.

War Diaries.

The Diary of an Australian Soldier (Captain K. J. Barrett). Melbourne and Sydney: The Lothian Book Publishing Co. 1921. Pp. 222. 7s. 6d.

Books about the war are many, but it is right and natural that this should be so. The one before us is of particular interest as a simple record, kept for the information of his family, by a young Australian officer, who, like so many others, developed both in character and grasp of things under the strain of military necessity.

Keith Barrett's father, Lieut.-Col. Sir J. W. Barrett, A.A.M.C., who writes a preface to the diary, points out that his son was not distinguished as a boy by any scholastic ability, but that the training in the officers' instruction school developed him in a remarkable manner. Moreover, he has left behind him various essays on discipline, on making men comfortable, and on other branches of knowledge essential for an officer, which, if they are anything like the diary, would be well worth publishing. Barrett received his training in Egypt in 1915, when he was given a commission in the Imperial Army, having on the outbreak of war volunteered as private in the 2nd Field Ambulance (Queensland). He served first in the Dardanelles and then in France, was twice mentioned in despatches during his life, and again after his death, which occurred on April 16th, 1917, from wounds received at Guemappe three days previously. For his work at the capture of "The Harp" on April 9th he was recommended for the D.S.O. The diary is a plain unvarnished record of the hard work, the failures, the successes, and the daily routine of warfare, but is full of little touches which show what manner of man was the young officer of the improvised armies, how earnestly he strove to do his duty, and how his whole thought was for his men.

The Diary of a Yeomanry M.O. By Captain O. Teichman, D.S.O., M.C., Croix de Guerre, Croce di Guerra, R.A.M.C. (T.F.). London: T. Fisher Unwin. Pp. 283. 12s. 6d.

This book is remarkable for the self-effacement of the writer. We see by the title-page that Captain Teichman gained most honourable distinctions, yet the reader would hardly gather from his pages that he was anything but an intelligent observer who had accompanied the forces on various fronts; who had a certain amount of military knowledge and was rather interested in medical matters. He served in Egypt, the Gallipoli Peninsula, Palestine, and on the Piave, and on at least two occasions was wounded. The greater part of his service was in the Palestine campaign, and he gives a graphic account of the sufferings endured by both men and animals mainly on account of lack of water, but his own share of the work is mentioned only impersonally.

Here and there he tells good stories. On p. 215 we hear of a private in an Egyptian Labour Corps who was anxious to return to Egypt. He accordingly wrote the following moving appeal to his C.O.: "Sir, my absence is impossible, some man has uprooted my wife, my God I am annoyed; yours faithfully." Captain Teichman does not say whether the writer obtained his leave, but we think he did. Another incident occurred during his service in Italy when he was acting S.M.O. of Faenza, where there were two hospitals, British and Indian, fed by train from various Eastern fronts. On p. 255 he relates how "on one occasion a train containing Indians suffering from mumps was held up for half a day near the station, being shunted on to a siding; when it had continued its journey the local sanitary authorities disinfected the permanent way, but later it transpired that the engine which had drawn the train had been waiting on another siding, and accordingly the rails on which it had stood were also solemnly disinfected." It is pleasing to think that so meticulous a regard for prevention has survived in Italy for some seven hundred years, for Ammianus Marcellinus, writing of the year 353 A.D., tells us in his account of Rome, Bk. XIV., cap. 6, that the fashionable Roman society of the day was so afraid of infection that not only did they decline to see a sick friend, but even when they sent a slave to inquire after him the slave was not permitted to re-enter the house with the answer until he had had a bath.

We take leave of Captain Teichman's book, with a recommendation that it should be read, and add only that we wish he had told us a little more about himself.

CLINICAL EXAMINATION OF DISEASES OF THE LUNGS.

By E. M. BROCKBANK, M.D., F.R.C.P., and ALBERT RAMSBOTTOM, M.D., F.R.C.P. London: H. K. Lewis and Co. 1921. Pp. 88. 4*s.* 6*d.*

THE title of this useful little book suggests that the authors examine diseases rather than the organs in which they occur, and this seems a topsy-turvy notion. In the covers of much standard information, the authors sandwich in many useful hints which are far too rare in text-books. Thus, in the case of a short, persistent, dry cough, they give the sensible but rather unusual advice that the physician should search for its cause in the external auditory meatus. Again, with regard to paracentesis abdominis in a case complicated by bronchitis they advise caution, pointing out that if the fluid be removed, the stretched abdominal muscles may no longer be able to help the diaphragm and thoracic muscles in their expulsive efforts in coughing. "The result is that the patient cannot get rid of the bronchial secretion, and may easily be drowned in his own sputum." The authors' English is deplorably inelegant, but this is a matter of secondary importance in a handbook of this description.

THE RHYTHMIC DANCE-BOOK.

By MARGARET EINERT. London: Longmans, Green and Co. 1921. Pp. 96. 4*s.* 6*d.*

Miss Margaret Einert, in her small and readable book, tells us that a sound mind in a sound body is not enough, there must also be a sound emotional nature. In order that this may be cultivated, she advocates that children should dance to express their joy in life. They must dance with body and head and arms as well as with feet. They must not move to the music; they must be moved by it. "Imagine," she says, "a fresh green lawn and a fiddler roaming about, playing as he walks from sheer happiness and love of his art. Imagine then a flock of loose-clad children dotted all about among the flowers and the sunshine." Rhythmic dancing, according to the enthusiasts, makes for joyous health, for complete coördination and control, for imagination, for self-realisation.

One delightful chapter in Miss Einert's book deals with stories in movement. For instance, children are asked to dance as though they were on the sea-shore. At once they picture sands, surf, waves, storms, thunder, and mermaids, and mark on the grass a section for sand, one for surf, and one for deep sea. They listen quietly to the music played once through and then they dance. The storm and the waves have their appropriate musical passages, and six children dancing together are taught to represent the curling wave, the incoming tide, the break of the surf on the sand. The teacher unfolds the story a little. Calm sets in after the storm, the sun comes out, and to a gentle melody the children spring forward to the shallow water and at once become mermaids combing out their long hair in the sunshine. Another dance-story represents the spirit of Christmas—another "*The Wind and the Rose.*" Further chapters deal with verse-dancing, with plastic posing, and with suitable clothing to allow freedom of movement.

A charming book with a strong eugenic side.

Reports and Analytical Records.

ETHANESAL.

(SAVORY AND MOORE, LTD., 143, NEW BOND-STREET, LONDON, W.)

THIS anæsthetic apparently has the physical properties of ether. It is anhydrous, free from sulphur compounds, and has a neutral reaction. It contains a very small amount of a substance oxidised to acetaldehyde by chromic acid, which presumably is ethylic alcohol. Ethanesal commences to boil at 33·9°C. When fractionated:—

41	per cent. distilled over between	33·9° and 35·0°C.
13	" " " "	35·0° " 36·1°
16	" " " "	36·1° " 37·8°
28	" " " "	37·8° " 40·2°
2	" " " "	above 40·2°

When ordinary B.P. ether is fractionally distilled some 97·5 to 98·5 per cent. passes over at 34° to 36°C., hence it is obvious that ethanesal is a mixture of substances having a boiling-point not far removed from that of ether. According to the statements of Dr. R. L. Mackenzie Wallis and Dr. C. L. Hewer in THE LANCET of June 4th (p. 1173) it appears that the anæsthetic properties of ether are due to the presence of certain ketones. Ethanesal is a mixture of pure ether and these ketones, and the introduction of this anæsthetic may be regarded as a distinct advance in anæsthetic practice.

TUBERCLE VACCINE R.

(ALLEN AND HANBURYS, LTD., LONDON.)

We have received two sample boxes of this preparation, introduced on personal trial by Dr. Nathan Raw, together with an explanatory pamphlet. According to the latter, this vaccine, which is designed for use both as a curative and prophylactic agent, is prepared from cultures of *B. tuberculosis*, subcultured without a break for 14 years. The vaccine is to be administered on the principle advocated by Dr. Raw, that the two types of disease, human and bovine tuberculosis, are antagonistic to one another, and that a mild infection of the one protects against the other. It is suggested that doses should begin at 0·001 mg. and be continued for at least 12 injections in increasing doses at intervals of seven days up to 0·025 mg. The pamphlet does not state whether the bacilli have been killed by heat, and if so, at what temperature, or by the addition of antiseptics. The price of the vaccine is 5*s.* per dose.

Each box contained three ampoules of 0·001, 0.002, and 0·003 mg. vaccine respectively, marked human strain. The contents of a 0·003 mg. ampoule when centrifuged showed small numbers of intact acid-fast bacilli, morphologically resembling tubercle bacilli with no sign of disintegrated organisms. Cultures on glycerinated Dorset's egg medium remained sterile. No secondary organisms were found either in films or on ordinary culture media (broth and agar). Two guinea-pigs were inoculated subcutaneously with the vaccine; one was given 0·003 mg. and the other 0·006 mg. No toxic symptoms were observed following inoculation and when killed three weeks later no signs of tuberculosis were observed macroscopically or microscopically.

QUINOSAL.

(S. H. M. Co., Ltd., Sutton, Heston, Middlesex.)

This preparation is made from quinine ethyl carbonate, known as euquinine or tasteless quinine and salicylic acid. It is in the form of small crystals melting at 197°C., and when analysed was found to consist of salicylic acid 25·2 per cent.; and quinine ethyl carbonate 74·4 per cent., water nil, ash nil. Quinosal is therefore a definite chemical compound with the composition corresponding to the salicylate of quinine ethyl carbonate. Quinine salicylate has been recommended for diarrhœa and neuralgia, rheumatism and sciatica. Quinosal is intended as a tasteless substitute for this drug. It is satisfactory to see that English manufacturers are placing high-class synthetic drugs of this kind on the home market. We are informed that the S. H. M. Co., are the sole makers of quinine ethyl carbonate in this country.

HÉMOSTYL.

(Wilcox, Jozeau and Co., 49, Haymarket, London, S.W.)

Three ten cubic centimetre flasks of this serum were received for examination. It is obtained from the horse by bleeding the animal during the regeneration phase which follows a hæmorrhage. This is done on the principle that the hæmopoietic properties of the serum are increased during this period. On examination the serum was found to yield no growth on aerobic or anaerobic cultures. Injected subcutaneously into a guinea-pig, the serum gave rise to no toxic symptoms and a second dose repeated three weeks later caused no anaphylaxis. The serum, therefore, is non-toxic and non-anaphylactic and is free from contaminating organisms.

LYSOL WARD SOAP.

(Lysol, Ltd., 9 and 10, St. Mary-at-Hill, London, E.C.)

On analysis we find this soap has the following percentage composition: Fatty anhydrides, 54·4; Na_2O, combined as soap, 6·2; Na_2O, combined as Na_2CO_3, 0·3; free alkali as NaOH, trace; and water, 37·9 per cent. Resin acids are present, and the claim that the soap contains 3 per cent. of cresols is substantially correct, a content which confers definite antiseptic properties. It is stated that this soap is manufactured for hospital and household use and that it is particularly suitable for the washing of flannels. The retail price is about *8d.* per lb., but in comparing this with other domestic soaps the high percentage of water (37·9) should not be lost sight of.

TURNWRIGHT'S TOFFEE DE-LIGHT.

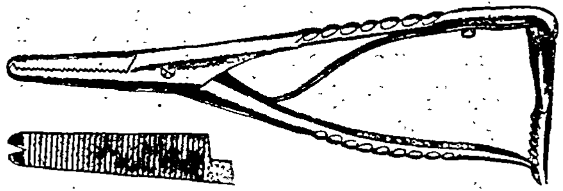
(Turner and Wainwright, Ltd., Brookfoot Mills, Brighouse, Yorkshire.)

On analysis this toffee was found to consist of sugar 65·9, water 7·3, fat 18·7, proteins 2·5, sodium chloride 0·6 per cent. These figures correspond to a mixture of sugars 65·9, dried milk 10, fat (other than that in the dried milk) 16·2, and moisture 7·3 per cent. The salt is probably added with a view to improving the flavour. The texture of this toffee, in common with many other popular modern brands, is soft and caramel-like in character and quite unlike the old-fashioned brittle preparations. The mixture is a well-proportioned one and furnishes a palatable and nutritious sweetmeat.

New Inventions.

A NEW APPENDIX CLAMP.

In appendicectomy the usual routine is to divide the appendix between two pairs of forceps. By this procedure the contents of the appendix are forced into the part between the two forceps, and, to prevent the spread of infection, the surgeon is compelled to resort to the inevitable "drop of pure carbolic." To avoid this troublesome procedure I have devised the instrument here illustrated, which is as easy to apply as a pair of forceps. The clamping part of the instrument is wide enough (9 mm.) to allow the base of the appendix to be ligatured and divided at the crushed part, the peritoneal surfaces of which are brought into apposition so that the appendix contents are forced away from the region of ligature and division. The crushing surfaces of the clamp bear fine transverse serrations which fix the appendix transversely. In my opinion clamps with smooth unserrated surfaces which act equally in all directions, unless they are narrow like Mr. Donald Armour's ingenious instrument, tend to produce a longitudinal rupture of the appendix. The ratchet catch and spring are similar to those used in various forms of needle holders, and are locked and unlocked with the greatest ease.

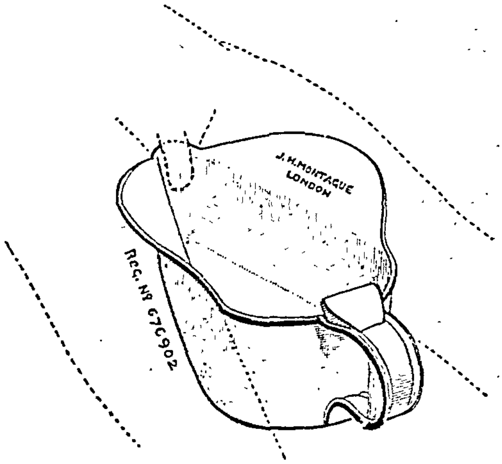


The clamp has been made in accordance with my suggestions by Messrs. Arnold and Sons.

Welbeck-street, W. W. K. Irwin, F.R.C.S.Edin.

A UROLOGICAL BASIN.

The urological basin illustrated is of great assistance in the treatment of urethritis and cystitis when irrigation is required. It is specially designed to fit firmly between the thighs without causing undue pressure on the posterior urethra which sometimes occurs when other appliances of the same nature are used. The flanges cover the inner surface of the thighs, and it is so constructed that no splashing or leaking over the sides can occur, which makes it particularly useful when treatment is carried out with the patient in bed. It will hold more than three pints of fluid and therefore does not require to be emptied during treatment. Lastly it is made of enamel iron and therefore can be sterilised by boiling. Mr. J. H. Montague, 69, New Bond-street, W.1, is the maker.



Welbeck-street, W. Walter J. Ronan, M.B. Dub.

THE LANCET.

LONDON: SATURDAY, JUNE 18, 1921.

The Report of Lord Cave's Committee.

THE anxiously expected report of Lord Cave's Committee upon hospital finance has made its appearance. This Committee, it will be remembered, was appointed by Dr. Addison during the debates at the end of last year before a Standing Committee of the House of Commons upon the Ministry of Health (Miscellaneous Provisions) Bill. This measure, which was afterwards rejected by the House of Lords, contained a clause around which important medical discussion centred, inasmuch as it sought to give powers to county councils to supply and maintain hospitals, to contribute to voluntary hospitals, and to undertake the maintenance of Poor-law hospitals and institutions. It was felt in many quarters that such legislation might prejudice the voluntary system of hospital support at a critical time, and Dr. Addison accordingly appointed a Committee "to enquire into and report upon the financial position of the voluntary hospitals throughout the country." This Committee, under the chairmanship of Lord Cave, and consisting of five members only, none of them being medical men or connected with hospital arrangements in any way, issued an interim report at the end of March. The document, which was signed by all the members of the committee, confirmed the view that it is in the public interest to maintain the voluntary system of hospital management, and gave reasons for believing that from the Approved Societies, under the National Health Insurance Acts, a substantial part of the disposable surplus shown by the quinquennial valuation of the assets of the societies should be applied towards the cost of the maintenance of members of the societies while they are in hospital. There is no doubt that the voluntary hospitals are of enormous service to the Approved Societies, and the interim report of Lord Cave's Committee had an *excellent reception.*

Late last week the report of Lord Cave's Committee was published, and we were able to give the recommendations, which we repeat this week, together with an abstract of the report. It will be seen that as a main principle the Committee regard the coöperation of the National Health Insurance Commission as essential to their scheme for preserving the voluntary system, which they state definitely to be temporarily in jeopardy. They are convinced that the system is worth saving, and the reasons which they give are practically the same as those that have been advanced over and over again in these columns, whenever the system has been challenged. Freedom in medicine is secured by the voluntary principle; progress and medical research are fostered by it; and in no other way can the education of the medical profession be carried on so satisfactorily as at medical schools which are in close association with a large voluntary hospital. A system with testimonials of this character to its credit is not likely to die without a struggle, and though it may be temporarily open to criticism—the balance sheets at many of the great institutions supply justification for this—there is no reason to doubt, and we have never doubted, that the existing financial conditions are temporary. They are due partly to the circumstances produced by the war, partly to the old-fashioned methods of collecting funds, which have become a stereotyped routine with many of the charities, and partly to faulty methods of spending money. Lord Cave's Committee draws attention to procedures which can be undertaken by managers of voluntary hospitals to improve the financial position of their hospitals, and many of their suggestions have been made in these columns and elsewhere upon a good many occasions.

The first clause recommends the formation of a Hospitals Commission, with the institution of Voluntary Hospitals Committees for the country, and we are certain that the central organisation of the charities thus implied will lead both to efficiency and economy. In this way the best methods of administration can be ascertained by comparison and the lessons learnt made the common property of the hospitals And a further admirable suggestion in respect of such a Hospitals Commission closes the Report. The last clause states that the Hospitals Commission should be authorised during a period of two years to recommend grants for the extension and improvement of hospitals subject to like contributions being made from private sources. A previous recommendation would sanction an immediate grant to the Commission of £1,000,000, so that in the intent to make a joint scheme of benevolence between the public and the State it is left to the State to make the first move.

Treatment of Whooping-Cough.

IN few acute diseases have a larger number of supposed remedies been advocated than in the case of whooping-cough—a sure sign of their doubtful efficacy. The sceptic or nihilist in therapeutics will read with a more or less indulgent smile the description given by Dr. J. D. Rolleston in the June number of *Medical Science* of the various forms of treatment which have been recommended for this disease within the last two years. The principal novelty first introduced by Audrain of Caen, and subsequently employed by Weill and Dufourt, Gleyvod of Lyons, Cheinisse of Paris, and other French physicians, is the intramuscular injection of ether, which is given in the upper part of the buttock. The ether is supposed to act by combating the spasmodic element of the disease, and is not regarded as having a specific action on the infective agent of pertussis. The dose employed is 1 c.cm. up to the age of 7 or 8 months, and in older children 2 c.cm. repeated daily or on alternate days. Weill and Dufourt, who consider this method to be far superior to any other in the treatment of pertussis, regard it as specially indicated in cases with numerous and severe paroxysms, and claim that after a few injections the children have only abortive attacks unaccompanied by vomiting. Gleyvod, who reports eight cases in children aged from 2¼ months to 8 years, treated by intramuscular injections of ether in Weill's clinic, states that the first injections always have a more striking effect than subsequent ones, the system apparently becoming habituated to the drug. If a decided improvement occurs after the second or third injection no more need be given. As a general rule, however, six injections will be required to produce a permanent effect, and a greater number is unnecessary. Although it is dangerous to give ether in the large doses employed in anaesthesia to patients suffering from chronic disease of the lungs or bronchi, such as asthma, emphysema, or tuberculosis, there is no contra-indication to its use in the small quantities required for intramuscular injection. On the contrary, GLEYVOD maintains that it acts as an energetic cardiac stimulant in the febrile forms of pertussis, and those accompanied by much constitutional disturbance and severe pulmonary complications.

In spite of the enthusiasm with which a large number of French writers speak of the method, intramuscular injection of ether does not appear to have found general acceptance nor to be invariably successful, as so eminent an authority as Dr. JULES COMBY, of Paris, states that he has had an equal number of failures and successes. In the United States benzyl benzoate, which has been used for a variety of spasmodic conditions, has received enthusiastic support as a remedy for pertussis. From its use in 115 cases, the great majority of which were in children, Dr. DAVID MACHT, of the Johns Hopkins Hospital, has found[1] that the administration of benzyl benzoate solution, either alone or preferably combined with small doses of benzaldehyde, had a palliative though not curative effect on the violence and number of the paroxysms. Five to 40 drops of a 20 per cent. solution were given three or four times a day and oftener, according to the age of the patient and the severity of the disease. The beneficial action of the drug, according to Dr. MACHT, is due to a variety of factors, which include its antispasmodic effect on bronchial spasm, its sedative effect on skeletal muscle, its anæsthetic effect on the larynx, its expectorant properties, and its antiseptic action. Before the Société de Thérapeutique de Paris, at the last session, Dr. L. DUMONT read a paper on the value of adrenalin in whooping-cough,[2] and claimed constant success in relieving the symptoms and abbreviating the course of the disease with this drug. This treatment is not new, and has been advocated in this country, but we know of no recent reports on its utility.

Vaccine treatment, which at one time enjoyed a considerable vogue, especially in the United States, has not fulfilled the expectations entertained. Dr. R. G. FREEMAN, a well-known pædiatrist of New York, states that until lately he had been of opinion that vaccines did not modify the course of pertussis, and that he had never seen a case prevented by their use. Recently, however, he has observed good effects from the use of fresh vaccines in cases where vaccines three weeks old had no effect. In a disease so capricious as whooping-cough, especially when it attacks children of a nervous disposition, it is difficult to estimate how far the effect of a given treatment is due to suggestion alone. LEDERER has recently treated 25 cases of pertussis by painting the throat every two days with a 2 per cent. solution of silver nitrate, a method previously recommended by OCHSENIUS. In the great majority of cases good results were obtained, the paroxysmal stage being considerably shortened, the frequency of nocturnal attacks diminished, and long-standing attacks frequently cured. LEDERER attributes the success of this method to suggestion and not to a specific bactericidal action, and recommends that the treatment should be reserved for older children of a neuropathic disposition in whom the attacks have lasted a considerable time, but without any complications. In such cases his experience is that the method may produce an immediate cure. KLEINSCHMIDT, however, thinks that suggestion can be excluded as an explanation of the success which he obtained from the use of diathermy in a large number of cases, among whom the youngest child was only 9 months old. The question as to how long a case of whooping-cough should be isolated is of considerable interest, especially to the medical officers of schools or children's hospitals. Recent investigations have shown that the disease is most contagious in the catarrhal stage, and ceases to be contagious at all after the third week. Dr. COMBY, therefore, is of opinion that isolation for pertussis may be reduced to a maximum period of a month, and that it is unnecessary to wait for the complete disappearance of the whoop, which may last for several months. But the persistence of the whoop, however harmless to other children, is damaging to medical science.

Panel Prescribing.

AN insurance practitioner was recently invited by his panel committee to show cause why he should not be surcharged under the excessive prescribing regulations for ordering resinol on various occasions in the course of two months for a case of eczema rubrum in a patient who had been unable to work for two years. The bill ran into pounds; it was regarded by the committee apparently as a glaring case. The practitioner appeared at the inquiry and stated that he had tried the B.P. preparation unguentum resinæ without any effect, that the insured person had been treated at hospital for two years, and that he had cured him in two months. The panel committee thereupon decided that he had justified the use of an expensive preparation. A second case has come to hand of an insurance practitioner who, on being asked to attend an inquiry, resented the criticisms of his formulæ and declared his intention of giving his patients the cheapest drugs he could find. The result was that he had to attend an inquiry at a later date on the excessive number of prescriptions given to his patients and the high level of his total drug bill. A third case occurred in which the practitioner was written to because his individual prescriptions exceeded an artificial datum line arranged by his insurance and panel committees. When the whole quarter's prescriptions were scrutinised it was found that the total number of prescriptions was small, the average for each patient treated being less than two and the total drug bill well under the amount allowed for his list at an average of 1s. 6*d.* per insured person. These cases well illustrate the position with regard to the provision of drugs for the treatment of insured persons receiving medical benefit.

The Insurance Act requires that the patient shall receive proper and sufficient medicines for the adequate treatment of his condition. The task of deciding what is proper and sufficient for the case is of course placed upon the prescriber, and is subjected to the general opinion of the panel committee, should a prescription be criticised on account of its exceptional cost. By his terms of service a practitioner is required to order such drugs and prescribed appliances as are requisite for the treatment of any patient. Here again the responsibility is placed upon the practitioner to decide what is requisite, and should his ordering be called in question by the panel committee, he must be prepared to justify the decision he has made. Such an arrangement may appear irksome in some individual cases, but it does ultimately lead to a more careful consideration of the needs of the case before the prescription is written. Inasmuch as practitioners are required to order the medicines necessary for the treatment of their patients on official forms, and these also act as vouchers on which payment is made to the chemist, they are collectively responsible for the amount expended in each committee area in providing insured persons with the proper and sufficient medicine guaranteed by the Insurance Act. These accounts for drugs are paid in full, and the Treasury is directly interested in seeing that a proper control is exercised in the spending of the drug fund. Originally this fund was computed at 2*s.* a head for each insured person entitled to medical benefit, with certain additional funds for special grants in the event of epidemics or excessive sickness. With the great increase in the cost of drugs during the war—and only in the case of a few drugs has the high cost been relieved—and with additional charges for professional services on the part of pharmacists, it is increasingly difficult to provide adequate drugs for insured persons without exceeding the fund as originally estimated. In many areas the allowance has been exceeded during the last two years. In London, for example, it is now approximately 2*s.* 6*d.* per insured person in the area.

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[1] THE LANCET, 1920, ii., 615.
[2] THE LANCET, 1921, i., 1244.

It is necessary that some machinery should exist for checking waste, and the present regulations on excessive prescribing appear to be a fair method of controlling expenditure. Possibly some practitioners do not fully appreciate the need to act up to their full responsibility under the terms of service, thus making it impossible for the charge to be brought against the Act that the medicines supplied are inadequate and inferior either in quantity or quality. The charge, when made, reflects on insurance practitioners who are failing in their duty. In practice it is found that an exceptionally high drug bill connotes carelessness in the frequency with which prescriptions are given and in the quantity of medicaments ordered. Instances are on record of an individual prescription supplying the needs of the rest of the family. Moreover, free prescribing may lead on to vicious drug habits, and it is for practitioners generally to increase the estimation in which their advice is held and to reduce to a reasonable dimension the abject faith in drugs so common in neurotics and hypochondriacs. A careful, well-conceived prescription, however costly, means more effective treatment, with a resultant shortening of the term of the illness and material reduction of the quantity of drugs taken. The contention that there is no leisure in a busy practice for such thought and consideration is tantamount to an admission that the quality of the work is being sacrificed, and the time may soon come when the remuneration will be based on the quality of the work done rather than on the quantity—as in the present scheme. If, however, the quality is improved—and there is good evidence to show that the service given to insured persons reaches a higher standard year by year, and if it is still found that the drug bill is generally exceeded, then the question of more adequate provision will arise. On the other hand, the present arrangements are sufficiently elastic for special grants to be made to so-called necessitous areas. Practitioners have a responsibility in seeing that their patients get the proper and sufficient medicine specified in the Act. With the responsibility goes the burden of justifying their orders to a committee of their colleagues, who are probably the best tribunal for deciding the matter. An admirable memorandum published by the London Panel Committee throws much light on the whole question of the drug tariff.

Annotations.

"Ne quid nimis."

THE THEORY OF RELATIVITY.

THE difficulties of travel successfully overcome by our distinguished visitor, Prof Albert Einstein, should stimulate those of us, who have hitherto been reluctant, to start our own journey into an unknown and difficult country full of dangerous curves, projections, and angles subtending monuments of even higher mathematics. Dr. Einstein's address at King's College last Monday evening gave his hearers an attractive glimpse of what they might expect. To those who now decide to sally forth a useful guide is at hand in the shape of a book by Mr. E. Cunningham, who expounds the principle of relativity with great clearness.[1] When the first edition of this book appeared no experimental confirmation of the Theory of Relativity had been made. In the interval two out of three predictions have been verified, and spectroscopists are at present engaged upon the outstanding one. For a full comprehension of the general bearings of the principle of relativity a knowledge of mathematics is no doubt essential, and Mr. Cunningham's book is not without mathematical expressions to which it is difficult always to ascribe a direct physical meaning; but this implies only that his lucid exposition will appeal to a wider public than that for which it is primarily written. To the physician skilled in differential diagnosis the mental processes involved in this science, and the mode by which the Theory of Relativity has been developed, must appear to have a certain resemblance. When physicists invoked the æther as a medium for the transmission of light, all went well until experiments, designed to show the drift of this æther past the earth in its motion, all yielded negative results. A way out of the dilemma was suggested by Fitzgerald and developed independently by Lorentz; this was that the length of a body was not an invariable quantity, but depended on the direction of its motion through the æther. The Electronic Theory of Matter bids one refer anything so fundamental in character back to the electrons themselves; this, however, as Mr. Cunningham reminds us, only throws the mystery one stage further back, for the final question remains as to why the electron should change its effective dimensions in just the required amount to account for the failure of all observations to show our motion through the æther. The theory here set forth is on a different plane from such physical laws as those embodied in Maxwell's equations embracing the electro-magnetic theory of light; it is a general mode of thought, and many readers will share Mr. Cunningham's surprise that the generalities of which he writes should suggest any precise experimental findings: that they explain outstanding discrepancies within the degree of accuracy possible by observation is sufficient reason for the value placed upon them. The Theory of Relativity, at any rate to some, has brought a different view-point to bear upon the general outlook of natural phenomena. In Mr. Cunningham's words: "The fact that we are able to make such an excellent guess at the form of the laws of nature by mere geometrical considerations leaves us with an uneasy feeling that we are looking at nature through coloured glasses, and are simply seeing those aspects of phenomena which are the easiest for us to appreciate. This, however, is the usual course of science, and it is something to feel that this most comprehensive of physical theories itself suggests that when our power of vision is greater we shall discover whole new realms of phenomena."

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[1] Relativity, the Electron Theory and Gravitation. By E. Cunningham, M.A. Second edition. With diagrams. London: Longmans, Green, and Co. Pp. 148. 10*s.* 6*d.* net.

In conclusion, we may remind our readers of the admirable special number of *Nature*, which appeared on Feb. 17th, and was entirely devoted to brief expositions on Relativity by acknowledged experts.

PNEUMONIA IN THE U.S. ARMY DURING 1917–18.

DURING the winter and spring of 1917–18 an epidemic of measles, occurring among the troops quartered in the United States Army Camps, was associated with a great epidemic of a peculiar form of pneumonia caused by a hæmolytic streptococcus; the epidemic was characterised by indefinite physical signs, by dyspnœa of an extreme type, and by livid cyanosis. This type of pneumonia was easily recognised as distinct from that ordinarily indentified as lobar pneumonia, more particularly as certain other cases occurring simultaneously displayed definitely the usual features of this acute specific fever. In an historical survey [1] of the epidemic form of pneumonia, Professor W. G. MacCallum points out that there is nothing new in its manifestations. The relationship of measles to severe and fatal pulmonary inflammation has always been recognised. With a fair degree of probability such epidemics may be traced back to the 16th century; recognisable descriptions date from 1812 (James Low), and perfectly clear ones from Delafield in 1884. The condition studied by Professor MacCallum may be indentified with that familiar to British readers as "purulent bronchitis," the first descriptions of which were published in THE LANCET in 1917 by Hammond, Rolland, and Shore [2] working in France, and by Abrahams, Hallows, Eyre, and French [3] who simultaneously and quite independently were obtaining identical results at Aldershot. Professor MacCallum concludes, "From the anatomical description which is given [in the articles on "purulent bronchitis" referred to], it seems evident that the lesion is practically the same as that which we are about to describe for the epidemic in this country." He observes, however, that the prominence of the influenza bacillus, which the British writers emphasise, was not demonstrable to the same extent in America, and he prefers the term broncho-pneumonia to "purulent bronchitis" (or bronchiolitis), as he found "the whole lung including the framework and pleura to be promptly affected." Measles is, of course, not an indispensable antecedent; it lowers the resistance of the tissues to the secondary organisms, e.g., pneumococcus or streptococcus hæmolyticus, which are responsible for the serious complications, and its rôle may be fulfilled by micro-organisms recognised or at present unrecognised. Professor MacCallum, in the first fasciculus, deals exhaustively with the post-mortem appearances, and to a minor degree with the clinical manifestations, of the fatal cases encountered in this first epidemic, which occurred contemporaneously with the cases of "purulent bronchitis" described by the British workers. At the conclusion he adds that since his paper was sent to press another and much greater epidemic has occurred, with appalling mortality, of pneumonia, and the investigation with special reference to the pandemic is elaborated in the second fasciculus. The original disease in this epidemic has, to use his own expression, been spoken of as influenza. He is clearly sceptical as to the rôle of the *B. influenzæ* in this epidemic, adding that it is found in pure culture associated with a form of pneumonia which is practically identical with the interstitial broncho-pneumonia described in connexion with measles. He considers that the evidence to hand for incriminating the *B. influenzæ* as responsible for the epidemic is inconclusive, and he relies upon the existence of some ultra-microscopic virus, an opinion in which he will not lack support in many circles. However, Dr. John Eyre, who was prominently associated with the original research at Aldershot, and with the investigation of many of the subsequent epidemics scattered throughout the country, is apparently satisfied that it is not necessary to invoke the presence of this hypothetical virus to explain the phenomena noted.

Nevertheless, in whatever features the author diverges from workers in this country in his opinion of the relative rôles played by the *B. influenzæ* and other organisms, his papers are in the main confirmatory of the chief results which have emanated from them. Three features in his results call for special reference. In the first place, we note the remarkable incidence of empyema. In the 49 autopsies enumerated in the first fasciculus, empyema figures in no fewer than 33. In this connexion it must be remembered that the term empyema is not used in the strictly surgical sense of thick pus, for which in life resection of a rib would be indicated. The author himself refers to this point in stating that in the majority of cases a thin watery turbid fluid occupied the pleural cavity and that the patient rarely survived long enough for thick pus to develop. More than one British worker has been struck by the relative frequency of this and other pathological features in epidemics occurring in certain areas, with relative infrequency or total absence of the same features in epidemics simultaneously occurring elsewhere. In other words, local peculiarities are prominent, and in all probability this empyema incidence may be explained as a special feature of the organisms in the epidemic here described. Secondly, only in the rarest instances was a positive blood culture obtained from a streptococcal infection, and in these cases only immediately antecedent to death, although in every case the heart's blood invariably yielded a positive result. Finally, as denoting the exhaustive character of the investigation, we note that the microscopical examination of the testes exhibited in many cases a cessation of spermatogenesis, a peculiarity to which attention has not been directed in this country.

IONISATION METHODS OF X RAY MEASUREMENT.

IN the year following the discovery of X rays the electrical effect produced by them upon a gas—namely, the ionisation—was shown to be one of their most striking manifestations. The light which a study of these electrical effects has shed upon atomic and molecular structure has illumined a splendid page in physical science; it was these ionisation studies which led to the recognition and isolation of the fundamental unit of negative electricity—the electron—by Sir J. J. Thomson in 1897. Experimental investigations since this date upon the ionisation of different gases under various conditions have been of an elaborative character. The accuracy of the electrical method of measuring the intensity of a beam of X rays made such investigations possible, yet the use of this method for the many medical purposes where intensity considerations are of supreme importance has only come into effect during the last few years.

Perhaps the main reason for this is that the type of electroscope used in ionisation work is only an intensimeter and not a quantimeter. It measures at any instant the intensity of the radiation in question; it does not integrate this intensity over an interval of time and so give a quantity which could serve as a basis for dosage. This is exactly what is required in X ray therapy, and it is probably due to the fact that the Sabouraud pastille acted as an integrator that it has had such an extensive application. Useful as these pastilles have proved for the purposes of surface therapy, their limits of utility are reached when any considerable degree of filtration of X rays is effected, for it happens that they become less and less sensitive as the wave-length of the X rays is diminished, and so they fail to serve even as accurate indicators of intensity once a certain wave-length is reached. This is not a limiting consideration in methods based upon the ionisation produced, say in air, by X rays of different wave-lengths. Generally speaking, we may say that the electrical effects are proportional to the amount of energy expended in the air by the beam in its passage through it, and do not depend dominantly upon selective processes. This being so, if some method were devised by which the electrical effects could be added up as time went on, then the whole electrification could serve as a basis of X ray dosage; this has now been very largely accomplished and we may anticipate that the electrical method will come more generally into radiological use for therapeutic purposes. One of the first instruments constructed with this intent and suitable for direct medical use, was the ionto-quantimeter of Szilard in 1916. Since then various modifications and improvements have been effected, largely as a result of the requirements of deep therapy. Upon the basis of this type of instrument Seitz and Wintz have founded their method of estimating the dose of X rays reaching organs at a depth in the body; in their treatment of cancer of the cervix by X rays a part of the ionto-quantimeter is actually introduced into the cervix and a measurement made of the intensity of X rays being applied. Two recent papers, one by Schrumpf-Pierron in *Paris Médical* of May 28th, the other by Iser Solomon in the May number of the *Journal de Radiologie et d'Electrologie* give good accounts of the general utility and practicability of this mode of measuring the dose of X rays under various conditions of therapy.

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[1] The Johns Hopkins Hospital Reports, vol. xx., fasc. i. and ii. The Pathology of the Pneumonia in the United States Army Camps during the Winter of 1917-18, and the Pathological Anatomy of Pneumonia associated with Influenza. By W. G. MacCallum, M.D. Baltimore: The Johns Hopkins Press. 1920-21.

[2] THE LANCET, 1917, ii., 41.

[3] Ibid., 377.

It is reasonable to anticipate that, when an electrical method has received the general sanction of approval, means will be taken to decide upon some unit of X ray energy which, while having a scientific basis for its determination, will be selected with some direct reference to the quantity used by radiologists in the treatment of disease. International recognition of such a unit would do much to coördinate the dosage determinations in X ray therapy throughout the world.

MOLLUSCUM CONJUNCTIVITIS.

ALTHOUGH it is well known that molluscum contagiosum may attack the skin of the lids, the occurrence of conjunctivitis due to this cause is not generally recognised. Dr. Harold Gifford and Dr. Sanford R. Gifford[1] of the Department of Ophthalmology of the University of Nebraska College of Medicine, state that during the last 15 years they have seen about a dozen cases, six of which they describe in detail, in which persistent irritation of the conjunctiva has been kept up by one or two molluscum nodules at the edge of the lids. In none of the cases was there any other evidence of the disease in the uncovered portions of the body, and the patients did not know of any other nodules of the sort, but they were not stripped for examination. In some of the cases quite a marked conjunctivitis of the follicular type was set up, with thickening of the folds, and in one case there was ulceration of the cornea. The mode in which the nodules cause conjunctivitis is hard to determine. That it is not extension of the inflammation from the skin is shown by the usual absence of such inflammation about the nodule on the skin itself. The purely mechanical irritation of the nodule would appear to be almost negligible in the cases in which it is not situated on the lid border but back among the eyelashes. The writers suggest that itching causes the nodules to be rubbed and that in this way some irritating secretion is carried into the sac which sets up the conjunctivitis. Treatment consisted in incising the nodules in typical cases and thoroughly expressing their contents with a ring forceps. In three cases in which the characteristic central umbilication was not apparent, and there were no other typical lesions present, the nodules were removed and found to be definitely molluscous. Though the symptoms were usually relieved quite promptly, in some cases changes were set up in the conjunctiva, which persisted for some time after removal of the irritating agent.

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[1] Archives of Ophthalmology, May, 1921.

INDUSTRY AND CONTENTMENT.

ECONOMISTS, political and otherwise, sociologists, and psychologists are ever ready to reconstruct the State, but the social aspects of medical work are seldom appreciated even by our own profession. For the most part these self-appointed lay physicians forget that the health of the State is made up of the health of its constituent members and that no State can be healthy or think healthily unless its members are healthy. Only in one branch of medicine is there some inkling of this fundamental fact—namely, in industrial hygiene. A contribution to knowledge on the subject is contained in the latest report of the Industrial Fatigue Research Board,[1] which deals with labour turnover, a delicate barometer of industrial contentment or of unrest. This report should be read in conjunction with an earlier one written by Dr. M. Greenwood and issued[2] by the Medical Research Council before the Board was in existence. The findings, which deal with more ample data, are in close agreement with those of the previous investigations; they are mainly based on records compiled during war time at national factories, but data gathered from peace-time factories are also laid under contribution. The authors, Miss Broughton and Miss Newbold, point out the loss to a factory of a high rate of leaving among beginners due to the fact that on the simplest of operations workers do not reach a reasonable rate of output under six weeks, while for moderately simple repetition work three months is required. They are able to show that labour turnover is highest in these early weeks and months; curves showing the rate of leaving distributed according to length of employment resemble in an exaggerated form the curve of infant mortality—indeed, Greenwood has aptly called labour turnover the infant mortality of industry. The medical aspect of this important social economic question becomes manifest when the connexion between labour turnover and sickness is investigated; here the authors found that those who left with less than three months' service had suffered a much higher rate of sickness than those who stayed longer, that those who stayed for three months but less than six had suffered throughout their period of employment more sickness than those who stayed longer, and similarly that those who stayed six months but less than nine had suffered more throughout than those who still remained in service. Ill-health and physical incapacity were only given as the reason for leaving by some 10 per cent. in war time and by 3·7 per cent. in peace time, but the above investigation showed that even though hardly appreciated by the workers, ill-being lay at the back of much labour wastage.

Most of the records used refer to female employment, and somewhat unexpected results emerge; thus domestic servants, shop assistants, and laundry workers stayed longer than workers from munitions and other factories. Apparently factory work has a definite adverse influence on the power of workers to withstand the strain a second time. Comparison is made between the rates of labour turnover which prevailed before, during, and after the war; for single women the average three-monthly rates of leaving were found to be 25·2 per cent., 27·8 per cent., and 18·8 per cent. respectively for the three periods. The rate of loss during the first three months was specially heavy, amounting to 45·3 per cent., 39·6 per cent., and 22·0 per cent. in the three periods. The post-war period was favourably influenced so far as leaving is concerned by the fear of loss of work due to men returning from the colours and filling up vacancies. Some estimate can be made of what these rates of leaving mean from the fact that " in the pre-war and post-war periods respectively, the number of survivors after 12 months from 1000 entrants in a biscuit factory were 322 and 441 respectively." Great differences were found at different factories, the rate of loss at the end of the first three months varying from 89·2 per cent. to 37·5 per cent., but the influences causing these variations could not be accurately determined. Nevertheless the authors state that at the factory with the lowest labour turnover the conditions were good and the work light; while at one of the worst the high turnover was considered to be " due undoubtedly to the arduous conditions, and in a large measure owing to night-shift working, the ordinary disadvantages as to broken rest being aggravated by the shops being built of corrugated iron with consequent extremes of temperature."

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[1] A Statistical Study of Labour Turnover in Munitions and other Factories, by Miss G. M. Broughton and Miss E. M. Newbold. Report No. 13. Industrial Fatigue Research Board. 1921. Pp. 92. H.M. Stationery Office. 3s.

[2] A Report on the Causes of Wastage of Labour in Munitions Factories employing Women, by Dr. M. Greenwood. Special Report Series No. 16. Medical Research Council. 1918.

Great care is exercised throughout this excellent report in refraining from drawing any but fully substantiated deductions; hence even more than usual reliance can be placed on the following conclusions:—

(*a*) The high leaving-rate that is evident in the early months of service is not confined to munitions factories nor to the war period, but is also to be found in factories engaged in peace-time industries, and is a source of economic loss at the present time.

(*b*) Married women are evidently a more fluctuating population than single women.

(*c*) The data relating to previous occupations are also too scanty to justify drawing general conclusions, but they indicate that former factory or munition workers are more unstable than those drawn from other sources.

(*d*) The loss for possibly avoidable reasons, such as ill-health, incompetence, and dissatisfaction, is very large.

The authors justly consider a case made for periodical consideration by employers of the state of labour turnover in their factories; and in order to assist the work, give in an appendix specimen forms for keeping records, and a simple exposition of the way in which they can be used. Special attention may be directed to the excellent form of medical certificate suggested in which the system of the body affected (rather than an exact diagnosis) is all that is asked for, as, indeed, it is all that could ever be usefully employed for statistical grouping. We agree with the Fatigue Board, who claim that " the attempt made in this report to measure labour wastage upon a uniform system, essentially similar to that adopted in the valuation of the liabilities of life insurance offices, deserves consideration"; and we congratulate them and the authors on having in this report added something to knowledge.

THREADWORMS AND APPENDICITIS.

VARIOUS workers have ascribed a share in causing inflammation of the appendix to threadworms. Prof. L. Aschoff,[1] of Freiburg i.B., opposes the view advocated by Rheindorf that oxyuris bear a frequent ætiological relation to acute appendicitis. Aschoff holds that appendicitis begins nearly always as an acute disease in a previously healthy appendix, passing after imperfect healing into a chronic complaint. The earliest lesion is commonly found in the deeper folds of the distal part of the appendix, and mechanical causes, by leading to undue delay of bacterium-infected material in contact with the mucous membrane, favour disease; but direct injury of the mucous membrane by foreign bodies or parasites is uncommon. Worms may give rise to pseudo-appendicitis or appendicopathia oxyurica—that is, a condition simulating appendicitis but without pyrexia or much quickening of the pulse-rate. They are found in healthy appendices more often than in diseased ones. Gmelin found that 19 per cent. of 300 patients in a field hospital were infected with oxyuris, and 19 per cent. with trichocephalus. Forty-four per cent. in all carried the eggs of some worm. Among these patients 18 cases of appendicitis occurred, of which only five—that is, less than a third—were in the worm-infested. Encapsuled threadworms may occasionally be seen in the appendical wall; but the histological appearances described by Rheindorf of channels in the mucous membrane made by worms boring into it and other epithelial defects are caused by the dehydration and other procedures connected with the preparation for the microscope. Such epithelial defects are found in sections of all appendices, healthy or diseased, made by the usual methods. If worms are present further artificial defects are caused by the pressing of their chitinous coats into the epithelium when cutting. Such appearances are not seen if the tissue is protected from shrinking by embedding and cutting in celloidin or gelatin. Further, a superficial catarrhal inflammation must not be assumed to be present unless there is migration of cells. Aschoff supports his thesis by statistical and histological detail, and with some warmth. He has laid his material, including sections embedded in various ways, before a medical congress and challenges his opponent to do the same.

THE INDIARUBBER-BALL COUGH SOUND.

WITH a thoroughness which is characteristic of the medical school of Upsala, Dr. G. Bergmark[1] has recently investigated the conditions under which the indiarubber-ball cough sound arises. Thus named by Dr. J. Mitchell Bruce, this post-tussic suction sound has been interpreted by some authorities as a sign of a cavity, on the assumption that it is generated by the elastic recoil of the wall of a cavity. Dr. Bergmark found this sign in 20 out of 39 cases in which the diagnosis of cavitation was confirmed by a necropsy. He failed to find it once among the 40 young and healthy persons whose chests he examined for it. In 35 cases of acute bronchitis, and in 52 of chronic bronchitis, he failed to find this sign, although in 18 cases the bronchitis was complicated by emphysema. The 12 cases of bronchial asthma examined for this sign, failed to show it. It was also negative in every case but one out of 42 in which the diagnosis of bronchial gland tuberculosis had been made by the X rays. In Turban's first stage of pulmonary tuberculosis it was never found, and only in 3 of 36 cases in the second stage was it demonstrable, whereas it was found in as many as 56 out of 130 cases in the third stage. Of a series of 25 cases of pulmonary tuberculosis associated with bronchophony or coarse râles, the sign was found in 16. In another series of 25 cases, in which the sign was positive, 20 exhibited bronchophony or coarse râles. With regard to the post-mortem examinations, no correlation could be established between the size and distribution of cavities on the one hand and the presence of this sign on the other; in two cases in which there had been a suggestion of the indiarubber-ball sound. the necropsy showed no sign of a cavity on the same side. But as there were cavities on the opposite side, this sound may have been conducted from one lung to the other. In view of the possibility that infiltration of the lung without cavitation might give rise to this sign, Dr. Bergmark sought it in 47 cases of croupous pneumonia, but found it only in one in which the pneumonia was complicated by pleurisy. In another series of 77 cases of broncho-pneumonia, he found the sign only in one case, and here again it was complicated by pleurisy. Thus, it appears that infiltration alone is not sufficient to give rise to the sign. It seemed, however, possible that pleurisy, by interfering with the elastic recoil of the lung, might give rise to the sign in the absence of cavitation; in 47 cases of pleurisy 5 exhibited this sound. Dr. Bergmark comes to the conclusion that though cavitation is the chief factor in the genesis of this sign, its appearance may be determined by the presence of pleural adhesions over a cavity. If this is so, the absence of the sign over a cavity may be helpful as indicating the absence of adhesions in the neighbourhood, promoting the successful induction of an artificial pneumothorax.

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[1] Berl. klin. Wochenschr., November, 1920, p. 1041.

[1] Upsala Läkareforenings Förhandlingar, Feb. 1st, 1921.

THE NERVOUS RESPONSE TO STIMULATION.

IN the course of a lecture at the Institute of Pathology and Research, St. Mary's Hospital, on June 9th, Dr. Henry Head said that the thalamus was now definitely proved to be the seat of the affective side of consciousness, a sorting of stimuli taking place here before the final result reaches the cortex. This sorting, rearrangement, and elimination took place not only in the thalamus, but at lower levels as well, the various centres of brain and cord forming as it were a nervous heirarchy. Only the dominant cortical centres are, he said, concerned in consciousness, the exact message they received depending on modification by the lower centres of the crude mixed stimuli arising from the end-organs. The selection of some messages and the suppression of others depends not only on the nature of the stimulus, but also on the condition of the receiving and transmitting mechanism, which may be profoundly modified by previous stimuli or by alterations in the environment. The organic neurologist, said Dr. Head, regards the nervous system as a penny-in-the-slot machine, into which we could put a penny with the certainty that a box of matches would emerge; but in the light of the new physiology it was obvious that one might equally well get chocolates, the result depending not so much on where the penny was placed as on who had been there before. The doctrine of specific nerve energy still apparently holds good, if we remember that a given stimulus may lead to different results under different circumstances. For example, pain is a necessary ingredient of *every* cutaneous sensation since it is a primitive protective factor and the organism cannot afford to eliminate it. If an object—say a test-tube containing warm water at 45° C.—is placed next to the skin the only sensation that is allowed to reach the higher centres is that of pleasant warmth. Heat, cold, and pain spots are severally stimulated, but the messages are incompatible and the strongest wins. This degree of heat being beneficial and not harmful, the impulse of pain may safely be inhibited. Dr. Head compared the central nervous system to a telephone exchange where only certain calls are taken. Pain, except when necessary as a warning, receives no attention. That pain is always an ingredient is shown by an observation made by Dr. Head himself during a well-known experiment on his own radial nerve. At one period of its regeneration any stimulus applied to the base of the index finger was referred to the outer side of the thumb. If the thumb was then stimulated with pleasant warmth and the index finger with icy cold the hot and the cold sensations neutralised each other and the net result was pain. In this case it was as if the favourite and the second favourite of a race came to grief, the rank outsider, pain, arriving first. This selection by suppression, repression, and facilitation of certain impulses depends for its final result on various factors, the chief being the nature of previous stimuli and the condition of the nervous system, and indeed of the body as a whole. For example, all normal persons become giddy if subjected to rapid rotation, but with repeated practice this tendency may be to a large extent overcome, only to return again in conditions of toxæmia, mental depression, worry, or fatigue. Dr. Head defined physical exhaustion as the loss of capacity to dominate impulses derived from peripheral stimuli; and he regarded as one of the most important landmarks in physiological research the discovery that even at the lower end of the spinal cord these same processes of facilitation and suppression could be demonstrated to occur.

THE SCHICK TEST AND NATURAL DIPHTHERIA ANTITOXINS.

THE Schick test[1] has hitherto made a much wider appeal to clinicians and immunologists in America than it has in this country. In a paper recently read before the Pathological Section of the Royal Society of Medicine by Messrs. A. T. Glenny, K. Allen, and R. A. O'Brien, and published in THE LANCET of June 11th, an appeal is made for a closer study of this reaction in Great Britain. The test is based upon the fact that small quantities of natural antitoxins appear to be present in the blood of normal persons. When one-fiftieth of a minimum lethal dose of diphtheria toxin is injected *intradermically* into a normal person it is neutralised by the natural antitoxin present in the blood, and no reaction follows. If, however, a person possesses no such natural antitoxin, the toxin injected will produce a reddened local reaction at the site of inoculation. This reaction is apparently purely an inflammatory one, and is not in any way related to the local reaction produced by Mantoux's intradermic tuberculin test, which depends on hypersensitiveness or anaphylaxis. A negative test therefore indicates some degree of natural immunity to the Klebs-Löfller bacillus, whilst a positive result signifies susceptibility. The authors of the present paper have made a careful laboratory study of the reaction, and indicate its probable usefulness in controlling an outbreak of diphtheria in a school or hospital. It would appear from the published results of Schick himself, and of Kolmer[2] and others in America, that it may be especially useful in young children in whom the question of immunisation is urgent. The authors also indicate certain issues which are of practical importance: (1) The preparation and control of toxicity (m.r.d.) of the test serum, which is, of course, primarily a laboratory matter; and (2) the interpretation which must be placed upon certain "pseudo-positive" and "combined" positive results. The latter raises, as the authors point out, certain very interesting questions as to the toxicity of bacterial proteins which need to be worked out by clinicians and immunologists conjointly. They also go on to discuss the bearing of this reaction in relation to von Behring's toxin and antitoxin ("T-A") method of immunisation.

In the number of the *Bulletins et Mémoires de la Société Médicale des Hôpitaux* of April 14th a series of articles on the Schick test by various authors give results of similar clinical observations on numbers of cases in a school and preventorium. The practical consequence of these various observations needs little emphasis. The use of the Schick test combined with von Behring's "T-A" method of immunisation may yet revolutionise the treatment of diphtheria in school and hospital epidemics. If, in addition, it will help to clear up the hopeless confusion at present existing on the question of diphtheria carriers it will be no small blessing to civilised communities where overcrowding is bound to occur and infection commonly results. The theoretical issues from the point of view of the immunologists are no less arresting, and we shall watch with interest the study of this question, not only with the toxin of *B. diphtheriæ*, but with all those toxins which Ehrlich associated with the toxin-antitoxin phenomenon in his first order of side-chains. Whatever be the truth of the matter with regard to this theory the classification of certain immunological phenomena into groups according to the different reactions of antigens and antibodies is doubtless of much significance.

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[1] Münch. Med. Woch., 1913, lx., 2605.

[2] Kolmer: Infection, Immunity, and Specific Therapy, second edition, 1917.

AN INSTITUTE OF APPLIED MEDICINE.

THE governing body of the Lister Institute presented this week its twenty-seventh annual report to the annual meeting of subscribers. It is a fine record of applied medicine, rendered possible largely by the prophetic vision of Joseph Lister and the wise generosity of Lord Iveagh. In the department of bacteriology Prof. J. C. G. Ledingham has continued his investigations on the transmission of the virus of trench fever. Dr. J. A. Arkwright has concluded his work on bacterial variation, and Dr. H. L. Schütze has shown the possibility of determining the blood group of an individual from a dried sample of his blood, a matter of great importance in medico-legal practice. Dr. E. H. Lepper's research on coliform infections of the urinary system may have a practical bearing on cystitis in the human subject. In the department of biochemistry Prof. A. Harden and Dr. S. S. Zilva have continued their work on accessory food factors, some of the results of which have already been made public through our own columns; and a group of investigators under the guidance of Dr. Harriette Chick are putting into practice the logical deductions from this work in Vienna, where the matter is of more than theoretic interest. The national collection of type cultures, placed at the service of bacteriologists throughout the Empire, continues to grow, and a catalogue of the cultures will shortly be published by the Medical Research Council. Sales of tuberculin and immune serums realised during the year a sum of £53,700, while the income and expenditure account for the financial year shows a substantial balance on the right side. This is the more satisfactory as the item of £19,600 for staff salaries and wages suggests that those who have given their lives to research work for the benefit of their fellows are receiving more than the miserable pittance which is often their only material reward.

TUBERCULOUS ANTIGENS IN URINE.

IT is two years since Dr. Hans Wildbolz of Berne first published[1] the interesting observation that urine from a tuberculous patient, evaporated to one-tenth of its volume and filtered, gives a typical allergic cutaneous reaction when injected intradermically, after the method of Mantoux, into another tuberculous patient. This original observation has been confirmed by Gramen, of Stockholm,[2] and others. Quite recently Dr. M. G. Ichok discusses[3] the whole question of tuberculous antigens in the urine at some length, and gives also brief details of tests made in rabbits. He points out that though it has been left to Wildbolz to make use of the presence of tuberculous antigens in the urine as a clinical test, isolated observations had been made by Marmorek as long ago as 1909 and by Biot in 1914. This test, in Switzerland at any rate, now appears to have acquired a position of clinical importance.

Dr. Ichok's article is suggestive. Apart from chemical questions involved, such as the effect of phosphates and oxalates on the skin reaction, there are at least four possibilities to be borne in mind from the point of view of immunity: (1) The presence of toxic substances excreted in varying amounts in the urine of all tuberculous subjects; (2) the excretion of special degeneration products of unknown composition in the urine of patients with lardaceous disease; (3) the elimination of living or dead tubercle bacilli in the urine of phthisis patients, which is known to occur from time to time apart from the presence of gross lesions in the kidneys; (4) the presence of casts, cellular and bacterial elements (not only tubercle bacilli, but secondary organisms) in the urine of cases of genito-urinary disease. Even if we assume that the process of concentrating the urine to a small bulk by evaporation at 55° C. indirectly sterilises it, there are obvious reasons for only using for the test the urine of early tuberculous cases uncomplicated by genito-urinary disease. Dr. Ichok's article seems to us to offer a fairly accurate method of estimation. After examining the urine microscopically in order to be sure that it contains no products of gross renal lesions, he inoculates the urine, concentrated in the usual way, subcutaneously into rabbits. These animals are found subsequently to develop tuberculous antibodies, which can be detected by fixation of complement.

SECURITY OF TENURE FOR M.O.H.'S.

THE Public Health Officers Bill passed a third reading in the House of Commons on June 3rd. The original intention of the Bill was to give all full-time medical officers of health and sanitary inspectors security in the tenure of their office. The Bill was, however, amended in Committee, so that it is now limited in its application to those officers a portion of whose salary is paid by the Exchequer. There is a further limitation that it shall only apply to the senior sanitary inspector employed by a local authority. The amendments will cut out from the benefits of the Bill a considerable number of medical officers and many sanitary inspectors. Sir Philip Magnus, the introducer of the Bill, agreed with the arguments of those who wished the Bill to apply to all whole-time officers, but had to make concessions to those authorities who had bought their freedom by refusing to accept Government grants, in order to get the Bill through. It was better, he said, to have four-fifths of a loaf than no bread. Considering the large number of sanitary inspectors employed by the county boroughs, we shall be surprised if the Bill applies to more than a tenth of the sanitary inspectors in the country. Theoretically, one cannot gainsay the argument that a medical officer of health or sanitary inspector ought to be in a position to carry out his work for the protection of the public health without the fear of dismissal if his work happens to bring him in opposition to influential members of the local authority which employs him. In practice it may be true, as Sir Kingsley Wood stated during the discussion, that there have not been a great many cases where the medical officers have suffered at the hands of the local authorities, but who is to know in how many cases the medical officers have felt it advisable to give way? A conscientious official who is keen on his job, and feels that he is doing good work, may be pardoned for thinking that it is advisable to take the line of least resistance in a few of such cases, provided he is getting the support of his committee in the execution of the most important sanitary reforms which he has to bring before them. Medical officers of health are not all Don Quixotes, and some will take the line of least resistance more easily than others. To give an illustration, it is conceivable that the examples of the so-called conservancy system, which still disgrace the sanitation of many of our county boroughs, would have disappeared years ago if medical officers of health had had greater security of tenure. We can easily understand the attitude of the local authorities. The bulk of their members respect the advice of an efficient officer, and treat him fairly. They are genuinely interested in the sanitary improvement of their district. They feel that they are able to manage their own affairs without the interference of Government departments which has been so much in evidence lately. "Timeo Whitehall et dona ferentem" was fast becoming the attitude of the local authorities. We believe, however, there are signs of a change, and that the local authorities may safely trust the Ministry of Health in this matter of security of tenure for public health officers. Our only regret is that the Bill does not, as originally intended, include all whole-time officers, and we hope that what Sir Philip Magnus calls the other fifth of the loaf will be forthcoming *during an early session of Parliament.*

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[1] Correspondenzblatt für Schweizer Aerzte, May 31st, 1919.

[2] Hygiea, 1920, lxxxii., 673.

[3] Annales de Médecine, 1921, ix., No. 2, p. 97.

THE BRONCHO-PNEUMONIA OF OLD PERSONS.

THE frequency of pneumonia and broncho-pneumonia as a final cause of death in the aged is well known. Charcot has related how insidious the onset of pneumonia often was amongst the aged inmates of the Salpêtrière Hospital at Paris. Drs. G. Roussy and R. Lerou[1] have recently published an anatomical-pathological investigation on the subject of broncho-pneumonia of the aged, founded on the material furnished by their department for old persons at the Hospice Paul Brousse at Villejuif. Amongst 300 post-mortem examinations (1919–21) they found lobar pneumonia in 4 cases and broncho-pneumonia in 162 cases. According to their elaborate macroscopic and microscopic examination of the lungs, there are frequently basal lesions of the nature of chronic arteritis and pulmonary sclerosis playing an important part in the production of the broncho-pneumonic condition. The lesions in question lead to the occurrence of a complete or partial vascular thrombosis, with ischæmia and even necrosis, more or less complete, of the corresponding portion of the pulmonary parenchyma. A secondary microbic infection then takes place, and it is easy to understand that the secondary infection of an infarct in the lungs is more likely to occur than of one in the kidneys or brain. The authors claim that their aspect of the matter enables us to understand the frequency of fatal broncho-pneumonia among bed-ridden persons, suffering from cerebral arterio-sclerosis. According to them, the idea of hypostatic congestion of the lungs fails to explain why such patients can keep to their beds for years without suffering from pulmonary complications, suddenly to be carried off by fatal broncho-pneumonia.

THE DRY METROPOLIS.

THE Metropolitan Water Board has intimated to the Ministry of Health that in consequence of the prolonged drought it is necessary at the present time to conserve the water-supplies of the metropolis, and a circular has been issued to sanitary authorities suggesting the restricted use of water for such purposes as flushing sewers or watering streets and recreation grounds. Drought does not strike like lightning and there has been ample warning that London will be short of water this summer. Thames water provides nearly 60 per cent. of the total supply, the Lee coming second with 23 per cent., well-water only yielding the small remainder of 17 per cent.; and during the month of March the average daily natural flow over Teddington Weir was, in round figures, 890 million gallons, or 1230 million gallons below the daily average of the last 40 years. In the same month the rainfall of the whole Lee basin was under 1 inch, and the months before and since have been equally dry. The river reservoirs with their immense storage capacity of nearly 13 thousand million gallons may seem inexhaustible, but with the normal demand they would give out in 50 days; and the band of chalk under the London clay, although full of water like a sponge, only yields what the pumps are capable of raising. Not since 1899 has there been any such drought. We are better off now than then, for the precious fluid is no longer vended to us by a number of competing companies with the interests of shareholders to consider, and timely notice of the shortage will have been given to the Ministry whose business it is to decide in what directions economy may be practised without danger to the public health. Thirty-eight gallons per head, per day, the normal rate of consumption, leaves a wide margin for luxury and waste. The public would like some guidance on where and how to save water if and when the need arises. Drainage by water carriage is so automatic and fool-proof, street-cleaning by the sanitary authority so regular, that the average citizen develops little personal sense of responsibility for keeping his city clean and sweet. We confess to some misgiving, however, about the economies suggested for a start. The normal sewer flush may be excessive; the Ministry of Health doubtless knows that it is. But to limit street watering just when the season of zymotic diarrhœa is beginning—that is open to question. In 1899 no one could define the effect of drought on the public health; was it the heat, the dirt, or the dryness of the subsoil that was the potent factor? We are not much wiser now; the spectre of epidemic diarrhœa may again overshadow London should July be hot as well as dry. There may be the same spike on the infant mortality chart for 1921 as there was in the hot summer of 1911. Until we have proved that watering the narrow crowded streets does *not* help to keep away summer diarrhœa we are hardly justified in economising there, rather than on baths and leaky taps. The thoroughfares with a minimum of horse traffic and a top dressing of petrol and lubricating oil may probably be left safely to take care of themselves.

PUBLIC HEALTH AT THE LABOUR CONFERENCE.

THE British Labour Party with its three million members, who for the most part are trade-unionists and voters, holds its annual conference on June 21st at Brighton. Though the conference sits for only four days, the agenda paper gives the text of no less than 248 resolutions and amendments, many of them dealing with world politics, diplomatic questions and recondite economic problems, which even the keenest intellects of the day might find it hard to grasp. Only towards the end of the agenda do we reach the question of education, when the Northampton Labour Party is to demand better treatment of school children's teeth, and complains of the almost total lack of any provision for such serious physical defects as spinal curvature, pigeon chest, and of the insufficiency of nursery schools and open-air schools for delicate children. Twelve proposals on the drink problem all, in one form or another, condemn existing public houses. The Carlisle experiment seems to meet with most approval, the sale of drink only being tolerated where food is provided as well as facilities for social intercourse. Several resolutions demand local option and State control of the trade in alcohol. On the housing difficulty, the executive committee has a resolution denouncing the Government for obstructing, during the last two and a half years, the erection of the half million new houses it had promised. The Government is admonished itself to supply the needed material and thus break up profiteering combinations. The Stepney Trades Council proposes the rationing of house accommodation and the stopping of superfluous house building—namely, luxurious dwellings—while others are forced to live in hovels unfit for human habitation. In regard to old age and other pensions, a number of resolutions are tabled to increase the amounts given, several Trades Councils endorsing a scheme for a State bonus to replace existing organisations for providing subsistence in cases of distress by a national pool collected from the national income at its source. The Poor-law, we imagine, itself disappears in the pool. Demands for better organised and more extensive help to mothers and to widows who have the charge of families are perhaps more likely to find immediate acceptance. In fact, the endowment of motherhood, on a more or less extended scale, has already entered the domain of practical politics. With regard to the Workman's Compensation Acts, a resolution advocates compensation for accidents on the same basis as that upon which war pensions are granted; another urges that the schedule of industrial diseases should be extended so as to include coal miners' asthma and other diseases caused or aggravated by the occupation on which workmen were engaged 12 months before they were disabled. Finally, we notice that the National Union of Ships Stewards, Cooks, Butchers and Bakers have come forward with a demand to be included in the advantages already granted to seamen and firemen. One resolution which deserves to be quoted, runs: "In view of the alarming increase of consumption among seamen, this Conference demands an inquiry into the living accommodation provided on board ships." Such are the principal proposals affecting public health, unfortunately smothered in the midst of a political programme of appalling length and complexity. Laws are of little avail if they are not understood and approved by the community, and we rejoice that the Labour Party is turning to the study of health legislation. It is to be hoped that by next year the political situation will have so improved as to enable these matters to be more fully discussed than on the present occasion.

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[1] Annales de Médecine, Paris, 1921, ix., pp. 161–196.

HEALTH OF TROOPS IN THE PALESTINE CAMPAIGN.

General Liman von Sanders, in his apology[1] for the defeat in 1918 of the Turkish Army Group which he commanded in Palestine, urges in extenuation that "there was a great epidemic of disease during the summer months, malaria and dysentery taking a heavy toll of the armies." It was known this must have been so, but it is satisfactory to have it stated by authority, and it shows that in this, as in all wars, a medical service which is ineffective lowers the fighting efficiency of the troops it is supposed to serve. Further, the statement supports the opinion we have already expressed that Lord Allenby's skilfully planned and magnificently successful operations on Sept. 19th, 1918, could not have been set going—there would not have been the troops to make them possible—but for the excellent work of the Royal Army Medical Corps, which planned the anti-malarial measures in the Auja Valley, and so kept the loss of strength from malarial fevers in Palestine, in the worst sector, down to 10 per cent. of the troops in the four months preceding the great attack.

THE Census, which was postponed last April, will be taken next Sunday, June 19th. The names of those dying before midnight on Sunday or born after midnight must be omitted.

THE William Gibson Research Scholarship (Second Award) for medical women has been awarded by the Council of the Royal Society of Medicine to Miss Gertrude M. A. Herzfeld, F.R.C.S. Edin.

THE first British Congress of Obstetrics and Gynæcology, held in Birmingham on June 3rd and 4th, was attended by delegates from societies in Edinburgh, Glasgow, the Midlands, the North of England, as well as from the Royal Society of Medicine. We hope to give an extended notice of this very successful meeting.

THE annual general meeting of the Research Defence Society will be held at the house of the Medical Society of London, 11, Chandos-street, Cavendish-square, London, on Wednesday, June 29th, under the presidency of Lord Lamington. A short address will be given by Dr. H. H. Dale, C.B.E., F.R.S., on the Work of the National Institute for Medical Research.

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[1] Journal of the Royal United Service Institution, May, 1921, p. 327.

THE POSITION OF THE VOLUNTARY HOSPITALS.

REPORT OF LORD CAVE'S COMMITTEE.

THE Report of the Committee on Hospital Finance (Lord Cave's Committee) appeared last week, when we published the recommendations. We comment on these in a leading article. An official summary of the document runs as follows:—

1. The present financial difficulties of the hospitals are due to the war. The receipts from voluntary subscriptions, donations, and legacies have not fallen off—on the contrary, they have risen by 67 per cent. since 1913. But during the war the cost of provisions, drugs, dressings, fuel, and labour has increased to such an extent that the expenditure of the hospitals has increased by 188 per cent. since 1913. The aggregate deficits of all the voluntary hospitals of Great Britain for the present year are estimated at £1,000,000 (para. 8).

2. The voluntary system is, therefore, temporarily in jeopardy. The Committee ask, "Is the voluntary system worth saving?" and their conclusion is, "We are convinced that it is." Apart from the immense sum of voluntary subscriptions and donations (estimated at £3,000,000 a year), the voluntary system secures gratuitous and skilled service, both lay and medical, of inestimable value. It preserves freedom in medicine, and is of incalculable advantage to the welfare of the sick, the training of the medical profession, and the progress of medical research. The breakdown of the voluntary system would imperil these services and impose a constantly growing charge upon public funds (para. 15).

3. The Committee are of opinion that if the voluntary hospitals are to be saved immediate assistance must be given by the State, such assistance to be strictly limited to a definite period of two years, and to be given only to hospitals which show that they are taking all possible steps to re-establish their financial position. A grant so limited and conditioned would re-establish the hospitals in the self-supporting position which they occupied before the war, and would not be inconsistent with the maintenance of the voluntary system (para. 16).

4. The Committee draw attention to a number of steps which managers of voluntary hospitals can themselves take to improve the financial position of the hospitals under their charge—e.g., review of expenditure, particularly in the light of comparative costs which could be ascertained by the general adoption of a uniform system of accounts (paras. 24 and 25); coöperative buying of drugs, apparatus, stores, and some kinds of provisions (para. 26); removal of convalescent cases to auxiliary hospitals (para. 27); coördination of appeals for subscriptions (para. 28); further development of new sources of income, such as subscriptions from wage-earners and employers, and other contributory schemes, examples of which are quoted in the Report (paras. 29 to 40); contributions from Approved Societies (para. 43).

5. To give effect to the temporary State assistance the Committee make the following recommendations:—

(1), (2) That a Hospitals Commission and Voluntary Hospitals Committees be formed for the country as a whole, the King Edward's Hospital Fund for London continuing to perform the functions of the latter for the Metropolitan Police District.

(3), (4) That Poor-law guardians be authorised to enter into arrangements as to the use of infirmaries, and that county councils be empowered to contribute to the expenses of voluntary hospitals committees.

(5) That failing the provision in the National Health Insurance Acts of a "hospital benefit," the courts be authorised to award to hospitals compensation under the Employers' Liability and Workmen's Compensation Acts.

(6) That local authorities be authorised to pay the cost of the treatment in hospitals of persons in their employ.

(7) That the payment out of technical education funds of grants for the training of nurses be considered.

(8) That provision be made for obtaining and tabulating returns of cases treated in hospitals.

(9), (10), (11) That all contributions by employers to hospital funds be allowed as deductions from profits for income-tax purposes, that where the payment to a hospital of a testamentary gift of residue is delayed for more than a year, the hospital be authorised to claim repayment of income-tax, and that legacy and succession duty on testamentary gifts to hospitals be remitted.

(12) That Parliament be asked to sanction a temporary grant of £1,000,000 to be expended under the direction of the Hospitals Commission in the assistance of hospitals which require it.

A last clause states that the Hospitals Commission should be authorised during a period of two years to recommend grants for the extension and improvement of hospitals subject to like contributions being made from private sources.

These recommendations if adopted will require legislation or executive action.

MEDICINE AND THE LAW.

The Certification of Lunatics.

IN a recent action tried by Mr. Justice Bailhache, sitting with a special jury, J. R. Gore Brown sued Sir Maurice Craig and Dr. J. Pitcairn, medical officer of Wandsworth Prison, for damages for conspiracy, false imprisonment, and wrongfully certifying him as a criminal lunatic, in consequence of which he was confined in Berkshire County Asylum. After an adjournment for several days in order that witnesses might be called to prove the authorship of a letter produced by the plaintiff, and alleged by him to have been sent by Sir Maurice Craig to the medical officer of the asylum in which the plaintiff was confined, the promised witnesses were not forthcoming, and the jury found for the defendants. The plaintiff's account of a career in which he had been military governor of Sonora, a general in the Mexican forces, and military adviser to President Carranza, of his military services in the war and his adventures with a German spy, has been fully reported. He appears, according to his own account, to have been sentenced to imprisonment upon a charge of dishonesty, and afterwards confined as a lunatic. The letter which, he alleged, was written by Sir Maurice Craig in connexion with this incident began with the sentence: "Dear Sir, In reply to your letter of December 10th in reference to the case of John Radleigh Gore-Brown, it is imperative that he should not be discharged from your asylum at the present time. There is no doubt of his sanity, but there is, as you can undoubtedly see, a very specific reason why he should not be set at liberty—he is a most dangerous man, and is a member of an Esoteric Eastern Order, which have as their object the downfall of the British Empire." There was a good deal more in a similar strain, and in his summing up Mr. Justice Bailhache observed on the internal evidence pointing to it not having been written by Sir Maurice Craig, and suggested that if he had written it he would himself be a fit subject for a lunatic asylum. That the trial should have occupied a judge and a special jury for two days, with an interval of postponement for the plaintiff's benefit, is no doubt creditable to our judicial system, as showing the impartial fairness of our courts, and the unwillingness of our judges to place the plaintiff in person at any disadvantage. Such a case, however, inflicts great and undeserved hardship upon medical men who perform duties essential to the safety of the public and of the individual whose sanity is questioned. Trials in which persons who have been confined in asylums seek for damages are, moreover, frequent. Such unfortunate individuals deserve sympathy rather than condemnation in their resentment at treatment, the necessity for which they do not understand. But the persons against whom they bring actions deserve sympathy still more. A measure of protection that could be afforded to them would be to enable the person confined to appeal within a certain time after his admission to an asylum to an official expert, whose pronouncement on his case should have the finality and privilege enjoyed by a judge of the High Court trying a question of fact. If no action could be brought against such an authority in respect of anything done by him in the performance of his duty, or against any other medical man without his sanction, the medical man consulted in a case of alleged insanity would escape, not the liability to pay damages if he was negligent or acted wrongfully, but the payment of heavy legal charges, in addition to enduring anxiety and wasting time, through having to defend himself against undeserved attack, or such a ridiculous accusation as that brought against Sir Maurice Craig.

Impotence Quoad Hanc.

The bringing in of judges not usually employed in the Divorce Court to relieve the congestion of matrimonial causes awaiting trial has had as one of its results the delivery of a weighty judgment by the Lord Chancellor in a case of a very important class from the point of view of the medical profession. After nearly 10 years of married life, Mrs. Miriam Colman or Hankey withdrew from cohabitation with her husband, and instituted a suit for a decree of nullity of marriage on the ground that there had been no consummation of the marriage and that he was incapable of consummating it. After a prolonged hearing, and after evidence had been given by the parties, by the wife's mother, and by medical men who had examined one or other of the parties, Lord Birkenhead delivered a reserved judgment in which he reviewed the law and the facts. There was, as he described it, an acute contest of fact, as the respondent not only alleged that sexual intercourse had taken place, but also that he had taken steps at one time with regard to making a will in the belief that his wife was pregnant. It was, however, clear from the evidence on both sides that the relations between the parties were not those of normal young married couples. The war accounted for the delay in the institution of proceedings. Lord Birkenhead in his judgment pointed out that the allegation was not that the respondent was generally impotent but that he was incapable of consummating this particular marriage. Doubts had been entertained as to whether impotence *quoad hanc* (that is to say, with regard to the particular woman in question) entitled a woman to a decree of nullity, but, clearly, before and after the Council of Trent, the Church had admitted, and indeed enjoined, nullity on that ground. Recent authority on the point was, however, scanty and he reviewed the various cases decided in the last century in which it had been discussed, referring to the difficulty arising from the parties being the only witnesses on the most important issues. As to this, and the responsibility attaching to the pronouncing of judgment upon the unsupported testimony of the petitioner, the court was not relieved from weighing the evidence, merely because both parties told different stories, one of which must be untrue. He referred to interviews between the petitioner, the respondent, and the petitioner's mother, as to which divergent evidence had been given, as having at any rate taken place, and as showing that up to a certain time difficulties had attended consummation, such as were consistent with the allegation that it had not taken place. With regard to the medical evidence, which he reviewed at length, as to the physical conditions observable in petitioner and respondent, his lordship described it as consistent with the petitioner's evidence and not with that of the respondent. It thus gave him the necessary guidance. Her story might be true. His story could not be true. His lordship, in conclusion, found that the petitioner's story as to the material facts was true, that the marriage had never been consummated, and that over a period of years the respondent had tried unsuccessfully to consummate it. It followed that he had been always incapable of consummating this particular union with this particular woman. There had been no allegation against her of frigidity, denied access, or physical malformation. There will, we think, be a feeling of doubt among medical men on this judgment.

CONTROL OF VENEREAL DISEASE.

THE RED CROSS REGIONAL CONFERENCE.

THE North European Red Cross Conference which was held at Copenhagen from May 20th to 25th, after considering the general measures adopted by the participating countries for the combating of venereal diseases, came unanimously to the following conclusions :—

1. That the provision, by responsible health authorities, of adequate facilities for diagnosis and treatment on lines which insure that the greatest possible number of infected persons is rendered non-infective is a measure of prime importance to the reduction of venereal diseases. The urgent necessity of commencing treatment at the earliest possible moment should be emphasised. It is suggested that the above facilities should be provided free of cost to the patient where they are otherwise unlikely to be utilised to the fullest extent.

2. That the questions of compulsory notification and of compulsory treatment, being dependent on the experience, resources, and psychology of the people concerned in each country, must be decided by individual nations.

3. That instruction, theoretical and practical, in the recognition of venereal diseases, particularly in their earliest manifestations and in their treatment, should form a part of the curriculum of every medical student, and that satisfaction of a test of proficiency in this subject should be a condition of every medical qualification.

4. That provision should be made, at suitable treatment centres, for such instruction of medical practitioners in the diagnosis and treatment of venereal diseases as will enable them to recognise these disabilities promptly and secure their adequate treatment.

5. That regulation and official toleration of professional prostitution has been found to be medically useless as a check on the spread of venereal diseases and may even prove positively harmful, tending as they do to give official sanction to a vicious traffic.

6. That the provision of "hostels" and rescue homes for the temporary care of girls suffering from venereal disease is a valuable means of preventing the spread of these diseases.

7. That the provision of opportunities for wholesome entertainment and recreation is an important factor in reducing the temptation and exposure to venereal infections.

8. That enlightenment of the general public on lines which are best calculated to minimise exposure to infection and emphasise the necessity of thorough treatment is an essential part of any scheme for the combating of venereal diseases. Instruction should particularly be addressed to parents and teachers in such a form as will enable them to give clear information on the reproduction of life and impress on adolescents the importance of individual responsibility to future generations. In the training of teachers special courses on these subjects should be provided.

The Question of Self-Disinfection.

The Secretary of the National Council for Combating Venereal Diseases, which was officially represented at the Conference, writes to us as follows: "A noteworthy point is the fact that the question of self-disinfection, which has appeared such an important and vexed factor in the campaign in England, provoked very little interest at this Conference of experts. Countries that have adopted self-disinfection as a part of their policy, stated, through their representatives, that it was not considered an all-important factor in the general campaign. This is the view taken by our own Ministry of Health according to the leaflet which they issued recently defining their policy. In Germany, where the self-disinfection policy has been pursued in a particularly vigorous manner, the results do not appear to be satisfactory, as venereal disease is spreading amongst the youth of the country in an alarming way. One of the German delegates quoted the following figures for his clinic in a large German industrial town, which has energetically pushed a campaign of self-disinfection for five years.

1919 ..	14 boys ..	60 girls	infected between the ages of 14 and 18 years
1920 ..	105 " ..	116 "	" "
1921 .. (first three months only).	33 " ..	61 "	" "

In Berlin the annual number of fresh infections was estimated by the other German medical delegate at 5,000.

State-Controlled Prostitution.

From the same source we learn that the unanimous opinion of the medical experts assembled at the Conference disposed of the fallacy that officially regulated prostitution is desirable for the purpose of reducing disease. Countries which have these so-called controlled establishments have analysed the results of this system since the publication of Flexner's "Prostitution in Europe." Not only is it proved that this system is medically useless as a check on the spread of venereal disease, but it is positively harmful as it gives official sanction to a vicious traffic. The provision of hostels and rescue homes for women and girls, and opportunities for entertainment and recreation, together with a general campaign tending to raise the standard of public morals, are the important means by which venereal diseases can be combated.

Disease amongst Seamen.

The campaign, initiated by the National Council for Combating Venereal Diseases at the first meeting of the League of Nations last year, to enable members of the mercantile marine of all countries to receive adequate treatment for venereal disease received active support at the Conference when the interests of seamen were particularly advocated by the British delegates, and the Conference approved of a detailed scheme providing for the free treatment of seafarers of all countries.

EXTENSION OF MEDICAL SERVICES: INITIATION OF A COUNTY SCHEME.

THE scheme for extension of medical services in the county area of Gloucestershire was formally adopted in April of last year and is now being put into effect. Dr. J. Middleton Martin, county medical officer of health and executive medical officer of the scheme, in a pamphlet of 16 pages issued by the County Council at 1s., describes the essential features of the extension, the genesis of which may be of interest to other sanitary authorities.

Provenance of the Gloucestershire Scheme.

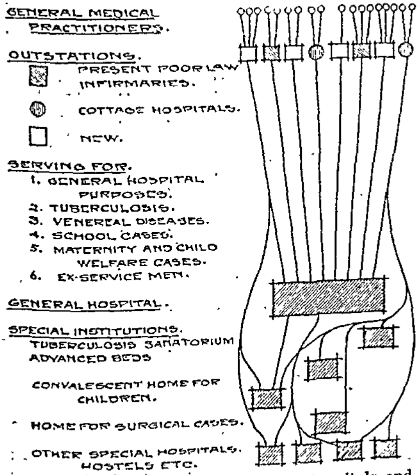
A scheme of out-stations in connexion with general hospitals in the Gloucestershire area was first propounded in a communication made in April, 1918, to the Ministry of Pensions in response to a request for a survey of institutional accommodation. In December, 1918, the Gloucestershire War Disablement Subcommittee passed a resolution in favour of the principle of the scheme, and in the same month a scheme of out-stations in connexion with general hospitals was submitted to the Local Government Board. In January, 1919, a general hospital (Cheltenham) accepted the principle of the scheme, which was about the same time submitted to the Board of Education. In February, 1919, the scheme secured the approval of the Gloucestershire Branch Council of the British Medical Association, and in March the Local Government Board signified approbation of the association of special work of local authorities with out-stations of general hospitals. On May 29th, 1919, the principle of the scheme was approved at a mass meeting of the medical profession in the county, and on the following July 7th it was formally adopted by the County Council. In September, 1919, a grant of £7000 towards capital expenditure was received from the Joint War Committee of the Red Cross. The detailed scheme was formally submitted by the council to the Ministry of Health in October, 1919, and formal approval obtained in April, 1920.

Requirements of a County Area.

The medical needs of a county area are, it is pointed out, much more difficult to meet than those of a large urban centre. Where Bristol has 13,100 persons to the square mile, the county of Gloucestershire has only 268. In a sparsely populated area it is impracticable to establish centres for each class of case; and while there are administrative advantages in working a scheme by whole-time special officers, it is needful to secure the attendance of specialists for examination and treatment of special groups only. Specialist services are required for consultation rather than routine examination. Based on these principles, the Gloucestershire scheme consists in the opening of out-patient departments at 11 cottage hospitals and 41 new out-stations of the general hospitals (somewhat on the lines of existing tuberculosis dispensaries with consulting room, waiting room, and dressing rooms), so that one will be accessible within a radius of about every three miles of the county. At these out-patient treatment of all the special classes of persons, for whom provision has at present been made at the public expense or may be made in the future, will be available. The usual medical attendants will be the local practitioners, and the specialist staff of the general hospitals will attend periodically for consultation and for the examination of cases reserved for them. An ambulance service will be available for general hospital cases, the out-stations being primarily intended for the special groups of cases whose treatment will be such as can be given in an out-patient department.

Utilisation of Existing Machinery.

In the large general hospitals are to be found the most complete equipment for medical and surgical treatment, and the most highly trained medical, surgical, and specialist services; of these there are four in or bordering on the county. There are also dotted about the county 11 cottage hospitals and, distributed over the same area, 240 medical practitioners. In the general hospitals will be the consultant services, and through the agency of the smaller hospitals and the medical practitioners, working closely in coöperation with the general hospitals, complete medical services available for the whole area of the county can be provided. Dr. Martin uses a familiar but convenient diagram to express the inter-relations of these various units.


GENERAL MEDICAL PRACTITIONERS.
OUTSTATIONS.
PRESENT POOR LAW INFIRMARIES.
COTTAGE HOSPITALS.
NEW.
SERVING FOR.
1. GENERAL HOSPITAL PURPOSES.
2. TUBERCULOSIS.
3. VENEREAL DISEASES.
4. SCHOOL CASES.
5. MATERNITY AND CHILD WELFARE CASES.
6. EX-SERVICE MEN.
GENERAL HOSPITAL.
SPECIAL INSTITUTIONS.
TUBERCULOSIS SANATORIUM ADVANCED BEDS
CONVALESCENT HOME FOR CHILDREN.
HOME FOR SURGICAL CASES.
OTHER SPECIAL HOSPITALS. HOSTELS ETC.

Provisional Scheme of Working.

Openings of Out-stations.—At present each of the 12 out-stations is to be open one day weekly for the attendance of the medical officer at a time to be fixed to suit his convenience and that of the neighbourhood; on other days, at times convenient to the neighbourhood, for intermediate treatment (ordered by the medical officer) by the nurse; periodically, for consultations, at times to be arranged between the medical officer and the parent hospital; at convenient times as a maternity and child welfare centre; at other times as may be arranged by the Board of Management for the convenience of the medical officer in seeing general hospital cases or other groups of patients, or for dental treatment, &c.

Persons eligible for Treatment.—The following classes are eligible for treatment under the scheme: (*a*) school children referred from the school by the medical inspector, the head teacher or the nurse, after reference to their usual medical attendants, who will either provide treatment or advise attendance at an out-station; (*b*) persons with symptoms of, or suspected to be suffering from, tuberculosis and contacts; (*c*) persons liable to be suffering from venereal diseases; (*d*) ex-Service men referred by pensions committees; (*e*) mothers and infants under the maternity and child welfare scheme; (*f*) other groups of patients by agreement between the medical officer and the board of management, on the recommendation of the medical advisory committee. Patients in groups (*a*), (*b*), (*c*), and (*d*) will attend at the times of the regular openings; those in group (*e*) when the out-station is opened as the maternity and child welfare centre, and other groups as arranged in the future.

Duties of Medical Officers.—The medical officer will examine all new cases and either treat them himself or give instructions to the nurse for their treatment; by arrangement with the hospital he will reserve groups for consultation with the special officer; he will keep such simple notes of each case as may be necessary to preserve the records of the various patients.

Duties of Nurse.—The nurse will attend at the out-station with, and assist, the medical officer; she will give such intermediate treatment as he may prescribe; she will keep the register of attendances; and ensure that the out-station is kept in proper order.

Preliminary List of Out-stations.

The out-stations which are or soon will be open for intermediate treatment and for consultations are as follows:—

Bristol Hospital Area.—Almondsbury Memorial Hospital (Monday), Chipping Sodbury Cottage Hospital (Friday), Thornbury Out-Station (John Street) (Monday).

Cheltenham General Hospital Area.—Cheltenham General Hospital (Friday), Chipping Campden Out-Station (Back Ends Road) (available shortly), Cirencester Hospital (Wednesday), Tewkesbury Rural Hospital (Tuesday).

Gloucestershire Royal Infirmary Area.—Berkeley Hospital (Wednesday), Cinderford Out-Station (The Institute) (Tuesday), Gloucestershire Royal Infirmary (Wednesday), Tidenham Out-Station (available shortly).

Stroud Area.—Stroud General Hospital (Tuesday).

The medical officers in each case are the local practitioners; where there is more than one, they take duty for six months in turn.

Tuberculosis Dispensaries are open at Cheltenham General Hospital (Wednesday), Cinderford Institute (Tuesday), Cirencester Hospital (by appointment), Gloucester Provident Dispensary (Tuesday and Thursday), Stroud General Hospital (Monday), Thornbury Out-Station (Friday), Warmley District Council Offices (Friday).

Venereal Disease Clinics are available at Bristol General Hospital, Bristol Royal Infirmary, Cheltenham General Hospital, Gloucester Royal Infirmary, Stroud General Hospital: in each case on two or more days of the week.

Dr. W. Arnott Dickson, to whose practical suggestions the scheme owes much, has been appointed its clinical medical officer.

Consultants Attached to the Scheme.

The following is a list of the consultants attached to the scheme, arranged under the general hospitals to which they belong:—

Bristol Hospitals.—Physicians: R. C. Clarke, Cecil Clarke, C. E. K. Herapath. Surgeons: A. W. Adams, H. Chitty, D. Wood, C. A. Moore, A. R. Short. Ophthalmic surgeons: A. E. Iles, E. H. E. Stack. Ear, nose, and throat: J. P. I. Harty, A. J. M. Wright. Gynæcologists: W. C. Swayne, R. S. S. Statham.

Cheltenham General Hospital.—Physicians: J. P. Johns, S. M. Hebblethwaite. Surgeons: J. Howell, J. R. Collins, J. C. R. Braine-Hartnell, T. Holmes. Ophthalmic surgeon (ear, nose, and throat): N. H. Pike. Maternity and child welfare: H. F. Powell. Radiologist: H. M. Meyrick-Jones. Dentist: G. A. Peake.

Gloucestershire Royal Infirmary.—Physicians: W. W. Grosvenor, D. E. Finlay, H. Cairns Terry. Surgeons: W. Washbourn, C. V. Knight, A. Alcock, R. L. Haines. Ophthalmic surgeon: W. Niccol. Ear, nose, and throat: H. Smurthwaite. Radiologist: J. C. Webb.

Stroud General Hospital.—Surgeons: A. Barnes Davies, A. W. Waller, C. L. Coode, J. C. Marklove.

The estimated cost of maintenance for the year 1921–22 is below £5000. The Ministry of Pensions pays the whole cost for ex-Service men, and the Ministry of Health will make grants of 75 per cent. for venereal diseases and 50 per cent. for other services.

THE CLINICAL UNIT IN OBSTETRICS AND GYNÆCOLOGY AT THE ROYAL FREE HOSPITAL.

THE staff of this unit at the Royal Free Hospital, which is at present the only teaching hospital which has a clinical unit in these subjects, is as follows, all the officers being whole-time:—Director: Prof. A. Louise McIlroy; Senior Assistant: Dr. Gertrude Dearnley; Second Assistant: Dr. Charlotte Houlton; Clinical Pathologist and Registrar: Dr. Dorothea Taylor; Resident Obstetric Officers, three. The beds in the unit number 63, of which 12 obstetrical and 25 gynæcological are in the Royal Free Hospital, and 26 in the Marlborough Maternity Block in Endsleigh-street; of the last a few are allocated to private paying patients. Similarly, a certain number of beds are reserved at the Royal Free Hospital in the gynæcological department for paying patients who cannot afford a nursing home. This does not involve any loss of beds for teaching purposes, since practically all patients pay varying amounts, and all enter the hospital on the understanding that students have access to the wards and may examine patients. Students are not allowed to make vaginal examinations in the wards, but only in a special examination room under the direct supervision of the director or an assistant. *One student only examines any case.* This applies to all patients, paying or non-paying, and to obstetric as well as gynæcological cases.

Clinical Work.—All students serve as clinical clerks in the obstetrical department of the unit for three months. A certain number of students are appointed as gynæcological clerks for three months under the unit, the remainder of the students serving as gynæcological clerks for another firm, the selection of students being made by a committee consisting of the dean, the warden of the Medical School, the director of the unit, and a senior student. These clerks take the records of the cases and examine the patients under the direct supervision of one of the assistants in small rooms fitted up for the purpose. They also conduct the cases of normal labour under the supervision of the resident obstetric officers. There is a district attached to the hospital where the students attend maternity cases under the supervision of the resident district officer. Students engaged in obstetrics are on duty for 12 hours either night or day. There is therefore no necessity to have special quarters for them for sleeping, but rest quarters are provided, and meals, both for night and day students. Antenatal clinics are held twice weekly for out-patients at the Royal Free Hospital and at Endsleigh-street. Gynæcological operations are performed by the director and her assistants with the help of a theatre nursing staff, working together as a team. Students assist at minor gynæcological operations. Gynæcological out-patients are seen on Saturday mornings at the Royal Free Hospital. Cases specially referred to the director are seen in the out-patients department on Wednesday and Saturday mornings at 10 o'clock. The case records are kept on the general index system instituted by the hospital and are stored centrally, a précis of the case-sheet being kept in the unit for reference when required. The clinical pathologist undertakes the treatment of cases of sepsis occurring in the wards of the unit in order to minimise the risk of carrying infection to other patients, and to free the director and her assistants from contact with septic cases. These cases are isolated in a special department and are not examined by students, who are however, allowed to see the treatment carried out. Cases in the puerperium who have a temperature of 100° F. for more than 24 hours are isolated and treated as septic.

A course of preparatory lectures in obstetrics and gynæcology for junior students is given twice a week by the director. The clinical clerks receive instruction on every case in the unit, and in the out-patients department. The final year students have a tutorial class daily, and a demonstration of operative obstetrics once a week. Special courses of lectures and demonstrations will be given in the winter term for students, and classes for post-graduates will also be held. A course of lectures on the Physiology and Psychology of Reproduction will be held by the director for post-graduates and senior students once a week, beginning in October, 1921.

Pathology.—There is a laboratory attached to the unit for the use of the medical staff for purposes of research; the main routine pathological work is done in the general pathological department. Special demonstrations in gynæcological pathology are given by the director of the pathological department of the hospital and by the clinical pathologist of the unit.

Public Health Services.

LONDON COUNTY COUNCIL ESTIMATES.

THE London County Council has passed a series of estimates totalling £645,711 in respect of the public health services of the metropolis. From the details given below it will be seen that by far the heaviest individual items were those for treatment of tuberculosis (£349,000), and diagnosis and treatment of venereal diseases (£115,100). The full details are as follows:—

	£
Public vaccinators	2,500
Sanitary officers	82,427
Registrars of births and deaths ..	509
Poor-law medical expenses	85,000
Treatment of tuberculosis (residential)	331,500
,, ,, (dispensary)	17,500
Diagnosis and treatment of venereal diseases	115,100
Milk-supply (tuberculosis)	2,965
Infant life protection	6,540
Precautionary measures against spread of epidemic diseases	20
Lying-in homes	60
Public health administration	100
Special county public health administration, including enforcement of Dairies, Cowsheds, and Milkshops Orders	665
Common lodging-houses and seamen's lodging houses	750
Miscellaneous expenses	75

SCHOOL MEDICAL INSPECTION.

Reading.

The first report issued since October, 1920, when the school work was undertaken by whole-time instead of part-time officers, deals mostly with the work under the part-time system. Dr. H. J. Milligan now combines the work of the public health and school medical departments with the help of two whole-time assistant school medical officers, and of Dr. J. A. P. Price, who still gives part of his time to the work. There are 14,752 children in attendance, and of these 4290 underwent routine medical inspection; 64, or 1·5 per cent., were found to be suffering from malnutrition; 139, or 3·2 per cent., from defective vision; and 158, or 3·7 per cent., from enlarged tonsils or adenoids. 19 children suffered from defective hearing, and 25 from otitis media. 154, or 3·6 per cent., were found to be unclean either in head or body. 238 children attended the ophthalmic clinic throughout the year, and for 107 of these Dr. Price prescribed glasses; the Education Authority provided glasses for 144, a considerable proportion of the expense being recovered from the parents. Playground classes are held in practically all the schools, while two schools arrange school journeys of a fortnight's duration. The open-air school is solely for children who suffer from tuberculosis in one form or another, but the cases are mainly pulmonary. There is an interesting table showing the after careers of children who have attended the physically defective, the open-air, and the mentally defective schools. Of the 77 girls attending the continuation school 7 were unclean, 1 suffered from spinal curvature, and 5 from flat foot.

Eastbourne.

In Eastbourne the public health school and infant welfare work are well coördinated. The school medical officers are also public health officers, and three out of the four nurses employed devote part of their time to infant welfare work. In addition, there are eight part-time medical officers. The adaptation into an open-air school of six army huts, with accommodation for 50 children, surrounded by a large area of open ground, is the outstanding feature of the year, and was foreshadowed in Dr. W. G. Willoughby's previous report. The results have already been so good that Dr. Willoughby suggests an extension to the school. Dinner is provided for all the children in attendance, and certain of them have milk in the morning. This school is a valuable asset to the tuberculosis and malnutrition clinic, where 92 children made 263 attendances throughout the year. The results of medical inspection in the continuation schools are interesting. The percentage of defects is high (41 per cent.), the number requiring treatment and observation being about equal. Dr. Willoughby writes: "I attribute the large number of deformities, many of them slight but still interfering with the perfect health of the individual, to the lack of systematic physical training in the elementary schools curriculum. It is obvious, I think, that the children do not get sufficient physical exercises. If they did there could not have been the number of misshapen spines and flat feet." Dr. T. Turner reports that having examined every boy in the secondary school, and four months' later having re-examined the cases noted for observation, he finds the general physique of the school good. He was struck by the almost complete absence of spinal curvature. Among the boys of the continuation school he finds the physique poor, especially among errand boys, and a large number of the latter suffered from flat foot. He attributes these physical defects to the fact that these boys attend school only twice a week, and therefore get no systematic training and spend little time in organised games.

Dewsbury.

2376 children underwent routine examination during 1920. 151 of these were found to be suffering from defective vision, 42 from defective teeth, 51 from defective conditions of nose and throat, 1 from speech defect, and 3 from pulmonary tuberculosis. Dr. Oscar Holden reports that if pulmonary tuberculosis looms largely in the returns of a school medical officer doing *routine* school inspections one must perforce believe that officer to have a bias, and *not* necessarily believe that tuberculosis is rife in any particular school. The report contains the interesting statement that the condition of teeth in the industrial towns of Yorkshire and Lancashire is considerably inferior to that seen in the agricultural classes of the south. "Whether the softness of the water, or the general hygienic surroundings, or the character of the food plays the most important part it is very difficult to say. An investigation carried out by me in regard to the dietaries of children with sound and unsound teeth revealed no difference. Bad teeth seem to be a family characteristic, an inherent tendency rather than a circumstance of environment." Glasses were prescribed for 110 children and obtained by 98. Provision is being made for carrying out remedial exercises at the new clinic. This will be undertaken by the organiser of physical culture under the direction of the school medical officer.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

Warning to Would-be Medical Students.

STUDENTS who have just completed their middle school course, having passed the "maturity" examinations, are being circularised with an appeal not to enter upon the study of medicine. The chief reason offered is the unfavourable financial condition of an exceedingly large percentage of physicians, consequent on the loss of two-thirds of the territory of Hungary by the Trianon peace treaty. Formerly patients poured into Budapest in vast numbers from the provinces. From every corner of the land doctors sent their patients for special treatment and consultation. But now patients from the occupied territories are prevented from coming to Budapest by technical obstacles. First of all there is the compulsory passport system; to procure a passport and necessary *visa* takes much time and expense. In fact a journey to Budapest from the occupied territories must be regarded as a luxury; for instance, the journey from Oradea Mare (late Nagyvarad), altogether 200 kilometres (about 130 miles) from Budapest, which took four hours by fast train before the war, with a service of seven to eight trains a day, now takes 24 hours. From Oradea Mare one has to go either by carriage or by automobile to Bors, the Roumanian custom station; thence by foot to Kerentes; thence by carriage to the Hungarian boundary; and thence by railway to Budapest. This roundabout journey has to be made because the direct railway line cannot be used for lack of interchange of railway engines and cars. The facts commented on in the circular are: (1) the surplus of medical men beyond the demand; (2) the abrogation of the laws against practice by the incompetent; (3) the legislation for the various sick clubs. The number of physicians in Budapest alone amounts to 2000, while in 1913 the number was slightly over 1000. Thus the number has more than doubled in eight years, and the prospects are that it will grow still larger. A further reason for avoiding the study of medicine given by the circular letter is the addition to the course of a "practical year," whereby the expenses of preparation for the profession, already very costly, are still further increased.

A Case of Boric Acid Poisoning.

The popular fallacy that boric acid is innocuous to the system is contradicted in a case which occurred two weeks ago in a Hungarian village. The patient, a man aged 23, suffered from bilateral inguinal adenitis, which had been incised, by a surgeon in the next town, and the patient went home with instructions how to dress his wounds. However, the patient, who had been in the sanitary service during the war, remembered that boric acid powder was administered in cases of suppurative mastoiditis. This recollection induced him to pack the cavities of his buboes with boric acid powder. He used for this purpose about 150 g. Soon afterwards the man developed the typical signs of boric acid poisoning, profuse vomiting, a papular rash over the face, neck, and chest, and a weak irregular pulse. The onset was rapid and the fatal issue came on within four days. There was also delirium and slight rise of temperature. Post-mortem examination showed congestion of the liver, spleen, and gastro-intestinal tract, and cloudy swelling and granular degeneration of the liver and kidney cells. There were also subpericardial hæmorrhages, together with discoloration and maceration of the tissues about the cavity in which the boric acid was placed. These findings limit the cause of death to a toxæmia resulting either from the abscess in the groin, or from the medicinal agent employed, as other recognisable causes were not present. Its recognblance to other cases previously reported (the last one described by Dr. C. I. Best in America), together with the demonstrated over-use of the drug, was sufficient for the diagnosis. The clinical features and the lack of success in cultivating pathogenic bacteria from the blood eliminate septicæmia, which is the condition most likely to be simulated in such a case.

Serum Treatment of Articular Rheumatism.

Dr. Radvanyi (Transylvania) states that better results in the treatment of acute and chronic articular rheumatism have been obtained from the use of antistreptococcus serum than from any other medicine. Chronic cases, if not cured, are materially improved, and in acute cases an endocarditis will heal more rapidly. As proof of the latter fact a case is cited which presented well-marked increase in cardiac dullness with presystolic murmurs at the apex during an acute attack; two years after treatment there were no longer any definite signs of endocarditis. Since the serum may render acute a chronic inflammatory process, Dr. Radvanyi says it should be used with caution in pericarditis, marked pleurisy, or advanced mitral stenosis. In acute cases single doses of 5 c.cm. should be employed (strength of the serum according to the severity of the symptoms), while if chronic, several periods of treatment are necessary. The other measures employed for rheumatism are also in place, but salicylates need not be given while serum treatment is being employed.

May 28th.

Obituary.

JOHN MATTHEW FORTESCUE-BRICKDALE,

M.D., B.CH. OXON., M.R.C.P. LOND.,

PHYSICIAN TO CLIFTON COLLEGE AND TO THE BRISTOL ROYAL INFIRMARY.

WE briefly recorded last week the death at an early age of Dr. J. M. Fortescue-Brickdale, in whom medicine as an art and medicine as a science were well blended. Born in London in 1869, son of the late Mr. Matthew Inglett Fortescue-Brickdale, conveyancing counsel to the Court of Chancery, he was educated at Dulwich College—where his literary bent already found expression in a school paper of a satirical character entitled "The Culex"—and at Christ Church, Oxford, receiving his medical education at Guy's Hospital. Of this period of his life one of his friends relates:—

> J. M. Fortescue-Brickdale came up to Guy's from Oxford in 1892, and for seven years was one of the most popular men in the hospital. His personality was effective; his smooth black hair, short-sighted eyes, and precise. rather drawling speech, marked him at once as a man out of the common rut of his fellows. Of wide education and interests, musical, artistic, and Athenian in his pursuit of all new things, whether in medicine or the humanities, he was an amusing companion and a keen and critical worker. He took a prominent part in the social life of the hospital, and was a brilliant and frequent speaker at the hospital debating society, where he would champion any cause which, by verbal sophistry, could be made to appear unpleasing to the Philistine. Brickdale was one of that small group who founded a short-lived but famous publication "The Guyoscope," which in its day satirized the staff and school of Guys, and contained witty articles on men and medicine, highly appreciated by those who knew the sly allusions. At any reunion of Guy's men it was always a scramble to get near "Forty" when he made one of his rare appearances, for age and work did not diminish his charm or lessen the affection with which he was regarded by his old hospital contemporaries.

Graduating M.B., B.Ch. at Oxford in 1898, he became clinical assistant, and afterwards house physician, at Guy's Hospital. leading on to his selection as school doctor at Uppingham. Upon resigning this appointment in 1903 he settled in Clifton. Soon after his arrival there he became assistant physician to the Royal Hospital for Women and Children. Later his interest in pharmacology, particularly in relation to organic compounds, obtained for him the distinction of being madt lecturer in pharmacology at Oxford while residene in Bristol, where he directed the public health laboratory attached to University College, and demonstrated physiology.

In 1908, Dr. Fortescue-Brickdale was elected assistant physician to the Bristol Royal Infirmary, a further link in the connexion between his family and the infirmary. As long ago as 1766 Matthew Brickdale, by virtue of his uncle's legacy of £200, obtained for himself and his heirs the "power and privelage" of perpetual subscribers. In 1840 Dr. Fortescue-Brickdale's grandfather successfully claimed this right, and in 1867 his father's name was entered on the list of life trustees. A family interest in the institution which had thus existed for more than a century and a half was thus cemented when Dr. Fortescue-Brickdale became a member of the honorary staff. His devotion to the Royal Infirmary amply upheld the tradition of his forbears; for a number of years he was lecturer and examiner to the nursing staff, and his experience in this capacity bore good fruit in the last book he published before his death, "A Text-book of Pharmacology and Medical Nursing for Nurses."

Fortescue-Brickdale served in the war as a Captain, R.A.M.C. (T.), first at the 2nd Southern General Hospital in Bristol and later for about two years in France, where he was for some time in medical charge at the Michelham Home at Cap Martin. Whilst in France he contracted a severe illness, the effects of which, it is believed, shortened his life. On his return to home service he had charge of a special centre for chest wound cases, on which he published a report in the *Quarterly Journal of Medicine* in 1918. Apart from this and some work on children's diseases, his writings were chiefly devoted to the chemistry and therapeutic actions of drugs. Collaborating first with Prof. Francis in a "Chemical Basis of Pharmacology," he brought out in 1910 a "Practical Guide to Newer Remedies," and later (jointly with Mr. H. G. Armstrong) a book on "Infectious Diseases in Schools." He contributed a number of therapeutic articles to the "Practitioner's Encyclopædia of Medical Treatment."

For the past seven or eight years Dr. Fortescue-Brickdale acted as physicain to Clifton College, and found there most congenial work. He watched over the health of several hundreds of boarders with the most particular care; again and again, by taking suitable measures at the first beginning of an illness, he was able to avert serious consequences. His surgical colleague on the staff writes of him as very sane in his diagnosis and treatment. "He made lots of friends and no enemies, although he was one of those men who have not the gift of advertisement, and few knew how good he really was. During the weary months of his last illness the true qualities of the man shone out nobly; none of those about him are likely soon to forget his uncomplaining patience and Christian courage."

Fortescue-Brickdale was a man of many interests, widely read and endowed with considerable literary gifts. He was an active member of the editorial committee of the *Bristol Medico-Chirurgical Journal*, where his colleagues found his eclectic taste of singular value. There are few charming little bits of verse from his pen. He loved music and played the violin well for an amateur, regularly taking part at Oxford in the quartets at the medical reunions held in the rooms of the late Dr. Mee. As a colleague he won universal esteem, total absence of self-seeking endearing him to all with whom he worked or came in contact. One note of appreciation which we have received ends: "He was an upright, staunch man, whose untimely death leaves his colleagues with a sense of intimate and personal loss."

Dr. Fortescue-Brickdale leaves a widow and two sons.

Correspondence.

"Audi alteram partem."

THE SALE OF DISINFECTANTS.

To the Editor of THE LANCET.

SIR,—May I supplement the most useful article on the subject of the sale of disinfectants in your issue of May 14th by a fact which may not be known to many of your readers? Under the Poisons and Pharmacy Act, 1908, all of those disinfectants which contain over 3 per cent. of carbolic acid and its homologues have to be labelled "poisonous," and so may not be sold except by chemists. But comparatively useless material of feeble disinfectant value, with not more than 3 per cent. of carbolic acid and its homologues, need not be so labelled, and may be sold at oil and grocery shops and stores. The Act therefore tends to favour the sale of these low-class disinfectants, for the public buys more disinfecting material from oil and grocery shops and stores than from chemists. It is not generally realised that when such disinfectants are bought at oil shops, &c., the purchase under present conditions must be of a low-grade article, which, if it disinfects at all in the circumstances of its use, is an uneconomical purchase having regard to the large amount which must be employed.

If these handicapping circumstances are not to operate against the sale of the most efficient (and cheapest) disinfectants, the above facts must be kept in view by those who advise the public in the use of these articles. The resolution referred to by the writer of the article, as proposed by me and carried at the Birmingham Congress of the Royal Sanitary Institute last year, was designed to protect the public against the sale of useless material and misrepresentation, so far as disinfectants are concerned. The resolution has been endorsed by a majority of all county borough councils—to whose verdict it has been submitted; and not a single council has had anything to say in disapproval.

I am, Sir, yours faithfully,

HENRY KENWOOD.

University College, London, June 11th, 1921.

CHRÓNIC TROPICAL ULCERATION IN EUROPEANS.

To the Editor of THE LANCET.

SIR,—In certain tropical areas a chronic ulceration of the lower limbs has been observed which gives rise to considerable trouble in treatment, and to a somewhat important point medico-legally. My experience of this trouble is confined to two areas: Cocos, in the Indian Ocean, and Perim, in the Red Sea. In both these places the lesion is exactly similar in onset, course, and result, and is known locally as Cocos or Perim sore. The ulceration is confined to the lower limbs, and commences either as some small skin abrasion or by a small vesicle. The course is rapid, the ulceration spreads quickly, the surrounding skin becomes inflamed, and a dark crust forms over the necrosed skin. On removal of this crust a deep punched-out ulcer is found, the bottom of clean pink granulations with piled up skin surrounding it. This is very sluggish in healing and is liable to break down on the slightest provocation. On healing there is left a dark-coloured cicatrix, very lasting, that is almost identical with a syphilitic scar. No pyogenic organisms are found, and self-inoculation was negative in result. Both Castellani and Stitt seem to look on these ulcerations as mostly syphilitic in origin; but this seems to me too great a generalisation. In some marked cases this origin is practically impossible; in others, extremely improbable. Rather does the lesion seem to come under the "deficiency" group. In support of this view, one deduces certain facts. An identical ulcer does not appear in the natives in these regions. A free supply of fresh vegetables and fish at Cocos reduced the trouble by at least 50 per cent. This ulceration in Europeans never occurs in areas except where the ordinary diet is unavoidably restricted. It is quite possible that, given the bodily condition for the development of the complaint, the local structure and conditions may aggravate it, as, in both these areas (coral and coral c. larva) undoubtedly sea-bathing is an intense irritant. In both these places a similar small but very painful ulceration is often set up in the mucous membrane of the inner ear after contact with sea-water.

The most effectual treatment of the complaint seems to be the packing of the ulcer with lot. rubra, with occasional application of hyd. perox. and ung. protargol. 7 per cent. The medico-legal point is that, from a life insurance point of view, the peculiar and persistent coppery-stained cicatrix is, by an unwarned observer, naturally taken for syphilitic. I am personally aware of a case which was rejected as an ordinary risk, and considerable family unpleasantness caused, in a young man whom I myself treated for these sores, and who was, I am convinced, never infected syphilitically. It would be interesting to hear if any other observers in similar area can be induced to give their views.

I am, Sir, yours faithfully,

B. E. EDGE,

May 25th, 1921. Port Medical Officer, Perim.

THE TREATMENT OF DIABETES.

To the Editor of THE LANCET.

SIR,—In your issue of April 23rd there is a review on my book on "Diabetes." I cannot agree with the reviewer regarding the statement that sodium nitro-prusside is a better test for aceto-acetic acid than for acetone. It may be unfortunate that we may get a positive reaction with sodium nitro-prusside where diacetic acid or acetone is present, but there are thousands of cases where we get a positive reaction for acetone and find no diacetic acid, either with Gebhardt test or ferric chloride, or whatever other test we may employ. Again, out of about one thousand cases I have come across three to four that gave a positive reaction for diacetic acid and no reaction with sodium nitro-prusside for acetone.

I am, Sir, yours faithfully,

New York, May 24th, 1921. PH. HOROWITZ, M.D.

THE FEDERATION OF MEDICAL AND ALLIED SOCIETIES.

To the Editor of THE LANCET.

SIR,—In your issue of June 11th the General Secretary of this Federation draws attention to the fact that at their late dinner what he terms "the right hand of fellowship" was held out to the British Medical Association; and he adds, with regard to these two organisations, that "one is primarily concerned with the interests of the patients, and the other with those of the doctor." So far as my knowledge goes, the British Medical Association has repeatedly stated that the interests of the patients and the doctors are one, and that in safeguarding one it is acting similarly to the other. It would not admit any such division of interests as possible either in its central or local organisation; no more than it would in the bedside association of the two concerned. May one venture to know why it has become necessary now to champion the patients' interests by forming a federation; and also how and to what extent these patients are directly represented on the councils of this new body? The Association stated in 1910 that, if loyally supported by the medical profession, it is in a position to carry successfully into effect all the aims and objects of the Federation. It is a little difficult to appreciate how a group of societies, formed for the advance of scientific subjects alone, can be expected to become suddenly capable of handling successfully medico-political questions, whether such questions relate to the doctor or patient or both. Would it not be far better for doctors to support on the one hand the Royal Society of Medicine for the science attainment, and the British Medical Association for the medico-political aspirations, rather than to butt in with a new and inexperienced conglomeration?

I am, Sir, yours faithfully,

Hove, June 12th, 1921. E. ROWLAND FOTHERGILL.

*** We publish Dr. Fothergill's letter with pleasure, but the societies allied to the Federation cannot be described as "formed for the advance of scientific subjects alone," and this fact interferes with his main argument.—ED. L.

THE DANGER OF ATHLETICS FOR GIRLS.

To the Editor of THE LANCET.

SIR,—I have been much interested in the recent correspondence, both in the daily press and in THE LANCET, on the subject of athletics for women. During the last five years I have had the opportunity of examining all the students at one of the largest physical training colleges for women, both on their entrance into the college and at the end of each term's work.

Miss C. Cowdroy, in her letter to THE LANCET of May 14th, makes the following statements with regard to physical experts, that "they frequently suffer from heart trouble . . . or from displacements of some kind. Sometimes the monthly disability stops for long periods." I should like to say that I have never come across a single case of heart strain, or of displacement of an organ. The amenorrhœa which occurs during term time, in about 1·5 per cent. of the students, is never permanent, and has never to my knowledge produced any ill-effect, whereas the cases of dysmenorrhœa (which is very uncommon among this class of girl) have frequently been distinctly benefited.

Miss Cowdroy further states "that the attitude of these women to life is frequently not a normal one, their mentality is not healthy." She also speaks of "the curious influence exerted by some of these women on girls, neurotic girls seeming obsessed by them." That such women do exist is certainly true, but to say that the condition is due to the practice of athletics seems to me to be making a very unfair assumption. The cause so far as it is possible to apprehend it at all is probably a very complex one, connected with the social conditions of the time, the excess of the female population over the male, and in particular to the conditions, of necessity, prevailing in boarding schools and resident colleges, in which numbers of women live together without any male society whatever. It is these circumstances which tend to make the teaching profession, but not any particular branch of it, especially prone to produce this type of woman. My experience with regard to the students at this physical training college has been that they are the most natural and normal girls that could be desired. I have on several occasions in conversation with members of the staff commented on the simplicity of the students and their youthful and healthy outlook, and they have invariably agreed with me. These girls certainly compare very favourably with the ordinary flapper and average college student.

Miss Cowdroy says "their marriages are often childless." Such an observation is, of course, of no value. Owing to the diversity of factors involved it would require years of research and a multiplicity of data before any accurate statement on the effect on the birth-rate of any one particular class of training could be made. Everyone admits that excess in physical training is to be deprecated, especially in the case of growing girls and boys, but I do not think that there is at present any evidence that athletics are practised to excess in girls' schools.

The question which, in my opinion, educationalists ought very seriously to consider is whether the daily school curriculum, particularly for girls of 14 to 17 years of age, is not too strenuous, and whether more time ought not to be allowed for complete relaxation and recreation. The time-table in many schools consists of full morning and afternoon sessions, followed by 2 to 2½ hours home-work. Even when 2 to 3 hours a week are apportioned to gymnastics or games it seems to me that such a curriculum constitutes far too great a strain on the average girl, and that it is not conducive of the best results from a physical, intellectual, or even examination point of view.—I am, Sir, yours faithfully,

MARGARET G. THACKRAH.

New Cavendish-street, W., June 4th, 1921.

THE VALUE OF SANATORIUM TREATMENT.

To the Editor of THE LANCET.

SIR,—In your issue of June 4th Dr. J. M. Johnstone claims that sanatorium treatment holds the premier place in the treatment of tuberculosis and stigmatises as astonishing the conclusions, recently arrived at by a tuberculosis officer, that cases do better in their homes. One wonders whether his experience extends to the treatment of patients of the working classes. When an attempt is made to trace after-histories, dispensary practice shows that the results of sanatorium treatment are disappointing, and the final result in those who have had it is little better than in those who have not. It is a common occurrence for patients to go downhill rapidly six months after discharge from a sanatorium as improved or much improved. This result is not the fault of the sanatorium, but rather of a system which tends to label that institution as the sheet-anchor in the treatment of the disease.

It has been stated frequently that most of the treatment of a working-class patient with tuberculosis must be carried out at his own home, and in my experience some undoubtedly do better in their own homes, and do not need institutional treatment. Give him a short period of educational treatment at a sanatorium by all means, or send him because he believes in the "cure," but he cannot stop sufficiently long to bring about a cure. Modern opinion makes resistance the keynote to the treatment of the disease. Cannot our efforts be concentrated on raising resistance in the home? Better food and adequate rest seem to be most important factors, and the working man is slowly getting both. There are other factors, of course, but I am not convinced that the sanatorium holds the premier place any more than housing does.—I am, Sir, yours faithfully,

F. G. CALEY,
Tuberculosis Officer.

Metropolitan Borough of Wandsworth
Tuberculosis Dispensary,
June 7th, 1921.

DIGITALIS AND THE PERIPHERAL CIRCULATION.

To the Editor of THE LANCET.

SIR,—Your correspondent, Dr. W. J. Grant, whose letter appeared in THE LANCET of June 4th, has not grasped the principles on which the conclusions arrived at in my paper have been based. In order to form a clear conception in regard to the pharmacology of digitalis it is necessary to have a clear idea as to the meaning of systolic, diastolic, and pulse pressure. Obviously, it is the increased pulse pressure which effects an increased volume of flow per unit of time at a time when both systolic and diastolic pressures are lower than normal. The more complete emptying of the veins near the heart which takes place owing to the greater systolic output may also affect the flow of the blood through the peripheral circulation to some extent.

I have already dealt in my paper with the problem of dilatation of capillaries, &c., to which I should like to refer your correspondent. Incidentally, I should like to state that already the old physicians observed an alteration in the character of the pulse after digitalis, doubtless due to the increase in pulse pressure which this drug effects. The observation was made by the simple method of feeling the pulse. Sir James Mackenzie, however, for whom sometimes facts do not exist which cannot be determined by his favoured methods, ridiculed the idea of a "digitalis pulse."

I am, Sir, yours faithfully,
I. HARRIS.
Liverpool, June 10th, 1921.

THE INHERITANCE OF ASTHMA.

To the Editor of THE LANCET.

SIR,—In his lecture on asthma, reported in THE LANCET of May 28th, Dr. A. F. Hurst shows clearly that this disorder is heritable, quoting Hyde Salter's 217 cases in which 39 per cent. were inherited. Before the modern researches as to the pathogenesis of asthma this fact of its inheritance could hardly attract the attention of the Neo-Lamarckian. But now that it is known that there are at least two factors which may operate in producing asthma, toxic idiopathy and an irritable bronchial centre, and that "in half of Walker's cases beginning after the age of 50 the patient was sensitive to a protein with which he came in contact as a result of his work"—for example, bakers, ostlers, coffee-sifters, and chemists—there is strong presumptive evidence afforded of an acquired character being inherited. Mendelians may wish to analyse the transmission of an irritable bronchial centre and a toxic idiopathy by their special laws of genetics, but, even if they find an answer, it would still leave the initial variation in question unexplained, whereas the facts would be strictly in keeping with Neo-Lamarckism. If their Neo-Darwinian opponents cannot refute the facts stated they must allow this instance to the Neo-Lamarckians.

I am, Sir, yours faithfully,
WALTER KIDD.
Cheltenham, June 8th, 1921.

A DEVELOPMENTAL ANOMALY.

To the Editor of THE LANCET.

SIR,—An annotation which appeared in your issue of May 28th dealt with two anatomical freaks, but neither of them was quite such a freak as the normal fœtus of your second note which thickened its ectoderm at the fourth month, and to which a lot of things happened at 13 months.

I am, Sir, yours faithfully,
J. ERNEST FRAZER.
St. Mary's Hospital, W.,
June 7th, 1921.

*** We plead guilty to a slip so obvious that it could hardly mislead the reader. *Month* should, of course, read *millimetre*.—ED. L.

A DISCLAIMER.

To the Editor of THE LANCET.

SIR,—My name was not mentioned in the *Daily Mail* of June 13th in the article "Do Eyes Radiate Energy?" and I write to state that the information was given to the *Daily Mail* by someone amongst the manufacturers to whom the work had to be shown for the production of instruments. This was without my knowledge and against my wishes. The work is on the eve of announcement in the medical and scientific press, and is to be demonstrated at the Ophthalmological Congress at Oxford on July 7th. I must point out, as the author, I am annoyed at such a breach of confidence.

I am, Sir, yours faithfully,
CHARLES RUSS, M.B., &c.
Beaumont-street, W., June 13th, 1921.

Medical News.

UNIVERSITY OF CAMBRIDGE.—*Third Examination for Medical and Surgical Degrees.*—The Registrary desires to call the attention of the tutors and prælectors of colleges and of the deans of medical schools to the report of the Special Board for Medicine of May 4th, 1921 (*Reporter*, p. 953), recommending important alterations in the times for the sending in of the names of candidates for the third examination for medical and surgical degrees, and for the presenting of certificates for the third examination for medical and surgical degrees. All medical students should be instructed to substitute the words thirty-first for tenth or thirty-one for ten, and thirty-one days for three weeks on pages 11, 17, 35, 36 of the Regulations and Schedules for Medical and Surgical Degrees. The additional fee for late entry is £2.

UNIVERSITY OF OXFORD.—Dr. Ernest Mallam, Magdalen College, has been appointed Litchfield Lecturer in Medicine for two years as from Oct. 5th, 1921.—Dr. Leonard Hill, F.R.S., has been reappointed Examiner in Animal Physiology in the Final Honour School of Natural Science.—The following have been re-elected members of the Board of the Faculty of Medicine: Dr. E. W. Ainley Walker, Fellow of University College; Dr. James H. Thursfield, Trinity College and St. Bartholomew's Hospital; Dr. Claude G. Douglas, Fellow of St. John's College.

Diploma in Public Health.—The following passed in Part I.: H. L. Coulthard, E. ff. Creed, S.-el-D. A. El Daab, A. Hunter, J. B. Kirk, N. B. Laughton, E. Newton, S. G. Overton, A. J. Partridge, E. G. Rawlinson, W. G. Southey, C. J. Todd, M. P. Wilson. The following passed in Part II., and received the diploma: H. L. Coulthard, T. J. Lloyd, G. W. Ronaldson, C. W. Sharpley.

UNIVERSITY OF MANCHESTER.—Mr. D. N. S. Watson, M.Sc., a former student of the University, has been appointed to the Jodrell Chair of Zoology and Comparative Anatomy in the University of London.—The following appointments have been made: Assistant Lecturer in Botany, Mr. Samuel Williams; Demonstrators in Pathology, Dr. P. I. C. Gibson and Dr. A. Haworth: Demonstrators in Anatomy, Dr. Georgina May Duthie and Dr. R. C. Shaw.—The Turner Medical Prizes have been awarded to Mr. G. V. Ashcroft and Miss Margaret Single.

UNIVERSITY OF BRISTOL.—Sir Isambard Owen is resigning his position as Vice-Chancellor of the University of Bristol, a position he has occupied with conspicuous success since the foundation of the University. His resignation is due to the fact that he is approaching the age limit laid down by the Treasury rules. Sir Isambard Owen brought to the new University experience gained at St. George's Hospital, at the University of Wales, and at Armstrong College, Newcastle-on-Tyne, of which he was Principal till he came to Bristol in 1909. Since that time the University has increased steadily, not only in numbers and material assets, but also in the width of its appeal to the surrounding counties, and it is this policy of broadening the basis of interest in its work for which the University is principally indebted to Sir Isambard Owen.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—A meeting of the Council was held on June 9th, Sir Anthony Bowlby, the President, in the chair. The Council passed a vote of congratulation to Sir Arthur Keith, Conservator of the Museum, on having received the honour of knighthood.—A report was read from the Court of Examiners respecting candidates found qualified for the Diploma of Fellow, and the diploma was granted to the following 25 candidates (including one woman):—

K. B. Bellwood, Cambridge University and St. Bart.'s Hosp.; E. C. Bowden, London Hosp.; G. N. Brandon, St. Thomas's Hosp.; G. W. Carte, Oxford University and St. Bart.'s Hosp.; H. Core, H. Coyte, and S. G. Dunn, St. Bart.'s Hosp.; J. A. W. Ebden, London and Westminster Hosps.; Satapriya Ghosh, Calcutta and London Hosp.; J. B. Haycraft, Edinburgh University and St. Thomas's Hosp.; S. N. Hayes, Middlesex and London Hosps.; O. S. Hulman, Middlesex Hosp.; J. R. Hunter, Cambridge University and Univ. Coll. Hosp.; C. M. Jones, Westminster and St. Bart.'s Hosps.; G. R. M. Kelly, London and Westminster Hosps.; T. P. Kilner, Manchester University and St. Bart.'s Hosp.; C. Lambrinudi, Cambridge University and Guy's Hosp.; H. M. Livingston, Durham University and St. Mary's Hosp.; R. P. S. Mason, Middlesex Hosp.; R. L. Newell, Manchester; H. C. W. Nuttall, Liverpool University; K. G. Pandalai, Madras University and London Hosp.; R. H. O. B. Robinson, Cambridge University and St. Thomas's Hosp.; F. W. Watkyn-Thomas, Cambridge University and St. Bart.'s Hosp.; and H. W. Wookey, Toronto University.

Mr. James Sherren and Mr. J. Bathe Rawling were elected as members of the Court of Examiners.—The following were elected members of the Board of Examiners in Anatomy and Physiology for the Fellowship for the ensuing year:—Anatomy: Arthur Ralph Thompson, John Ernest Sullivan Frazer, Gordon Gordon-Taylor, and William Frederick Haslam. Physiology: Herbert Willoughby Lyle, Francis Arthur Bainbridge, Arthur Rendle Short, and John Mellanby.—The following were elected examiners under the Examining Board for the ensuing year:—Elementary Biology: Thomas William Shore and James P. Hill, Anatomy: Arthur Thompson, Frederick Gymer Parsons, and David Hepburn. Physiology: George Alfred Buckmaster and Herbert Eldon Roaf. Midwifery: George Frederick Darwall Smith, Cuthbert Lockyer, George Drummond Robinson, and Charles Hubert Roberts. Diploma in Public Health: Sir Frederick William Andrewes and Frederick Norton Kay Menzies. Tropical Medicine and Hygiene: H. B. G. Newham and G. Carmichael Low. Diploma in Ophthalmic Surgery: J. Herbert Parsons, H. Willoughby Lyle, and E. Treacher Collins. Diploma in Psychological Medicine: Sir Frederick Mott.—The following lecturers, professors, and demonstrators were elected for the ensuing year:—Hunterian Professors: Sir Arthur Keith, six lectures on the Comparative Osteology of Human Races; Mr. Harold Burrows, two lectures on the Results and Treatment of Gunshot Wounds of the Blood-vessels; Mr. A. G. Timbrell Fisher, one lecture on the Pathology of Chronic Arthritis with remarks on the Basal Principles of Treatment of Joint Diseases as indicated by Anatomical and Physiological Observations; Mr. C. A. Pannett, one lecture on Hydronephrosis; Mr. A. H. Todd, one lecture on Orthopædic Aspects of Rheumatoid Arthritis: Mr. K. Macfarlane Walker, one lecture on Enlargement of the Prostrate. Arris and Gale lecturers: Mr. V. Zachary Cope, one lecture on the Nerve-supply of the Parietal Peritoneum and Superperitoneal Tissues; Mr. F. W. Edridge-Green, one lecture on New Researches in Colour Vision; Prof. Swale Vincent, one lecture on a Critical Examination of Current Views on Internal Secretion. Erasmus Wilson Lecturer: Prof. S. G. Shattock. Arnott Demonstrator: Sir Arthur Keith. Thomas Vicary Lecturer: Sir Charles A. Ballance.—The Committee recommended that the Primary Fellowship Examinations should be held in June and December, 1922, and until further notice.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS, GLASGOW.—At the monthly meeting of the Faculty held on June 6th the following were admitted (after examination) as Fellows: Dr. John Hutcheson Fyfe, Dr. Archibald Monteath Laurie, Dr. Thomas Talmage Read, and Dr. James Douglas Wright.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—The annual elections at the Royal College of Surgeons took place last week. The President and Vice-President, Mr. Edward Taylor and Sir W. I. de C. Wheeler, hold office without change. The vacancy in the post of honorary secretary left by the death of Sir Charles Cameron has been filled by the election of Sir Lambert Ormsby. There are two new members of Council, Mr. Louis A. Byrne and Mr. Seton Pringle.

CONFERENCE ON INFANT WELFARE.—The second English-speaking Conference on Infant Welfare will be held at the Central Hall, Westminster, London, S.W. (instead of as previously announced), on July 5th, 6th, and 7th, from 10 to 1 and from 2.30 to 4.30 each day. On Tuesday, July 5th, at 10 A.M., the President of the conference, Lord Astor, will deliver the inaugural address, followed by consideration, during the morning and afternoon sessions, of papers on Residential Provision for Mothers and Babies. Sir George Newman will take the chair at these sessions, and papers will be read by Dr. Janet Campbell, Miss E. Walker Finlay, Dr. C. J. Macalister, Mrs. Cyril Smithett, Miss M. E. Broadbent, Dr. H. B. Gladstone, and Miss J. Halford. On Wednesday, July 6th, Dr. Janet Lane-Claypon will preside at the morning, and Mr. Wilfred Buckley at the afternoon session. The subject for discussion will be The Supply of Milk: its Physiological and Economic Aspects, and papers will be read by Mr. Nathan Straus, Prof. Stenhouse Williams, Dr. E. W. Hope, Dr. Harold Waller, and Dr. S. G. Moore. From 5.30 to 6.30 P.M. a special medical session will be held, when a discussion on "Uniformity of Method and Practice in the Conduct of Infant Welfare Centres" will be introduced by Dr. Eric Pritchard. All members of the medical profession are invited to attend this session, and will be admitted free on presentation of visiting card. On Thursday, July 7th, Dr. G. F. Still will preside. A discussion on Inheritance and Environment as Factors in Racial Health will be held, and papers will be read by Dr. Helen MacMurchy, Dr. Frederick Hoffman, Dr. C. W. Saleeby, and Dr. Gordon Ley. From 5.30 to 6.30 P.M. a meeting of the General Council of the Association of Infant Welfare and Maternity Centres will be held. The subject for discussion will be "What are the Most Vital and Essential Forms of Child Welfare Work?" All interested are invited to attend, and will be admitted free. Evening lectures have been arranged as follows: July 5th, 7 to 8 P.M., The Ideal Maternity and Child Welfare Centre, by Mrs. H. B. Irving; 8 to 9 P.M., Common Infections in Mother and Child, by Dr. Eric Pritchard. July 6th, 7 to 8 P.M., The Accessory Factors in Infant Feeding; 8 to 9 P.M., The Syphilitic Mother and her Infant, by Dr. John Adams. July 7th, 7 to 8 P.M., The Psychology of the Mother and her Child, by Dr. Flora Shepherd; 8 to 9 P.M., The Tuberculous Mother and her Infant, by Dr. Geoffrey Marshall. A Child Welfare Exhibition will be open from July 5th to 9th, from 11 A.M. to 9 P.M., in the Central Hall, Westminster, where demonstrations on the care of the baby, including feeding, cookery, toilet, exercise, clothing, sleep, habits, &c., will be given. Child welfare doctors, dentists, and oculists will be in attendance daily to give free consultations and advice on the health of mothers and young children. The inclusive conference fee is £1 1*s.* per member, but tickets for various parts of the conference and for attendance without the right to printed matter issued in connexion therewith, as well as all further particulars, can be obtained from Miss Halford, Secretary, National Association for the Prevention of Infant Mortality, 4 and 5, Tavistock-square, London, W.C. 1.

Dr. William Brown, M.D., D.Sc., Reader in Psychology in the University of London (King's College), has been appointed Wilde Reader in Mental Philosophy in the University of Oxford.

ROYAL SANITARY INSTITUTE.—The inaugural address at the Congress to be held at Folkestone from June 20th to 25th, to which we referred last week, will be given at 5 P.M. on June 20th by Lord Radnor, and a popular lecture, "Vitamins and their Relation to Health," will be given by Prof. Edward Mellanby on June 23rd at 8 P.M. Among the subjects on which discussions are being arranged are: Control of the Developmental and Wasting Diseases; Overfeeding and Wasting in Children: Mentally and Physically Defective Children; Administration of Maternity and Child Welfare Work; Day Continuation Schools and the Teaching of Hygiene and Child Welfare; The Backward Class versus the Special School; Child Welfare Centres and Rickety School Entrants; Dental Clinic and Prevention of Physical Defects; Legislative Reforms needed in the Interest of Child Life; Egg Powders and Invalid Wines; The Relation of Hospitals to Preventive Medicine; The Hospital and the Primary Health Centre in relation to a Health Service; The Gloucestershire Scheme for the Extension of Medical Services; Costs and Results of various Public Health Activities; Tuberculosis; Diphtheria, Spread of Disease by Carriers; Poor-law Relief, its Effect on Public Health; Trained Nurses and Public Health Work; Preservation and Restoration of Breast Milk; Hygiene and Personal Efficiency; Health Teaching of Mother and Child; Common Sense Hygiene in the Home; Industrial Fatigue; Work of Research Board: Industrial Welfare; Miners' Nystagmus; Tuberculin Test in Cattle; Slaughtering of Animals intended for Human Food; Milk, and Supervision of Cowsheds: Meat Inspection and Slaughter-houses; Rats, Prevention and Destruction; Smoke Abatement; Housing and Town Planning; Rural Housing; Communal Hot Water and Heating; Hospital and Sanatoria Construction; Utilisation of Sewage Sludge; Refuse Salvage; Roads—Heavy Motor Traffic and District Roads; Disinfection and Disinfectants. Arrangements for excursions are being made, and a Health Exhibition will be held in the Drill Hall from June 20th to 29th. The officers at the Conferences to be held are as follows:—(1) Representatives of Sanitary Authorities; President: The Mayor of Folkestone; Recording Secretary: Dr. A. Wellesley Harris. (2) Medical Officers of Health; President: Dr. J. Wright Mason; Recording Secretary: Dr. Alfred Greenwood. (3) Engineers and Surveyors; President: Mr. H. Percy Boulnois; Recording Secretary: Mr. Edward Willis. (4) Veterinary Inspectors: President: Major-General Sir L. J. Blenkinsop; Recording Secretary: Mr. J. R. Hayhurst, M.R.C.V.S. (5) Sanitary Inspectors: President: Mr. G. M. Pettit: Recording Secretary: Mr. J. H. Clarke. (6) Health Visitors; President: Miss Gertrude Tuckwell; Recording Secretary: Miss L. M. O'Kell. (7) Rat Officers: President: Dr. Nathan Raw, M.P.; Recording Secretary: Mr. G. L. Moore. Congress tickets, at £1 11*s.* 6*d.* each, can be obtained from the hon. secretaries, Royal Sanitary Institute Congress, Town Clerk's Office, Folkestone. Ladies' tickets (not including copies of the Proceedings) 10*s.* 6*d.* each.

LONDON DERMATOLOGICAL SOCIETY.—The annual general meeting of this Society will be held at 4.30 P.M. on Tuesday, June 21st, at St. John's Hospital, 49, Leicester-square, London, W.C. At 5 P.M., the first annual address on the Progress of Dermatology will be given by Dr. T. M. Legge, H.M. Chief Medical Inspector of Factories on Occupational Dermatoses and the State, Lord Chesterfield presiding.

DONATIONS AND BEQUESTS.—The late Mr. Rutherford John Pye-Smith, Professor of Surgery at Sheffield University, who left estate of the gross value of £9596, bequeathed £1000 to Sheffield University for a Chair in Surgery; £100 to Sheffield Royal Hospital; and £50 each to Broompark Mission, Daisy-walk, Sheffield, the Edinburgh Medical Mission, and the Pye-Smith Scholarship Fund, Walthamstow Hall, Sevenoaks.—St. Thomas's Hospital has received £1000 from the trustees of Smiths Charities and £500 from Lloyds Bank.

INTERNATIONAL UNION AGAINST TUBERCULOSIS.—An International Conference will be held in London on July 26th, 27th, and 28th under the auspices of the National Association for the Prevention of Tuberculosis. The annual conference of the Association will be merged in the meeting. The International Union against Tuberculosis is the lineal continuation of the International Tuberculosis Conference which, up to 1913, assembled annually in one or other of the capitals of Europe or in America. The purpose of the International Union is to achieve an effective combination of the nations of the world against tuberculosis. Its President for the current year is Mr. Léon Bourgeois, President of the French Senate, who will be succeeded on the occasion of the impending Conference in London by Sir Robert Philip. The Conference is open to official delegates from countries within the League of Nations and from the United States of America, and from all authorities interested in the subject. It will be welcomed to London on behalf of the Government by Lord Curzon, and Sir Alfred Mond, the Minister of Health. Addresses will be given at the opening meeting by Mr. Léon Bourgeois and Colonel George Bushnell, United States Army Medical Corps. A discussion on the Modes of Diffusion of Tuberculosis throughout the Races of the World will be opened by Prof. A. Calmette, and the subject will be dealt with under the following headings: (*a*) Frequency of tuberculosis among civilised people: its rarity among savage or nomadic races; (*b*) number of persons infected at different ages of life in crowded centres and in rural areas; (*c*) sources of tuberculous infection—expectoration, discharging tuberculous lesions, milk; (*d*) contagiousness of latent lesions: discharge of bacilli by natural excretory channels (intestine, kidney, mammary gland); (*e*) dissemination of tuberculous infection by apparently healthy T.B. carriers: preventive measures against the spread of infection. A discussion on the Rôle of the Medical Profession in the Prevention of Tuberculosis will be opened by Sir Humphry Rolleston, followed by Sir George Newman. The Lord Mayor of London will give a reception in honour of the Union at the Mansion House on Tuesday, July 26th. Other social functions and visits to institutions of special interest are being arranged. A fee of one guinea per representative will be charged, to include copy of transactions.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The annual provincial meeting of this Society was held on June 11th, at the Institute, Welwyn Garden City, Herts, Dr. F. E. Fremantle, M.P., the President, being in the chair. There was a large attendance of members, who first motored from London to Hatfield House, which was visited by permission of the Marquis of Salisbury. The members then proceeded to Welwyn Garden City, where they were entertained at luncheon by the President of the Society. After luncheon a short address was given by Sir Theodore G. Chambers, chairman of Welwyn Garden City, on the Garden City project. He referred to the interest taken in the scheme by Dr. Fremantle, who is one of the directors of the company and has devoted a great deal of time to it. Sir Theodore Chambers emphasised the distinction between the proposed garden city on the one hand and garden suburbs or villages on the other. The fundamental idea of the scheme was the development, in accordance with a carefully devised plan, of a complete self-contained town, comprising within itself its own industries and having a full civic life. It was too much mixed up in the public mind with suburban development, to which it was the antithesis. Suburban development of large towns involved an excessive amount of transport and other sources of wear-and-tear, while the idea of the satellite town or garden city was a redisposition of population in rural surroundings. There was at present a scandalous amount of overcrowding in towns, and the motive of the new development was to move into the country whole communities, rich and poor, together with their working conditions. Sir Theodore Chambers referred to the enormous difficulties inherent in any attempt to remedy the grave housing and allied evils in existing towns—evils due largely to vested interests. In the Welwyn Garden City development would not be hampered by encumbrances of this kind, because (1) the Garden City Company owned in fee simple the whole of the land, comprising about four square miles (about the size of Luton or Bedford), and (2) the dividend on the capital was definitely limited, so that the whole of the excess profit could be used for development and improvement. The land was acquired 15 months ago, and there were now 150 houses completed. Already there were civic meetings, church services, a restaurant, a club, and facilities for tennis, cricket, croquet, &c. The Herts County Council, whose clerk, Sir Charles Longmore, had been a strong supporter of the garden city idea, both here and at Letchworth, had given great assistance by altering the local boundaries so that the Welwyn City now consisted of a single civil parish in one rural district and one Poor-law union. There would be a liaison between the parish council and the city company, the former electing some of the members of the latter. This would give all the citizens a share in the management of the city. Already sites had been taken for factories which would employ some thousands of hands. The city was situated at the junction of railway lines in four directions, and the Great Northern Railway has decided to constitute it a great railway centre, and to give excellent facilities for sidings, &c. The site was from 300 to 400 feet above the sea-level, and the city would have its own water-supply and sewage disposal. There was no large town within eight or nine miles, so that it would be centrally situated in a large tract of country. In conclusion, Sir Theodore Chambers claimed that the idea of the satellite town offered a direction in which true progress might be made towards the elimination of the evils due to the agglomeration of population in large towns, the effects of which, he said, were well known to his hearers. Prof. H. R. Kenwood (M.O.H., Bedfordshire and Stoke Newington) proposed a vote of thanks to the President for his entertainment, which was passed with acclamation. He referred with regret to the fact that Dr. Fremantle's year of office was drawing to a close and congratulated him on its success. The President briefly replied, and called attention to the pioneer work which had been done by Mr. Ebenezer Howard in the inception and development of the garden city idea and the acquisition of the Welwyn site; and also to the great services rendered by Sir Theodore Chambers. After the business meeting, at which were elected 17 new Members and 115 new Associates, the party proceeded to Bedwell Park, where they were entertained to tea by Mrs. Fremantle.

NATIONAL COUNCIL FOR COMBATING VENEREAL DISEASES.—The sixth annual meeting of the Council will be held in the Morley Hall, Y.W.C.A., 25 and 26, George-street, Hanover-square, London, W. 1, on Tuesday, June 28th, at 4.15 P.M., Lord Gorell in the chair.

Mr. George E. Vincent, Ph.D., LL.D., director of the Rockefeller Foundation, and two of its members, were entertained to dinner by the Government at the Carlton Hotel on June 13th. Mr. Churchill, who presided, welcomed the guests on behalf of the Colonial Office which, he said, would do everything possible to assist the work of the Foundation. The study of tropical diseases was a work of mercy and of urgency. Therein lay a line of defence in which all nations could join hands.

COLLEGE OF NURSING, BIRMINGHAM.—For the ten days ending June 11th a considerable undertaking on behalf of the trained nurses of Birmingham and the three counties adjoining, in the form of a scenic fair in Bingley Hall, met with considerable success. The aim of the promoters was to obtain a sum of £10,000 and £21,000 has so far been received. This sum will be allocated as follows: (1) 80 per cent. to found a club for nurses and to endow scholarships for the nurses of Birmingham and the three counties; (2) 10 per cent. to the College of Nursing; (3) 10 per cent. to the Nation's Fund for Nursing.

GENERAL HOSPITAL, BIRMINGHAM.—On June 10th a presentation was made to Dr. Thomas Wilson on his retirement from the medical staff of the hospital after 28 years' service, of which 10 had been spent as assistant obstetric officer, and 18 as hon. obstetric officer. The Bishop of Birmingham presided over a large meeting of subscribers. At Dr. Wilson's request the sum of money collected is to be devoted towards a fund for the purchase of apparatus for medical research and teaching under the guidance of the medical committee. Mrs. Wilson was presented with a valuable necklace in appreciation of her services to the hospital on the Samaritan Committee and in other ways. Dr. Wilson is recommended to the governors for election to the post of consulting obstetric officer.

Parliamentary Intelligence.

HOUSE OF COMMONS.

Wednesday, June 8th.

Medical Services in the Navy.

The House considered on Report the Navy Estimates for 1921-22.

On a vote of £720,500 for Medical Services, including the cost of medical establishments at home and abroad,

Commander Bellairs said he understood that the representatives of the army and navy were meeting together under the presidency of the Lord President of the Council. He wanted, if possible, the Admiralty to meet the War Office and see whether they could not effect economy by amalgamating the medical arrangements of the army and the navy. To give a concrete example, he found in the case of Hong-Kong that the military hospital there had accommodation for 166 patients, and the maximum number of patients accommodated was 64, showing a surplus accommodation of 102. The minimum number of patients accommodated was 20, or a surplus of 146. Similar figures were shown in connexion with the naval hospital, which had accommodation for 135, a maximum accommodated of 97, and a minimum of 55. The Yokohama Naval Hospital, also on that station, was closed all through the war and right up to 1920, and it had now been reopened. He urged that a great deal might be saved if there was a thoroughgoing inquiry, with the object of preventing overlapping between the two services. There was no difference between the body of a soldier and the body of a seaman so far as medicine was concerned. The House would be shocked if it were to investigate the number of medical men, say, on the China station, and the number of men for whom they had to cater. They had also convalescent barracks at Hong-Kong for the military, and if all these arrangements were considered together he thought they could bring about considerable economies. He suggested that a general stocktaking should be made in regard to the medical arrangements, because he did not believe that the medical service was doing its best in both services to cut down expenditure.

Sir G. Collins said if the army and the navy could combine on hospital accommodation it would, he thought, be of advantage to the patients, and, incidentally, to the advantage of the taxpayer. He should like to ask why the Admiralty had refused to adopt the recommendations of the Select Committee on National Expenditure, and present their accounts to the House of Commons in the modern method. The War Office had accepted that recommendation, and a study of the War Office Estimates revealed the cost of patients in every hospital under the War Office, whereas from a study of the Navy Estimates it was quite impossible to find out if these medical establishments were efficiently managed.

Mr. Amery (Parliamentary Secretary to the Admiralty) said that the suggestion of Commander Bellairs that they might secure economy by amalgamating the naval and military hospital work at certain stations abroad was one that naturally at first sight would appeal to the House, and he would certainly promise to look into it, but, at the same time, Members would realise that the conditions of naval and military service and discipline, and many of the aspects of their organisation, were so different as to make it not altogether an easy thing to carry out that amalgamation, though he could imagine that there might be some stations where a military hospital could provide for a certain limited number of naval patients, and vice versa. With regard to the case of Yokohama, he had not only asked for a close investigation as to the cost of that establishment, but also as to the possibility of getting some military establishment elsewhere to deal with patients who at present went to Yokohama. As regarded the point raised by Sir G. Collins, the Admiralty were still considering the whole of their system of accounting. A committee was sitting on the subject, and he hoped that their deliberations would lead to a considerable simplification of their financial methods and accounts.

The vote was agreed to.

Medical Board's Decision Set Aside.

Viscountess Astor asked the Minister of Pensions whether he was aware that James Stanley Fairbank, late officers' steward, second class, R.N., who was demobilised on Feb. 27th 1919, after having suffered severely from sleeplessness and nervous debility, and who subsequently developed neurasthenia, applied for a disability pension in September, 1920, which was recommended by a medical board in December, 1920, but quashed by the regional committee without any further medical examination: why was the opinion of the local medical board set aside by a body which had made no such personal investigation; and would he undertake that the case should be reconsidered on the basis of the original medical board.—Mr. Macpherson replied: Although the medical board which examined this man when he made a claim to pension more than one and a half years after discharge expressed the opinion that his disability was due to service, the Ministry were unable to accept that view, and pension was accordingly refused. The case has now been heard by the independent Pensions Appeal Tribunal, which has confirmed the finding of the Ministry; and, as decisions of the tribunal are final, I regret that the case cannot be reopened.

Welsh Board of Health.

Mr. Alfred T. Davies asked the Minister of Health whether, in view of the fact that under the National Health Insurance one of the Insurance Commissioners for Wales was a woman, he intended to appoint a woman to the Welsh Board of Health.—Sir A. Mond replied: If a vacancy occurs I shall be prepared to consider the appointment of a woman to the Welsh Board of Health. At present the Board, which consists of salaried administrative officers, is sufficient in number for the work to be done.

Thursday, June 9th.

Grants to University Colleges.

Mr. Ernest Gardner asked the President of the Board of Education whether the University Grants Committee was precluded from allocating financial assistance to university colleges where support was not forthcoming from local sources or whether such assistance is to be proportioned to the amount of the support from local sources without regard to the proved educational value of the work of the institution; its increase, if any, in numbers; its consequential legitimate requirements, and the strength or weakness of the financial resources available from which local support might be afforded.—Sir R. Horne (Chancellor of the Exchequer) replied: Local support is regarded as the primary factor in estimating the claims of the different institutions for additional grant aid, but the University Grants Committee are not precluded from making allowance for the other considerations referred to by the honourable Member in their grant recommendations.

Insurance Benefit in Hospital.

Mr. Robert Young asked the Minister of Pensions whether a discharged soldier temporarily unfit for work, and receiving while in hospital 100 per cent. allowance, was entitled to any benefit under the National Insurance Acts while in hospital.—Mr. Parker (for Sir Alfred Mond) replied: Sickness or disablement benefit is not payable to an insured person while he is an inmate of a hospital or similar institution, but the whole or part of the benefit is paid to his dependents, if any, or may be applied towards meeting any expenses for which the insured person may be liable otherwise than to the hospital, or, with his consent, may be paid to the hospital if it is not maintained out of public funds. So far as the money is not used in any of these ways, it becomes payable to the insured person on leaving the hospital. In the special case where the insured person is a discharged soldier in receipt of 100 per cent. allowance, the rate of sickness (or disablement) benefit is reduced by 7*s.* 6*d.* a week unless he has been employed for 26 (or 104) weeks since discharge from the army.

Closed Wards in the London Hospital.

Mr. Charles Edwards asked the Minister of Health whether his attention had been called to the closing of certain wards and curtailment of the out-patient department of the London Hospital; and whether he proposes to take any steps to provide adequate facilities for medical treatment for the people of East London.—Mr. Parker (Lord of the Treasury) replied: The answer to the first part of the question is in the affirmative. As regards the second part my right honourable friend can make no statement until the Government have had an opportunity of considering the Report of Lord Cave's Committee which is now before them, but he would point out that there is accommodation for emergency cases available in the Whitechapel and other infirmaries in East London.

Training Grants for Nurses.

Mr. Hurd asked the Minister of Labour whether any and, if so, how many of the women under training as nurses had been rejected after trial as being unsuited to the nursing profession; and whether, in any of these cases, his Ministry had refused to accept this decision and was continuing the payment of training grants.—Dr. Macnamara replied: No women have been placed in training for the nursing profession by the Ministry of Labour. A number of women, however, are being trained to become qualified midwives. It is the practice to discontinue training immediately if the trainee is reported by the responsible authorities to be unsuitable. If my honourable friend has any particular case in mind, perhaps he would give me details, in order that I may have inquiry made.

Disabled Men in General Hospitals.

Captain Viscount CURZON asked the Minister of Pensions whether the Ministry could occupy some of the vacant wards in hospitals for the accommodation of disabled men, and so release hut accommodation, such as Ruskin Park, and benefit the hospitals.—Mr. MACPHERSON replied: This hospital was transferred to the Ministry of Pensions by the War Office Authorities. It has been fitted with special orthopædic out-patient arrangements, and special sections for treatment of disabled officers and nurses. It has been found to provide the most convenient and, incidentally, the most economical centre for treating the large body of the disabled in that district.

Bellahouston Hospital.

Mr. NEIL MACLEAN asked the Minister of Pensions whether the inquiry into the administration of Bellahouston hospital was a private one; and whether, in view of the general interest in the matter, he would order the proceedings to be conducted in public.—Mr. MACPHERSON replied: The answer to the first part of the question is in the affirmative, and to the second part in the negative.

FRIDAY, JUNE 10TH.

Coroners (Remuneration) Bill.

The House considered the Coroners (Remuneration) Bill as amended in Standing Committee.

On Clause 1, which deals with the increase of coroners' remuneration, Sir JOHN BAIRD (Under Secretary for Home Affairs) moved to omit Subsection 1. He explained that the amendment was necessary to secure that a revision and not merely an increase of the salaries of coroners took place. Should a decrease be found necessary, it could be made if this amendment was agreed to.—The amendment was carried.

Sir F. BANBURY moved to omit Subsection 2, which defines the duties of the authorities charged with the payment of coroners' salaries. He said he wished to draw the attention of the House to the fact that this Bill had been moved by an honourable Member who was a coroner himself, and would receive benefit from the Bill. Whether or not this was within the strict letter of the Orders of the House he contended it was utterly wrong.—The DEPUTY SPEAKER said this amendment would practically destroy the Bill.

Sir F. BANBURY then moved to substitute the word "may" for "shall" in the subsection.

Sir T. BRAMSDON said he had asked Mr. Speaker about the matter, and he had told him that he was perfectly in order in bringing in the Bill and, according to Erskine May, a Member who represented a class was quite in order in bringing in a Bill and voting upon it. He brought in the measure as Past-President of the Coroners' Society for England and Wales, and therefore he did represent the class of coroners.—Sir F. BANBURY said the honourable Member was not returned to that House by the coroners, but by the electors of his constituency. Surely the people to judge whether coroners should receive increased remuneration were the local authorities and the ratepayers. They all knew how heavy was the burden of the rates, and he asked the House to support him in killing this Bill, which had no business to have been brought in.—Mr. BARTLEY DENNISS said he hoped the Government did not support this Bill. He was astonished that it should be in order for a private Member to bring in a Bill which compelled local authorities to raise the fees of coroners by not less than 50 per cent. The House would lose its self-respect if it passed such a measure. No terms were too strong to condemn the Bill.

Sir T. BRAMSDON said that he assured the House that there was no necessity for heat. The proposals were very just. Coroners for counties were paid by salary which was arranged according to the quinquennial valuation under the Act of 1860. Coroners for boroughs were paid by fees, and being a coroner himself he might say that they were the worst paid body of public servants in the whole Kingdom. Coroners for boroughs were paid £1 6s. 8d. for every inquest which they held. The last increase in the fees took place in 1887. If a coroner did not hold an inquest he was entitled to no fee at all. They held a great number of inquiries and got nothing out of them. Moreover, if an inquest lasted three or four days the coroner only got £1 6s 8d. Coroners and High Court judges were the only officials in the country who had not had an increase in their salary. The Bill was not a permanent, but a temporary one. The view taken by the Home Office was that these salaries should be revised.—Mr. S. ROBERTS said coroners were not overpaid at present, and they had not only to pay out of their fees a very much increased remuneration to their staff, but they had got to pay the cost of stationery and postage and increased rates on their offices, as well as increased cost of petrol or hire of conveyances. He supported the Bill, but he must vote for the amendment to leave it to the local authorities to decide, as he objected to Parliament forcing local authorities to make payments.

Sir J. BAIRD said although coroners were paid by the local authorities they were judicial officials, and to that extent they were connected with the Home Office. They had come to the Department and pointed out that there had been no alteration in their fees since 1887. He did not think that it would be easy to substantiate the view that a payment which was adequate in 1887 was adequate for similar services to-day. Yet the fees could not be increased without the sanction of that House. Though the Government were not able, in view of the Parliamentary situation and the business to be got through, to bring in a Bill dealing with their case, it appeared to them that the coroners had a claim for consideration. If this amendment were not carried he would later move one to provide that any increase in salary which might have been granted should be taken into account in the revision under the Bill. The Government had made it clear that if a private Bill was brought in they would favourably consider it, provided that it was amended in such a way as to meet what they considered necessary conditions. He hoped the House would hesitate before refusing a reasonable opportunity for having these salaries revised.—On a division Sir F. BANBURY's amendment to make the Bill permissive was carried by 74 votes to 49.

On the motion of Sir F. BANBURY it was agreed to leave out in Subsection 2 the words: "and if the authority and the coroner fail to agree as to the amount at which the salary or fees should be fixed the Secretary of State shall, on the application of the authority or the coroner, determine the amount, having regard to the increase and other circumstances aforesaid."

Mr. BARTLEY DENNISS moved to leave out from Subsection 2 the words: "Provided that, as respects fees, the amount thereof shall in every case be revised so as to be increased by not less than 50 per centum." The amendment was agreed to.

On the motion for the third reading of the Bill,

Mr. G. BARKER said he agreed that the principle of the Bill was in accordance with equity and justice, but if the House was to legislate it should do so righteously and equitably for all the people of the country. That which was proposed to be given to the coroners was to be taken away from all the workers in this country. The Bill was a piece of downright class legislation.

The Bill was read a third time and passed.

Sick Pay and Light Work.

Mr. THOMAS DAVIES asked the Minister of Health under what Act of Parliament the Ministry of Health had altered the words of the National Health Insurance Act, incapable of work to mean incapable of heavy work, which was the only interpretation that could be given to Model Rule 12 (1) (c) of Model Rules, a 1919 edition, which interpreted incapable of work to mean that a member in receipt of sick pay might do light work; and what was the Ministry's definition of light work.—Sir A. MOND replied: The rule referred to by the honourable Member does not modify in any way the statutory requirement that in order to be qualified for sickness or disablement benefit an insured person must be incapable of work. Under Section 11 (2) of the National Insurance Act, 1911, every approved society is required to have a rule as to the behaviour of members while incapable of work and in receipt of sickness or disablement benefit. The rule in question, which was drawn up with the concurrence of the advisory committee composed of representatives of approved societies of all types, merely sets out the restrictions which a society should impose on the activities of a member whom they have already decided to be incapable of work. The Ministry does not lay down any definition of light work as it rests with each society to interpret its own rules in applying them to any particular case which may arise.

MONDAY, JUNE 13TH.

Dentists Bill.

The House considered the Dentists Bill on Report.

Colonel WEDGWOOD moved an amendment to Subsection 3 of Clause 1, excluding from the provisions of the Bill the extraction of teeth without fee or payment. Frequently in domestic life, he said, the mother of a family had to extract a loose tooth from a child's mouth. He wanted it made perfectly clear that a mere domestic extraction of that kind should not be treated as a crime.

Sir A. MOND said that he made it clear in Committee that they took out the words "without fee or reward" because they wished to prevent unqualified people starting practice by undertaking to extract teeth without fee or reward, on the understanding that they would be able to sell artificial teeth to those people, thus by some camouflage defeating the whole object of the Bill, which was to prevent unqualified people tampering with the teeth of the nation. Something in that direction was long overdue. A mother taking out the tooth of her child could not be held to be practising dentistry, either directly or by implication.—The amendment was withdrawn.

Colonel WEDGWOOD moved the adjournment of the debate.—Lieut.-Commander KENWORTHY seconded the motion. He was not opposed to the Bill, but he had received many communications from dentists in his constituency asking for amendments, not wrecking amendments. Owing to the way in which the Bill had been brought in he had not had time to put them on the paper.—Sir A. MOND resisted the motion to adjourn the debate. Long negotiations had taken place between all the parties affected, and practically it was agreed that after the Bill passed through Committee the Report stage should be treated as agreed.—Colonel WEDGWOOD: Agreed by whom?—Sir A. MOND: By representatives of the registered and unregistered dentists.—Colonel WEDGWOOD: What about the public?—Sir A. MOND: The Minister represents the public, and it is in the interests of the public that the Bill should be passed.—Colonel WEDGWOOD said the Report of the Departmental Committee included a great deal more than the putting of the dentists in the same category as the doctors. It included also a free dental service. It also included some form of scholarship which would enable children of the working class to become practitioners. All that had been dropped. Dentistry had been made a close corporation, confined, like medicine, to the children of the middle and upper classes, and ruling out those who were dental mechanics.—Mr. LAWSON asked what guarantee the public had got against monopoly prices for dentistry.—The motion to adjourn the debate was negatived.

On Clause 3, which deals with the right of certain persons to be admitted to the Register, Colonel WEDGWOOD moved an amendment to substitute for the words "prescribed examination," "a modified examination." His object, he said, was to ensure that dental mechanics should not be called upon to pass a very stiff examination such as would be necessary for future aspirants.—Sir A. MOND resisted the amendment and urged that the word "modified" meant nothing.—The amendment was negatived.

The Report stage of the Bill was completed.

On the motion for the third reading of the Bill, Colonel WEDGWOOD moved the rejection of the measure.—Mr. MYERS seconded.—Major MOLSON advocated the passing of the Bill in the interests of the public and not in the interests of any branch of the profession. As to the question of a monopoly, he thought Colonel Wedgwood seemed to forget that they were going to double the number of qualified dentists in the country, and if they increased the supply surely that was the best way of reducing the price. The quality would improve.

The Bill was read a third time and passed.

TUESDAY, JUNE 14TH.

Financial Position of the Hospitals.

Colonel MILDMAY asked the Minister of Health whether he could find it possible to take steps which would result in immediate action based on the recommendations of Lord Cave's Report, with reference to the financial position of hospitals.—Sir ALFRED MOND replied: The matter is now before the Cabinet, and I hope to make an announcement on the subject in the course of the next few days.

Drunkenness Statistics.

Sir J. D. REES asked the Under Secretary of State for the Home Department, as Chairman of the Central Control Board (Liquor Traffic), the number of convictions for drunkenness in the scheduled areas of England and Wales during the past quarter of the current year; and the decrease on the figures for the corresponding quarter of 1920.—Sir J. BAIRD replied: The returns of the Central Control Board are compiled weekly. The most accurate information therefore which I can supply to my hon. friend is contained in the returns for the first complete 13 weeks of the year. They are as follows: 1920, 23,993; 1921, 19,854—decrease in 1921 as compared with 1920, 4139.

The Services.

OFFICERS' ALTERNATIVE PENSIONS.

THE Ministry of Pensions announce that officers and nurses disabled by Service in the Great War who intend to claim alternative retired pay or pension, based on pre-war earnings and present earning capacity, must make application before July 2nd, 1921, or before a year has elapsed since the first award of disability, retired pay, or pension, whichever is the later date. Applications for alternative pensions by widows of officers whose deaths were due to service in the Great War must also be made before July 2nd, 1921, or within a year of the date of first award of the flat-rate pension. A widow who may not be eligible at present owing to the receipt of allowances for children, but who may become eligible when these allowances cease must make application before July 2nd, 1921, in order to establish her future claim. A disabled officer is not eligible for alternative retired pay if his pre-war earnings did not exceed £132 a year (rather less for navy warrant officers), nor is a disabled nurse eligible for alternative pension if her pre-war earnings did not exceed £95 a year. In the case of officers' widows there is no fixed limit. As the substitution of alternative retired pay or pension for the ordinary flat-rate pension represents in some cases a substantial addition to the amount of the pension, disabled officers and nurses, and officers' widows who have not yet made application, should ascertain without loss of time whether they are entitled to the benefits of the alternative system. Applications and inquiries should be addressed to the Officers' Branch, Ministry of Pensions, Cromwell House Annexe, Millbank, London, S.W.1.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. J. H. Pead has been placed on the retired list with rank of Surg. Capt.

ROYAL ARMY MEDICAL CORPS.

The undermentioned temp. Capts. to be temp. Majs. whilst specially empld: H. St. A. Agate and A. G. Higgins.

The undermentioned relinquish their commns.:—Temp. Maj. J. F. O'Malley (and retains the rank of Maj.). Temp. Capts. (and retain the rank of Capt.): R. J. Snider and R. A. Shekleton.

ARMY DENTAL CORPS.

The undermentioned Dental Surgs. to be Majs: Temp. Maj. F. W. Shilton, from Spec. List; Flight Lt. (actg. Squad. Leader) C. L. Colbran, from R.A.F.

Flight Lt. D. Blair, Dental Surg., from R.A.F., to be Capt.

The undermentioned temp. Capts. to be Capts.: R. M. King, from Gen. List.

Dental Surgs. from Gen. List: D. Clewer, A. E. Webb, R. J. Condie, H. J. Procter, and H. L. McCallum.

Dental Surgs. from Spec. List: J. V. M. Byrne, F. H. W. Beer, A. T. Madin, and W. R. Wotton.

Lt. T. D. Corke, from Midd'x R., to be Lt.

The undermentioned temp. Capts. to be Lts. (with the temp. rank of Capt., but without the pay or allowances of that rank): J. Baillie and M. J. O'Reilly, Dental Surgs., from Gen. List.

Dental Surgs., from Spec. List: H. E. Flavelle, H. J. Higgins, and A. B. H. Cole.

TERRITORIAL FORCE.

Maj. W. Bryce is granted the rank of Lt.-Col., with permission to wear the prescribed uniform.

Capts. G. T. Willan and C. Corfield to be Majs.

Capt. E. S. Stork, from T.F. Res., to be Capt.

Capt. D. Stewart (late R.A.M.C., S.R.) to be Capt.

A. G. Williams (late R.N.V.R.) to be Capt.

D. M. Lindsay to be Lt.

DEFENCE FORCE.

C. I. Ellis to be temp. Col.

H. G. L. Allford to be temp. Capt.

2nd (Home Counties) Fd. Amb. (D.F.).—To be temp. Maj.: R. A. Freeman.

1st (W. Lancs.) Fd. Amb. (D.F.).—R. R. Thompson (Capt. R.A.M.C.) is granted the rank of temp. Maj.

1st (S. Midland) Fd. Amb. (D.F.).—To be temp. Capt.: J. H. Sheldon

1st (Highland) Fd. Amb. (D.F.).—To be temp. Maj.: F. M. Rorie.

1st (Welsh) Fd. Amb. (D.F.).—To be temp. Maj.: R. A. Beaver.

53rd Divl. San. Sect. (D.F.).—To be temp. Capt.: P. W. Kent.

INDIAN MEDICAL SERVICE.

The following relinquish their commissions:—Temp. Capts. Jitendra Mohan Ghosh (granted the rank of Capt.), Henry Richard Rishworth (granted the rank of Capt.), Chandragiri Rangabhashyam Naidu, Vasant Rajaram Masurekar, Kedar Nath Goyal, Teja Singh Uberoi, Justinian Anthony daCosta, Muqatlal Damodardas Munim, Ardeshir Dadabhoy Shroff, Ram Singh Sharma, and Lieut. George Fredrick Andeen.

Temp. Capt. Bantwal Shankar Rau is granted the rank of Capt. on relinquishing his temporary commission.

Mr. F. E. De B. Pim, L.R.C.P., L.R.C.S. Irel., has been appointed a Knight of Grace, and Mr. R. D. Thomas, L.R.C.P., L.R.C.S. Edin., an Esquire, of the Order of St. John of Jerusalem in England.

Appointments.

CHISHOLM, A. E., M.B., F.R.C.S. Ed., has been appointed Obstetric Physician and Gynæcologist at the Royal Infirmary, Dundee.

FERNANDO, H. M., M.D., B.Sc. Lond., a member of the Executive Council of the Island of Ceylon, and an Unofficial Member of the Legislative Council of that Island.

MCARTHUR, J., L.R.C.P. & S. Edin., Medical Officer of Health to the Conisborough Urban District Council.

MATTHEWS, E. W., M.B., B.S. Lond., D.P.H., Medical Officer of Health for Kingston-on-Thames.

PICKEN, R., M.B., C.M. Glasg., Medical Officer of Health for Cardiff.

RAINY, H., M.D. Edin., Medical Adviser to the Prison Commissioners for Scotland.

Certifying Surgeons under the Factory and Workshop Acts: GIBBON, J. G., M.D. Dub. (Mullingar); CROWLEY, T., L.R.C.P. & S., Irel. (Wath-on-Dearne); SAVERY, W. M., L.R.C.P. Lond., M.R.C.S. (Evesham).

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Asylum.—Temp. Jun. Asst. P. £250.

Ashton-under-Lyne District Infirmary.—Asst. H.S. £200.

Bedford County Hospital.—H.S. £200. Asst. H.S. £150.

Birmingham General Hospital.—Asst. Obst. Officer.

Birmingham and Midland Ear and Throat Hospital.—H.S. £200.

Birmingham, Queen's Hospital.—Obstet and Ophth. H.S. Cas. H.S. £90 each.

Birmingham, Yardley-road Sanatorium and Municipal Anti-Tuberculosis Centre.—Asst. M.O. £500.

Bootle Borough Hospital.—Sen. H.S. £200. Jun. H.S. £150. Hon. Phys. Hon. Ophth. Surg.

Bradford Royal Infirmary.—H.S. £200.

Bristol Education Committee.—Asst. Sch. Med. Officer. £600.

Bristol Eye Hospital.—H.S. £150.

Burnley County Borough.—Tuberc. O. and Director of Municipal Laboratory. £650.

Burnley, Victoria Hospital.—H.S. £200.

Cambridge, Addenbrooke's Hospital.—H.S. £130.

Cancer Hospital, Fulham-road, S.W.—H.S. £150.

Charing Cross Hospital, Agar street W.C.—Phys. in charge of Children's Dept. Med. Reg. £150.

Chester, City of.—Asst. M.O.H. £500.

Colchester, Essex County Hospital.—H.S. £200.

Derby, Derbyshire Royal Infirmary.—H.S. H.P. Each £200.

Doncaster Royal Infirmary and Dispensary.—Sen. H.S. £225. Jun. H.S. £200.

Eday, Orkney.—M.O. £9 per week.

Elizabeth Garrett Anderson Hospital, Euston-road.—Female Asst. Radiologist. £50. Female Asst. Pathologist. £275.

Enfield Education Committee.—Sch. M.O. £500.

Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—Asst. H.S. £150.

Leeds Public Dispensary.—Sen. Res. M.O. £200.

Liverpool Royal Southern Hospital.—Two H.P.'s and three H.S.'s. Each £100.

Liverpool, West Derby Union, Mill-road Infirmary and Alder Hey Hospital.—Asst. Res. M.O's. £400.

London County Council.—Asst. M.O. for Mental Hosp. Service. £300.

London (R.F.H.) School of Medicine for Women.—Part-time Demonstrators in Department of Anatomy.

London Temperance Hospital, Hampstead-road, N.W.—Asst. Res. M.O. £120. Surg. Registrar. 10 guineas.

London University.—Professor of Medicine and Director of the Medical Clinic at St. Mary's Hospital Medical School. £2,000.

Lucknow University, India.—Prof. of Pathology. Rs.1200 a month. Prof. of Physiology. Rs.1100 a month.

Manchester, Ancoats Hospital.—Res. Surg. O. £250.

Manchester Northern Hospital for Women and Children, Park-place, Cheetham Hill-road.—H.S.

Manchester Royal Infirmary, Central Branch, Roby-street.—Female Res. M.O. £200.

Margate, Royal Sea-Bathing Hospital for Surgical Tuberculosis.—Female Surg. £200.

Middlesbrough Education Committee.—Female Asst. School M.O. £500.

Newcastle-upon-Tyne Education Committee.—Dental Surg. £150

Newport, Mon., Royal Gwent Hospital.—H.S. £200.

Nottingham, City of.—Asst. Pathologist. £500.

Oswestry, Shropshire Orthopædic Hospital.—H.S. £250.

Poplar Hospital for Accidents, Poplar, E.—Asst. Res. S. £150.

Preston and County of Lancaster Royal Infirmary.—Sen. H.S. £250.

Royal Free Hospital, Grays Inn-road, W.C.—Two H.P.'s. £50.

Royal Naval Medical Service.—Surg.-Lieuts. 26s. 6d. per diem.

St. George's Hospital, S.W.—Two Res. H.S.'s, Res. Obstet. O. Each £50. Cas. O. £200.

St. Helens Hospital, Lancashire.—Res. M.O. £250.

Saint Pancras Dispensary, Oakley-square, N.W.—Res. M.O. £225.

Seamen's Hospital, Albert Dock, Connaught-road, E.—H.S. £150.

Southampton Free Eye Hospital.—H.S. £200.

Southampton, Royal South Hants and Southampton Hospital.—Jun. H.S. £150.

South London Hospital for Women, South Side, Clapham Common, S.W.—Asst. Pathologist. £150. Temp. Anæsth.

Stamford, Rutland and General Infirmary.—H.S. £250.

Sunderland Royal Infirmary.—H.P. £200.

Sydney University, New South Wales, Australia.—Lecturer in Veterinary Anatomy and Surgery (including Obstetrics). £500.

Torquay, Torbay Hospital.—H.S. £200.

Union of South Africa Government.—Asst. P.'s in Mental Hospital Service. £400.

West London Hospital, Hammersmith-road, W.—Two H.P.'s. H.S. Each £50. P. Neurologist.

Wigan Infirmary.—Hon. Asst. Surg.

Worcester County and City Mental Hospital, Powick.—Sen. Asst. M.O. £500.

Births, Marriages, and Deaths.

BIRTHS.

JAMIESON.—On June 6th, at Stalheim, Mulgrave-road, Sutton, Surrey, the wife of R. Hillhouse Jamieson, M.D., F.R.C.S. Ed., of a daughter.

LANGFORD-JONES.—On May 31st, at a nursing home, Croydon, the wife of R. P. Langford-Jones, M.B., B.S. Lond., of a son.

MCCARTER.—On June 2nd, at Orsett-road, Grays, Essex, the wife of Dr. W. H. R. McCarter, of a son.

MARSH.—On June 11th, at Torbay House, Stow Park-avenue, Newport, Mon., the wife of O. de B. Marsh, O.B.E., M.B., B.Ch. Cantab., of a son.

SODEN.—On June 9th, at Tudor House, Winchcombe, Glos., to the wife of W. Scovil Soden, M.B., B.Ch.—a son.

MARRIAGES.

CASSIDY—EVAN-THOMAS.—On June 4th, at St. James's Church, Piccadilly, Major Colin Cassidy, M.C., R.A.M.C., to Cara Averil, second daughter of Mr. and Mrs. Edmund Evan-Thomas, of Bramham-gardens, S.W., and Neath, Glamorgan.

MARR—PETTY.—On June 8th, at St. Marylebone Parish Church, Lieut.-Colonel Colin Forbes Marr, I.M.S., to Alethea Seymour Martin, eldest daughter of the late Rev. H. M. Petty, M.A., Milton Abbot, Devonshire, and of Mrs. Petty, Farnham.

TRUMPER—TIRARD.—On June 11th, at All Saints', Margaret-street, W., William Arthur Trumper, M.R.C.S., L.R.C.P., of Ivybridge, South Devon, to Marigold Tirard, elder daughter of Sir Nestor and Lady Tirard, of 74, Harley-street, W.

DEATHS.

FLOOD.—On June 5th, at Morehampton-road, Dublin, Frederick Leopold Flood, L.R.C.P., in his 64th year.

BOOKS, ETC., RECEIVED.

CHURCHILL, J. AND A., London.
A Manual of Bacteriology, Clinical and Applied. By R. Tanner Hewlett, M.D. Pp. 808. 21s.

GREEN, W., AND SON, London and Edinburgh.
Encyclopædia Medica. Under the general editorship of J. W. Ballantyne, M.D. Vol. VII., Intestines to Labour. Pp. 611.

LEWIS, H. K., AND CO., London.
The Heart: Old and New Views. By H. L. Flint, M.D. Pp. xii. Pp. 177. 15s.
French-English Medical Dictionary. By Alfred Gordon, M.D. Pp. 161. 16s.

ROYAL EARLSWOOD INSTITUTION.—The seventy-fourth annual report (1921) of the Earlswood Board of Management conveys the welcome information that the residual estate of the late Mr. W. H. Ray has now been made available and £30,000 realised to extinguish bankers' loans and other outstanding liabilities. The largely enhanced current expenses still call for liberal support on the part of subscribers. The report of the medical superintendent, Dr. C. Caldecott, shows that during the year 1920 the average number of patients resident was 442, 281 males and 161 females, 47 admissions, 37 discharges, and 14 deaths being recorded; 23 were admitted by "election and part payment," 21 on "payment," and four were "aided by local committees." A few of the new cases raise hopes of improvement from training, but there is also a considerable percentage of hospital cases. Twenty-six of those discharged were reported "improved," and a youth of 21 was discharged by the Visiting Justices as "recovered." The death-rate was low—i.e., 3·16 per cent. to the average number resident. Pulmonary tuberculosis was responsible for four deaths (28·5 per cent.), and there was also a case of intestinal tuberculosis. The number of epileptics in the institution represents the percentage of 13·31 to the average number resident, and the occurrence of no less than 9107 fits was recorded during 1920, three patients, accounting between them for 3137 of the above, having died in the "status epilepticus." Considerable reorganisation seems to be in progress in the educational departments of the establishment, including special instruction of an interesting character for low-grade and infant cases; while the industrial and trade work, for which Earlswood has so long been noted, is fully maintained.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

Tuesday, June 21st.—5 p.m., Croonian Lectures:—Dr. F. L. Golla: The Objective Study of Neurosis.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Monday, June 20th.—2 p.m., Dr. S. Pinchin: Medical Out-patients. Dr. Simson: Diseases of Women. Dr. Morton: X Ray Department. 2.30 p.m., Mr. Baldwin: Visit to Surgical Wards. 5 p.m., Lecture:—Mr. D. Armour: Diseases of the Gall Bladder and Ducts—Treatment.

Tuesday, 21st.—10 a.m., Mr. Steadman: Dental Department. 11 a.m., Dr. McDougal: Electrical Department. 12 noon, Mr. T. Gray: Demonstration of Fractures. 2 p.m., Mr. Banks Davis: Diseases of the Throat, Nose and Ear. 2.30 p.m., Mr. Addison: Demonstration of Cases, Surgical Wards. 5 p.m., Lecture:—Dr. Pernet: Some Bullous Eruptions.

Wednesday, 22nd.—10 a.m., Mr. MacDonald: Genito-Urinary Department. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2.30 p.m., Mr. D. Armour: Demonstration of Cases. 5 p.m., Lecture (II.):—Mr. Baldwin: Surgery of the Rectum.

Thursday, 23rd.—10.30 a.m., Dr. Simson: Gynæcological Demonstration. 12 noon, Dr. S. Pinchin: Diseases of the Heart. 2 p.m., Mr. MacDonald: Surgical Out-patients. 2 p.m., Mr. B. Harman: Eye Department. 5 p.m., Special Lecture:—Dr. J. C. Bridge: General Practitioners and the Prevention of Industrial Diseases. (Open to all Medical Practitioners.)

Friday, 24th.—10 a.m., Dr. G. Stewart: Neurological Demonstration. 10 a.m., Dr. Robinson: Gynæcological Operations and Visit to Wards. 2 p.m., Dr. Burnford: Medical Out-patients. 2 p.m., Dr. Pernet: Skin Department. 2.30 p.m., Dr. Pritchard: Demonstration of Cases, Medical Wards. 5 p.m., Lecture:—Mr. T. Gray: The Surgical Physiology of the Alimentary Tract.

Saturday, 25th.—10 a.m., Dr. A. Saunders: Medical Diseases of Children. 2 p.m., Dr. Owen: Medical Out-patients. Mr. Sinclair: Surgical Out-patients.

Daily:—10 a.m., Visit of Post-graduates to Wards. 2 p.m., In-patient, Out-patient Clinics and Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Monday, June 20th.—10 a.m., Mr. W. E. Tanner: Surgical Out-patients. 2 p.m., Dr. A. J. Whiting: Medical In-patients. 2.30 p.m., Mr. J. B. Banister: Gynæcological.

Tuesday.—9.45 a.m., Lt.-Col. R. H. Elliot: Eye Operations and Cases. 2.30 p.m., Dr. J. Metcalfe: X Ray Department. 3 p.m., Lecture Demonstration:—Mr. C. H. Hayton: Cases illustrating Diseases of the Nasal Cavities and Accessory Sinuses, and their Treatment.

Wednesday.—2 p.m., Mr. C. H. Hayton: Throat Operations. 2.30 p.m., Dr. W. J. Oliver: Dermatological. 3 p.m., Lecture Demonstration:—Mr. W. E. Tanner: Clinical Pathology and Differential Diagnosis of Scrotal Enlargements (II.).

Thursday.—2 p.m., Mr. N. Fleming: Eye Department. 2.30 p.m., Mr. J. B. Banister: Gynæcological Operations. Dr. J. Metcalfe: Radiology.

Friday.—2 p.m., Dr. C. E. Sundell: Diseases of Children. 3 p.m., Lecture Demonstration:—Mr. T. H. C. Benians: Blood Examination in Diagnosis (II.). 5 p.m., Dr. Provis and Mr. Benians: Venereal Department.

Saturday.—10.30 a.m., Mr. W. E. Tanner: Operations. 3 p.m., Mr. H. W. Carson: Surgical In-patients.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, W.C. 1.

MEDICAL SCHOOL.

Monday, June 20th.—2 p.m., Dr. Hinds Howell: Out-patient Clinic. 3.30 p.m., Dr. Aldren Turner (Lecture Room): Demonstration of Cases.

Tuesday, June 21st.—2 p.m., Dr. Grainger Stewart: Out-patient Clinic. 3.30 p.m., Dr. Risien Russell (Lecture Room): Demonstration of Cases.

Thursday, June 23rd.—2 p.m., Dr. Farquhar Buzzard: Out-patient Clinic. 3.30 p.m., Lecture:—Dr. Farquhar Buzzard: Poliomyelitis.

Friday, June 24th.—2 p.m., Dr. Gordon Holmes: Out-patient Clinic. 3.30 p.m., Dr. Collier (Lecture Room): Demonstration of Cases.

NEUROLOGICAL OPHTHALMOLOGY.

Wednesday, June 22nd.—3.30 p.m., Lecture:—Mr. Leslie Paton: Papillœdema.

Fee for Post-Graduate Course £7 7s.

C. M. Hinds Howell, Dean.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.

Post-Graduate Course on Infant and Child Welfare.

A Course of Twelve Practical Demonstrations on the Management and Feeding of Infants and Young Children by Dr. E. Pritchard to Qualified Practitioners.

Tuesday, June 14th.—10.30 a.m., Demonstration I., Causes of Infant Mortality.

Thursday.—3 p.m., Demonstration II., How to Conduct an Infant Consultation, Examine an Infant and Keep Records.

LONDON HOSPITAL MEDICAL COLLEGE (University of London), Turner-street, Mile End, E.

Courses of Lectures:—

A Course of Fourteen Lectures on Psycho-Neuroses, to be given by Dr. M. Culpin in the Clinical Theatre of the Hospital. Open to Students of the Hospital and to Members of the Profession.

Tuesday, June 21st.—5.15 p.m., Lecture XIV.: General Review of Opinions.

Advanced Lectures in Physiology, to Students of the University and to others interested in the subject.

A Course of Eight Lectures on Reception of Sensory Stimuli, to be given by Prof. H. E. Roaf in the Physiology Theatre.

Thursday, June 23rd.—4.30 p.m., Lecture VII.

SURGICAL UNIT.—A Special Course of Ten Lectures on Advanced Surgery in the Unit Theatre to Post-graduates and Senior Students.

Tuesday, June 21st.—4.15 p.m., Mr. R. Milne: Non-Tuberculous Hip Disease.

Thursday.—4.15 p.m., Mr. R. Milne: Endosteal Tumours of the Bones.

ST. BARTHOLOMEW'S HOSPITAL (University of London), West Smithfield, E.C.

A Course of Eight Advanced Lectures in Physiology, to be given in the Physiological Laboratory, to Students of the University and others interested in the subject.

Tuesday, June 21st.—4.30 p.m., Lecture VIII.: Dr. L. Hill: The Capillary Circulation.

A Course of Four Advanced Lectures in Medicine, to be given in the Surgical Lecture Theatre, to Students of the University and others interested in the subject.

Monday, June 20th.—5 p.m., Prof. F. R. Fraser: The Therapeutic Use of Digitalis (Lecture IV.).

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

Thursday, June 23rd.—4 p.m., Lecture:—Mr. T. Gray: Hare-lip and Cleft Palate.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, E.

A Course of Post-graduate Clinical Lectures and Demonstrations in the Board Room of the Hospital, free to Medical Practitioners and Students of Medicine.

Tuesday, June 21st.—4 p.m., Dr. C. L. Hewer: Anæsthesia in Children.

Thursday.—4 p.m., Mr. B. W. Howell: Demonstration of Cases and Plasters.

Friday.—5 p.m., Dr. C. Alice King: Clinical Manifestations of Rheumatism in Children.

TAVISTOCK CLINIC FOR FUNCTIONAL NERVE CASES, 51, Tavistock-square, W.C.

A Course of Ten Lectures on Elementary Psychotherapy, to be given by Dr. H. C. Miller, at the Kingsway Hall, Kingsway, W.C.

Friday, June 24th.—5.15 p.m., Lecture VIII.: Dream Interpretation (I.): Myths, Legends, Obsessions.

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THE CREATIVE FORCE AS A FACTOR IN THE ECONOMIC PROBLEMS OF WOMEN'S WORK.

BY PROF. A. LOUISE MCILROY, D.SC., M.D. GLASG.

NOWADAYS, when sex problems are so much a subject of discussion, we are inclined to take the view that sex is the dominant factor in almost all relationships of life. If we substitute the words "creative force" for sex, this is to a great extent true. The creative energy in the normal individual has as its main object the reproduction of the species, just as in the animal kingdom as a whole. When this creative force is not used for reproductive purposes, the question arises whether it can be employed in other directions beneficial to the community.

Sex Instinct as a Motive Force.

The world permits to men a sex instinct in the narrow sense, and condones its exercise as being the natural outlet for a physiological necessity. With women, on the other hand, it is held that sex is dormant and should only be called forth on marriage; that at the best it is an instinct which should not only be controlled, but in the minds of many prudes, even to-day, should be completely denied or hidden. Why should the maternal instinct in a mother be so lauded and the sex instinct so despised? Surely one is bound up with the other. Under modern conditions of so-called civilisation the natural outlet for sex instincts is not always to be obtained for every individual. That sex or creative energy must, therefore, be enlisted for the benefit of the community in other directions. It must be remembered that it is during the reproductive phase of life that all the greatest work of the world has been done. It is just the sex energy which has been deflected into the work which has given so much of its value.

The solution of sex problems thus lies not in the perversion of sex instincts, but in the direction of sex energy into such channels as will make it the motive power for great work of invention and research. The sexual instinct is the ultimate force which gives the energy, the keenness, the enthusiasm to all work, although the individual may be perfectly unconscious of the source of his or her activities.

Individuals suffering from neuroses or warped by unsatisfied sex instincts are as a rule leading misdirected lives. Given work to do in which they can use their creative energy, happiness and contentment is in most cases within their grasp. The physical satisfaction of sex is not an absolute physiological necessity for either men or women, but an outlet must be found in each individual for the creative force. In some individuals the sex instinct remains unsatisfied after mere union; in women it is often the maternal instinct which calls loudly for satisfaction. Women who dwell upon sex problems—to their own great unhappiness—are not necessarily over-sexed individuals; they are suffering from the exuberance of unemployed creative energy. The outlet to this energy may lie in original researches in art, science, or literature, or in work of the utmost value to the State. The products of such work are the children of the brain, and although sometimes the worker may long for more tangible children, on the whole she will be content.

Creative Work and Reproduction.

As a result to a great extent of the war there has been an upheaval in the world's attitude towards the more serious side of women's work, and problems which were formerly only of academic interest have now to be faced owing to the increasing numbers of women who have obtained the opportunity of engaging in work of a higher nature, entailing the expenditure of much energy in specialised directions. Women have proved that their work may equal that of men; the problem is how such work is to fit in with that of motherhood and care of a family. When we consider the training and education of girls for the higher branches of the professions we are faced with the problem of the possible influence of her activities on her reproductive functions and conversely of the possible influence of marriage and motherhood on her career.

The problem is further complicated by the fact that it is not always possible for women to marry, owing to various domestic, economic, or other circumstances, nor have they always an opportunity of doing so. Man chooses his mate; woman can only make a selection from possible candidates. In many cases, therefore, she is denied the opportunity of male companionship and the maternal joys which go to make a home, which are the highest functions a woman can fulfil, both for her own individual happiness and for the prosperity of the race. Such an ideal existence is one which is approved by the best and most intellectual women of the day, but it mostly involves the sacrifice of independence and freedom, and retirement into comparative oblivion. This retirement has many compensations, but these do not necessarily appeal to every woman, and as a consequence much of the business of the State is carried on by the large number of voluntarily unmarried women, who by their contribution of work become more or less the mothers of this State. It is these women who, for example, are in a position to come forward at the time of a national crisis and offer help. Few would object to the praise and publicity which is their reward, praise which only half makes up for the absence of home ties.

The Clash of Interests.

We cannot as yet judge of the results of the higher education of women as a whole, nor can we form opinions as to the capacity of women for special branches of work. Public opinion at present encourages men workers to marry but puts every difficulty in the way of the marriage of women workers. Some departments of the State even debar them from the continuance of their work after marriage. Celibacy, therefore, becomes voluntary for men, but for women workers in most fields it is more or less compulsory, at least so far as motherhood is concerned. One result is that among women workers who do marry the birth of children is often prevented by contraceptives, the use of which must offend at least the æsthetic sense. Existence for a woman under such conditions is an abnormal one. Apart from the temporary dislocation of interests caused by a love episode, marriage brings gain to the work of a man, unless he is hampered by family or financial worries which cannot be put down to marriage per se. Man's creative force as regards actual reproduction entails little strain upon his work; it is often a thing apart; but with woman, at the time when it is being physiologically exercised, it is more or less her whole existence. Marriage may be said from the point of view of specialised work, such as research work, to be the handicap of a woman's professional career. The care of offspring before birth and for some years after entails the expenditure of much energy. I do not for a moment suggest that because this function is being exercised all married women should be debarred from work. That is entirely a matter for the decision of the individuals concerned; and it must not be forgotten that the offspring of a mother who augments her husband's income is often better off by the increased financial advantages. It is in higher and more specialised forms of work, where the individual counts so much, that the problem is the greatest. In such work, the mere time spent at research is not sufficient in itself, but original ideas must be given out, and the creative force used almost to the uttermost in its attempts to wrest from Nature the secrets so carefully stored and hidden from us. If a woman engaged in such work endeavours at the same time to lead the life of a mother what will be the result? In her work she is placed at a disadvantage in her competition with men working in the same branch; she attempts to do the work they find all-absorbing in addition to the rearing of her family. Too great a strain is put upon her mentally and physically. Should she fail in either or both, the finger of scorn is at once raised and she is used as an example of the futility of women aspiring to do the work of men. In practice, with very few exceptions, it works out that one or other gets neglected. Even when domestic difficulties are got over, and home worries wiped out, the question whether a mother can give her whole-hearted attention to her research work still remains to be answered. If creative energy is directed or distributed in several directions, work must suffer.

No Immediate Solution.

Woman therefore must make a more or less definite choice between her heart and her head, or compromise by giving up her work while she is exercising her reproductive functions. Experience shows, however, that it is difficult to take up work again later, when fresh competitors may have entered the field. Yet it seems hardly just or fair that a certain section of research workers should take the unspoken vows of celibacy, and sacrifice themselves to a life without the companionship which is just as desirable for a woman as for a man. Are the more attractive women to remain untrained for the higher careers just because of the possibility of marriage? Should only the unattractive be chosen and urged onwards? Who is to judge which is which? There may be no solution to these problems, but we must remember that the widest sympathy and understanding is only got by knowledge, and the educated woman may become singled out all the more readily as a fitting companion by a man. No one can foresee how many members of a school or college will survive the temptations and attractions of marriage and motherhood, nor whither we are tending in these matters. We can only work blindly on, trying to develop character by training and letting the gods decide as to the ultimate best. All women should be given an equal chance of development and culture, and their subsequent choice between careers must be an individual one. Whatever a woman's decision, the world will doubt its wisdom, and so, on occasion, will she herself. But that is no reason to deprive her of the opportunity for free choice, from which alone some measure of contentment after the conflict may be hers.

COLONIAL HEALTH REPORTS.

Gold Coast.—In a report prepared by Mr. G. C. B. Parish, Assistant Colonial Secretary, on the Blue-book for 1919, it is stated that at the census of 1911 the population of the Gold Coast and Dependencies was 1,503,386. The number of Europeans resident in the Colony during 1919 was 3182, as against 1823 in 1918, there having been an increase of nearly 200 per cent. in the mercantile community. A summary of the chief causes of death shows 22 per cent. due to the intestinal group of diseases, 12 per cent. to the pneumonia group, and 5 per cent. to tuberculosis (including phthisis), while senility and prematurity accounted for 11 per cent. each. Registration not being general all over the colony no accurate statement of infant mortality can be given, but as in Accra 28 out of every 100 deaths registered are those of infants it must be presumed that the proportion of those born in the colony who fail to reach their first birthday must be high. The death-rate amongst Europeans resident in the colony during 1919 was 8·8 per 1000, as compared with 30·7 in 1918 (the year of the influenza epidemic); the invaliding rates per 1000 for the same periods were 23·27 and 55·4 respectively. Amongst European officials in 1919 1 death was due to influenza, 1 to yellow fever, 1 to blackwater fever, 1 to liver abscess, 1 to chronic gastritis, and 1 to accident. Of the 15 deaths of European non-officials, 7 were due to blackwater fever, 1 to thermic fever, and the others to miscellaneous diseases. Seven European non-officials were invalided with blackwater fever, 1 with kala-azar, and 1 with yellow fever. Treatment was given in 3758 cases of malaria, 458 of dysentery, 9 of yellow fever, 277 of pneumonia, and 269 of tuberculosis. 16,943 successful vaccinations were performed; 14 cases of sleeping sickness were treated. Of 20 cases of blackwater fever treated, 8 proved fatal, and of 9 cases of yellow fever, 5 proved fatal. The special features of 1919 were the comparative drought and a severe epidemic of cerebro-spinal fever in the north-western extremity of the colony, 91 per cent. of the cases being fatal. The rainfall in Accra was 20 inches as compared with an average of 32 for the previous 10 years. The climate, though hot and damp, is cooler than that of most tropical countries situated in the same latitude. It is not in itself unhealthy, but an evil reputation has been earned for it in the past by the prevalence of mosquito-borne diseases, against which all possible precautions have constantly to be taken. The Gold Coast is peculiarly free from many of the discomforts associated with tropical countries: hot nights and intense heat by day are the exception rather than the rule, while insects are comparatively unobtrusive. The efforts of the sanitary and medical authorities in promoting hygiene and treatment of disease continue to exercise a beneficial effect on the general health of Europeans.

British Honduras.—Mr. Eyre Hutson, C.M.G., Governor of the Colony, reports that the estimated population in 1919 was 43,586. The birth-rate for the year was 33·979 and the death-rate 27·555 per 1000. The proportion of illegitimate births was 42·40 per cent. Rain fell on 187 days in the year in Belize and amounted to 68·93 inches. The daily average number of patients under treatment and care in Belize Hospital was 45·63, in Coroza Hospital 8·61, in Orange Walk Hospital 6·11, in Stan Creek Hospital 6·32, in Toledo Hospital 7·14, and in the Lunatic Asylum 56·45.

AN AMPHIBIOUS BOAT-TRAIN.

The *Economic Review* for June 10th tells of experiments with a new system of waterway transport, described alternatively as the "amphibious boat" or the "amphibious train," which have been successfully carried out on the Willebroeck Canal in Belgium. The object of the system is to overcome transport difficulties on unnavigable portions of rivers, such as rapids, by rendering craft easily transferable to land while loaded and conveying them by rail until their further transport by water again becomes possible. It also contemplates the conveyance of the craft overland from one river or waterway to another. The inventor is a Belgian, Mr. Robert B. Goldschmidt, and it is hoped to make use of the system mainly in the Belgian Congo. The amphibious "boat-train" is described as a series of twin-boats or barges, the first of which is the tug, which can be driven by petroleum or palm oil. Each pair of boats is bound together laterally by a double yoke of steel, bearing a hanging device which runs on a mono-rail. The mono-rail is laid on a raised masonry or timber structure scribed so as to clear the hulls of the boats on either side. It is hoped that the boat-train will enable the great river system of the Congo, hitherto neglected, to be used regularly for transport, notwithstanding its frequent interruption by rapids.

A QUICK REPLACEMENT.

Whilst one of the members of the medical profession was attending to his duties his car was stolen. Within 48 hours of this he received a cheque from Messrs. L. A. Aldridge and Co., Ltd., of 23, Bucklersbury, E.C. 4, with whom he was insured, covering the full value of his car.

THE FREMLIN-ROGERS (STEAM) HYGIENISER.

The Fremlin-Rogers Milk Hygieniser shown in the illustration is designed for scalding milk in large or small quantities without the risks of burning, over-heating, or loss by boiling. The milk is poured into a basin-like receptacle, passing thence in a thin layer over a heated surface, the flow being regulated by moving a pointer over a graduated scale. In this process of scalding, bacteria are destroyed, the sudden rise and fall of temperature, it is alleged, ensuring this without damaging the nutriment or the chemical constituents of the milk, or lessening its vitamin content. The apparatus, which can be heated by gas, oil, or electricity, is made in various sizes, that depicted being a household hygieniser capable of dealing with one quart of milk in five minutes, or three gallons in an hour. It can be obtained from the proprietors, Milk Sterilisers, Ltd., 24, Buckingham Street, London, W.C. 2.

AN IMPOSTOR.

To the Editor of The Lancet.

Sir,—I should like to warn my colleagues in London hospitals of a person who describes himself as a gentleman. He called upon me on Saturday week whilst I was engaged in the out-patient department of the hospital to which I am attached, first of all asking the hospital beadle for the name of the "officiating" doctor. He then said he was urgently in need of the doctor and was admitted. When he confronted me it was to say that he was a member of a well-known Scotch family, the MacDougall's, and that he had wired to his brother—a general in command of troops at Fermoy—for money, as he and his wife were stranded in London without a penny. Could I lend him two sovereigns till Monday morning at 11? Foolishly, I was struck by his knowledge of the MacDougall family, of whom I knew, and lent him the money. The loan has not been returned, so I wish to prevent others from being victimised.

I am, Sir, yours faithfully,

June 13th, 1921. "O. P."

The great sale of surplus Navy and Army medical stores is continuing at the Disposal Board Depôt, Wood Lane, Shepherd's Bush, London, W.

An Address

ON THE

UNSOLVED PROBLEMS IN GYNÆCOLOGY AND OBSTETRICS.

Read by invitation before the American Gynæcological Society on June 2nd, 1921,

BY W. BLAIR BELL, B.S., M.D. LOND.,

PROFESSOR OF OBSTETRICS AND GYNÆCOLOGY IN THE UNIVERSITY; OBSTETRICAL AND GYNÆCOLOGICAL SURGEON TO THE ROYAL INFIRMARY; OBSTETRICAL SURGEON TO THE MATERNITY HOSPITAL, LIVERPOOL.

TO-DAY gynæcology and obstetrics stand high among the developments of surgery along scientific and specialised lines; yet the more I think of this, the greater is my wonderment that it should be so. It seems such a short while since our specialties were struggling towards the light. When, therefore, I received your invitation to address this learned society, it occurred to me that it might not be inappropriate if I were to consider for a few moments the principal avenue through which approach may be made to the secrets still hidden from us, and the *personnel* and equipment required for the task.

I do not think there can be any doubt that the collective status of the gynæcologists and obstetricians of the world in regard to clinical acumen and surgical technique is nearing the limit which must be set to human achievement, and that the same will soon obtain in regard to the bacteriological aspects of our special subjects.

But in contradistinction to this must be placed the unsatisfactory character of our advancement—the slow progress we are making—in the more essentially biological, including biochemical, problems, connected not only with the normal morphology and physiology of the female genitalia, but also with the pathological developments that may be associated with the structure and function of the reproductive organs. Concerning the actual details of these problems I shall have but little to say, except by way of illustration.

EDUCATIONAL METHODS.

First, let me consider how far our present methods of education are conducive to the correct mental attitude of the future investigator, whether they are methods that stimulate the powers of perception and make every student an interested observer from the beginning.

It is a curious commentary on the value of the allied sciences to the surgeon of to-day that there is a growing tendency, at any rate in my own country, to minimise the importance of biology and to urge the superior—I might almost say "exclusive"—claims of the final hospital study; and the attitude is not confined to the student. This seems to me unfortunate, for it means that we are catering entirely for men of moderate intelligence and not at all for those on whom may fall the responsibility of sustaining progress in our science. As a result of our existing methods, the clinical aspects of gynæcology and obstetrics have been thoroughly illuminated, as I have said, while the more abstruse biological features are but very imperfectly understood and their claims hardly realised. It may be argued that there are many expert physiologists, biochemists, and comparative anatomists; and this is true, but alone they cannot help us because they do not yet know our difficulties, neither have they the clinical nor technical knowledge with which to guide their steps. Up to the present the teaching of elementary gynæcological anatomy and physiology has been conducted by the clinical instructor, because these subjects have been almost invariably ignored by the physiologist and anatomist. This means, generally speaking, that expert physiologists and anatomists have remained in more or less complete ignorance of these matters, and are, therefore, even now unaware of the hiatuses in our knowledge.

There can be no doubt, I think, that the man who continually has to face difficulties in practice is the one most likely to find the means of circumventing them, provided he have sufficient all-round knowledge and adequate facilities for his task. It is only natural, however, that each should turn his attention to those matters concerning which he is best informed. It is obvious, therefore, that if the many biological problems connected with gynæcology and obstetrics, which so far have baffled us, are to be elucidated we must modify the general plan of education in regard to those who may perchance attempt to throw light on what is now obscure and indistinct.

In attempting to indicate the direction in which educational improvement may be made, I shall doubtless merely give verbal form to what must already have taken shape in the minds of many. In our educational methods we are too apt, I think, to set store on detail. We should, I believe, aim at encouraging a comprehensive and inclusive outlook. We destroy originality by overloading the young mind with so-called facts which often are the easily deducible results of observation. Again, it seems to me that the different subjects of the general curriculum are taught in too disjointed and exclusive a manner. As gynæcologists and obstetricians we should have the right—and the same applies to teachers in the other branches of final medical study—to define the subject-matter of the physiological and anatomical courses. The anatomist should be required to demonstrate and teach comparative and human anatomy on the lines we desire, and the physiologist should be obliged to lead, by experiment and demonstration in the laboratory, more directly to what will be taught later in regard to the human subject. There must, in fact, be more coördination throughout. It would be better, for instance, if the key-subject biology were taught in such a way as to make the student realise that in it man is included in a wide generalisation with the lower animals, and that man is but the evolutionary physiological and morphological climax. The student should be more definitely impressed with the knowledge that in his biological and biochemical studies he is watching the evolution of man, that he is following the simple to the complex, and that what may be normal at one stage is pathological in a higher state of evolution—that hermaphroditism, for example, is normal in the earth-worm but abnormal in man. If the student could be imbued with some conception of the ultimate value of all his biological work, and could be taught not to look upon it as a separate and isolated obstacle to arrest his onward course, not only would his hospital studies be more interesting and more relatively important, but his mental attitude and outlook would be as much fitted for the investigation of biological as for the study of purely clinical problems.

THE WIDER SCIENTIFIC MENTALITY.

The present trend, then, of medical education in Great Britain has been towards the production of good clinicians, rather than of men with their minds alive to the biological—morphological and physiological, including biochemical—import of the phenomena they observe. I often wonder how far this question has been realised in America, this training of the student towards a wider scientific mentality. In Great Britain, where general practitioners are now being urged to coöperate in an investigation concerning the beginnings of disease, it is clear that there is a need of reform in our methods of education if we are to expect results on the lines I have indicated.

Supposing, however, that the student has been educated on these principles, in what circumstances and in what environment will he find inspiration, *and obtain the best results?* The establishment and success of clinical units and of units for group-study in North America and Canada may provide the answer. Their foundation is, of course, open to the interpretation that these systems have been brought into existence because the brain of the average intelligent man is incapable of grasping and understanding all the side issues that go to make up the sum of medical knowledge; and I have heard it stated by an advocate of them that this is their raison d'être. Moreover, it is said that only in them can material properly be utilised and the one-line worker find an immediate use for his output. While the last part of this statement is true, I cannot agree entirely with the first. A properly educated man of wide perception is not necessarily a man of encyclopædic knowledge, but, rather, one whose mind is so saturated with basic principles that the mosaic of detail falls into an orderly pattern under the influence of his prescient intelligence. A man with the index type of mind is rarely original, and is not, therefore, necessarily worthy of encouragement. I have already referred to this in regard to the education of the student.

Pasteurs are, of course, born not made, but I believe that useful imitations can be developed by proper education and training, imitations good enough in the helpful environment of which I have just spoken to obtain results. Because the great biological and medical discoveries in the past have emanated from the brains of men ploughing a lonely furrow, there is no inherent reason why men of similar intellect should not again arise and in the more perfect environment that can be assured to-day unravel the outstanding questions. Meanwhile it should be possible now for men of lesser ability with proper education and a perfect environment to surmount difficulties which the master-minds of the past, with their more limited opportunities, could not overcome.

I would once more urge the importance, so well recognised in this country, of clinical work going hand in hand with scientific laboratory investigations. You have many wise foundations, whereas we are sadly handicapped for want of them. We in Great Britain who are interested in the scientific aspects of our subjects have not the same facilities.

In this continent there is offered subsequently to the well-educated man every opportunity for attacking these problems at a living wage; but in Great Britain we cannot always secure the best men for the service of science, for we cannot offer them a reasonable financial reward, a reward in any way commensurate with that to be obtained from practice. This is a matter that is exercising us greatly, for times are changing, and while clinical matters are so well established that they can take care of themselves, there is urgent need that further progress which, as I have stated is largely biological, should not be crippled and hampered for want of proper organisation in teaching and post-graduate research.

If, then, the last ramparts of gynæcological and obstetrical diseases are to be captured we must modify to some extent our methods of education and we must bring correlation, breadth, and inspiration into the musty empiricism of the preliminary studies. I know the curriculum is overcrowded, but it is mostly with what could well be spared. We must, also, encourage scientific enterprise, and after educating our students for their life-work give them the opportunity of utilising their talents and of advancing the science of obstetrics and gynæcology.

I shall now endeavour briefly to substantiate my statement that the great outstanding problems in gynæcology and obstetrics are biological in the narrowest sense of the word.

MORPHOLOGICAL PROBLEMS.

The development of the human ovary can now be described with a considerable degree of certainty, but the same cannot be said in regard to that of the genital passages. To what factors, for instance, is due the fusion of the Müllerian ducts in the genital cord? This is of considerable importance in connexion with the common so-called malformations of the uterus and vagina. Prof. Wood Jones, who has done so much excellent work on the comparative anatomy of the genital organs, believes that we should look upon these conditions of imperfect union as atavisms rather than malformations; and in this light the comparative anatomy of the genitalia becomes both interesting and instructive. Indeed, it is from this point of view alone that information can be obtained. If serial sections be cut of the divided and uniting uterine horns in various species of rodentia and carnivora, all the later stages in the development of the human uterus may be seen. Moreover, it will be made clear that the human uterus has morphologically but two muscular coats and not three, as usually described. Nevertheless, we do not yet know what determines the final development of the human uterus, and we can hardly expect to know until we have decided definitely what are the variations in the factors that lead to the different degrees of Müllerian union that are normal, constant phenomena in closely related animals. In rodents there may be seen the complete didelphic condition with double vagina (viscacha) and the gradual evolution to the single vagina and bicornute uterus (agouti).

Again, can the peritoneal pouch that encloses the ovarian extremity of the tube and ovary itself, a structure seen in certain rodents, and, as I have found in a less complete form in hedgehogs, be passed over as a freak structure, in spite of the fact that, as Bland-Sutton has shown, it may exist as an atavism in woman? It seems to me that a structure so useful to fertilisation and conception is worthy of serious study, especially from the point of view of the state of peritoneal currents and other influences in the creatures concerned. An investigation concerning the nature of the secretion of these sacs would also be of considerable interest.

Let me take another matter which, possibly, is of more clinical importance. How far are we familiar with the causes of the irregularities in the female bony pelvis, apart from those resulting from gross postnatal disease, such as rickets? We talk about civilisation, athletics, and the rest, but what causes a generally contracted pelvis in a well-developed non-rachitic woman who has been guilty of none of the enterprises that militate against functional perfection?

The work of Whitridge Williams and others has demonstrated beyond reasonable doubt that the typical funnel-shaped pelvis is associated with high assimilation, but I do not think the cause of high assimilation is definitely known. Such an important matter, especially in this country, is deserving of extensive systematic investigation. Comparative racial studies, in which different races are examined in their natural environments, might throw considerable light on this and on other pelvic abnormalities. There can be no doubt that civilisation may greatly affect structure as well as function.

As a last morphological point of interest—albeit there are many others that will occur to all—let me say that I look forward to the day when some gynæcologist or obstetrician will give us the clue to the mode of origin of pathological new growths. After all the gynæcologist and obstetrician has, time and again, given a lead to the rest of the profession; and in the problem to which I refer he is on his own ground, for his work is chiefly concerned with the preservation of the structures and functions through the medium of which neoplastic developments normally occur.

PHYSIOLOGICAL PROBLEMS.

It is within the last 20 years that practically all the recognised facts concerning the female functions have been discovered. We now know, if I may quote one of my own aphorisms, that a woman is a woman on account of all her internal secretions.

and not only because she possesses ovaries. But we still lack certain evidence as to the nature of the controlling force that determines the primary sex-characteristics of the person concerned; nor do we know how it comes about that even in the course of development a conjunction of sex-characteristics may occur, a condition of hermaphroditism. Even if it be that the masculinity or femininity balance of the internal secretions is disturbed, this is still an effect, not a cause. That this fascinating and intricate problem is capable of solution I am convinced. It may well be the life-work of someone capable of estimating the gradual changes through the numerous classes of creatures that indicate the evolutionary origin of man—of some comparative morphologist with all the histological technique of the present at his disposal on which to graft new methods of observation; and then, when the gross serial steps have been demonstrated, he may perchance gain an inkling of that on which they depend, an inkling of the force which imbues the fertilised ovum of man with maleness and femaleness.

There are few, surely, who cannot recognise to-day the vast importance of femaleness as opposed to maleness, and few, too, who are not conversant with the essential physiological—that is to say, biochemical—differences that influence the mind and body. We have, too, some knowledge of what constitutes puberty. It is, we believe, the time of life when the metabolism has met the claims of somatic growth. The potentiality of a girl's metabolic resources at this time is such that it can support the strain of reproduction and all that this involves. But we do not know what happens at puberty to start the new train of events. What is the hormone that makes the ovary aware of the situation; is it then that the genital functions of the ductless glands come into being, and, if so, what leads to this awakening? That it is not a habit of life is too obvious to need discussion; it is due, rather, to a series of chemical events that may be altered and delayed by many circumstances of health and environment.

Nature of Menstruation.

Then, again, have we established without the possibility of fallacy the nature of menstruation? My view that it is an excretory process in regard to the principal elements required during pregnancy for the building up of the fœtus, and during lactation for the formation of milk, as is made evident by the calcium metabolism, requires full confirmation and elaboration in regard to the exact part played by the ovaries and other internal secretions.

To pass on, I would ask if there is general agreement concerning the factors involved in the production of the climacteric? I myself, for instance, disagree with those who think that the normal menopause is the result of primary ovarian atrophy, although many of the phenomena of the menopause are due to this change. The fact that the artificial menopause is produced by oöphorectomy has been a blind to all of us. If the ovaries are removed from a young woman with protracted amenorrhœa and ovarian destruction menopausal symptoms do not supervene. The artificial menopause is induced only when there has been pre-existing ovarian activity. At the commencement of the normal menopause the ovaries are normal and active, indeed, at the end of that phenomenon the woman may be capable of conception. Why is it that ovarian substance or extract of any kind, and in any combination whatever and however administered, does not produce specific results at the physiological menopause: whereas whole-gland ovarian substance, especially in association with thyroid substance, gives relief in case in which the menopause has been induced by operative procedures? There are some, I know, who will dispute this; but I believe the facts, as I have stated them, to be true. From this jumble—shall I say?—of observations it appears justifiable to ask you to consider as a working hypothesis for further investigations the view that there is at the climacteric some substance circulating in the blood, some natural biochemical toxin, or something withdrawn from it, which leads not only to ovarian atrophy but also to the other physiological and structural alterations that take place at the "change of life."

Another group of important correlated functions about which we know but little is that concerned with fertilisation and conception.

Selective Sterility.

I think that light will soon be shed on that curious anomaly I call "selective sterility." In view of recent additions to our knowledge in regard to the incompatibility of the blood of persons in different groups, it is not unlikely that selective sterility—as well as successful homoplastic, as opposed to autoplastic, ovarian grafting—will be found to depend on a similar, if not identical phenomenon. So far we know that a difference in the blood-grouping of married couples has no obvious relation to the possibility, or otherwise, of conception. Again, the normal inter-relations that exist between the mother and her fœtus in utero have been studied to some purpose; but we are still ignorant of the way in which the growing embryo controls the development of the chorionic epithelium that sometimes takes on such disastrous activity when the control is removed.

I do not think the theory that in such circumstances there is lutein over-growth is sufficient. It is common to see vesicular mole and chorion-epithelioma without abnormal lutein development.

Toxæmias of Pregnancy.

Moreover, how little we know concerning the toxæmias of pregnancy. It seems to me that before we can arrive at any proper idea of the disturbance produced we must know far more intimately the normal metabolic mechanism concerned and the maternal forces that are marshalled against the deleterious effects produced by what is, after all, a new growth in the uterus. If the recent work of Dold and Obata concerning eclampsia be correct, as seems possible, we shall be placed in possession of very interesting information concerning a biological phenomenon of vast importance, for I do not doubt that, if it be fully confirmed, we shall be able to test the blood of every pregnant woman before so serious a condition as eclampsia supervenes and to treat her with normal human serum. I have myself seen excellent results with blood-transfusion.

Although hundreds of thousands of human beings are expelled from the uterus daily we have but a faint glimmering of the biochemical factors leading to the determination of parturition. And what of lactation? Is the mechanism of the simple nature I have described in the Sex Complex? If so, we are little in advance of the ancients who, owing to their powers of perception, have always been worthy of consideration in matters of priority.

Such gynæcological and obstetrical problems seem to me almost infinite when I let my mind wander around the outposts of our small impregnable position of certain knowledge. I have, however, to-day the desire to emphasise not only the importance of those unsolved problems, which we all admit, but also the essential biological nature of them. I have attempted, too, to show that our education tends to drive us forward almost entirely along the deeply-trodden paths rather than along those barely to be seen or yet uncut through virgin country. I would plead, therefore, that our students and our post-graduates be more broadly educated at least in the great principles of biology, for I believe that only by way of physiological, especially biochemical research, and by the comparative study of simpler forms of structure shall we be able to bring our art towards scientific pefection.

The Relation
OF
HEART DISEASE AND PREGNANCY.

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IN FOUR SECTIONS—SECTION IV.

IRREGULAR ACTION OF THE HEART.

Significance of Irregular Heart Action.

THE importance of irregularity of the heart's action has not been sufficiently recognised. It is a matter seemingly so confused that few writers try to understand its real significance. Moreover medical knowledge had not until recently advanced far enough to enable physicians to differentiate its various forms.

This state of affairs is unfortunate, because a clear understanding of irregularity throws light on many obscure features of cardiac action and gives information of the most valuable kind in diagnosis, prognosis, and treatment. Indeed, the neglect of this subject renders a great part of the writings of physicians of little or no use. I have referred to Macdonald's description of cases of mitral regurgitation. In this description, as I pointed out, the incidental remark that the heart was irregular gives the clue to the real nature of the condition. An occasional reference such as this, if one is able to apply it, is often far more helpful than all the other details. Unfortunately, irregularity is usually considered so *unimportant* that it is not mentioned. Even when it is mentioned, the reference is often so vague as to preclude an exact differentiation and diagnosis.

But there is more than this. It is unhappily true that one can rarely trust a statement that the heart was irregular. I have often seen perfectly regular hearts described as irregular. Tracings of these showed beyond possibility of dispute that irregularity was not present.

I go farther than that and say that even when a sphygmogram is given the statement that the heart is irregular cannot always be accepted. I have just been looking at some sphygmograms taken by a physician in a case of pregnancy. One of these is described as "irregular." Certainly a casual examination seems to justify this description, for the pulse waves are of varying height. But when the length of each beat of the pulse is measured accurately, this first impression is disproved. The beats are of exactly the same length and are absolutely regular. Thus the apparent irregularity is artificial. I know from my experience in taking records, especially when there is laboured breathing, that the movements of the patient's arm will cause a marked variation in the height and depth of the waves, which in this instance was mistaken for an irregularity.

When, over thirty years ago, I began the study of irregular heart action, I was told that the subject was so difficult and confused that it was a waste of time to attempt such an investigation, and that in any case little benefit would result even if I happened to be successful. Even to-day, few physicians, and evidently no obstetricians, have made themselves familiar with this subject. As a consequence the subject is still shrouded in mystery; and where we get mystery we get fear, and we find people with irregularities treated like people with murmurs. We have, too, the same kind of prognosis—"the sign may be of no significance, but, on the other hand, it may be serious." As there is no clear differentiation, there is no certainty regarding the forms which are innocent and those which are of serious import.

Mechanism of Heart Irregularities.

The vast majority of irregularities can be classified in a manner which renders them easy of recognition by the unaided senses. This, I think, is of great importance, for it is obvious that if knowledge of this subject is to be utilised in practice, differentiation must be accomplished without apparatus and in a reasonably short space of time.

The manner in which the irregularities arise will be made clear by means of the diagram (Fig. 8).

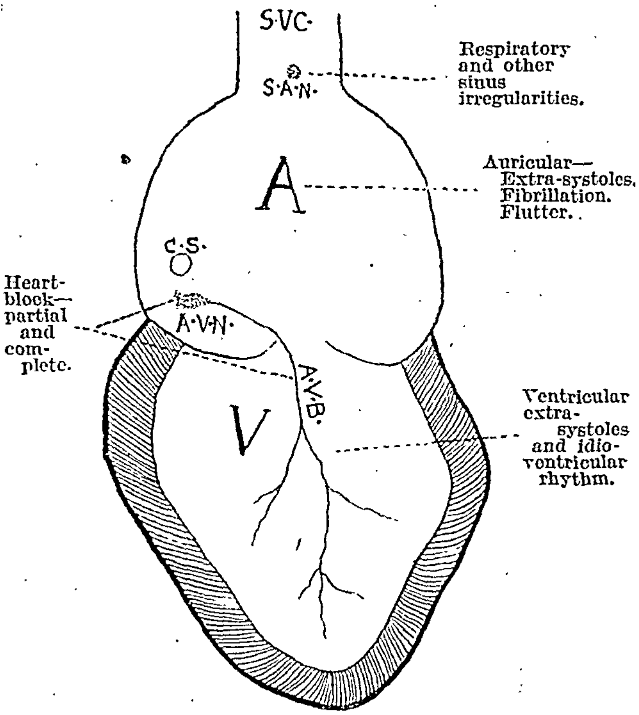
S·V·C·
S·A·N·
Respiratory and other sinus irregularities.
A
Auricular— Extra-systoles. Fibrillation. Flutter.
C·S·
Heart-block—partial and complete.
A·V·N·
A·V·B·
V
Ventricular extra-systoles and idio-ventricular rhythm.

FIG. 8.—Diagram representing the parts concerned in the movements of the heart, and the places of origin of the different forms of irregular heart action. *S.V.C.*, Superior Vena Cava; *S.A.N.*, Sino-Auricular Node; *A.*, Auricle; *C.S.*, Opening of Coronary Sinus; *A.V.N.*, Auriculo-Ventricular-Node; *A.V.B.*, Auriculo-Ventricular Bundle; *V.*, Ventricle.

This diagram represents certain structures concerned in the mechanism of the heart's movements. The heart's contraction starts at a small collection of peculiar fibres, the so-called sino-auricular node (*S.A.N.*) situated at the mouth of the superior vena cava (*S.V.C.*). The stimulus from the *S.A.* node causes contraction of the auricle (*A.*). From the auricle the stimulus passes to the auriculo-ventricular node (*A.V.N.*), the tissues of which resemble, in their structure, the fibres of the sino-auricular node. This *A.V.* node is situated in the wall of the right auricle near the opening of the coronary sinus (*C.S.*). The stimulus passes from the *A.V.* node along a bundle of peculiar cells, the auriculo-ventricular bundle (*A.V.B.*) to the ventricle (*V.*), where it breaks up into innumerable branches distributed to different parts of the ventricle.

While, in normal circumstances, the stimulus of contraction passes in this manner, i.e. from the sino-auricular node to the ventricle, yet each of the different parts, the auricle, the *A.V.* node, the *A.V.* bundle, and the ventricle, is capable itself of initiating a stimulus which can produce a contraction. The reason that the stimulus arises first in the *S.A.* node is that this tissue is most sensitive. After a stimulus of contraction has been discharged, no other stimulus can be discharged until a certain time has elapsed. This time is required in order that the tissue may recover its excitability. The rate of recovery is most rapid in the *S.A.* node. Thus, other parts of the heart are again whipped to action before they are able to discharge a stimulus of their own manufacture.

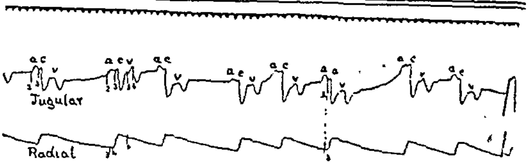

FIG. 9.—Simultaneous tracings of the jugular and radial pulses, showing an irregular pulse. The waves *c* in the jugular tracing are due to the carotid beat, and correspond in time to the pulse beats in the radial tracing. The wave *a* is due to the auricular systole, and it is seen that in this form of irregularity the auricles and ventricles equally participate—as shown by the waves *a* and *c*.

This is why, for instance, in complete heart-block, when the connexion between the ventricle and the upper parts of the heart is severed (as in damage of the *A.V.* bundle), the ventricle beats at a much slower rate than the auricle. In this condition the auricle may be contracting at the rate of 70 or 80 beats per minute, while the ventricle pursues an independent contraction at the rate of 30.

In abnormal circumstances the parts below the *S.A. node may become* so excitable that the stimulus may arise in them and set up independent contractions, which anticipate in point of time the stimulus for the *S.A.* node. This may occur occasionally in single beats, and so give rise to such irregularities as the extra-systole, which is due to premature contraction of the auricle or of the ventricle (Fig. 11). In the former case the auricular contraction precedes the stimulus from the *S.A.* node; in the latter case the ventricular contraction precedes the auricular or occurs at the same time. The premature contraction of auricle and ventricle may be continuous for a shorter or longer time, and so give rise to the various abnormal rhythms and the tachycardias (Figs. 20 and 21).

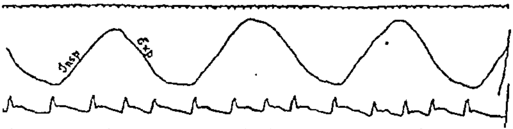

FIG. 10.—Tracings of the movements of respiration, taken at the same time as the radial pulse, showing that in the respiratory irregularity the rate of the heart increases during inspiration and becomes slower during expiration.

Differentiation of Heart Irregularities.

The places where the different irregularities arise are shown in the diagram (Fig. 8).

In the course of an inquiry into irregular action of the heart, I found that there were several groups of cases, and that these could be clearly differentiated on two grounds:

(1) On the ground of the mechanism by which they were produced; and

(2) On the ground of their clinical significance.

While the first basis of differentiation has been the subject of much research, the second has received far too little attention. This is due, I think, to the fact that the method by which knowledge of the kind required can be obtained has not been understood.

It is perfectly evident that, while an understanding of the mechanism by which an irregularity is produced is of profound interest and of great value, so far as the patient is concerned at any rate, knowledge of what is going to happen is of far more importance. To the doctor in charge of the patient such a knowledge is therefore essential to rational practice. This is particularly true in connexion with the problem of pregnancy, where an abnormal sign like irregular action of the heart may be present and must be interpreted.

It will be found that in pregnancy we have to deal chiefly with three forms of irregularity: respiratory irregularity, extra-systoles, and auricular fibrillation.

Respiratory Irregularity.

In this irregularity, which is probably the most common of all, the pulse is continuously varying in its rate. Simultaneous records of the radial artery and jugular vein show that the auricles as well as the ventricles participate (Fig. 9). While the irregularity can be clearly demonstrated by graphic records, it is necessary that the doctor should recognise it by his unaided senses. Advantage is taken of the fact that the alterations of the pulse are dependent on the respiration (Fig. 10). The pulse rate increases during inspiration, and slows during expiration. Frequently, however, this relationship cannot be recognised in a patient who is breathing normally; for a new stimulus has, in such cases, come into play before the effects of the previous one have passed off. Thus a confused sort of rhythm is encountered. When, however, the patient is made to breathe slowly and deeply the relationship of the altering rhythm, with the different phases of respiration, can be easily determined (Fig. 10). *I wish particularly to draw attention to this method of determining the* type of irregularity, as a doctor can apply it without any mechanical assistance. The character *of the irregularity is best made out* by listening to the heart at the same time as the patient breathes slowly and deeply.

The explanation of this irregularity is that a stimulus arises during expiration which *affects the vagus and so* produces the temporary slowing. On account of this fact the irregularity is sometimes spoken of as a "vagal irregularity," while on account of its association with the breathing it is called a "respiratory irregularity." Again, as it arises from a stimulation of the motor centre of the heart in the remains of the sinus venosus, it is called "sinus irregularity," to distinguish it from irregularities arising in other parts of the heart. There are, however, more than one form of sinus irregularity. I collected a large number of cases showing this irregu-

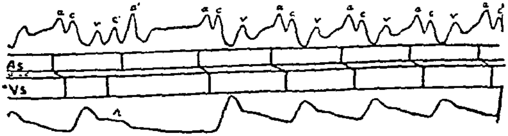

FIG. 11.—The upper tracing is from the jugular, taken at the same time as the radial (lower tracing). The interpolated diagram explains the events that happened in the heart during the period of irregular action. The down strokes in the space *As* represent the auricular systoles, and correspond with the *a* waves in the jugular tracing. The space *a–c* represents the passage of the stimulus along the *a–v* bundle, while the down strokes in the space *Vs* represent the ventricular systoles; and each corresponds with a pulse wave in the radial tracing. It will be seen that with one exception the auricular beat is followed by a ventricular beat. This one exception shows a wave *c'* in the jugular tracing, and a small wave *r* in the radial tracing, which occurs prematurely, i.e. before the auricular wave *a'*. These events represent what happens in the intermittent pulse, and show that the irregularity is due to a premature contraction (or extra-systole) of the ventricle.

larity, and found that the vast majority occurred in young people. The next most prevalent form of irregularity (the extra-systole) I found, on the contrary, to be most common in adults and elderly persons. So to make a distinction I called this "respiratory irregularity" the "youthful type," and the extra-systole the "adult type." I mention this differentiation as it has a distinct value in practice.

"Respiratory irregularity" is common in healthy young women, and in some women of maturer years, especially when there is present in the case a nervous element. It is a physiological phenomenon, indicative neither of disease nor of impairment. In no case should it be a reason for treatment or a bar to pregnancy.

The Extra-Systole.

This irregularity is due to a premature contraction of the ventricle, occurring independently of the stimulus from the auricle. It occurs usually at the same time as the auricular contraction or a little before it. Sometimes the auricle also contracts prematurely: this premature auricular beat is followed by a small ventricular contraction. Premature beats can be recognised as small beats in the pulse occurring too early and followed by a pause. Sometimes the small beat is not felt, and there seems to be a long pause in the pulse. The irregularity can thus be recognised without graphic record by feeling the pulse and auscultating the heart at the same time. When the pause in the pulse is felt the heart will give two short sharp sounds or one muffled sound, and this will be followed by a pause longer than usual (Fig. 12). A glance at the tracings and diagrams will explain the mechanism. If the pulsation in the jugular be observed during the pause of the pulse, a large wave may often be detected (Fig. 17). This is due to the fact that the auricular contraction is taking place at the same time as the premature ventricular contraction.

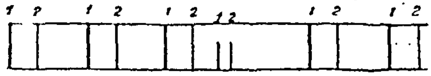

Fig. 12.—Diagram representing the sounds of the heart during an extra-systole.

The auricle cannot send its blood forward into the contracted ventricle, and so sends it back into the jugular vein.

Doctors should familiarise themselves with these clinical phenomena, as this form of irregularity and the "respiratory irregularity" constitute the great bulk of irregular heart actions. I repeat that both of them can, as a rule, be recognised by the unaided but trained senses.

My inquiries into the significance of this form of irregularity, which were pursued by watching large numbers of active people who showed it, revealed to me the fact that it is of no grave clinical significance. If heart failure did occur in people with extra-systoles, there were always other conditions present to account for it. So that, when this irregularity is the only abnormal sign it can be ignored so far as the prognosis is concerned; if heart failure is present, then the prognosis should be based on the other signs and not on the extra-systole.

So far as pregnant women are concerned I found extra-systoles present in 50 per cent. of healthy cases.* Usually they occurred at rare intervals and their detection was often accidental. Occasionally they were of frequent occurrence. In all cases the pregnancy was completed and the confinement passed with no trouble. I have in addition followed many women for 20 and 30 years, and the results justify this view.

Auricular Fibrillation and Paroxysmal Tachycardia.

The form of irregularity which is most commonly associated with heart failure in women at the child-bearing age is that due to fibrillation of the auricle. In this condition the muscle fibres do not contract in unison as in the normal beat, but each fibre twitches and contracts independently. The result is that the auricle is to all intents and purposes functionally inactive.

The Discovery of Auricular Fibrillation.

It was this inactivity which led to the discovery of the condition. I had recognised that in mitral stenosis of a progressive type changes slowly took place in the murmurs. I was therefore watching the course of the disease in a number of my patients whom I had attended many years earlier for rheumatic fever. In one case, a woman whom I had under observation for 17 years, there had for many years been present signs of auricular activity; for example, a presystolic murmur, and the wave in the jugular pulse, which I had come to associate with the beating of this chamber of the heart. There had also been present well-marked pulsation of the liver, due, mainly, to a wave caused by the auricle.

The patient was suddenly seized with great breathlessness on exertion, and developed a rapid and irregular heart (Fig. 5). When her heart had quietened down under digitalis I was surprised to find that there was, now, no presystolic murmur, nor any waves due to the auricle in either jugular or liver pulse. In fact, at the time the heart had become irregular all signs of auricular activity had disappeared. I assumed that the auricle had become paralysed, and in my early writings I described the condition as paralysis of the auricle (see Figs. 13 and 14, and also Figs. 6 and 7, The Lancet, June 18th, p. 1284).

Relation of Auricular Fibrillation to Extreme Heart Failure.

The light thrown by this case led me to search for other cases with this irregular action, and to watch other patients who suffered from mitral stenosis. As a result I found the irregularity to be far from infrequent, and I was so fortunate as to detect its onset in a number of instances. This led me to a study of heart failure in its relation to this condition. I worked also to discover the best means of combating the trouble. There followed the discovery that probably 80–90 per cent. of all cases of heart failure with dropsy and enlarged liver are due to auricular fibrillation. Further I convinced myself and others that the astonishingly good effects of digitalis are practically confined to patients with this irregularity.

Effect of Fibrillation of the Auricle on the Ventricle.

The normal rhythm of the heart (due to the production of a stimulus in the sino-auricular node at the mouth of the superior vena cava) has already been described. When the auricle passes into fibrillation it ceases to contract as a whole, and the orderly discharge of the stimulus to the ventricle is interrupted. The twitching muscle pours forth a rapid series of irregular stimuli, so that the auriculo-ventricular node is assailed by a great number of weak demands. Only certain of these—the actual number would seem to depend on the susceptibility of the auriculo-ventricular node and the bundle—pass through to the ventricle. The ventricular contraction is a normal one, but as a rule the rate of the ventricle becomes greatly increased, and the rhythm very irregular (see Fig. 5, The Lancet, June 11th, p. 1235). There may, however, be exceptions.

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* This was the percentage I found on examining 100 cases about thirty years ago. I have looked for my data, but I have lost the references and the notes of most of my cases. Among those of which I do possess records the percentage is not so high. The matter is not, however, of much consequence.

Thus, in a case in which for many years there had been a delay in the response of the ventricle to the auricle, due to a slight damage of the auriculo-ventricular bundle ("partial heart-block") and in which the rhythm was regular and the rate about 60, the onset of auricular fibrillation did not quicken the pulse. It did produce the characteristic irregularity. This patient was not conscious of the onset of the abnormal rhythm, and his response to effort was not impaired. In the vast majority of cases, on the other hand, the onset is not only accompanied by a great increase in rate, but also by a great limitation of the field of response to effort. Indeed, in eliciting the history of the condition one can often determine the moment of onset with great accuracy, for the patient will state that he was quite well until some effort—for example, hurrying up a hill—induced marked breathlessness. From that time onwards he has been breathless on slight exertion.

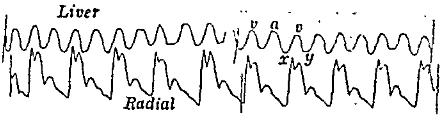

FIG. 13.—Simultaneous tracings of the liver and radial pulses in a patient with mitral and tricuspid stenosis, before the onset of auricular fibrillation. There are two waves *a* and *v* during the cardiac cycle. (See Fig. 14.)

From the fact that the heart beats are not only small and rapid, but also irregular, it can readily be understood how ineffective the circulation is bound to become (Fig. 5). Moreover, the rapid rate of the ventricle leads to exhaustion, so that heart failure speedily supervenes. This is in striking contrast to the absence of heart failure, when the rate is not increased as in the case just cited. When, in addition, there is a damaged ventricle, the rapid rate leads directly to a fatal issue.

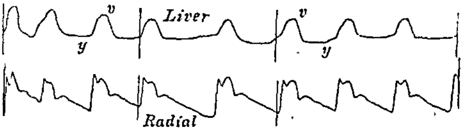

FIG. 14.—Simultaneous tracings of the liver and radial pulses after the onset of auricular fibrillation. There is but one wave now in the liver pulse during the cardiac cycle, the wave *a* having disappeared, and the presystolic murmur has also disappeared, and the rhythm is irregular. (Compare with Fig. 13.)

Principles of Treatment in Auricular Fibrillation.

Recognition of the fact, then, that the rapid rate leads to exhaustion of the heart muscle, and so to an inefficient circulation, gives us the data for applying a rational treatment. We must slow the heart. For even with auricular fibrillation the circulation is efficiently maintained when the rate of contraction is slow.

Study of the effects of digitalis and strophanthus in these cases showed that those drugs act by diminishing the rate in a most remarkable manner. I have repeatedly seen patients in dire extremity from heart failure (dropsy, orthopnœa, Cheyne-Stokes respiration), with a pulse-rate of from 120 to 150, lose all their distressful symptoms under digitalis, and that speedily. The rate would fall to 60 or 70 beats. Relapses, too, which are apt to occur, could be warded off for years by the judicious administration of that amount of the drug which maintained the rate at from 60 to 80 beats when at rest.

The Recognition of Auricular Fibrillation by the Unaided Senses.

The symptom by which the clinical observer can most readily recognise auricular fibrillation is the character of the pulse. The pulse rhythm is usually irregular, and this irregularity is of a very disorderly kind (Fig. 15, also Figs. 5, 7, and 14). In this respect it differs from most other arrhythmias. These, as we have seen, possess distinctive characters of their own. Thus, the irregularity in the heart of the young is marked by the fact that variations in rate coincide with phases of respiration; the intermittent pulse, due to extra-systoles, by the fact that the irregularity breaks in on an otherwise regular rhythm. In auricular fibrillation the length of the pauses between the beats is, as a rule, continually changing, the pauses between two succeeding beats seldom being of the same duration; moreover, succeeding beats are rarely of the same strength. The character of these phenomena will be made clear by the radial tracings in Fig. 15. These tracings were taken from five patients.

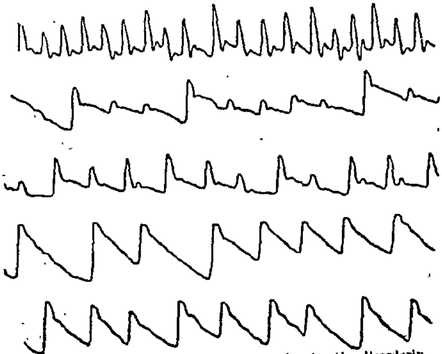

FIG. 15.—Tracings of the radial pulse, showing the disorderly irregularity characteristic of auricular fibrillation from five different patients.

Murmurs of Mitral Stenosis in Auricular Fibrillation.

I have already stated that, with the onset of auricular fibrillation, all evidences of auricular systole disappear. Thus in a patient with mitral stenosis, whose condition has been revealed by the presence of a presystolic murmur alone, or by a presystolic murmur accompanied by a diastolic murmur, auricular fibrillation causes the presystolic murmur to disappear. The diastolic murmur remains, for the reasons already given. When the heart is beating rapidly the diastolic murmur may fill up the interval between the second and first sounds, and physicians are then apt to assume that it is presystolic in type. If, however, the heart be auscultated during one of the long pauses which frequently occur, or after the rate has decreased—for example, owing to the administration of digitalis—the murmur will be found to follow the second sound, and there will be noted an appreciable silence before the first sound occurring at the exact moment at which the presystolic murmur was wont to be heard (*see* Figs. 6 and 7). This is a feature which even experienced clinicians seldom detect unless they specially seek for it.

Bearing of Auricular Fibrillation on Pregnancy.

My experience of pregnancy in women with auricular fibrillation is limited to half a dozen cases. This may seem a small number, yet if it be considered that these cases occurred at a time when I had a midwifery practice of 40 or 50 confinements a year, it will be seen that altogether there must be a considerable number. All my cases gave a history of rheumatic fever; all had mitral stenosis. In each case the advance of pregnancy was accompanied by increasing signs of heart failure—limitation of effort and œdema of the lungs as already described. In all but one, premature labour set in between the sixth and seventh months. All lived through the confinement, but none ever recovered the same degree of health as was enjoyed before the pregnancy. I actually saw none patient in two pregnancies. She made a fair recovery. In the others heart failure increased gradually till they died within two years of the pregnancy.

Judging by my own experience, I believe that though pregnancy does not produce an immediately fatal heart failure, it so weakens the organ that it hastens the fatal issue. In saying this, I recognise that my experience is limited. At the time at which five of these cases were under my care I had not recognised the nature of auricular fibrillation, nor had I learned how to give digitalis in this condition. In the one case which occurred after I had acquired this knowledge, I think I was able to help. The matter, however, requires far more investigation than I have been able to undertake. I leave it here, trusting that others, fortified by the knowledge now available, will carry out a more thorough inquiry.

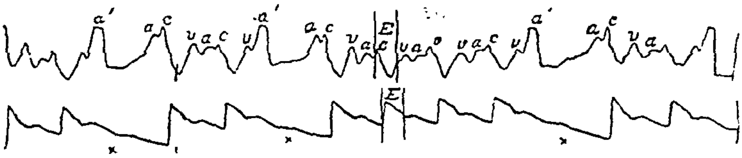

FIG. 17.—Simultaneous tracings of the jugular and radial pulses during irregular action of the heart. The auricle preserves its rhythm, there being a larger wave (*a′*) during the pause in the radial pulse. At this time there is a premature contraction of the ventricle, so that the auricular and ventricular contractions occur at the same time, and the contents of the auricle, not being able to enter the ventricle, are thrust back into the jugular, causing the larger wave *a′*.

In the meantime I would lay it down that auricular fibrillation is a bar to pregnancy. Should pregnancy have occurred, careful observation of the patient must be maintained. If the pulse rate exceeds 80 when at rest, digitalis should be given and continued until the rate falls to between 60 and 70 per minute. If œdema of the lungs, orthopnœa, or enlarged liver supervenes, the pregnancy should be terminated forthwith.

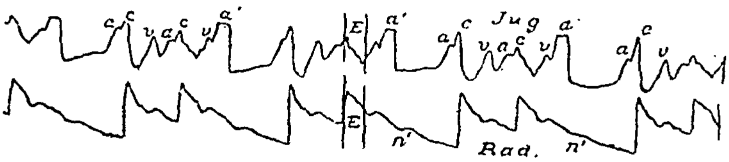

FIG. 18.—Shows the same thing as Fig. 17.

Paroxysmal Tachycardia.

There are other abnormal rhythms which may have to be considered in relation to the pregnant state. The most common of these is a condition allied to auricular fibrillation and known as auricular flutter. In this condition the auricle does not contract in the usual manner. but beats ineffectively at a very rapid rate—usually about 300 times a minute. The ventricle does not, as a rule, respond to every beat of the auricle; it often responds only to every second beat, and sometimes to a varying number of beats, so that the pulse is slow and irregular.

The condition usually arises in paroxysms. The patient is conscious of a sensation which suggests that her heart is "running away" at a great rate. This is accompanied by a sense of prostration. The paroxysm may last for a few minutes or a few hours. It subsides suddenly. A sudden onset and a sudden offset—the latter being followed by one or two forcible beats—are thus distinguishing features.

This form of paroxysmal tachycardia may occur with different types of heart trouble. Its significance in pregnancy should, therefore, be considered in relation to the presence or absence of disease. When there are no signs of disease, and the patient is well and strong between the attacks, the condition is not one of much importance. This is likely to be the state of affairs in young subjects. In the elderly, beyond the child-bearing age, the arrhythmia is often associated with disease of the myocardium, and may then be of serious significance. We may note, however, that paroxysmal tachycardia is not infrequently associated with mitral stenosis in quite young people. In such cases the physician should take into consideration what I have said in connexion with that form of disease. The presence of auricular flutter naturally adds to the gravity of the condition.

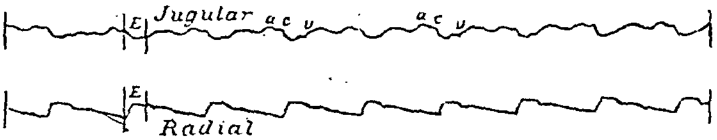

FIG. 16.—Simultaneous tracings of the jugular and radial pulses. The jugular pulse is of the auricular form.

I have had no experience of this abnormal rhythm as a complication of pregnancy. The opinion I have given is the result of the study of heart failure in connexion with auricular flutter in a large number of cases, some of which I have watched for many years.

Description of a Case of Abnormal Heart Action with Pregnancy.

I have had one case of another and rarer form of abnormal rhythm. This woman went through her pregnancy unscathed. It is partly on the inferences which I drew from her that I formed the views I have just stated.

The woman (aged 35) was pregnant with her first child. For several years previously she had suffered at times from breathlessness and irregular action of the heart. During the few weeks in which she was under my care (at the eighth month of pregnancy) the pulse was usually irregular—the degree of irregularity varying very much. When the heart was irregular the venous pulse was always large, while when the heart was regular it was barely perceptible, so much so that it was with difficulty that I could get a tracing of it (Fig. 16). Figs. 17 and 18 show the different characters of the irregularity. In Fig. 17 there are long pauses in the radial pulse (*x x x*). During these the auricular wave *a′* becomes large, an evidence that at this time the auricle and ventricle contracted together. The ventricle, however, was in systole (an extra-systole), and so the contents of the auricle could not be sent into the ventricle. They were therefore thrown back into the jugular vein. Hence the large wave *a′*. The extra-systole does not appear in the radial pulse. It is a premature contraction of the ventricle (a ventricular extra-systole). This was so small that it did not send any wave into the radial artery. Occasionally this heart would break into a series of rapid beats as shown in Figs. 19, 20, and 21. Thus there was produced a form of tachycardia whose origin is of the same nature as that of the premature ventricular beats in Figs. 17 and 18. I did not attend this patient in confinement, but I heard that she passed through it without trouble; some years after I heard that she was quite well.

THE NEUROTIC HEART.

By this term I refer to a very distinct type of heart affection in which the symptoms are due mainly to disturbances of sensation. The patients complain of pain in the left chest, usually under the breast. The pain is of a dull aching character, accompanied sometimes by "stabs." The aching varies in severity, slowly increasing and decreasing. It may last for hours; or, again, the patient may be conscious of it for days. It is not usually immediately aggravated by effort; but it may appear some hours afterwards, or, if present before, may become worse when effort is undertaken. Only occasionally is it provoked to a severe degree by effort. Attacks of great severity resembling attacks of angina pectoris sometimes arise. In these instances doctors may alarm their patients and their patients' friends by telling them that the condition is in fact angina pectoris.

It should be recognised further that these attacks of pain may come on with great severity in the absence of any apparent provoking cause.

Site of Pain and Associated Phenomena.

The distribution of the pain, while mainly confined to the left chest, may extend also into the arms and up the side of the neck. The attacks are often preceded or followed by a sense of chilliness, or cold. They are frequently accompanied by shivering resembling a rigor. There is usually present hyperalgesia of the skin and deeper tissues of the chest wall. This can be elicited by lightly pinching or pressing the left breast. In a less degree the right breast is also tender to pressure. The aching of the breast and its tenderness may lead the patient to think that there is some disease in this region.

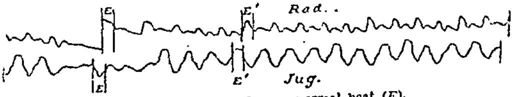

FIG. 21.—Shows only one normal beat (*E*).

These patients are liable to attacks of palpitation; and the heart's rate is sometimes unduly increased in response to effort or excitement.

When asked what sensations stop them while walking on the level, they usually reply: "A feeling of exhaustion, with a desire to sit or lie down."

Relation of the Neurotic Heart to Physical Signs.

The phenomena described above occur frequently in women; and the hearts of these women show, as a rule, no abnormal physical sign. In some, however, a systolic murmur may be detected, or an irregularity of the respiratory type or extra-systoles. The size of the heart may be slightly increased.

Those abnormal signs do not in any sense add to the gravity of the state; they are merely incidental. The condition, in short, is not due to disease of the heart—though it may be associated with disease, as, for example, mitral stenosis. It is due to some agent which increases the excitability of the whole nervous mechanism of the heart. Pregnancy can safely be undertaken by these people. It often does them a great deal of good.

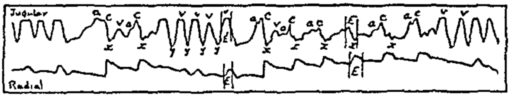

FIG. 19.—Shows a number of normal beats, with the usual waves, *a, c, v*, in the jugular, and a series of abnormal beats, small and rapid, with the waves *v* in the jugular. These abnormal beats are due to a series of independent ventricular contractions.

Conditions Predisposing to the Neurotic Heart.

There are three conditions which induce this form of cardiac weakness: (1) toxic states; (2) overwork; (3) sexual disturbances.

Toxic States.—The source of poisoning is most frequently an intestinal trouble. In every case of this sort a careful inquiry should be made into the condition of the digestive organs. The abdomen should be examined for signs of cutaneous hyperæsthesia and muscular rigidity. The presence of these latter is a sure indication of some old-standing trouble in this region. Appendicitis, gastric ulcer, adhesions around the cæcum or gall-bladder, and intestinal stasis, are among the most common conditions found. Sometimes the source of infection may be an abscess in some other part of the body, as, for example, in the antrum or at the roots of the teeth.

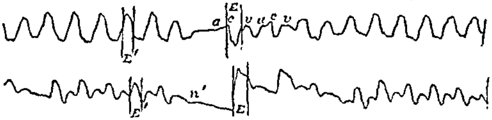

Fig. 20.—Shows two normal beats in the centre, all the rest are independent ventricular beats.

Overwork.—Women who have too long hours of labour, with little sleep, are apt to develop nervous hearts. The long nursing with disturbed nights of an ailing parent, husband, or child by a woman who has to do her housework or earn her living is an illustration in point. Any form of fatiguing work with mental worry is apt to induce the condition.

Sexual disturbances.—When no apparent cause which would account for the condition can be found, inquiry should be made into the sexual functions. For it is a fact that this type of heart is apt to be engendered in otherwise healthy young women who are married to impotent men or men who are only capable at long intervals.

One of the most extreme cases of this type which I have seen was a woman of 26, who had been married for two years to an impotent old man. Another case was a young woman who had had no intercourse with her husband, with whom she slept, because her doctor, a maiden lady of mature years, had warned her that this would be dangerous on account of her weak heart. Complete recovery followed the assumption of normal relations with her husband, and pregnancy followed.

The neurotic heart is also frequent among women, whether married or not, who indulge in masturbation. The worst case I have seen was a pretty young Jewess, whom I examined some weeks after the birth of her first baby. Not only were there present the signs of neurotic heart already described, but the heart rate was persistently increased to 130–150 beats per minute. She confessed to indulging in the habit six or eight times a day.

While dealing with this subject I may refer to another matter which bears a relation to it—the danger, or supposed danger, of coitus to women with damaged hearts. The domestic happiness of married couples is often marred by the injudicious advice of doctors who have, on account of fears as to the hearts of patients, forbidden intercourse. I have just cited an instance of the unwisdom of this advice; I have found it given so frequently that I wish to state that I know of no heart condition which should act as a deterrent when the woman feels competent. It is a matter for the woman, and not the doctor, to decide. If she finds that it comforts her, as it often does, and if she experiences afterwards nothing but a passing exhaustion, there is no ground for objection, however affected her heart may be.

CONGENITAL DEFECTS OF THE HEART AND PREGNANCY.

I have not had much experience of the complications of pregnancy by congenital defects of the heart. The opinions which I express, therefore, are based only on a knowledge of general principles. I would suggest that in doubtful cases doctors should be guided by a recognition of the state of the heart's efficiency. When the organ is enlarged, or when there is cyanosis or clubbing of the fingers, the response to effort will be so limited that it will readily be seen that pregnancy is a danger and should be avoided. When, on the other hand, the heart is normal in size, or only slightly enlarged, the response to effort good, and no cyanosis present, then, notwithstanding any physical sign—such as a murmur—which may be found, marriage and pregnancy can be allowed.

Types of Congenital Murmurs.

There are two congenital murmurs which stand out prominently. The first, and most common, is a loud, rough, systolic murmur, heard all over the heart, the area of maximal intensity of which it is difficult to determine. I do not know for certain where this murmur arises, though I lean to the view that it has its source in a small communication between the ventricles. I have met it so frequently in the young, and so rarely in the adult, that I suspect that it disappears with growth. I have, however, never been able to follow my cases long enough to see.

Patent Ductus Arteriosus.

The other murmur is due to a patent ductus arteriosus. It is a remarkable murmur, and when once recognised can always be identified easily. The tube connecting the aorta and pulmonary artery remains in these cases patent after birth. The pressure in the aorta being higher than that in the pulmonary artery, the blood passes through during the whole of the cardiac cycle and produces a continuous murmur, which is loudest at the beginning of systole, and which diminishes in loudness during diastole. It is always accompanied by a thrill over the second and third ribs on the left side. At this place the murmur is loudest.

I have only seen one case of patent ductus arteriosus in a pregnant woman. In this instance I was called into consultation to decide whether the pregnancy should be allowed to proceed and whether the patient should take chloroform. I had no hesitation in recommending that the pregnancy should be allowed to go to full term, and that chloroform should be freely given. The woman came through her confinement, and through a subsequent one, with no unfavourable incident.

I have seen a considerable number of cases of patent ductus arteriosus in the young, but only three or four in persons over 20 years of age. I have not been able to follow up my cases; but it ccurs to me that this condition also may disappear adult life.

THE MANAGEMENT OF CASES OF PREGNANCY WITH HEART DISEASE.

With an Efficient Heart.

The first duty of the physician is to decide whether or not there is any reason to expect heart failure if pregnancy occurs. The presence of abnormal signs gives no indication of the functional efficiency of the heart. That must always be estimated on the lines laid down above. If the functional efficiency is not impaired to an extent greater than that occurring in a normal pregnancy, no steps need be taken and no anxiety felt.

When, however, a woman with undoubted heart disease, such as mitral stenosis, does become pregnant the pregnancy should be allowed to continue only so long as no marked signs of heart failure are present. Such exercise as can be undertaken in perfect comfort may be permitted. But any distress, particularly breathlessness, is an indication that effort must cease.

With an Inefficient Heart.

The patient should be examined weekly for signs of heart failure, particularly for signs of œdema of the lungs as already described. If crepitations at the bases of the lungs appear, persist, and tend to increase, they may be taken as evidences of the onset of heart failure. There will also, in such cases, be present a great limitation of the field of response to effort—breathlessness being induced on slight exertion. The patient should be confined to bed or couch, and her activities reduced to a minimum. She should be encouraged to sit up or lie propped up in bed, since lying down, by restraining the movements of the ribs, tends to hamper the circulation in the bases of the lungs. At times, during the day, she should be made to breathe deeply, in order to assist the right heart in expediting the flow through the lungs.

Management of the Labour.

If heart failure is kept in check the pregnancy can be allowed to go to full time. If often happens that labour sets in, in these cases, about the seventh month; so that, as a rule, the birth is accomplished with little stress on the heart. It was my custom to give chloroform at an early stage of labour—light anæsthesia at first. My object was to restrain the "bearing down," which taxes the heart heavily. When the labour had advanced so far as to justify the use of forceps I pushed the chloroform to complete anæsthesia and delivered. In this way the straining of the last stage was avoided.

I gave chloroform freely to my midwifery cases, and never had any trouble. It is possible that "twilight sleep" may be better than chloroform, but I have no experience of it.

Indications for Shortening the Pregnancy.

When the heart failure is so extreme as to threaten life, intervention is necessary. Premature labour or miscarraige should then be induced.

Those patients in whom I induced miscarriage in the third or fifth month suffered from mitral stenosis. I had attended them in previous confinements which they had come through with difficulty—the heart failure being so extreme that it was manifest that another pregnancy would probably prove fatal. In nearly all my cases of mitral stenosis which carried to the later months premature labour set in spontaneously.

Medicinal Treatment.

Medicinal treatment by drugs of the digitalis group is not satisfactory unless auricular fibrillation is present. I have rarely found any benefit from these drugs in heart failure in mitral stenosis, so long as the rhythm remained normal. If the rate of the heart is much increased, however, digitalis may be given a trial, for sometimes it does slow the heart when the rhythm is normal. It is in auricular fibrillation that the good effects of the drug are obtained. Here heart failure is nearly always associated with a rapid rate, many of the beats being ineffective. Digitalis slows the heart, and the individual beats become strong and effective. The circulation is thus at once greatly improved. When the heart responds to digitalis, and the rate falls to 70 or 60, the drug should be suspended, and only resumed when the rate begins to increase. The quantity sufficient to keep the rate about 70 should be determined by giving and withholding the drug during a period of a few weeks. Thereafter the patient should continue for the rest of her life to take that quantity which keeps her heart beating at a moderate rate.

I have found the tincture of digitalis so satisfactory that I rarely recommend any other form. The dose should be fifteen drops four times a day, and the effect should be looked for on the fourth to the seventh day. The symptoms of overdose are nausea or vomiting, or diarrhœa, or a tight feeling of distress across the chest or a great fall in the rate. When any of these symptoms appear the drug should be stopped at once. It should be cautiously resumed when they disappear. In this way digitalis can be given without fear of untoward result.

General Management.

It is needless to dwell upon the general management of such cases. Patients must, of course, avoid conditions which throw a strain upon the heart—as, for example, mental worry, straining at stool, and digestive troubles. In regard to digestion, flatulence is often a distressing complication. It can best be avoided by taking meals in a dry state so as to compel thorough mastication. Meals should also be small in quantity and frequent.

Sleep must be obtained during the pregnancy. If it does not come naturally, then the milder hypnotics should be given, beginning with the bromides. If these fail, some of the tar products should be tried. If, in spite of these, sleeplessness persists, chloral or opium, or one of its derivatives, may be cautiously administered.

SUMMARY.

As the danger attending pregnancy in women with heart disease is the occurrence of heart failure, the physician must keep clearly before him the symptoms by which this can be recognised.

The absence of a clear conception of the nature of these symptoms has too often led to a misunderstanding of their significance. No sign manifested by the heart itself gives information as to the functional efficiency of the organ, and consequently the signs of heart failure must be looked for in other directions and more especially in those structures whose blood-supply is likely to be reduced by the weakening of the circulation.

Extreme heart failure is shown by such signs as dropsy, enlargement of the liver, œdema of the bases of the lungs, or cyanosis.

Early heart failure may be revealed by no sign when the body is at rest, and may only be discovered by distress evoked when some effort is made which the patient was wont formerly to perform in comfort.

The signs of distress, so far as women in the child-bearing period are concerned, are breathlessness and palpitation. Pain on effort may be present in certain cases of mitral stenosis and aortic disease; but, as a rule, the pain of grave heart failure is a sign which occurs much later in life.

From this it follows that no single sign shown by the heart itself, however abnormal it may seem, should be a bar to pregnancy.

Systolic murmurs, no matter in which area they are loudest, should never be a cause of anxiety in pregnancy. If they occur in hearts which show no other abnormal sign, and if the patient's response to effort is good, they should be ignored. If they are associated with other signs of heart disease, the prognosis should be based on these other signs and not on the systolic murmurs.

The same rule applies to the irregular actions of the heart due to respiratory arrhythmia and extra-systoles.

In women with easily excitable hearts, who suffer at times from pain of varying degrees of severity (the neurotic heart or the toxic heart), when the organ is normal in size, or only slightly enlarged, the heart trouble constitutes no bar to pregnancy. This applies whether systolic murmurs are present or not.

The form of heart disease which gives most occasion for anxiety in pregnant women is mitral stenosis. This usually has followed an attack of rheumatic fever. In such cases great care must be taken to differentiate between dangerous and not dangerous forms of the malady. The latter include instances in which the cicatrising process, which produces the stenosis, is stationary or is only progressing slowly. Such slow progress is shown by the character of the murmur. If there is present ten or fifteen years after the causative attack of rheumatic fever only a presystolic murmur, and if the heart's size is normal, its rate regular, and the response of the patient to effort good, then pregnancy may be undertaken with fair prospect of safety.

If, on the other hand, there is present, within a few years of the causative attack of rheumatic fever, a diastolic murmur as well as a presystolic, there will be danger. This will be particularly the case when there is evidence also of the heart muscle being damaged—i.e., enlargement of the organ and much distress on effort. When in addition to the mitral stenosis there is fibrillation of the auricle, pregnancy should be forbidden. If pregnancy has taken place, then the case should be watched; and if grave signs of heart failure occur, the pregnancy should be terminated.

In cases of aortic regurgitation, if the heart is normal in size and the response to effort is good, pregnancy may be undertaken. If, on the other hand, the ventricle is much hypertrophied, and there is a marked "Corrigan" pulse, the probability is that the heart will be so permanently impaired that it will cripple the patient severely if she gets over her confinement.

THE EPIDEMIOLOGY OF MEASLES IN A RURAL AND RESIDENTIAL AREA.[*]

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SINCE February, 1902, measles has been compulsorily notifiable in the landward portion of Renfrewshire. This area is administered by one medical officer of health, working in two districts, first and second. The first district is largely suburban, residential and industrial, with rapidly increasing population, while the second district is mainly rural and the population has increased slowly. The circumstances have therefore been fairly suitable for studying not only the influence of notification and administrative measures on measles under different conditions of environment, but also any features of the epidemiology of measles which may be peculiar to populations of low density. The period of 20 years, 1893 to 1912, has been selected for this purpose, and the writer is indebted to Dr. A. Campbell Munro, consulting county medical officer, for access to the records of these years and for guidance in their compilation.

It may be said at the outset that measles has been seriously regarded in Renfrewshire. Notification has not been an end in itself, but only the beginning of concerted preventive measures and propaganda aiming at control of the disease. The writer is satisfied, from an intimate knowledge of the administration in Renfrewshire, that every practicable means of controlling measles recognised during the period under review was applied wholeheartedly.

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[*] Being the substance of a paper read before the Epidemiological Section of the Royal Society of Medicine on Feb. 25th, 1921.

In a previous paper[1] an effort has been made, with limited success, to demonstrate the effect of notification in Renfrewshire, by comparing the deaths from measles there and in adjoining administrative areas. So far as they went the figures quoted indicated that notification was an advantage; but the absence of the data which notification affords is an obstacle to any accurate comparison of the behaviour of measles in an area where it is not in force with one in which it is. In the course of the present inquiry any internal evidence for or against the value of notification has been sought. The main purpose, however, is to put on record the observed facts of the incidence and fatality of measles in an area of this character. No detailed information from a county area appears to be available in medical or epidemiological literature and the importance of obtaining it justifies notification, from the scientific point of view, even if no other benefit can be proved.

Periodicity.

If the monthly incidence of measles is traced in Renfrewshire throughout the years since 1891, the long and short waves, now recognised as characteristic features of the disease, are clearly seen. The long wave seems to have a period of about 20 years, although the duration of the observations is not sufficient to make this certain. The biennial period is very pronounced at the summit of the long wave, but tends to be lost in its trough. The usual spring-summer incidence occurs. The form of the waves fits fairly well Brownlee's theory of recurrent vitality of the virus at intervals of nearly, but not quite, two years.[2]

The practical point, however, is that there is fair correspondence between the behaviour of measles in the two districts and in the adjacent city of Glasgow. There is therefore fair ground for assuming that a common strain or strains of measles virus inhabit these areas and that further comparison of the statistics of measles between them is permissible.

Death-Rates.

In Table I. the mean death-rates from measles in certain periods of ten years are shown. The mean death-rate from measles in Renfrewshire has not been high in any of these periods, and it is also apparent that notification was not followed immediately by any decline. But the marked fall in both districts during the last ten years is striking in view of the fact that several years of this period were included in the summit of a long wave when a high death-rate might have been expected. It remains to be seen whether this decline is attributable to change of incidence or of fatality.

TABLE I.—*Mean Annual Death-Rates from Measles per 1000 of the Population in Certain Decennia.*

—	District I.	District II.	County.
1881–1890 ..	0·26	0·20	0·24
1893–1902 ..	0·27	0·21	0·25
1903–1912 ..	0·19	0·10	0·16

Case-Incidence.

The mean case-rates in two periods of ten years during which notification was in vogue are shown in Table II. The case-rate has declined in both districts, but to a much less extent than the death-te has fallen. The latter decline is therefore not lained by the former. The fact, however, that case-rate has fallen at all is significant in view of the fact, already mentioned, that the second period was exceptionally favourable to high incidence.

TABLE II.—*Mean Annual Incidence of Measles per 1000 of the Population.*

—	District I.	District II.	County.
1893–1902 ..	22·13	18·68	20·73
1903–1912 ..	20·24	17·04	19·21
1893–1912 ..	20·99	17·83	19·87

It would seem to be fair to give at least some of the credit to notification and preventive measures.

Fatality.

For the same periods of years the mean case mortalities are shown in Table III. A marked decline in fatality has occurred which appears to be of real significance so far as errors of chance are concerned and which accounts for the difference between the fall of the death-rate and of the case-rate. There may have been some failure of notification in the earlier years which would have the effect of exaggerating the difference of fatality and of diminishing the difference in the case-rates. In the opinion of the writer, this fallacy is not great in the Renfrewshire figures and the main feature of the period of notification, preventive measures, and propaganda has been great diminution of the fatality of measles.

TABLE III.—*Mean Fatality per 100 Cases.*

—	District I.	District II.	County.
1893–1902 ..	1·23	1·14	1·20
1903–1912 ..	0·92	0·60	0·83
1893–1912 ..	1·05	0·88	0·99
ϵ_{12}	0·16	0·21	0·12

It will be observed that the fatality of measles is lower in the rural second district than in the first, which is more densely populated. The comparison may be carried beyond the county, as in Table IV.

TABLE IV.—*Fatality per 100 Cases of Measles in Several Districts.*

Urban District, 1892–4[3]	6·1
Glasgow, 1908[4]	5·1
Edinburgh, 1880–1901	3·5
Aberdeen, 1883–1902[5]	3·3
American States, 1914[6]	1·7
Willesden[7]	1·3
Renfrewshire, *1893–1912*	1·0

Roughly, the fatality falls as the density of population diminishes. Many factors have to be considered such as age-distribution of the population, social status, higher resistance to disease of the rural child, immunity from complications and varying efficiency of administration, and some of these will be dealt with later. But some other explanation seems to be required to account for the variation of fatality not only between town and county but also of excessive fatality in isolated epidemics occurring in institutions, in armies and in "unsalted" populations many of which are recorded in literature.

As illustration, reference may be made to the behaviour of measles among the soldiers of the Highland Division at Bedford in 1914–15, a chart of which has been kindly lent to the writer by Colonel Dewar. There is no evidence that measles was more than usually fatal to the civilian population at that time, but its mortality among these susceptible Highland soldiers was 12·4 per cent. The first cases were infected from civilians and the fatality in October (8 cases) and November (79 cases) was nil and 2·53 per cent. respectively. Later, however, when other soldiers were infected from these men the fatality rose to 13·82 per cent. in December and 15·62 per cent. in January. It is not sufficient to y that the "unsalted" character of this Highland pulation was the cause of the excessive fatality; at is not the experience among similar immigrants Glasgow infected at random from the general pulation. Unhygienic conditions for the patients obably did exist but not more so in the later stages.

It is suggested that the explanation tentatively ven by Whitelegge[8] is *the correct one*—viz., that e virus of measles is intensified under circumstances hich favour rapid transmission from person to erson in a highly susceptible population. As the portunity for rapid transmission is clearly greater cities and towns than in rural districts, the fference of fatality in such areas may also be due this cause.

Incidence and Fatality According to Age.

It has been shown that the fatality of measles, respective of age, has been higher in certain urban eas than in the county of Renfrew. This might due partly to a difference in age-incidence. The oint is illustrated in Table V. If these readings are

TABLE V.—*Mean Annual Case-Rates per 1000 of the Population Living at Several Ages.*

Age.	Renfrewshire.	Aberdeen.	Glasgow (1908).
–1	41	44	73
–2	81	86	142
–3	94	86	174
–4	96	79	166
–5	99	75	165
5–10	75	49	49
10–15	13	4	
15 and over ..	1·0	0·6	0·6

harted the contrast between incidence in town and ounty is well brought out. *In the county the age f attack is delayed.* Expressed otherwise, the roportion of all cases of measles which occurred at ges under 3 years (the most fatal) was 24·75 er cent. in Renfrewshire, 33·32 per cent. in Aberdeen, nd 34·50 per cent. in Glasgow. This, however, xplains only partly the difference in fatality already iscussed.

It should be noted that in Renfrewshire, as in berdeen, there is a sudden excess of incidence in he sixth and seventh years of life—i.e., at the age f entering school. This indicates the effect of chools in exposing susceptible children to measles nd justifies the attention given to this mode of ransmission in Renfrewshire, where closure of infant lasses has been regularly applied whenever departmental inquiries have shown that such classes were ikely to have been infected.

If such methods were successful they should in ourse of time delay the age-incidence of measles. able VI. has been prepared to test the result in

TABLE VI.—*Mean Annual Case-Rates per 1000 at Several Ages in Separate Decennia.*

Age.	District I.		District II.	
	1893–1902.	1903–1912.	1893–1902.	1903–1912.
–1	50	53	35	39
–2	85	101	84	71
–3	103	105	88	78
–4	101	108	91	84
–5	106	114	91	86
5–10 ..	86	81	70	65
0–15	13	11	15	17
5–20	3	2	5	3
0 and over ..	1	1	1	1

he two areas of Renfrewshire. In the first place, his table shows that the more rural district has a ower incidence at all ages under 10 years but higher above that age. In this district, too, there has been a decline in the case-rate at ages under 10 in he second decennium and a slight transference to he age period 10–15. In the first district, however, exactly the opposite movement has occurred, the younger children being more heavily attacked. The contrast may be expressed briefly in terms of the mean age of all cases under 20 years of age. In the first district the mean age fell from 5·35 years in 1893–1902 to 5·16 years in 1903–1912, while the corresponding figures for the second district were 5·94 and 6·09. The conclusion may be drawn, therefore, that in this important respect the efforts of the Health Department have failed in the first district but have had some success in the second. The further inference can be drawn that the greatly reduced fatality in Renfrewshire has not been mainly due to more favourable age-incidence of the disease in the second ten years.

The fatality of measles at various ages *of life* in different places is shown in Table VII. The general trend is similar in the four places, but *at each age* fatality in the county is much lower than in the large cities, and is approached only by that in Willesden. It is evident that whatever influences in the less densely populated areas conduce *to low* fatality are exerted equally at each age of life, and the comparatively low mortality in Renfrewshire is not entirely, or even mainly, explained by favourable age-distribution of the cases.

TABLE VII.—*Fatality per 100 Cases at Several Ages.*

Age.	Renfrewshire.	Aberdeen.	Glasgow.	Willesden.
–1	4·3	13·9	16·2	2·8
–2	4·6	10·0	18·5	5·0
–3	1·4	3·4	5·3	3·0
–4	0·5	1·6	2·5	1·5
–5	0·2	0·9	1·3	0·2
5 and over	0·2	0·5	0·7	0·3

Influence of Social Condition.

For want of a better measure of social condition the size of house occupied has been adopted as in other similar inquiries.[4] [5] So far as incidence of the disease is concerned the population in small houses is most heavily attacked. For instance, for the years 1910, 1911, and 1912, the rates per 1000 of the population were 28 in one-apartment houses, 36 in two-apartment, 19 in three-apartment, and 13 *in houses over this size.* The records of Glasgow, which are similar, show that the difference is not entirely due to the larger population at susceptible ages in small houses, but similar census information *is not available* to confirm this in Renfrewshire.

That fatality is also connected with size of house is shown in Table VIII. The fatality falls consistently

TABLE VIII.—*Fatality per 100 Cases in Houses of Various Sizes.*

Size of house.	Renfrewshire.	Aberdeen.	Glasgow.
1 apartment ..	1·85	6·8	9·2
2 apartments ..	1·24	3·0	4·6
3 apartments ..	0·69	1·8	2·5
4 apartments and over	0·31	0·9	1·5

as the size of house increases. In Scotland, however, the *occupants* of one- and of two-apartment houses belong practically to the same social grade, and it is probable that the heavier mortality in one-apartment houses is mainly due to the larger proportion of young children among the occupants. This view is strengthened by examination of the fatality-rates among children in Renfrewshire under 3 years of age, which are 3·7 per cent. in one-apartment, 3·7 per cent. in two-apartment, 2·5 per cent. in three-apartment, and 1·1 per cent. in larger houses. The general rule, however, holds good even at these ages that fatality diminishes as social station improves.

Table VIII. also completes the demonstration that Renfrewshire's low fatality is not due to better social conditions of the patients, just as it has been shown not to depend on favourable age-distribution.

The Administrative Control of Measles.

Any measures for this purpose must have regard to the channels of infection. Children are infected in their homes or at school or at random. The fact is that most children of school age, especially in rural districts, are infected at school, and it is through the school that any measures to control measles have usually been applied.

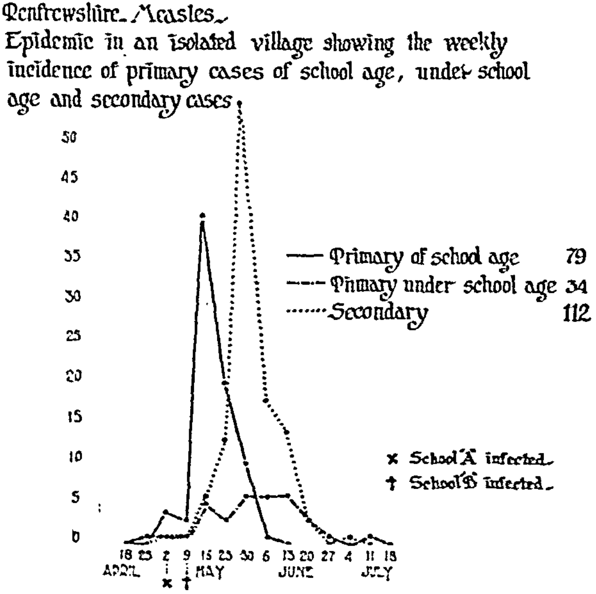
The effect in Renfrewshire of domiciliary and of extra-domiciliary infection on the age-distribution of cases is shown in Table IX. Whereas, only 34·6 per cent. of the primary cases are under 5 years of age, 65·9 per cent. of the secondary cases occur at these ages—i.e., before entering school, and the sudden aggravation of incidence among primary cases in the sixth and seventh years is further evidence of the influence of schools.

TABLE IX. — *Age-Distribution of 19,567 Cases, Showing Primary Cases in Families Separately from Secondary Cases.*

Age in years.	Primary.	Secondary.	Age in years.	Primary.	Secondary.
–1 ..	334	513	–7 ..	2058	419
–2 ..	738	1029	–8 ..	1505	306
–3 ..	900	1158	–9 ..	955	300
–4 ..	1017	1181	–10 ..	536	212
–5 ..	1180	1086	10 and over ..	1067	642
–6 ..	1740	691	Total ..	12,030	7537

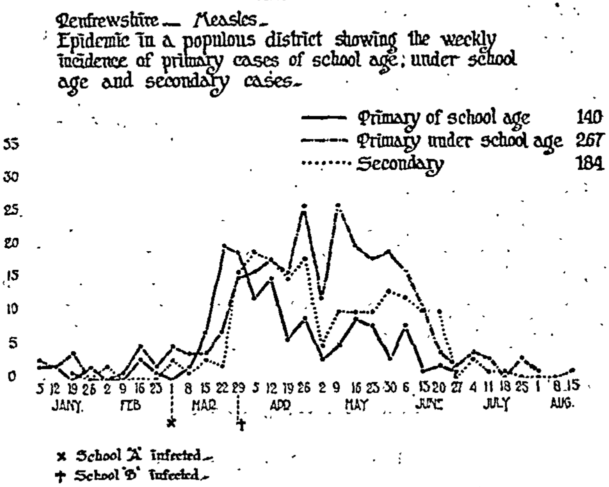
This influence is also illustrated by Charts 1 and 2, which show for two typical districts the course of a measles epidemic as it involves the school population and the children under school age. Chart 1 shows the course of an epidemic as it affected primary cases among school children, other primary cases and secondary cases in a relatively isolated village. In the first three weeks most of the cases were primary cases of school age, while secondary cases formed the bulk of those sickening in the last four weeks. Primary cases under school age formed a small proportion at any time. The epidemic burned itself out in eight weeks. Only half the cases were infected outside of their homes, and less than one-third of these were under school age. This form of epidemic is characteristic of the incidence of measles in isolated villages.

CHART 1.



In the other epidemic (Chart 2) a populous area on the outskirts of Glasgow was involved. Sporadic cases were occurring until the infant class of a school was infected on March 4th, an outburst of school primary cases following a fortnight later. In another fortnight a crop of secondary cases occurred and, coincidently, the incidence of primary cases under school age increased. The fall of school primary cases was delayed by infection of a second school and the curve of secondary cases followed more or less the same course; but the primary cases under school age continued to occur in increasing numbers and formed the bulk of the latter half of the epidemic. More than two-thirds of the cases were primary and two-thirds of these were under school age. This chart is typical of the course of measles in populous places.

CHART 2.



Clearly, it would be difficult to control an epidemic of the latter type by efforts directed at the school. Random infection plays too large a part. On the other hand, the epidemic traced in Chart 1 indicates that control through schools may be possible. Dr. Campbell Munro[9] and others have cited many instances in which they were satisfied that school closure had been effective in practice, and the statistics as to mean age, &c., quoted above suggest that such measures have been of value in the second district of Renfrewshire, where small isolated communities predominate. The results in Renfrewshire, however, which probably represent the best that can be obtained by school closure, indicate only partial success. In any case such measures can only indirectly protect the young children who constitute the bulk of the secondary cases and among whom the fatality is high.

The method suggested by Brownlee[10] of transferring exposed susceptible school children from homes where there are younger susceptible children aims at a solution of this problem. It presents serious administrative difficulties and would probably fail in populous districts, but an area such as the second district of Renfrewshire would be a suitable field for an experimental trial of the method.

Hospital treatment and home nursing can provide effectively for only a limited proportion of the cases lying ill at any one time during an explosive epidemic. In any case such methods can have little or no effect on the incidence and it has not been proved that they diminish the fatality to a greater extent than continuous propaganda as practised in Renfrewshire.

Conclusions.

1. Notification of measles has been justified in Renfrewshire, not only by the epidemiological information it has furnished, but also by its effect on mortality from the disease.

2. It has not materially affected the case-incidence in the more populous districts, but there is evidence that the rural districts have benefited also in this respect.

3. Apart from any administrative measures, age-incidence, or social conditions, there are factors rendering measles a much less fatal disease in rural than in urban areas.

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THE NECESSITY OF NOTIFICATION OF MEASLES.

By REGINALD DUDFIELD, O.B.E., M.A., M.B.

WITH our present knowledge of measles the only uses to which we can put any information of the occurrence of the disease are: (1) The segregation of susceptible contacts—the "O.M.'s"—attending the public elementary schools; and (2) the bringing into operation of any provision for the nursing of patients in their homes, made by the local authorities. I do not wish to absolutely exclude such ancillary procedure as removal to hospital, but I doubt whether such removal should not be considered as part of the nursing scheme referred to above rather than as a method of preventing the spread of infection. I pass over the desirableness of having complete information of the prevalence of the disease for the study of its epidemiology, &c.

It is customary to decry compulsory notification of measles partly on the score of expense and partly because it is alleged that notification in the past has failed to yield any useful results. The experience in Aberdeen is the stock argument brought forward against proposals to make the disease notifiable.

No one will question the importance of early information of cases reaching the officers responsible for dealing with the disease. I use the phrase "dealing with" rather than "controlling," but I do not wish it to be understood that I regard the disease as beyond control. I feel fairly confident that some method of more or less complete control will ultimately be evolved, but that question I do not propose to take up on this occasion. If compulsory notification be ruled out the only source of information on which any reliance can be placed is that obtainable through the schools. I shall show that that channel is unsatisfactory for two reasons.[1] In the first place, the cases reported form only a fraction of the full total, and in the second, the interval which occurs between the onset of the disease and the forwarding of the report of the case, is, with the present machinery, so long that the success of segregation is jeopardised and the efficiency of any provision of nursing seriously impaired. As regards segregation, I am assuming that it must be put into operation at the latest eight days after the onset of original case, or, having regard to the uncertainty of the first day of infectivity, four days after the appearance of the rash. As to nursing, I think that any delay may be dangerous, but for argument's sake I will assume that an average delay not exceeding six days from the onset, or two days after the appearance of the rash, may be hazarded with a certain degree of impunity.

Dr. W. H. Hamer advocates school reports in preference to notification, and the Ministry of Health took the same line in the circular letter of December, 1919. I have tried both systems and have come to the conclusion that notification is the only reliable source of information. Careful records of the prevalence of the disease in Paddington have been kept since 1903—from 1903 to March, 1914—based on school reports ("Form 81") and from the latter date on notification.

Notification was initiated in Paddington in March, 1914, by an Order[2] made by the Borough Council under Section 56 of the Public Health (London) Act, 1891, the Order being in the first instance for three months, but subsequently made without time limit. When the Measles Regulations of 1915 came into operation the Council's Order was rescinded (February, 1916) at the request of the Local Government Board. In December, 1919, the Ministry of Health announced that the Measles Regulations, 1915, would be rescinded as from January, 1920. The Council thereupon obtained from the Ministry a new set of Regulations, the "Measles (Paddington) Regulations, 1920." Nominally there was no interruption in notification, actually the announcement in the daily and medical papers of the rescission of the Measles Regulations, 1915, caused considerable uncertainty in the mind of the profession, and a good deal of explanatory correspondence was necessary to clear up the ambiguity.

The local records of the disease cover, therefore, 18 years, those for 11 years (1903-13) being based on school reports, and those for the remaining seven years (1914-20) on notification—both sources of information being supplemented by inquiries made by the women inspectors. During the 18 years 27,280 cases of measles have been known to me, or an average of 1525 per annum. During the first period—the 11 years of school reports—the cases totalled 12,567, with an average of 1142 per annum. For the other seven years—notification (not uniformly complete) in force—the total number of cases was 14,713 and the yearly average 2102, or 960 more than in the former period. Such figures suggest that something over 40 per cent. of the cases were not reported. I say "suggest" because I have reason to think that the disease was more prevalent during 1914-20 than in 1903-13.

A comparison of the rates of fatality recorded during the two periods is even more "suggestive" of the deficiencies of school reports. The deaths during 1903-13 averaged 43 per annum, those during 1914-20, 40, and the fatalities for the two periods were 3·73 and 1·91 per cent. In other words, the average fatality during the years of school reports was 51 per cent. above that for the notification years. So far as I am aware there is no reason for assuming that the fatality during the former period was higher than that during the latter. I incline to think that it was, on the whole, lower. In any case fatalities of 2·37, 2·68, and 2·15 per cent. were observed in 1915, 1917, and 1918.

Without giving a definite opinion as to the measure of the defect, I think it will be agreed that reliance on school reports entails a serious deficiency in the number of cases reported. Having regard to the fact that a double system of reporting—viz., by school teachers and by doctors—has been in force since 1914, it will be of interest to see to what extent the school teachers' reports precede the doctors'. During the seven years in 1522 instances—11·0 per cent. of all known cases—the school reports were received before the notification certificates. The highest percentage in any year was 18·8 (1914, notification in vogue for some months only) and the lowest 7·7 (1917). In 1920 the percentage rose to 14·4, but in that year notification was rendered less complete owing to the rescission of the Measles Regulations, 1915.

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[1] There is one incurable defect associated with a system based on school reports. I refer to the intervention of the holidays, when naturally, all such reports cease.

[2] The Order made in 1914 required all cases of measles to be notified, excluding German measles. The Measles Regulations, 1915, called for notification of first cases only of measles and German measles, while the local Regulations, 1920, cover all cases of both diseases. I have limited my statistics to measles (*Morbilli*).

Before considering the question of delay attaching to school reports it will be well to touch on that of the completeness of compulsory notification. It is frequently argued that many cases of measles receive no more than domestic treatment and that in consequence, even with compulsory notification, a fairly large number of cases will never be reported. In part that difficulty is met by the fact that parents are required to notify cases as well as medical practitioners. If a case be traced in which no doctor has been in attendance, and for which no notification has been received from the parent, a letter is addressed to the parent calling attention to the omission and warning him of the penalty to which he has rendered himself liable.

During 1920, out of 1946 known cases there were 141 (or 7·2 per cent.) which were not medically certified, being reported by school teachers only.[3] I will not venture to say that those 141 cases give the full measure of failure of notification, but I can say that I believe that very few primary cases escaped my knowledge. The 141 instances referred to above have been analysed to show the intervals between the date of onset of the disease—determined by the appearance of the rash—and the date on which the school report was received. The results are shown in the appended table. As a basis of comparison with compulsory notification the same facts have been taken out for 346 cases occurring in the poorest localities in the borough, where action must be prompt to be effectual.

Days after Appearance of Rash.

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	17	18	19	21
		(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(21)	(22)	(23)	(25)
School forms ..	—	19	27	26	13	11*	8†	8	3	4	4	6	2	1	4	2	2	1	—
Notification ..	10	92	125	67	28	14*	7†	1	—	2	—	—	—	—	—	—	—	—	1

Totals: School forms, 141; notification, 347.

* Limit for segregation of "O.M.'s." † Limit for nursing scheme.

As regards segregation of contacts, a delay extending beyond the fourth day subsequent to the appearance of the rash has been postulated as rendering segregation useless. If that be granted, it means that 56 out of the 141 cases—39·7 per cent.—were reported too late to allow the "first crop" of secondary cases to be excluded from school before they became infectious. Compare that proportion with the proportion of notified cases. In the latter group only 24 (6·9 per cent.) were reported too late, even with the inclusion of the odd case of 21 days.[4] For the school cases the average interval for the 141 cases was 4·31 days from the appearance of the rash, or over eight days from first infectivity, whereas for the notified cases the intervals were—from rash 2·3, or from first infectivity just over six days.

As regards nursing, a delay of two days after the rash has been allowed for argument's sake. Such limit includes only 46 (32·6 per cent.) of the school cases, and 227 (65·6 per cent.) of the notified cases. Comment appears to be unnecessary.

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[3] *These 141 cases were primary cases. There were in addition 341 secondary cases which were not medically certified, but were reported by the women inspectors.*

[4] As a matter of fact, the three cases reported 7, 9, and 21 days after onset were accidents, the practitioners concerned usually reporting very promptly.

Industrial Welfare Society.—A conference on the organisation of industrial canteens will be held to-day (Friday), at Caxton Hall, Westminster. In the morning an address will be given by Mr. Arthur Agar, late Chief Organising Inspector of Munitions Canteens, and in the afternoon a discussion will be opened by Sir Francis Towle.

A FURTHER CONSIDERATION OF SANATORIUM CONTROLS.

By E. WARD, M.D. Camb., F.R.C.S. Eng.,
TUBERCULOSIS OFFICER, SOUTH DEVON.

The discussion following my recent paper, a Controlled Study of Sanatorium Results, calls for some reply. So far nothing has appeared in the correspondence which calls for a reconsideration of my views. Single cases prove nothing; any of the numerous special treatments for tuberculosis advocated in the past have been supported by cases, most of them genuine, which seem to uphold the originator's contentions.

Dr. Campbell Thompson tells us, "Other treatment of pulmonary tuberculosis stands to sanatorium treatment somewhat in the relation that moonlight does to sunlight." Allowing for poetic licence (sunlight is to moonlight as 600,000 to 1) he means presumably that sanatorium treatment must be regarded as several times more efficient than other forms of treatment. Dr. Noel Bardswell, investigating the mortality of pulmonary tuberculosis after treatment at Midhurst, finds that patients at the average age of 33, discharged from Midhurst with the disease "arrested," have the same expectation in life as an unselected individual aged 60, while patients at the same average age, discharged "much improved," have the same expectation as an unselected individual aged 74. This, says Dr. Thompson, is sunlight. It can hardly be denied that the treatment at Midhurst is as good as any in the country. Moreover, their patients are drawn from an intelligent class, and both come from, and return to, far better surroundings than the ordinary working-class sanatorium patient. We are driven, then, to conclude on Dr. Thompson's basis, that patients at an average age of 33 who have not been to a sanatorium, but whose disease appears "arrested," will have the same expectation in life as an ordinary individual aged 130, and a patient aged 33 similarly "much improved" the same as an ordinary individual aged 212. An absurdity which suggests that Dr. Thompson's conclusion may be erroneous.

The only way to get light on this difficult matter is to control results from sanatorium treatment by other results, and this is what I have attempted to do. One critic accuses me of taking a gloomy view of tuberculosis, but I *cannot accept this.* If sanatorium results, as represented by the Midhurst figures, show the best that can be done for patients, and those that do not go there fare much worse, as my critics believe, the prospect for sufferers is gloomy indeed; but if our sanatorium results can be greatly improved by altered methods, as I suggest, and if patients not going there may yet do quite well, the outlook is surely less gloomy.

Methods of Investigation.

I am anxious not to overcall. My inquiry dealt with only one district, with patients drawn from the working classes, sent to sanatoriums for an average period of three and three-quarter months, and treated by modern methods. It referred not to immediate results, but to those observed at the end of two or four years. I have no ground for contradicting those who say that three months is an insufficient period, and that no results can be expected in so short a time, but this is the standard period of sanatorium treatment in this country for working-class patients. Dr. E. E. Prest may be quite right in stating that modified methods give better results. I do know that he is a progressive thinker in these matters and would not hesitate to adopt any improvement which occurred to him, no matter how unconventional it might be. But compared with the reports of various sanatoriums published from time to time, my sanatorium results, without the controls, seem favourable.

Dr. Thompson says, "Dr. Ward writes sarcastically that if patients were kept at the institutions for a year or more we should have our authorities urging for a period of three or five years instead of one." Yet Dr. J. Crocket the following week says exactly this, "Many patients require three years, and not three months." My figures do not disprove this, but if sanatorium treatment is to be used, and it becomes a question of three years' treatment to achieve arrest, it is certain that considerably under 10 per cent. of the class of patient here considered would submit to it, possibly under 1 per cent., quite apart from the enormous expense involved. So we are driven to Dr. Noy Scott's proposition, who "cannot help thinking that if much of the money which has been spent on sanatoriums had been used to enforce by-laws regarding fresh air and sunlight in *cottages* we should have had better results." I should prefer to utilise modified sanatoriums partly as hospitals and partly as preventoriums. There is a great deal in the suggestion made in THE LANCET editorial of April 16th, "We would venture the prophecy that sanatorium treatment will more and more develop on the lines of prevention in the young, *than 'cure'* in the adult."

To classify patients according to the intensity of the disease rather than the extent would be desirable; for some time I considered how it might be done, but came to the conclusion that it was not possible in my series, for only observation in hospital could enable such a classification to be made. This does not tell unduly against the sanatorium, as acute and pyrexial cases were not sent there. Moreover, nearly all the published results of sanatorium treatment divide cases, with various modifications, as in my paper, into first, second, or third stages.

Dr. Thompson complains that I have included in the sanatorium series patients who had been there just over a month. But the line had to be drawn somewhere, and after consideration I drew it at a month. Had I drawn the line at a full three months' treatment, no doubt the accusation would have been made that among the controls many were included who *had all the* educational value of sanatorium treatment, though their stay was comparatively short. Dr. Crocket cites a case in whom the disease became arrested only after three years' sanatorium treatment. Dr. Thompson also cites a case of arrest of advanced disease after three years' treatment. But a single case in this regard is of no value. Most *practitioners* of experience could cite parallel cases of patients who recovered after years of invalidism, and yet who never went to a sanatorium. The same may be said for all special methods of treating tuberculosis, orthodox and heterodox (although the advocates of these ask, as the sanatorium supporters, for early cases).

To go further afield, I know *of one* case of extensive pulmonary disease, accompanied by laryngeal tuberculosis, who, after sanatorium treatment for a year or more in different institutions was still quite unfit, and yet, after an interval of another year, recovered, and undertook an important municipal post during the war. The patient attributed his recovery to the abandonment of all *medical treatment* and the adoption of Christian Science. Then there is the case, much boomed a few years ago, of a girl who became "delicate" at 12, was nine months in a sanatorium at 15, after which she continued an invalid, tubercle bacilli being present in the sputum. From 19 to 22 she was for the most part confined to bed, and then "miraculously" recovered. I know two of the doctors who attended this girl, and who, while not ready to acknowledge the "miracle," admit that she recovered and was able to resume an active life after years of apparently hopeless illness. I have also read a paper published in the 1860's which quoted some remarkable arrests of tuberculosis attributed by the author to the administration of cod-liver oil. I would also like to quote from my original paper, "Undeniably a few cases are definitely and permanently improved by sanatorium treatment, and it is worth considering if this number can be increased by improved methods."

Dr. Thompson asks how it is possible *to tell that* patients treated at a sanatorium often lose ground so rapidly, that after two years they have fallen below the level they would have reached if they had never been there. This conclusion was reached by comparing cases that seemed clinically similar, some of whom went to a sanatorium and some did not; also by comparing the results where one member of a tuberculous family was sent to a sanatorium and another not. It is not claimed that this is a mathematical proof, but one cannot get much nearer to a proof when dealing with human material. When writing towards the end of the paper "a patient at a sanatorium would stay indefinitely, the longer the better," I referred mainly to the use of sanatoriums as hospitals for isolation purposes, and presumed also that an attempt to improve sanatorium methods would be made.

Major and Minor Tuberculosis.

An editorial article in THE LANCET of April 16th rightly considers that before discussing the subject it is necessary to define what we mean by sanatorium treatment. Perhaps even this should be preceded by defining what we mean by pulmonary tuberculosis.

Dr. Crocket considers that my controls were "a *doubtful collection.*" This may well be true, but so also then were the cases sent by me to a sanatorium. In my cases all were included that might arguably be considered suitable for a sanatorium, and for this reason I added a large number of Stage III. cases to the controls, whom I, personally, would never have sent to a sanatorium. I have always tried to send *early cases* to a sanatorium, which is what they ask for; this was so even when in practice, before the days of tuberculosis officers. The medical superintendent at our county sanatorium then considered the cases I sent were what he wanted; so much so that although there was the usual pressure on his beds he would ring me up when a vacancy was *about to occur*, and ask if I had anyone to fill it, adding that he gave me first chance, because I never sent anyone unsuitable.

The last paragraph of Dr. Crocket's letter suggests that he regards as definitely tuberculous only the patients who do not improve with treatment other than at a sanatorium. If this reading is correct it is not far removed *from the old* conception of "consumption" as a disease which never recovered, and that, if a patient did recover, the diagnosis was wrong, and he had never had consumption. Dr. Thompson also complains that I am suggesting tuberculosis is "a comparatively benign disease," although, later in his letter he paradoxically accuses me of pessimism, because *I have observed* that patients may get well without going to a sanatorium. There must be some misconception here. Pathological evidence indicates such a very wide prevalence of healed, or partially healed tuberculosis in patients dying from other causes, that the pathologist whose lectures I once attended spoke of tuberculosis as "one of *the most* curable of all diseases," and a letter which recently appeared in the press from a distinguished bacteriologist suggested, reasonably it seemed, that as the immunity caused by inoculation to tuberculosis was so short-lived the reason of such a large amount of apparently acquired immunity among the population at large was due to the presence of *a slightly active* lesion. In my paper I pointed out the difficulties arising from the common existence of pathological as opposed to clinical tuberculosis. The use of the words minor and major tuberculosis for these conditions seems more suitable, for it is almost certain that the great majority of patients showing pathological tuberculosis did, at some *time or* other, when the disease was active, suffer from a few symptoms. They were easily tired perhaps, or got "run down" or thin, or developed an obstinate "stomach" cough, and at that time it is quite likely there were a few physical signs to be detected, such as dullness at one apex, a few crepitations, and diminished breath sounds. Such cases are met with often enough when examining contacts in the home, and present a serious difficulty in attempting any such comparison as I have made. Most of these get well within a short time (I have known this happen within a month or two even when tubercle bacilli were found in the sputum on the only occasion when any was procurable), but some go on to major tuberculosis, and this is where the preventorium should prove beneficial. Many such I have sent to a sanatorium. A comparison of Stage II. cases alone in each series seemed to me enough to eliminate minor cases. When collecting cases I had no bias beyond a moderate belief in the efficacy of sanatoriums, and did not know whither the inquiry would lead.

In considering tuberculosis to-day one great difficulty is that the majority of those who give thought to the subject have been narcotised by sanatoriums.

Treatment other than at a Sanatorium.

Dr. Crocket suggests that if I am right "the best thing that can be done for tuberculous patients would be to leave them alone." If he will make this read "for many tuberculous patients" it is certainly correct. A number of patients do well if reassured and left alone under the normalising influence of their daily work, with possibly occasional observation by the physician, so that other methods may be tried if progress seems unsatisfactory. Minor tuberculosis in private practice is usually treated in this way, and on the whole successfully, with or without the addition of some medicine which enables the doctor to maintain the observation. When tuberculosis becomes more manifest, and has been definitely mentioned to the patient, "advice only" does not for a moment imply no treatment at all. It is here, indeed, that the skill and individuality of a fadless practitioner can be exercised most efficiently. First, to read between the lines of the patient's history, then to put right what is wrong in his daily life. To substitute, for instance, something restful for a too vigorous recreation, or too many public activities in the patient's spare time; or to modify the despairing desire for a short life and a merry one, which so often arises when a patient, especially a young patient, does not feel as well as he did, and suspects that something serious is the matter. And in many patients the weekly encouragement by their doctor is a most important aid to recovery.

Conclusions.

I still hold the views set forth in the paper read on Jan. 31st last. On the one hand I have received severe criticism from some of those engaged in tuberculosis work, but on the other hand several practitioners of experience have informed me that they agree whole-heartedly with my remarks; and the experienced practitioner is generally able to pass very sound judgments on treatment other than his own. The most hopeful means that I can see of dealing with the tuberculosis problem is by adequate isolation of infective cases. This necessitates hospitals, of which there is a shortage, and the introduction of appropriate legal measures, of which there seems no prospect. The preventorium, especially for children, also seems promising, and by all means let us try to improve and coördinate the present sanatorium methods. A committee of experts to visit sanatoriums with the object of devising better treatment, and of standardising our methods, as advocated by the Association of Medical Superintendents, would be admirable if the members are not chosen solely from medical superintendents; it should include a general practitioner, a surgeon (for sanatorium treatment is often beneficial to rgical cases), and an intelligent layman.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

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A CASE OF DELAYED TETANUS TREATED WITH LARGE DOSES OF ANTI-TETANIC SERUM.

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THE following case is of sufficient interest to merit permanent record:—

A. B., 24 years, was admitted on April 28th, 1917, to Hull Royal Infirmary, under my care, with inability to open his mouth. He had been wounded five months before and had sustained a gunshot wound of the face, right arm, and right leg. His right eye had been excised and anti-tetanic serum was stated to have been administered on the same day, and again a few days later. After this he appeared to go on well, and the wounds healed up. On April 24th he found he could not open his mouth properly, and he had attacks of shivering. On the 25th he consulted Dr. Soutter, of Hedon, who diagnosed tetanus and sent him into the Hull Royal Infirmary.

On admission he was able to walk into the ward. There was marked trismus, he being unable to open his mouth more than one-eighth of an inch; back rigid, neck stiff, and any endeavour to sit up brought on a severe spasm of the jaw. No headache, temperature normal, pulse-rate 100; he complained of a cough and some pain over insertion of diaphragm. Slept well; no mental symptoms, tremors, or Kernig's sign, but marked increase of the reflexes. No local pain in the wounds which were healed, but a local increase of reflex excitability in the muscles of the face. No sore-throat or difficulty in swallowing. There was considerable general muscular rigidity.

Treatment.

The patient was put on fluids ad lib. Milk, beef-tea, &c., and treated with intrathecal, intramuscular, and subcutaneous injections of anti-tetanic serum.

The following amounts were given: the numbers represent hundreds of units:—

Date in 1917.	Intra-thecal.	Intra-muscular.	Sub-cutaneous.	Date in 1917.	Intra-thecal.	Intra-muscular.	Sub-cutaneous.
28/4	30	15	—	9	—	160	—
29	—	15	—	10	—	160	—
30	30	15	—	11	—	80	—
1/5	160	15	—	12	—	80	—
2	—	80	15	13	—	30	—
3	160	160	80	14	—	30	—
4	160	80	—	15	—	80	—
5	—	80	30	16	—	80	—
6	160	80	30				
7	—	80	80	17/5*	—	—	—
8	—	80	—	18	—	30	—

* No serum administered on this day.

Total of units given, 2365 hundreds, or 236,500 units.

The intrathecal injections were in every case given under chloroform, and owing to the patient's weakness after chloroform it was considered advisable when possible to miss a day. Twenty-one injections of ¼ grain of morphia were given during the period for the first few days, two a day being given. On May 5th a serum rash appeared. On the 8th he was able to move himself much more in bed and was able to read; on the 9th he was able to sit up in bed and had fish for dinner, but could not open his jaw very widely. On May 16th he could open the mouth quite well, but not to its full extent. There was no stiffness in the muscles of the face. I saw this patient in robust health a year ago, three years after the attack of tetanus.

Remarks.

This case illustrates the value of large doses of serum in the treatment of tetanus. I should point out that the serum was given intrathecally, after lumbar puncture, an equal quantity of cerebrospinal fluid having been drawn off. This method acts on the nerve cells in a shorter time than the intramuscular injection (it is stated in about 12 hours), the intramuscular injection taking 24 hours and the subcutaneous a still longer time. Intravenous injection was not given on account of the danger of possible anaphylaxis. Medical Abstracts, Vol. I., p. 116, quoting Richet, Brodin and Saint-Girons, "On the immunising action which chloride of sodium manifests on the determining anaphylactic dose," states that if nine parts of saline 0·8 % are mixed with one part of plasma, the anaphylactic reaction does not occur. In the above case there was no sign of anaphylaxis, although a large amount of serum was given by subcutaneous, intramuscular, and intrathecal routes.

It is, I believe, difficult at the present time to obtain the highly concentrated serum suitable for intrathecal injection. In a case of tetanus which came under my care a few months ago, I was unable to obtain the highly concentrated serum; the more dilute is not nearly so efficient for intrathecal injection, as only a small quantity can be injected into the spinal theca.

A CASE OF

DIVERTICULITIS WITH METASTATIC SUPPURATION.

By W. E. FOGGIE, M.D. EDIN.,
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THE following is a record of the clinical history and post-mortem examination of a case of diverticulitis in which the rare sequela of metastatic suppuration was present.

C. C., a woman aged 80, was admitted to hospital on August 20th, 1920, with a left-sided paralysis of 14 days' duration.

Family and Personal History.—Her father died of a "stroke," and her mother of pulmonary tubercle. Her only brother and her only sister died in infancy. She was a nurse for 30 years, mostly with private patients, and latterly she has been a prison wardress. Her home conditions are satisfactory. Erysipelas, chronic bronchitis, and neuritis make up her past ailments.

Present Illness.—She has had threatenings of "shocks" for a year or two and has on several occasions fallen down. Two weeks before admission she fell down and was unable to get up. She did not lose consciousness, but was confused. She was unable to stand, and could not move her left arm or her left leg. She has remained in this condition until her removal to hospital.

Condition.—Patient is a very big, heavy, fat woman. She looks aged and helpless as she lies in bed. Her memory is poor unless she happens to be talking about old times. Her chief complaints have reference to pain in her paralysed left leg and left arm. The pains are situated in back of leg and thigh; in upper limb they are in the arm and pass into the neck. Sensation to light touch appears diminished over left side. Left arm is held rigidly in a flexed position close to the chest; there is slight power of movement in the fingers and at the elbow, and also in the leg, but any movement is attended by severe pain. The tongue on protrusion is deviated to the left. Muscles flaccid in the left lower extremity, but rigid in the upper. No obvious wasting. Examination of reflexes on left side shows knee-jerk difficult to elicit, a Babinski, and absence of an ankle clonus; left abdominal reflex is present; supinator and biceps reflexes are exaggerated. Pulse 72, regular; artery wall thickened. Slight enlargement of heart to left; mitral first sound long; respiratory system appears normal. Tongue coated; bowels constipated. Urine, which has a sp. gr. of 1010, is acid, dull-straw in colour, and contains albumin.

Progress of Case.—Patient showed no sign of improvement after admission. The condition was apparently stationary for the first week, but thereafter it got worse from day to day. The pains increased, a cough developed, the patient became sleepless, and the heart failed. The end came at the beginning of the fourth week with increasing weakness, Cheyne-Stokes breathing, and mild delirium. The temperature remained subnormal throughout. The pulse quickened a little after the first week, but was generally only between 100 and 108. The respirations remained quite quiet until the last day or two of life. After one week incontinence of urine set in and remained during the rest of her life. Constipation continued until a day or two before death. The patient died on Sept. 13th. The clinical diagnosis was cerebral hæmorrhage.

Post-Mortem Report.

The post-mortem report by Prof. L. R. Sutherland was as follows.

The body is markedly obese. The layer of adipose tissue over the abdomen measures fully 1¼ inches in depth. The heart is soft and fatty, showing infiltration of the wall of the right ventricle. The aorta is atheromatous. The left lung shows several considerable abscesses having the character of embolic abscesses surrounded by condensed lung tissue The pleura covering several of these is necrosed. Branches of the pulmonary artery contain slightly adherent thrombus. The spleen, kidneys, and liver present nothing noteworthy. The sigmoid flexure, which has large appendices epiploicæ, is the seat of multiple false diverticula. From one of these seen before disturbing the part a small amount of pus exuded. The mucous membrane of the lower bowel generally is hyperæmic. In the brain there is œdema of the soft membranes. The vessels at the base are atheromatous. On the right side in the region of the external capsule there is an area of evidently purulent softening. This is an ill-defined abscess measuring roughly 1¼ inches antero-posteriorly by ¾ inch tranversely. It is regarded as an embolic abscess. These is no evidence of hæmorrhage.

Summary.—Multiple diverticula in large intestine—suppurative diverticulitis. Embolic abscesses in lung (thrombosis in pulmonary artery). Embolic abscess in brain, &c.

Commentary.

The entry of diverticulitis into general recognition as a clinical entity dates from the review of the subject by Telling[1] in 1908, when after an analysis of 105 cases the main lines of its pathology and its clinical manifestations were laid down. The disease received much attention after this more especially from surgeons, so that Lockhart-Mummery, in his treatise on diseases of the colon,[3] is able to give a detailed account of the condition and of its surgical treatment. In 1917 Telling and Gruner,[2] from a study based on 324 cases, were able to amplify and give more definition to their previous picture on both its pathological and clinical sides. Lastly, in 1920, in a discussion at the Royal Academy of Medicine,[4] opinion was focussed from many sides on the whole subject especially as regards its ætiology, diagnosis by X ray, and surgical treatment.

It is now recognised that the condition occurs generally in those at least of middle age, frequently in the obese, and often where there is a history of constipation with the added factor of increased pressure inside the bowel. The main site is the sigmoid flexure. The diverticula, generally multiple, allow the retention of fæcal material which goes on to the formation of concretions. With subsequent bacterial invasion there results a diverticulitis which may lead on to perforation, or to adhesion to neighbouring organs—e.g., to the bladder, or to tumour formation and possible stricture. In short, the diverticulitis in an acute or in a chronic form has to be reckoned with in the diagnosis of the various surgical or gynæcological conditions occurring in the left lower quadrant of the abdomen. The present case is on a somewhat different footing. It happened in a weak old woman, and the diverticulitis had not proceeded so far as to develop those secondary results which bring the disease within the likely range of clinical recognition. It is sometimes possible at this stage of the disease to demonstrate the presence of the diverticula by the use of X ray with bismuth meals.

In his review of 1908 Telling could only find one example of metastatic suppuration, that of Mackie Whyte,[5] who found in a patient ill with rigors and pyrexia, multiple abscesses of the liver, secondary to a diverticulitis in a cavity the size of a thrush's egg in the sigmoid flexure. In p. 191 of his monograph of 1917 Telling still says "so far only one example of this (i.e., metastatic suppuration) has been recorded." I have not been able to find any other case, so that the above appears to be the second recorded one. It is regretted that the abscesses in the lung and the brain were not examined bacteriologically so that their relation to the occult focus in the sigmoid might have been made more explicit.

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Medical Societies.

ROYAL SOCIETY OF MEDICINE.

THE PRIVATE CLINIC SYSTEM:

An Important Discussion.

At a general meeting of Fellows of the Royal Society of Medicine held on June 16th the President, Sir **John Bland-Sutton**, in the chair, an important discussion took place on private clinic systems in this country.

The Problem of the Private Clinic System.

Sir **Thomas Horder** opened the discussion. He said: If I interpret my function aright this evening, Mr. President, it is not to emphasise my own personal views upon the subject of our discussion, by particularising as to the actual form that I think the private clinic should take in order to meet what many believe to be a growing demand, so much as to refer briefly to various aspects of the whole question, and thus test the opinion and collect the views of colleagues working in different branches of medicine.

The actual wording of the subject of discussion has itself been difficult. I shall assume that one of the things we have in mind this evening is a consideration of what is conveniently termed "group diagnosis" and "group treatment," since this idea, as I understand the matter, is the debatable factor in the conception of the modern "private clinic."

Group Diagnosis and Group Therapy.

There is, of course, nothing new in the conception of group medicine.

1. The principle is in daily operation in most of our general hospitals, where each of us has the great advantage of the opinions and special technique of our colleagues in the investigation and treatment of our patients. In these institutions, again, patients are "transferred" frequently from one ward to another, and from one out-patient department to another, so as to secure for them the benefit of the service most nearly adapted to the nature of their diseases. That the principle can operate under the same roof, as it were, and that we can meet in consultation about cases of mutual interest without loss of time either to the patient or to ourselves, are two great assets in our hospital practice the value of which can be scarcely over-estimated.

2. In our private work the principle of group medicine is also being acted upon constantly. We all know where to get reliable expert help in regard to investigations which we judge to be likely to yield important facts supplementary to our own examination of the patient. If the nature of the case is, in the main, outside our province, we pass the patient over to the colleague most likely to help. As for diagnosis, so also for treatment.

But in private practice all this desirable collaboration does *not* go on under the same roof, nor are there means of securing the colleague one wants without much loss of time both to the patient and to his advisers; there are no days and hours which are fixed for attendance at a known place where the expert is available for consultation.

Now it will scarcely be denied that the facilities for group practice afforded by general hospital conditions lead to increased efficiency so far as the patient is concerned, and also contribute more to the advance of medical knowledge. This fact is recognised by the public as well as by the profession. It seems but a natural corollary that some adaptation of the same method to private practice is desirable, and should be seriously considered. It is a question whether such a development is not already overdue. It is also a question whether, if the profession does not itself arrange facilities for group medicine, and itself control the form in which the principle be exploited, the public may not force the doctors' hands by efforts of its own, probably destined to yield less efficient results, and almost certainly many more professional complications. That extraordinary venture in New York, calling itself "The Life Extension Institute," to which many of the best known and most reputable members of our profession in the States and even a few in our own country are acting as medical advisers, is really a reflection upon the persistence of the idea that one man can any longer be considered capable of coping with the whole gamut of medical knowledge as it exists to-day.

Bound up with the principle of group diagnosis and group therapy is the problem of the nursing home. The "patient of moderate means"—a type that has increased greatly since the war—wonders why little or nothing is still being done to improve in radical fashion the present unsatisfactory conditions in this connexion. If the development of group clinics hastens the arrival of large institutions properly equipped and administered, which shall replace the innumerable small converted private houses in which most of our nursing-home patients are at present being treated, it would probably be welcomed for this achievement alone.

Before any clinic system, whether it embody the notion of group medicine or not, can prove itself an advance upon our present methods, I suggest that it must be so planned as to ensure two advantages:—

(1) It must supplement the ordinary routine physical examination of the patient by providing facilities for expert investigations and thus rendering the diagnosis fuller and more accurate.

(2) It must offer facilities for more thorough and therefore more beneficial treatment than can be undertaken by the individual practitioner.

The Aims of a Group System.

Aside from these two advantages a successful group system should aim at two other benefits:—

(3) It should save time for both doctor and patient, but without sacrifice of efficiency.

(4) It should save money for the patient, again without sacrifice of efficiency.

If I may assume that the first two desiderata must be fulfilled, it is clear that certain private groups and clinics now existing, or under consideration, are out of court. I will mention two of these in order to define the subject more nearly:—

(1) A practitioner, working with a number of juniors, who are in effect his assistants, who are paid by him; and who have no special knowledge or training;

(2) A number of practitioners or consultants of equal status and experience, working together, but not chosen so as to be representative of various branches of medicine.

With the first of these we are, of course, familiar. Even supposing that the senior man sees all the patients, which he rarely does, such an arrangement does but multiply his own individual activities, it adds no extra value to them. I am not sure if the second of these groups exists in this country. In U.S.A. there are several such groups, sometimes miscalled "diagnostic clinics."

On the other hand, there are two forms of the private clinic which, on reflection, would appear to operate so as to fulfil the desiderata mentioned.

(1) A number of practitioners or consultants of equal professional status, working together, chosen carefully so as to be representative of various branches of medicine ("hand-picked," as our American cousins term it). This constitutes a true group.

(2) A practitioner or consultant of great experience and balanced judgment who, after taking a careful history and making a thorough routine examination, refers the patient to one or more specialists for expert investigation and report. This does not constitute a true group.

Considerable reflection and some experience lead me to believe that both of these systems are practicable and that both of them should be encouraged. I propose briefly to compare them, and to consider the difficulties that beset them, as well as the benefits to be expected from them. For convenience I shall term the first the "*group clinic*" and the second the "*personal clinic.*"

The Group Clinic.

The group clinic has certain advantages over the personal clinic. It caters for patients having a much greater variety of diseases because its staff represents several different branches, whereas the personal clinic is likely to attract mainly (or only) those patients whose ailments are known to be of special interest to the chief. Again, the group clinic will naturally have some arrangement by which the constituent members are readily available for the expert examination of any patient—their hours of attendance at the clinic would be known, and it would therefore not be difficult to have all the consultations going on under the same roof, though this is not, of course, essential. The chief of the personal clinic must make his special arrangements with his experts, entailing loss of time and much secretarial work. Meetings of all the members of the group clinic would take place at a settled time, and general discussions about difficult cases would be possible. The chief of a personal clinic would rarely, if ever, meet all his experts together. And again, the group clinic can undoubtedly add more valuable, and more authoritative, knowledge to medical progress than can the smaller institution; its records must necessarily deal with larger numbers and must reflect a wider range of opinion. This is an important consideration.

The Personal Clinic.

On the other hand, the personal clinic has certain advantages. The chief is brought into close touch with each patient, a very valuable factor in practice: in the group, although this is possible for each member and each patient originally sent to him, it would tend to lapse in respect of the patient whose main trouble is found to concern another man more than the man who first sees him. And the personal clinic scores heavily by possessing someone who can act as responsible agent at all of the three critical points in every group system; the point where sound judgment is needed to decide what expert examinations, if any, are desirable to supplement the general survey of the patient; the point where the various expert reports are coördinated or integrated so as to arrive at a full diagnosis; and the point where the programme of treatment is decided upon. It is true that the group clinic might choose one of its number to act as assessor in this manner, but this would almost certainly lead to serious difficulties, and would probably strain the friendly relations of the group not a little.

It seems certain that these three crucial points must be borne in mind and carefully provided for; *upon them depend the main success of any form of group medicine.* I think it is generally agreed that to send a patient the round of a number of experts quite indiscriminately, or to fail in the proper integration of the expert reports, or to be either scrappy on the one hand, or over-elaborate on the other, in formulating the therapeutics indicated by a study of the case, is to bring the whole position of group medicine into disrepute.

Finance.

Then in the very pertinent question of finance, there are obviously much greater difficulties facing the group clinic than the personal clinic. In the group clinic it is hard to see at present how a flat rate fee can be arranged for the patient without considering the members of the group to be, in the legal sense, partners. And if they be partners, is a Member or a Fellow of the College of Physicians eligible to work in such a group? In the case of the personal clinic a flat-rate fee may be charged by the chief to cover his own survey, certain clinico-pathological and other investigations, and his "integration" of expert reports, and the specialists may be paid their customary consultation fees as extras.

Certain Difficulties.

As already suggested, the formation and the operation of the personal clinic are fraught with fewer difficulties than is the case with the group clinic. And yet there are many who think that the group clinic, once the initial obstacles are overcome, and the idea has ceased to seem strange, is destined to do more for patient, doctor, and medical science than the one man clinic can possibly do. Let us look more closely at some of the difficulties facing the group clinic, and also at some of the reasons alleged against the system.

1. *The Preservation of Personal Contact.*—Can the personal contact between doctor and patient, which most of us consider to be so important, be preserved? The answer seems to be that it can, but that there is a definite tendency for it to lapse. This lapse can be prevented, either by the group being no larger than is absolutely necessary to cover the main branches of practice, and by each member of this compact group recognising the importance of himself guarding the personal relationship with all the patients who come originally to him, or by each group having a member detailed for this purpose; this member would rather naturally be the general physician of the group.

2. *The Difficulty of Finance.*—This has to be considered as it affects the patient and as it affects the group. It is perhaps a better scheme to charge a relatively small flat-rate to cover the general survey and preliminary clinico-pathological investigations, and to surcharge for whatever expert examinations are decided upon, than to fix a relatively higher flat-rate to cover examinations by all the experts if these are necessary. In this way the group system escapes the criticism of exploiting the patient by superfluous examinations which increase his expenses unnecessarily. Financial arrangements between the members of the group probably represent the most difficult question of all. Should the distribution be upon equal terms, or based upon the number of patients introduced to the group by each member respectively, or upon the number of hours spent at the work of the clinic? A group clinic doing successful work in the States adopted the somewhat bold and decidedly candid plan of sharing fees in proportion to their incomes on entering the clinic, with an agreement to take equal shares at the end of three years. I hope that some speakers following me may have other concrete suggestions to offer.

3. *Legal Relations between Members.*—The question of finance as it affects the group is bound up with the legal relations existing between its members. Here, again, are matters needing discussion. Is a deed of partnership the best form of relationship between the workers? Or would an incorporated body give them a better basis for good work and amity? Shall they be whole-time or part-time men? It is highly probable that quite successful groups may be established without uniformity in these matters.

4. *Possible Disturbance of Cordial Relations.*—Will the advent of the group clinic tend to disturb those cordial relations between members of the profession which we all strive to preserve? This is, of course, one of those fears which only care on the part of the men in the group can dissipate. There are certain privileges which it will be well to guard in order more surely to avoid the growth of undesirable cliques; the right of any patient to avail himself of the opinion of a specialist outside the group should be unalienable, and it will perhaps be equally important to permit overlapping of groups, assuming that the organisation of the group admits of this.

Conclusion.

There are other points which call for discussion; but I have already said enough by way of introduction. It would seem that the private clinic, supervised by one man, who is fitted by nature, by training, and by experience for such work, has up till now been more easy to set going in this country than the group clinic. And we must remember that Great Britain is not the United States, and British patients are not Americans. All the same, it seems highly probable that the group clinic will soon become a successful British institution, though its constitution and its mode of operation will remain British. Initial experiments will doubtless be looked at very critically, and early efforts will reflect the courage of the men who embark upon the scheme. Group medicine is obviously much better adapted to urban than to rural conditions. Not all men are qualified by temperament to act with others in a group; this fact will be patent to all of us. But given due recognition of this fact, a sense of loyalty within the group, and a desire to make the patients' welfare the paramount consideration in all aspects of the work—given these things, there is probably a much greater future for the group clinic than for the personal clinic. Our present forms of practice are satisfactory up to a point, and they are typical of British individualism. But they often lack cohesion, they are not infrequently extravagant both of time and of money, and it can scarcely be claimed that in the case of many complex, obscure, and chronic disease-processes the patient is getting all the help that present-day medical knowledge and technique can supply. The words of Dr. L. F. Barker, an ardent apostle of group medicine, are not exaggerated, when he says: "No single person can, any longer, hope to attain to equal skill in the use of the many instruments and procedures of diagnosis. And the same may be said of the complexity of modern therapeutic technique. No general practitioner, no surgeon, no physician can any longer, unaided, give to patients the benefits that they can, in the more obscure cases derive, and have a right to expect, from his efforts when combined with the properly coördinated (and subordinated) activities of a group of adequately trained medical and surgical specialists."

TEAM WORK ORGANISATION.

Sir HUMPHRY ROLLESTON said: The expression "Team Work" first became familiar in connexion with research into problems necessitating collaboration between experts in various branches of medicine —for example, the clinician, the physiological chemist, the bacteriologist, and the pathologist. On the advantages of such schemes of work there is no question, and to-night's discussion is directed to the consideration of team work in the diagnosis and treatment of individual patients rather than in the advance of clinical medicine as a whole. As this method constitutes that employed in ordinary well-equipped general hospitals, the issue before us is narrowed down to its adoption in private practice. In other words, to place within the reach of the rest of the population the same complete investigation and varied treatment that the necessitous poor have in the large general hospitals or, more briefly, to provide collective instead of individual medical attendance. This, again, is not a novel notion; firms of medical practitioners often constitute themselves with the view of covering more or less completely the large field of medicine and its special branches. Thus in choosing a junior partner preference is given to a young man with a special surgical bent and experience; and from time to time the various partners take special courses to qualify themselves as local authorities in eye, throat, X ray work, and so forth. But what is comparatively recent is the further development of this idea into the organisation of combined expert medical and surgical diagnosis and treatment such as has been carried to its logical conclusion by the phenomenal success of the brothers W. J. and C. H. Mayo at Rochester, Minnesota. This institution, which slowly grew up under the guidance of exceptional organising ability, has recently by its endowment as the Mayo Foundation become a permanent educational and research body, and so has undergone a further development. In its previous stages it showed the way for a complete surgical clinic on the team work lines, and the example thus set has aroused the sincerest form of flattery. Naturally, the rest of America has not been backward, and the practice of what is called "Group Medicine" has spread widely in the smaller towns. In large centres the paying wards attached to teaching hospitals have long supplied this need; and it is noteworthy that the attending physicians and surgeons in many hospitals in America have their consulting rooms in the hospital, much to the patients', their own, and the hospital's advantage. The method of thorough examination of a patient by experts of all the specialties and the final assembling of the accumulated data by the supervising medical man or general diagnostician, who is the head of the team, or what Sir Thomas Horder called "the personal clinic," has been described in detail by Prof. Lewellys Barker,[1] of the Johns Hopkins Hospital, who has elaborated the system from the physician's standpoint.

As to the personnel and arrangements of a team work organisation, there is room for much variation according to the aims of those concerned in directing it. It might consist in miniature of an up-to-date hospital with beds for observation, laboratories, rooms for X ray and other examinations, and an operating theatre; the staff would consist of a physician or physicians, a surgeon or surgeons with assistants or colleagues with special knowledge in particular departments, bacteriologist and pathologist, radiologist, and so forth, with a resident secretary who should combine these duties with those of resident medical officer. Or this team work might be confined to cases of a medical or surgical character —for example, those of obscure illness requiring metabolic and chemical examination, and patients with nervous or gastro-intestinal disorders.

As to the clientèle of such a unit, the patients might be merely those of members of the team who have united their forces and practices so as to economise time and obtain more satisfactory results; or such a team work organisation might receive patients from outside practitioners for purposes of diagnosis, and return the patients with a report much in the same way as the Clinical Research Association reports on blood and other examinations. In large cities there would be room for both these forms of institutions; the private arrangement would perhaps be better suited for large than for small towns; for in a small town a private team might act injuriously on practitioners not members of the team and tend to freeze them out, thereby damping down healthy competition and engendering cliqueism.

Team work in an organised form is certain to come, if indeed it has not already arrived, but in this discussion its uses and possible abuses should be considered, and these may be briefly referred to under the following heads:—

1. From the patient's point of view, there can be no doubt that a systematic examination by all available methods of the laboratory, X rays, and so forth, will be a great advantage and will economise time. Financially, although the initial outlay may appear considerable, the ultimate gain may compensate; it is perhaps reasonable to believe that with the arrangements concentrated in one establishment the inclusive charge would be less than the amount of the fees now necessitated by examinations made as occasions seems to demand. It might be suggested that, although more extensively analysed, the patient might suffer from a multitude of counsellors, inasmuch as he would be regarded more as a machine out of order than as a human being who is out of health.

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[1] Barker, L.: New York Med. Jour., 1918, cviii., 489–493, 577–582.

2. From the point of view of the medical profession it is obvious that by having the facilities of an up-to-date hospital and of expert advice from his fellow team workers, the medical man would get through his work in a much more satisfactory fashion and with a minimum loss of time. Medical men who are not attached to a team, on the other hand, would be left out in the cold unless the team work was so far available to them that they could send their patients there for expert opinion and if necessary treatment; and even then they would to some extent suffer in prestige.

The financial aspects of team work will require careful consideration both as regards the relations of the individual members of the teams and as regards the reputation of the profession as a whole. The question whether an individual shall be, so to speak, a whole or part-time member of a team is a matter of private arrangement, but obviously of considerable importance from the point of view of a consultant in active practice who joins a firm. If he be a whole-time member all the fees that he earns—e.g., for long journeys—would go into the common fund, and this would be justified on the assumption that his reputation may be derived from the team of which he is known to be a member.

From a financial aspect a team of consultants and experts would be in the same position as a firm of general practitioners, and the members of the team might be regarded as shareholders in a company trading in medicine for profit.

POINT OF VIEW OF THE GENERAL PRACTITIONER.

DR. **DRURY PENNINGTON** said: I have spent nearly two years trying to discover why there should be any objection to any body of men grouping themselves together for their mutual benefit both financially and scientifically. Individually, men of all branches of medical work will agree readily enough that some scheme is needed whereby their work should be better coördinated with that of others. Collectively, the various medical bodies have seemed curiously shy, and the most concrete objection that I have thus far been able to extract is that "the time is not yet ripe."

In my view the late world-war has ripened a good many fruits, at least it has forced mere flowery speculation into fruitful action in many walks of life. Politicians at the end of 1918 were preaching a new heaven and a new earth! Look around for the fulfilment of this flippant prophecy and you find only one outstanding change from the days before the war. This change is summed up in the word "combination." Banks have grouped themselves into a few huge machines. Trade in all directions is seeking larger and larger combinations in order to exist at all, and by no means least, labour has so grouped itself that at present we are experiencing the worst economic crisis within living memory—an instance perhaps of faulty organisation due to false ideals.

Can we alone as a profession smugly continue to plough our lonely little furrows, and say, "Thank God we are not as these others." If such complacency ever really existed in fact, the last three months in Harley-street must have brought an unpleasant awakening.

Therefore I say with all the emphasis at my command: The time is over-ripe. We need a fresh adjustment to new conditions and for two main reasons:—

(1) The rapidly decreasing power of the public to pay the old dues, and

(2) The formidable increase in the cost of diagnosis during the last 15 years.

These two considerations alone would justify such a meeting as we are holding to-night, but there is yet another aspect, one of even greater importance, and that is the scientific rather than the merely commercial development of our craft.

Now thus far I have doubtless merely paraphrased the opinions of previous speakers this evening, but I am anxious to focus attention more especially on the position and needs of the general practitioner in relation to present-day difficulties.

Speaking as a general practitioner myself I have found the following main problems arising in the course of a fairly varied practice. Time and again I am confronted with the chronic case with a multiplicity of symptoms which in the nature of things probably arise from some fundamental cause or causes, and before I can assure either my patient or myself of the accuracy of my diagnosis, I find it necessary to apply to a bacteriologist or radiologist—often both—to give me some of the missing links in the chain of evidence. This course may be exhaustive and thus scientifically desirable, but what of the patient's pocket? Here we arrive at my second frequently encountered difficulty, often only surmounted by my either going round begging for gratuitous service or, as often, of converting my fee into a payment on account for the patient.

More strictly on the scientific side I am faced with a difficulty of a rather different order. When as a country practitioner I was in the habit of regularly reading medical journals in an endeavour to keep abreast of affairs, I often found a most plausible article dealing with a problem that concerned me at the time. The writer was an entire stranger to me, and despite the usual advertisement of degrees in the superscription, I was wholly unable to estimate the accuracy of a single statement made. The only practical solution lay in the empirical application of the advice to the next likely patient—a wholly unmoral proceeding unless the patient is told that he is being subjected to a clinical experiment, and that if no success attends the effort no charge will be made. I do not think my experience in this respect is in any way unique. I may say it is a common practice among others similarly situated.

Surely it would be of infinitely greater value to all concerned were it known that an article written by John Smith had been submitted to the scrutiny and criticism of several colleagues who had seen the same cases upon which the article had been based. And here let me add from a general practitioner's point of view it is not enough that a number of surgeons should pronounce favourably upon a suggested panacea; we are quite as concerned to know what the psychologists have to say in opposition or agreement on the same subject.

The Practitioner as Assessor.

No one could more appreciate the value of the advice and technique of the specialist than myself, but while I am a convinced advocate of all forms of specialism, it is my concern to get results in the individual rather than in the mass, so that I become very conscious that specialism tends sooner or later to mental myopia and that the whole is apt to be lost in the part. It is therefore not wholly surprising that I find myself more and more being forced out of the position of being the mere hack of consultant autocracy into the far more difficult rôle of arbiter between the oft-times conflicting opinions of rival specialists. I conceive it to be my duty to keep a watchful eye upon the whole individuality of the patient in regard to any advice that may be offered as to any one portion of his anatomy—in short, I find difficulty in adequately discharging the office of assessor to opinions of consultants as they are now given.

You may argue that my difficulty in this respect is of my own making, that it serves me right for arrogating to myself functions for which I was never intended, and that I should have been content with the subordinate rôle of a general practitioner. I submit in reply that the status of the general practitioner has changed very considerably during the last 20 years. He can now actually be trusted to make an accurate diagnosis of an acute appendix or pneumonia! And I venture to add with all deference that while there has been a perceptible rise in the general level of intelligence among the hack workers in medicine, there has been a corresponding falling off of the need for the general consultant physician for the purposes of diagnosis and therefore also of treatment.

And here I may perhaps indulge a human weakness and prophesy that before many years pass the general consultant physician will cease to exist but will find his regeneration in the rôle of an assessor to a team, to his very great content and profit.

What, then, of the general practitioner in this scheme of things? As I see it, the success of any group will largely depend upon the acumen and personality of the assessor. I use the word acumen designedly because it does not exclude the man with experience of men, the man of common-sense and therefore the type not always found among the ranks of academic successes. In less veiled language, a man's diplomas or degrees will cease to be the only criterion. For that matter the public is realising more and more that the man of many degrees is by no means deified by reason of such degrees, and until the time arises when someone invents a system whereby personality and common-sense may be estimated in terms of marks, degrees per se will be less and less the hall-marks of efficiency.

Thus team-work by no means excludes the employment of the general practitioner in the rôle of assessor, for it is certain that unless the general practitioner is up to his work his colleagues will find reason not to collaborate with him.

Conclusion.

To sum up my various points:—

1. The time is ripe for the adaptation of medical practice to the needs of modern science and modern economics.

2. The formation of teams all over the country—each adapted to meet local requirements—should supersede the present system of individualism.

3. Evils which exist here and there in private practice would tend to disappear when the individual has no longer only himself to consider.

4. Any evils which team-work might be thought to engender would be far more easily detected and corrected than is the case now.

Professional Feeling in the Matter of Private Clinics.

Mr. **Bishop Harman** said that as chairman of the Hospitals Committee of the B.M.A. he felt honoured in being asked to contribute to this discussion, but he wished to make it clear that he had no authoritative information to give. There were certain points, however, that might throw light on professional feeling in the matter of these private clinics. The idea of professional combinations was not new. During the war the Central Medical War Committee urged private practitioners to combine (*a*) to foster subdivision of their work, to promote economy, and to achieve higher attainment in special branches of the profession; (*b*) to facilitate continuity during periods of illness, holidays, and study. The recommendation was well received and had been acted upon with success. A similar combination for in-patient work in a private hospital in the provinces had also been under review and no exception had been taken to the idea. Mr. Harman thought that in general no objection could be made to the principle of combination, either for domiciliary treatment or clinic work. It was the necessary outcome of the growing complexity of medicine, and the logical corollary of the established principle of hospital practice. It was now desired to extend those benefits which patients at a charity obtained as a matter of course, to private patients who were able to pay their way.

In practice certain difficulties might arise. The cost of establishing an efficient private clinic might be so high as to prevent a combine of capable doctors from establishing a clinic on their own resources. They might be tempted to accept lay finance, which might mean lay control or direction; the lay element would desire financial success, and the temptation to some form of advertising would be difficult to combat. Some difficulties akin to this had arisen with regard to establishments, originally founded as quasi-medical institutions, which now combined medical work with facilities for legitimate entertainment. A risk such as this could be guarded against by a proper legal deed of constitution for each clinic before it was set up. Again, if powerful combinations became numerous they might exert an inhibitory influence on the careers of younger members of the profession, who could not or would not seek admission into existing combinations. Existing combinations might become powerful enough to prevent the establishment of new combinations and thereby act detrimentally on the development of professional knowledge and skill. Possibilities such as these foreshadowed a risk of professional competition far more serious than anything now existing between individual practitioners or partnerships, and it was difficult to see how these dangers could be guarded against. Lastly, there was a thought of risk in some minds that the commercial aspect which a costly clinic would introduce might lead to patients being exploited for profit to the combine and not treated primarily for the benefit of the patient. This was a risk present in any form of practice, individual or combined, and there was no safeguard against it other than that of the high standard of integrity of the several members of the profession. So long as that standard was as high as it is to-day the risk was minimal, and there was no reason why we should fail to maintain that standard. In conclusion, Mr. Harman cited some actual expressions of experience made to him by intelligent patients, which showed with what favour these patients viewed such arrangements as were suggested for their benefit.

The Surgeon's Point of View.

Mr. **W. H. Clayton-Greene** said that as the main subject had been exhaustively dealt with by previous speakers he proposed to touch only on that aspect which affected him as a surgeon. In a discussion on any proposals for change the adequacy or inadequacy of the present system must not escape consideration. To Mr. Clayton-Greene the existing system appeared most unsatisfactory. Before coming to the meeting he had looked up the distance between London and Banff and had ascertained that the distance between London and the only resident establishment where diseases of the alimentary tract could be thoroughly investigated was 587¼ miles! In trying to estimate the advantage of the private clinic system, the surgeon had to consider what help he would be likely to receive from close association with his colleagues (1) in diagnosis; (2) from an operative point of view. Mistakes in diagnosis were made by every surgeon, and radiologists, bacteriologists, and pathologists were at least as fallible when working without clinical evidence, but in Mr. Clayton-Greene's opinion mistakes would be less likely to occur if patients were consulted over by surgeons and physicians jointly with the additional help of the specialists. The system of *sending* the patient to the specialist was wrong, and the habit of sending a piece of the patient still more reprehensible. The dangers of this latter method were exemplified in a case in which Mr. Clayton-Greene had recently been associated. A digital tumour had been sent to a pathological laboratory as ? sarcoma, and since the tumour showed numerous round cells, the suggested diagnosis was confirmed. The true nature of the condition—a granuloma due to syphilis—was elicited in a consultation which, had it taken place earlier, might have saved the patient from the loss of a useful part of his arm. This was the diagnostic aspect of the question. As to the operative side, the work done in most nursing homes contrasted unfavourably with that done in hospitals, which was essentially team-work. Even in the best nursing homes the same standard of efficiency would hardly be reached. Operations in private houses were even more difficult to arrange. For all these reasons private clinics appeared desirable. It had been said that the clinic system was foreign to British ideas, but if this system did its job well the British public would march to the door of the clinic, even if to reach it they had to travel 587¼ miles.

The Business Side.

Mr. W. S. DICKIE said that the problem had to be considered from the point of view of the patient, of the medical practitioner—using the term in its widest sense—and of the credit and reputation of British medicine. With regard to the patient, his interest consisted in getting the best possible treatment, attention, and environment at the lowest reasonable cost. The general public was becoming much more critical than formerly with regard to the accommodation available, and comparisons between British and foreign provision for the treatment of private patients were much to our disadvantage. As to the medical practitioner, it was obviously to his interest to have at his command facilities for examination, diagnosis, and treatment of his private patients at least equal to those existing in well-equipped general hospitals.

If we assumed that existing conditions were unsatisfactory, how were they to be remedied? Provision might be made at existing voluntary institutions for receiving a certain proportion of paying patients, and this plan, on a limited scale, was already in operation in various places. The plan had certain obvious advantages. There was no need for any initial capital expenditure; existing buildings and administrative machinery were utilised, and already installed technical plant—probably not running at full capacity—was available. The disadvantages were that (1) in some, perhaps in many institutions, any such provision would be outside the scope of the original trust foundation and the present constitution; (2) without important structural alterations or extensions any provision made by existing institutions would be insufficient to meet the needs; (3) provision made by a voluntary hospital could hardly be made available for the use of medical men other than the members of the honorary staff of the institution; (4) a bureaucratic and institutional element between the practitioner and his private patient would almost inevitably be introduced; (5) evidence from America and the continent of Europe showed that the combination of paying and non-paying patients in the same institution worked badly.

Another suggestion was that the necessary provision might be made in or additional to existing rate-supported institutions, but in Mr. Dickie's opinion all the arguments against the provision of the desired accommodation in voluntary institutions applied here even more strongly. Again, special provision might be made by local authorities for building and equipping hospitals for private patients, these institutions being available to the general public at rates to be fixed on an economic basis, so that the hospital should not only pay its way but provide a fund for redemption. The professional service might be open to all registered practitioners, fees being a matter of private arrangement between doctor and patient. Mr. Dickie said that though this plan at first sight appeared to provide a reasonable solution of the problem, the ultimate development would be uncertain, and it might lead to rate control not only of the hospital, but also of the financial and other relations between doctor and patient. Mr. Dickie believed the best solution would be reached by private enterprise, working on business lines untrammelled by association with existing charitable or voluntary or other public bodies. The question arose whether the income could be expected to meet current working expenses, pay reasonable interest on invested capital, and provide adequate sums for upkeep and depreciation. As regards capital cost, no institution for the treatment of private patients could be considered satisfactory if it had not been specially designed, built, and equipped for the work in view. The converted building was difficult to work and costly in upkeep. Capital expenditure was commonly expressed in terms of cost per bed (though this was not in all respects a satisfactory basis), and Mr. Dickie had calculated that the cost of a complete private hospital need not exceed £500 per bed, and in some districts could be less. He uttered a strong protest against elaboration and luxury, which were no more necessary in the treatment of the wealthy than of the poor, and gave his grounds for believing that an adequate private clinic could be constructed at about 1s. 6d. per cubic foot. As to running expenses, Mr. Dickie claimed that the housekeeping costs need not be greater than those of general hospitals. The medical and surgical expenses were also comparable, since the private patient used no more drugs and dressings than the patient in a public institution; surgical instruments, catgut, and gloves, would be provided by the surgeon, and though wages and salaries might be a proportionately larger item in the private institution, Mr. Dickie expressed his confidence that the running costs of an efficient private hospital need not exceed, and ought not to exceed, the comparable expenses of the voluntary hospital, especially as the private hospital had no costly out-patient department. He therefore used the figures of voluntary hospitals as the basis of calculations. Running costs of voluntary hospitals were at the present time about £3 per patient per week, and he estimated that an income of £7 a week per bed would keep a hospital of, say, 50 beds on a sound financial basis. As to the source of the capital required, Mr. Dickie deprecated the old idea that it was improper and unprofessional for a medical man to have a financial interest in the institution to which he sent his patients. Conditions had changed, and nowadays it was the duty of the practitioner—medical, surgical, obstetrical or general—to be financially interested in the establishment to which he sent his patient if he wished to safeguard that patient's interests. The professional man's active interest would be the element which would lift an institution from the level of a dividend-producing factory to that of an actively beneficent social factor.

Mr. Dickie considered that the medical man should be financially interested in such an institution openly and in association with non-medical shareholders. If a score of medical men combined, put down £500 to £1000 each, and then went to their business friends with a scheme there would be no difficulty in raising an equivalent sum from these friends, who would recognise the need for an institution and its prospects of success. Mr. Dickie warned his colleagues that if they did not themselves proceed to the organisation of a private clinic system it would be done for them by cosmopolitan financiers, who would do it well but would be concerned only with the fees they could obtain and the dividends they could draw.

Some Practical Suggestions.

Dr. G. C. ANDERSON said that he was sure that any move on the lines of the private clinic system would be welcomed by the general practitioner. A general practitioner, anxious to have a second opinion upon a particular case, might be doubtful whether the opinion ought to be that of a physician, a surgeon, or a specialist in some other branch. If the case belonged to the poorer class and could be sent to a hospital it would not matter to whom the patient were directed in the first instance. If, however, the patient could afford to pay, the general practitioner might direct the patient to a surgeon, only to be told that the case was purely a medical one or that an X ray was required before a surgical opinion could be expressed. From a private clinic he could obtain a comprehensive report, most probably accompanied by a clinical diagnosis confirmed by X rays and bacteriological examinations. From the point of view of the public, also, the advantages were apparent. Modern diagnosis was now growing so formidable that very often patients had not sufficient means left for treatment after an accurate diagnosis had been established. The fees charged at a private clinic could be made more moderate than the present fees charged by individual consultants, because by combination the expenses would be materially decreased, and in this way also the receipts of the medical men associated with the clinic would tend to be increased. The general practitioner would be able to attend with his patient, and in this way he would tend to become more proficient in his own work.

There were several ways in which a private clinic might be worked. The team should consist of a number of practitioners or consultants of equal status, chosen in such a way as to represent all the different branches of medicine, with the possible addition of a medical assessor. A possible scheme of work might be that each member of the team would carry on all his own private work at the clinic. The second opinion available in an adjacent room would be an obvious advantage, both to the practitioner and to the patient. Entire freedom of choice could be left to the patient, by providing that if desired he might equally well consult for a second opinion a doctor who did not form part of the team. Each member of the team would draw his own fees from private patients seen at the clinic, but fees from patients sent by outside practitioners to the clinic for general diagnosis only would go into a central pool, upon which would fall the burden of the upkeep of the establishment. The expenses necessary for the conduct of the clinic would be met out of the central fund, the practitioners being thereby enabled to carry on their private practice without any expense at all, and any surplus from the pool could be divided annually. The team of practitioners would not get individual payment for general diagnostic work, but would gain indirectly owing to the diminution of their private expenses. The general practitioner who sent up the case for diagnosis would receive a comprehensive report, and would be free to adopt any line of treatment within his own competence that seemed best.

Arrangements for treatment at such a clinic might be provided, but the privilege of a patient to choose his own specialist should be preserved. The charges of a nursing home attached to the clinic would go towards the upkeep of the home, whilst professional fees would be paid direct to the surgeon or physician who had undertaken the treatment. All patients, other than those who wished to see a particular member of the team, would in the first instance be directed to a medical assessor, who should be a practitioner or consultant of great experience, who would make a thorough routine examination before referring the patient to any specialist. A pooling system for fees could only be made applicable to diagnostic work, fees for treatment being arranged privately between the practitioner concerned and the patient. Dr. Anderson did not think it would be in the interests of either the patients or of those practitioners if diagnostic work alone were done at the clinic. Observation wards would anyhow be necessary, and additional beds for treatment would probably follow as a matter of course. However, arrangements for treatment would lead to greater difficulties in connexion with finance. The expenses of establishing a diagnostic clinic could be provided by the team of medical men, but it was doubtful whether sufficient money would be forthcoming from this source for a nursing home as well. Once outside financial help was contemplated difficulties arise. From his experience as an official of the British Medical Association, Dr. Anderson realised that once the public was asked to aid in any way the financing of a nursing home the question of advertising would sooner or later be raised, and it was for this reason that he felt strongly that the control of private clinics, whether for diagnostic or treatment purposes, should be entirely in the hands of the medical profession.

Financial Benefit to the Patient.

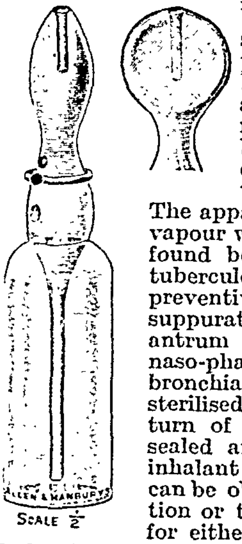
Dr. A. F. HURST said that he had long felt that his work at Guy's Hospital was more thorough than his private work, and so, within the last few months, he had started a private clinic about 20 miles from London. Already he had found it infinitely more pleasant and satisfactory to work in private with a team. In his opinion the financial aspect of such a clinic ought to be entirely independent of the medical officers, who should, however, have control, and should not allow advertising. His own clinic was entirely removed from the idea of financial gain. It was financed by two members of the lay public. The services of an old regular R.A.M.C. quartermaster had been secured to do the administrative side of the work. From the patient's point of view there was a distinct gain, since the total fees he often had to pay to one specialist after another would be much bigger than the fee payable to the clinic. This fee was the same, however many investigations were done, save where the patient's means suggested some reduction. In private practice it was often doubtful whether an additional test would throw light on the condition, and the patient's means had to be considered; at a clinic this question did not arise, an exhaustive investigation was made as a matter of routine, and unexpected diagnoses not infrequently ensued. As to patients of moderate means, in Dr. Hurst's opinion these should benefit at the expense of those better off, and therefore some cases were admitted to his clinic at greatly reduced fees. The clinic should be regarded as a place where a prolonged consultation takes place. The saving of time to the medical officers was enormous, and, from the patient's point of view, though diagnosis might take a week, it was then probably as definite as it ever could be. A resident medical officer was an enormous help in relieving the senior men of routine work, and also in getting the initial history typed ready for his visit. Dr. Hurst gave a few examples of difficult cases which had recently been diagnosed at his clinic. The resident medical officer was in a position to examine a patient at any time of day or night when an attack of pain or other symptom manifested itself, and this fact alone was of incalculable diagnostic advantage. As to treatment, Dr. Hurst mentioned gastric cases as exemplifying the advantages of a consultation between surgeon and physician. In his experience twice as many patients presented themselves suffering from after-effects of gastro-enterostomy as from primary gastric symptoms. He did not suggest that this was not a good operation, but most people would agree that it is done too often, and with adequate medical treatment the patients would often recover without such drastic measures being resorted to.

On the motion of Dr. A. LAPTHORN SMITH, seconded by Sir THOMAS HORDER, the discussion was adjourned to a day which will be announced later.

New Inventions.

ALL-GLASS INHALER.

THE inhaler shown in the illustration is so constructed that on nasal or oral inspiration air is drawn into the main body of the bottle-like apparatus through a small opening in the "neck," passes down the central tube, bubbles through the inhalant, and becomes saturated. The medicated air then, through a by-pass, enters into the upper chamber or nozzle, and thence through the nose or mouth. The apparatus gives a highly saturated vapour with volatile drugs. It has been found beneficial in phthisis, laryngeal tuberculosis, nasal catarrh, and as a preventive of influenza; in rhinitis and suppuration of accessory sinuses—antrum or frontal—various forms of naso-pharyngeal catarrh, asthma, and bronchial trouble. The inhaler can be sterilised by boiling, and by a quarter turn of the stopper it can be safely sealed and packed for travelling with inhalant in it, ready for instant use. It can be obtained for nasal or oral inhalation or the nasal appliance can be used for either. Messrs. Allen and Hanburys, Ltd., 48, Wigmore-street, London, W., are the makers.



SCALE ½

Inverness. R. C. MACDONALD, M.D. Aberd.

Reviews and Notices of Books.

ANNALS OF THE MIDDLESEX HOSPITAL AT CLACTON-ON-SEA DURING THE GREAT WAR, 1914-1919.

By COMYNS BERKELEY and VICTOR BONNEY. London: W. J. Clark and Co. 1921. Pp. 128. 10*s.* 6*d.*

THE branch of the Middlesex Hospital at Clacton-on-Sea was offered to the War Office on the outbreak of war as a complete surgical unit for 115 men and 15 officers. The offer was accepted and the hospital was employed as a First Clearing Hospital throughout the war. Owing to the fact that all the other members of the surgical staff were already employed on war work, the two gynæcological surgeons, Mr. Comyns Berkeley and Mr. Victor Bonney, volunteered to do the work at Clacton as resident surgeons, each living there and carrying out the whole work of the hospital for part of the week. The book before us gives a readable and interesting account of the work at Clacton. During the 4½ years, 9242 patients passed through the wards and were thus under the care of the two surgeons, who were personally responsible for all the medical and surgical work of the hospital except that some assistance was given in the matter of anæsthetics. The analysis of the cases given in Chapter IV. shows how varied they were and gives some idea of the labour involved. No less than 874 operations were performed, and all the X ray examinations were carried out by the two surgeons themselves, after a little coaching from the late Mr. Cecil Lyster. It is impossible to withhold a tribute of admiration for the patience, resource, and versatility shown by Mr. Berkeley and Mr. Bonney in the work here recorded. Many hospitals with an equal or smaller number of beds had a large staff to carry out the work, which was here done with high efficiency by two men. They have the satisfaction of knowing that the personal sacrifices they made in a time of national need set free other men for work abroad. The proceeds of the sale of the book are to be devoted to the funds of the hospital. The book is well written and contains humorous details of life in a war hospital. It is illustrated by photographs and a few sketches and caricatures, and we feel sure that it will appeal to a wide circle of readers.

DICTIONARY OF APPLIED CHEMISTRY.

Vol. I. By Sir EDWARD THORPE, C.B., LL.D., F.R.S. London: Longmans, Green and Co. 1921. Pp. 752. 60*s.*

IT is rightly pointed out in the preface to this volume that the war has exercised a great influence on applied chemistry, for it has led to an enormous expansion, more or less permanent, of certain branches both in this country and abroad. As there now appears to be some likelihood of a really stable chemical industry being established in Great Britain, the appearance of a revised and enlarged edition of this well-known work is opportune. The chemical manufacturer who proposes to make high-grade products, involving large capital outlay and technical skill, naturally hopes to sell his goods at a reasonable profit. In many, if not in most cases he cannot do so at the present time and, if the industry is to be kept going, some assistance, such as has been outlined by the Government, is an absolute necessity. The interdependence of chemical warfare and chemical industry is so well known that it would appear that Government aid to the industry is at least prudent from a national insurance standpoint.

The arrangement of the work is alphabetical. Vol. I. starts at A and ends with Calcium. Special articles are contributed by experts whose professional standing shows that Sir Edward Thorpe has done his best to make the Dictionary a true record of the present relations of chemistry to the arts and sciences

The medical man will find much which is interesting in this volume. Professor Barger writes on alkaloids, aconitine, adrenaline, and aloes, Professor Halliburton on bile, blood, and bone, and Dr. H. Robinson on anæsthetics. There appears to be little room for constructive criticism in the compilation and mistakes and misprints are rare. References to the literature are numerous, but some contributors adopt the rather irritating fashion of quoting the number of the volume and page but not the year: in the forthcoming volumes the year of the references should be added.

ANATOMY.

Anatomy of the Nervous System. By STEPHEN W. RANSON. London and Philadelphia: W. B. Saunders Company. 1921. Pp. 395. 32*s.* 6*d.*

Professor Ranson has produced a work intended for the use of the student of medicine, and has written with this object ever in mind. He begins with a short but clear exposition of the nervous system in invertebrates and lower vertebrates, and thus leads on to the study of the mammalian and human system. The descriptions of the various parts which make up the whole complicated system are good and excellently clear, but we confess to being left with an indefinite feeling of confusion, which is probably connected with the arrangement of the descriptions. The illustrations are instructive, but we would recommend more careful editing of the figures in future editions: for example, the trochlear nerve is wrongly labelled in Fig. 8, and a similar fault appears to affect the mesencephalon in Fig. 11. Such inaccuracies are the more regrettable as the author makes such good use of his figures in his text. The book contains also a short outline of a laboratory course for students of neurology, and ends with a full and excellent bibliography.

Manual of Surgical Anatomy. Third edition. By C. R. WHITTAKER. Edinburgh: E. and S. Livingstone. 1921. Pp. 429. 15*s.*

THIS third edition of a book which has a considerable vogue among students shows some enlargement and several new figures. Mr. Whittaker purports only to give outlines of the subject, and his book is a good example of a student's handbook of its kind. The diagrams serve their purpose, and we especially note one or two of the skiagrams as unusually good. Fig. 46, however, would perhaps give a more natural colour to the retina with better registering, and there is an evident gap in Fig. 2, which ought to contain lines indicating the contributory fibres to the outer cord. The text is readable and clear, but we think it would be as well to omit developmental descriptions where no direct reference is made to their bearing on pathological or clinical problems. We are glad to see that this is one of the few English books wherein Professor Marie's objections to the conventional teaching of the schools regarding aphasia receives mention, although no further details are given. A short appendix, giving Macewen's results in study of bone formation, epiphyseal junctions, and pelvic measurements, closes a good little manual.

ELECTRICAL METHODS IN UROLOGY.

Notions Pratiques d'Electrothérapie Appliquée à l'Urologie. Second edition. By Dr. DENIS COURTADE. With a Preface by *Prof.* LEGUEU. Paris: E. Le Francois. 1921. Pp. 241. Fr. 18.

As it title implies, this book deals with the uses of electrical methods for the treatment of diseases of the urinary tract. In addition, the physiology and pathology of the tract are described in so far as they are relevant, and also the properties and means of production of the various currents used for treatment. The subject is presented in the form of a series of lessons. The first four of these are devoted to physics and electro-technics and the remaining six to those diseases of the urinary tract which can be successfully treated by electrical methods These diseases are divided into two classes, of which one includes disorders of function, unattended by organic change, and the other those in which organic changes are present. In the fifth lesson the connexions of the urinary tract with the nervous system are described, and then the various neuralgias—renal, vesical, urethral, prostatic, and testicular—with their symptoms, diagnosis, and appropriate electrical treatment. In the sixth and seventh lessons functional disorders of the urethral and vesical muscle, such as paralysis and spasm, are considered, also nocturnal incontinence, spermatorrhœa, and a condition termed "pollakiurie" (frequency of micturition without increase of the total daily quantity). The remaining three lessons deal with diseases of the urinary tract accompanied by organic changes. These include inflammation and new growths of the bladder and prostate, urethritis, stricture, and polypi of the urethra. The author speaks of the value of ionisation, and 13 pages are occupied by a description of this method and its advantages. By means of ionisation drugs can be made to penetrate the mucosa of the bladder and urethra, while the epithelium of these passages is impenetrable by the process of simple diffusion. The treatment of strictures by electrolysis is described, and the method termed "electrolytic dilatation" (a combination of simple dilatation and electrolysis) is recommended by Dr. Courtade, who claims that it acts more quickly than simple dilatation, and that the benefits are permanent. If the stricture is composed of very dense scar-tissue, the method is slow, but good results are finally obtained.

The book is a clear exposition of the powers of electricity for the treatment of diseases of the urinary tract, and is based on the experience gained by Dr. Courtade at the Hôpital Necker during the past 30 years. He insists on the importance of knowledge of physiology and pathology for successful treatment, as well as familiarity with physics and electrotechnics. The first 99 pages contain an account of these subjects that can be clearly understood by anyone who is acquainted with the commonest electrical terms.

The English reader is left in some doubt regarding the method of action of high-frequency currents—other than by the production of heat, and elsewhere when more than one method of treatment is described, the reader is not always given sufficient indication of their relative values. The book is attractively written and is a valuable addition to the literature of medical electrology.

SIDELIGHTS ON THE EVOLUTION OF MAN.

By KARL PEARSON, F.R.S. University of London Eugenics Lecture Series. XIII. Cambridge University Press. 1921. Pp. 27 + 7 plates. 3*s.*

THE intention of this lecture is to set forth what evidence can be adduced from the study of a single bone—the femur—to support the contention that the line of man's evolution followed that of the fiercer of the Primate series, rather than that of the arboreal or more timorous group; that he is more nearly related to ancestors which produced the modern anthropoid apes than to those from which the gibbons have arisen. The point on the evolutionary tree from which the gibbons started, and certain alleged resemblances between Trinil femur and those of Dryopithecus, a fossil gibbon of great size, have for years been in dispute. Professor Karl Pearson is in agreement with Sir Arthur Keith in believing that the modern anthropoids—the chimpanzee, orang, and gorilla—left the direct simio-human stem at a more recent date than the gibbons. He regards the features of the Trinil femur as substantially those of modern man, and dismisses Dubois's view that the convexity of the popliteal space is evidence of near relationship to the gibbons, by showing that the same condition is not uncommon in modern human femora.

The author discusses in particular certain anomalies or deviations from the accepted anatomical description of this bone, the lateral protrusion, the degree of bowing, the hypotrochanteric fossa, "pilasters," and the third trochanter. He gives statistics and measurements of these features which strongly support his contention, although those relating to the third trochanter are not convincing. The significance of pilasters—occurring chiefly in bones showing excessive bowing—seems to be questionable. Professor Pearson says, "I doubt very much whether man ever stood upright until he had developed a pilaster," and the same might be said of the possessors of the rickety bones with which all are familiar. The causation of the pilaster in both cases must lie in the nature of the muscular pull in a curved bone.

So far as the femur alone is concerned the case is a strong one, and the use made of the numerous indices deserves further study. When applied to a single bone in this manner physical anthropology recalls the methods employed by Mr. Sherlock Holmes, in a case in which his client had left his hat behind him, to deduce the type of man he was.

PERSPECTIVE: THE OLD AND THE NEW METHOD.

By A. S. PERCIVAL. London: Longmans, Green and Co. 1921. Pp. 42. 4*s.* 6*d.*

MR. PERCIVAL, well known for his work as ophthalmologist and mathematician, has essayed the difficult task of writing a book on perspective that shall be both brief and lucid. The medical interest of the book is slight, and Mr. Percival has not thought it necessary to include the preliminary remarks on optics which, in other treatises, have mystified many art students. He comes straight to his subject and he sets out the rules of perspective dogmatically and comprehensively. What teachers at drawing classes, as well as their pupils, may thank the author in particular for is the opening section in which the field of view is explained. It is quite usual in books on perspective of far greater ambition than this treatise for the authors to make such muddling remarks on "distance," "station," "point of view," and "vanishing points," that the whole subject of artistic perspective, which requires a clear mind for its understanding, becomes involved in mystery from the start. So much information has never before been given in so small a compass, but knowledge packed closely by an author has always to be unpacked slowly by a reader. An art student to benefit by this small book must read slowly, pencil in hand, and be resolved not to read one line ahead of perfect understanding.

There are several misprints, which should be corrected in any future issues.

JOURNALS.

IN the *Military Surgeon* for May, Colonel A. N. Stark, who was medical officer at headquarters of the American Army in the St. Mihiel and Argonne operations ("Army Surgeon"), discusses the preparation by the surgeon of an army for the medical service of a battle. He stresses the need for full information of what is intended, observing that it is only relatively inexpert staffs which fail to give the senior medical officer information as soon as a movement is decided upon. The same thought is, by apt coincidence, expressed in the May *R.A.M.C. Journal*, where Major A. C. Osburn mentions it was only "after 1916, when brigade staffs became more inexperienced," that he had to find out for himself what his field ambulance was wanted to do. Colonel Stark goes on to say that after the chief surgeon has prepared the perfect battle scheme and has arranged therein for everything that can be foreseen, emergencies will still arise that can only be met by what he terms "esprit," developed in a spirit of mutual confidence and in friendly rivalry.—Major A. Parker Hichens, of the U.S. Army Medical School at Washington, speaking of anaphylactic collapse, recommends small doses of epinephrin and of atropin, though his 1100 gr. of atropin sulphate seems rather a large dose, 0·5 mgm. being the suggested metric alternative. He also recommends epinephrin for the urticaria which may arise after serum injections.

THE LANCET.

LONDON: SATURDAY, JUNE 25, 1921.

Notification of Measles.

MEASLES is a potent cause of preventable infant mortality. Usually the annual deaths from this disease are, roughly, equal to the total deaths from all other notifiable infectious diseases. Two articles in the present issue of THE LANCET, by responsible public health officers, discuss some aspects of the compulsory notification of measles, Dr. R. DUDFIELD, representing an essentially urban community and Dr. R. M. F. PICKEN, a suburban and rural area. In the light of these articles it may be well in the first instance to review the history of notification. Up to Jan. 1st, 1916, measles was compulsorily notifiable in the areas of a few sanitary authorities only who had obtained the permission of the Local Government Board to add it to the list of diseases notifiable under the Act of 1889. During the war serious outbreaks of the disease occurred among troops, which, as noted by Dr. PICKEN in the case of the Highland Regiment at Bedford, were sometimes accompanied by a very heavy mortality. It was therefore important that troops should not be billeted upon or located near, a population among which measles existed. An Order was therefore made by the Local Government Board requiring compulsory notification of the disease all over England and Wales from Jan. 1st, 1916. At the same time an attempt was made to induce sanitary authorities to take steps to reduce mortality from this disease among the civilian population by the provision of home visiting and nursing, and by medical assistance for cases of measles. Grants were promised to assist expenditure for this purpose. In 1918 an account of the administrative measures taken against measles by Dr. S. W. WHEATON, and a report on the prevention of mortality and disablement due to measles and pneumonia by Dr. A. S. MACNALTY, were published by the Local Government Board.[1] In the four years 1916 to 1919, 1,565,380 cases of measles had been notified, and 29,567 deaths had occurred from measles. On the termination of the war the position had to be reviewed. It was found that the country as a whole was not ready for action for the prevention of mortality from measles; and the Ministry of Health, which had succeeded the Local Government Board, decided that the continuance of the Order was not the best method of dealing with the problem. Accordingly the Order was rescinded, and from Dec. 31st, 1919, measles was no longer compulsorily notifiable throughout England and Wales.

The reasons that influenced the Ministry in taking this course are set out in the report of the Chief Medical Officer for the year 1919-20, p. 50. It is there stated that (1) notification of the first case in a house attended by a medical practitioner, and of each case in a household by the parents of the patient, is not an essential factor in a practical scheme for reducing mortality from measles; (2) that the sanitary authorities most active in this work have still to rely in large measure on other means than notification for finding out cases of the disease—e.g., through reports of health visitors and from schools, with the result that notification was redundant; (3) that on the other hand, in certain districts nothing followed notification, and it was difficult to justify the expenditure on notification fees. Grants in aid of measles prevention work were continued. The Ministry were willing, in any case where the sanitary authority had made suitable arrangements for reducing the mortality from measles, to make an Order on the lines of the rescinded Order of 1915 to apply to their district. This course was followed at Paddington, as related by Dr. DUDFIELD, where compulsory notification has been continued up to the present time without a break. The absence of compulsory notification need not prevent any sanitary authority from taking action for reducing the mortality from measles. All other available machinery must be called upon for reporting cases of the disease in children, such as inquiries by health visitors and school nurses in the course of their ordinary duties, the reporting of cases by school teachers, school attendance officers, and by parents. Measures should be devised for speeding up this information, so that it may reach the medical officer of health promptly, and the delay in receipt of the information, referred to by Dr. DUDFIELD, must be removed, that nursing assistance can come into operation sufficiently early in the course of the disease. It is noteworthy that the Registrar-General states the mortality from measles for the year 1919, the fourth year of general compulsory notification, to be 326 per million, which is by far the lowest ever recorded. It is to be hoped that all medical officers of health will give details of measures taken for preventing mortality from measles in their annual reports, and for securing notification without compulsion.

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Antimalarial Measures in India.

ALL who read on page 1393 of this issue of THE LANCET our review of the Report of the Sanitary Commissioner with the Government of India for 1918, the most recent Report yet issued, will feel that the well worn tag—"If preventable, why not prevented," has a special application to the incidence of many diseases, and in particular of malaria, in the Empire. In 1918 the death-rate from all causes in the general population of India was no less than 62·42 per mille. Much of the excess over the average rates in previous years was due to a huge influenza epidemic, and it must be admitted that preventive medicine was as powerless elsewhere as in India to deal with the scourge. No less than 11,134,441 deaths were registered as due to "fevers," against a decennial mean of 4,308,356. But in each 4½ million deaths registered under this term in India, it has long been officially conceded that not less than one million are due to malaria, and that the cases of sickness from this cause which do not end fatally amount to one hundred millions per annum. Were malaria contracted solely by the families of the labouring classes, and without taking into account capital vested in the producer, such figures would imply annually an unproductive expenditure of from £17,000,000 to £20,000,000, by reason of loss of wages, expenditure during sickness, and concomitant circumstances. The calculation, though a rough one, enables us to see how much money and how many lives are wasted and to what an extent industrial production is handicapped, because the preventable disease of malaria is not prevented. The carrying out of measures must fall to local governments, but the responsibility for legislation rests with the Government of India, whose rarely-exercised right of suggesting sanitary measures has been abrogated; and it is to the Government of India that the medical profession looks for active remedy. The principles which have guided the Government hitherto, in respect of the incidence of malaria, account for the lack of success in making a reduction of the disease in any area sufficiently large to appreciably diminish the loss of lives. As man after man has succeeded to office in the Government, he has inherited files from his predecessor which have taught that, in dealing with a tropical people, possessed of, or obsessed by, caste and religious prejudices, to go slowly is the only sound procedure. It would be well that some more active policy were adopted, although, broadly speaking, when dealing with 450 millions of people we cannot go faster than they want. It is first needful to create the demand for better things.

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[1] Reports by the Local Government Board on Public Health and Medical Subjects. (New Series, No. 115.)

At the instance of the Royal Commission on the Sanitary State of the Army in India, which issued its Report nearly 60 years ago, namely, in 1863, there was established in each Presidency a Sanitary Commission in direct communication with the local government concerned—that of Bengal being also the advising body of the Government of India. During the short period these Commissions were allowed to exist, they gave an earnest of excellent work. But they were too far in advance of medical knowledge, and slowly but surely their functions were whittled away; first the members, then the president, and lastly the secretary, were got rid of. A single Sanitary Commissioner with the rank and pay of a Deputy Surgeon-General, corresponding to the rank of Colonel at the present day, then represented what had been a powerful body, supported by the Secretary of State, with which the Government of India had to reckon. But even this solitary officer was found to be an awkward factor if he ignored the time-honoured habits of procrastination or inertia in sanitary affairs, so reduction in pay and rank followed. In 1864–65 the Sanitary Commission of Bengal urged the appointment of municipal and sanitary services in all districts. Later the Secretary of State required the attention of the Government of India to the same subject for India generally. Successive Sanitary Commissioners of the other Provinces have urged similar reforms. But 1921 finds necessary action far from complete. Nor has the Government of India exhibited any more virile attitude in respect to measures more directly connected with malaria. Ross commenced his efforts to solve the malaria carrier problem in May, 1895. In December, 1896, the Government of Madras, recognising the importance of this research, urged the Government of India to place him on "special duty," so that full time might be at his disposal. This meant the grant of an acting allowance for the medical officer of a regiment to supply the vacancy, and a small percentage on the normal pay of the incumbent of the appointment. The Government of India, however, pleaded financial inability to meet the expenditure till February, 1898, and we seem to have heard that Ross personally received no thanks or recognition of any description for the work he had done in this connexion. The heritage of files in the offices of the Government of India still dictates that it is cheaper to place quinine on sale than to inaugurate with a whole heart large antimalarial measures in fever-stricken areas. The Government of India would seem still to regard drainage as of dubious utility, yet, and without the knowledge that we now possess of the causation of malaria, the members of the Royal Commission were able in 1863 to give the following definite opinion:—"One of the earliest discoveries of these facts was that intermittent fevers disappeared from places which were formerly ravaged after drainage of the soil and improved cultivation." In 1921 the effect of drainage is a matter of experiment in India with the aid of the Research Fund. Are conditions as to soil and water so very different to those found in other countries as to demand a waiting policy? It may be admitted that agricultural drainage may often be a better antimalarial measure than a mere ad hoc scheme. The prosperous and well-fed native becomes remarkably tolerant of the malarial virus. The problem, too, is different in every Presidency and often in every district. In Lower Bengal, where certain land is slowly rising above flood level, it is a geological-agricultural problem; in the cities the wells and water cisterns are to blame; in the Terai it is usually clear streams that drain the country perfectly; in some places it is railway borrowpits; in others dense jungle; in others again salt pools along the edge of the sea.

In view of all this it is satisfactory to find from the Sanitary Commissioner's last Report that at Secunderabad, as a result of abolition of wet cultivation and drainage of a tank, *commenced in 1917*, a decrease in malaria prevalence has occurred. This is the result of advice which has been offered by successive medical officers concerned since and probably before 1882, but with no result. And retrospect takes us back much further than 1882. Advice was tendered by a Special Committee on which DEMPSTER, of spleen fame, sat in 1845 in respect to Peshawar which was, and is, exactly to the point, but it remains, if not lost sight of, still "under consideration." This advice was as follows: "According to almost universal experience, there is no more ready way of generating malaria in such a climate as this than by profusely irrigating a stiff retentive soil, and therefore we believe it imperative not only to prohibit all canal irrigation within one mile of the Cantonment Pillars, but to take steps for securing the perfect drainage of the space included within this line." That important sanitary works have been completed in India none would wish to deny, but the fact remains that, notably in sanitary organisation and in major antimalaria efforts, the Government of India has failed to adapt its policy with changing times. Of this fact the annual recurrence of one million deaths from the preventable disease of malaria is evidence in the light of recent knowledge.

Hæmoglobin.

INTERESTING letters in *Nature* from Sir RAY LANKESTER have raised again some curious questions with regard to the occurrence of hæmoglobin in the animal series. For the original statements he was himself mostly responsible, nearly 50 years ago, and not much has been added since to the facts which he gave in the Proceedings of the Royal Society in 1872. All vertebrates have acquired the trick of having a rapidly moving circulating fluid carrying large quantities of hæmoglobin which is packed inside special corpuscles. It may be presumed that this method of arranging the supply of oxygen has been developed in adaptation to the increasing complexities of a delicate nervous system, and, in warm-blooded animals, to the immense rise in the activities of the tissues generally. The plan used by insects, which alone among invertebrates show a rate of metabolism comparable to that of mammals, of a system of air-tubes conveying air, as such, directly to the tissues, has not been pursued further in evolution.

Scattered about among invertebrates there are a number of instances of the occurrence of hæmoglobin, either inside cells or free in the body fluids. There are considerable quantities of it in such familiar objects as the blood of the larva of the fly *Chironomus* and the flat pond snail *Planorbis*, in the muscles about the tongue in the pointed pond snail *Limnæa*, in the nervous system of the sea-mouse *Aphrodite*, in the blood of earth-worms, and so forth. It seems to have developed in a haphazard way in species or genera in a variety of groups, and it is difficult to indicate precisely its utility. It is certainly not necessary for life, since the whole of it may be put out of action by carbon monoxide without any immediate ill-effects. The various species of *Planorbis* and *Limnæa* live together in the same ponds and rivers; both normally obtain their oxygen by coming to the surface and gulping in air; yet in the former hæmoglobin occurs in large quantities in the blood, while in the latter there is merely a trace in its masticatory muscles. It has been shown that the hæmoglobin of *Planorbis* is of advantage when the oxygen supply is very deficient, but the animal must seldom find itself in such situations, and its near relations and neighbours get on quite well without. Such advantage as hæmoglobin must carry with it would seem to be a very small one. Of the remote origin of hæmoglobin we have no information beyond a chemical relationship to chlorophyll and the pigments of red and blue-green algæ. The blue copper-containing proteid found in the blood of the larger mollusca and crustacea indicates another line of development but not a promising one, for the oxygen-carrying powers of this hæmocyanin are small compared to those of hæmoglobin. The odd cases where invertebrates are known to accumulate lead, zinc, and manganese are also perhaps worth consideration. The chemical intermediates which evolution theory postulates are as unknown as their morphological analogues: perhaps because they are colourless and have not been looked for very thoroughly.

For there is no doubt that "hæmoglobin" connotes to everyone its gorgeous colour: whole arterial blood is decorative enough, and when it is laked it is magnificent. As RICHARD OWEN remarks in one of his profounder moments, "Man is naked, and is the only terrestrial mammal in that predicament," which has incited him to exercise his æsthetic instincts and make that singular secondary decorative use of his respiratory pigment which could serve as an introduction to a consideration of the best part of human conduct. It is an accident that hæmoglobin is red, but it is an accident on which is founded the homœopathic magic of the virtues of red wine and pink pills and all sorts of curious beliefs and practices. Is it possible after all that some of the invertebrates are more emotional than we suppose?

CONFERENCE ON PHYSICALLY DEFECTIVE CHILDREN.—A Conference under the joint auspices of the Central Committee for the Care of Cripples, 10, Berkeley-street, London, W. 1, and the Newcastle Invalid Children's Aid Association, 17, Ellison-place, Newcastle-upon-Tyne, will be held at Newcastle on July 19th. The subjects for discussion will be the treatment and education of physically defective children and the best methods of administration and coördination to procure the same. Programmes will be issued shortly.

Annotations.

"Ne quid nimis."

"BACK-PRESSURE" AND HEART FAILURE.

IN this issue of THE LANCET we print the concluding section of Sir James Mackenzie's important dissertation upon the whole subject of Heart Disease and Pregnancy. These chapters will, we feel sure, have appealed to a wide circle of readers, coming as they do from the pen of one who writes with the authority derived from a lifetime of careful observation at the bedside. For many years Sir James Mackenzie has taken every opportunity of insisting, both by written and spoken words, that the heart muscle is the vital factor in the production of the phenomena of heart failure. The same notion can be found here and there in the writings of an earlier generation, but it appears only sporadically and without insistence. In the main, until recent years, there had been a tendency to ignore the heart muscle, and to focus attention on the heart valves. This undoubtedly resulted from the introduction of the stethoscope—an instrument which Sir James Mackenzie regards as a not unmixed blessing so far as the heart is concerned—for the discovery of cardiac murmurs, and their relation to valves found damaged at the post-mortem examination, led to the conclusion that the embarrassment of the circulation was due to the damaged valves. There followed the gradual evolvement of the back-pressure theory to explain heart failure. It was assumed that the damming back of the blood in the chamber behind the damaged valve—for instance, in the left auricle when the mitral valve is stenosed, caused that chamber to dilate and fail; the consequent congestion of the lungs led to failure of the right ventricle, which in turn brought about failure of the right auricle, tricuspid incompetence, general œdema, and finally failure of the left ventricle.

In his book on "Diseases of the Heart" (third edition, p. 6), Sir James Mackenzie points out that the back-pressure theory did not arise from the careful observation of individual cases passing through the different stages of failure, but from attempts to describe the process by arguing backwards from the evidence present in advanced conditions of failure. He further states that the theory has done much harm to individual patients and has hampered the advance of medical science. It is interesting to note in this connexion that in the second section of the present article, Sir James Mackenzie now considers that back-pressure does play some part in the production of heart failure in certain cases, especially in mitral stenosis. But the theory fails to account for a very large number of cases, and conspicuously in that common group in which, with the onset of an abnormal rhythm such as auricular fibrillation, failure with general congestion is abrupt in its origin. Nor is the new and abnormal rhythm in these cases itself the cause of the failure, for it is by no means uncommon to meet with cases of auricular fibrillation with little evidence of circulatory embarrassment. We are led to the conclusion that the determining factor is the degree of integrity of the heart muscle. The complete story of heart failure is not yet unfolded. The remaining chapters will assuredly be written, and much may be hoped in the future from that method of accurate clinical observation of which Sir James Mackenzie is a past master.

THE DENTISTS BILL.

THE Bill, as amended, remedies the failure of the Dentists Act of 1878 in many directions, though it does not give general satisfaction. We think that the Dentists' Committee may be congratulated on the general moderation of their demands. And having conceded the major claims of the Bill, is it really of much value to have a "special list."

or a special term such as "Dental Practitioner," to distinguish the new-comers from the men at present registered? After all, it is not the profession who have to select the dentist but the general public, and when we allow the 4000 men carrying on practice under the protection of the present Register to be watered by the inrush of some 10,000 unqualified practitioners, how can we expect the public to recognise the distinction afforded by a duplicate list? After all, it is to the Dental Directory rather than to the Register that the small proportion of the public who makes inquiry as to the qualifications of a dentist will go, and there a man's professional record will be fully set out. And even now the 14,000 dentists of the new official list will not suffice for the great mass of the public. Of dentistry more than of any other calling may it be said "the harvest truly is plenteous, but the labourers are few." It is, therefore, to be regretted that the Bill omits or waters down important recommendations such as the provision of maintenance scholarships for one-half of the entrants to the profession in the next five years; a complete scheme of dental inspection and treatment of school children, and children under 5 years, and expectant and nursing mothers; the setting up of a public dental service in populous areas; and finally, the granting to public health authorities of powers in regard to dental disease similar to those contained in regard to tuberculosis in Section 3 of the Public Health (Prevention and Treatment of Disease) Act, 1913. These measures are the positive steps which must be taken if we wish to destroy quack practice. Prohibitions are well as far as they go, but provision is better, and in this respect the Bill before Parliament is lamentably wanting. The Bill has passed the second reading in the House of Lords, and if various interests are affected it is well for all parties to remember that we are living in an age of great reconstruction, and patience as well as boldness is required of us all.

NO NECK.

IT is a constant feature of mammalian anatomy to have seven vertebræ in the neck and seven only; the constancy is almost comic, for the supply is more than adequate for the walrus or dolphin, and much less than adequate for the giraffe. Man may well be content with seven. In a recent issue of *La Presse Médicale* is a description by Dubreuil-Chambardel of a rare condition associated with a developmental defect of the cervical vertebræ. Although medical literature contains many references to an analogous defect in the lumbar region, variations in the number of the cervical vertebræ are much more rarely met with, and have received correspondingly scanty attention. The writer in the paper under notice has collected the published observations relating to 12 cases of "les hommes sans cou" with the idea of presenting a complete clinical picture, the symptoms of which he designates as the syndrome of Klippel-Feil after the two men who first described it in 1912. From the anatomical standpoint the main characteristic of the syndrome is the partial or complete fusion of the cervical vertebræ. It is difficult to distinguish clearly the vertebral bodies in this fused mass—although usually the rudiments of three or four deformed vertebræ may be made out—the atlas and the axis often being so small and indistinguishable in the mass as to appear to be absent altogether. Another characteristic is the presence of a triangular opening on the posterior aspect of the vertebræ which may reach from the cranium to the thoracic region, constituting a true spina bifida. This condition, although not constant, was present in eight of the 12 cited cases. The third anatomical characteristic to which the author draws attention is the displacement upwards of the chest—the "cervical thorax"—owing to atrophy of the cervical column and elevation of the thoracic vertebræ and ribs. The three main clinical signs of the condition are: the absence of the neck, more noticeable from the posterior view; the limitation of head movements, more especially rotary and lateral movements; and the level of the base of the hairy scalp, usually below the biacromial line. To these signs may be added an associated scoliosis, with or without kyphosis, and the lowering of the mammary areolæ together with the elevation of the scapulæ. The ætiology of the dystrophy is obscure, the author preferring not to commit himself to an opinion as to whether the association of spina bifida is post hoc or propter hoc. Finally, the writer discusses the differential diagnosis of the condition, which was mistaken for Pott's disease in five out of the series of 12 cases, and for a simple torticollis in several other cases, in two of which section of the sterno-cleidomastoid was done, without, of course, any effect. The diagnosis rests mainly on the congenital character of the deformity, the absence of pain and swelling, the persistence and painlessness of nodding movements, while lateral and rotary movement is limited or absent, and the abnormally low level of hair growth posteriorly. An X ray photograph, however, settles the diagnosis conclusively. The deformity, which is not incompatible with a long life, appears to be commoner in men than in women, the proportion in the cases cited being 9 to 3.

POST-GRADUATE MEDICAL EDUCATION.

IN January last a Committee was appointed by Dr. Addison, as Minister of Health, to investigate the needs of medical practitioners and other graduates for further education in medicine in London, and to submit proposals for a practicable scheme of post-graduate medical education. The Committee, composed of the following members, Dr. H. J. Cardale, Sir Wilmot Herringham, Sir George Makins, Sir George Newman, Sir Robert Newman, M.P., Sir Edward Penton, Sir E. Cooper Perry, Mr. J. Dill Russell, and Dr. T. W. Shore, with Lord Athlone as chairman, has just issued its report.[1] The chief recommendation made is the establishment of a Central Post-Graduate Hospital and School to be devoted solely to post-graduate work. The hospital should contain at least 300 beds and its equipment should be complete and modern, and a fully developed out-patient department would be an essential. The allotment of beds is suggested as follows: medical 100, surgical 100, ophthalmology 12, skin diseases 12, gynæcology 24, children's diseases 12, venereal diseases 6, neurology 12, laryngo-oto-rhinology 12, observation and septic cases 12. Associated with this Central Hospital and School would be the great special hospitals of the metropolis. It is suggested that one of the existing under-graduate schools might be converted into such a centre, and the building of a new hospital for this special purpose is not recommended. The institution of a central office to link up post-graduate study in the United Kingdom with that of the continent of Europe and America is suggested. This central office should be in the charge of a whole-time principal officer and its committee of management should be responsible for the organisation of the system as a whole. Social facilities in the shape of reading rooms, a restaurant, and a library of periodicals should be attached to this central office, and a hostel for the convenience of doctors attending the courses from a distance would also, in the opinion of the Committee, be a desirable addition.

Another important recommendation is the establishment of an institute of State medicine whereat public health post-graduate work should be concentrated. Such an institute might be under the administration of the University of London, in a position analogous to that held by the Institute of Historical Research, and would provide instruction in public health, forensic medicine, toxicology, and industrial medicine to students from the United Kingdom, from overseas, and from foreign countries. The whole scheme as outlined in the report would involve an annual charge of approximately £28,000. As constituent parts of the University of London, the school and institute would be eligible for inclusion in the list of institutions subsidised by the Treasury through the University Grants Committee. Fees from students would raise a certain amount, and from whatever source the balance, if any, is to be procured, it is not proposed to ask for support from local rates. These are the main conclusions of the Committee, which includes in its report some account of the history of the attempts to procure post-graduate facilities in London, with special reference to the efforts of Sir Jonathan Hutchinson and, more recently, of the Fellowship of Medicine. We trust that prompt action will be taken on the lines suggested by the Committee.

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[1] Report of the Post-Graduate Medical Committee. H.M. Stationery Office. 8d.

INJECTION OF ANTITOXIC SERUM AND SUDDEN DEATH.

FROM time to time cases of sudden death following the injection of antitoxic serum are recorded, sometimes even in healthy persons to whom the serum is given for prophylaxis. The prevalent view is that these distressing tragedies are due to anaphylaxis. In the *Journal of the American Medical Association* Dr. J. H. Lewis has advanced very cogently a new explanation. He points out that it should be impossible to produce death by subcutaneous injection of serum in ordinary doses. To produce acute anaphylactic death experimentally the antigen must get into the circulation rapidly. Paul Lewis found that from 6 to 10 c.cm. of serum injected into a sensitised guinea-pig (the most sensitive animal to anaphylaxis known) did not kill; from 12 to 20 c.cm. were necessary. But taking 6 c.cm. as the dose that will kill a 250 gm. guinea-pig, nearly two litres would be necessary to kill a 70 kg. man, if he were as sensitive as the guinea-pig, which he is believed not to be. Practically all the fatal cases are similar. A few minutes after injection the patient is seized with intense dyspnœa, followed by œdema and urticaria. The respiration ceases, but the heart continues to beat and death occurs within ten minutes. The sooner the reaction appears the more intense it is. These cases are inconsistent with the rate of absorption of serum from the subcutaneous tissue. This has been shown experimentally to be very slow by testing by complement-fixation the time of appearance in the circulation of horse serum in an animal subcutaneously injected. In a dog, injected with 10 c.cm., serum was first detected in the circulation 1½ hours after injection and was found present for 24 hours. To account for the presence in the circulation of serum in sufficient quantity to prove fatal in a few minutes, Dr. Lewis suggests that the injection was accidentally made into a vein. The subcutaneous tissue contains numerous vessels of good size and it is possible for the point of the needle to enter one. Then only a small amount of serum could be fatal to a sensitised person. A case of fatal intravenous injection of only one minim of horse serum into a man the subject of horse asthma has been recorded. The possibility of accidental intravenous injection is supported by experience of subcutaneous injection of oils and fat. Moller reported fat embolism 43 times in 315 patients injected subcutaneously with oily substances 3835 times. Febriger recorded a death following subcutaneous injections of olive oil in a patient suffering from stricture of the œsophagus. He developed hemiplegia and the necropsy showed fat emboli all over the body. Embolism after paraffin injections has also been described. A point which Dr. Lewis does not make is that the danger of injecting into a vein in the case of hypodermic injection of drugs has long been recognised. To avoid the danger of intravenous injection, Dr. Lewis recommends care before injecting to ascertain whether a blood-vessel has been injured. Aspiration should be performed to see whether blood can be drawn into the syringe. Another way in which serum may rapidly enter the circulation after hypodermic injection is on massaging the swelling produced, which Dr. Lewis says is a common practice; but whatever be done in America we have not heard of the practice in this country. He found that a dose of serum not big enough to kill a sensitised guinea-pig quickly proved fatal when the site of injection was massaged. This should be warning against the practice.

THE CORONERS (REMUNERATION) BILL.

A BILL has been amended in Standing Committee and read a third time in the House of Commons which has for its object the raising of the emoluments of coroners, who are now paid at a rate not changed since 1887. In view of present conditions, and of the importance and responsibility of the coroner's office, it would appear to be in the public interest that the remuneration offered should be such as to attract well-qualified men, and the qualifications necessary for a coroner are a knowledge of medicine and of law. In other words, the ideal coroner should have undergone the training and seen something of the practice of two learned professions. Nevertheless there were several members of the House of Commons who were evidently opposed to the Bill. One of these expressed disapproval of the fact that it was moved by a Member of Parliament, Sir T. Bramsdon, who was himself a coroner, and he contended that whether this was within the strict letter of the orders of the House, or not, it was utterly wrong. As a matter of fact, the Speaker had been consulted by Sir T. Bramsdon, and had ruled that his association with the Bill was perfectly in order. We fail to see that it can be "utterly wrong," as a matter of general principle, for a Member of Parliament, who has in some sense a personal interest in a particular piece of legislation, to abstain from furthering it or from impeding it. It is true that Members of Parliament are returned by their constituencies and that they have to consider the interests of their constituencies as well as those of the country at large. They are, however, if they are members of a particular profession or trade, experts with regard to it, and if without any concealment they take part in legislation directly or indirectly affecting it, their fellow members are well able to determine whether they act honestly in the general interest, or whether professional feeling is corrupting their judgments in a matter of public policy. There were members of the bar among the adverse critics of Sir T. Bramsdon, but it has never been urged that barristers should have nothing to do with legislation which provides remunerative posts for their profession. Nor has any consideration of the fact of their being personally interested prevented members of the House of Commons from providing themselves with salaries.

CHANCRE OF THE GUM.

IN a review of the literature of the subject, including the description of a personal case, Dr. Joseph Victor Klauder,[1] Assistant Professor of Dermatology and Syphilology in the Graduate School of the University of Pennsylvania, remarks that chancre of the gum is one of the rarest of extragenital chancres. Scheuer, in his work on "Syphilis of the Innocent," published in 1910, out of a total of 14,590 extragenital chancres recorded up to that date, states that only 97, or 0·66 per cent., were gum chancres. Since the appearance of Scheuer's book 15 cases of chancre of the gum have been reported up to 1919, making a total of 112 cases. The greater frequency of buccal chancres in some countries than in others is attributed by Dr. Klauder to the manner of eating and customs of different races and to racial customs of nursing and feeding children, and not, as might be supposed, to perversion of the sexual act. The chief source of infection is accidental contamination by various objects, especially toothbrushes, toothpicks, and dental instruments. In all the reported cases the lesion on the gum has been single, though in one of Fournier's cases there was an associated chancre of the hard palate, and in Frossard's case a lingual chancre as well. The anterior part of the gum is involved almost exclusively, and the upper gum is more frequently affected than the lower, the usual site of the chancre being opposite one or more incisor teeth, sometimes the median incisors but more frequently the left lateral. There are usually two types of chancre of the gums. The first or erosive type varies in size from that of a split pea to that of an almond, and is sharply demarcated from the surrounding tissue. The surface is smooth and of a carmine colour. Although in exceptional cases the lesion may remain unchanged, it usually becomes infected, the surface being covered with a false membrane and the centre showing ulceration and necrosis. The second type of gum chancre appears from the first as a sharply circumscribed ulcer of variable size and shape. Infection of the periosteum not infrequently occurs, the symptoms of which make the diagnosis more difficult. The conditions from which chancre of the gum is to be distinguished are inflammation and ulceration due to various causes, as well as tumours such as fibroma, epithelioma, and sarcoma. The early appearance and extreme degree of the adenopathy are characteristic of chancre, and the diagnosis is confirmed by the Wassermann reaction and dark-field examination.

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[1] Archives of Dermatology and Syphilology, May, 1921.

THE EXAMINATION OF GASTRIC AND DUODENAL CONTENTS.

THE introduction of fractional methods of gastric analysis has given a fresh impetus to the study of the secretions of the alimentary canal. Few gastro-enterologists are now content with the information given by analysis of a test-meal which has been withdrawn after an hour's gastric digestion. The main shortcoming of the old method was the indefinite indication which it supplied as to the actual degree of pyloric obstruction and gastric stasis present in any particular case. At the same time the technical difficulties of fractional analysis have delayed its universal adoption, and it is accordingly of interest to find the original devisers of the fractional technique now devoting especial attention to the examination of the "resting-juice," or "gastric residuum," as a means of clinical diagnosis. This has been the form of gastric analysis advocated for a considerable time by many of the French physicians, notably by Loeper, Pron, and Labbé, and there can be little doubt that it frequently yields information of the utmost value. In their latest communication,[1] Rehfuss and his co-workers in Philadelphia draw special attention to the conclusions which may be derived from knowledge of the volume of the fasting stomach content, and to the significance of the presence of food retention, altered acidity, pus, blood, and mucus. Especially do they point out the importance of septic conditions of the nose and throat as sources of the muco-pus frequently found in the stomach. The extraction and analysis of duodenal contents must necessarily present far greater difficulties than those attending gastric investigation; but in this field also advances continue to be made. Following the technique of Einhorn, an inquiry into the whole subject has recently been made by Mauban, of Vichy; his work[2] deals chiefly with technical methods for the passage of the duodenal tube, the quantitative estimation of the ferments and other constituents of the duodenal secretions, &c. It is to be expected that these and similar methods will, during the coming decade, yield information which will help to dispel the obscurity which at present veils so many of the problems of gastro-intestinal disease.

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[1] W. W. Lermann, M. E. Rehfuss, and P. B. Hawk: Journ. Amer. Med. Assoc., May 14th, 1921, p. 1310.

[2] H. Mauban, Rev. de Médecine, 1921, No. 3, p. 146.

INDUSTRIAL CATARACT.

IMPORTANT evidence as to the causation of certain forms of cataract will be found in the May issue of the *British Journal of Ophthalmology*. The observation that glass-workers in this country were especially prone to the disease was first made by Mr. W. Robinson, of Sunderland, who published papers on the subject in 1903 and 1907. Afterwards bottle-makers' cataract was placed by the Home Office upon the schedule of diseases under the Workmen's Compensation Act. At the same time a committee of the Royal Society was appointed to investigate the causation of the disease, and researches were conducted upon the absorption of various radiations by the media of the eye. In 1915 a paper was published in the Proceedings of the Royal Society by Prof. A. V. Hill and Dr. G. Hartridge tending to prove that the heat factor was of primary importance, but up till that date, with the exception of cases occurring among the glass-makers, there was a lack of clinical evidence to support that view. This evidence, however, has since been forthcoming. Some cases have been published by Mr. B. Cridland, of Wolverhampton, in which men who work at iron-smelting furnaces have developed a form of cataract identical with that observed among the glass-workers. Mr. St. Clair Roberts, of Dudley, has collected 25 similar cases among the chain-makers, men who spend the whole of the working day either gazing into the fire to judge when the links are hot enough to weld, or at the white hot metal while hammering it on the anvil. Still more remarkable evidence is supplied by Mr. James J. Healy, who, after having had the opportunity of seeing the cases among the bottle-makers of Sunderland, has made special investigations among the tinplate millmen of Llanelly. "The work is unusually heavy," he says, "and the heat is very great, so much so that a person unaccustomed to the work could not stand in the centre of a mill for longer than about five minutes without feeling somewhat overcome." "All the men in the mills are exposed to infra-red rays from the red hot tinplates . . . the ultra-violet rays are negligible." Cases occurring in men who had been working under 15 years in the mill were rare, but of 354 men of 35 years or over, who had been at work in the mill for as much as 15 years, 144 were found to have lenticular opacities, which could be detected without dilatation of the pupils. On the face of it the evidence appears to be irrefutable that continuous exposure to excessive heat over a long period is an efficient cause of cataract. Prevention is not easy, for although, as Mr. Healy remarks, the wearing of suitably prepared triplex standardised goggles would keep back the heat rays from entering the eyes, some additional preparation would have to be found to prevent the otherwise inevitable collection of moisture and dust on the glasses. It is to be hoped that this may be done before long. Meantime it seems very unfair that although glass-workers are entitled to receive compensation by law for the development of cataract, other workers whose eyes are exposed to excessive heat are not. To quote from the *British Journal of Ophthalmology*: "The evidence adduced by Messrs. Cridland, Roberts, and Healy is so conclusive that there is every reason to hope that the Home Office will take steps to remove this anomaly." The Glass-workers' Cataract Committee of the Royal Society, we understand, are taking steps to this end.

CONGENITAL ATRESIA OF THE ŒSOPHAGUS.

ACCORDING to Dr. I. Seth Hirsch,[1] director of the Roentgen Ray Department, Bellevue Hospital, New York, who reports two illustrative cases, 146 verified cases of congenital atresia of the œsophagus have been reported up to July 1st, 1920, the first having been observed by Thomas Gibson in 1696. The commonest type which is met with in 70 per cent. of the cases is a blind upper sac measuring from 1 to 9 cm. in length with a lower sac opening into the trachea at or above the bifurcation. The two portions may or may not be connected by a thin strand of tissue composed of muscle fibre or fibrous tissue. Associated anomalies are frequent, being present in 59 out of 94 cases. The commonest is atresia ani, which was present in 24 cases. The period of survival which was noted in 120 cases has ranged from 1 to 14 days, five of the infants being stillborn and 15 dying on the first day of life. As regards the pathogenesis it is now generally conceded that the anomaly is due to a developmental error rather than to an inflammatory process as was once supposed, the condition being due to failure of closure of the tracheo-œsophageal septum.

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[1] Journal of the American Medical Association, May 28th, 1921.

THE I.M.S. DINNER.

THE annual dinner of the Indian Medical Service, held on June 15th at the Trocadero Restaurant, is a domestic gathering at which the Editor of the *British Medical Journal* and the Editor of *The Lancet*, and they alone, are invited to share the salt. Leave is scarce in the Service at present and passages still scarcer, and it therefore comes about that the dinner is representative of those who have seen ten years or more of the official practice of medicine in a country which contains a sprinkling of Europeans and 450 millions of other races. In the nature of things there is no possibility of a similar gathering in India itself. Hence the occasion is one of unique importance and the time that might have been wasted upon formal toasts and set speeches is free for the informal discussion of domestic policy. No one present asserted that the Medical Service is now a great reconciling influence in Indian life, for no one doubted it; nor was any hesitation felt in mentioning the colour difficulty, for senior native officers were present as an integral part of the Service. All agreed that as long as Britain was charged with the Government of India, so long would British medicine find a worthy place there and nothing but the best possible service could be offered. Sir Dawson Williams in a few wise words spoke of the support given to the Indian Medical Service in the past by the medical press of this country and of their community of interest for the future. To say more might be to transgress the sacred law of hospitality. But we should like to commend the Dinner Fund to those members of the Service who do not yet subscribe to it.

SIR THOMAS WRIGHTSON.

THE death of Sir Thomas Wrightson, at the age of 82, removes a figure notable alike in science and industry. Born near Darlington in 1839, Wrightson completed his education at King's College, London, and took up engineering as his profession, serving his articles with his cousin, Lord Armstrong, at Elswick. After a period of civil engineering work at Westminster, he took employment at the Teesdale Ironworks of Messrs. Head, Ashby and Co., later joining the firm, which then became Head, Wrightson and Co., Ltd. For many years he was vice-chairman, and later chairman, of this great business, being also a director of other companies and a prominent figure in the public life of the Stockton district. His political career was not marked with the uniform success which attended him in other directions, but his services won him a baronetcy in 1900. Wrightson's great contribution to physiology and physics, his "Enquiry into the Analytical Mechanism of the Internal Ear," was published in 1918,[1] when he was in his 78th year. In this work were combined the results of many years of study of aerial wave-form, with an engineer's survey of the cochlea considered as a machine. The comparative anatomy of the cochlea formed the subject of a luminous appendix by Prof. Arthur Keith; by means of his own ingenious "ohmograph" Wrightson had recorded a large number of compound sound curves of varying complexity, which he analysed by application of the "four stimulus" theory—i.e., the theory that a sound wave is a pressure variation implying a stimulus in hearing of four phases of the curve at maximum and minimum, and at the crossing of the zero lines, at each of which points the direction of change is reversed. Briefly, the authors showed the cochlea to be a mechanism capable of registering every complexity of the compounded wave and of passing it on to the sensorium in accurate record as nerve impulses, the final process of appreciation of these impulses (simple or compound) being, of course, central. Wrightson's work therefore gave to science an intelligible account of the genesis and nature of the peripheral stimulus concerned in the sense of hearing.

CONGRESS OF MEDICAL HISTORY.

A CONGRESS on the history of medicine, initiated by Prof. Domenico Baduzzi of Siena, was held at Rome from Oct. 11th-14th, 1912, when the agenda paper included addresses on prehistoric medicine and mediæval anatomy. Last year a congress was summoned at Antwerp and next week, from July 1st to 6th, the Second Congrès d'Histoire de la Médecine will be held in Paris under the patronage of the Minister of Public Instruction and on the initiative of the Société Française d'Histoire de la Médecine. Prof. E. Jeanselme and Prof. W. Menetrier will preside at the meetings, which begin at 9 A.M. on July 1st in the historical museum of the Faculty of Medicine. An "exposition rétrospective médicale" is being put together to include books, manuscripts, engravings, statuettes, instruments, or other objects of historical value. A number of visits and excursions have been arranged to places of historical interest. The general secretary of the Congress is Dr. Laignel-Lavastine, 12 bis, place de Laborde, Paris.

THE annual meeting of the National Council for Combating Venereal Diseases will be held next Tuesday, June 28th, in the Morley Hall, Hanover-square, at 4.15 P.M. The annual report, the draft of which is now being settled, brings the proceedings up to May 31st.

WE are glad to print in full on page 1377 an interim report of the X Ray and Radium Protection Committee, for it is well that safeguards and precautions, wherever they have been found useful, should receive immediate and wide publicity. London is fortunate in having a sufficient number of recognised experts to constitute a representative committee which can meet frequently to confer and compare notes. Distance alone has stood in the way of choosing the committee from other centres of radiology. Liverpool and Manchester have been well to the fore in precautionary measures, and the London committee has profited by their experience.

THE last of the series of lectures delivered by authorities on different aspects of pathological research in its relation to medicine at the Institute of Pathology and Research, St. Mary's Hospital, was given on June 16th by Prof. W. Bulloch, F.R.S. His subject was the Use and Abuse of Scientific Medical Literature, and among entertaining anecdotes and criticism, destructive and constructive, of current medical journals Prof. Bulloch found opportunities to plead for a reduction in the mass of work published and an improvement in its quality. The course of lectures has been much appreciated by large and representative audiences.

THE SEMON LECTURE.—The Semon Lecture, a foundation of the University of London, will be delivered on Tuesday, July 5th, at 5 P.M., by Dr. Jobson Horne, President of the Laryngological Section of the Royal Society of Medicine, in the house of the Society.

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[1] See Review in THE LANCET, 1918, ii., 46.

MODERN ARTIFICIAL LIMBS.

THE WORK OF THE ARM-TRAINING CENTRE AT ROEHAMPTON.

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ASSISTANT SURGEON AND JUNIOR ORTHOPÆDIC SURGEON TO KING'S COLLEGE HOSPITAL.

WHILE the function of a lost lower limb has for centuries been capable of replacement with a fair degree of success, the achievements with the arm have remained on a very much less satisfactory basis—occasionally, as with the immortal Captain Cuttle, a lost hand has been replaced by some elementary instrument, but any instance in which even the simplest function has been restored has appeared as something remarkable. The rule has been that a lost arm has meant a sleeve as empty as Nelson's.

The recent advances in the structure of the artificial limb—advances confined to a mere score of years—have attracted a great deal of attention of late, particularly in the lay press. The publicity thus gained has, of course, had some beneficial effects, notably in inspiring confidence, both among the general public and those directly or indirectly concerned, in the means that are being taken to repair the most distressing wreckage of the war. One fact, however, does not seem to have emerged in its true perspective, some accounts read almost as if the limb were in itself endowed with a mysterious motive power, readily attached and placed under the control of the amputee. It would appear as if the fitting of the limb in itself restored the function that had been lost. The results must have been particularly deplorable in cases where the sufferer acquired such ideas, was fitted with the limb (perhaps not quite so efficient as the most modern, but still capable of very good work), and has gone forth expecting the advertised miracle. Disillusionment must come, demoralisation, despair, and resentment, the suspicion that the best limb has not been given and that there has been shabby, parsimonious dealing. The limb has been discarded and the man who should once more have become a self-reliant, self-supporting member of the community, turns into a drifting, discontented, and demoralised unit. This is history in hundreds of instances—history that happily is not only no longer being made, but is also being unmade.

It is history that need never have been made at all, for fairly obvious reasons. Comparatively little trouble is necessary to attain a decent degree of ease and function in the case of the lower limb prosthesis, for weight-bearing and locomotion are relatively simple questions; but to attach to a stump something that will handle, hold, swing, lift, and half a hundred other things is very different. The importance of instruction in the use of the new complicated appliance must be clear.

Necessity of Education in Use of Artificial Arm.

The fact that up to about three years ago some three-quarters of the men who had lost arms in the war had discarded their prosthesis as useless or as too much trouble cannot be more than slightly attributable to the defects of the limbs themselves, although considerable progress has been made since then in the construction of artificial limbs.

The small classes of case may first be eliminated—those of surgical unfitness to wear a limb, and the somewhat larger number of those with inefficient and unsuitable limbs. The remedies here are obvious. The remainder, the great majority, are cases where a man, physically capable, has simply not been educated in the use of a mechanically efficient limb. It is particularly necessary to note that such education must not be merely technical. The recovery of loss of function depends to a very great degree on the mentality of the patient, and the old admonition to "treat the patient as well as the disease" is nowhere more applicable than in the case we have under consideration; there is a liability to neglect the mental make-up of organic disease—(apart from which fact one has the suspicion that the phrase is made responsible for a great deal of humbug!)

In war injuries we have to deal with three kinds of mental attitude. First comes what can be termed the sympathetic or coöperative type—those in this class will actively aid and participate in the attempts at restoration. Next is the antagonistic—those who do not wish for recovery, do not believe that it can be attained, and suspect and resist the treatment given (this attitude may be conscious, subconscious, or both). The third and worst group is that of entire indifference to recovery or non-recovery—the apathetic.

It will be obvious that to obtain results in the first group will be a comparatively simple matter if reasonable attention is given and the physical disability is at all capable of being surmounted. In the second there will be the necessity for the most open, frank treatment, the willingness to examine all alleged grievances, to reason, and to persuade. In the third direct argument and persuasion may be of use, but the best stimulant by far of the desired interest is the "atmosphere of recovery."

The work of the arm-training centre at Roehampton is an object-lesson in successful methods of overcoming such problems.

The Modern Artificial Limb.

Before giving a description of this work it will be useful to interpose a brief account of the modern artificial arm, although naturally it will be impossible to go into the details of the various types. This is all the easier inasmuch as, while there is a wide range of arms officially sanctioned by the Ministry for fitting, it may be said that there is a tendency to standardisation of principles of construction. It must not be thought that this means that the official policy is towards the stereotyped—on the contrary, it is strongly progressive. Suggestions for improvements are welcomed, and are sure to receive the fullest possible consideration; every facility is given to inventors, and inventions are constantly being brought forward by armless men—who, indeed, have been almost entirely responsible for the efficiency of the modern arm. New improvements are constantly and promptly added to the official list, and become available to all armless pensioners. One actually witnessed the encouraging reception given to an inventor by the Chief Instructor, himself an armless ex-officer and inventor; the appliance was appraised, suggestions were offered for further slight improvements, and a full account of the procedure to obtain recognition was given. The manufacture of limbs entirely by private firms further prevents stagnation (it is to be noted that the industry provides constant employment for a large number of limbless men).

Function of the Artificial Arm.

The complex functions of the upper limb can, of course, be reproduced only to a limited extent by any prosthesis. In particular, it is only the simpler of the hand movements that can be replaced. The joints will be considered seriatim; joints surgically preserved will obviously retain their function if adequate leverage and articulating stump be provided beyond them for the artificial limb.

1. *Shoulder-joint.*—The artificial shoulder remains passive and may permit abduction, flexion, and extension, or all of these. Rotation is not needed, being supplied at the "wrist." The limb swings at this joint actuated by power transmitted through the objects gripped from the other limb, which is holding the object at the same time. Nevertheless, anterior and posterior movements are to some extent produced when the elbow is actively moved by transmission cords.

2. *Elbow-joint.*—A variety of possibilities exist for the elbow-joint. It may be simply adjustable mechanically by the other hand; there are numerous forms of hinges

and catches permitting fixation at any desired angle. In other cases an active movement of flexion terminates in an automatic lock released either by another transmitted movement or by the sound hand. Again it is permitted in other instances to let the elbow swing freely by grip-transmitted power, as at the shoulder.

3. *Pronation and Supination.*—In no artificial limb does the forearm stump activate voluntary rotation—i.e., the stump acts merely as a lever. It seems to have proved impracticable so far to utilise the freedom of the radius, a fact which emphasises the difficulties in the way of the making of artificial limbs, for it might appear on the surface that this could fairly easily be done. In many limbs the "wrist" is fixed in the mid-prone-supine position; in some it is adjustable by the sound hand, but in the majority the appliance attached to the forearm is free to rotate at the wrist, being controlled by the grip of the sound side—as, for instance, where both hands hold a spade. In a few, however, rotation with locking by active movement is provided.

4. *Wrist Movements.*—Here again the joint, where a "hand" is fitted, may be either fixed in moderate extension, adjustable by the sound hand in the desired position in some cases, or be capable of movement by active, transmitted power, a mechanical lock operating at the end of such a movement where desired. In most instances the forearm terminates for working purposes in a tool whose attachment may be either "free wheel," adjustable, or fixed.

Photographs showing the very active rôle of which the artificial limb is capable. The standard "harness" is not being worn.

5. *The Grip.*—For æsthetic purposes it is desirable that the limb should terminate in some semblance of a gloved hand. The dress arm always provides this, and in some forms of limb a hand is fitted which is capable of performing light or even moderately heavy work. In most instances, as already stated, a tool is attached where moderate or heavy work is to be performed. As regards the production of the grip sustained hold on an object is always obtained mechanically—e.g., by springs, lock, or rack. Release of the grip may be by an active movement as in most forms of "hand" or by a device operated by the sound hand. Spring and release attachments are also fitted for the thumb on the same principles.

6. *Tools.*—It is in the appliances or tools attached to arms that probably the greatest advance has recently been made; of them again there is infinite variety, and one was greatly impressed by their ingenuity. Some of their qualities were particularly striking—strength, lightness, wide range of usefulness, and above all, ready and quick interchangeability. As an example might be quoted the "Mechanical C Hook," in whose invention the Arm Training School played a great part. This provides for gripping large or small objects, loose hold of large objects, and pressing down either large or small objects. The grip is released by transmitted power and is maintained by a spring. This is relatively a very wide range for such appliances. It might be stated here that most of the modern tools are the direct outcome of the work of the School at Roehampton, a fact which speaks volumes for the way in which its task is carried out.

With regard to the structure of the limb, those officially sanctioned show a great variety in material. Wood, leather, and metal, fibre and metal, duralumin, are most commonly used; a new substance, certalmid, is being more and more used in the making of buckets, being akin in its range of applicability to celluloid-acetone, but superior in cheapness, absolute non-inflammability, rigidity, and ease of application. This material is the result of much patient labour in the Ministry Research Laboratory attached to the hospital. One ventures to predict for it a great field of usefulness in orthopædic work.

Production of Movements in Artificial Arms.

It is perhaps necessary to point out that the armless man has to educate his remaining arm as a right arm—e.g., a left-handed amputee has to educate a remaining right arm to replace the function of the lost left arm.

Voluntary Movements.—These are produced on a very simple principle. The prosthesis is attached to the body firstly by a moulded segment appropriate to the site of amputation and secondly by a standard harness. This is made of a series of bands of broad webbing fixed to the segment applied to the body, converging somewhat usually at the middle of the back, and then expanding again to embrace the root of the opposite limb, the pressure being taken chiefly by the anterior axillary wall and the clavicle. No straps pass, in the most modern harnesses, in front of the chest—this permits a surprising degree of freedom of shoulder movement, and the harness and limb can be attached in a very few seconds and with great ease.

Motive Power.—From the sound side, which acts as the fixed (not as commonly supposed, the activating) point, two or three leather bands or Bowden wires pass in various relations to the affected shoulder through pulleys and thence to appropriate points of attachment on the artificial limb; leaving no slack. It follows then that if the sound shoulder remains fixed and the cord be put on tension by a movement of the affected shoulder, a pull will be transmitted to the insertion of the cord or wire. Roughly speaking, vertical, anterior, and posterior movements of the shoulder are available for transmutation into energy to reproduce the active functions of the limb. In addition others may be utilised—flexion of the humeral stump, even flexion of the elbow.

The function of the artificial arm will therefore be seen to depend on the following: active movements, rarely more than three in number, are derived from certain educated actions of the shoulder muscles; they are employed in altering the position or attitude of a part of the limb, or in releasing springs or catches; very uncommonly are they used in a sustained effort; springs, &c., are used for maintaining hold on an object; joints other than those selected for active movement may be either fixed, adjustable to various positions by the sound hand, or left freely mobile.

We are now in a position to see, first, the obvious need of the amputee for training, and the utter futility of sending him forth without such instruction in the use of this really elaborate tool. Further, it is clear that great benefit will be derived from the advice of those experienced in the selection of limbs for particular occupations; there is a great deal in the actual selection of the limb and of the tools. The staff at the limbless hospital possess unique experience in such matters, and it would be the greatest pity were any policy of short-sighted economy to disperse and waste it.

Procedure at the Training Centre.

We can now appreciate the way in which the armless man is dealt with at Roehampton. He is admitted for a while as an in-patient at the limbless hospital in beautiful and healthy surroundings. He mingles with numbers of others with the same kind of disablement, hears them talk of their progress, sees what they can do. He begins to understand that restoration of function is taken for granted, as a thing beyond doubt. He is able to go freely anywhere, seeing armless men at work—digging, hoeing, using a pitchfork, wheeling a barrow even up an acute slope, swinging heavy hammers in driving for instance a pile—and doing all these things without effort or discomfort. He sees that the limb is no mere toy, but a very practical and strong working proposition. He will find that even a very high arm amputation is no bar to an efficient prosthesis; he may see a man disarticulated at the right shoulder, but doing all the above things. This man habitually does gardening solidly for eight hours a day, is no more tired than he used to be before the war, and finds practically no limit to his usefulness. A visit to the workshops will show him all branches of carpentry in progress; there are fellow armless men using plane, hammer, spokeshave, chisel, and the like. He will see that the work can be done cleanly and quickly. He finds that delicate work, too, can be done in spite of the loss of an arm. He begins to compare notes with the workers as to site of amputation, and as to individual experiences with different types of arms. He forms an opinion as to the limb that will be most useful in the occupation he proposes to adopt. With all this at the back of his mind he comes before the medical officer, who after a discussion of the case, and consideration of the surgical aspect, gives instruction for fitting. The man is offered in every case a choice or a large say in the ultimate selection of the limb, for surgically two or three limbs may be applicable; the advice of the staff is always available if he is in the slightest doubt as to which limb to select. Similarly, the tools attached to the limb are decided upon. The benefits of such a system will be apparent, for its great assumption is that the patient is treated throughout as a responsible and free agent. Fitting having been completed (this may take a considerable while for a cast of the stump has to be obtained as a preliminary to the making of a perfectly fitting bucket) the man begins his training. First, a short course of instruction is given in the elementary principles of carpentry, and then the man proceeds to work from simple to more and more complicated actions. It must be understood that the teaching of carpentry is undertaken merely as a means of instruction in the use of the limb, as is also the use of the spade, hammer, hoe, wheelbarrow, and the like. Each involves the learning of a different kind of action, and is studied for this purpose alone. It might be pointed out, however, that many men, both skilled and otherwise, have, as a result of their training at the centre, decided to adopt woodwork, metal work, and the other things used as methods of instruction as their means of gaining a livelihood. In such cases, after the period of arm-training, the man goes to the schools of the Ministry of Labour for a course of technical instruction. Many have thus come into a better status in the labour market than they enjoyed before the loss of the arm.

It is not long, as a rule, before the man begins to take a keen interest in his progress and to compete healthily against those starting with him in the use of the limb. He will become often inordinately proud of some little trick that no one else seems to have acquired. Practice with the limb needs no urging, and it is remarkable to note that the majority of men show a very complete degree of proficiency in from two to three weeks.

While most of the men have a chief preoccupation—their means of livelihood—and pay most attention to the factors bearing on this, there is another and most heartening aspect of the centre. This is in the world of sport and play. It will not be long before the athlete will find that there is no need for the armless man to forgo the pleasures he formerly derived from sport. He can see men who handle a cricket bat with the best, drive a golf ball, and play billiards—instances could easily be multiplied. Perhaps the most interesting of all was the man who fiddled, bowing with a limb fitted high in the arm. Nothing could be more stimulating than to learn that active participation in games is still open—the arm is gone, but the man can still work and play!

This, then, is the atmosphere which envelopes the armless man from the time of his entrance to the hospital. Most of the difficulties that stand in the way of the utmost possible recovery of function are met and conquered by it. While this applies chiefly to the cases newly becoming fit for a limb, it must be remembered that these are still much the largest proportion of the men in the hospital. There is, of course, a big out-patient attendance comprising cases with stump complications, and those requiring repairs or alterations in the artificial limb.

With regard to results, it remains to record an investigation carried out by Colonel MacLeod, medical superintendent, with a view to finding out to what extent the modern artificial limb was satisfactory. Four hundred and fourteen consecutive cases were questioned, the men were invited to make criticisms without reserve, and all such complaints were thoroughly investigated. It was found that of these 414 only 34 were not in good permanent employment, and that in almost every case of criticism the complaints were due to remediable causes in connexion largely with further changes in the stump since fitting.

The Research Laboratory.

This account of the work of the training centre would be very incomplete without a reference to the Research Laboratory attached to the hospital for the purpose of investigating the problems that constantly crop up with regard to the function, manufacture, and details of construction of artificial limbs. Here, again, each difficulty is squarely faced, and there is no rest until some solution is reached. As an instance of the resources of the department, one quotes the use of the Ultrarapid Kinematograph in the analysis of the relative movements of the lower limb and of the phases of the flexion of the knee in walking; a considerable improvement in the gait in thigh amputations has resulted from this investigation. Reference has already been made to certalmid, the valuable qualities of which material were clearly demonstrated.

The whole hospital gives one the impression of an institution strikingly akin to the orthopædic workshop, in which there is a "live" staff, thoroughly experienced in the work of which each member does his utmost to get results, leaving no factor neglected in order to make good as far as possible the disability of the limbless.

ROYAL SOCIETY OF MEDICINE.—The recently established Gold Medal of the Society was awarded to Sir Almroth Wright on Nov. 11th last when he delivered an address, but as it was not possible to have the medal ready for presentation it will be presented to him at the annual general meeting on Wednesday, July 6th, at 5 o'clock.

The meeting of the Dermatological Section in July will not take place.

X RAY AND RADIUM PROTECTION COMMITTEE.

A PRELIMINARY REPORT.

THE X Ray and Radium Protection Committee, representing the various radiological and other scientific bodies with their headquarters in the metropolis, after deliberating for some weeks, has issued a preliminary and admittedly tentative report. The document states present knowledge in regard to equipment, ventilation, and working conditions of X ray and radium departments, and undoubtedly there is a constant demand for guidance, both from individuals and institutions, upon such points.

The preliminary part of its work, the Committee states, will lead up to more extensive objects, entailing research, and offers of personal or other assistance are invited by the Committee and should be sent to the hon. secretaries, from whom the preliminary document may be had on application.

PRELIMINARY REPORT.

Introduction.

The danger of over-exposure to X rays and radium can be avoided by the provision of efficient protection and suitable working conditions. The known effects on the operator to be guarded against are: (1) Visible injuries to the superficial tissues which may result in permanent damage. (2) Derangements of internal organs and changes in the blood. These are especially important, as their early manifestation is often unrecognised.

General Recommendations.

It is the duty of those in charge of X ray and radium departments to ensure efficient protection and suitable working conditions for the personnel. The following precautions are recommended: (1) Not more than seven working hours a day. (2) Sundays and two half-days off duty each week, to be spent as much as possible out of doors. (3) An annual holiday of one month or two separate fortnights. Sisters and nurses, employed as whole-time workers in X ray and radium departments, should not be called upon for any other hospital service.

Protective Measures.

It cannot be insisted upon too strongly that a primary precaution in all X ray work is to surround the X ray bulb itself as completely as possible with adequate protective material, except for an aperture as small as possible for the work in hand.

The protective measures recommended are dealt with under the following sections: (I.) X rays for diagnostic purposes. (II.) X rays for superficial therapy. (III.) X rays for deep therapy. (IV.) X rays for industrial and research purposes. (V.) Electrical precautions in X ray departments. (VI.) Ventilation of X ray departments. (VII.) Radium therapy.

It must be clearly understood that the protective measures recommended for these various purposes are not necessarily interchangeable; for instance, to use for deep therapy the measures intended for superficial therapy would probably subject the worker to serious injury.

(I.) X Rays for Diagnostic Purposes.

1. *Screen examinations.*—(*a*) The X ray bulb to be enclosed as completely as possible with protective material equivalent to not less than 2 mm. of lead. The material of the diaphragm to be equivalent to not less than 2 mm. of lead. (*b*) The fluorescent screen to be fitted with lead glass equivalent to not less than 1 mm. of lead, and to be large enough to cover the area irradiated when the diaphragm is opened to its widest. Practical difficulties militate at present against the recommendation of a greater degree of protection. (*c*) A travelling protective screen, of material equivalent to not less than 2 mm. of lead, should be employed between the operator and the X ray box. (*d*) Protective gloves to be of lead rubber (or the like) equivalent to not less than ½ mm. of lead and to be lined with leather or other suitable material. (As practical difficulties militate at present against the recommendation of a greater degree of protection, all manipulations during screen examination should be reduced to a minimum.) (*e*) A minimum output of radiation should be used, with the bulb as far from the screen as is consistent with the efficiency of the work in hand. Screen work to be as expeditious as possible.

2. *Radiographic examinations ("overhead" equipment).*—(*a*) The X ray bulb to be enclosed as completely as possible with protective material equivalent to not less than 2 mm. of lead. (*b*) The operator to stand behind a protective screen of material equivalent to not less than 2 mm. of lead.

(II.) X Rays for Superficial Therapy.

It is difficult to define the line of demarcation between superficial and deep therapy. For this reason it is recommended that, in the reorganisation of existing, or the equipment of new, X ray departments, small cubicles should not be adopted, but that the precautionary measures suggested for deep therapy should be followed. The definition of superficial therapy is considered to cover sets of apparatus giving a maximum of 100,000 volts (15 cm. spark-gap between points; 5 cm. spark-gap between spheres of diameter 5 cm.).

Cubicle System.

Where the cubicle system is already in existence it is recommended that: (1) The cubicle should be well lighted and ventilated, preferably provided with an exhaust electric fan in an outside wall or ventilation shaft. The controls of the X ray apparatus to be outside the cubicle. (2) The walls of the cubicle to be of material equivalent to not less than 2 mm. of lead. Windows to be of lead glass of equivalent thickness. (3) The X ray bulb to be enclosed as completely as possible with protective material equivalent to not less than 2 mm. of lead.

(III.) X Rays for Deep Therapy.

This section refers to sets of apparatus giving voltages above 100,000. (1) Small cubicles are not recommended. (2) A large, lofty, well ventilated and lighted room to be provided. (3) The X ray bulb to be enclosed as completely as possible with protective material equivalent to not less than 3 mm. of lead. (4) A separate enclosure to be provided for the operator, situated as far as possible from the X ray bulb. All controls to be within this enclosure, the walls and windows of which to be of material equivalent to not less than 3 mm. of lead.

(IV.) X Rays for Industrial and Research Purposes.

The preceding recommendations for voltages above and below 100,000 will probably apply to the majority of conditions under which X rays are used for industrial and research purposes.

(V.) Electrical Precautions in X Ray Departments.

The following recommendations are made: (1) Wooden, cork, or rubber floors should be provided; existing concrete floors should be covered with one of the above materials. (2) Stout metal tubes or rods should, wherever possible, be used instead of wires for conductors. Thickly insulated wire is preferable to bare wire. Slack or looped wires are to be avoided. (3) All metal parts of the apparatus and room to be efficiently earthed. (4) All main and supply switches should be very distinctly indicated. Wherever possible double-pole switches should be used in preference to single-pole. Fuses no heavier than necessary for the purpose in hand should be used. Unemployed leads to the high tension generator should not be permitted.

(VI.) Ventilation of X Ray Departments.

(1) It is strongly recommended that the X ray department should not be below the ground level. (2) The importance of adequate ventilation in both operating and dark rooms is supreme. Artificial ventilation is recommended in most cases. With very high potentials coronal discharges are difficult to avoid and these produce ozone and nitrous fumes, both of which are prejudicial to the operator. Dark rooms should be capable of being readily opened up to sunshine and fresh air when not in use. The walls and ceilings of dark rooms are best painted some more cheerful hue than black.

(VII.) Radium Therapy.

The following protective measures are recommended for the handling of quantities of radium up to one gramme: (1) In order to avoid injury to the fingers the radium, whether in the form of applicators of radium salt or of emanation tubes, should always be manipulated with forceps or similar instruments, and it should be carried from place to place in long-handled boxes lined on all sides with 1 cm. of lead. (2) In order to avoid the penetrating rays of radium all manipulations should be carried out as rapidly as possible, and the operator should not remain in the vicinity of radium for longer than is necessary. The radium when not in use should be stored in an enclosure, the wall thickness of which should be equivalent to not less than 8 cm. of lead. (3) The handling of emanation should, as far as possible, be carried out during its relatively inactive state. In manipulations where emanation is likely to come into direct contact with the fingers thin rubber gloves should be worn. The escape of emanation should be very carefully guarded against, and the room in which it is prepared should be provided with an exhaust electric fan.

Existing Facilities for Ensuring Safety of Operators.

The governing bodies of many institutions where radiological work is carried on may wish to have further guarantees of the general safety of the conditions under which their personnel work. (1) Although the Committee believe that an adequate degree of safety would result if the recommendations now put forward were acted upon, they would point out that this is entirely dependent upon the loyal coöperation of the personnel in following the precautionary measures outlined for the benefit. (2) The Committee would also point out that the National Physical Laboratory, Teddington, is prepared to carry out exact measurements upon X ray protective materials and to arrange for periodic inspection of existing installations on the lines of the present recommendations. (3) Further, in view of the varying susceptibilities of workers to radiation, the Committee recommend that wherever possible periodic tests—e.g., every three months—be made upon the blood of the personnel, so that any changes which occur may be recognised at an early stage. In the present state of our knowledge it is difficult to decide when small variations from the normal blood-count become significant.

The Committee is constituted as follows:—

Chairman: Sir Humphry Rolleston, K.C.B. Members: Sir Archibald Reid, K.B.E., C.M.G., St. Thomas's Hospital; Dr. Robert Knox, King's College Hospital; Dr. G. Harrison Orton, St. Mary's Hospital; Dr. S. Gilbert Scott, London Hospital; Dr. J. C. Mottram, pathologist, Radium Institute; Dr. G. W. C. Kaye, O.B.E., National Physical Laboratory; Mr. Cuthbert Andrews. Hon. Secretaries: Dr. Stanley Melville, St. George's Hospital; Prof. S. Russ, the Middlesex Hospital. Address: care of Royal Society of Medicine, 1, Wimpole-street, W. 1.

THE CAVENDISH LECTURE.

Dr. Christopher Addison delivered the Cavendish Lecture before the West London Medico-Chirurgical Society in the Council Chamber of the Kensington Town Hall, London, on June 17th. Dr. F. J. McCann, who presided, said that it had been given to few men in the course of a single lifetime to rise to eminence in two professions. Dr. Addison after being a distinguished teacher of anatomy had become an important Minister of the Crown, and had filled the posts of President of the Local Government Board, Minister of Munitions, Minister of Reconstruction, and Minister of Health with conspicuous ability.

The Part of the State in the Prevention of Disease.

During the last century, said Dr. Addison, the country had become an industrial, as distinct from an agricultural, nation, and in the past the short-sighted policy had been adopted of practising the doctrine of individual effort and the survival of the fittest in its most unthinking form. Whatever that system might mean to the individual it was not "good business" to run up habitations anyhow, on any spare spot of ground, to bring young children into factory life, to have factories and industries so organised that they were prejudicial to the lives of those engaged in them. Our statute books were crammed with expedients adopted from time to time in the endeavour to prevent the effects of this kind of scramble. Among the legacies bequeathed to us by this condition of things it would be interesting to know what our slums had cost in Poor-law expenditure, in provision of sanatoriums and convalescent homes, in amelioration of physical disabilities, and in industrial inefficiency and unemployment resulting from those disabilities. The sum might even challenge comparison with our war debt. The best available knowledge and professional advice were needed to undo the evils of the past, but there was an opponent to be reckoned with in the shape of a certain type of latter-day economist who would readily spend millions on armaments, but would question every item spent on a system of preventive services.

The Need for Preventive Medicine.

Knowledge was naturally always in advance of its application. The average medical practitioner did what he could in the cause of preventive medicine by advising his patients, but most of his time was spent in attending to the sick and bringing them back to health. There was, however, a serious deficiency in regard to the teaching of preventive medicine in our present scheme of medical education. When an attempt was made to deal with causes which might affect in bulk avoidable disabilities, difficulties arose which were beyond the bound of individual effort, and to deal adequately with these causes public education was needed. Voluntary aid was most useful, as the report of Lord Cave's Committee had shown, in regard to hospitals, but the action of public bodies, with the power of the State behind them was also required. A State medical service was no panacea, and it was certain that large categories of the work to be undertaken in the combat against disease and disablement could only be dealt with by civil or lay authorities. Dr. Addison then described in some detail the various municipal bodies who shared in the administration of health matters, and referred to the waste and muddle that resulted from incoördination of the work of these bodies. In 1919 the public funds expended on direct health service and in payments to those who were sick amounted in England and Wales alone to nearly £46,000,000. At a time of national stringency and when the disastrous records of the war, with its multitude of men classified as unfit, were still fresh in our minds, it behoved all men of patriotic goodwill to examine the mass of sickness indicated by this expenditure, to inquire to what extent it was preventable, and to frame the measure of policy accordingly. We were now at the commencement of a new period of revelation and inquiry, and, though our information was as yet scanty and imperfect, the importance of acquiring it was being clearly appreciated both generally and in industry. An examination of the ailments for which insured persons sought medical advice in 1916 showed that, excluding influenza, tuberculosis, pneumonia, malignant and other defined diseases, nearly 1 in 3 of the people required medical attention because of colds, nasal and bronchial catarrh, and digestive disorders. Here was presented an opportunity for common-sense instruction and for further research of well-nigh incalculable value. The difficulty was to devise ways and means of disseminating reliable information. It was of little use to give advice upon which the majority of the people could not act, and it was necessary to guard against the reactions which followed on advice which proved to be unavailing. There were many voluntary organisations which were exceedingly helpful though difficulties were presented by their multiplicity. Beyond these medical research on sound lines must be encouraged, for it was one of the most economical and rewarding directions of effort open to the community. Over and over again during the war, at the Ministry of Munitions and in the armies, it was found that small expenditure upon research under the superintendence of the Medical Research Committee produced saving which not only repaid the expenditure incurred, but more than paid the whole cost of all the Committee's efforts for a whole year, and in some cases for the whole time of its existence since 1912. There was also need for improvement in the home and in domestic habits and conditions. The medical schools might with great advantage pay more attention to instruction in the beginnings of disease and to the importance of those so-called minor ailments which were among the most disabling in so far as the mass of the community was concerned.

Summary of the Present Situation.

In concluding his lecture Dr. Addison said that well-considered effort was required in at least five directions: the spread of useful information and instruction, steady progress in the provision of better home conditions, encouragement of research and inquiry—not only into the more strictly scientific aspects of medical problems but extending beyond this into the field of employment and industrial conditions—improvement of facilities for early diagnosis and treatment, and a better organisation and direction of agencies charged with responsibility in health matters. At a time of national and world impoverishment we were confronted with a mass of physical disablement, much of which was realised, even with the knowledge now available, to be preventable. Tens of millions a year were poured out in an endeavour to mitigate its ill-effects, while towards the removal of the causes of these effects our efforts by comparison were insignificant and disconnected. There was work here for more than one generation, but recent experience gave good ground for encouragement.

SWITZERLAND.

(FROM OUR OWN CORRESPONDENT.)

Medical Meetings.

WE are in the midst of a series of meetings of medical societies. The ninety-third annual meeting of the Swiss Medical Federation was held in Basle on May 28th and 29th. Several hundred practitioners were present. The opening paper on the first day, on Methods for the Extraction of Foreign Bodies in the Œsophagus, was read by Prof. Oppikoper of Basle. At a social gathering following, the production of a play entitled "Steinach" by medical amateur actors caused great amusement. The author is a leading Swiss neurologist, and I only mention the play to show that the medical world here has not much use for the Steinach operation and its propaganda. The morning session of the second day of the meeting was devoted to demonstrations in the various clinics and medical institutes of the town. Prof. Doerr of Basle read a paper on "Idiosyncrasies," followed by a discussion in which Profs. Sahli of Berne and Bruno Bloch of Zurich took a prominent part. The latter emphasised the great importance of idiosyncrasies as a cause of eczema, idiosyncrasy being probably the clue for the solution of the eczema problem.—The nineteenth annual conference of the Swiss Neurological Society took place in Fribourg on June 4th and 5th under the presidency of Prof. Robert Bing of Basle. The subject for discussion was Regeneration in the Nervous System. Prof. Bing approached it from the clinical point of view, Dr. Perret of Montreux as a surgeon and Prof. Hedinger of Basle contributed a valuable paper from the pathological and anatomical side.—The Swiss Society of Surgeons is meeting in Aarau on June 25th and 26th. Surgery of the Gall Ducts will be the subject for a general discussion.

Small-pox near Basle.

In Basle and in Oerlikon near Zurich there is at present an outbreak of small-pox. The disease was brought to Basle by a German railway official. So far we have in Basle 10 cases with one death. At Oerlikon there are 97 cases; none of these had ever been vaccinated except one lady aged 65, who had been vaccinated when 5 years old, and one other patient who was vaccinated 30 years ago. These two epidemics should be a warning signal to our country, which has no compulsory vaccination. Compulsion was rejected some 20 years ago by a people's referendum. There is now a great rush to the vaccination stations and a movement is afoot to re-introduce compulsion by an appeal to a better-informed electorate.

Imitations of Salvarsan.

There was never a time when imitations and sophistications of drugs was so frequent. During the war nearly all countries placed embargoes on the import of medicaments, and owing to this the supply became scanty. The drugs rose in price and in consequence became a popular object of smuggling. Switzerland, with its high exchange rate, soon attracted the smugglers. In the back restaurants of Basle morphine, cocaine, and salvarsan were bought, sold, and re-sold. The fact that many persons engaged in the speculative trade of drugs had no knowledge whatever of their pharmacology enabled certain unscrupulous vendors to profit and to sell their customers imitations. The most prominent of the drugs imitated was salvarsan. Dr. Hunziker, director of the health office of Basle, who investigated the question, at a recent meeting of the Basle Medical Society gave a description of some samples of counterfeited salvarsan. A very clumsy substitute was contained in a bottle of green glass, roughly sealed, bearing the inscription: "Original package for Oversea Trade. Neo-Salvarsan 0·3. Contents 500 g." Chemical analysis showed that the yellow powder consisted of sulphate of barium and chromate of lead. A bricklayer of Basle had brought this bottle from a German plasterer for 6000 marks (400 francs) The contents of a similar bottle were found to consist of dust of silicates and rye flour. Three bottles, each containing 500 g. of a yellowish powder, had a label similar to those on the small original packages. The inscription, "500 g. Neo-Salvarsan and 0·4 g. Salvarsan" was sufficient to rouse suspicion. The contents were sulphate of barium, chromate of lead, and a yellow aniline dye-stuff, probably naphthol yellow S. In the trade of these bottles were engaged a hairdresser, a beer retail merchant, and a baker. But the most dangerous imitations of all were those resembling the small, much used salvarsan packages. A parcel with several hundred samples was found by the Basle police at a short distance from the German frontier. The labels closely resembled the original ones, but showed several slips; the name Höchst a. M. was spelled Höchs, in the English text the word "prohibited" ran "prohibitet," and the name of the firm Brüning was wrongly spelt. The contents, a yellow powder, looked very much like the original salvarsan, but consisted only of dust and of salt stained with yellow ochre. The dangers to the public health of this illegitimate trade are obvious, but quite apart from the spurious products the rough handling of the authentic salvarsan by the smugglers is apt to produce oxidisation, when the arsenic components may become more toxic.

BRITISH PHARMACEUTICAL CONFERENCE.

THE 58th annual general meeting was held in Scarborough last week. The President, Major E. Saville Peck, gave an address upon British Pharmacy and its Possibilities. He drew attention to the addresses delivered in recent years on the need for the representation of pharmacists upon the Pharmacopœia Revision Committee, on the institution of an Army Pharmaceutical Corps, on the advisability of the separation of prescribing and dispensing of medicines and the necessity for pharmaceutical research. The President outlined the present unsatisfactory position of the practice of pharmacy, and urged members to work for the establishment of a distinct profession of pharmacy on the lines of that which obtains upon the continent and is suggested in the United States of America. He advocated a wider preliminary education for all those entering the calling, and pointed out the advantage to be gained by insisting that apprentices or students of the Pharmaceutical Society should pass one of the School Leaving Certificate Examinations before registration. Major Peck also advocated the establishment of a university degree in science with pharmaceutics as one of the final subjects, and strongly urged the institution of a Fellowship Examination to include biochemistry and bacteriology with clinical microscopy. Such an examination, and the training required therefor, would enable students to carry out clinical analyses and so assist in diagnosis of disease. It would train men for the work of clinical assistants to medical men in the primary and secondary health centres contemplated by the Ministry of Health. Such men are also required by wholesale houses for the purposes of preparing vaccines and for research upon new drugs and remedies. He urged that the professional spirit should be reawakened in the rank and file of pharmacists and that the local associations should be stimulated to discuss pharmaceutical professional matters. These associations should send delegates to an annual conference so that the considered opinion of members might be focussed and handed on to the council of the society. He advocated the formation of an association of teachers from the various schools of pharmacy recently instituted, the associates to meet annually to discuss subjects in furtherance of pharmaceutical education. He looked forward to the time when a central unifying body should be formed to coördinate and combine all these forces—education, qualification, professional conduct, and research. This would work for the evolution of a profession of pharmacy, which coexistent and interdependent with that of medicine, would assist in the combating of disease and in the improvement of the health of the nation.

Correspondence.

"Audi alteram partem."

PERMANGANATE OF POTASH AS A STYPTIC FOR SEROUS SURFACES.

To the Editor of THE LANCET.

SIR,—Every surgeon knows the difficulties happening during the separation of adhesions between the intestines and other organs in the abdomen, particularly the often serious hæmorrhage from the separated surfaces. To arrest this various measures have been applied, such as pressure by means of tents or tampons, thermo-cauterisation, or suture. All of these demand much time and are not without danger in themselves. In cases of hæmorrhages from superficial wounds of the serosa after separation of adhesions, I have, since 1901, used kalium hypermanganicum cryst. with the best and quickest results. I lay hold of one or more crystals of the salt with a pair of dissection forceps and apply them to the bleeding points. On contact with this substance the blood coagulates, a clot forms, and in place of the hæmorrhage there is to be found a black, dry, aseptic scab. The bleeding stops immediately. After some seconds the scabs are cautiously removed with fine blunt forceps, and on the wounded surface of the serosa there remain only smooth black spots.

The moment that permanganate of potash touches the blood, oxygen is set free in a nascent state and an exceedingly powerful aseptic effect results. If the bleeding surface is large, a pinch of permanganate crystals is folded in a piece of lint and applied continuously to the wound for a few seconds. I have employed this styptic method for nearly 20 years without any complications.

I am, Sir, yours faithfully,
JOHN DSIRNE, M.D.,
Late Chief of the Surgical and Urological Clinics of the University of Moscow.
Constantinople, May 24th, 1921.

X RAY LESIONS AND MEDICINAL WATERS:

A SUGGESTION.

To the Editor of THE LANCET.

SIR,—The losses, amongst radiologists, which we all deplore, may well lead us to ask whether we have sufficiently recognised the resources of treatment. An expectant attitude has sometimes prevailed amongst medical men in the treatment of chronic affections and those of which the origin is still obscure. But there are in nature powerful remedial forces which have often given good results in just those chronic and toxic maladies in which other means have failed. We refer to air, climate, medicinal waters. The retarding as well as the exciting action of some of these forces in the evolution of disease—catarrh, rheumatism, syphilis and tuberculosis—is well known. With regard to cancer, there is evidence that the ingestion of certain bicarbonated waters stimulates the development of malignant growths of the stomach and liver, and accelerates the fatal issue. As the bicarbonate of sodium in ordinary doses produces no such effects, we are led to conclude that these waters, in which, as we know, the salts are *ionised*, have properties different from those of the pharmaceutical preparations. Are there not then, perhaps, waters that, combined with climatic treatment, may delay or even prevent the cancerous process? Within the last 20 years the science of medical hydrology has advanced by experimental methods, and something more than clinical experience entitles us to consider such an hypothesis. We propose to compare certain effects of X rays and radium with those of medicinal (and especially arsenical) waters. And we suggest that there are sufficient grounds to make it advisable that those radiologists who are liable to blood and tissue changes as a result of exposure to X rays should submit themselves to courses of climatic and hydrological treatment.

1. *Blood and Tissue Changes after Exposure to X Rays.*—Heinecke first noticed after the exposure of an animal to X rays a diminution of the circulating lymphocytes and a selective destruction of lymphogenic tissues. A maximum loss of red and white cells has been noticed about 48 hours after exposure, and five to six weeks may be required for the re-establishment of the blood.[1] Cases have been recorded in which after a single treatment for cancer the alteration of the blood was such that it became irreparable, the patient dying cachectic, in spite of the cure of the local lesion. Certain observers have stated[2] that the "resistance to cancer and tuberculosis in animals is attended by an increase in number of the circulating lymphocytes, and that the resistance as well as the lymphocytosis may be destroyed by X rays in proper dosage."

The action of radium and X rays upon the tissues is described as: in minimum doses stimulative, and in larger doses destructive and toxic, the nucleus of cells being especially affected.[3] There is reason to think that a definite and continuous dosage may be capable of producing a "habit of growth" in sensitive tissues. It has been shown that whilst radium may bring about the destruction of cells in lymphosarcoma, with toxic symptoms and rise of temperature, the same agency, in a different dosage, may stimulate the growth of malignant tumours. The effect of radium and X rays upon the skin is: erythema, brownish discoloration, branny desquamation, with pain and dryness; later, a deeper red coloration, slight blistering, and the swelling and ulceration which constitute radio-dermatitis. The skin is ultimately replaced by scar tissue, without glands or hairs, and with characteristic pigmentation. The chronic stage shows keratinisation with papular growth, forming and shedding scales, and going on towards epithelioma.

2. *Effects of Arsenic and Arsenical Waters.*—Arsenic and sulphur are two elements existing in the colloidal state in natural medicinal waters, and visible under the ultra-microscope as particles in rapid motion. Both have specific actions upon the skin and upon deeper tissues. We are now concerned with arsenic. When it is taken internally, the following changes in the skin have been observed: a short phase of epithelial proliferation; followed by hyper-keratinisation; an atrophic phase, affecting principally the interpapillary processes, the skin becoming planiform with partial destruction and detachment of the epidermal cells. In chronic arsenical poisoning a variety of exanthemata are observed. In small repeated doses arsenic is believed to cause increase of assimilation and to stimulate the formation of hæmoglobin or red cells. In massive doses, arsenic resembles X rays in causing destruction of the cells of the liver, kidneys, capillaries, and blood. Cases of aplastic anæmia following the administration of salvarsan have been recorded.[4] Certain pathological tissues (malignant lymphoma, syphilis) appear to be especially susceptible to the dissimilative action of arsenic.

The European arsenical waters are represented by La Bourboule and Levico. Clinical experience has for many years proved the value of waters of this class in anæmia, "lymphatic affections" and chronic dermatoses. The La Bourboule water, of which one litre is chemically equivalent to 21 drops of Fowler's solution, forms what may be called an isotonic arsenical serum. Certain doses were injected into the veins of animals after extreme venesection, and the process of recovery watched.[5] These and further experiments by one of us have shown the superiority of this water to artificial serums, both from the point of view of the restoration of the red and white cells and of the hæmoglobin.[6]

Some recent writers[7] hold that in cancer the normal lipoid equilibrium of the tissue cells is disturbed, causing a change in the permeability of the cellular envelope, and that this disturbance of the lipoid equilibrium is increased by bicarbonated waters. Dr. Jacques Loeb has shown that the fertilising action of spermatozoa can be reproduced in all its details by exposing the ovum for one minute in sea water, to which has been added a certain quantity of monobasic fatty acid, and thereafter for about half an hour in sea water, of a certain determined saline proportion. In this process soaps are formed and break down the lipoid equilibrium of the cell. The negative electrolytic ions of the mineral water pass through the cell membrane and precipitate the colloidal substance. Loeb has emphasised the essential part played by electrolytes in many of the phenomena of life. What could, on a priori grounds, be more capable of modifying the equilibrium of the cell and the permeability of the cell wall than natural waters with their complex and varied electrolytic elements? The observation of colloid disturbance, and also of anti-anaphylaxis, provoked by the injection of the Bourboule water, appears to show a marked action of these waters on cellular permeability. When we reflect that the majority of chronic diseases are in their nature toxæmic, with anaphylactic phases, is it not reasonable to hope to find elements amongst natural waters which have a selective action upon particular cells and in particular toxæmias? Arsenic is *par excellence* a selective remedy.

3. *Interaction of Remedies.*—An association and interaction of remedies appear to be necessary for the process of recovery. According to this principle, exemplified in hydrological medicine, waters, in natural alliance with climate, modify various predispositions to premature degeneration and functional failure. But it is necessary to select the climatic and other influences, so that they will contribute to hydrological treatment—that is, will augment and not lessen its effect. In the case of the X rays worker a moderate degree of altitude and the action of cold and of the sun (frigotherapy, hydrotherapy, heliotherapy), as on the mountain slopes of Auvergne or Tyrol, or in the north-east of Scotland, should definitely assist the action of waters. One of us has observed during many summers in the district last mentioned the prevention and retardation of degenerative processes and recovery from anæmia and toxic conditions, especially among brain workers, who made a habit of spending a certain number of weeks annually in the north country. The recovery of strength and colour resulted sometimes from the northern climate alone, but more often from climate associated with waters. Dr. Robert Knox, and in France Dr. Bélot, insist upon the necessity of prolonged change of air for radiologists. The latter has made a habit, since the introduction of X rays, of absenting himself for three months in each year, and has had as yet no lesions of the skin, and the blood has remained normal. (Many operators, as we know, have lesions of the hand with a normal blood.) We venture to go one step further, and to suggest that in combined climatic and hydrological treatment, carried on from year to year, may be found an effective means of preventing and retarding the serious changes, both in the blood and tissues, to which some of our colleagues are liable.

We desire to express our acknowledgments to Prof. W. S. Lazarus-Barlow and to Dr. Stanley Melville for valuable data.

We are, Sir, yours faithfully,
R. Fortescue Fox.
Paul Ferreyrolles.

June 6th, 1921.

References.—1. See J. C. Mottram and J. R. Clarke, Roy. Soc. Med. Proc., vol. xiii., Sect. Electrotherap., p. 25; and Colwell and Russ, Radium, X Rays and the Living Cell, p. 187. 2. H. D. Taylor, W. D. Witherbee, and J. B. Murphy, X Rays and the Blood, Jour. of Exper. Med., vol. xxix., p. 53. 3. W. S. Lazarus-Barlow, Biological Effects of Small Quantities of Radium, Arch. of Radiology and Electricity, June, 1919; A Critical Review of the Cancer Problem, Med. Science, Abstracts and Reviews, November, 1920. 4. H. Gorke (Munich), Medical Science, Abstracts and Reviews, March, 1921. 5. Fleig, Les Eaux Minérales Milieux Vitaux. 6. Billard and Ferreyrolles, Les Eaux Minérales en tant que Sérums Artificiels, Congress of Hydrology, Algiers, 1909. 7. Billard, Journal Médical Français, December, 1920.

THE DIAGNOSIS OF DYSENTERY BY THE SIGMOIDOSCOPE.

To the Editor of The Lancet.

Sir,—Dr. P. Manson-Bahr and Dr. A. L. Gregg in your issue of May 28th and Dr. A. F. Hurst on June 4th deal with the sigmoidoscopic diagnosis of dysentery. Fifteen years ago I pointed out the importance of a sigmoidoscopic examination in all cases of ulcerative colitis, and since the war this has become the recognised means of diagnosis in chronic dysentery. Without such an examination it is impossible to be certain what kind of ulceration is present, what stage it has reached, or how extensive the area involved. No doctor would be willing to treat an ulcerated throat without first looking at it, and yet one frequently sees cases of ulcerative colitis that have been under treatment for months without an examination of the inside of the bowel having been made.

I agree with Dr. Hurst that it is easy to distinguish between the ulceration of amœbic dysentery and that of bacillary dysentery, although their symptomatology may be similar. Several other types of ulceration of the colon can be distinguished. When cases of chronic dysentery are systematically examined with the sigmoidoscope it is found that both amœbic and bacillary dysentery are frequently followed by an ulcerative colitis of a different type from the original infection and due no doubt to secondary infection, usually with a streptococcus. This secondary infection is much more chronic than the original disease, and has often little tendency to get well. It is the cause of many of the cases of chronic dysentery sent back to this country from the East, and is similar, if not identical, to the form of ulcerative colitis which is indigenous as a primary condition in this country. It does not react to emetin injections or to antidysenteric serums.

It is important that when this secondary type of ulceration has developed it should be recognised, and this can only be done by sigmoidoscopic examination. I believe it to be essential that all cases of dysentery which do not clear up in reasonable time under proper treatment should be examined to see what type of ulceration is present in the colon. These severe secondary ulcerations of the colon clear up very satisfactorily after an appendicostomy, and it is our experience at St. Mark's Hospital, where we have to treat a considerable number of such cases, that when an appendicostomy is performed in time complete recovery is the rule. Too often, however, a surgeon is only called in as a last resort, and when the patient has little or no recuperative power left. When treated at a stage before the general health is seriously damaged the rapidity of recovery is often astonishing.

I feel sure that when a systematic examination of the colon with the sigmoidoscope in all cases of dysentery and ulcerative colitis becomes the rule, we shall have far fewer deaths from these conditions than is the case at present. As Dr. Hurst points out in his letter, the sigmoidoscope is also the only satisfactory check to treatment in these cases, and no case can be considered cured until an examination shows that the mucosa is normal.

I am, Sir, yours faithfully,
J. P. Lockhart-Mummery, F.R.C.S.

Hyde Park-place, W., June 17th, 1921.

CONTROL OF VENEREAL DISEASE: THE RED CROSS REGIONAL CONFERENCE.

To the Editor of The Lancet.

Sir,—Your report of this Conference, appearing in your issue of June 18th, quotes the Secretary of the National Council for Combating Venereal Diseases as saying: "A noteworthy point is the fact that the question of self-disinfection, which has appeared such an important and vexed factor in the campaign in England, provoked very little interest at this Conference of experts." The reason is not far to seek, and was due to the fact that the National Council for Combating Venereal Diseases (who had been adopted by the League of Red Cross Societies in Geneva as the recognised channel in this country for communication on these subjects) had selected as delegates Colonel L. W. Harrison, Dr. F. N. Kay Menzies, and Mrs. C. Neville Rolfe (Mrs. Gotto), who are well-known opponents to the immediate self-disinfection policy.

The Society for the Prevention of Venereal Disease, in reply to a request that they might be represented at the Conference, received a most courteous reply from the Secretary of the Danish Red Cross, intimating that he would be pleased to welcome delegates from our Society, but that the selection of delegates was entirely in the hands of the British Red Cross. Upon my communicating with the British Red Cross, I was told that the Society for the Prevention of Venereal Disease could not be represented, as the above-mentioned delegates had already been selected. The views of that very large section of the people in this country, who support the policy of immediate self-disinfection advocated by the Society for the Prevention of Venereal Disease, had therefore no opportunity of being presented to the Conference, and this important aspect of venereal disease prevention was largely neglected, mainly through the action of the National Council for Combating Venereal Diseases.

I am, Sir, yours faithfully,
H. WANSEY BAYLY,
Harley-street, W., June 17th, 1921. Hon. Sec., S.P.V.D.

THE PROPERTIES AND COMPOSITION OF ETHANESAL.

To the Editor of THE LANCET.

SIR,—I have administered the new general anæsthetic, described under the name ethanesal in your issue of June 4th by Dr. R. L. M. Wallis and Dr. C. L. Hewer, to 32 patients (15 male and 17 female). In three cases a little ether was used in the induction stage. In all but two the apparatus used was the warm ether "bomb." By this short trial a favourable impression has been formed; the narcosis has been at least as good as with ether, and the after-effects unusually trifling, except that one woman developed on the next morning a mild bronchitis which lasted for several days; she had, however, caught cold just before the day of operation. 28 oz. used in the bomb for maintenance only lasted for 307 minutes, or 5·47 oz. per hour, as compared with 4·7 oz. per hour of ether under similar conditions.

Several factors probably combine to make the difference greater than should be—chiefly the general length of the operations, which were, perhaps, twice as long in the ether cases. It would be of interest to know from the manufacturers precisely what quantity of ketones, and how much CO_2 and ethylene, are added to the ether in this new anæsthetic.

I am, Sir, yours faithfully,
K. B. PINSON,
Anæsthetist, Manchester Royal Infirmary.
June 19th, 1921.

DIGITALIS AND THE PERIPHERAL CIRCULATION.

To the Editor of THE LANCET.

SIR,—I readily admit that I have not grasped the "principles" upon which Dr. I. Harris in his paper of your issue of May 21st bases his conclusions on the pharmacology of digitalis. First, it is impossible to agree with the primary assumption that a large systolic output will necessarily give rise to a correspondingly large pulse pressure and vice versâ. In the presence of an increased systolic output the degree of pulse pressure will depend wholly upon the degree of vaso-dilatation or constriction present. Pulse pressure may even be lessened in the presence of increased systolic output. Again, it is impossible to agree that, if under the influence of digitalis the pressure in the veins is not increased, these will be able to pass a greater amount of blood per time-unit into the heart at the increased pressure necessary to cause the rise of intra-cardiac pressure depicted by Dr. Harris. Finally, simple considerations of physics prevent agreement with the statement that a force acting *a tergo* can propel in a given time-unit through a system of elastic tubes, such as the arterial, a greater volume of fluid in the absence both of increased intratubal pressure or tubal dilatation. In view of the fact that his "principles" are based on such errors and disregard of elementary physical laws Dr. Harris need feel no surprise if one is unable to grasp them.

I am, Sir, yours faithfully,
Eltham, June 20th, 1921. W. J. GRANT.

THE FEDERATION OF MEDICAL AND ALLIED SOCIETIES.

To the Editor of THE LANCET.

SIR,—A memorandum issued by the Council of the British Medical Association on Jan. 29th, 1921, and reprinted in its Annual Report of April 30th, contradicts statements in Dr. R. Fothergill's letter published in your last issue, and at the same time answers his questions. Dealing with the qualifications of a body to represent the profession as a whole, that memorandum states: "The body must not profess to promote the interests of the community rather than those of doctors"; "Bodies exclusively or mainly scientific have no concern with medical politics"; "They must be trained in expressing opinions on such matters" and, speaking of the Association, that "Its members are trained, both locally and centrally in dealing with medical politics."

I am, Sir, yours faithfully,
N. HOWARD MUMMERY.
Vere-street, W., June 17th, 1921.

THE TREATMENT OF DIABETES.

To the Editor of THE LANCET.

SIR,—In your issue of June 18th Dr. Ph. Horowitz has disagreed with a statement which I made in the review of his book. I stated that sodium nitro-prusside test was a better test for aceto-acetic acid than for acetone. I based that statement on the work of Dr. W. H. Hurtley (THE LANCET, 1913, i., 1160). Aceto-acetic acid can be detected in a dilution of 1 in 400,000, whereas acetone can only be detected in a dilution of 1 in 20,000. With the ferric chloride test, aceto-acetic acid can be detected in a dilution of 1 in 100,000 if it is dissolved in water, but in urine the test is much less sensitive because the pigments of the urine interfere with the reaction. It follows, therefore, that the nitro-prusside test for aceto-acetic acid will often be positive when the ferric chloride test is negative. It has also been shown by Folin and Emden independently that acetone is present in very small amounts in diabetic urine when it has been freshly passed. When the urine has stood for a little time, the acetone increases in amount owing to the decomposition of the aceto-acetic acid into acetone. Hence, if the nitro-prusside test is positive in fresh urine, it means that aceto-acetic acid is present in the urine.

I am, Sir, yours faithfully,
June 17th, 1921. THE WRITER OF THE REVIEW.

EARLY DIAGNOSIS IN DIPHTHERIA.

To the Editor of THE LANCET.

SIR,—May I add a few words to the discussion on this subject. I should like to emphasise the great value of antitoxin in non-diphtheritic tonsillitis. Fifteen to twenty years ago I saw a large number of severe septic throats. I always gave antitoxin before swabbing, and found that it was just as useful in those throats that were streptococcic, as in the diphtheritic, and the results just as rapid and striking. Indeed, after a short experience, I was able to assure the boy that within 12 hours he would feel well, and this was almost invariably the case; the actual physical signs took rather longer to clear up, about 24 hours. I never tried normal horse serum, and so cannot be sure as to the exact curative agent. Of the cures themselves I had and have no doubt; of recent years I have no experience, as (owing to a new drainage system) I have no sore throats.

I am, Sir, yours faithfully,
MEDICAL OFFICER TO A BIG PUBLIC SCHOOL.
June 19th, 1921.

Public Health Services.

THE OXFORD CONTRIBUTORY HOSPITAL SCHEME.

THE final report of the Voluntary Hospitals Committee commends the system of weekly contributions, carried further than elsewhere by the Radcliffe Infirmary and County Hospital at Oxford, as an admirable instance both of the benefits of a system of collections from wage earners and of the advantages of hospital coördination. The Radcliffe, which is the only large hospital in the northern part of Oxfordshire and is connected with the medical school of the University, appears to perform the functions both of a "secondary health centre" and of a "teaching hospital" as defined in the Dawson report. It takes all the active cases from the Poor-law infirmaries in its district, and has succeeded in linking up with its work the primary and cottage hospitals as well as, to some extent, the district nursing service within its radius. The hospital has recently organised with conspicuous success a scheme for obtaining weekly contributions, not only from workmen, but from the whole wage-earning population of the towns and villages in its area. The conditions of this scheme are stated as follows:—

1. A contributor of 2*d.* a week is entitled to free treatment.
2. In the case of married people, when the husband and wife each subscribe 2*d.* a week, their children are also entitled to free treatment up to wage-earning age, and from then until they are earning adult's wage, each child pays 1*d.* a week. The children of a widow or widower are also entitled to free treatment up to wage-earning age on the 2*d.* contributions of their parent.
3. Non-contributors will in future be expected to contribute towards their maintenance in the hospital, but no payment is required from old-age pensioners.
4. Every case must be accepted by a doctor or surgeon as suitable for hospital treatment.
5. No supporter will in future require a "turn."

Although the scheme was only established in September last, there are already 35,000 contributors from 288 firms and 165 village aid associations. The aid committees are represented on the board of governors and it is proposed that they shall appoint one-third of the management committee. The scheme is expected to yield something like £25,000 of "new" money.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

City of Carlisle.

Dr. J. Beard's annual health report for the year 1920 is a very complete one. As in other towns a marked increase took place in the number of births, and for 1920 the birth-rate was 24·7, the highest recorded since 1906. The death-rate was 12·5, and the infant mortality rate 80, the same as that recorded for England and Wales. "About 130 privies still exist in the outlying parts of the city, which were added in 1912, most of which will be replaced by water-closets when the proposed extensions to the sewers are completed." There are no cesspools or ashpits in the city; portable receptacles for house refuse have been in use for the last 20 years. Most of the refuse is tipped into old claypits or on low-lying land near the river. "The tips are covered with soil, and no nuisance arises from this method of disposal." A small destructor deals with offal from the slaughter-house and refuse which might cause a nuisance. An unusual arrangement is in operation by which all cows purchased by city cowkeepers are purchased subject to examination by the veterinary inspector, and any found to be unsatisfactory are returned to the sellers. Of 221 new cows purchased under this system in 1920, 10 were found by the veterinary inspector to be unsound and were returned to the sellers. Eight samples of milk were examined for tubercle bacilli with a negative result. During May and June there was a return of the influenza, 20 deaths being registered from this cause and 13 from acute influenzal pneumonia during the period mentioned. (Several towns, e.g., Sheffield, Blackburn, Halifax, and Sunderland, had similar attacks somewhat earlier in the year.) Otherwise the prevalence of ordinary infectious diseases was low, there being two deaths from diphtheria, one from enteric fever, and four from measles in an estimated population of 57,697. In Carlisle, as in other towns, there was an increased mortality from pulmonary tuberculosis during the war. A decline in this mortality began in 1918, and in 1920 the deaths were 36, making a rate of 0·63 per 1000 of the population, the lowest ever recorded in the city. The corporation have no residential institution of their own, but reserve 20 beds in the Blencathra Sanatorium for early and intermediate cases of pulmonary tuberculosis. There is no provision for advanced cases. During the year Coledale Hall was purchased for the purpose, but, owing to opposition inspired by unreasonable fear of the spread of infection to the neighbourhood, the project was given up, and the hall handed over to the education committee for an open-air school. The school nurses also act as tuberculosis nurses—a very satisfactory arrangement. Encouraging results have been obtained from the treatment by tuberculin of specially selected cases, mostly children.

A treatment centre for venereal diseases has been established jointly by the corporation and the county council at the Cumberland Infirmary, and during the year 112 male and 51 female patients were treated for these diseases. Midwives attended 821 out of the 1425 births—about 57 per cent.—and sent for medical help in 92 cases. In 65 cases a notification was received of the intention to substitute artificial for breast-feeding. Dr. Beard gives a list of the reasons put forward to justify artificial feeding, and comments as follows:—

> "An examination of the above figures suggests that in a number of instances the midwife should have refused to countenance the substitution of artificial feeding of the infants. This would have avoided the many risks connected with artificial feeding, and secured the only food natural to infants, which is cheaper, cleaner, safer, and more easily digested. It is difficult to believe that any mother would withhold her milk from her infant on purely personal grounds if the advantages of breast-feeding and the risk attending artificial feeding were put sufficiently strongly before her by a midwife during the time she is in attendance. It should also be remembered by the midwife that in this connexion her duty to the mother commences at the time she is engaged to attend upon her, and not merely with the commencement of labour."

Thirty-six cases were admitted to the Corporation Maternity Hospital (opened in May, 1920) during the year. No cases occurred of maternal death, puerperal sepsis, or ophthalmia neonatorum. Three mothers were unable to breast-feed owing to albuminuria with general anasarca, cardiac disease, and profound anæmia respectively. An antenatal clinic is held at the hospital (attended by 46 expectant mothers since its opening), and also an infant consultation clinic. There are four voluntary infant welfare centres and a day nursery, with an average attendance of about 12, all linked up with the corporation scheme, by the corporation maternity and child welfare medical officer acting as medical supervisor. Dr. Beard thinks the infant mortality could be still further reduced were it not for unnecessary artificial feeding, and points out that the debility caused by artificial feeding continues long after infancy, as "proved by the fact that 50 per cent. of the children dying between the age of 1 and 5 years were artificially fed." Complete information is given as to the result of all the 56 notified cases of *ophthalmia neonatorum*. Both eyes were affected in 43 cases, one eye in 13, and all the cases resulted in recovery except two, in which the sight of one eye will be slightly impaired owing to damage to the cornea. There were 11 deaths from whooping-cough, which Dr. Beard points out is regarded by parents as a minor ailment, and says:

"I am not sanguine enough to hope for much alteration in the apathy and callousness of certain parents unless and until whooping-cough is made compulsorily notifiable."

Carlisle, like other towns, is suffering from overcrowding. We learn from the report that, owing to the lack of building enterprise, only 218 houses have been erected since 1906. No action can be taken with regard to overcrowding, "as it is impossible, until new houses are built, to displace families from their present dwellings." For the same reason "difficulty has been experienced in remedying more serious defects found in houses," and action with regard to the Crown-street and Caldewgate unhealthy areas will have to be delayed. Lowther House, one of the two common lodging-houses, is now owned by the corporation, and the second has been closed as from Dec. 31st as being "totally unfit." The chief sanitary inspector is of opinion that there is unnecessary smoke from factory chimneys, but no action has been taken beyond warnings. It is now well recognised that black smoke from chimneys serving boiler furnaces is unnecessary, and it is to be hoped that the national experience of purer air, as the result of the unfortunate coal dispute, may lead ultimately to a crusade in the matter. The inspector also reports a reluctance on the part of the managers of some milk shops to provide covers for milk storage vessels, and that the present method of disposing of the slaughter-house refuse at the tips is very wasteful.

County Borough of Eastbourne.

The annual health report for 1920 submitted by Dr. W. G. Willoughby is very satisfactory. The temporary rise in death-rates which occurred during the war has subsided. The death-rate was 10·5 per 1000 of the Registrar-General's estimate of the population. The infant mortality rate was 59·8 per 1000 births, 20 less than the rate for England and Wales. The death-rate from pulmonary tuberculosis, 0·56 per 1000, was the lowest ever recorded, and the death-rate from infectious diseases was very low. Other signs of progress are the opening of an open-air school in June, and of a maternity and infant hospital in March. Fifty-eight of the new municipal houses have been opened during the year, but Eastbourne, like other towns, is suffering from overcrowding. This is not surprising when we consider that the population of Eastbourne increased from 34,960 in 1891 to 52,542 in 1911; that the inhabited houses in the same period increased from 5190 to 8967, and that during the war there was a cessation of house-building. The yearly average of houses built during the five years before the war was 103, and during the preceding quinquennium was 132; 138 hut tenements are temporarily occupied, and it is estimated that 150 houses are definitely required over and above the present scheme of municipal building. There are about two males to three females in the population of Eastbourne, and 50 per cent. of the working female population are domestic servants. During 1920 the death-rate among the males was 10·75 per 1000, and among the females 7·20. With a population of this constitution one can hardly attribute the change in the infant mortality rate to anything but increased knowledge and more intelligent care. Thus during the three closing years of last century the infant mortality rates were 139, 145, and 121 respectively, while during the last three years the infant mortality rates have been 74, 57, and 59·8. This is a wonderful record. From the table on p. 39 of the report we note that vaccination in Eastbourne has been almost given up. During 1920 the vaccination officer received 709 certificates of conscientious objection. The births in the vaccination district during 1919 were 750. During the last decade the yearly average of births has been 871, and the yearly average of successful vaccinations 165. During the year 52 cases of venereal diseases were treated at the clinic (opened in September, 1919). Eastbourne has its own tuberculosis hospital of 24 beds, but, in addition to this, 88 patients were sent away to various sanatoriums and hospitals. One of the needs is a hospital for non-pulmonary tuberculosis. Dr. Willoughby mentions that tentative proposals have been made for a joint Sussex arrangement, but have so far come to nothing. The results achieved at Alton have been so good that one cannot help being surprised at the slow progress of this movement for converting cripples into useful citizens.

We congratulate Eastbourne on having a very complete maternity and child welfare scheme, including, as it does, a well-attended antenatal clinic, a hostel for unmarried mothers, a maternity home, an infants' home, and a municipal home-help. There is also a dental clinic for the mothers, and arrangements have been made during the year for boarding out illegitimate infants, some of them at their own homes. The council subsidise a creche, which accommodates 16 children, and one wonders why it is necessary to have a creche in Eastbourne, and whether, with a population of a constitution such as that of Eastbourne, it would not be a sounder policy and more economical to "board out" the babies at their own homes, as has been done for some of the illegitimate babies. The proportion of births attended by midwives is only 27·4 per cent., a very different state of things to that obtaining in industrial towns. Eleven cases of ophthalmia neonatorium were notified during the year without any resulting blindness, though it is not mentioned if any damage to the eyes occurred. The report concludes with a housing survey, to which some reference has already been made.

SCHOOL MEDICAL SERVICE.

Hull.

The service here comprises, besides the school medical officer, two whole-time assistants and five part-time officers, along with two part-time ophthalmic and orthopædic surgeons and a school dentist. The department works in coöperation with the public health, the tuberculosis, and the infant welfare departments. During 1920, 17,799 children underwent routine medical inspection, and 1472 were re-examined. The school dentist found among 4411 children between 6 and 7 years of age, 2550 requiring treatment. In 1917 only 9·2 per cent. of the children had sound teeth, as against 20·5 per cent. in 1920. The number with clean mouths has been increasing steadily each year. It is difficult to believe that any public benefit can result from the high price of milk, yet we are told, "The rapid rise in price and greatly diminished consumption of milk may have called into play more profuse salivation than hitherto, and food instead of being washed down with a drink is formed into a more natural and digestible bolus."

An interesting investigation into the visual and auditory capacity of 4695 children between 6 and 7 years of age was made; 950 having vision of less than 6/12 in both eyes were submitted to a test of refraction, and in the case of 250 glasses were found to be necessary. Unfortunately, the scheme for a large open-air camp school and a residential open-air school has had to be abandoned on account of the expense involved, and so far there are no schools with open-air class-rooms, though the teachers are encouraged to develop playground classes. The organiser of physical training reports a steady improvement in the results obtained from physical exercises, which is noticeable in the carriage and the movement of the children, and we are told that the introduction of the new syllabus into the schools has been responsible for a large amount of this improvement.

Bootle.

There have been certain changes in the administrative staff during the past year, Dr. F. T. H. Wood succeeding Dr. W. H. Daley as school medical officer and medical officer of health, and Dr. Kate M. Cowe succeeding Dr. J. M. Taylor as assistant school medical inspector. Dr. Cowe gives part of her time *to maternity* and child welfare work, thus coördinating these two branches.

There was an average attendance of 11,424 children out of 12,928 on roll, and 39,073 routine and 12,002 special inspections, while 35,863 re-examinations were made. *The number found* at routine inspections without any physical defect totals 27·4 per cent., as compared with 27·3 per cent. last year, 19·9 per cent. in 1918, and 16·5 per cent. in 1917. The more important percentages of physical defects this year are malnutrition, 6·6 per cent; *defective vision*, 13·1 per cent.; enlarged tonsils, 7·5 per cent.; lung disease, 8·7 per cent. These figures correspond closely to those of last year. The number of children referred for further observation or treatment was 62·5 per cent., as compared with 57·6 per cent. in 1919, both high percentages. The scheme for establishing an *open-air residential school* has unfortunately been deferred, and as there is no *provision for open-air education* in Bootle, Dr. Wood suggests the establishment of playground classes wherever possible. Comment is made on the wide variations in the methods employed in the physical training of the children, and it is suggested that the appointment of *an organiser* of *this* department would do much to systematise and coördinate the instruction. Bootle has *three* evening play centres, which are a great attraction, and which have been well attended throughout the year. These centres have done much to promote the social and physical welfare of the children. Examination of children *attending* secondary schools revealed such children to be better in physique. nutrition, and *cleanliness than* the ordinary *average* elementary school child. Of 69 children of school age who *died during the* year, 18 *died from tuberculosis*, 11 from diphtheria, 7 from pneumonia, 5 from heart disease and rheumatic fever, 5 from accidents, 4 from scarlet fever, and 3 from measles. The incidence of tuberculosis here revealed is very striking

Leamington.

The average school attendance here is 1927; 879 routine and 802 special inspections were carried out. The number of children re-examined was 381. No child suffered from malnutrition, and only three cases of definite pulmonary disease were found. *Out of 5787 children inspected by* the nurse, 791 were found to be unclean. The anthropometrical work done by Dr. W. L. Goldie is interesting: In estimating the cephalic index he found on examining 200 boys and 218 girls that 10 boys and 16 girls were dolichocephalic, or had cephalic indices below 75; 127 boys and 151 girls were *mesaticephalic, or had cephalic* indices from 75 to 80; and 63 boys and 51 girls were brachycephalic, where the cephalic index was above 80. *He has* also made investigation into the colour of the eyes and the comparative lengths of the index and ring fingers, and found among other things that an index finger longer than the ring finger is nearly twice as *common amongst* boys as amongst girls.

RONTGEN SOCIETY.—The annual general meeting was held on Thursday, June 16th, *at the rooms of the* Royal Photographic Society, 35, Russell-square, London, W.C. The following officers and *members of council* were elected for the ensuing year. President: Prof. J. W. Nicholson, F.R.S. *Vice-Presidents: Dr.* G. H. Rodman, Sir Ernest Rutherford, F.R.S., and Sir William Bragg, F.R.S. Hon. *Treasurer:* Mr. Geoffrey Pearce. Hon. Secretaries: Mr. E. A. Owen, D.Sc., and Dr. J. Russell *Reynolds. Hon. Editor:* Major G. W. C. Kaye, D.Sc., and 12 members of council. A discussion on "The Physics *of the X Ray Tube*" was opened by Major Kaye. An Exhibition of Modern X *ray Tubes, and a demonstration of the* New Portable Coolidge Outfit—British Thomson-Houston Co., Ltd.—was given. The attention of *members is* called to the exhibition of Radiographic Prints arranged by the Rontgen Society in the rooms of the Royal Photographic Society, which will be open daily (Sundays excepted), during June from 10 A.M. to 5 P.M.

Medical News.

UNIVERSITY OF CAMBRIDGE: *Diploma in Hygiene.*—The University of Cambridge, in response to a communication from the League of Red Cross Societies at Geneva, has established a new Diploma in Hygiene. In order that the scheme may assume an international aspect, it is hoped to bring together men representing the views of different countries—that is to say, candidates from advanced countries, such as America and Scandinavia, as well as those from the more recently reorganised nations of Eastern Europe, may avail themselves of the facilities provided in these classes. The training is primarily intended to benefit those who wish to familiarise themselves with English methods of sanitary science and practice and to return to their own countries *holding* an official certificate that they are qualified to act as officers of health. The diploma is open to candidates from all countries outside the British Dominions who possess a qualification to practise medicine or surgery *which, though not registrable in Great Britain*, is recognised by the authority of the country in which the candidate *practises.* The diploma is not registrable by the General Medical Council of Great Britain and Ireland. The full *course must extend over a* period of nine calendar months, and all candidates must have matriculated and resided in *the university for not less than two terms* or for one term and during a long vacation course. The examination is *divided into two parts and the requirements for* each part are similar to those demanded for the Diploma in Public *Health with the exception that no detailed* knowledge of English public health laws and statutes will be called for. It *appears to be more important that candidates should* become acquainted with the general principles of the *English code of sanitary legislation than that they should* possess a detailed knowledge of the legal duties and responsibilities *of our* sanitary authorities. *Arrangements are now* being completed to ensure lodging accommodation not only for D.P.H. *students*, but for the students who intend to take the diploma in hygiene.

The Secretary to the State Medicine Syndicate is Mr. J. E. Purvis, Public Health Laboratory, Cambridge.

MEDICO-LEGAL SOCIETY.—The annual general meeting will be held at 11, Chandos-street, Cavendish-square, London, W., on Thursday, July 7th (not Tuesday, June 28th, as previously announced), at 8.15 P.M. At 8.30 P.M. a paper will be read by Prof. A. Louise McIlroy on "Some Factors in the Control of the Birth-rate," which will be followed by a discussion. Lord Justice Atkin has been nominated by the Council of the Society as President.

FEDERATION OF MEDICAL AND ALLIED SOCIETIES.—The annual general meeting of the Federation will be held at 11, Chandos-street, London, W. 1, on Tuesday, June 28th, at 5.15 P.M., when the annual report of the Executive Council will be presented and the officers elected for the ensuing year. The President, Sir Berkeley Moynihan, will preside.

SOCIETY OF MEDICAL OFFICERS OF HEALTH: NAVAL, MILITARY, AND *AIR FORCE HYGIENE GROUP.*—A meeting of this group will be held at the house of the Society, 1, Upper *Montague-street, London*, W.C., on Thursday, June 30th, at 1.30 P.M. Colonel H. W. Grattan, Deputy *Director of Hygiene*, War Office, will read a paper on the Coöperation between Civil and Military Sanitary Authorities *during a* Grave National Emergency.

THE Research Defence Society will hold its annual general meeting on Wednesday, June 29th, at 3.30 P.M., at the *house* of the Medical Society of London, 11, Chandos-street, Cavendish-square, London, W. The chair will be *taken* by Lord Lamington. A short address will be given by Dr. H. H. Dale, F.R.S., on the work of the National Institute for Medical Research. Specimens will be shown. All interested are invited to attend.

ROYAL MEDICAL BENEVOLENT *FUND SOCIETY OF* IRELAND.—The annual meeting of this Society was held in the Royal College of Physicians on *June 15th, Sir James* Craig, the President, being in the chair. The amount given *in* grants during the year was £1201 10s., *as compared* with £1130 7s. 6d. last year. The amount received from branch treasurers showed an *increase of over* £88. There has been a marked increase in receipts from dividends and interest on investments—*£921, as compared* with £653 last year. Revenue from all sources for the year was £2915 6s. 11d., as compared with *£2530 12s. 8d.* in 1920, and the balance for this year is £1508 2s. 6d., as compared with £1275 1s. 8d. last year.

London Medical Exhibition.—The eleventh exhibition is arranged to be held in the Central Hall, Westminster, S.W., on Oct. 3rd, 4th, 5th, 6th, and 7th next.

Dr. Sidney C. Lawrence, after 15 years' tenure of the post, has resigned his appointment as Medical Officer of Health for Edmonton.

Mr. Henry P. Sturgis, upon his retirement from the post of chairman of the Royal London Ophthalmic Hospital, which he has held for the last 24 years, has been presented by members of the committee and medical staff with a handsome silver salver, as an expression of their appreciation of his services.

South London Hospital for Women.—A garden fête, pound day, and sale of work will be held to-day (Friday) from 3 p.m. Princess Helena Victoria has promised to attend and will receive purses. Tickets of admission 3 to 5 p.m. 2*s.*, after 5 p.m. 1*s.*, may be obtained at the hospital (South Side, Clapham Common, S.W.4) which will be open to inspection.

Royal College of Physicians of London.—At an extraordinary comitia held on June 15th, Sir Norman Moore in the chair, the resignation of his membership of the College by Jugalkisor Adhya was received and accepted. Sir Humphry Rolleston was appointed a representative of the College on the Court of Governors of the University of Sheffield in place of Dr. T. D. Acland. A resolution was passed to the effect that every candidate for the Conjoint Diploma should be required to produce evidence of adequate training in diseases of children and that the final examination should include examination in this subject.

Oxford Ophthalmological Congress, 1921.—The twelfth annual meeting of the Congress will take place on Thursday, Friday, and Saturday, July 7th to 9th next. The annual dinner of the Congress will take place in the Hall of Keble College at 7.45 p.m. on Thursday, July 7th. Members will meet informally at 7.45 p.m. on Wednesday, July 6th in the Hall of Keble College. The proceedings of the meeting will take place in the Department of Human Anatomy in the University Museum, kindly lent for the purpose by Prof. Arthur Thomson, and will consist of addresses, demonstrations, a scientific and a commercial museum. An outline of the programme is as follows: Thursday, July 7th: The Congress will be opened by the Master, Mr. Sydney Stephenson; at 10.5 a.m. a discussion on "The Causes of Infection after Extraction of Senile Cataract" will be opened by Dr. Victor Morax, of Paris. The following will take part in the discussion: Dr. A. Maitland Ramsay (Glasgow), Dr. T. Harrison Butler (Leamington Spa), Mr. John Hern (Darlington), Mr. E. H. E. Stack (Bristol), Mr. P. H. Adams (Oxford), Mr. Burdon-Cooper (Bath), Mr. Rayner D. Batten (London), Mr. N. C. Ridley (Leicester). The annual general meeting will be held at the conclusion of the discussion. During the afternoon the following will read papers: Mr. R. J. E. Hanson (London) "Stereoskopometry"—a suggested standard test; Mr. Arthur Greene (Norwich), Petrosal sinus sepsis; Dr. Wm. Wallace (London) Epidiascope demonstration of War Injuries of the Fundus, illustrated by water-colour drawings. On Friday, July 8th, in the Department of Human Anatomy, at 10 a.m., the Doyne Memorial lecture will be delivered by Mr. E. E. Maddox on "Heterophoria." 11 a.m., Dr. Charles Russ (London), An instrument which is set in motion by the eye—i.e., by vision, or by proximity of the human body—e.g., the hands. 12.30 p.m., Mr. John Hern (Darlington), Experiences of 606 and its substitutes in eye diseases. 2.30 p.m., at the Eye Hospital, Mr. N. C. Ridley (Leicester), the trench operation for chronic glaucoma, with account of cases: Dr. T. Harrison Butler (Leamington Spa), A plea for early diagnosis and operation in chronic glaucoma, with some remarks upon the treatment of acute glaucoma; Mr. P. H. Adams (Oxford), A modified operation for chronic glaucoma; Mr. B. Cridland (Wolverhampton), Some points in the performance of the Lagrange operation for chronic glaucoma. On Saturday, July 9th, in the Department of Human Anatomy: 10 a.m., Dr. T. Harrison Butler, Loss of vitreous during cataract extraction: 10.30 a.m., Mr. Percival J. Hay (Sheffield), Sight-testing with coloured test types; 11 a.m., Dr. Hamilton McIlroy (Glasgow), Some points of interest in the work of a school oculist. The Scientific and Commercial Museums will be open in the Department of Human Anatomy from 9.30 a.m. daily. Members who propose to be present are requested to send the attendance fee (one guinea) to the hon. secretary, Mr. Bernard Cridland, F.R.C.S. Edin., Salisbury House, Wolverhampton, at their earliest convenience, and at the same time to intimate whether they desire rooms reserved in Keble College, and their intention or otherwise to be present at the annual dinner.

Medical Golf Competitions.—*Medical Golfing Society:* The annual tournament was held on June 16th on the Walton Heath Golf Course. The day was very successful and the pleasure of the competitors was largely due to the excellent condition of the course. The results of the various competitions were as follows:—*The Lancet Cup*, open to members of the medical profession and given for the best scratch return against bogey: Winner, Mr. H. D. Gillies, 3 up. *Henry Morris Challenge Cup*, under handicap: Class A—1. Dr. C. E. Finny, 3 up: 2. Dr. J. A. Torrens, 2 up; last nine holes, Dr. Murray Thomson, 2 up. Class B—1. Dr. Eric W. Gandy, all square; 2. Sir Charles Ryall, one down; last nine holes, Dr. E. H. Shaw, 1 up. The Society will dine together at the Florence Restaurant, Rupert-street, London, on June 29th, and then discuss a proposed programme of inter-team matches. Members intending to be present should inform the hon. secretary, Dr. L. E. Creasy, 36, Weymouth-street, W.1.

Ladies' Medical Golfing Society: A most successful meeting was held on June 15th at Beaconsfield Golf Club. In the morning a medal round under handicap was played; the senior division prize was won by Miss Edith Adams after a tie, with a net score of 79, and the junior prize, presented by Mrs. W. F. Pedler, was won by Mrs. Alfred Eddowes, also after a tie, with a net score of 78. The Canny Ryall Challenge Cup for the best net return was won by Mrs. Arthur Moore with a score of 77. The prizes offered by Mrs. A. Currie for the best eclectic score sent in by a pair of competitors playing together, under half combined handicaps, were won by Mrs. de Paula and Mrs. Beatty Smyth. In the afternoon a foursomes versus bogey competition over ten holes resulted in a win for Mrs. T. Watts Eden and Dr. Joan Ross, who were one down. The success of the meeting was largely due to the efforts of the hon. secretary, Mrs. Laming Evans, to whom at the close of the meeting a hearty vote of thanks was accorded.

Prospective Candidate for the Scottish Universities.—At meetings of the Unionist Associations of the Scottish Universities held recently a letter was received from Sir Watson Cheyne, one of the members for the universities, stating that he had definitely decided not to seek re-election, and requested that a suitable prospective candidate should be selected without delay. In view of this letter Sir George Andreas Berry, LL.D., F.R.S.E., a former president of the Royal College of Surgeons, Edinburgh, and of the Ophthalmological Society of the United Kingdom, was invited to become prospective Unionist candidate, and he has agreed to place his services at the disposal of the constituency. Sir George Berry was educated at Marlborough and Edinburgh University, and also studied in London, Paris, Copenhagen, Vienna, and Giessen. He was from 1882 to 1905 ophthalmic surgeon, Edinburgh Royal Infirmary, where later he acted as one of the managers, and he has been for the past ten years a member of the University Court of the University of Edinburgh. During the war, and for one year after the war, he served as chief of the ophthalmic department of the Second General Hospital. He was knighted in 1916 in recognition of his scientific work.

Royal Medical Benevolent Fund.—At the last meeting of the Committee, held on June 14th, 27 cases were considered and £382 voted to 23 of the applicants. The following is a summary of some of the cases relieved:—

Widow, aged 50, of M.R.C.S. who practised in Clevedon and died in 1917. On the death of her husband applicant resumed her profession as a nurse, but, unfortunately, her health gave way and she cannot work continuously. Her daughter, aged 20, is apprenticed to a photographer but is not able to keep herself. Applicant receives £50 interest on War Loan and her fees for nursing amounted to £20. Rent of flat £60. Voted £10 in two instalments.

Widow, aged 42, of M.B. Dublin who practised in Plymouth and died in 1915. Applicant had nervous breakdown two years ago and sold her furniture to pay expenses, and it is only within the last few months that she was well enough to try to support herself and children. She hopes to get a house so that she can take boarders. A friend promised to share the furnished flat she now has, but owing to this arrangement falling through she has to find the whole rent—£3 3*s.* per week. Applicant managed to let one of the rooms for the last three months at 30*s.* per week including meals. She receives £25 subscribed by medical men and invested with the Public Trustee, £30 from Devon and Exeter Medical Society, and £50 from a brother-in-law. Owing to insufficient means she has had to take her daughter away from her art studies, the two younger children are at home and the boy at Epsom. Applicant earned £15 by knitting jumpers. Voted £18 in two instalments.

Daughter, aged 67, of M.R.C.S.Eng. who practised in Portsmouth and died in 1878. Three daughters were left to support themselves; one died recently who helped with the house. Their sole income is derived from letting apartments. Applicant and her sister, owing to indifferent health, find the work very trying. Mortgage and rates amount to £53 per annum, and by letting they received £3 3*s.* per week, including part board for one. In 1910 and 1911 the Fund helped this case to the extent of £22. Voted £18 in 12 instalments and a special grant of £6.

Widow, aged 63, of L.R.F.P.S.Glasg. who practised at Paignton and afterwards as a ship's doctor. When the war broke out applicant's husband went as a surgeon on transports engaged by different shipping companies, and not coming directly under the Admiralty was not entitled to a pension. Applicant is an invalid. Her son allows her £1 per month; the youngest daughter is out as a cook but unable to help her mother financially. Voted £12 in 12 instalments.

Daughter, aged 70, of M.R.C.S.Eng. who practised at Durham and died in 1860. Applicant is asking help towards increased rent and rates. Owing to limited accommodation not more than four lodgers can be taken and the rent received from them amounts to £170. Applicant also receives £25 from the Governesses Benevolent Institution. The Fund helped a sister in 1915 to the extent of £5. Voted £18 in 12 instalments.

Widow, aged 45, of L.S.A.Lond. who died in 1921. After paying funeral expenses and debts out of the insurance of £100 applicant had so little left that she applied to the Public Trustee for an advance of £20 pending the settlement of her father-in-law's estate, which is expected to realise about £60 per annum. The eldest girl is a lady-help earning 14s. per week and board, the youngest is undergoing three months' training as a shorthand-typist, the fees being paid by a neighbour. Voted £10.

Daughter, aged 36, of L.R.C.S.Edin. who practised at Hastings. Applicant has supported herself by literary work, but owing to a nervous breakdown has been unable to carry on work and was dependent on friends. She came under the notice of the C.O.S., who applied to the Fund on her behalf. She was found very ill and near starvation. Another society sent her away for six weeks to regain strength and ask for a grant towards the cost. Voted £15.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters J. Symonds, C.B., F.R.C.S., at 11, Chandos-street, Cavendish-square, London, W. 1.

Dr. D. J. Galloway has been appointed an unofficial Member of the Legislative Council of the Straits Settlements.

Hôpital St. Antoine, Paris.—A week's course on diseases of the digestive system will be given by Drs. Bensaude, Félix Ramond, and Le Noir from July 11th to 18th, at 10 A.M. and 3 P.M. Practical demonstrations will be given each day after the discussions; those attending these demonstrations must register under Dr. Le Noir, Salle Arant. Fee for the course, 100 francs.

East African Campaign Dinner.—A reunion dinner for all who took part in the East African Campaign will be held at the Holborn Restaurant on Friday, July 1st, when General Smuts will be the guest of the evening. Many who served in the R.A.M.C. in that campaign may be glad of this opportunity of meeting their late Commander-in-Chief on the occasion of his first visit to England as Prime Minister of the Union. Further particulars may be obtained from the Hon. Sec., 20, St. Thomas's Mansions, London, S.E.

Irish Medical Association.—The annual meeting of this Association was held on June 15th in the Royal College of Surgeons, Dublin, Dr. E. Magennis, the President, in the chair. The annual report of the Council stated that in the year 1920 the membership increased from 677 to 681. During the year the Treasury had agreed to the following remuneration for medical attendance on the Royal Irish Constabulary: (a) 2s. per head a month; (b) an addition of 6d. per head a month in respect of men stationed more than two miles from the doctor's house: (c) the rates to apply to the whole of Ireland from July 1st, 1920. The obligation to attend wives and children of constables has been abolished, and the new rates are therefore a substantial improvement on the old. It was noted that the Post Office had declined to increase the rate of remuneration (13s. a year) for attendance on postal servants. The Midwives Board for Ireland, as the result of the representations made by a deputation of the Council, had adopted an amended scale of fees for doctors summoned by midwives under the Midwives (Ireland) Act. The scale is as follows: (i.) Attendance at confinement in the day-time (8 o'clock, A.M., to 8 o'clock, P.M.) £2 2s. (ii.) Attendance at confinement in the night-time (8 o'clock, P.M., to 8 o'clock, A.M.) £3 3s., with the addition in each case of a mileage rate of 9d. for the portion of the outward and return journeys beyond three miles from the doctor's residence—no locomotion expenses to be allowed where the distance from the doctor's residence to the patient's house is under three miles. The annual statement of accounts shows a balance in hand of £163 19s. 6d., as against £581 3s. 10d. at the beginning of 1920. The President, in his address, alluded to the probability that the Association would be compelled to increase its subscription from one guinea perhaps to three. A discussion took place regarding the question of the fee paid for examination for life insurance. Representations had been made last year to the principal companies pointing out that the fee of one guinea was inadequate and demanding an increase. The companies, in view of their agreement with the British Medical Association that the fee should be one guinea, had declined to pay more. The Association passed a resolution asking the Irish Medical Committee to take steps to organise the profession of Dublin on the question.

The P. & O. Steamship Company has subscribed £1000 per annum for three years to Lady Minto's Indian Nursing Association towards the cost of passages for nursing sisters.

St. Thomas's Hospital Jubilee.—On June 21st the Jubilee of St. Thomas's Hospital was celebrated, the present buildings having been opened by Queen Victoria on June 21st, 1871. A jubilee appeal for £100,000 was made to clear the hospital of debt, and £2000 given or collected by the nursing staff was handed to the Duke of Connaught, President of the hospital, who presented the prizes to students of the medical school.

Committee on International Hygiene.—Following a suggestion of the Washington Conference to appoint an advisory committee of experts on industrial hygiene, the International Labour Office has invited the Governments of Belgium, France, Germany, Great Britain, Italy, Japan, the Netherlands, Spain, Sweden, and Switzerland each to nominate as a member of this advisory committee one of their health inspectors or factory inspectors.

The Children's Country Holidays Fund.—Mr. Percy Simmons, chairman of the London County Council, has issued an appeal on behalf of the above Fund. "For many years," he says, "by means of the Fund, a large number of the children attending the London elementary schools have been enabled to obtain a fortnight's holiday in the country, and this has been of the greatest value to them in every way. The position this year is particularly difficult owing to lack of funds and the increase in railway fares, while unemployment and short work make it impossible for the parents to contribute as much as they have done in past years." Cheques, &c., should be made payable to the Children's Country Holidays Fund, and should be sent direct to the Secretary at 18, Buckingham-street, London, W.C. 2.

Donations and Bequests.—The late Sir Felix Semon, K.C.V.O., M.D., F.R.C.P., bequeathed the whole of his laryngological library, except copies of his own writings, to the Royal Society of Medicine.—By will the late Mr. Daniel de Pass, of Old Court Mansions, Kensington, and Worthing, left £1000 each to the London Hospital, Dr. Barnardo's Homes, and the London Jewish Hospital, Stepney Green; £500 to the Beth Holim Hospital; and £100 each to St. Mary's Hospital, Paddington, the Jewish Deaf and Dumb Society, and the Worthing Hospital.—The late Mr. John Butt, of the Barnlands, Littlehampton, bequeathed £1000 to the Littlehampton and District Hospital; £300 to the Royal West Sussex Hospital, Chichester; £200 each to the Sussex Eye Hospital, the Sussex County Hospital, Brighton; and £100 to the Littlehampton Parish Nurses' Fund.—By will Mr. William Henry Fox, B.A., of Bradwell-grove, near Burford, left £1000 to the Burford Cottage Hospital and £2500 to the Radcliffe Infirmary.

Obituary.

WILLIAM ABRAHAM BELL, M.B. CAMB.

Dr. W. A. Bell, whose death at advanced age was recently announced, was born in April, 1841, the only son of Dr. William Bell, a well-known homœopath, of Hertford-street, London. Educated at Ipswich Grammar School and at Trinity Hall, Cambridge, he took a first class in the Natural Science Tripos, and in 1866 graduated in medicine. On his after career we have received the following interesting note from Dr. Robert Lee, who preceded him as a student by one year at St. George's Hospital. Dr. Lee writes: "As father and son could not agree on the question of medical practice, it was arranged that the son should go out to America to study. There he joined an important expedition to San Francisco, and after two years settled at Pike's Peak, Colorado, retiring from professional work. He became chief agent for development in Europe of interests in the American Railway and the lands that came under its control, and his house in Colorado was well known to Kingsley, Flower, and other scientific men who went out from our universities to explore the Western States."

Dr. Bell married in 1872 Clara Georgina Whitmore, daughter and co-heir of Whitmore Scovell, of Waddon, Surrey, by whom he had one son and three daughters.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

National Health Insurance Bill.

Sir A. MOND, Minister of Health, has introduced in the House of Commons the National Health Insurance Bill. Clauses 1 and 2 of the measure are based on the recommendations of the recent Departmental Committee on Approved Societies' Administration Allowance. No change is made in the rates of contribution or normal rates of benefit under the National Health Insurance Acts, but in order to enable the administration allowance for approved societies to be increased from 4*s.* 5*d.* to 4*s.* 10*d.* per member per annum the Bill proposes to make a small reduction in the amount retained out of each weekly contribution for the purposes of the Contingencies Fund, thus leaving a greater amount in the general funds of the societies out of which the administration allowance is provided. The proportion of two-ninths of the cost of benefits and administration to be provided by the Exchequer remains unaltered. The Exchequer is enabled to reduce or suspend its contribution of £150,000 a year to the Central Fund *pari passu* with the contribution thereto from the Societies Contingencies Funds. Clause 2 provides for the contribution from the funds of approved societies towards the administration expenses of insurance committees being increased by twopence per member per annum with a corresponding relief to the Exchequer. Clause 3 enables a reduction to be made in the membership of insurance committees in England and Wales with a consequent saving in the administration expenses of the committees while retaining so far as practicable the present proportions between the several classes of persons to be appointed. The net saving to the Exchequer under the Bill will, it is stated in the memorandum, be about £300,000 a year as from Jan. 1st last.

HOUSE OF LORDS.

THURSDAY, JUNE 16TH.

The Dentists Bill.

The Earl of ONSLOW, in moving the second reading of the Dentists Bill, explained the provisions of the measure, and said that it made no charge on the Exchequer. The expenditure would be defrayed from fees, and if there was any surplus it would be spent on dental education and research. There was only one point of substance about which there was any difference, and that was in regard to the form of the register. The admission of the unqualified practitioner had been regarded with some misgiving by Sir Frank Colyer, and a different form of register had been suggested. The matter had been discussed at considerable length and Sir Frank Colyer's points had been answered by the Chairman of the Departmental Committee, Mr. Acland. The Government supported the view of the Committee. The British Dental Association had forwarded to the Ministry of Health a memorial extensively signed by dental practitioners in favour of the Bill.

Lord GREVILLE said he did not wish their lordships to think that this was altogether an agreed Bill. There was, in fact, considerable opposition to a certain part of the measure, and on behalf of the Ivory Cross Society, of which he was at present the Chairman, he should have something to say in the Committee stage. There was no opposition to the Bill as a Bill by dental practitioners or the Society. It was, in fact, welcomed by dental practitioners and by his organisation, but there were certain features of it to which they strongly objected, principally in regard to the wholesale admittance of the unqualified practitioner.

The Marquess of SALISBURY said there was certainly an element in the Bill which would have to be carefully scrutinised in Committee. They were all in favour of the Bill and of protection for the dental profession, but there were not enough dentists to supply the population, and it was evidently proper that they should do all in their power to make the profession as attractive as possible. In order to arrive at an agreement the Committee seemed to have been led as a *quid pro quo* to the unqualified practitioners to admit the existing ones *en bloc* as fully qualified dentists. That might be good tactics from a Parliamentary point of view, but it was extremely bad from the point of view of the people who suffered from toothache, and they would have to consider closely whether they were going to allow a number of practitioners, some of whom were little better than charlatans, to be admitted by a stroke of the pen to the full advantages, privileges, and dignities of dentists in order to facilitate the passage of the Bill. There might be an answer, and if it was a good one, of course they would bow to it, but as at present advised he thought the Government should carefully consider whether a change in the Bill in this respect ought not to be made.

Viscount KNUTSFORD, a member of the Departmental Committee, said there was no suggestion that all unregistered men should be admitted *en bloc* to the register. On the contrary, they limited the admission of them to those men who had been in good practice for five years and could bring evidence of good character in that practice. Those men who had not been five years in practice, but who would submit themselves to a qualifying examination were also to be admitted. They had all received letters and circulars from a certain number of gentlemen, more noisy than wise, who wished to keep out all the unqualified men from the register. By far the greater part of the dental work in this country was done now by these unregistered men, and it would be a monstrous thing to prevent them carrying on their practice altogether. Moreover, the dental work of the country could not be done unless they were allowed to practise. It had been suggested that a special list of these men might be made. A much better plan would be that the Dental Register should show the qualifications of the dentist opposite his name, and that those who were unregistered, or were on the register without qualification, should have that fact shown opposite their names, in brackets. He ventured to think, however, that not a single member of that House had ever looked at a register to see what degrees his dentists had obtained; it mattered very little. But the fact of a dentist being on the register meant that he was obliged to obey the ethics of the profession; he was not allowed to canvass or advertise for work. The register, therefore, was not only a privilege, it was a controlling influence. Unless the Bill passed a good many men would not join the dental profession. Why should a father allow his son to join that profession when he knew that the butcher, the baker, or the candlestick maker might take a house next door and practise equally with him?

The Bill was read a second time.

HOUSE OF COMMONS.

WEDNESDAY, JUNE 15TH.

Pre-war Disability Pensions.

Viscountess ASTOR asked the Financial Secretary to the Admiralty what conclusions had been reached with regard to increases in the pre-war disability pensions of men who served again in the war.—Mr. AMERY replied: It has been decided that the claims of pre-war disability pensioners who served during the war and were demobilised are to be dealt with under the post-war scales of pension. It is anticipated that the scales will shortly be promulgated, the final details being now in course of settlement.

Disabled Men and Unemployment Contributions.

Mr. ROBERT YOUNG asked the Minister of Labour whether an ex-Service man totally disabled was entitled to any refund of contributions paid by him into the funds governing unemployment under the National Insurance Acts.—Dr. MACNAMARA replied: An ex-Service man totally disabled is not entitled on the ground only that he is totally disabled to any refund of employment contributions correctly paid under the National Insurance Acts. The only provision for a refund to an insured contributor of contributions correctly paid is contained in Section 25 of the Act of 1920, under which a contributor may obtain a refund upon reaching the age of 60, provided that certain conditions are satisfied. A person who is in receipt of a pension of £26 or upwards, is, however, entitled under Section 3 of the Act to exemption from liability to be insured. This would relieve him, but not his employer, from payment of contributions.

Unemployment Benefit and Treatment Allowances.

Mr. TYSON WILSON asked the Minister of Labour if he was aware that, when an ex-Service man who was or had been in receipt of treatment allowance was certified by the medical referee as fit for employment, his treatment allowance ceased immediately; that if he had no employment to go to he cannot make application for unemployment benefit for at least seven days after the receipt of the last treatment allowance; and that this meant that these men were sometimes without any income for two or even three weeks; and whether he could, by regulation or otherwise, make arrangements whereby unemployment benefit could be paid them seven days after the stoppage of treatment allowance.—Dr. MACNAMARA replied: A claimant for unemployment benefit must, amongst other things, be capable of and available for work. Accordingly, an ex-Service man who has been in receipt of full treatment allowance on the ground that he was incapable of work, would not be in a position to claim benefit during the period covered by the treatment allowance. Treatment allowances are paid in advance up to Tuesdays; unemployment benefit, which is necessarily due only after proof of unemployment has been given, is paid on Fridays in respect of weeks ending Wednesdays. Accordingly there is a period of 16 days between the last day on which treatment allowance is actually paid and the first day on which benefit is received. The first seven of these days will be covered by the last payment of treatment allowance paid in advance. I may further point out that this class of man is almost invariably entitled to a pension and that payment of pension in advance, which is, of course, suspended during full treatment allowance, is, or ought to be, resumed immediately on cessation of treatment allowance.

Polluted State of the River Lee.

Major MALONE asked the Minister of Health whether he would have inquiry made by his department into the polluted and offensive state of the River Lee; whether he was aware that complaints had frequently been made to the local authorities by the inhabitants and persons using the river, and that, as late as last week, the medical officer of health for Tottenham reported to his committee that objectionable matter consisting of decomposing organic material and an oily substance entered the River Lee below the Tottenham lock, causing that reach of water to be highly polluted and offensive, and would he exercise such pressure on the Lee Conservancy Board as to compel that authority to purify the river in the interest of the health of the inhabitants and the users of the river.—Sir ALFRED MOND replied: The Lee Conservancy Board are by virtue of Section 9 of the Rivers Pollution Prevention Act, 1876, the authority for enforcing the provisions of that Act and of the Lee Conservancy Act, 1868, with regard to the River Lee, and I have no power to compel the Board to take action in the matter. I have no information as to the complaints referred to in the second part of the question.—Major MALONE: In the interests of the health of the district and in view of the complaints that have been made has not the right honourable gentleman power to compel the Board to carry out this work?—Sir ALFRED MOND: No, Sir, I have not.

Remuneration of Bramley Vaccination Officer.

Mr. ROBERT RICHARDSON asked the Minister of Health whether his attention had been directed to the case of Mr. Arthur Gaunt, vaccination officer of the Bramley Union, and the definite attempt of the Bramley guardians to deprive an official of 20 years' service of his living by taking away the bonus entirely, leaving this officer the sum of £25 9*s.* 7*d.* per quarter as his only source of income to maintain a wife and two children; and whether, under the circumstances, this was a case in which he would exercise his right of determining the amount of remuneration to be paid by the Bramley guardians.—Sir ALFRED MOND replied: I understand that the facts are as stated in the first part of the question except that as the officer in question is only a part-time officer, I am not able to say whether he has any other source of income. After full consideration of the circumstances of this case, I do not see my way to interfere with the decision of the guardians in a matter affecting the salaries of their officers.

The Criminal Law Amendment Bill.

Viscountess ASTOR asked the Lord Privy Seal whether he had received copies of two resolutions passed at a meeting held in the House of Commons in support of the Bishop of London's Criminal Law Amendment Bill, at which practically every organisation interested was represented, promising to abstain from introducing controversial amendments; and whether, under these circumstances, he would undertake to give facilities for the passage of the Bill this session.—Mr. CHAMBERLAIN replied: The answer to the first part of the question is in the affirmative. I cannot, however, at present add anything to the answer which I gave my honourable friend on April 12th last.—Viscountess ASTOR: Since that answer we have had a meeting, and as this is not a controversial question could not the right honourable gentleman really see his way to make time for it as it will cost the country nothing? It is one of those Bills which the Government could get through. It would do a great deal of good, and I would urge the right honourable gentleman to find time for it.—Mr. CHAMBERLAIN: I quite understand the importance attached to this measure by a very large section of public opinion, and I am anxious that it should be considered by the House this session, but I cannot make a pledge to find time for it at this stage, though I hope it may be possible to do so later.—Major C. LOWTHER: Is the right honourable gentleman aware that this Bill would be by no means uncontroversial and that it is likely to lead to considerable controversy?—Viscountess ASTOR: Only by a certain section.

Old Age Pensioners in Poor-law Infirmaries.

Mr. NEVILLE CHAMBERLAIN asked the Minister of Health, whether an old age pensioner ceased to be entitled to receive his pension on entering a Poor-law infirmary on the ground that the cost of his maintenance was borne by the institution so long as he was an inmate; and, if so, on what ground the pension was stopped in cases where the cost of maintenance was borne by relatives or friends of the pensioner.—Commander HILTON YOUNG (Financial Secretary to the Treasury) replied: In the former case Section 3 (1) of the Old Age Pensions Act, 1919, provides that an old age pensioner shall not be disqualified for the receipt of a pension during a period of three months from the date of entering an infirmary if he so long continues to require medical or surgical treatment. After that period he incurs disqualification. In the latter case the pensioner ceases to be entitled to a pension so soon as his means, which include the cost of maintenance borne by relatives or friends, exceed the statutory limit of £49 17*s.* 0*d.* per annum.

Pensions (Ill-health) Claims.

Sir ROBERT CLOUGH asked the Minister of Pensions whether claims were admitted on the part of soldiers who did not, on demobilisation, make complaint of ill-health, either because they did not themselves then recognise the gravity of the symptoms or because there were actually at the time no specific symptoms of the disease whose origin arose from the war, but which only developed subsequently.—Major TRYON (Parliamentary Secretary to the Ministry of Pensions) replied: The answer is in the affirmative.

Medical Referee and ex-Soldier's Claim

Lieut.-Colonel HURST asked the Minister of Pensions whether he was aware that the Appeal Board had refused to revise the case of F. J. Taylor, 55, Jenkinson-street, Manchester, and had maintained a 20 per cent. assessment; whether this refusal was in harmony with the report of the medical referee; whether he was aware that this ex-soldier still had a bullet lying immediately to the left of his heart; and if he would have the case inquired into.—Mr. MACPHERSON replied: I am having inquiries made in this case, and hope to communicate with my hon. and gallant friend in a few days.

Lunacy Act Regulations.

Colonel WEDGWOOD asked the Minister of Health how soon he proposed to have posted up in the waiting-rooms of public asylums the provisions of Section 79 of the Lunacy Act, 1890, which had hitherto been hidden from the friends and relatives of patients.—Sir ALFRED MOND replied: The Board of Control have notified all visiting committees that they propose to make a rule requiring the inclusion of the substance of this Section in the "Regulations as to Visitation" furnished by all asylums to the friends of patients. There is, however, no foundation for the suggestion contained in the last part of the question.

Certification of "Voluntary Boarders."

Colonel WEDGWOOD asked the Minister of Health whether the Lunacy Board of Control had recently issued a regulation putting a stop to the certification of voluntary boarders while inmates of licensed houses or registered hospitals; and, in view of the fact that no procedure for certification had been prescribed by the Lunacy Act of 1890 applicable to the circumstances of such boarders, would he say what had been the nature of the steps required to be taken under Section 20 of the Act of 1891, when certification had hitherto been directed by the Board.—Sir ALFRED MOND replied: The hon. and gallant Member is under a misapprehension and no such regulation has been issued. No steps have been taken by the Board and none are needed to give effect to Section 20 of the Lunacy Act, 1891. The methods of certification are laid down in the Acts.

Medical Officers and Examination of ex-Service Men.

Mr. ALFRED T. DAVIES asked the Minister of Pensions what proportion of medical men whose services were used in examining ex-Service men had had experience overseas during the war; and whether he would consider the desirability of the employment of a larger number of such medical men in the interests of those so examined from time to time.—Major TRYON replied: Approximately 60 per cent. of the medical officers employed by my department in the examination of ex-Service men have served overseas. It is the practice of the Ministry, other things being equal, to give preference to medical men possessing the qualification to which my hon. friend refers.

THURSDAY, JUNE 16TH.

Permits for Bellahouston Hospital.

Mr. NEIL MACLEAN asked the Minister of Pensions whether, although permits to enter Bellahouston Hospital and interview cases had been granted to the British Legion, the Association for the Limbless, and the New Advisory Committee by the Scottish Regional Director, a permit for a similar purpose had been refused to the representative of the International Union of Ex-Service Men; what was the reason for this refusal; and whether he would issue instructions that equal facilities given to other ex-Service men's organisations would also be granted to the International Union of Ex-Service Men.—Mr. MACPHERSON replied: The hon. Member appears to have been misinformed. No such permits have been issued to any of the bodies mentioned, and the remainder of the question, therefore, does not arise.

Pensions Administration in Glasgow Area.

Mr. Neil Maclean asked the Minister of Pensions whether he was aware of the public dissatisfaction in Glasgow in the administration of the war pensions in the Glasgow area; that there was a feeling that the regional officers were giving rulings which were at variance with the decision of the local war pensions committee, and that the local war pensions committee resigned because of the difficulties created by these rulings: and whether he was prepared to have a full inquiry into the administration of the war pensions committee for the Glasgow area.—Mr. Macpherson replied: The answer to all parts of this question is in the negative.

Local War Pensions Administration.

Mr. Lawson asked the Minister of Pensions, whether it was the policy of the Ministry to transfer the powers of local pension committees to the areas, so that the work carried out by these committees would in a short time be undertaken by permanent officials of the Ministry.—Mr. Macpherson replied: My hon. friend may remember that the working of the local committee system was specifically included in the terms of reference to the Departmental Committee of Inquiry which I appointed last November. Until the report of that Committee is in my hands I do not propose to make any statement.

Appointments of Medical Referees.

Mr. John Guest asked the Minister of Pensions (1) whether, seeing that the original appointments of medical referees were made before the completion of medical demobilisation, these appointments would now again be declared vacant and re-advertised, or whether the original appointments were the fixed and permanent appointments of the present holders; (2) whether the appointment of medical referees were now reviewed every six months as originally decided; how many of these appointments had been considered vacant on review and changed; and whether the opinion of the local pensions committee was ever asked or considered in these appointments.—Mr. Macpherson replied: In the latter part of 1919, when the demobilisation of medical men was practically complete, the then existing appointments of medical referees, to the number of 962, were declared vacant, and 1553 new appointments were made, preference being given to those men who had served overseas during the war. All the present appointments are temporary, being subject to one month's notice on either side. While the paramount consideration in making these appointments must be medical, consideration is always given to representation made by local committees.

Cost of Medical Referees.

Mr. Guest asked the Minister of Pensions what was the total number of medical referees employed locally and centrally on pensions work; what was the total cost to the country; what fees were now paid for this work; what was the average per claimant pensioner: and whether all the appointments were part-time.—Mr. Macpherson replied: The Ministry utilises the services of 1717 medical referees, whose appointments are part-time and subject to a month's notice. Payment is made at the rate of 5*s.* per case except where the examination is in connexion with a claim to alternative pension, when the fee is 10*s.* 6*d.* The amount paid in fees to medical referees during the last financial year was approximately £250,000.—Sir W. Pearce: Is there a transfer of duties formerly performed by war pensions committees to the medical referees?—Mr. Macpherson: I do not think so. They deal purely with the medical aspect of a case and the local pension committees deal mainly with the facts.

Medical View of School Camps.

Mr. Trevelyan Thomson asked the President of the Board of Education whether, notwithstanding the recommendations of the chief medical officer that school camps should be encouraged, local education authorities were handicapped in making such arrangements under Section 17 of the Education Act of 1918, owing to the rulings of his Board that attendance at lessons given in camps could not be reckoned on the register of attendances if any charge was made; and, if the Act of 1918 prohibited such charges, would he bring in an amending Bill to enable local education authorities to organise school camps for which a charge was made and where attendance at lessons might be counted on the school register.—Mr. Herbert Lewis replied: On the general question of principle I can only refer the hon. Member to the answer which was given to him on April 26th. I do not consider that local education authorities are handicapped, and I am not prepared to introduce legislation for the purpose suggested.

Death-rate among Miners.

Mr. Robert McLaren asked the Secretary for Mines whether his attention had been called to the report published by the Chief Inspector of Mines, and could he explain why the death-rate per 1000 persons employed in 1920 was 0·88 and in 1914 1·08, whereas the amount of mineral produced per death was 217,259 tons and 228,947 tons for 1920 and 1914 respectively; and whether, in the opinion of the department, the mines were safer now than in 1914.—Mr. Bridgeman replied: The explanation of the phenomenon that while the death-rate per person employed has fallen the death-rate per mineral produced has risen is, of course, that the fall in the death-rate is not proportionate to the fall in output. As regards the last part of the question, my hon. friend is aware that it is the constant endeavour of my department to bring about greater safety in mining, but it is obvious that progress cannot be tested by a comparison of the figures of two isolated years.

Ex-Service Men and Lunacy Regulations.

Mr. Frederick Roberts asked the Minister of Health whether, when an ex-Service man had been committed to an asylum on account of mental injury attributable to the war the man himself and his next-of-kin were informed that one of the privileges attached to his having been placed on a private patient footing was that, provided that he could not be proved to be dangerous and unfit to be at large, his next-of-kin had the right, in accordance with Sections 72 to 74 of the Lunacy Act, to direct his discharge.—Sir Alfred Mond replied: It is not desirable to furnish this information on admission, but when a service patient is sufficiently recovered to raise the question of his discharge he is informed of the legal position and of the steps to be taken by his relatives.

Insured Man and Sanatorium Treatment.

Mr. Grundy asked the Minister of Health if he was aware that Frederick Shoesmith, of 9, Cator-street, S.E. 15, had been an inmate of Camberwell Infirmary for several months, that he was an insured person, and as such had been recommended for sanatorium treatment; and what steps he proposed to take to obtain the benefit expected by this man.—Sir Alfred Mond replied: I understand that an application for sanatorium benefit was received by the London Insurance Committee on April 12th last from this man, who was at the time an inmate of the Camberwell Infirmary; that the case is one of advanced tuberculosis, and that Mr. Shoesmith was not therefore recommended for treatment in a sanatorium. I am informed, however, that the case may be suitable for admission to a hospital for the treatment of advanced cases of this disease. Consequent upon the termination of sanatorium benefit on April 30th last the Insurance Committee ceased on that date to provide institutional treatment for tuberculosis, and the question of the provision of such treatment is now a matter for the London County Council. There is considerable pressure upon the available accommodation for the treatment of advanced cases of tuberculosis in London at the present time, but I will communicate with the County Council with regard to this case.

MONDAY, JUNE 20TH.

Death Sentence for Infant Murder.

Mr. Henry McLaren asked the Secretary for the Home Department whether he had received representations in reference to the sentence passed on a girl named Roberts convicted of the murder of her infant child at Hinckley; and whether, in view of the feeling aroused by the passing of the death sentence in such cases, he could see his way to introduce into the House of Commons a Bill giving discretionary powers to the judge to pass a sentence other than death.—Mr. Shortt replied: The answer to the first part of the question is in the affirmative. I will send the honourable Member a draft of a Bill dealing with this matter which was agreed to by the Lord Chancellor, the Lord Chief Justice, and the Attorney-General in 1910. If a Bill on those lines were introduced and proved to be uncontroversial, I think it might be passed.

The Sinking of Hospital Ships.

Mr. Bottomley asked the Prime Minister whether any person connected with the German submarine naval command was to be brought to trial for the issue of orders to submarine commanders to sink hospital ships; and, if not, was the British Government a party to this arrangement.—Sir G. Hewart (Attorney-General) replied: As already stated the trials which have taken place and are to take place immediately are of cases upon the Allies' preliminary list. It is not in the interest of further proceedings to reply specifically to the first part of the question. No such arrangement as suggested has been entered into.

Medical Insurance Benefits.

Mr. Leonard Lyle asked the Minister of Health if he had any statistics showing the number of insured under the National Health Insurance Act who were already in arrears with the maximum total of unpaid subscriptions which, unless met before October, would debar them from medical benefits in 1922.—Sir A. MOND replied: *All insured persons remain entitled to medical benefit so long as they continue in insurance and there is no suspension of the* benefit on account of arrears of contributions.

TUESDAY, JUNE 21ST.

Washington Maternity Convention.

Major HILLS asked the Prime Minister whether the Government was prepared to submit a resolution embodying the hours of labour convention and the maternity convention to the House of Commons before July 27th, in view of the fact that, on that day, expired the time limit allowed under Article 405 in which to bring conventions before the competent authority for the enactment of legislation.—Mr. CHAMBERLAIN (Lord Privy Seal) replied: For details *as to the constitutional* issues involved, I would refer my honourable and gallant friend to the speech made by my right honourable friend the Attorney-General during the debate on Friday, May 27th. We are anxious, however, to give the House the fullest possible opportunity for discussion on these conventions. Such an opportunity was afforded during the recent debate, and, as I explained on Tuesday last, there will be a further opportunity for discussion so soon as the pressure of other business permits.

Milk Deficient in Fat.

Mr. HURD asked the Minister of Agriculture whether, in view of recent proceedings, he would consult the Minister of Health as to the issue of a circular letter to local authorities informing them that the basis of prosecutions for supplying milk deficient in fat should be not one or two tests made in *exceptional circumstances but a series of tests*, so that while detecting adulteration the farmer or dairyman might not be penalised for faults for which neither could be held responsible.—Sir A. BOSCAWEN replied: I am examining into such cases as my honourable friend has put before me of the prosecution of dairymen *in respect of the sale of milk* of poor quality. As I stated in my reply on June 16th, *I shall be prepared, if the body of evidence warrants it, to* consult with my right honourable friend the Minister of Health *with a view to the issue of a circular letter to local* authorities.

The Services.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. E. P. Hewitt retires on ret. pay.

Capt. T. K. Boney relinquishes the actg. rank of Maj.

Capt. H. G. Winter, M.C., relinquishes the actg. rank of Maj.

Temp. Capt. A. C. Profeit relinquishes his commn. and is granted the rank of Maj.

R. W. Harper, late temp. Capt., to be temp. Capt.

ARMY DENTAL CORPS.

Temp. Maj. J. G. Worsley, Dental Surg., from Spec. List, to be Maj.

Temp. Capt. A. V. Milnes, Dental Surg., from Gen. List, to be Capt.

SPECIAL RESERVE OF OFFICERS.

Capt. D. Clyde relinquishes his commn. on appt. to a permanent commn. in the Ind. Med. Service.

Capt. R. Magill relinquishes the actg. rank of Maj.

TERRITORIAL FORCE.

Lt.-Col. (Bt. Col.) T. H. Haydon resigns his commn. and retains his rank.

Maj. J. A. Kendall resigns his commn. and retains the rank of Maj.

Maj. T. Martin (late R.A.M.C.) to be Capt. and relinquishes the rank of Maj.

Capt. J. W. Kemp to be Maj.

Capt. H. E. S. Richards is secd. for service under the Colonial Office.

A. H. Crook (late Surgn. Lt., R.N.V.R.) to be Capt.

Capt. D. C. Graham (late R.A.M.C.) to be Lt. and relinquishes the rank of Capt.

Lt. *L. H. Taylor to* be Capt.

2nd Lond. Sanitary Co.—Lt. S. H. Kemp resigns his commn. and retains the rank of Lt.

DEFENCE FORCE.

To be temp. Majs.: Temp. Capt. O. Teichman (whilst specially empld.) and J. C. S. Burkitt.

Temp. Capt. R. M. Wilson relinquishes his commn.

To be temp. Capts.: A. H. Fullerton and M. H. Barton.

1st (Home Counties) Fd. Amb. (D.F.).—*To be temp.* Lt.-Col.: E. A. Houchin.

2nd (Home Counties) Fd. Amb. (D.F.).—G. A. Blake (Capt. (Bt. Maj.), R.A.M.C.) is granted the rank of temp. Lt.-Col. while *comdg. a Fd. Amb.*

1st (E. Lancs.) Fd. Amb. (D.F.).—R. MacKinnon (Capt., R.A.M.C., Spec. Res.) is granted the rank of temp. Maj.

1st (N. Midland) Fd. Amb. (D.F.).—A. E. Milner (Maj. is granted the rank of temp. Lt.-Col. while comdg. a Fd. Amb.

2nd (N. Midland) Fd. Amb. (D.F.).—To be temp. Lt.-Col.: G. B. *Gill*. To be temp. Maj.: T. C. Clare. To be temp. Capts.: G. R. Jackson and J. Donald. To be temp. Lt.: T. N. C. *Atkinson*.

3rd (N. Midland) Fd. Amb. (D.F.).—To be temp. Lt.-Col.: J. Miller. To be temp. Maj.: G. F. *Haycraft*. To be temp. Capts.: R. B. Lilly and W. W. Hallchurch.

2nd *(E. Ang.) Fd. Amb. (D.F.).—To be temp. Lt.-Col.:* S. J. Fielding.

3rd (E. Ang.) Fd. Amb. (D.F.).—To be temp. Lt.-Col.: C. S. Wink.

2nd (S. Midland) Fd. Amb. (D.F.).—To be temp. Lt.-Col.: R. A. Broderick. To be temp. Capts.: L. G. Parsons and H. W. Featherstone.

The undermentioned relinquish their commissions: Temp. Lt.-Col. R. A. Broderick. Temp. Capts. L. G. Parsons and H. W. Featherstone.

INDIAN MEDICAL SERVICE.

The King has approved the relinquishment of their commissions by the undermentioned:—

Temp. Capts. Gorur Srinivasmurti, Shyam Behari Lal, Vinayak Laxman Sathe, Armand Marcus Duarte, Christian John Prabhakar, Ram Lal Bhumbhwal, Vasadeo Bhanrao Gupte.

ROYAL AIR FORCE.

Squadron Leader *H.* B. Porteous is seconded for duty with the South African Air Force.

THE WAZIRISTAN OPERATIONS.

The following names appear in a long list of awards for services during the Waziristan Operations:—

Companion of the Star of India: Col. C. W. Profeit, C.M.G., D.S.O., A.M.S. (mentioned in despatches).

Companion of the Indian Empire: Col. T. Stodart, I.M.S., and Lt.-Col. (actg. Col.) C. Hudson, D.S.O., I.M.S. (mentioned in despatches).

Officer of the British Empire: Capt. (actg. Lt.-Col.) A. G. Biggam, R.A.M.C. (mentioned in despatches); Maj. T. C. C. Leslie, R.A.M.C. (mentioned in despatches); Capt. and Bt.-Maj. (temp. Maj.) J. A. Sinton, V.C. I.M.S. (mentioned in despatches); and Maj. G. S Wallace, R A.M.C.

To be Brevet Lt.-Col.: Maj. T. S. Dudding, O.B.E., R.A.M.C.

Bar to Military Cross: Capt. W. J. S. Ingram M.C., I.M.S.

Military Cross: Temp. Capt. Banwari Lall Gupta, I.M.S.; Temp. Capt. Kishan Ganesh Mohile, I.M.S.; Capt. (actg. Maj.) D. Reynolds, R.A.M.C.

Mentioned in Despatches: Maj. (actg. Lt.-Col.) J. Anderson, I.M.S.; Maj. D. Coutts, I.M.S.; Capt. Radha Krishna Dewan, I.M.S., T.C.; Maj. C. H. Fielding, I.M.S.; Capt. (actg. Maj.) R. E. Flowerdew, I.M.S.; Capt. C. C. Harrison, R.A.M.C., S.R.; Capt. Enathickal John Koshi, I.M.S., T.C.; Capt. (temp. Maj.) *H. H. Mulholland, R.A.M.C.; Capt. (actg. Lt.-Col.)* D. F. Murphy, I.M.S.; Lt. Attamahomed Tajmahomed Shaikh, I.M.S., T.C.; Capt. (actg. Lt.-Col.) C. H. Smith, O.B.E., I.M.S.; Capt. R. R. Thompson, M.C., R.A.M.C.; Capt. (actg. Maj.) Jagannath Balkrishna Vaidya I.M.S.; Capt. (actg. Lt.-Col.) J. P. Huban I.M.S.; *Temp. Capt. Nitya Nand Joshi, I.M.S.*; Maj. (temp. Lt.-Col.) N. M. Wilson, I.M.S.; Maj. (actg. Lt.-Col.) H. B. Scott, I.M.S.; Maj. (actg. Lt.-Col.) F. B. Shettle, I.M.S.; and Dr. Alice Pennel, Afghan Mission Hospital, Bannu.

The King has granted permission to *Dr. Kenneth Edward* Eckenstein to wear the Cross of Chevalier of the Legion of Honour and the *Cross of Chevalier of the Order of the Crown* respectively conferred upon him by the President of the French Republic *and the* King of the Belgians, in recognition of his services during the late war as medical officer in the *French Army.*

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Medical Diary.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

Thursday, June 30th.—Papers:—Sir J. J. Dobbie and Dr. J. J. Fox: The Absorption of Light by Elements in a State of Vapour; The Halogens. Prof. W. A. Bone and the late Mr. W. A. Haward: Gaseous Combustion at High Pressures. Part II., The Explosion of Hydrogen-Air and Carbon-Monoxide-Air Mixtures. Prof. A. E. H. Love and Mr. F. B. Pidduck: Lagrange's Ballistic Problem. Mr. J. Proudman: The Principles of Internal Ballistics (communicated by Prof. H. Lamb). Mr. R. H. Fowler: A Simple Extension of Fourier's Integral Theorem and some Physical Applications in particular to the Theory of Quanta (communicated by Sir Ernest Rutherford). Capt. D. Brunt: The Dynamics of Revolving Fluid on a Rotating Earth (communicated by Sir Napier Shaw). And other papers. The following papers will be read in title:—Takeo Shimizu: A Preliminary Note on Branched a Ray Tracks (communicated by Sir E. Rutherford.) Takeo Shimizu: A Reciprocating Expansion Apparatus for Detecting Ionising Rays (communicated by Mr. C. T. R. Wilson). Mr. R. W. Wood: The Time Interval between Absorption and Emission of Light in Fluorescence.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETING OF SECTION.

Monday, June 27th.

SECTION OF ODONTOLOGY: at 8 p.m.

Paper:—Mr. Kelsey Fry: The Dental Treatment of Congenital and other Perforations of the Palate.

RESEARCH DEFENCE SOCIETY: at the House of the Medical Society of London, 11, Chandos-street, Cavendish-square, W.

Wednesday, June 29th.—3.30 p.m., Annual General Meeting. Short Address:—Dr. H. H. Dale: Work of the National Institute for Medical Research. Specimens will be shown.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

Monday, June 27th.—12.15 p.m., Dr. Burnford: Pathological Demonstration. 2 p.m., Mr. Baldwin: Demonstration of Cases (Surgical Wards). Mr. MacDonald: Surgical Out-Patients. Dr. Morton: X Ray Department. 5 p.m., Lecture:—Mr. D. Armour: Diseases of the Gall-bladder and Ducts: Treatment.

Tuesday.—10 a.m., Mr. Steadman: Dental Department. 11 a.m., Dr. McDougal: Electrical Department. 2 p.m., Dr. Burnford: Medical Out-Patients. Dr. Pernet: Skin Department. 2.30 p.m., Mr. Addison: Visit to Surgical Wards. 5 p.m., Lecture:—Dr. Simson: Abortion.

Wednesday.—11 a.m., Mr. MacDonald: Demonstration of Cystoscopy. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 p.m., Mr. Gibb: Eye Department. Mr. D. Armour: Visit to Surgical Wards. 5 p.m., Lecture:—Mr. Baldwin: Surgery of the Rectum.

Thursday.—10.30 a.m., Dr. Simson: Gynæcological Demonstration. 12 noon, Dr. S. Pinchin: Diseases of the Heart. 2 p.m., Mr. B. Harman: Eye Department. 2.30 p.m., Dr. Arthur Saunders: Demonstration of Cases (Medical Wards). 5 p.m., Special Lecture:—Sir Thomas Horder: The Investigation and Immediate Treatment of a Case of Acute Pyogenic Infection (open to all medical practitioners).

Friday.—10 a.m., Dr. Robinson: Gynæcological Operations and Visits to Wards. Dr. G. Stewart: Neurological Demonstration. 2 p.m., Mr. Banks Davis: Diseases of the Throat, Nose and Ear. 2.30 p.m., Dr. Pritchard: Visit to Medical Wards. 5 p.m., Lecture:—Mr. T. Gray: The Surgical Physiology of the Alimentary Tract.

Saturday.—10 a.m., Dr. A. Saunders: Medical Diseases of Children. 2 p.m., Dr. Owen: Medical Out-patients. Mr. Sinclair: Surgical Out-patients.

Daily:—10 a.m., Visit of Post-graduates to Wards. 2 p.m., In-patient, Out-patient Clinics and Operations.

LONDON HOSPITAL MEDICAL COLLEGE (University of London) Turner-street, Mile End E.

Courses of Lectures:—

Advanced Lectures in Physiology, to Students of the University and to others interested in the subject.

A Course of Eight Lectures on Reception of Sensory Stimuli, to be given by Prof. H. E. Roaf in the Physiology Theatre.

Thursday, June 30th.—4.30 p.m., Lecture VIII.

SURGICAL UNIT.—A Special Course of Ten Lectures on Advanced Surgery in the Unit Theatre to Post-graduates and Senior Students.

Tuesday, June 28th.—4.15 p.m., Mr. H. Lett: Stricture of the Urethra.

Thursday.—4.15 p.m., Mr. H. Lett: Retention of Urine.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

Thursday, June 30th.—4 p.m., Lecture:—Dr. Poynton: Pericarditis.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Monday, June 27th.—10 a.m., Mr. W. E. Tanner: Surgical Out-patients. 2 p.m., Dr. A. J. Whiting: Medical In-patients. 2.30 p.m., Mr. J. B. Banister: Gynæcological.

Tuesday.—9.45 a.m., Lt. Col. R. H. Elliot; Eye Operations and Cases. 2.30 p.m., Dr. J. Metcalfe: X Ray Department. 3 p.m., Lecture Demonstration:—Mr. C. H. Hayton: Anatomy of the Pharynx and Larynx, with Methods of Examination.

Wednesday.—2 p.m., Mr. C. H. Hayton: Throat Operations. 2.30 p.m., Dr. W. J. Oliver: Dermatological. 3 p.m., Lecture Demonstration:—Mr. W. E. Tanner: Some Cases of Acute Bone Disease.

Thursday.—2 p.m., Mr. N. Fleming: Eye Department. 2.30 p.m., Mr. J. B. Banister: Gynæcological Operations. Dr. J. Metcalfe: Radiology.

Friday.—2 p.m., Dr. C. E. Sundell Diseases of Children. 3 p.m., Lecture Demonstration:—Dr. C. E. Sundell: Physiology of Digestion in Infants. 5 p.m., Dr. Provis and Mr. Benians: Venereal Department.

Saturday.—10.30 a.m., Mr. W. E. Tanner: Operations. 3 p.m., Mr. H. W. Carson: Surgical In-patients.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.

Post-Graduate Course on Infant and Child Welfare.

A Course of Twelve Practical Demonstrations on the Management and Feeding of Infants and Young Children by Dr. E. Pritchard to Qualified Practitioners

Tuesday, June 28th.—10.30 a.m., Demonstration V., The Modification of Milk.

Thursday.—3 p.m., Demonstration VI., The Uses of Dried Milk and Patent Foods.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, E.

A Course of Post-graduate Clinical Lectures and Demonstrations in the Board Room of the Hospital, free to Medical Practitioners and Students of Medicine.

Tuesday, June 28th.—4 p.m., Mr. K. A. Lees: Chronic Otitis Media.

Thursday.—Mr. V. Nesfield: The Temporary Treatment of Acute Glaucoma by Paracentesis.

TAVISTOCK CLINIC FOR FUNCTIONAL NERVE CASES, 51, Tavistock-square, W.C.

A Course of Ten Lectures on Elementary Psychotherapy, to be given by Dr. H. C. Miller, at the Kingsway Hall, Kingsway, W.C.

Friday, July 1st.—5.15 p.m., Lecture IX.: Dream Interpretation (II.).

Appointments.

Graham, Lewis, M.S. Lond., F.R.C.S. Eng., has been appointed Honorary Obstetric Officer, Queen's Hospital, Birmingham.

Kidd, E., M.B., B.S. Durh., Certifying Surgeon under the Factory and Workshop Acts for the Washington district of the county of Durham.

Marnoch, J., M.B., C.M. Aberd., a Medical Referee under the Workmen's Compensation Act for the Sheriffdom of Aberdeen, Kincardine, and Banff.

McKendrick, A., F.R.C.S. Edin., D.P.H., a Medical Referee under the Workmen's Compensation Act for the Sheriffdom of the Lothians and Peebles.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Asylum.—Temp. Jun. Asst. P. £250.

Ashton-under-Lyne District Infirmary.—H.S. £200.

Bedford County Hospital.—H. S. £200. Asst. H.S. £150.

Birmingham Education Committee.—Part-time M.O.

Birmingham and Midland Ear and Throat Hospital.—H.S. £200.

Birmingham General Hospital.—H.P. £100. H.S. to Special Depts. £125. H.S. £100.

Blackburn and East Lancashire Royal Infirmary.—Third H.S. £250.

Blyth Urban District.—M.O.H. and Sch. M.O. £800.

Bournemouth, Royal Victoria and West Hants Hospital.—Hon. Sen. and Jun. M.O.'s.

Bradford Royal Infirmary.—H.S. £200.

Burnley County Borough.—Tuberc. O. and Director of Municipal Laboratory. £650.

Burnley, Victoria Hospital.—H.S. £200.

Cambridge, Adenbrooke's Hospital.—H.S. £130.

Cardiff, King Edward VII. Hospital.—H.S. £200.

Charing Cross Hospital, Agar-street, W.C.—Med. Reg. £150.

Chester, City of.—Asst. M.O.H. £500.

Colchester, Essex County Hospital.—H.S. £200.

East London Hospital for Children and Dispensary for Women, Shadwell.—Cas. O. £120.

Eday, Orkney.—M.O. £9 per week.

Enfield Education Committee.—Sch. M.O. £500.

Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—Asst. H.S. £150.

Great Northern Central Hospital, Holloway-road, N.—Clin. Asst. £1 1s. per session. Dental S.

Halifax, Royal Halifax Infirmary.—Third H.S. £200.

Hospital of St. John and St. Elizabeth, 40, Grove End-road, N.W.—Asst. S.

Huddersfield County Borough.—Asst. M.O.H. £500.

Leeds Public Dispensary.—Sen. Res. M.O £200.

Leeds University (Leeds Maternity Hospital).—Tutor in Obstetrics and Res. M.O. £300.

Leicester Royal Infirmary.—H.S. £200.

London County Council.—Asst. M.O. for Mental Hosp. Service. £300.

London Temperance Hospital, Hampstead-road, N.W.—Asst. Res. M.O. £120. Surg. Registrar. 40 guineas.

Lucknow University, India.—Prof. of Pathology. Rs.1200 a month. Prof. of Physiology. Rs. 1400 a month.

Manchester, Ancoats Hospital.—Res. Surg. O. £250.

Manchester Children's Hospital, Pendlebury.—Res. M.O. £150.

Manchester Ear Hospital.—Hon. Asst. S. Hon. Radiologist.

Manchester Royal Infirmary, Central Branch, Roby-street.—Female Res. M.O. £200.

Margate, Royal Sea-Bathing Hospital for Surgical Tuberculosis.—Female Surg. £200.

Middlesex Hospital.—Cas. M.O. £104.

Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Res. M.O. £250.

Newcastle-upon-Tyne City Mental Hospital, Gosforth.—Jun. Asst M.O. £400.

Newport, Mon., Royal Gwent Hospital.—H.S. £200.

Nottingham General Hospital.—Res. Cas. O. £250.

Oxford, Radcliffe Infirmary and County Hospital.—Cas. H.S. £200.

Portsmouth, Royal Portsmouth Hospital.—H.S. £150.

Reading, Royal Berkshire Hospital.—Second H.S. £200.

Royal Free Hospital, Gray's Inn-road, W.C.—Two H.P.'s. £50.

Royal Naval Medical Service.—Surg.-Lieuts. 26*s.* 6*d.* per diem.

St. Mary's Hospital, Paddington, W.—Cas. P. £100.

Saint Pancras Dispensary, Oakley-square, N.W.—Res. M.O. £225.

Salford Royal Hospital.—H.S. Cas. H.S. Each £150.

Seamen's Hospital, Albert Dock, Connaught-road, E.—H.S. £150.

Sheffield, East End Branch of the Children's Hospital.—Female H.S. £150.

Southampton Free Eye Hospital.—H.S. £200.

Southampton, Royal South Hants and Southampton Hospital.—Jun. H. S. £150.

Stroud General Hospital.—H.S. £200.

Sydney University, New South Wales, Australia.—Lecturer in Veterinary Anatomy and Surgery (including Obstetrics). £500.

Union of South Africa Government.—Asst. P.'s in Mental Hospital Service. £400.

West London Hospital, Hammersmith-road, W.—P. Neurologist.

Westminster Hospital.—H.P. H.S. Asst. H.P. Asst. H.S. Med. Registrar. £50.

THE Chief Inspector of Factories announces the following vacant appointments: Ruabon (Denbigh), West Drayton (Middlesex).

THE Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for the Falmouth and Truro, Helston, Newquay, Penzance, Redruth, and St. Austell County Courts, in Circuit No. 59. Applications for the post should be addressed to the Private Secretary, Home Office, and should reach him not later than July 13th, 1921.

Births, Marriages, and Deaths.

BIRTHS.

KEYNES.—*On June 17th, at 10, Boundary-road, N.W. 8, to the* wife of Geoffrey Keynes, *F.R.C.S. Eng.—a son.*

LEATHART.—On June 14th, at Tollemache-road, Birkenhead, the wife of P. W. Leathart, M.B., B.C., of a son.

PLATTS.—On June *13th, at Clifton Lawn,* York, *the wife of* S. Goodman Platts, M.B., of a daughter.

QUICK.—On June 13th, at Varfell, Eaton-crescent, Swansea, the wife of Hamilton E. Quick, M.B., F.R.C.S., *of a daughter.*

RIGGALL.—On June 20th, at 31, Wimpole-street, W. 1, the wife of Robert M. Riggall, L.R.C.P. Lond. and Edin., of a daughter.

MARRIAGES.

ALTON—THIVE.—On June 14th, at Christiania, Edgar Hepworth Alton, L.R.C.P. & S. Edin., of King's Norton, Birmingham, to Ida Thive, eldest daughter of the late Ludovick Riordan, of Porsgrund, Norway.

CLARKE—TYRWHITT DRAKE.—On June 16th, at the Abbey, St. Albans, Sidney H. Clarke, M.D., of Longbutts, St. Albans, to May Gladys, youngest daughter of the late Rev. W. T. Tyrwhitt Drake *and* of Mrs. Tyrwhitt Drake, of Borogate, St. Albans.

CONNOR—LEES.—On June 11th, at the British Embassy Church, Paris, Brevet Lieut.-Colonel Frank Powell Connor, D.S.O., F.R.C.S., I.M.S., to Grace Ellen, daughter of Reginald O. Lees, *late Director,* Indian Government Telegraphs.

KEYMS—BENNETT.—On June 16th, at St. James', *Piccadilly,* J. J. Keyms, L.R.C.P. & S. Irel., to Alice, second daughter of the late Frank Bennett, of Cregane Manor, Rosscarbery, Co. Cork.

NOON—SOUTH.—On June 18th, at St. Peter's, Crawley, Charles Noon, F.R.C.S., to Cicely, eldest *daughter* of F. W. South, of Ifield, Sussex.

TAYLOR—LE MAISTRE.—On June 14th, at the Parish Church, Everingham, Harold Bourne Taylor (late Captain, R.A.M.C., M.R.C.S., L.R.C.P., to Francesca Maria, only daughter of Rev. *Sylvester and* Mrs. le Maistre.

Notes, Short Comments, and Answers to Correspondents.

REPORT OF THE SANITARY COMMISSIONER WITH THE GOVERNMENT OF INDIA FOR 1918.[1]

THE average strength of European troops (Regulars and Territorials) in India during 1918 was 87,982, as compared with 80,825 in the previous year, and 60,110 in the pre-war quinquennium 1910–14. For the whole force the admissions to hospital averaged 1030·2 per 1000, the deaths 16·19, the invalids sent home 22·81, and the average constantly sick, 60·00. All of these ratios are considerably higher than in any of the years immediately preceding; in 1917 the corresponding figures had been 771·7, 4·83, 16·54 and 45·00 respectively; *in the pre-war quinquennium* (1910–14) they had been 567·2, 4·51, 7·03 and 30·13. There has been no such high admission-rate since 1903 (when it was 1035·5); no such high death-rate since that of 1898 (20·31), no such invaliding since 1907 (25·47), and no such constantly sick ratio since that of 1903 (63·17).

Effect of War Conditions on the British Garrison.

The Director of Medical Services in India, in his introductory remarks, points out that, in considering the statistics of 1918, it is necessary to bear in mind the manner in which war conditions had affected the British Garrison; the standard of recruitment was lower, the more fit men had passed on to the Expeditionary Forces, leaving the debilitated behind, and invaliding had been delayed owing to shipping difficulties. *All the principal military* stations had increased ratios for admission to hospital and death, as compared with the previous year, with the one exception of Rangoon; and for average constantly sick, *except Rawal Pindi.*

The main cause of this increase was the epidemic prevalence of influenza, for which there were 19,308 admissions and 775 deaths, the ratios per 1000 strength being 210·5 and 8·81. The disease was introduced into the country *through the port of Bombay, where it appeared first among* the civilian population in the middle of June, and among the military immediately after. This epidemic abated on July 3rd, but a second outbreak started in September, and lasted into November, this being more severe than the first wave. *All the large military stations suffered;* the garrison most severely affected was that of Ahmednagar, where the influenza admissions reached the very high ratio of 459·8 per 1000 strength, the death-rate from this cause being 11·70 per 1000, and the case-mortality 2·51 per cent.; other large garrisons, with an admission-rate over 300 per 1000, were Meerut (392·0), Lahore (392·5), Colaba (376·4), Nowshera (360·5), Rawal Pindi (321·3) and Peshawar (313·0). The highest influenza death-rates were experienced at *Dalhousie* (19·20 per 1000, with a case-mortality of 8·37 per cent.), Nowshera (also 19·20, with a case-mortality of 5·33 per cent.), Peshawar (19·15, case-mortality 6·12 per cent.), Delhi (18·93, case-mortality 7·16), and Lahore (18·55, case-mortality 1·73). *The most* severe type of the disease appears *to have been experienced* at Quetta, where, though the admissions were not in a higher ratio than 152·4 per 1000, the death-rate was 13·67, giving a case-mortality of 8·97 per cent.—higher than that at *Dalhousie. On the other hand* Colaba, with the high admission-rate just mentioned (376·4), had the low death-rate of 4·31, giving a case-mortality of only 1·15 per cent.; Lucknow, with 279·0 admissions per 1000 had a case-mortality of only 1·09 per cent. Rangoon (no doubt, from its *detached situation)* suffered less than any other large station; the influenza admissions were only 72·4 per 1000, and there was only one death (0·98 per 1000). Two points of interest are mentioned in *regard* to this epidemic: (1) the streptococcal element was omitted in the vaccines prepared, as a result of discussion at a conference of bacteriologists, this organism not having been often found to be present; (2) there was no mention of the occurrence of *hæmorrhages,* as had been reported in other countries.

Malaria the Chief Cause of Sickness.

In spite of the prevalence of influenza, malaria retained its position as the *chief* cause of sickness and inefficiency among British troops in 1918. The admissions numbered 23,687 (equal to 26·13 per cent. of the total admissions for all causes), and were in a ratio of 269·2 per 1000 of total strength, as compared with 227·9 in 1917, and 117·2 in the pre-war quinquennium 1910–14.

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[1] Calcutta: Superintendent of Government Printing. 1920.

It is pointed out, however, that the total admissions for malaria have probably been increased during each year of the war by the inclusion of relapse cases whose infections were contracted overseas, and whose statistics should more correctly be debited against the Expeditionary Forces. Every effort has been made to keep these statistics distinct; but so long as practical means are not *available to distinguish between relapses and fresh infections* a small error must occur, which may be in part or in whole counter-balanced by the cases which contracted their infection in India, but did not exhibit the disease until they were absorbed into the Expeditionary Forces.

Secunderabad had an admission ratio for malaria of 965·2 per 1000, the actual number of cases being 2998; the disease was of a very mild type, and not a single death occurred; at this station No. 8 Reserve Battalion, with a strength of 1451, had 1762 admissions for malaria (1213 per 1000). Various drainage works were carried out, and *it is stated that the "comparative absence of fresh infection* during the latter half of the year is promising," in spite of the increased rainfall. Mosquito-nets are authorised in the plains for all British troops and their families. It is not stated whether or no they are used. The issue of quinine as a prophylactic is left to the discretion of the medical authorities. It is not easy to see what other course could be adopted. As malaria is undoubtedly a preventable disease, the old query—"If preventable, why not prevented?" will continue to be asked; if the sanitary measures required are carried out mosquitoes would cease to be prevalent; if quinine were administered the troops would be rendered immune; if mosquito-nets were used they would be protected. The results that have been obtained in Italy, Panama, and elsewhere have proved beyond question that under the most difficult conditions of environment satisfactory prophylaxis is practicable. Peshawar cantonment is referred to in the Sanitary Commissioner's report in the following words: "The presence of a highly infected civil population and the existence of *kutcha* drains combined with irrigation is sufficient to account for the incidence of malaria." There is no hint at any need for action.

The Enteric Fevers.

For "enteric fevers," or "enterica," there were 663 admissions and 62 deaths, as compared with 276 and 33 respectively in 1917, and 227 and 26 in 1910–14; the ratios per 1000 were 7·5 and 0·70 in 1918, 3·4 and 0·41 in 1917, and 3·3 and 0·37 for 1910–14. Of the total cases in 1918 only 97 (with 23 deaths) were returned as "typhoid"; 209 (with 8 deaths) and 8 (with no deaths) were "paratyphoid" A and B respectively; and 349 (with 31 deaths) are classed in an "enteric group," which now includes cases formerly returned as pyrexia of uncertain origin, "P.U.O.," that is, "cases from which the specific organism could not be recovered, [but which] may be diagnosed on clinical grounds or on a rising Widal reaction." Eliminating this "enteric group," there remain 314 admissions for typhoid and paratyphoid A and B, with 31 deaths, 23 of these being due to typhoid and 8 to paratyphoid A. By far the largest number of admissions occurred at Bangalore (127, or 14·4 per 1000), where there were 71 cases in June, July, and August, an additional 30 in May and September, but only 26 during the remaining seven months of the year. Of the total number 23 (mostly among furlough men) had probably not contracted infection in Bangalore itself. The South Lancashire Regiment, 6th Battalion, suffered most, with 23 cases and 2 deaths. A particular cookhouse appeared to be the source of infection, and on bacteriological investigation a soldier was found to be a carrier of *B. paratyphoid A*, and was transferred to the enteric convalescent depot at Wellington. The disease prevailed throughout the station, and carriers played a considerable part in the spread of infection; flies were also abundant and the disease was present among the civil population. At Peshawar, Kirkee, Poona, and Lahore there was also excessive prevalence, though not a high mortality, except at Lahore, where 11 out of 33 cases were fatal.

Mortality from Other Diseases.—Home Invaliding.

For dysentery, colitis and diarrhœa the combined admission ratio was 49·2 per 1000, compared with 24·3 for the pre-war quinquennium (1910–14); the corresponding death ratios were 0·30 and 0·22. At Secunderabad the dysentery admissions and deaths were 61·7 and 0·32 per 1000, and for diarrhœa 32·2 admissions, with no death. Drinking-water supplies at various railway stations were investigated by local committees. It is regrettable that the incidence of venereal diseases (62·5 admissions per 1000) again shows a marked increase; in 1909 the admission ratio had been 67·8; in 1915 it had fallen to 29·1; in 1917 it was 52·0. Special attention has been given to early detection of the disease by regular inspection of new arrivals, and by surprise inspections, and the men have been encouraged to seek early treatment.

There were only 8 cases of plague (4 fatal). This is a good omen. For cholera there were 91 admissions, with 37 deaths (1·0 and 0·42 per 1000); 32 cases occurred at Poona and 18 at the neighbouring station of Kirkee, with 10 deaths at each station. The Kirkee water-supply at *Pashan lake was reported to be infected; but the water* was chlorinated at the waterworks and again in the British lines, and was not looked upon as the source of infection. A few days later 23 cases were admitted to the Station and King George's Hospitals at Poona. The milk was suspected, but no definite evidence of infection was obtained.

There were 911 admissions for heatstroke among British troops throughout India in 1918, with 97 deaths (10·4 and 1·10 per 1000). Of these cases 373, or 41 per cent., with 2 deaths, occurred at the single station of Nowshera, 114 in the North Staffordshire Regiment, and the remainder *among the R.A. and Machine Gun Corps; one-fifth of the* whole strength of the station appear to have been affected. The cases exhibited all degrees of severity, from simple exhaustion to the major type with cerebral symptoms and hyperpyrexia. No details are furnished as to the circumstances causing, or accompanying, this remarkable visitation, except that during June, July, and August abnormal dry and wet bulb temperatures were recorded. Pulmonary tuberculosis caused 154 admissions to hospital and 18 deaths, the ratios being 1·8 and 0·20 per 1000 respectively, a slight increase on those for the previous year (1·5 and 0·16, and the pre-war quinquennium, 1910–14 (1·1 and 0·16); there was no special prevalence at any one station. Diphtheria caused 90 admissions (of which 41 were at Quetta, from a newly arrived draft); there were only two deaths.

At the Kasauli and Coonoor Institutes 313 men and 45 women and children were treated for dog-bite; there were no deaths. Small-pox caused 117 admissions and 18 *deaths, giving ratios of 1·3 and 0·20 per 1000.*

The total number of men invalided home for all causes was 2007, being in a ratio of 22·8 per 1000, as compared with 16·5 in 1917, and 11·0 for the decennium 1908–17; the chief causes were heart disease (288), diseases of the nervous system (139), epilepsy (55) and insanity (130), malaria (147), and pulmonary tuberculosis (126).

Officers, Women, and Children.

The average strength of officers with British units was 4524, among whom the hospital admission-rate was 1344·6, and the death-rate 15·92; the corresponding ratios for 1917 were 965·5 and 7·03 per 1000, and for the pre-war quinquennium, 1910–14, 567·5 and 5·14. Out of the whole number of 72 deaths among officers 30 were due to influenza and 8 to pneumonia; there were 59 cases of typhoid, giving a ratio of 13·0 per 1000, the corresponding ratio for non-commissioned officers and men being 7·5 per 1000; only one officer died from this disease. Among the women (average strength, 1481) the admission- and death-rates were 603·0 and 24·98; anæmia and debility (129 per 1000), influenza (82·4), and malaria (44·6) were the chief causes of sickness; and pneumonia (4·73), pulmonary tubercle (2·03), and enteric fever (1·35) the chief causes of death. Among the children (average strength, 2624) the chief causes of illness were influenza (53·4 per 1000), malaria (51·4), and bronchitis (48·0); the corresponding death ratios being 1·52, 0·38, and 0·38 respectively. The admission and death ratios for all causes were 432·9 and 20·20 per 1000 respectively; for 1917 these ratios had been 355·6 and 12·17.

INDIAN ARMY.

The average strength of Indian troops in 1918, including those in China, but "excluding those under field-service conditions," was 341,458, as compared with 191,242 in 1917, and 130,261 in the pre-war quinquennium, 1910–14. The admissions to hospital reached the enormous total of 292,393, being in a ratio of 856·3 per 1000; the deaths numbered 9959 (29·17 per 1000); the ratios for invaliding and average constantly sick were respectively 19·2 and 40·7. These ratios (except that for invaliding) are much in excess of those for 1917, when the corresponding figures were 741·4, 11·51, 17·9, and 34·3; and, if compared with the average of the five years (1910–14) before the war, the increase is very great; the admissions to hospital during that period averaged 544·6, the deaths only 4·39, the invalids only 5·4, and the average constantly sick 20·7 per 1000.

Influenza, Malaria, and Pneumonia.

The great increase in admissions and mortality is largely accounted for by a widespread epidemic of influenza, which caused 46,715 admissions and 5200 deaths (136·8 and 15·23 per 1000). At Dera Ismail Khan there were 443·6 influenza admissions per 1000 strength, but the case-mortality ratio was only 1·56 per cent., *giving a death-rate* of 6·92 per 1000. At Risalpur, on the North-West Frontier, with 231·8 influenza admissions per 1000, the case-mortality was 16·43, giving a death-rate of 38·59 per 1000. At Kirkee, with the very moderate admission ratio of 68·5 per 1000, the deaths amounted to 32·58 per 1000, giving a case-mortality of 47·57 per cent. After influenza, malaria was the most frequent cause of admission to hospital (129·7 per 1000), but showed much improvement on the figures for the two years preceding (181·6 in 1917 and 200·7 in 1916), though higher than the ratio for 1910–14, which was 113·3. The mortality was 1·00 per 1000. At Tank and Fort Sandeman the admission ratios were highest (1280·2 and 1127·4); no specially infected area was discovered at either place. Attention is called to the fact that Secunderabad "does not figure among the ten worst stations this year." This is ascribed to the effect of drainage measures which were *commenced in* 1917 and consisted briefly in the drainage of the Picket and other tanks and the substitution of dry for wet cultivation. The admission ratio was 141·4, *compared with 518·4 in 1917*; this mild incidence may also be compared with the excessive prevalence among British troops (965·2) at the same station *already alluded to*.

Pneumonia caused an admission-rate of 19·6, and a death rate of 6·02 per 1000; this, as usual, was the most fatal disease for native troops (influenza excepted, which it so frequently accompanies), and to this cause probably many of the deaths recorded under pneumonia may be attributed, though efforts were made to differentiate between deaths due to primary pneumonia and pneumonia as a complication.

Tuberculosis; Diarrhœal Diseases; Plague.

Pulmonary tuberculosis (2·5 admissions per 1000, as compared with 2·1 in 1910-14) has not much increased, though the death-rate (0·63) is much heavier than that of the former period (0·22). As usual, Gurkha troops suffered the most (5·4 admissions and 1·90 deaths). The group of diarrhœal *diseases (dysentery, colitis, and* diarrhœa) showed a very great increase (as compared with 1910–14) *among Indian* as with British troops; the admissions and deaths for the three affections combined amounted to 68·4 and 0·45 per 1000 *respectively, as compared with 33·5 and* 0·14 in the pre-war period. Venereal diseases caused 18,125 admissions (58·1 per 1000), also a considerable increase over the ratios for 1916 and 1917, which were *40·1 and 45·0; in 1910–14* the ratio had been 14·8. At Deolali the admission ratio was 361·8, and at Bombay 242·4. Plague caused 121 admissions and 62 deaths *(0·4 and 0·18 per 1000), compared* with corresponding ratios of 0·60 and 0·30 in 1917, and 0·30 and 0·15 in the pre-war quinquennium. There was an appreciable reduction in the admissions for *cholera* (85, or 0·2 per 1000) compared with the previous year (0·7), and the death-rate (0·13) was less than *half that of* 1917 (0·29); the case-mortality, however, was high (52·94 per cent.); there was no epidemic prevalence. *Enterica* (0·8 and 0·28 cases and deaths per 1000) also showed a reduction in cases, though the deaths were *more in number* than in 1917.

GENERAL POPULATION.

For British India, as a whole, the birth-rate is recorded as 35·35 per 1000, as compared with 38·05, the average *of the preceding five years*: but it is stated that this fall is due mainly to interference with registration on account of the influenza epidemic. The highest ratios were recorded in Delhi (47·92) and the Central Provinces and Berar (43·21); the lowest in Ajmer-Merwara (26·35) and Madras Presidency (28·9). The general death-rate was 62·16 per 1000, ranging from 38·10 in Bengal and 30·20 in Lower Burma to 102·60 in the Central Provinces and Berar, and 114·78 in Ajmer-Merwara. The infantile mortality (under 12 months) was lowest in Assam (21·6 per *100 births) and* Bengal Presidency (22·8), and highest in Bombay city (59·6); in Madras city it was 35·5, and in Calcutta 28·0.

Much useful work is being carried out in various cities towards the prevention of infant mortality, *by the provision* of trained midwives, the establishment of dispensary centres, and the appointment of municipal nurses and *health visitors*. The total number of births is stated as 8,130,560, and the total deaths 14,895,801 (62·46 per 1000). *Of this latter* total, 11,131,111 (46·69 per 1000) are returned as "fevers," amounting to 74·7 per cent. of the total *mortality*, and of these deaths 7,402,070 were registered during *the last* quarter of the year, when influenza *was prevalent*. *It is* stated that "there is no evidence to show that 1918 was for malaria in any sense an *exceptional* year," and it is suggested that the mortality directly and indirectly due to influenza was near the mean *between* (1) "the excess in the mortality from all causes between June 1st and Dec. 31st over the five years' mean"—6,812,633; (2) an estimate obtained "by subtracting from the total mortality from all causes the deaths registered as due to the chief epidemic diseases—plague, cholera, and small-pox, and comparing this figure with one similarly obtained for the previous quinquennium"; (3) the excess mortality from "fevers" and respiratory diseases over the average for the five years. The respective figures for the two latter estimates are 7,301,178 and 7,151,971; the mean of the three, 7,089,691, is adopted by the Sanitary Commissioner. The heaviest incidence, judging by the excess mortality, was experienced by the Central *Provinces and Berar* (66·1 deaths per 1000), Ajmer-Merwara (59·5), Delhi province (56·6), and Bombay (51·9); in Coorg the excess was only 11·5, and in Bengal *only* 8·5 *per* 1000. Speaking generally, districts on or near the sea coast had a comparatively low mortality (under 20 per 1000). As to the origin of the epidemic, *the Sanitary Commissioner states that* "the case for the introduction of infection by shipping must be left as unproven. *The case for endemic loci is* just as *uncertain* . . . . *Although* it cannot be stated definitely that influenza existed in India before the first official intimation of its existence early in June in Bombay, *yet the possibility* cannot be *excluded*."

Many other matters of interest are dealt with in this exhaustive report, which extends to 322 pages *and is* accompanied by an excellent map of India and very numerous diagrams and tables. The sections dealing with the European and Indian Armies are contributed by the Director of Medical Services; *for the remainder, referring* to the general population, jails, &c., Lieutenant-Colonel F. H. G. Hutchinson, I.M.S., *Sanitary Commissioner* with the Government of India, is responsible.

NATIONAL BABY WEEK.

THE *fifth birthday of National Baby Week, to be celebrated* on July 1st, and for a week thereafter, will again give to the nation an opportunity of considering the needs of its children, and the steps which are—or are not—*being taken* to meet those needs. Birthdays have their uses, *and not least in that* they serve as landmarks, from whence one can survey the progress made, or *the ground lost, in the past* years. In this fifth year of its existence the National Baby Week Council, in common with other societies engaged in child welfare work of one sort or another, is able to rejoice in the decreasing infant mortality rate, the figure for 1920 (80 per 1000 births) being the lowest recorded. Many influences have *contributed to bring about* this satisfactory result, and the National Baby Week Council feels that it may claim a not inconsiderable share of the credit. Since the first Baby Week held in 1917, the Council has worked steadily to make *known* the position of child welfare in this country. Its work is wholly that of education and propaganda: it exists *to draw* attention to the child, its needs, its disabilities, and its possibilities. Each year the Council has *concentrated on some* particular aspects of child welfare, thus focusing attention on one or two important points, not *suggesting that* by so doing it has covered the whole field of child welfare, but rather excluding some important *points in order* that others may for the time being be emphasised. Thus, in its first year, attention was *drawn* to the facts of infant mortality, and the importance of infant life to a nation which was daily *losing the flower* of its manhood in the great war. In 1918, the teaching of mothercraft was the slogan; in 1919, the *creation of new* and better ideals of babyhood and the importance of natural feeding; and in 1920, the necessity for liquor control in the interests of maternity and child welfare, the better care of the unmarried mother and her child, and the urgent need for some scheme of pensions for civilian widows with young children.

This year the Council is emphasising three matters of great importance, two of which have already been *emphasised in* previous years: 1. The importance of natural feeding, in view of the fact that a naturally-fed baby *has twice as* good a chance of surviving as an artificially-fed baby. 2. The urgent need for some scheme *of pensions for* civilian widows with young children, which will enable the children to remain in the care of *their own* mothers, instead of *being entrusted* to the much less efficient and much more expensive care of public *institutions*. 3. The prevention of infantile blindness and the importance of notification and *treatment* of ophthalmia *neonatorum*. This year, too, as last year, the Council is identifying itself with the Children's Era Movement, which *aims* at the closer coöperation of all existing agencies for the betterment *of the* child—religion, health, *recreation*, education, &c. While the Council rejoices with other child welfare societies in the lowered *infant mortality* rate, it realises that in success there is an element of danger. Those who care for the children of the nation must *not* be content with this lowered rate: their aim must be still further to reduce it. It must be rememhered that our daughter countries can point to a still lower rate—for instance, the mortality rate for the whole Commonwealth of Australia in 1919 was only 69·21 per 1000 births for children under one year. The aim of the Baby Week Council is not only to reduce the death-rate, but also to reduce the correspondingly high *damage*-rate among the children who manage to survive. It has been said that every social problem is a problem of child welfare. It is certainly true that every social problem takes its toll of child lives. Bad housing, defective sanitation, alcoholism, venereal disease, industrial employment of mothers, all these must be held responsible to an enormous extent for the heavy damage-rate among little children in this country.

A criticism sometimes heard suggests that the mothers resent the help offered by welfare societies and regard it as interference. In a few isolated cases perhaps they do, but the increase in the number of successful infant welfare centres and similar agencies in the country is evidence of the fact that these centres, schools for mothers, Baby Week, and so forth, supply a felt need.

CHARTERED SOCIETY OF MASSAGE AND MEDICAL GYMNASTICS.

A YEAR ago an amalgamation took place under Royal Charter of the Incorporated Society of Trained Masseuses and the Institute of Massage and Medical Gymnastics with the righteous aim of advancing the profession of massage in the broad sense, and of affording protection to those qualified to practise it. The following list of recognised training centres, with the subjects in which classes are held, has now been drawn up and may be found useful to our readers. Massage=M. Medical Electricity=E. Medical Gymnastics=G.

Hospital Schools: London.

	Subjects taught.
City of Westminster Infirmary	M.
Fulham Infirmary	M.
Guy's Hospital	M. E. G.
King's College Hospital	M. E. G.
Lambeth Infirmary	M.
Maida Vale Hospital	M. E.
Middlesex Hospital	M. E. G.
National and University College Hospitals	M. E. G.
Queen Mary's Hospital for the East End	M.
Royal National Orthopædic Hospital	M. E. G.
St. Thomas's Hospital	M. E. G.
West End Hospital	M. E. G.
Westminster Hospital	M. E. G.

Provinces.

Manchester, Ancoats Hospital	M. E.
York, County Hospital	M.
Buxton, Devonshire Hospital	M. E.
Ipswich, East Suffolk and Ipswich Hospital	M. E.
Birmingham, General Hospital and Orthopædic Hospital	M. E. G.
Bristol, General Hospital	M. E. G.
Nottingham, General Hospital	—*
Worcester, General Infirmary	M.
Cardiff, King Edward VII. Hospital	M. E.
Norwich, Norfolk and Norwich Hospital	M.
Carshalton, Surrey, Queen Mary's Hospital	M. E.
Newport, Mon., Royal Gwent Hospital	M.
Bradford, Royal Infirmary	M. E.
Bristol, Royal Infirmary	M.
Leicester, Royal Infirmary	—*
Liverpool, Royal Infirmary	—*
Manchester, Royal Infirmary	M. E. G.
Bath, Royal Mineral Water Hospital	M. E.
Brighton, Royal Sussex County Hospital	M. E.
Newcastle-on-Tyne, Royal Victoria Infirmary	M. E. G.
Salford, Salford Royal Hospital	M. E.
Shrewsbury, Salop Infirmary	M.
Rochester, St. Bartholomew's Hospital	M. G.
Oswestry, Shropshire Orthopædic Hospital	M. E. G

Ireland.

Dublin, Adelaide Hospital	—*

Scotland.

Glasgow, Western Infirmary	M. E. G.

* Not training at present.

Colleges and Schools: London.

Misses Bear, Queen Alexandra House Gymnasium, Kensington Gore, S.W.	M. G.
Misses Brown and Humble, Training College for Remedial Gymnastics, and Massage, 36, Pembridge Villas, W. 11	M. E. G.
Miss Joyce Buckley, School of Massage and Swedish Remedial Gymnastics, 12, Buckingham-street, Strand, W.C. 2	M. E. G.
Mrs. Manning Carr, 3, Bedford-place, W.C. 1 (Evening Classes)	E. G.
Mrs. Penfold, Hampstead Medical Gymnastic College, 27, Canfield-gardens, N.W. 6	M. E. G.
Miss Rose Morris, 2, Albany-terrace, Regent's Park, N.W.	M. E. G.
National Institute for the Blind (Massage Branch), 221, Great Portland-street, W. 1	M.
Miss Spelman Stanger, Denmark Hill Gymnasium, Sunray-avenue, Herne Hill, S.E. 24	M. G.
Mrs. Hoghton Stewart, London School of Massage and Swedish Remedial Gymnastics, Westminster Medical School, 12, Caxton-street, S.W.	M. E. G
Mr. T. W. Wall, Central London School of Massage for Men, 211, Great Portland-street, W. 1	M. E.
Miss Wilkie, Chelsea School of Physical Training (3 years' course), Manresa-road, S.W.	M. G.
Dr. Justina Wilson, Swedish Institute, 106, Cromwell-road, S.W.7	M. E. G.

Provinces.

Miss Chuck, School of Massage, 18, Falkner-square, Liverpool	M. E. G.
Miss Irene Marsh, Liverpool Physical Training College (2 years' course), Bedford-street, Liverpool	M. G
Miss Masters, Southport School of Massage, 22, Part-street, Southport	M. E.
Miss A. M. Poulter, School of Massage and Medical Gymnastics, 27, Cambridge-road, Hove, Brighton, Sussex	M. E. G.
Miss Weeks, 22, Pinecliffe-avenue, West Southbourne, Bournemouth	M.

Ireland.

Miss Despard, Lincoln Chambers, Dublin	E.
Miss Hogg, School of Massage and Medical Gymnastics, 12, Hume-street, Dublin	M. E. G.
Miss E. Sweeny, 15, Upper Mallow-street, Limerick	M.

Scotland

Misses Hastings and Ewart, School of Massage and Swedish Remedial Gymnastics, 20, Dublin-street, Edinburgh	M. E. G.

THE A.D.R.M.

ACCORDING to *La Presse Médicale* (June 4th), a useful way of fostering amical relations between medi men in France and other allied or friendly countries is contemplation. It has been suggested that the for a time of the children of medical men living in differen countries might conduce to the happiest results. As a pr paratory measure, an invitation has been issued by the Association pour le Développement des Relations Médical (A.D.R.M.) to those French medical men who would to take advantage of such an arrangement to send th names and addresses, and to indicate the town in or Spain to which they would like to send their children. Steps will then be taken to ascertain the names of docto in the countries mentioned who would like to participat in such an exchange. Among other suggestions accept by the Association, the general secretary of which is M Charles Béclard, Faculté de Médecine, 12, rue de l'Ecole d Médecine, Paris, was one by Mr. Desmarets that member travelling abroad should be entitled to receive letter from the committee introducing him to his colleague in foreign countries.

MUZZLING ORDERS.

THE most recent outbreaks of rabies in England at Southampton on June 6th and at Salisbury on June 7th There has been no recent outbreak of rabies in Sco In Wales the last outbreak of rabies occurred on Sept. 8 1920. The Minister of Agriculture states that it is no possible at present to give any indication as to when muzzling orders will be withdrawn from the schedule districts in the case of Southampton and Salisbury. No muzzling orders have been recently applied to Scot As regards Wales the muzzling order was withdrawn May 1st last.

INFANT MORTALITY IN THE WEST INDIES.

FIGURES relating to infant mortality in the parts America under British rule were recently given in the House of Commons by the Secretary for the Colonies follows:—

Colony.	Year.	Infantile mortality.*	Colony.	Year.	Infantile
Barbados	1919	306	Leewards (*cont.*)—		
Bermuda	1919	166	Nevis	1918	26
British Guiana	1919	185	Anguilla	1918	
British Honduras	1919	215	Trinidad	1919	1
Jamaica	1919	161	Windwards—		
Leewards—			Grenada	1920	1
Antigua	1918	177	St. Lucia	1919†	14
Dominica	1920	146	St. Vincent	1919†	11
St. Kitts	1918	255			

* The figure given is the number of deaths of children unde 1 year of age per 1000 living births.

† April-December.

S.M.S. MEDICAL COLLEGE